SIEMENS

SIMATIC NET

Industrial Ethernet switches SCALANCE XP-200

Operating Instructions

Introduction 1

Safety notices 2

Security recommendations 3

Description of the device 4

Installing and removing 5

Connecting up 6

Upkeep and maintenance 7

Technical specifications 8

Dimension drawings 9

Approvals A

04/2025
C79000-G8976-C428-12

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 Aktiengesellschaft. 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.

Siemens Aktiengesellschaft
Digital Industries
Postfach 48 48
90026 NÜRNBERG
GERMANY

C79000-G8976-C428-12
Ⓟ 04/2025 Subject to change

Copyright © Siemens 2017 - 2025.
All rights reserved

Table of contents

1 Introduction 5

1.1 Cybersecurity information 7

2 Safety notices 11

3 Security recommendations 13

4 Description of the device 21

4.1 Product overview 21

4.2 Device views 24
4.2.1 SCALANCE XP208 and SCALANCE XP208EEC 24
4.2.2 SCALANCE XP208PoE EEC 25
4.2.3 SCALANCE XP216 and SCALANCE XP216EEC 26
4.2.4 SCALANCE XP216PoE EEC 27

4.3 Accessories 28

4.4 Spare parts 32

4.5 LED display 33
4.5.1 Overview 33
4.5.2 "RM" LED 33
4.5.3 "SB" LED 34
4.5.4 "F" LED 34
4.5.5 LEDs "DM1" and "DM2" 34
4.5.6 LEDs "L1" and "L2" 35
4.5.7 Port LEDs 36

4.6 RESET button 37

4.7 SELECT / SET button 39

4.8 C-PLUG 41

4.9 Power over Ethernet (PoE) 43
4.9.1 PoE properties of the devices 43
4.9.2 Configuration 46

5 Installing and removing 47

5.1 Safety notices for installation 47

5.2 Types of installation 50

5.3 Wall mounting 50

5.4 Wall mounting 50

5.5 Rack mounting 51

5.6 Installation with the SCALANCE PSP9230PoE power supply 52
5.6.1 Wall or rack mounting 52
5.6.2 Mount a SCALANCE XP208 on the SCALANCE PSP9230PoE 54

5.6.3 Mount a SCALANCE XP216 on the SCALANCE PSP9230PoE ... 55
5.7 Disassembly ... 56
6 Connecting up ... 57
6.1 Safety when connecting up ... 57
6.2 Industrial Ethernet ... 61
6.3 24 VDC power supply ... 64
6.4 54 VDC power supply ... 66
6.5 Connect the power supply of the SCALANCE PSP9230PoE ... 68
6.6 Signaling contact ... 71
6.7 Serial interface ... 73
6.8 Functional ground ... 74
6.9 Replacing a C-PLUG ... 75
7 Upkeep and maintenance ... 79
7.1 Downloading new firmware using TFTP without WBM and CLI ... 80
7.2 Restoring the factory settings ... 81
8 Technical specifications ... 83
8.1 Technical specifications SCALANCE XP208 and SCALANCE XP208EEC ... 83
8.2 Technical specifications of the SCALANCE XP208PoE EEC ... 84
8.3 Technical specifications SCALANCE XP216 and SCALANCE XP216EEC ... 85
8.4 Technical specifications of the SCALANCE XP216PoE EEC ... 86
8.5 Technical specifications of the SCALANCE PSP9230PoE ... 88
8.6 Resistance to harmful gases according to ISA-71.04 ... 90
8.7 Cable lengths ... 90
8.8 Switching properties ... 90
9 Dimension drawings ... 93
9.1 Dimension drawings SCALANCE XP-200 ... 93
9.2 Dimension drawing SCALANCE PSP9230PoE ... 95
A Approvals ... 97
Index ... 103

Introduction

1

Purpose of the Operating Instructions

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

The configuration and the integration of the devices in a network are not described in these operating instructions.

Validity of the Operating Instructions

These operating instructions apply to the following devices:

- SCALANCE XP208
- SCALANCE XP208EEC
- SCALANCE XP208PoE EEC
- SCALANCE XP216
- SCALANCE XP216EEC
- SCALANCE XP216PoE EEC

Unless mentioned otherwise, the descriptions in these operating instructions refer to all devices of the SCALANCE XP-200 product group named above in the section on validity.

There are two variants of some devices, refer to the section "Product overview (Page 21)".

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 XP-200 is used.	SCALANCE XP-200
Device	If information relates to a specific device, the device name is used.	e.g. SCALANCE XP208PoE EEC

Documentation on configuration

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

- SCALANCE Layer 2 Switches Web Based Management (WBM) Vx.x
- SCALANCE Layer 2 Switches Command Line Interface (CLI) Vx.x

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/21869/man).

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.

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under
https://new.siemens.com/cert (https://www.siemens.com/cert).

Note on firmware/software support

Check regularly for new firmware/software versions or security updates and apply them. After the release of a new version, previous versions are no longer supported and are not maintained.

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.

Decommissioning

Shut down the device properly to prevent unauthorized persons from accessing confidential data in the device memory.

To do this, restore the factory settings on the device.

Also restore the factory settings on the storage medium.

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

The following and possibly other names not identified by the registered trademark sign ® are registered trademarks of Siemens AG:

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)

SITRAIN - Training for Industry

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.

NOTICE
Loss of water and dust protection
If you open the device, it loses its water and dust protection. • Do not open the device. If the is not adhered to, the manufacturer's guarantee is lost.

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

⚠ WARNING
EXPLOSION HAZARD
Do not open the device. There are no serviceable parts inside of the device.

⚠ 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.

Security recommendations

3

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 to the device and/or network, observe the following security recommendations.

General

- Check the device regularly to ensure that these recommendations and/or other internal security policies are complied with.
- Evaluate the security of your location and use a cell protection concept with suitable products (https://www.industry.siemens.com/topics/global/en/industrial-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.
- No product liability will be accepted for operation in a non-secure infrastructure.
- Use VPN to encrypt and authenticate communication from and to the devices.
- For data transmission via a non-secure network, use an encrypted VPN tunnel (IPsec, OpenVPN).
- Separate connections correctly (WBM, SSH etc.).
- Check the user documentation of other Siemens products that are used together with the device for additional security recommendations.
- Using remote logging, ensure that the system protocols are forwarded to a central logging server. Make sure that the server is within the protected network and check the protocols regularly for potential security violations or vulnerabilities.

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 can find information on this at the Industrial Security (https://www.siemens.com/industrialsecurity) website.
- Inform yourself regularly about security recommendations published by Siemens ProductCERT (https://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 attacks 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.

Authentication

Note

Accessibility risk - Risk of data loss

Do not lose the passwords for the device. Access to the device can only be restored by resetting the device to factory settings which completely removes all configuration data.

- Replace the default passwords for all user accounts, access modes and applications (if applicable) before you use the device.
- Define rules for the assignment of passwords.
- Use passwords with a high password strength. Avoid weak passwords, (e.g. password1, 123456789, abcdefgh) or recurring characters (e.g. abcabc).
  This recommendation also applies to symmetrical passwords/keys configured on the device.
- Make sure that passwords are protected and only disclosed to authorized personnel.
- Do not use the same passwords for multiple user names and systems.
- Store the passwords in a safe location (not online) to have them available if they are lost.
- Regularly change your passwords to increase security.
- A password must be changed if it is known or suspected to be known by unauthorized persons.
- When user authentication is performed via RADIUS, make sure that all communication takes place within the security environment or is protected by a secure channel.
- Watch out for link layer protocols that do not offer their own authentication between endpoints, such as ARP or IPv4. An attacker could use vulnerabilities in these protocols to attack hosts, switches and routers connected to your layer 2 network, for example, through manipulation (poisoning) of the ARP caches of systems in the subnet and subsequent interception of the data traffic. Appropriate security measures must be taken for non-secure layer 2 protocols to prevent unauthorized access to the network. Physical access to the local network can be secured or secure, higher layer protocols can be used, among other things.

