SIEMENS

SIMATIC NET

Industrial Ethernet switches SCALANCE XC-200

Operating Instructions

07/2016

C79000-G8976-C442-01

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.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

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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C79000-G8976-C442-01
℗ 10/2016 Subject to change

Table of contents

Introduction

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Purpose of the Operating Instructions

These operating instructions support you when installing and connecting up devices of the SCALANCE XC-200 product group.

Validity of the Operating Instructions

These operating instructions apply to the following devices:

- SCALANCE XC206-2 (ST/BFOC)
- SCALANCE XC206-2 (SC)
- SCALANCE XC206-2SFP
- SCALANCE XC208
- SCALANCE XC216
- SCALANCE XC224

Unless mentioned otherwise, the descriptions in these operating instructions refer to all devices of the SCALANCE XC-200 product group named above in the section on 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-200 is used.	SCALANCE X-200
Product group	If information applies to all devices and variants of a product group, the term SCALANCE XC-200 is used.	SCALANCE XC-200
Device	If information relates to a specific device, the device name is used.	e.g. SCALANCE XC206-2SFP

Additional documentation

In addition, note the Operating Instructions of the pluggable transceivers.

You will find the supplementary documentation 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 (https://support.industry.siemens.com/cs/ww/en/ps/15247)

Documentation on configuration

You will find detailed information on configuring the devices in the following configuration manuals:

- SCALANCE XB-200/XC-200/XP-200 Web Based Management
- SCALANCE XB-200/XC-200/XP-200 Command Line Interface

You will find the configuration 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 (https://support.industry.siemens.com/cs/ww/en/ps/15247).

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 under the following entry IDs:
  - 27069465 (http://support.automation.siemens.com/WW/view/en/27069465) Industrial Ethernet / PROFINET Industrial Ethernet System Manual
  - 84922825 (http://support.automation.siemens.com/WW/view/en/84922825) Industrial Ethernet / PROFINET - Passive network components System Manual

SIMATIC NET manuals

You will find the SIMATIC NET 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 (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 (http://support.automation.siemens.com/WW/view/en/50305045)

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=/de&language=en)

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

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.

Security information

Siemens provides products and solutions with industrial security 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 security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit http://www.siemens.com/industrialsecurity (http://www.siemens.com/industrialsecurity)

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

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under https://support.industry.siemens.com/cs/ww/en/ps/15247/pm (https://support.industry.siemens.com/cs/ww/en/ps/15247/pm).

Trademarks

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SIMATIC NET, SCALANCE, C-PLUG, OLM

Safety notices

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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".

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 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:

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.

2.1 Recommendations on network security

NOTICE
Information security Connect to the device and change the standard password for the user set in the factory "admin" and "" before you operate the device.

To prevent unauthorized access, note the following security recommendations.

General

- You should make regular checks to make sure that the device meets these recommendations and/or other security guidelines.
- Evaluate your plant as a whole in terms of security. Use a cell protection concept with suitable products (http://www.industry.siemens.com/topics/global/en/industrial-security/network-security/Pages/Default.aspx).
- When the internal and external network are disconnected, an attacker cannot access internal data from the outside. Therefore operate the device only within a protected network area.
- For communication via non-secure networks use additional devices with VPN functionality to encrypt and authenticate the communication.
- Terminate management connections correctly (WBM. Telnet, SSH etc.).

Physical access

- Restrict physical access to the device to qualified personnel because the plug-in data medium can contain sensitive data.
- Lock unused physical interfaces on the device. Unused interfaces can be used to gain access to the plant without permission.

Software (security functions)

- Keep the firmware up to date. Check regularly for security updates for the device. You will find information on this on the Internet pages Industrial Security (http://www.siemens.com/industrialsecurity).
- Inform yourself regularly about security recommendations by Siemens ProductCERTHotspot-Text (http://www.siemens.com/cert/en/cert-security-advisories.htm).
- Only activate protocols that you require to use the device.
- Restrict access to the management of the device with rules in an access control list (ACL).

- The option of VLAN structuring provides protection against DoS and unauthorized access. Check whether this is practical or useful in your environment.
- Use a central logging server to log changes and accesses. Operate your logging server within the protected network area and check the logging information regularly.

Passwords

- Define rules for the assignment of passwords.
- Regularly change your passwords to increase security.
- Use passwords with a high password strength.
- Make sure that all passwords are protected and inaccessible to unauthorized persons.
- Do not use the same password for different users and systems.

Certificates and keys

- On the device there is a preset SSL certificate with key. Replace this certificate with a self-made certificate with key. We recommend that you use a certificate signed either by a reliable external or by an internal certification authority.
- Use a certification authority including key revocation and management to sign certificates.
- Make sure that user-defined private keys are protected and inaccessible to unauthorized persons.
- It is recommended that you use password-protected certificates in the PKCS #12 format
- Verify certificates and fingerprints on the server and client to prevent "man in the middle" attacks.
- It is recommended that you use certificates with a key length of at least 2048 bits.
- Change certificates and keys immediately, if there is a suspicion of compromise.

Secure/non-secure protocols and services

- Avoid or disable non-secure protocols and services, for example Telnet and TFTP. For historical reasons, these protocols are available, however not intended for secure applications. Use non-secure protocols on the device with caution.
- Check whether use of the following protocols and services is necessary:
  - Non authenticated and unencrypted ports
  - MRP, HRP
  - IGMP snooping
  - LLDP
  - Syslog
  - RADIUS
  - DHCP Options 66/67
  - TFTP
  - GMRP and GVRP
- The following protocols provide secure alternatives:
  - HTTP → HTTPS
  - Telnet → SSH
  - SNMPv1/v2c → SNMPv3

    Check whether use of SNMPv1/v2c. is necessary. SNMPv1/v2c is classified as non-secure. Use the option of preventing write access. The device provides you with suitable setting options.

    If SNMP is enabled, change the community names. If no unrestricted access is necessary, restrict access with SNMP.

    Use the authentication and encryption mechanisms of SNMPv3.
- Use secure protocols when access to the device is not prevented by physical protection measures.
- If you require non-secure protocols and services, operate the device only within a protected network area.
- Restrict the services and protocols available to the outside to a minimum.
- For the DCP function, enable the "Read Only" mode after commissioning.
- If you use RADIUS for management access to the device, activate secure protocols and services.

Interfaces security

- Disable unused interfaces.
- Use IEEE 802.1X for interface authentication.
- Use the function "Locked Ports" to block interfaces for unknown nodes.
- Use the configuration options of the interfaces, e.g. the "Edge Type".
- Configure the receive ports so that they discard all untagged frames ("Tagged Frames Only").

Available protocols

The following list provides you with an overview of the open protocol ports.

The table includes the following columns:

- **Protocol**
- **Port**
- **Port status**
  - Open

    The port is always open and cannot be closed.
  - Open (when configured)

    The port is open if it has been configured.
- **Factory setting**
  - Open

    The factory setting of the port is "Open".
  - Closed

    The factory setting of the port is "Closed".
- **Authentication**

  Specifies whether or not the protocol is authenticated.
- **Encryption**

  Specifies whether or not the transfer is encrypted.

Protocol	Port	Port status	Factory setting	Authentication	Encryption
SSH	TCP/22	Open (when configured)	Open	Yes	Yes
HTTP	TCP/80	Open (when configured)	Open	Yes	No
HTTPS	TCP/443	Open	Open	Yes	Yes
SNMP	UDP/161	Open (when configured)	Open	Yes	Yes (when configured)
PROFINET	UDP/34964, UDP/49154 - UDP/49157	Open	Open	No	No

Protocol	Port	Port status	Factory setting	Authentication	Encryption
TELNET	TCP/23	Open (when configured)	Open	Yes	No
EtherNet/IP	TCP/44818, UDP/2222, UDP/44818	Open (when configured)	Closed (Open with EtherNet/IP variants)	No	No
DHCP	UDP/67, UDP/68	Open (when configured)	Closed	No	No

Description of the device

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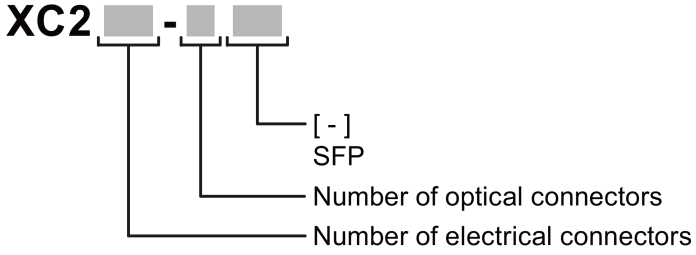
3.1 Product overview

Article numbers

Device	Description	Article number
SCALANCE XC206-2 (ST/BFOC)	6 x 10/100 Mbps RJ-45 ports, 2 x 100 Mbps ST/BFOC ports, multimode FO cable	6GK5 206-2BB00-2AC2
SCALANCE XC206-2 (SC)	6 x 10/100 Mbps RJ-45 ports, 2 x 100 Mbps SC ports, multimode FO cable	6GK5 206-2BD00-2AC2
SCALANCE XC206-2SFP	6 x 10/100 Mbps RJ-45 ports, 2 x pluggable transceiver slots with 100/1000 Mbps	6GK5 206-2BS00-2AC2
SCALANCE XC208	8 x 10/100 Mbps RJ-45 ports	6GK5 208-0BA00-2AC2
SCALANCE XC216	16 x 10/100 Mbps RJ-45 ports	6GK5 216-0BA00-2AC2
SCALANCE XC224	24 x 10/100 Mbps RJ-45 ports	6GK5 224-0BA00-2AC2

Type designation

The type designation of a SCALANCE XC-200 is made up of several parts that have the following meaning:



Interfaces of devices with optical connectors:

Interface	Property
SFP	Pluggable transceiver port with 100/1000 Mbps

Components of the product

The following components are supplied with a SCALANCE XC-200:

- One IE switch
- A 4-pin terminal block for the power supply
- A 2-pin terminal block for the signaling contact
- One product DVD with documentation and software

The following components are also supplied with a SCALANCE XC206-2SFP:

- 2 covers for the pluggable transceiver slots

The following components are also supplied with a SCALANCE XC206-2:

- 2 covers for optical ports

3.1.1 Accessories

The following accessories are available for SCALANCE XC-200:

C-PLUG

Component	Description	Article number
C-PLUG	Configuration plug, exchangeable storage medium for configuration data	6GK1 900-0AB00

Cable

Component	Description	Article number
Connecting cable (RJ-11/RS-232)	Preassembled, serial cable with RJ-11 and RS-232 plug, Length: 3 m pack of 1	6GK5 980-3BB00-0AA5

Pluggable transceiver SFP (100 Mbps)

Type	Property	Article number
SFP991-1	1 x 100 Mbps, LC port optical for glass FO cable (multimode), up to max. 5 km	6GK5 991-1AD00-8AA0
SFP991-1LD	1 x 100 Mbps LC port optical for glass FO cable (single mode) up to max. 26 km	6GK5 991-1AF00-8AA0
SFP991-1LH+	1 x 100 Mbps LC port optical for glass FO cable (single mode) up to max. 70 km	6GK5 991-1AE00-8AA0
SFP991-1ELH200	1 x 100 Mbps LC port optical for glass FO cable (single mode) up to max. 200 km	6GK5 991-1AE30-8AA0

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
SFP992-1LD	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 10 km	6GK5 992-1AM00-8AA0
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

Note

Restriction for pluggable transceivers

If you use pluggable transceivers of the types LH, LH+, ELH or ELH200, the maximum ambient temperature is reduced to 60 °C.