Certificates and keys

- There is a preset SSL/TLS (RSA) certificate with 2048 bit key length in the device. Replace this certificate with a user-generated, high-quality certificate with key. Use a certificate signed by a reliable external or internal certification authority. You can install the certificate via the WBM ("System > Load and Save").
- Use certificates with a key length of 4096 bits.
- Use the certification authority including key revocation and management to sign the certificates.
- Make sure that user-defined private keys are protected and inaccessible to unauthorized persons.
- If there is a suspected security violation, change all certificates and keys immediately.
- Use password-protected certificates in the format "PKCS #12".
- Verify certificates based on the fingerprint on the server and client side to prevent "man in the middle" attacks. Use a second, secure transmission path for this.
- Before sending the device to Siemens for repair, replace the current certificates and keys with temporary disposable certificates and keys, which can be destroyed when the device is returned.

Secure/non-secure protocols and services

- Avoid or disable non-secure protocols and services, for example HTTP, 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
  - HTTP
  - Telnet
  - SNMPv1/v2c
  - NTP
  - MRP, HRP, STP, RSTP and MSTP
  - IGMP snooping
  - LLDP
  - DCP
  - Syslog
  - 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.
  - TFTP → SFTP
  - NTP → NTPsecure
- 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.
- If you use RADIUS for management access to the device, activate secure protocols and services.
- With authentication on the RADIUS server and RADIUS client, use the Message Authenticator attribute to check packets.

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

- **Configurable port**
  - ✓
    The port status can be changed.
  - --
    The port status cannot be changed.
- **Authentication**
  Specifies whether the communication partner is authenticated.
- **Encryption**
  Specifies whether or not the transfer is encrypted.

List of available services

Note

Packet filtering

Packets are processed according to their importance for the operation of the network. Some packets directed to the CPUs of the switch may be discarded due to various security-relevant packet filters. Therefore, it can occur that not all ICMP packets are delivered to the CPUs, for example, and are thus not responded to.

The following is a list of all available services and their ports through which the device can be accessed.

The table includes the following columns:

- **Service**
  The services that the device supports
- **Default port status**
  This is the status of the port in the delivery state (factory setting).
- **Configurable port/service**
  Indicates whether the port number or the service can be configured via WBM / CLI.
- **Authentication**
  Specifies whether the communication partner is authenticated.
  If optional, the authentication can be configured as required.
- **Encryption**
  Specifies whether the transfer is encrypted.
  If optional, the encryption can be configured as required.

The following is a list of all available protocols and services as well as their ports through which the device can be accessed.

Service	Protocol / Port number	Default port status	Configurable		Authentication	Encryption [5)]
			Port	Service		
DHCPv4 Server	UDP/67	Closed	-	✓	-	-
DHCPv4 Client	UDP/68	Open	-	✓	-	-

Service	Protocol / Port number	Default port status	Configurable		Authentication	Encryption [5]
			Port	Service		
EtherNet/IP	TCP/44818 UDP/2222 UDP/44818	Closed (Open with EtherNetIP variants)	-	✓	-	-
HTTP Server/Client [3]	TCP/80	Closed	✓	✓	✓	-
HTTPS WBM Server/ Client	TCP/443	Open	✓	✓	✓	✓
NTP Client	UDP/123	Closed	✓	✓	-	-
NTP (secure)	UDP/123	Closed	✓	✓	✓	-
PROFINET	UDP/34964 UDP/49151 ... 49159 [1]	Open	-	✓	-	-
RADIUS Client	UPD/1812 [4] UPD/1813 [4]	Outbound only	✓	✓	-	-
	UDP/3799	Open	✓	✓	-	-
SFTP Server	UDP/22	Outbound only	✓	✓	✓	✓
SMTP Client	TCP/25	Closed	✓	✓	-	-
SMTP Client (secure)	TCP/465	Closed	✓	✓	✓	✓
SNMPv1/v2c [2] [3]	UDP/161	Open	✓	✓	-	-
SNMPv3	UDP/161	Open	✓	✓	Optional	Optional
SNMP Traps	UDP/162	Outbound only	-	✓	-	-
SNTP Client	UDP/123	Closed	✓	✓	-	-
SSH CLI Server	TCP/22	Open	✓	✓	✓	✓
Syslog Client	UDP/514	Closed	✓	✓	-	-
Syslog (secure) Client	TCP/6514	Closed	✓	✓	-	✓
Telnet [3]	TCP/23	Closed	✓	✓	✓	-
TFTP Client	UDP/69	Outbound only	✓	✓	-	-

1) Port number can be configured via the WBM.

2) Read-only access only.

3) Protocol according to Security by Default.

4) The port is closed by default and is displayed when a RADIUS server is configured. Port number can be configured via the WBM.

5) You can find additional information on the encryption methods used in the WBM appendix "Ciphers used".

The following is a list of all available Layer 2 services through which the device can be accessed.

The table includes the following columns:

- **Layer 2 service**
  The Layer 2 services that the device supports.
- **Default status**
  The default status of the service (open or closed).
- **Service configurable**
  Indicates whether the service can be configured via WBM / CLI.

Layer 2 service	Default port status	Service configurable
DCP	Setup mode [1)]	✓
LLDP	Open	✓
RSTP	Closed	✓
MSTP	Open	✓

1) Setting according to Security by Default.

Description of the device

4

4.1 Product overview

Article numbers

There are two variants of some devices with different article numbers. These variants differ only in their factory settings. All other properties are identical.

Device	Description	Article number (EtherNet/IP)	Article number (PROFINET)
SCALANCE XP208	8 x 10/100 Mbps M12 connector technology electrical	6GK5 208-0HA00-2TS6	6GK5 208-0HA00-2AS6
SCALANCE XP208EEC	8 x 10/100 Mbps M12 connector technology electrical, varnished circuit board	-	6GK5 208-0HA00-2ES6
SCALANCE XP208PoE EEC	8 x 10/100 Mbps M12 connector technology electrical, varnished circuit board, Power over Ethernet on 4 ports	-	6GK5 208-0UA00-5ES6
SCALANCE XP216	12 x 10/100 Mbps and 4 x 10/100/1000 Mbps M12 connector technology electrical	6GK5 216-0HA00-2TS6	6GK5 216-0HA00-2AS6
SCALANCE XP216EEC	12 x 10/100 Mbps and 4 x 10/100/1000 Mbps M12 connector technology electrical, varnished circuit board	-	6GK5 216-0HA00-2ES6
SCALANCE XP216PoE EEC	12 x 10/100 Mbps and 4 x 10/100/1000 Mbps M12 connector technology electrical, varnished circuit board, Power over Ethernet on 8 ports	-	6GK5 216-0UA00-5ES6

Factory settings

EtherNet/IP variants

- Industrial Ethernet protocol: EtherNet/IP
- Base bridge mode: 802.1Q VLAN Bridge
- Redundancy mechanism: RSTP
- Trust mode: Trust CoS-DSCP
- IGMP Snooping/IGMP Querier: On
- IPv4 Address Collision Detection: Attempt to defend

PROFINET variants

- Industrial Ethernet protocol: PROFINET
- Base bridge mode: 802.1D transparent bridge

- Redundancy mechanism: Ring redundancy
- Trust mode: Trust CoS
- IGMP Snooping/IGMP Querier: Off
- IPv4 Address Collision Detection: Never give up

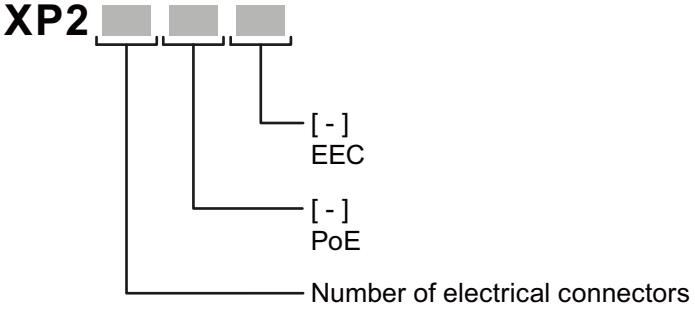
Ring ports

With PROFINET variants for which the ring redundancy redundancy method is set, the factory setting defines the following ring ports:

Device	Factory setting ring ports
SCALANCE XP208 SCALANCE XP208EEC SCALANCE XP208PoE EEC	P0.1 and P0.2
SCALANCE XP216 SCALANCE XP216EEC SCALANCE XP216PoE EEC	P0.10 and P0.12

Type designation

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



Property	Description
EEC	Enhanced Environmental Conditions
PoE	Power over Ethernet

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

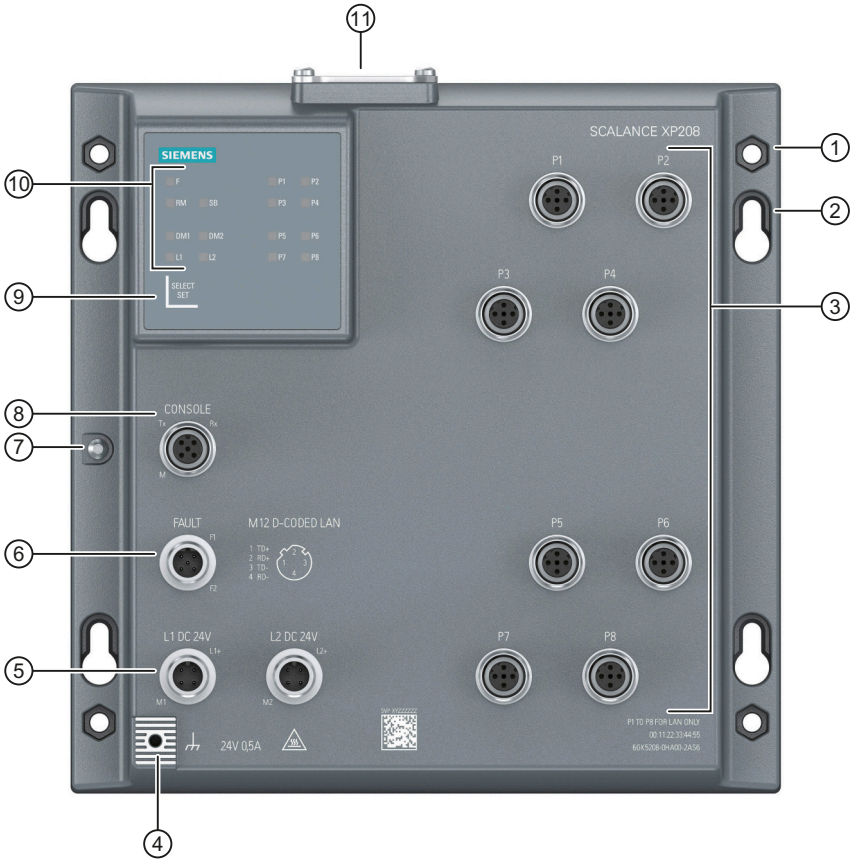
The following components are supplied with a SCALANCE XP-200:

- One device
- One product DVD with documentation and software
- Protective caps for all connectors (premounted)
- 4 screws for mounting on a rack
- Grounding screw (premounted)

4.2 Device views

4.2.1 SCALANCE XP208 and SCALANCE XP208EEC

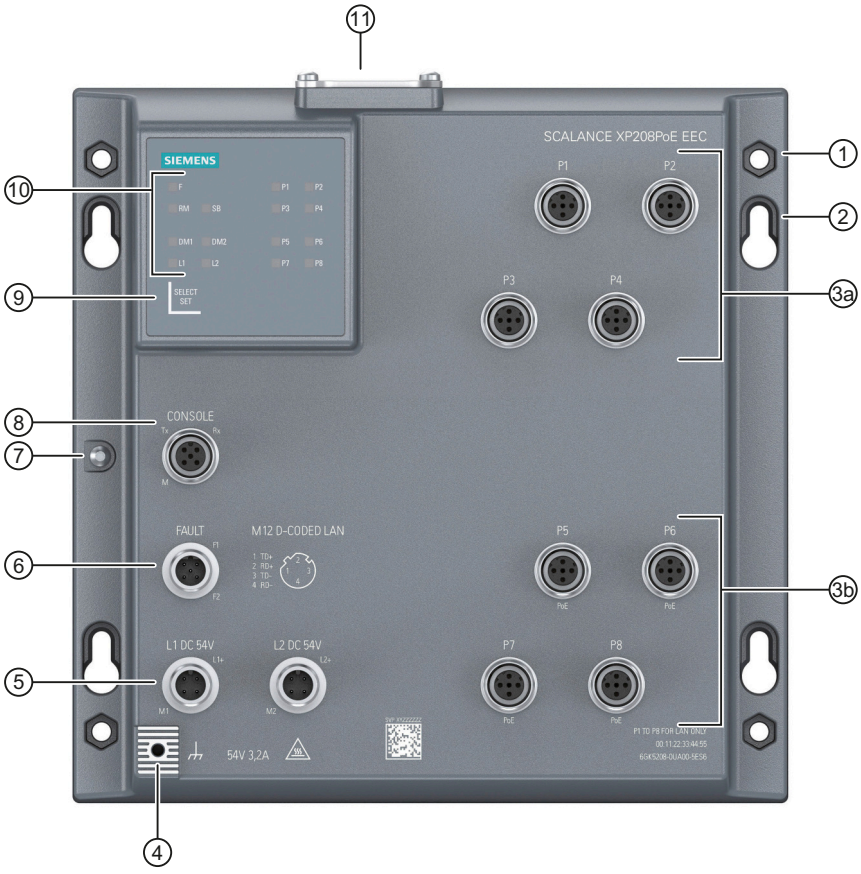
The following figure shows an overview of the components of the SCALANCE XP208 and SCALANCE XP208EEC.



① Cutout for hexagonal nuts
② Keyhole hang-up mechanism
③ Ethernet ports for Fast Ethernet
④ Grounding point
⑤ Power supply (redundant)
⑥ Signaling contact
⑦ Securing point for covering the serial interface
⑧ Serial interface
⑨ "SELECT / SET" button
⑩ LED display
⑪ Cover for:
- C-PLUG slot
- "RESET" button