Spare parts

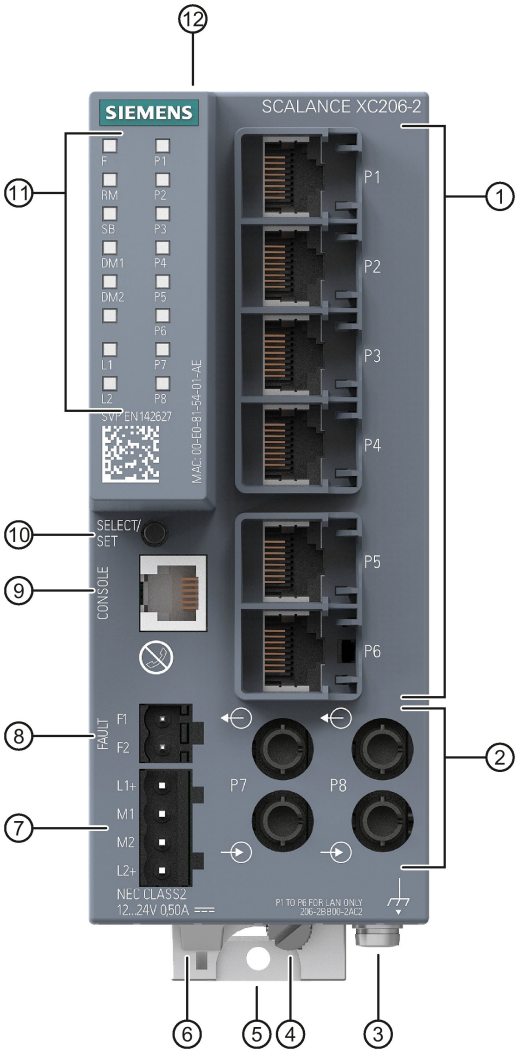
The following spare parts are available for SCALANCE XC-200:

Component	Description	Article number
Spring-loaded terminal block, 4 terminals	4-terminal spring-loaded terminal block to connect the power supply (24 VDC), for SCALANCE X/W/S/M, pack of 5	6GK5 980-1DB10-0AA5
Spring-loaded terminal block, 2 terminals	2-terminal spring-loaded terminal block to connect the signaling contact (24 VDC), 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 XC206-2 (ST/BFOC)

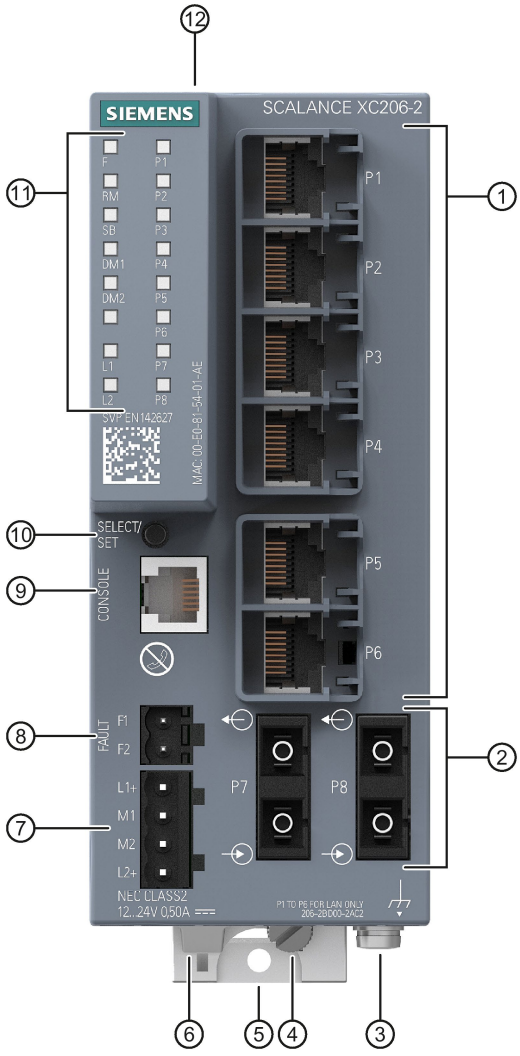
The following figure shows an overview of the components of the SCALANCE XC206-2 (ST/BFOC).



① Electrical ports
② Optical ports
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 Serial interface
⑩ "SELECT / SET" button
⑪ LED display
⑫ C-PLUG slot

3.2.2 Device view of a SCALANCE XC206-2 (SC)

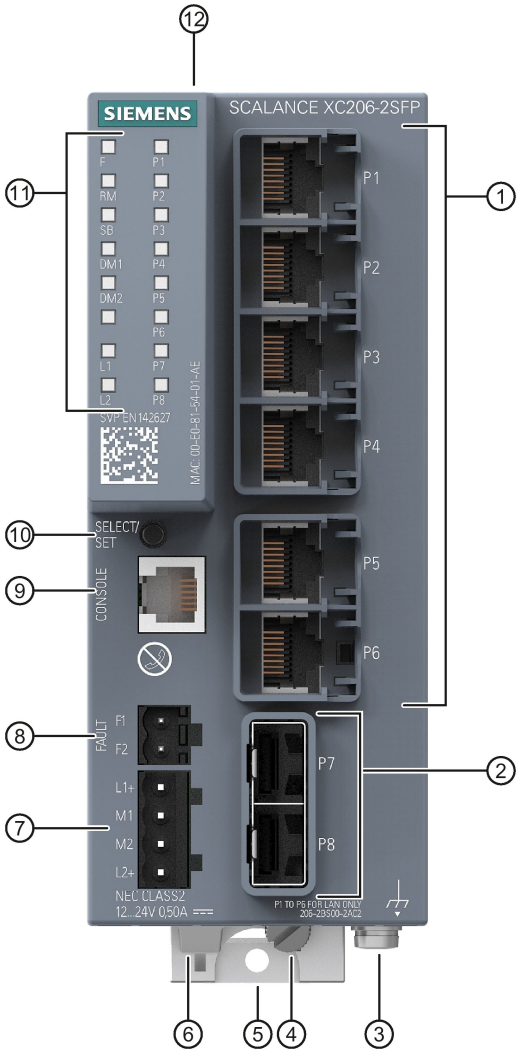
The following figure shows an overview of the components of the SCALANCE XC206-2 (SC).



① Electrical ports
② Optical ports
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 Serial interface
⑩ "SELECT / SET" button
⑪ LED display
⑫ C-PLUG slot

3.2.3 Device view of a SCALANCE XC206-2SFP

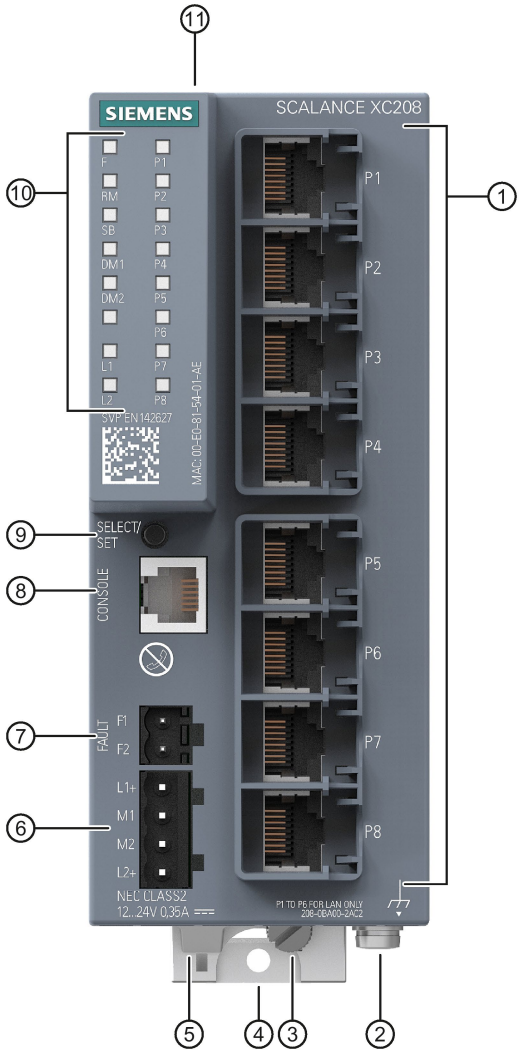
The following figure shows an overview of the components of the SCALANCE XC206-2SFP.