4.2.2 SCALANCE XP208PoE EEC

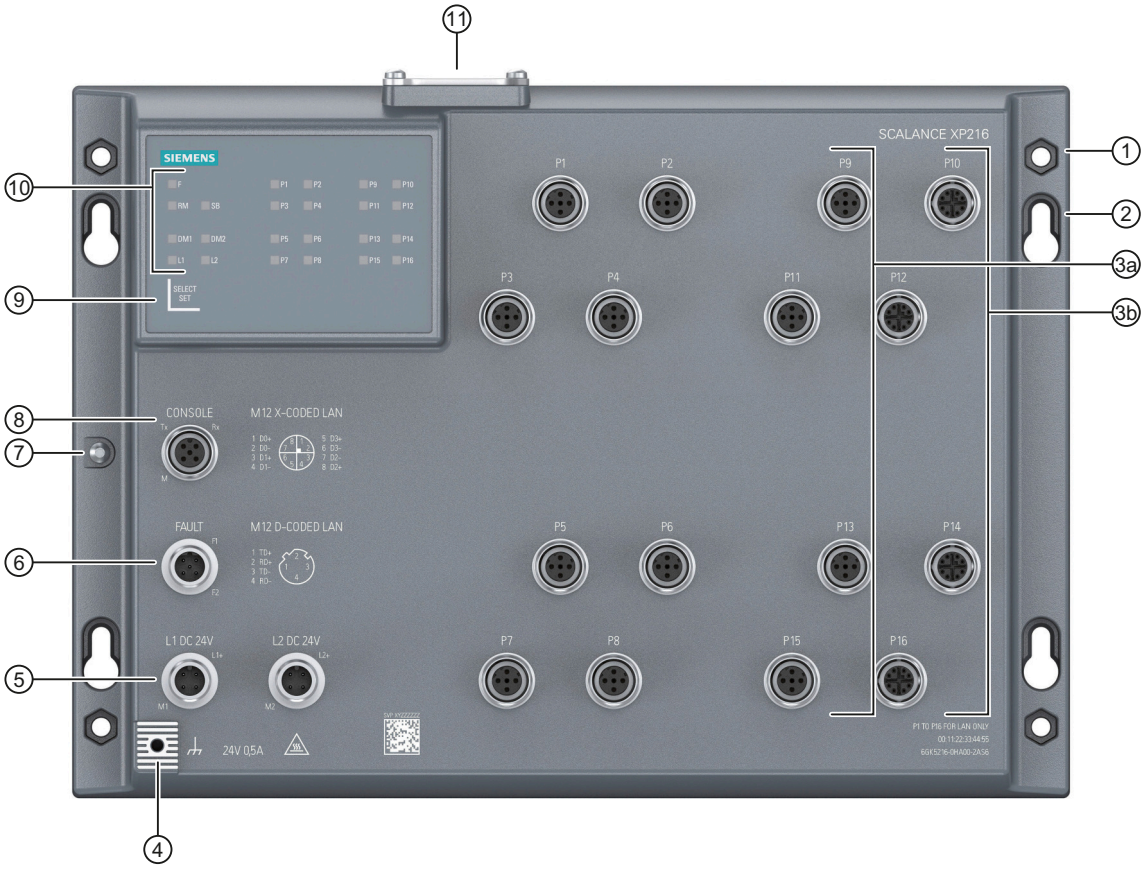
The following figure shows an overview of the components of the SCALANCE XP208PoE EEC



① Cutout for hexagonal nuts
② Keyhole hang-up mechanism
③ a Ethernet ports for Fast Ethernet (P1 - P4)
b Ethernet ports for Fast Ethernet and PoE (P5 - P8)
④ Grounding point
⑤ Power supply (redundant)
⑥ Signaling contact
⑦ Securing point for covering the serial interface
⑧ Serial interface
⑨ "SELECT / SET" button
⑩ LED display
⑪ Cover for:
- C-PLUG slot
- "RESET" button

4.2.3 SCALANCE XP216 and SCALANCE XP216EEC

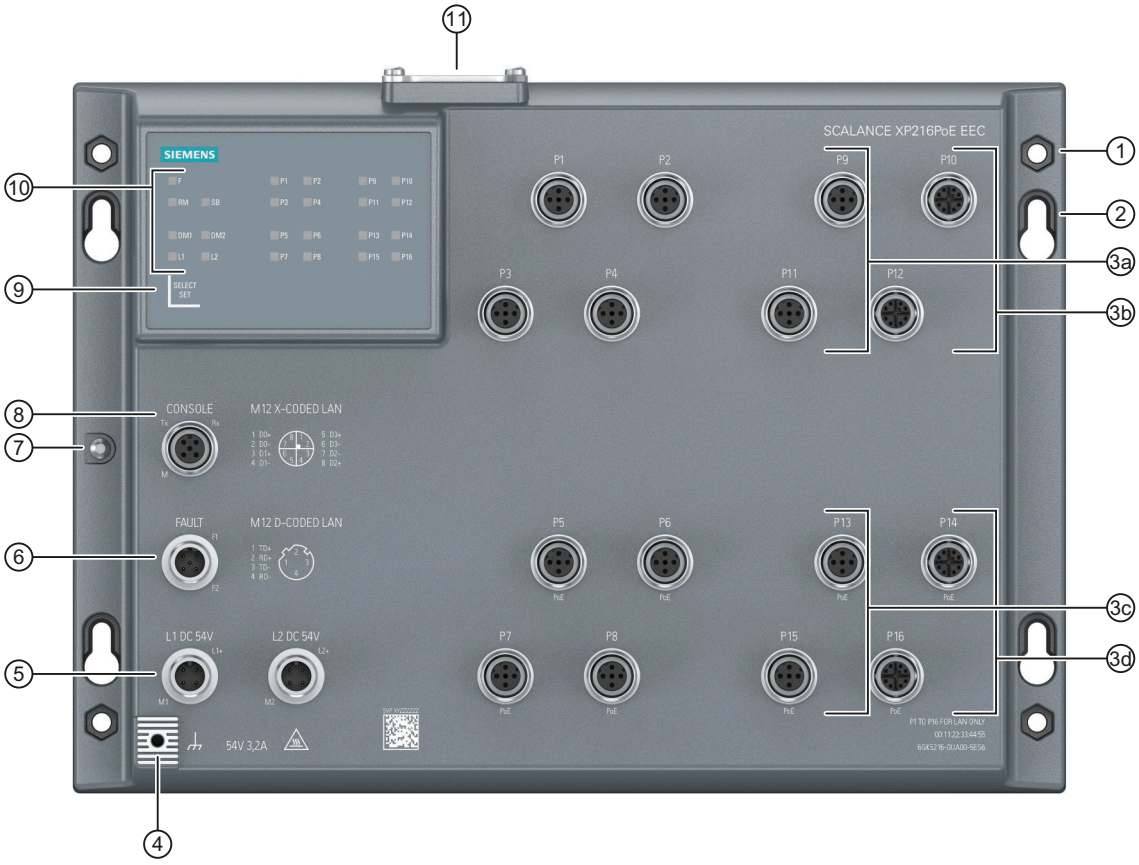
The following figure shows an overview of the components of the SCALANCE XP216 and SCALANCE XP216EEC.



① Cutout for hexagonal nuts
② Keyhole hang-up mechanism
③ a Ethernet ports for Fast Ethernet (P1 - P8, P9, P11, P13 and P15)
b Ethernet ports for Gigabit Ethernet (P10, P12, P14 and P16)
④ Grounding point
⑤ Power supply (redundant)
⑥ Signaling contact
⑦ Securing point for covering the serial interface
⑧ Serial interface
⑨ "SELECT / SET" button
⑩ LED display
⑪ Cover for:
- C-PLUG slot
- "RESET" button

4.2.4 SCALANCE XP216PoE EEC

The following figure shows an overview of the components of the SCALANCE XP216PoE EEC.



① Cutout for hexagonal nuts
② Keyhole hang-up mechanism
③ a Ethernet ports for Fast Ethernet (P1 - P4, P9 and P11)
b Ethernet ports for Gigabit Ethernet (P10 und P12)
c Ethernet ports for Fast Ethernet and PoE (P5 - P8, P13 and P15)
d Ethernet ports for Gigabit Ethernet and PoE (P14 and P16)
④ Grounding point
⑤ Power supply (redundant)
⑥ Signaling contact
⑦ Securing point for covering the serial interface
⑧ Serial interface
⑨ "SELECT / SET" button
⑩ LED display
⑪ Cover for:
- C-PLUG slot
- "RESET" button

4.3 Accessories

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

C-PLUG

Component	Description	Article number
C-PLUG	Configuration plug, exchangeable storage medium for saving configuration data, 32 MB, coated (conformal coating)	6GK1 900-0AQ00
	Configuration plug, exchangeable storage medium for saving configuration data, 256 MB	6GK1 900-0AB10

M12 data plug-in connector

Component	Description		Article number
IE FC M12 PLUG PRO 2x2	M12 data plug-in connector for IE FC TP cables 2x2, IP65/67, D-coded, axial cable outlet	1 connector per package	6GK1 901-0DB20-6AA0
		8 connectors per package	6GK1 901-0DB20-6AA8
IE FC M12 PLUG PRO 4x2	M12 data plug-in connector for IE FC TP cables 4x2, IP65/67, X-coded, axial cable outlet	1 connector per package	6GK1 901-0DB30-6AA0
		8 connectors per package	6GK1 901-0DB30-6AA8
IE FC M12 CABLE CONNECTOR PRO 4X2	M12 plug-in connector (X-coded) can be assembled in the field, 8-pin, metal housing, FC fast connection technology, socket insert	1 connector per package	6GK1 901-0DB40-6AA0
		8 connectors per package	6GK1 901-0DB40-6AA8

Data line

Component	Description	Article number
Connecting cable (M12/RS232)	Preassembled, serial cable with M12 and RS-232 plug, Length: 3 m Pack of 1	6GK5 980-3BC00-0AA5
IE FC TP STANDARD CABLE GP2X2 (PROFINET type A)	Standard bus cable, TP installation cable for connection to FC OUTLET RJ45, for universal use, 4-wire, shielded, CAT 5E Sold by the meter	6XV1 840-2AH10

Component	Description	Article number
IE FC TP ROBUST STANDARD CABLE GP 2X2 (PROFINET type A)	Standard bus cable, ATPE outer jacket for connection to FC RJ45 PLUG and FC OUTLET RJ45, fixed installation, for universal use, 4-wire, shielded, CAT 5 Sold by the meter	6XV1 841-2A
IE FC TP ROBUST FLEXIBLE CABLE GP 2X2 (PROFINET type B)	Flexible bus cable, TPE outer jacket for connection to FC RJ45 PLUG and FC OUTLET RJ45, flexible wires, 4-wire, shielded, CAT 5 Sold by the meter	6XV1 841-2B
IE FC TP FLEXIBLE CABLE GP 2X2 (PROFINET type B)	Flexible bus cable, TP installation cable, flexible wires, shielded, CAT 5 Sold by the meter	6XV1 870-2B
IE FC TP TRAILING CABLE 2X2 (PROFINET type C)	Highly flexible bus cable, TP installation cable for connection to FC OUTLET RJ45, for use in drag chains, 4-wire, shielded, CAT 5 Sold by the meter	6XV1 840-3AH10
IE TP TORSION CABLE 2X2 (PROFINET type C)	Highly flexible bus cable, TP installation cable for use in highly flexible applications (torsion), 4-wire Sold by the meter	6XV1 870-2F
IE FC TP STANDARD CABLE GP 4X2	Shielded TP installation cable for connection to IE FC RJ45 PLUG 4X2, CAT 6, AWG 24 Sold by the meter	6XV1 878-2A
IE FC TP FLEXIBLE CABLE GP 4X2	Shielded TP installation cable for connection to IE FC RJ45 PLUG 4X2, flexible wires, CAT 6, 24 AWG Sold by the meter	6XV1 878-2B
IE CONNECTING CABLE M12-180/IE RJ45	Flexible IE connecting cable, 4-wire, preassembled with a 4-pin M12 plug (D-coded) and an IE FC RJ45 Plug 145	6XV1 871-5T*
IE CONNECTING CABLE M12-180/M12-180	Flexible IE connecting cable, 4-wire, preassembled with two 4-pin M12 plugs (D-coded)	6XV1 870-8A*

* Available in different lengths

Cabinet feedthrough

Component	Description	Article number
IE M12 PANEL FEED-THROUGH	Cabinet feedthrough for conversion from M12 connector technology (D-coded, IP65) to RJ-45 connector technology (IP20) pack of 5	6GK1 901-0DM20-2AA5
IE M12 PANEL FEED-THROUGH PRO	Cabinet feedthrough for conversion from M12 connector technology (D-coded, IP65) to M12 connector technology (D-coded, IP65) pack of 5	6GK1 901-0DM30-2AA5
IE M12 PANEL FEED-THROUGH 4X2	Cabinet feedthrough for conversion from M12 connector technology (X-coded, IP65/67) to R-45 connector technology (X-coded, IP20) pack of 5	6GK1 901-0DM40-2AA5

PoE power supply

Component	Description	Article number
SCALANCE PSP9230PoE	The SCALANCE PSP9230PoE power supply is the suitable accessory for the SCALANCE XP-200 product group. It supplies the switches with the required energy. The SCALANCE PSP9230PoE has the same approvals and the same degree of protection as the SCALANCE XP-200 product group. • Input: 100 to 240 V AC / 110 to 250 V DC • Output: 24 V DC/1 A and 56 V DC/0 A ... 4 A • IP65	6GK5 923-0PS00-2AA6

* Available in different lengths

Power supply

Component	Description	Article number
SITOP PSU100P	• Stabilized power supply • Input: 120 to 230 V AC • Output: 24 V DC/5 A • IP67	6EP1 333-7CA10
	• Stabilized power supply • Input: 120 to 230 V AC • Output: 24 V DC/8 A • IP67	6EP1 334-7CA10

* Available in different lengths

Energy cable

Component	Description	Article number
Energy Cable 2 x 0.75	Energy cable for connection of signaling contact and power supply 24 V DC, 2-wire, stranded wire 2 x 0.75 mm^2, capable of trailing, not assembled Sold by the meter	6XV1 812-8A
Robust Energy Cable 4 x 0.75	Energy cable for connection of power supply 24 V DC, 4-wire stranded 4 x 0.75 mm^2, robust, flexible, not assembled Sold by the meter	6XV1 801-2A
M12 connecting cable	Flexible plug-in power cable to connect the power supply 24 V DC, 4-wire, preassembled with a 4-pin M12 plug and an M12 socket (A-coded)	6XV1 801-5D*

* Available in different lengths

Socket

Component	Description	Article number
IE POWER M12 CABLE CONNECTOR PRO	Socket for the 24 V DC power supply. 4-pin, A-coded pack of 3	6GK1 907-0DC10-6AA3
SIGNALLING CONTACT M12 CABLE CONNECTOR	Socket for the signaling contact, 5-pin, B-coded pack of 3	6GK1 908-0DC10-6AA3

M12 Power T-Tap

Component	Description	Article number
M12 Power T-Tap	Power T tap with two M12 sockets and one M12 plug, see also section "24 VDC power supply (Page 64)" pack of 5	6GK1 907-0DC00-6AA5

Rack (ET200PRO)

Component	Description	Article number
Rack narrow	Length: 500 mm (ready for installation) Pack of 1	6ES7 194-4GA00-0AA0
	Length: 1000 mm (ready for installation) Pack of 1	6ES7 194-4GA60-0AA0
	Length: 2000 mm, Pack of 1	6ES7 194-4GA20-0AA0

Component	Description	Article number
Rack wide	Length: 500 mm (ready for installation) Pack of 1	6ES7 194-4GB00-0AA0
	Length: 1000 mm (ready for installation) Pack of 1	6ES7 194-4GB60-0AA0
	Length: 2000 mm, Pack of 1	6ES7 194-4GB20-0AA0
Rack compact narrow	Length: 500 mm (ready for installation) Pack of 1	6ES7 194-4GC70-0AA0
	Length: 1000 mm (ready for installation) Pack of 1	6ES7 194-4GC60-0AA0
	Length: 2000 mm, Pack of 1	6ES7 194-4GC20-0AA0
Rack compact wide	Length: 500 mm (ready for installation) Pack of 1	6ES7 194-4GD00-0AA0
	Length: 1000 mm (ready for installation) Pack of 1	6ES7 194-4GD10-0AA0
	Length: 2000 mm, Pack of 1	6ES7 194-4GD20-0AA0