① Electrical ports
② Pluggable 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 Serial interface
⑩ "SELECT / SET" button
⑪ LED display
⑫ C-PLUG slot

3.2.4 Device view of a SCALANCE XC208

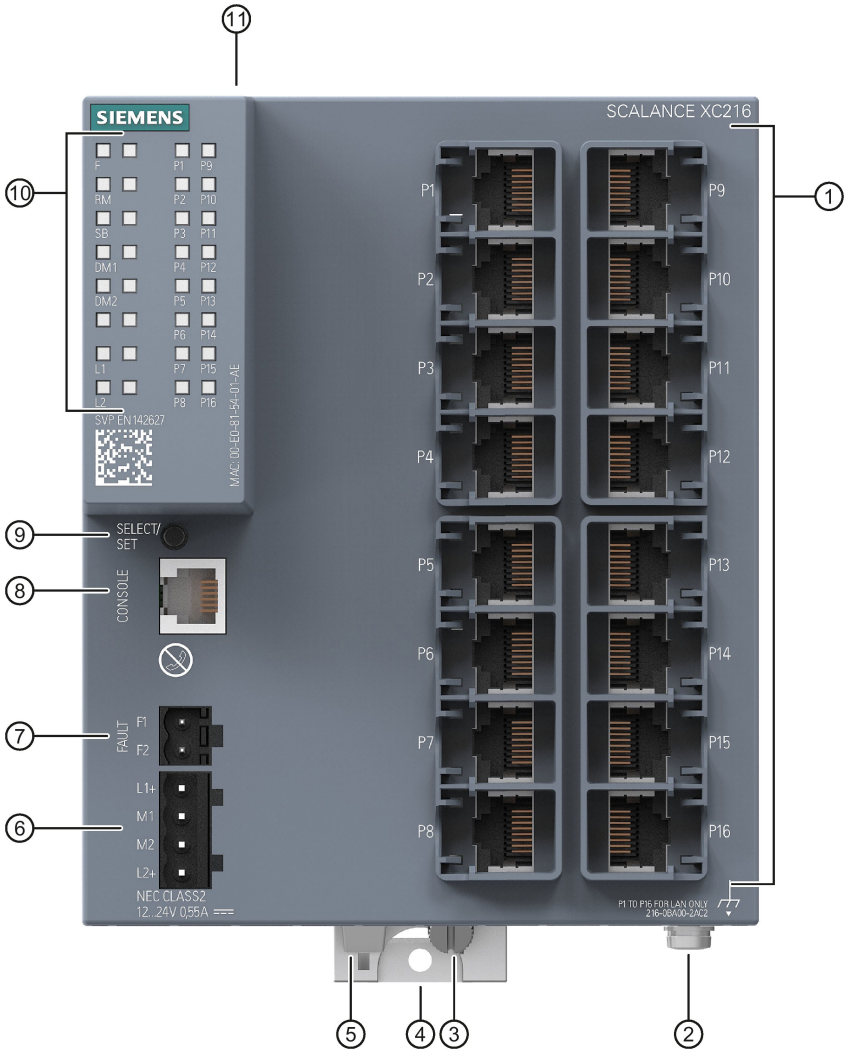
The following figure shows an overview of the components of the SCALANCE XC208..



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 Serial interface
⑨ "SELECT / SET" button
⑩ LED display
⑪ C-PLUG slot

3.2.5 Device view of a SCALANCE XC216

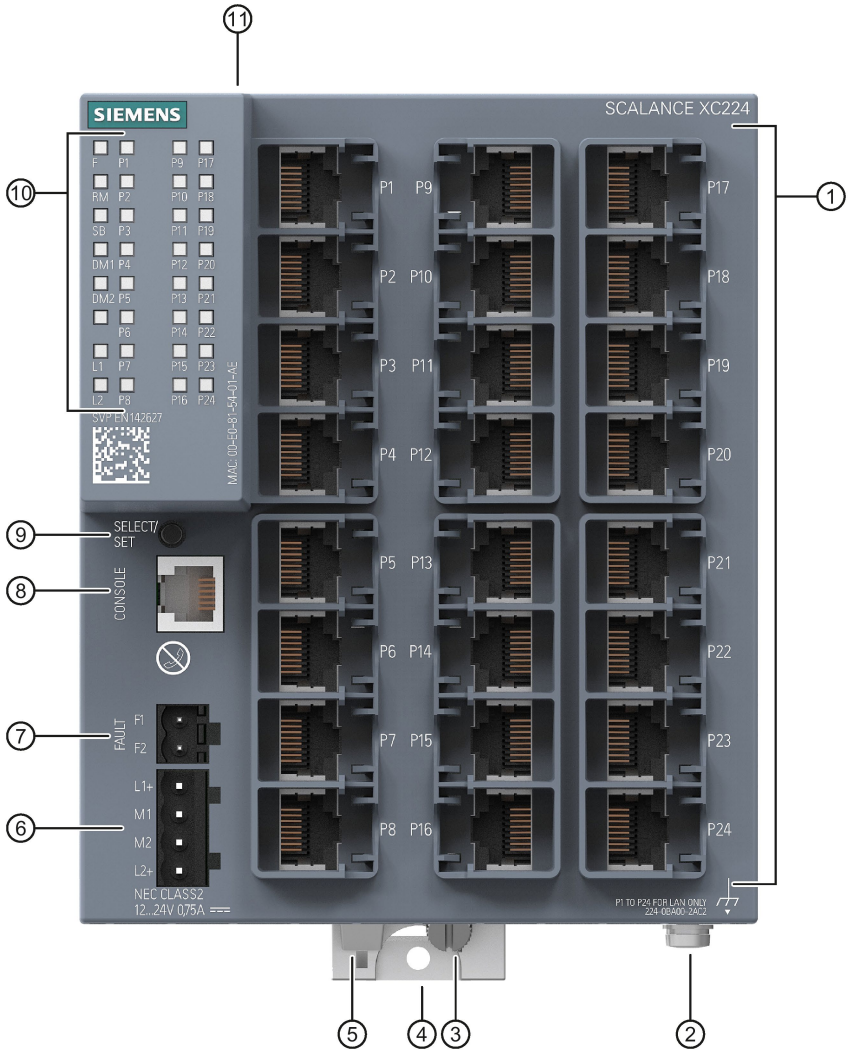
The following figure shows an overview of the components of the SCALANCE XC216.



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 Serial interface
⑨ "SELECT / SET" button
⑩ LED display
⑪ C-PLUG slot

3.2.6 Device view of a SCALANCE XC224

The following figure shows an overview of the components of the SCALANCE XC224.



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 Serial interface
⑨ "SELECT / SET" button
⑩ LED display
⑪ C-PLUG slot

3.3 SELECT / SET button

Position

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

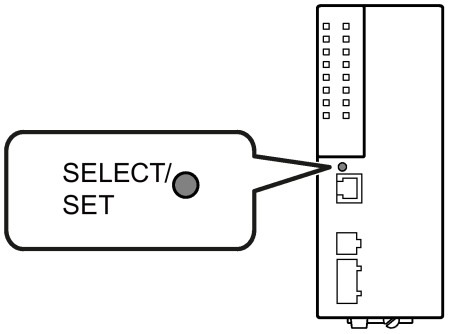


Figure 3-1 Position of the button "SELECT/SET", for example on the SCALANCE XC208

Setting the display mode

To set the required display mode, press the "SELECT/SET" button.

For more detailed information on the display modes, refer to the section "LEDs "DM1" and "DM2" (Page 30)".

Resetting the device to factory defaults

NOTICE
Previous settings
If you reset, all the settings you have made will be overwritten by factory defaults.

NOTICE
Inadvertent reset
An inadvertent reset can cause disturbances and failures in the configured network.

Requirement

- The device is in operation.
- The function "Reset to Factory Defaults" is enabled for the "SELECT / SET" button.

Note

Reset despite disabled "SELECT/SET" button

If you have disabled the "Restore Factory Defaults" function for the "SELECT/SET" button in the configuration, this does not apply during the startup phase, see section "Restoring the factory settings (Page 58)".

If the function has been disabled in the configuration, it is only disabled on completion of the startup phase.

Procedure

To reset the device to the factory defaults during operation, follow the steps below:

1. Switch to display mode A.

   Display mode A is active if the LEDS "DM1" and "DM2" are unlit.

   If the "DM1" and "DM2" LEDs are lit or flashing, you will need to press the "SET/SELECT" repeatedly until the "DM1" and "DM2" LEDs go off.

   If you do not press the "SELECT/SET" button for longer than 1 minute, the device automatically changes to display mode A.

2. Hold down the "SELECT/SET" button for 12 seconds.

   After 9 seconds,the "DM1" and "DM2" LEDs start to flash for 3 seconds. At the same time, the port LEDs go on one after the other.

   After you have held down the button for 12 seconds, the device restarts and the factory defaults are restored.

   If you release the button before the 12 seconds have elapsed, the reset is canceled.

Enabling and disabling the button

In the configuration, you can enable or disable the button function.

Defining the fault mask

Using the fault mask, you specify an individual "good status" for the connected ports and the power supply. Deviations from this status are displayed as errors/faults.

You configure newly plugged-in connections in the configuration.

To define the fault mask, follow the steps below:

1. Switch to display mode D.

   Display mode D is active if the "DM1" and "DM2" LEDs are lit green..

   If another display mode is active, you will need to press the "SET/SELECT" button repeatedly until the "DM1" and "DM2" LEDs are lit green.

2. Hold down the "SELECT/SET" button for 5 seconds.

   After 2 seconds,the "DM1" and "DM2" LEDs start to flash for 3 seconds. At the same time, the port LEDs go on one after the other.

   After you have held down the button for 5 seconds, the current settings are stored as the "good status".

   If you release the button before the 5 seconds have elapsed, the previous fault mask will be retained.

Enabling/disabling the redundancy manager

To enable/disable the redundancy manager, follow the steps below:

1. Switch to display mode B.

   Display mode B is active if the "DM1" LED is lit green and the "DM2" LED is off..

   If another display mode is active, you will need to press the "SET/SELECT" button repeatedly until the "DM1" LED is lit green and the "DM2" LED is off.

2. Hold down the "SELECT/SET" button for 5 seconds.

   After 2 seconds,the "DM1", "DM2" and "RM" LEDs start to flash for 3 seconds. At the same time, the port LEDs go on one after the other.

   If you release the button before the 5 seconds have elapsed, the action is canceled.