4.4 Spare parts

Spare parts

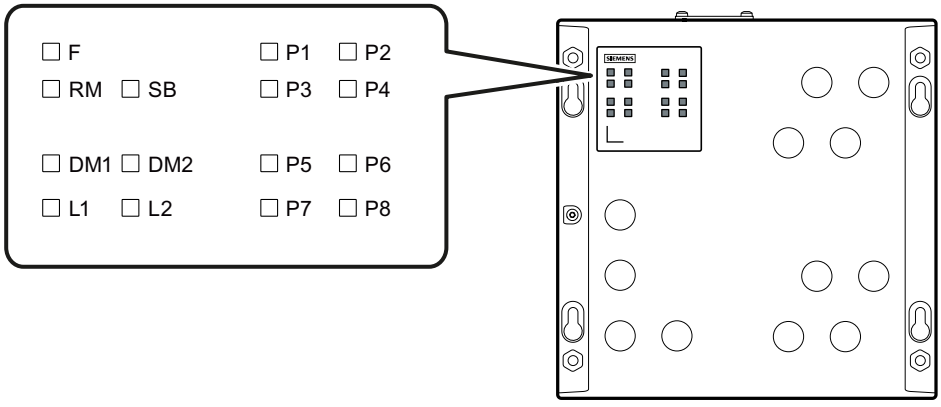
The following spare parts are available for SCALANCE XP-200:

Component	Description	Article number
M12 protective caps	Protective caps to protect unused M12 sockets and plugs Pack of 8 for sockets and 2 for plugs	6GK5 980-2FA00-0AA0

4.5 LED display

4.5.1 Overview

The following figure shows the arrangement of the LEDs.



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.

4.5.2 "RM" LED

The "RM" LED indicates whether the device has the Media Redundancy Manager (MRM) role and whether the MRP ring is operating error-free.

LED color	LED status	Meaning
-	Off	The device is not an MRM.
Green	On	The device has the MRM role. The MRP ring is in normal state. The MRM has blocked data traffic on one of its ring ports and is monitoring the MRP ring.
Green	Flashing	The device has the MRM role. The MRP ring is in error state. The MRM has detected an error in the MRP ring or at one of its ring ports and activates an alternative communication path.

4.5.3 "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.

4.5.4 "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. The signaling contact is closed.
Red	On	The device has detected a problem. The signaling contact has opened.
Red	Flashing	The device is starting up for the first time or has been reset to factory settings. The password of the default user "admin" has not yet been changed.

4.5.5 LEDs "DM1" and "DM2"

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

There are 5 display modes (A, B, C, D, and E). 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
Green	Flashing	Off	Display mode E

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
Press four times	Flashing	Off	Display mode E

4.5.6 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 34)".

Meaning in display modes A, B, C and E

In display modes A, B, C and E, from the "L1" and "L2" LEDs you can see whether the power supply is higher or lower than a certain voltage limit.

Table 4-1 Power supply with devices with 24 VDC

L1/L2 LEDs		L1/L2 connector
LED color	LED status	
-	Off	Power supply too low
Green	On	Power supply is applied

Table 4-2 Power supply with devices with 54 VDC

L1/L2 LEDs		L1/L2 connector
LED color	LED status	
-	Off	Power supply too low
Green	On	Power supply is applied

Meaning in display mode D

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

Table 4-3 Power supply with devices with 24 VDC

L1/L2 LED		L1/L2 connector
LED color	**LED status**	
-	Off	Power supply is not monitored. If the power supply is too low, the signaling contact does not respond.
Green	On	Power supply is monitored. If the power supply is too low, the signaling contact responds.

Table 4-4 Power supply with devices with 54 VDC

L1/L2 LED		L1/L2 connector
LED color	**LED status**	
-	Off	Power supply is not monitored. If the power supply is too low, the signaling contact does not respond.
Green	On	Power supply is monitored. If the power supply is too low, the signaling contact responds.

4.5.7 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 34)".

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 station 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 ≙ 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.

Meaning in display mode E

In display mode E, the port LEDs indicate whether the connected device is supplied using PoE.

LED color	LED status	Meaning
-	Off	The connected device is not supplied using PoE.
Green	On	The connected device is supplied via PoE.

4.6 RESET button

NOTICE
Loss of water and dust protection If the cover is not mounted correctly, the device is not water and dust proof.

Position

The "RESET" button is located under the cover on the top of the SCALANCE XP-200.

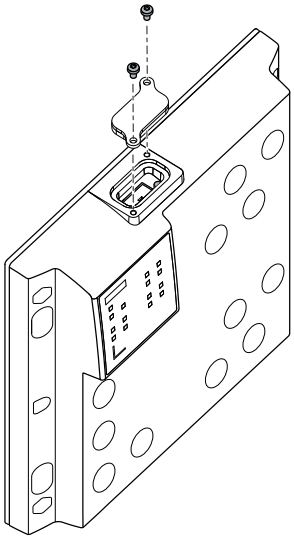


Figure 4-1 Position of the "RESET" button using the example of a SCALANCE XP208

See also

Restoring the factory settings
(Page 81)

Resetting the device to factory defaults

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

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

Requirement

- The device is in operation.
- The function "Reset to factory defaults" is enabled for the RESET button.

Note

Reset despite disabled "RESET button"

If you have disabled the "Restore Factory Defaults" function for the "RESET" button in the configuration, this does not apply during the startup phase; see section "Restoring the factory settings
(Page 81)".

If the function has been disabled with 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. Loosen the screws of the cover.
2. Remove the cover.
3. Hold down the "RESET" button for 12 seconds.

Note

The RESET button is a long-stroke button with a pressure point.

Press the button until you feel the pressure point.

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 factory defaults are restored.
If you release the button before the 12 seconds have elapsed, the reset is canceled.

4. Close the cover (tightening torque = 0.8 Nm), to ensure that the device is closed and is water- and dust-proof.

Enabling and disabling the button

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

4.7 SELECT / SET button

NOTICE
Loss of water and dust protection If the film of the button is damaged, the device is not water and dust proof. Make sure that the film of the button does not get damaged. Do not use e.g. sharp objects to press the button.

Position

The "SELECT/SET" button is located on the front of the SCALANCE XP-200.

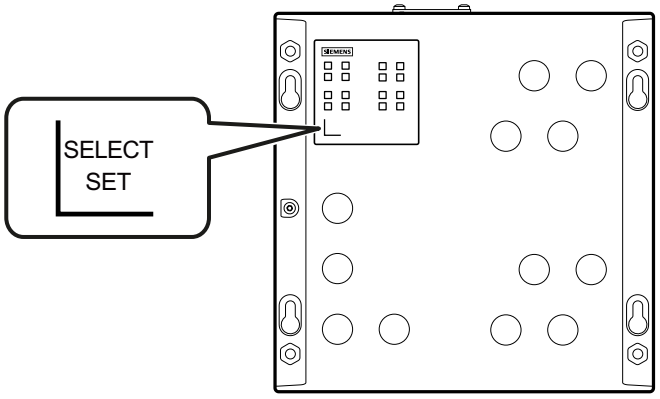


Figure 4-2 SELECT/SET button

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 34)".

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 the monitoring of plugged-in connections in the plant engineering.

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.

4.8 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.

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.

A C-PLUG can be used to save the firmware. You will find more information under "System > PLUG".

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.

Position

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

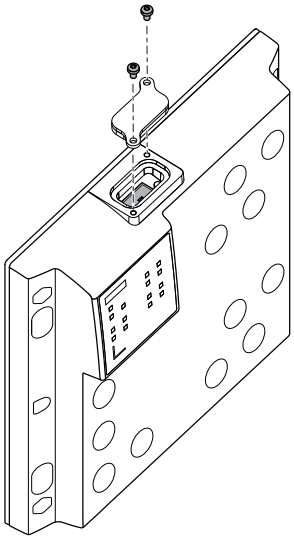


Figure 4-3 Position of the C-PLUG using the example of a SCALANCE XP208

See also

RESET button (Page 37)

NOTICE
Loss of water and dust protection If the cover is not mounted correctly, the device is not water and dust proof.

The procedure for pulling and plugging the PLUG can be found in the section "Replacing a C-PLUG (Page 75)".

4.9 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.

4.9.1 PoE properties of the devices

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.

		802.3at Type 1 - PoE	802.3at Type 2 - PoE+
Maximum power supplied by the power source		15.40 W	30.0 W
Available power at the power source		12.95 W	25.50 W
Voltage range	Power source	44.0 ... 57.0 V	50.0 ... 57.0 V
	Power consumer	37.0 ... 57.0 V	42.5 ... 57.0 V

PoE variants

The PoE variants of SCALANCE XP-200 are power sources and have 4 or 8 PoE ports. Via the PoE ports, devices capable of PoE can be supplied with power via the Ethernet cable.

Note

You can also use the PoE ports without the PoE function. A voltage is applied only after the device has detected an end device capable of PoE at the port. With devices not capable of PoE, only the data connection is used.

PoE ports

- The PoE ports are M12 sockets. Ports P5 to P8, P13 and P15 are D-coded, ports P14 and P16 are X-coded.
- Depending on the connected power supply, the device can supply power consumers of the standard IEEE 802.at type 1 or type 2

- 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 is designed for 500 Vrms (1 minute).
- The PoE ports are divided into port groups:
  - Ports P5 to P8
  - Ports P13 to P16

  Devices with 8 ports have one port group, devices with 16 ports have two port groups.
- In total a power source can make a maximum of 120 W (incl. line losses) available. The power can distributed to the port groups variably.
- Note the line losses. For example to supply power consumers with approx. 102 W, the connected PoE power supply must make at least 120 W available.
- If you use a Cat5/Cat5e cable with a maximum length of 100 m, the connected device can be supplied with a power of 25.5 W.

Note

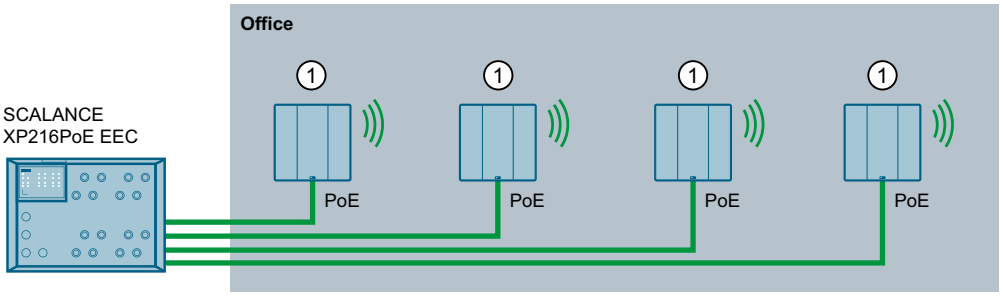
Turn off the power source before you disconnect the PoE cable of a power consumer.

Sample configuration for PoE ports on SCALANCE XP-200

The following configuration graphics show as examples how power supply via PoE might look with SCALANCE XP-200. In all examples, 120 W is available through the SCALANCE XR216PoE EEC. These 120 W are used differently in the examples:

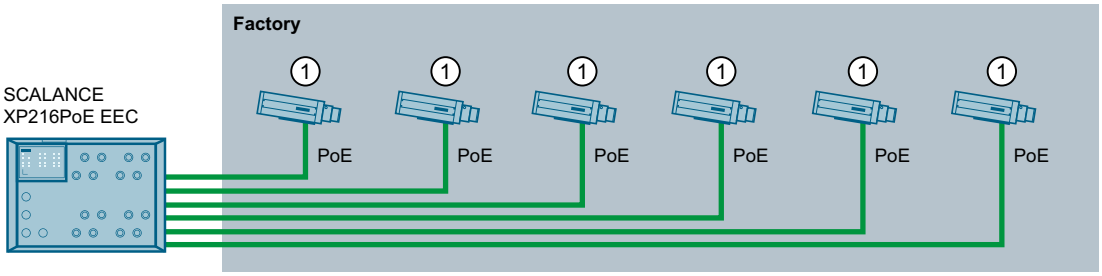
- In example 1, the 120 W are used to operate 4 power consumers which each consume approx. 25.5 W.
- In example 2, the 120 W are used to operate 6 power consumers which each consume approx. 13 W.
- In example 3, the 120 W are used to operate 8 power consumers which each consume approx. 6.5 W.

Example 1



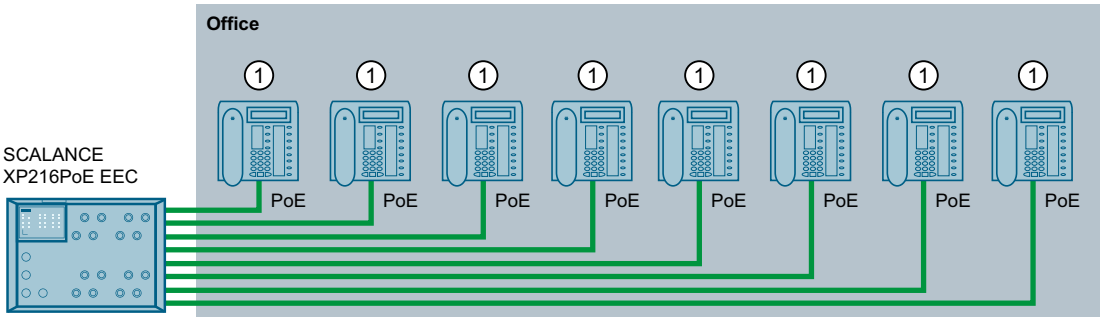
	Power consumer	Required power	Available ports
1	SCALANCE W1750D-2IA RJ45	Approx. 25.5 W	P5 - P8, P13 - P16

Example 2



Power consumer	Required power	Available ports
① IP camera	Approx. 13 W	P5 - P8, P13 - P16

Example 3

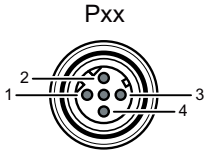


Power consumer	Required power	Available ports
① IP telephone	Approx. 6.5 W	P5 - P8, P13 - P16

Power transfer and pin assignment

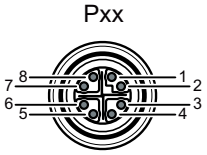
The voltage is transferred on the data wires 1, 2, 3 and 4 of the Ethernet cable.

D-coded ports



Pin number	Assignment
Pin 1	Negative power supply
Pin 2	Positive power supply
Pin 3	Negative power supply
Pin 4	Positive power supply

X-coded ports



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

4.9.2 Configuration

How you activate and configure PoE is described in the configuration manuals, see section "Introduction", section "Documentation on configuration".

Installing and removing

5

5.1 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 40 °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 40 °C.

⚠ WARNING

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

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.

WARNING

EXPLOSION HAZARD

The equipment is intended to be installed within an enclosure/control cabinet. The inner service temperature of the enclosure/control cabinet corresponds to the ambient temperature of the module. Use cables with a maximum permitted operating temperature of at least 20 °C higher than the maximum ambient temperature.

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:

⚠ 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.

Note

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

Additional notes

⚠ CAUTION

Use only approved components

If you use components and accessories that are not approved for SIMATIC NET devices or their target systems, this may violate the requirements and regulations for safety and electromagnetic compatibility.
Only use components approved for the SIMATIC NET devices.

NOTICE

Warming and premature aging of the IE switch due to direct sunlight

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

Provide suitable shade to protect the IE switch against direct sunlight.

Note

During installation and operation, keep to the installation guidelines and safety notices described in this document and in the system manuals "Industrial Ethernet / PROFINET Industrial Ethernet" and "Industrial Ethernet / PROFINET passive network components".

You will find information on the system manuals in the section "Introduction", under "Further documentation".

5.2 Types of installation

The following types of installation are permitted for the devices named in the scope of validity:

- Wall mounting
- Back wall mounting
- Rack mounting

5.3 Wall mounting

Note

Depending on the mounting surface, use suitable fittings.