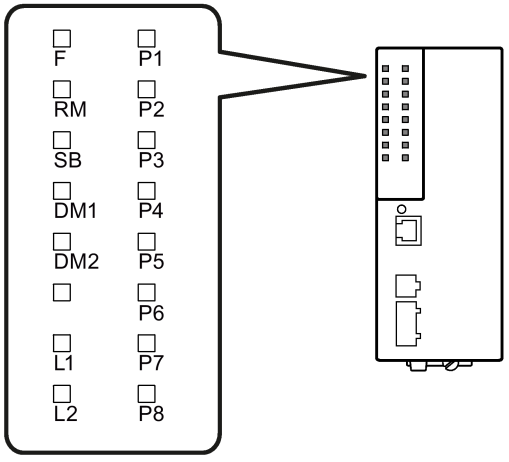
   The result of the action depends on the initial situation:

   - **Initial situation:**
     The redundancy manager and media redundancy are disabled.
     Result:
     After enabling the redundancy manager, media redundancy is also enabled.
   - **Initial situation:**
     The redundancy manager and media redundancy are enabled.
     Result:
     After disabling the redundancy manager, media redundancy remains enabled.

3.4 LED display

3.4.1 Overview

The following figure shows the arrangement of the LEDs based on the example of the SCALANCE XC208.



F	LED for displaying the fault/error status
RM	LED for displaying the "redundancy manager" function
SB	LED for displaying the "standby" function
DM1/DM2	LEDs for displaying the display mode
L1/L2	LEDs for displaying the power supply
P	LEDs for displaying the port status *)

*) The number of port LEDs depends on the device.

3.4.2 "RM" LED

The "RM" LED indicates whether or not the device is a redundancy manager and whether or not the ring is operating free of error.

LED color	LED status	Meaning
-	Off	The device is not a redundancy manager.
Green	On	The device is a redundancy manager. The ring is working without problems, monitoring is activated.
Green	Flashing	The device is a redundancy manager. An interruption has been detected on the ring and the device has switched through.

3.4.3 "SB" LED

The "SB" LED shows the status of the standby function.

LED color	LED status	Meaning
-	Off	The standby function is disabled.
Green	On	The standby function is enabled. The standby section is passive.
Green	Flashing	The standby function is enabled. The standby section is active.

3.4.4 "F" LED

The "F" LED shows the fault/error status of the device.

Meaning during device startup

LED color	LED status	Meaning during device startup
-	Off	Device startup was completed successfully.
Red	On	Device startup is not yet completed or errors have occurred.
Red	Flashing	There are errors in the firmware.

Meaning during operation

LED color	LED status	Meaning during operation
-	Off	The device is operating free of errors. detected The signaling contact is closed.
Red	On	The device has detected a problem. The signaling contact has opened.

3.4.5 LEDs "DM1" and "DM2"

The "DM1" and "DM2" LEDs indicate which display mode is set.

There are 4 display modes (A, B, C and D). Display mode A is the default mode.

Depending on the set display mode, the "L1", "L2" LEDs and the port LEDs show different information.

LED color	LED status		Meaning
	DM1 LED	DM2 LED	
-	Off		Display mode A
Green	On	Off	Display mode B
Green	Off	On	Display mode C
Green	On		Display mode D

Setting the display mode

To set the required display mode, press the "SELECT/SET" button.

If you do not press the "SELECT/SET" button for longer than 1 minute, the device automatically changes to display mode A.

Pressing SELECT/SET button starting at display mode A	LED status		Display mode
	DM1	DM2	
-	Off		Display mode A
Press once	On	Off	Display mode B
Press twice	Off	On	Display mode C
Press three times	On		Display mode D

3.4.6 LEDs "L1" and "L2"

The "L1" and "L2" LEDs indicate the current range of the power supply at connectors L1 and L2.

The meaning of the "L1" and "L2" LEDs depends on the set display mode, see section "LEDs "DM1" and "DM2" (Page 30)".

Meaning in display modes A, B and C

In display modes A, B and C, from the "L1" and "L2" LEDs you can see whether the power supply is higher or lower than 9.6 V.

L1/L2 LED		L1/L2 connector
LED color	LED status	
-	Off	Power supply lower than 9.6 V
Green	On	Power supply higher than 9.6 V

Meaning in display mode D

In display mode D, the "L1" and "L2" LEDs indicate whether the power supply is monitored.

L1/L2 LED		L1/L2 connector
LED color	LED status	
-	Off	Power supply is not monitored. If the power supply falls below 9.6 V, the signaling contact does not respond.
Green	On	Power supply is monitored. If the power supply falls below 9.6 V, the signaling contact responds.

3.4.7 Port LEDs

The port LEDs "P1", "P2" etc. show information about the corresponding ports.

The meaning of the Port LEDs depends on the set display mode, see section "LEDs "DM1" and "DM2" (Page 30)".

Meaning in display mode A

In display mode A, the port LEDs indicate whether a valid link exists.

LED color	LED status	Meaning
-	Off	No valid link to the port (for example communications partner turned off or cable not connected).
Green	On	Link exists and port in normal status. In this status, the port can receive and send data.
	Flashes once per period*	Link exists and port in "blocking" status. In this status, the port only receives management data (no user data).
	Flashes three times per period*	Link exists and port turned off by management. In this status, no data is sent or received via the port.
	Flashes four times per period*	Link exists and is in the "monitor port" status. In this status, the data traffic of another port is mirrored to this port.
Yellow	Flashing / lit	Receiving data at port

* 1 period ≙ 2.5 seconds

Meaning in display mode B

In display mode B, the port LEDs indicate the transmission speed.

LED color	LED status	Meaning
-	Off	Port operating at 10 Mbps
Green	On	Port operating at 100 Mbps
Orange	On	Port operating at 1000 Mbps

If there is a connection problem and the type of transmission is fixed (autonegotiation off), the desired status, in other words the set transmission speed (1000 Mbps, 100 Mbps, 10 Mbps) continues to be displayed. If there is a connection problem and autonegotiation is active, the port LED goes off.

Meaning in display mode C

In display mode C, the port LEDs indicate the mode.

LED color	LED status	Meaning
-	Off	Port operating in half duplex mode
Green	On	Port operating in full duplex mode

Meaning in display mode D

In display mode D, the port LEDs indicate whether the port is monitored.

LED color	LED status	Meaning
-	Off	Port is not monitored. If no link was established at the port the signaling contact does not indicate an error.
Green	On	Port is monitored. If no link was established at the port the signaling contact indicates an error.

3.5 C-PLUG

3.5.1 Function of the C-PLUG

NOTICE
Do not remove or insert a C-PLUG during operation
A C-PLUG may only be removed or inserted when the device is turned off.

Saving the configuration data

A C-PLUG is an exchangeable storage medium for storing the configuration data of the device. This allows fast and uncomplicated replacement of a device. The C-PLUG is taken from the previous device and inserted in the new device. The first time it is started up, the replacement device has the same configuration as the previous device except for the device-specific MAC address set by the vendor.

A C-PLUG stores the current information about the configuration of a device.

Note

The device can also be operated without a C-PLUG.

How it works

Operating mode

In terms of the C-PLUG, there are three modes for the device:

- Without C-PLUG

  The device stores the configuration in internal memory.
  This mode is active if no C-PLUG is inserted.

- With unwritten C-PLUG

  If an unwritten C-PLUG (factory status or deleted with Clean function) is used, the local configuration already existing on the device is automatically stored on the inserted C-PLUG during startup.
  This mode is active as soon as an unwritten C-PLUG is inserted.

- With written C-PLUG

  A device with a written and accepted C-PLUG uses the configuration data of the C-PLUG automatically when it starts up. The requirement for acceptance is that the data was written by a compatible device type.
  If there is configuration data in the internal memory of the device this is overwritten.
  This mode is active as soon as a written C-PLUG is inserted.

Operation with C-PLUG

The configuration stored on the C-PLUG is displayed over the user interfaces.

If changes are made to the configuration, the device stores the configuration directly on the C-PLUG, if this is in the "ACCEPTED" status and in internal memory.

Response to errors

Inserting a C-PLUG that does not contain the configuration of a compatible device type and inadvertently removing the C-PLUG, or general malfunctions of the C-PLUG are indicated by the diagnostic mechanisms of the device.

- Fault LED
- Web Based Management (WBM)
- SNMP
- Command Line Interface (CLI)
- PROFINET diagnostics

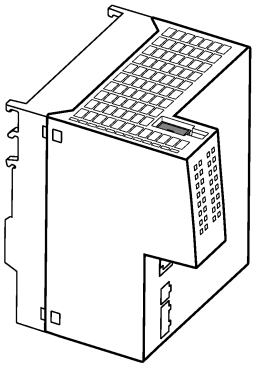
The user then has the choice of either removing the C-PLUG again or selecting the option to reformat the C-PLUG.

3.5.2 Replacing the C-PLUG

Position of the C-PLUG

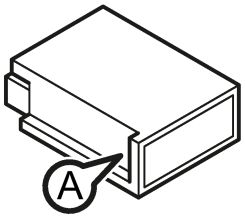
NOTICE
Do not remove or insert a C-PLUG during operation
The C-PLUG may only be removed or inserted when the device is turned off.

The C-PLUG slot is on the top of the device housing.



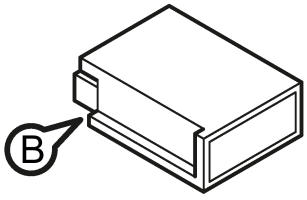
Replacing a C-PLUG.

Removing a C-PLUG



1. Turn off the power to the device.
2. Insert a screwdriver between the front edge of the C-PLUG (A) and the slot and release the C-PLUG.
3. Remove the C-PLUG.

Inserting a C-PLUG



1. Turn off the power to the device.
2. The housing of the C-PLUG has a protruding ridge on the long side (B). The slot has a groove at this position. Insert the C-PLUG correctly oriented into the slot.

3.6 Near Field Communication

Information on Near Field Communication

- Near Field Communication (NFC) is a wireless communications technique.
- With a mobile end device that supports NFC Forum Type 4 Tags, you can read out information via the SCALANCE XC-200.

Position

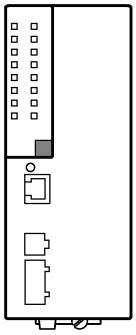


Figure 3-2 Position of NFC on the SCALANCE XC-200 in the bottom left corner of the LED display.

Reading out information

To read out information via the SCALANCE XC-200 using NFC, follow the steps below:

1. Turn on Near Field Communication on the SCALANCE XC-200.

   As default, the function is deactivated.
2. Turn on Near Field Communication on your mobile end device.
3. Hold the mobile end device directly in front of the marked area on the SCALANCE XC-200.

Mounting

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 in an ambient temperature of more than 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.

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 suitable only for operation in the interior.

⚠ WARNING

The device may only be operated in an environment with pollution degree 1 or 2 (see IEC 60664-1).

⚠ 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.

Safety notices for use according to ATEX and IECEx

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

⚠ WARNING

To comply with EC Directive 2014/34/EU (ATEX 114) or the conditions of IECEx, this enclosure or cabinet must meet the requirements of at least IP54 in compliance with EN 60529.

⚠ 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.

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

Types of installation

The SCALANCE XC-200 can be installed in the following ways:

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

Installation clearance

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

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

Installation location

Mount the devices vertically so that the LED display is at the top left.

4.3 Mounting on DIN rails

Installation

Note

Note the position of the securing bar, see also section “Dimension drawings SCALANCE XC-200 (Page 73)“.

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 45)“.

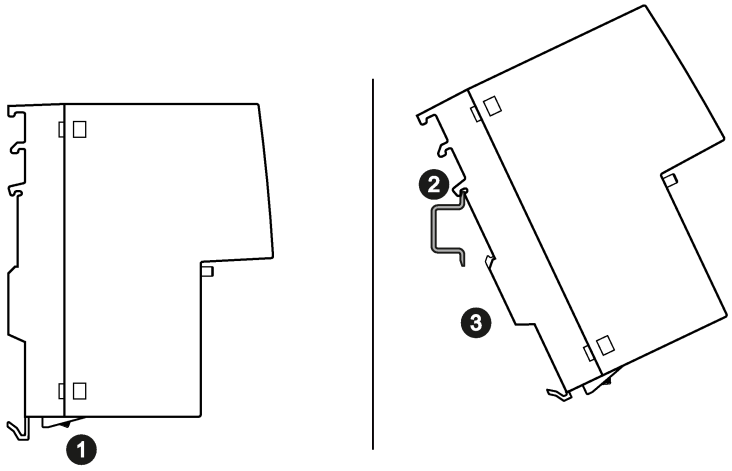


Figure 4-1 DIN rail mounting with securing bar in the wall mounting position.

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 up (Page 47)".

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.

4.4 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 “Dimension drawings SCALANCE XC-200 (Page 73)“.

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 45)“.

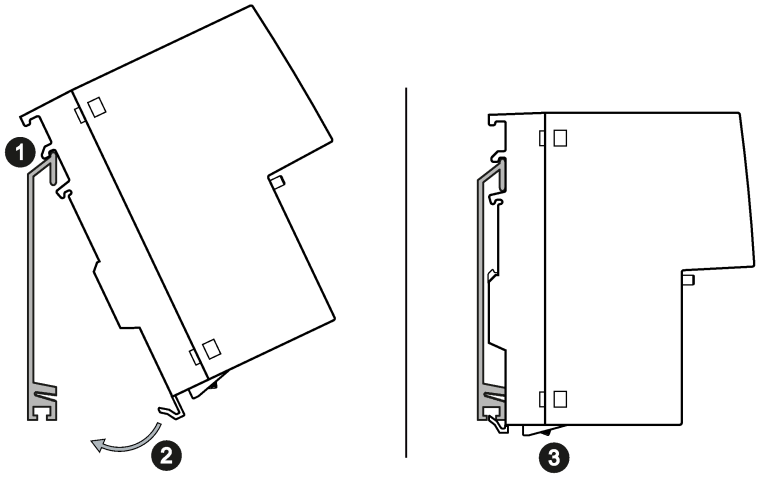


Figure 4-2 S7-300 mounting rail installation with the securing bar in the wall mounting position.

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 up (Page 47)".

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.

4.5 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 “Dimension drawings SCALANCE XC-200 (Page 73)“.

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 45)“.

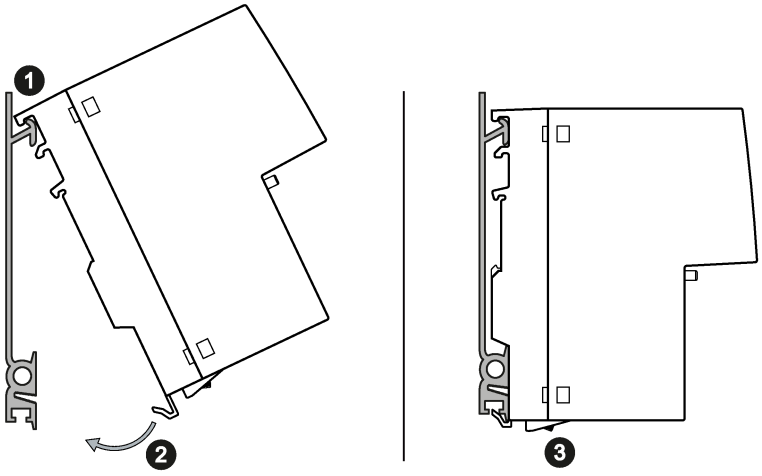


Figure 4-3 S7-1500 mounting rail installation with the securing bar in the wall mounting position.

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 up (Page 47)".

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.

4.6 Wall mounting

Preparation

Note the position of the securing bar, see also section “Dimension drawings SCALANCE XC-200 (Page 73)“.

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 45)“.

Tools

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

- 2 wall plugs
- 2 fillister head screws

Note

Depending on the mounting surface, use suitable fittings.

Assembly

Note

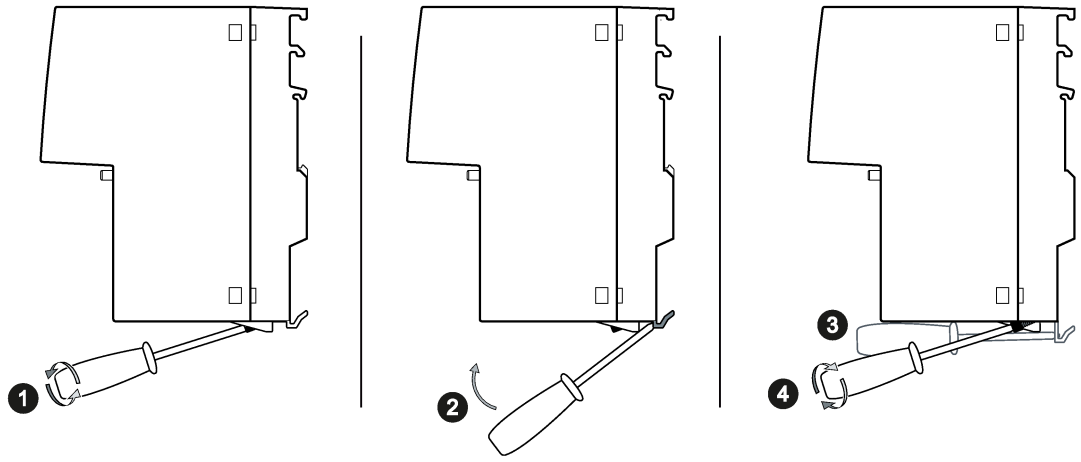
The wall mounting must be capable of supporting at least four times the weight of the device.

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 73)".
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 up (Page 47)".

4.7 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.

4.8 General notes for SFP transceivers

⚠ WARNING

Use only approved SFP transceivers

If you use SFP transceivers that have not been approved by Siemens AG, there is no guarantee that the device will function according to its specifications.
If you use unapproved SFP transceivers, this can lead to the following problems:

- Damage to the device
- Loss of the approvals
- Violation of the EMC regulations

Use only approved pluggable transceivers.

Note

Plugging and pulling during operation

You can plug and pull pluggable transceivers with the device in operation.

Documentation for SFP transceivers

You will find detailed information in the operating instructions of the pluggable transceivers, see the chapter "Introduction (Page 5)" section "Additional documentation".

Connecting up

5

5.1 Safety when connecting up

Safety notices

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

⚠ WARNING

The equipment is designed for operation with Safety Extra-Low Voltage (SELV) by a Limited Power Source (LPS).

This means that only SELV / LPS complying with IEC 60950-1 / EN 60950-1 / VDE 0805-1 must be connected to the power supply terminals. The power supply unit for the equipment power supply must comply with NEC Class 2, as described by the National Electrical Code (r) (ANSI / NFPA 70).

If the equipment is connected to a redundant power supply (two separate power supplies), both must meet these requirements.

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.

Close unused optical sockets and plugs as well as pluggable transceivers and slots with the supplied protective caps.

Remove the protective caps only immediately before you use the plug-in connection.

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.

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

Do not connect or disconnect while the circuit is live or unless the area is known to be free of ignitible concentrations.

Safety notices for use according to ATEX and IECEx

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

⚠ WARNING

Take measures to prevent transient voltage surges of more than 40% of the rated voltage. This is the case if you only operate devices with SELV (safety extra-low voltage).

⚠ 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).

⚠ WARNING

EXPLOSION HAZARD

Do not press the SELECT/SET button when there is an explosive atmosphere.

5.2 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.

5.3 Power supply

Notes on the power supply

⚠ WARNING

Incorrect power supply

When the device is connected to a redundant power supply (two separate power supplies), both must meet these requirements.

Never operate the device with AC voltage or DC voltage higher than 32 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 devices of the IE switches SCALANCE XC-200 to electromagnetic interference was the "surge immunity test" according to EN61000-4-5. This test requires overvoltage protection for the power supply lines. A suitable device is, for example, the Dehn Blitzductor BVT AVD 24, article number 918 422 or a comparable protective element.

Manufacturer: DEHN+SOEHNE GmbH+Co. KG, Hans-Dehn-Str.1, Postfach 1640, D92306 Neumarkt, Germany

Operate the SCALANCE XC-200 with suitable overvoltage protection.

Note

The device can be disconnected from the power supply by pulling off the terminal block.

Information on the power supply

- The "L1" and "L2" LEDs indicate the current range of the power supply, see the section "LEDs "L1" and "L2" (Page 31)".
- 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.
- The power supply can be connected redundantly. Both inputs are isolated. There is no distribution of load. When a redundant power supply is used, 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.
- Note the wiring rules.

Position and assignment

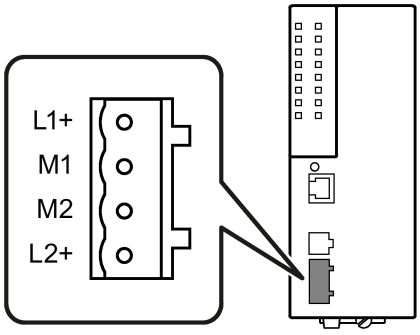


Figure 5-1 Position of the power supply based on the example of the SCALANCE XC208 and the assignment of the terminal block

Contact	Assignment
L1+	24 VDC
M1	Ground
M2	Ground
L2+	24 VDC

5.4 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
The signaling contact can be subjected to a maximum load of 100 mA (safety extra-low voltage SELV, 24 VDC).
Higher voltages or currents can damage the device.

Position and assignment

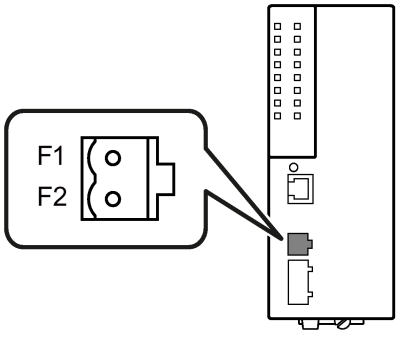


Figure 5-2 Position of the signaling contact based on the example of the SCALANCE XC208 and the assignment of the terminal block

Contact	Assignment
F1	Fault contact 1
F2	Fault contact 2

Signaling faults

- The signaling of errors by the signaling contact is synchronized with the fault LED "F", see section ""F" LED (Page 30)".
  All errors that the fault LED "F" indicates (freely configurable) are also signaled by the signaling contact.
- If an internal fault occurs, the fault LED "F" 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.

5.5 Serial interface

Information on the serial interface

- Via the serial interface on the device (RJ-11 jack), you can access the Command Line Interface of the device directly via an RS-232 (115200 8N1) connection without assigning an IP address.
- Access to the device is possible independent of the Ethernet ports.
- To connect the serial interface to a PC, you require a cable with an RJ-11 plug and 9-pin D-sub female connector. The connecting cable for the serial interface can be ordered as an accessory.

Position and assignment

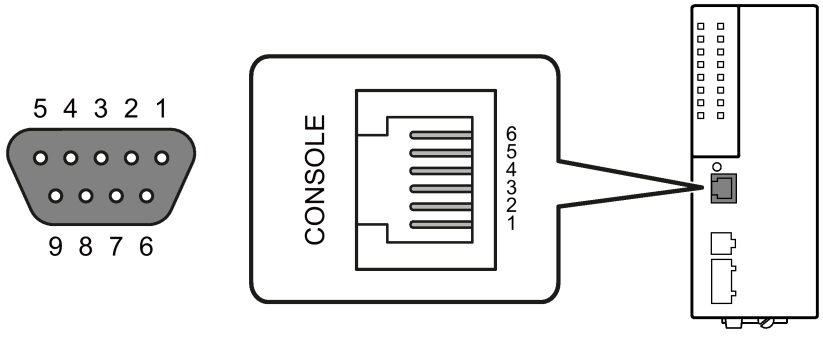


Figure 5-3 Position and pin assignment of the serial interface (RJ-11 jack), for example on the SCALANCE XC208 as well as the pin assignment D-sub socket.

Assignment of the terminal block

The connecting cable has the following assignment:

Contact	Pin assignment of the RJ-11 plug	Pin assignment of the D-sub female connector
1	-	-
2	-	TD (Transmit Data)
3	TD (Transmit Data)	RD (Receive Data)
4	SG (Signal Ground)	-
5	RD (Receive Data)	SG (Signal Ground)
6	-	-
7		-
8		-
9		-

Note

Pin assignment of the RJ-11 jack on the device

The RJ-11 jack on the device has a pinout to match the RJ-11 plug of the connecting cable.

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 20)".

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

Follow the steps below to connect the functional ground:

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

6.1 Downloading new firmware using TFTP without WBM and CLI

Firmware

The firmware is signed and encrypted. This ensures that only firmware created by Siemens can be downloaded to the device.

Procedure with Microsoft Windows

Using TFTP, you can supply a device with new firmware even when it cannot be reached using WBM or CLI. This section explains the procedure based on the example of Microsoft Windows.

Follow the steps below to load new firmware using TFTP:

1. Turn off the power to the device.
2. Press the button and reconnect the power supply to the device while holding down the button.
3. Hold down the button until the red fault LED "F" starts to flash.
4. Release the button as long as the red error LED is still flashing..

   Note

   This time only lasts a few seconds.

   The bootloader of the device waits in this status for a new firmware file that you can download by TFTP.
5. Connect a PC to port 0.1 via an Ethernet cable.
6. Assign an IP address to the device using DHCP or the Primary Setup Tool.
7. Open a Windows command prompt and change to the directory where the file with the new firmware is located and then execute the following command :

   ```
   tftp -i <IP address> put <firmware file>
   ```

   Note

   You can enable TFTP in Microsoft Windows as follows:

   "Control Panel" > "Programs and Features" > "Turn Windows features on or off" > "TFTP Client".
8. Once the firmware has been transferred completely to the device and validated, there is an automatic restart on the device. This may take several minutes.

6.2 Restoring the factory settings

NOTICE
Previous settings
If you reset, all the settings you have made will be overwritten by factory defaults.

NOTICE
Inadvertent reset
An inadvertent reset can cause disturbances and failures in the configured network.

Requirement

The device is in the startup phase.

NOTICE
Reset despite disabled "SELECT/SET" button
Using the "SELECT/SET" button, you can always reset the device parameters to the factory defaults during the startup phase of the device. This applies also if the "Reset to Factory Defaults" function was disabled in the configuration. This allows you to reset the device to the factory defaults in an emergency.
If the function has been disabled in the configuration, it is only disabled on completion of the startup phase.

Procedure

To reset the device to the factory defaults during the startup phase, follow the steps below:

1. Turn off the power to the device.
2. Now press the "SELECT/SET" button and reconnect the power to the device while holding down the button.
3. Hold down the button until the red error LED "F" stops flashing and is permanently lit.
4. Now release the button and wait until the fault LED "F" goes off again.
5. The device starts automatically with the factory defaults.

Restoring the factory defaults during operation

You can also reset the device to the factory defaults during operation, see section "SELECT / SET button (Page 26)".

Technical specifications 7

7.1 Technical specifications SCALANCE XC206-2 (ST/BFOC)

The following technical specifications apply to the SCALANCE XC206-2 (ST/BFOC).

Technical specifications			
Attachment to Industrial Ethernet			
Electrical connectors	Quantity		6
	Connector		RJ-45 jack
	Properties		Half/full duplex, MDI-X pinning
	Transmission speed		10 / 100 Mbps
Optical connectors	Quantity		2
	Connector		ST/BFOC socket
	Properties		Full duplex acc. to 100Base-FX
	Transmission speed		100 Mbps
	Cable type		Multimode glass FO cable
	Transmitter output (optical)		
	• Minimum		• -19 dBm
	• Maximum		• -14 dBm
	Receiver input		
	• Sensitivity min.		• -32 dBm
	• Input power max.		• -3 dBm
	Cable cross-section	Cable length	Attenuation
	• 50/125 µm	• 0 ... 5 km	• ≤ 1 dB/km at 1310 nm; 1200 MHz * km
	• 62.5/125 µm	• 0 ... 5 km	• ≤ 1 dB/km at 1310 nm; 1200 MHz * km
Diagnostics interface			
Serial interface	Quantity		1
	Connector		RJ-11 jack
Electrical data			
Power supply [1)]	Rated voltage		12 to 24 VDC
	Voltage range (incl. tolerance)		9.6 to 31.2 VDC Safe Extra Low Voltage (SELV)
	Design		Terminal block, 4 terminals
	Properties		Implemented redundantly
Current consumption	12 VDC		500 mA
	24 VDC		250 mA
Effective power loss			6 W
Fusing			2.5 A / 125 V

Technical specifications		
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	During operation up to 2000 m	-40 °C to +70 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP20	
Dimensions (W x H x D)	60 x 147 x 125 mm	
Weight	540 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)	> 46 years	
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	

[1] Note the wiring rules (Page 49).

7.2 Technical specifications SCALANCE XC206-2 (SC)

The following technical specifications apply to the SCALANCE XC206-2 (SC).

Technical specifications			
Attachment to Industrial Ethernet			
Electrical connectors	Quantity		6
	Connector		RJ-45 jack
	Properties		Half/full duplex, MDI-X pinning
	Transmission speed		10 / 100 Mbps
Optical connectors	Quantity		2
	Connector		SC socket
	Properties		Full duplex acc. to 100Base-FX
	Transmission speed		100 Mbps
	Cable type		Multimode glass FO cable
	Transmitter output (optical)		
	• Minimum		• -19 dBm
	• Maximum		• -14 dBm
	Receiver input		
	• Sensitivity min.		• -32 dBm
	• Input power max.		• -3 dBm
	Cable cross-section	Cable length	Attenuation
	• 50/125 µm	• 0 ... 5 km	• ≤ 1 dB/km at 1310 nm; 1200 MHz * km
	• 62.5/125 µm	• 0 ... 5 km	• ≤ 1 dB/km at 1310 nm; 1200 MHz * km
Diagnostics interface			
Serial interface	Quantity		1
	Connector		RJ-11 jack
Electrical data			
Power supply [1)]	Rated voltage		12 to 24 VDC
	Voltage range (incl. tolerance)		9.6 to 31.2 VDC Safe Extra Low Voltage (SELV)
	Design		Terminal block, 4 terminals
	Properties		Implemented redundantly
Current consumption	12 VDC		500 mA
	24 VDC		250 mA
Effective power loss			6 W
Fusing			2.5 A / 125 V
Signaling contact [1)]	Quantity		1
	Design		Terminal block, 2 terminals
	Permitted voltage range		24 VDC
	Load capability		max. 100 mA

Technical specifications		
Permitted ambient conditions		
Ambient temperature	During operation up to 2000 m	-40 °C to +70 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP20	
Dimensions (W x H x D)	60 x 147 x 125 mm	
Weight	540 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)	> 46 years	
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	

[1] Note the wiring rules (Page 49).

7.3 Technical specifications SCALANCE XC206-2SFP

The following technical specifications apply to the SCALANCE XC206-2SFP.

Technical specifications			
Attachment to Industrial Ethernet			
Electrical connectors	Quantity		6
	Connector		RJ-45 jack
	Properties		Half/full duplex, MDI-X pinning
	Transmission speed		10 / 100 Mbps
Slots for pluggable transceivers	Quantity		2
	Connector		SFP transceivers (LC port)
	Transmission speed		100 / 1000 Mbps
Diagnostics interface			
Serial interface	Quantity		1
	Connector		RJ-11 jack
Electrical data			
Power supply [1]	Rated voltage		12 to 24 VDC
	Voltage range (incl. tolerance)		9.6 to 31.2 VDC Safe Extra Low Voltage (SELV)
	Design		Terminal block, 4 terminals
	Properties		Implemented redundantly
Current consumption	12 VDC	Without SFP	400 mA
		With SFP [2]	500 mA
	24 VDC	Without SFP	200 mA
		With SFP [2]	250 mA
Effective power loss		Without SFP	4.8 W
		With SFP [2]	6 W
Fusing			2.5 A / 125 V
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 [3]	During operation up to 2000 m		-40 °C to +70 °C
	During storage		-40 °C to +85 °C
	During transportation		-40 °C to +85 °C
Relative humidity	During operation at 25 °C		≤ 95 % no condensation
Housing, dimensions and weight			
Design	compact		
Housing material	Basic housing		Die cast aluminum, powder coated
	Front cover		Polycarbonate (PC-GF10)
Degree of protection	IP20		

Technical specifications	
Dimensions (W x H x D)	60 x 147 x 125 mm
Weight	520 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)	> 47 years
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

[1] Note the wiring rules (Page 49).

[2] Detected with the SFP992-1ELH. You will find the precise values in the operating instructions of the pluggable transceivers, see the section "Introduction" Additional documentation (Page 5).

[3] Depending on which pluggable transceiver you use, the maximum ambient temperature can change, see section "Accessories", Pluggable transceivers SFP (Page 18)".

7.4 Technical specifications of the SCALANCE XC208

The following technical specifications apply to the SCALANCE XC208.

Technical specifications		
Attachment to Industrial Ethernet		
Electrical connectors	Quantity	8
	Connector	RJ-45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	RJ-11 jack
Electrical data		
Power supply [1)]	Rated voltage	12 to 24 VDC
	Voltage range (incl. tolerance)	9.6 to 31.2 VDC Safe Extra Low Voltage (SELV)
	Design	Terminal block, 4 terminals
	Property	Implemented redundantly
Current consumption	12 VDC	350 mA
	24 VDC	175 mA
Effective power loss		4.2 W
Fusing		2.5 A / 125 V
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	During operation up to 2000 m	-40 °C to +70 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP20	
Dimensions (W x H x D)	60 x 147 x 125 mm	
Weight	520 g	

Technical specifications	
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)	> 48 years
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

[1] Note the wiring rules (Page 49).

7.5 Technical specifications of the SCALANCE XC216

The following technical specifications apply to the SCALANCE XC216.

Technical specifications		
Attachment to Industrial Ethernet		
Electrical connectors	Quantity	16
	Connector	RJ-45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	RJ-11 jack
Electrical data		
Power supply [1)]	Rated voltage	12 to 24 VDC
	Voltage range (incl. tolerance)	9.6 to 31.2 VDC Safe Extra Low Voltage (SELV)
	Design	Terminal block, 4 terminals
	Properties	Implemented redundantly
Current consumption	12 VDC	550 mA
	24 VDC	275 mA
Effective power loss		6.6 W
Fusing		2.5 A / 125 V
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	During operation up to 2000 m	-40 °C to +70 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP20	
Dimensions (W x H x D)	120 x 147 x 125 mm	
Weight	800 g	

Technical specifications	
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)	> 48 years
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

[1] Note the wiring rules (Page 49).

7.6 Technical specifications of the SCALANCE XC224

The following technical specifications apply to the SCALANCE XC224.

Technical specifications		
Attachment to Industrial Ethernet		
Electrical connectors	Quantity	24
	Connector	RJ-45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	RJ-11 jack
Electrical data		
Power supply [1)]	Rated voltage	12 to 24 VDC
	Voltage range (incl. tolerance)	9.6 to 31.2 VDC Safe Extra Low Voltage (SELV)
	Design	Terminal block, 4 terminals
	Property	Implemented redundantly
Current consumption	12 VDC	750 mA
	24 VDC	375 mA
Effective power loss		9 W
Fusing		2.5 A / 125 V
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	During operation up to 2000 m	-40 °C to +70 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP20	
Dimensions (W x H x D)	120 x 147 x 125 mm	
Weight	880 g	

Technical specifications	
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)	> 41 years
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

[1] Note the wiring rules (Page 49).

7.7 Mechanical stability (in operation)

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 XC206-2 (ST/BFOC)	●	●
SCALANCE XC206-2 (SC)	●	●
SCALANCE XC206-2SFP	●	●
SCALANCE XC208	●	●
SCALANCE XC216	●	●
SCALANCE XC224	●	●

7.8 Cable lengths

The following technical specifications apply to the following devices:

- SCALANCE XC206-2 (ST/BFOC)
- SCALANCE XC206-2 (SC)
- SCALANCE XC206-2SFP
- SCALANCE XC208
- SCALANCE XC216
- SCALANCE XC224

Cable	Permitted cable length
IE TP torsion cable with IE FC Outlet RJ-45 + 10 m TP cord	0 to 45 m + 10 m TP cord
IE TP torsion cable with IE FC RJ-45 Plug 180	0 to 55 m
IE FC TP Marine / Trailing / Flexible cable with IE FC Outlet RJ-45 + 10 m TP cord	0 to 75 m + 10 m TP cord
IE FC TP Marine / Trailing / Flexible cable with IE FC RJ-45 Plug 180	0 to 85 m
IE FC TP standard cable with IE FC Outlet RJ-45 + 10 m TP cord	0 to 90 m + 10 m TP cord
IE FC TP standard cable with IE FC RJ-45 Plug 180	0 to 100 m

7.9 Switching properties

The following technical specifications apply to the following devices:

- SCALANCE XC206-2 (ST/BFOC)
- SCALANCE XC206-2 (SC)
- SCALANCE XC206-2SFP
- SCALANCE XC208
- SCALANCE XC216
- SCALANCE XC224

Switching properties		
Switching technique	Store and forward	
Latency	10 microseconds	
Full wire speed switching	**Frame length (bytes)**	**Number of frames per second (at 100 Mbps)**
	64	148810
	128	84459
	256	45290
	512	23496
	1024	11973
	1280	9615
	1518	8127

Note

The number of SCALANCE XC-200 modules connected in a line influences the entire frame delay. When a frame passes through the IE switch, this is delayed by the store-and-forward function of the SCALANCE XC-200 by 10-130 microseconds (at 100 Mbps).

Dimension drawings

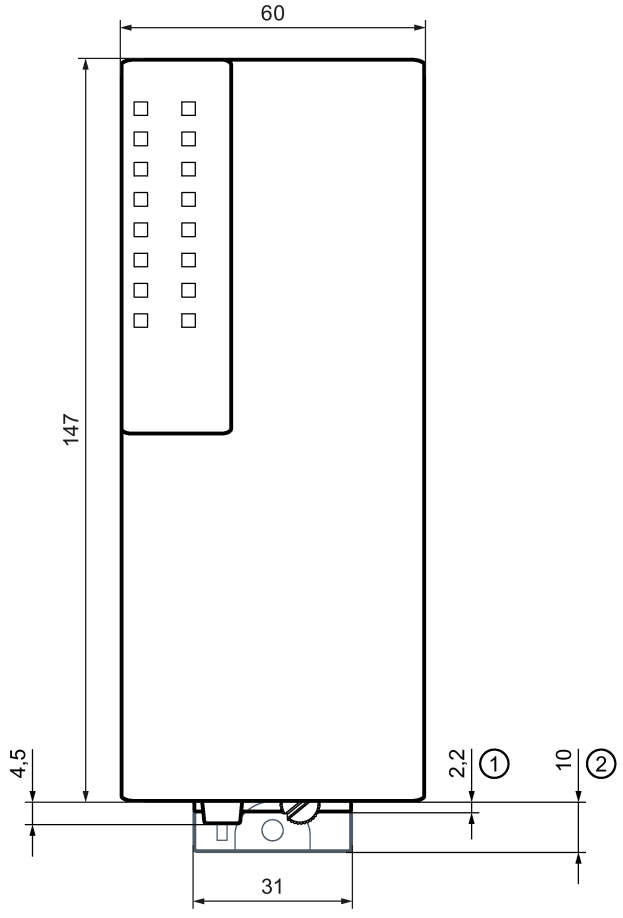
8

8.1 Dimension drawings SCALANCE XC-200

Note

Dimensions are specified in mm.

Front view SCALANCE XC206-2 (ST/BFOC), SCALANCE XC206-2 (SC), SCALANCE XC206-2SFP and SCALANCE XC208

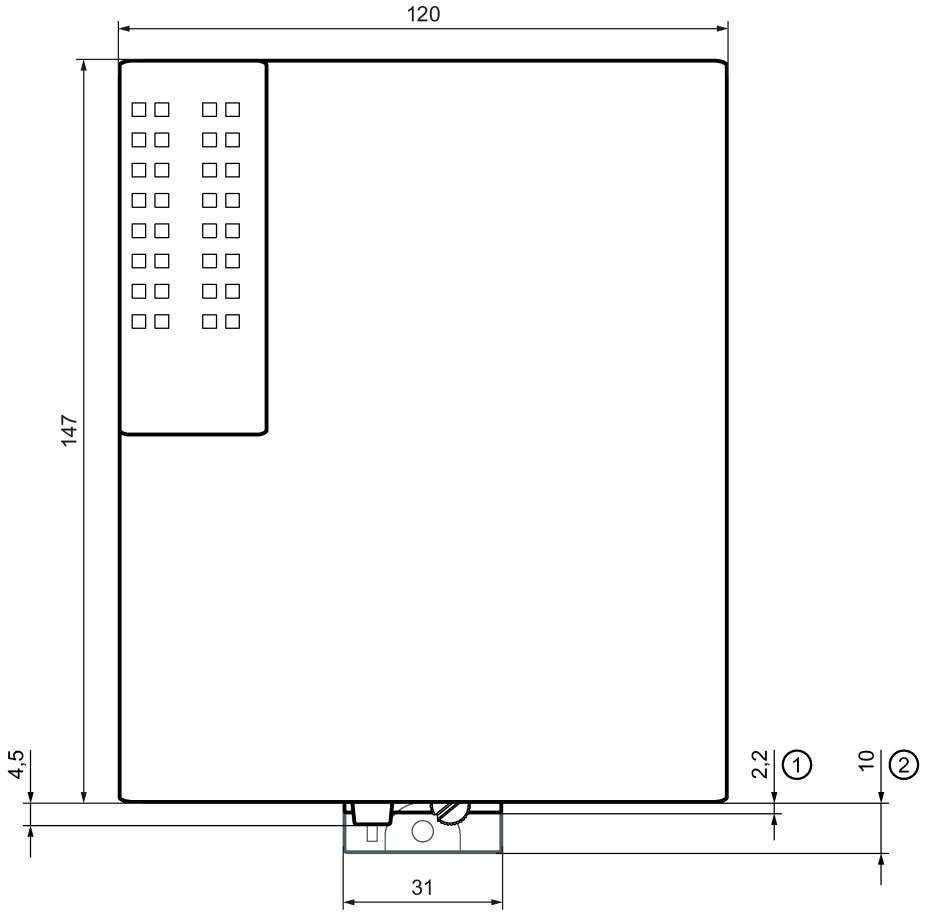


① Securing bar in the rail mounting position

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

Figure 8-1 Width and height

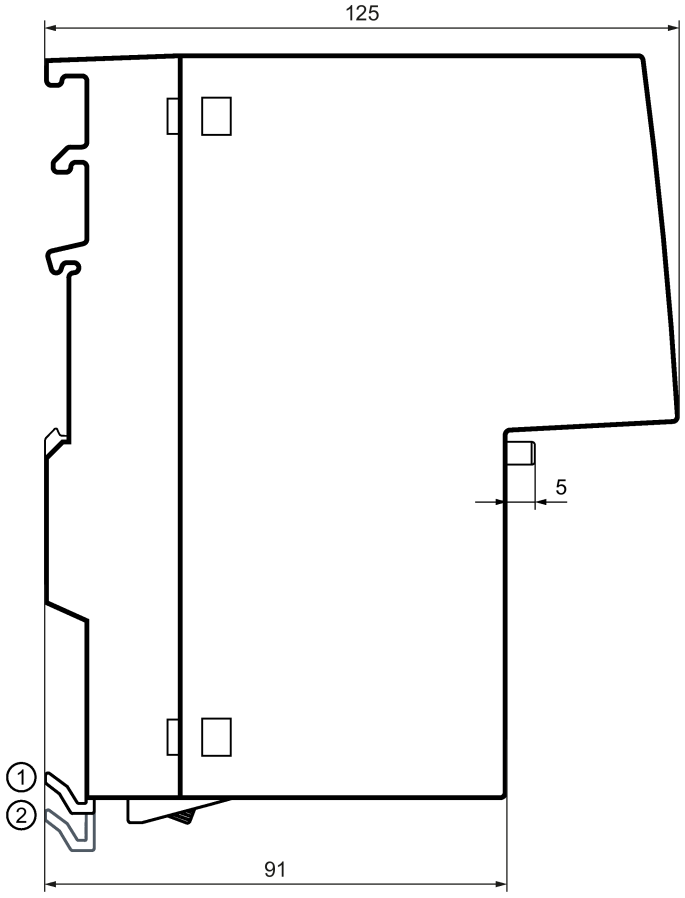
Front view SCALANCE XC216 and SCALANCE XC224



① Securing bar in the rail mounting position
② Securing bar in the wall mounting position (as supplied).

Figure 8-2 Width and height

Side view of the SCALANCE XC-200



① Securing bar in the rail mounting position
② Securing bar in the wall mounting position (as supplied).

Figure 8-3 Depth

Drilling template for wall mounting

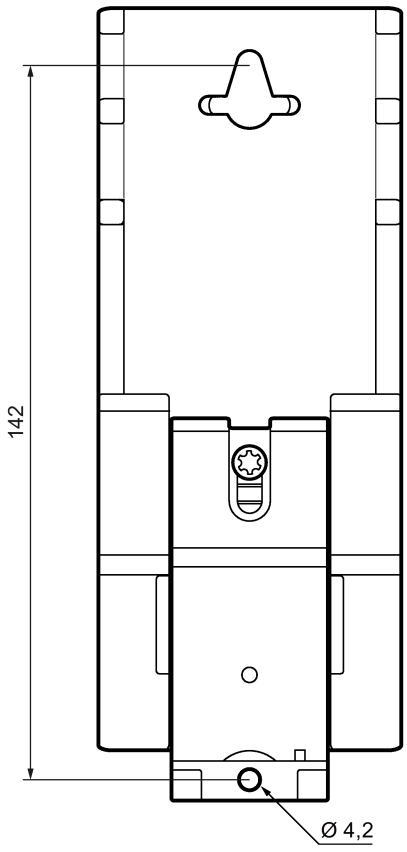


Figure 8-4 Drilling template with securing bar in the wall mounting position (as supplied)

Certifications and 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

The devices are not machines in the sense of the EC Machinery Directive. There is therefore no declaration of conformity relating to the EC Machinery Directive 2006/42/EC for these devices.

If the devices are part of the equipment of a machine, they must be included in the declaration of conformity procedure by the manufacturer of the machine.

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
- "Industrial Ethernet / PROFINET - Passive network components" System Manual

  You will find information on the system manuals in the section "Introduction (Page 5)", in "Further documentation".
- "EMC Installation Guidelines" configuration manual

  60612658 (http://support.automation.siemens.com/WW/view/en/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.

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.

- **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

You will find the EC declaration of conformity for these products on the Internet pages of Siemens Industry Online Support (http://support.automation.siemens.com/WW/view/en/33118389/134200).

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

Siemens Aktiengesellschaft

Division Process Industries and Drives
Process Automation
DE-76181 Karlsruhe
Germany

ATEX (explosion protection directive)

⚠ WARNING

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 subasseblies/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 of Siemens Industry Online Support (http://support.automation.siemens.com/WW/view/en).

Enter the document identification number C234 as the search term.

The SIMATIC NET products meet the requirements of the EC directive 94/9/EC "Equipment and Protective Devices for Use in Potentially Explosive Atmospheres". and as of 20.04.2016 the EC directive 2014/34/EU.

ATEX classification:

II 3 G Ex nA IIC T4 Gc

KEMA 07ATEX0145 X

The products meet the requirements of the following standards:

- EN 60079-15 (electrical apparatus for potentially explosive atmospheres; Type of protection "n")
- EN 60079-0 (Explosive atmospheres - Part 0: Equipment - General requirements)

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

IECEx

The SIMATIC NET products meet the requirements of explosion protection according to IECEx.

IECEx classification:

Ex nA IIC T4 Gc

DEK 14.0025X

The products meet the requirements of the following standards:

- IEC 60079-15 (Explosive atmospheres - Part 15: Equipment protection by type of protection "n")
- IEC 60079-0 (Explosive atmospheres - Part 0: Equipment - General requirements)

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

EMC directive (electromagnetic compatibility)

Until 19.042016 the SIMATIC NET products described in these operating instructions meet the requirements of the EC Directive:2004/108/EC "Electromagnetic Compatibility" (EMC directive) and as of 20.04.2016 the EC directive 2014/30/EU.

Field of application	Requirements	
	Emission	Immunity to interference
Industry	EN 61000-6-4	EN 61000-6-2

You will find the current versions of the standards in the currently valid EC declaration of conformity.

RoHS

The SIMATIC NET products described in these operating instructions meet the requirements of the EC directive 2011/65/EC for the restriction of the use of certain hazardous substances in electrical and electronic equipment:

Applied standard:

- EN 50581

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 for industrial control equipment

cULus Listed IND. CONT. EQ.

Underwriters Laboratories Inc. complying with

- UL 61010-2-201
- CAN/CSA-IEC 61010-2-201

Report no. E85972

cULus Approval for Information Technology Equipment

cULus Listed I. T. E.

Underwriters Laboratories Inc. complying with

- UL 60950-1 (Information Technology Equipment)
- CSA C22.2 No. 60950-1-03

Report no. E115352

cULus Approval Hazardous Location

cULus Listed I. T. E. FOR HAZ. LOC.

Underwriters Laboratories Inc. complying with

- UL 60950-1 (Information Technology Equipment)
- ANSI/ISA 12.12.01-2007
- CSA C22.2 No. 213-M1987

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

Report no. E240480

RCM

The product meets the requirements of the AS/NZS 2064 standard (Class A).

MSIP 요구사항 - For Korea only

A급 기기(업무용 방송통신기자재)

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Marking for the customs union

EAC (Eurasian Conformity)

Customs union of Russia, Belarus and Kazakhstan

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

FDA and IEC marks

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

Device	CLASS 1 LASER Product	CLASS 1 LED Product
SCALANCE XC206-2 (ST/BFOC)	●	●
SCALANCE XC206-2 (SC)	●	●
SCALANCE XC206-2SFP	●	●
SCALANCE XC208	-	-
SCALANCE XC216	-	-
SCALANCE XC224	-	-

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.

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