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 drill holes for wall mounting. For the precise dimensions, refer to the section "Dimension drawings".
2. Screw the device to the wall using the keyhole hang-up mechanisms.
3. Fit the connectors for the power supply, see the section "Power supply".
4. Fit the connectors for the signaling contact, refer to the section ""Signaling contacts".

5.4 Wall mounting

Installation

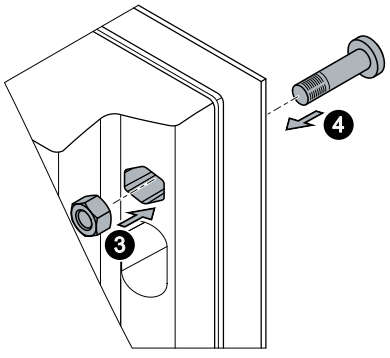


Figure 5-1 Wall mounting

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

1. Prepare the drill holes for mounting. For the precise dimensions, refer to the section "Dimension drawings (Page 93)".
2. Bring the drill holes and the cutouts for the hexagon nuts together so that they cover the same area.
3. Place the hexagon nuts in the corresponding cutouts. The nuts cannot be turned in the cutouts.
4. Push the screws through the drill holes and screw them to the nuts.
5. Fit the connectors for the power supply, see the section "Power supply (Page 64)".
6. Fit the connectors for the signaling contact, refer to the section "Signaling contact (Page 71)".

Removal

To remove the device from the wall, follow the steps below:

1. Disconnect all connected cables.
2. Loosen the screws.

5.5 Rack mounting

Mounting on a rack

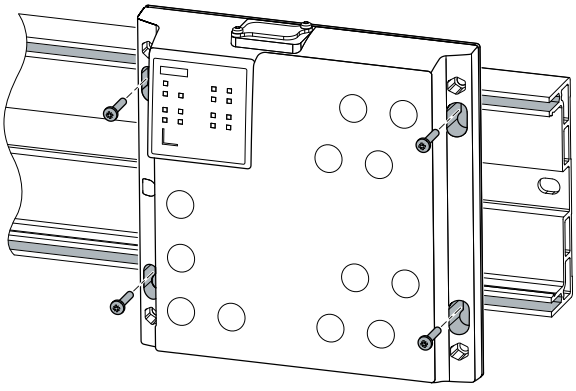


Figure 5-2 Mounting rack

To screw the device to a rack, you require fixing screws with the following propeties:

- Self-tapping screw M5 x 20 mm
  Four self-tapping screw M5 x 20 ship with the device.
- Screw head diameter: max. 7 mm

To install the device on a rack, follow the steps below:

1. Screw the device to the rack using the keyhole hang-up mechanisms, see also sections "Dimension drawings (Page 93)" and "Accessories (Page 28)".
2. Fit the connectors for the power supply, see the section "Power supply (Page 64)".
3. Fit the connectors for the signaling contact, refer to the section "Signaling contact (Page 71)".

Note

Grounding

The device is not grounded via the rack by the keyhole hang-up mechanisms.

If necessary connect a separate ground.

Removal

To remove the device from a rack, follow the steps below:

1. Disconnect all connected cables.
2. Loosen the screw connection.
3. Lift the device from the rack via the keyhole hang-up mechanisms.
4. Loosen the screws completely.

5.6 Installation with the SCALANCE PSP9230PoE power supply

Like all devices in the SCALANCE XP-200 product group, the SCALANCE PSP9230PoE has degree of protection IP65 and is intended for operation outside a control cabinet. A SCALANCE XP208 can be mounted directly on the SCALANCE PSP9230PoE For mounting a SCALANCE XP216, two adapter plates are included with the SCALANCE PSP9230PoE.

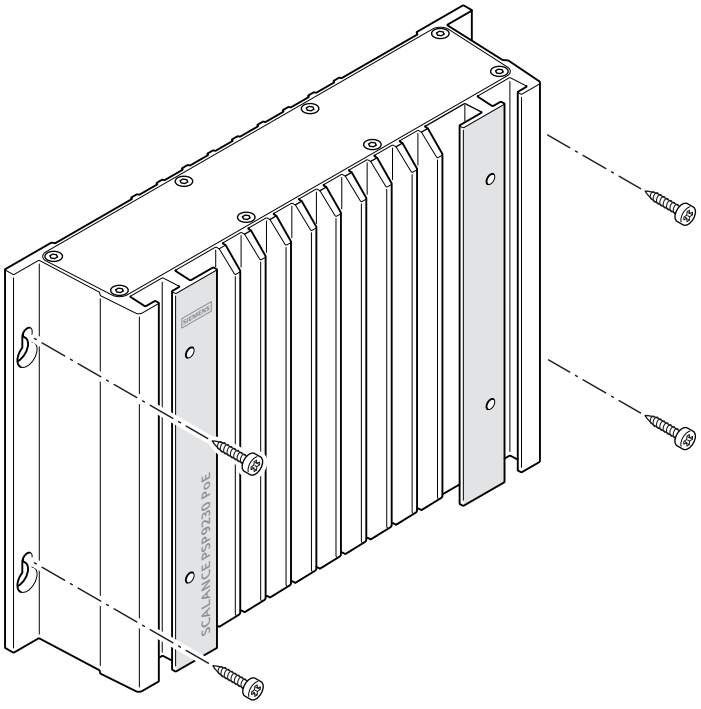
5.6.1 Wall or rack mounting

Note

The wall mounting must be capable of supporting at least four times the weight of the power supply and the SCALANCE XP-200.

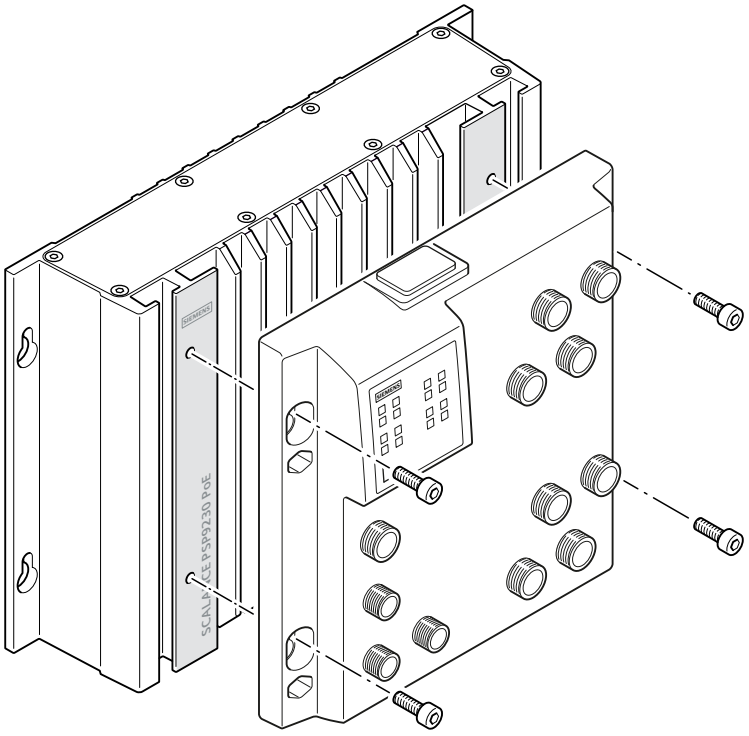
Use the following mounting hardware:

- **Wall mounting**
  The type and length of screws depends on the nature of the wall (concrete, masonry, drywall, wood, etc.). If necessary, use suitable dowels. For more detailed information about the spacing of the fastening holes, refer to the following section: "Dimension drawing SCALANCE PSP9230PoE (Page 95)".
- **Mounting on SIMATIC ET200PRO module rack (e.g. 6ES7 194-4GA00-0AA0)**
  Four self-tapping screws M5 x 20 ship with the SCALANCE PSP9230PoE.



5.6.2 Mount a SCALANCE XP208 on the SCALANCE PSP9230PoE

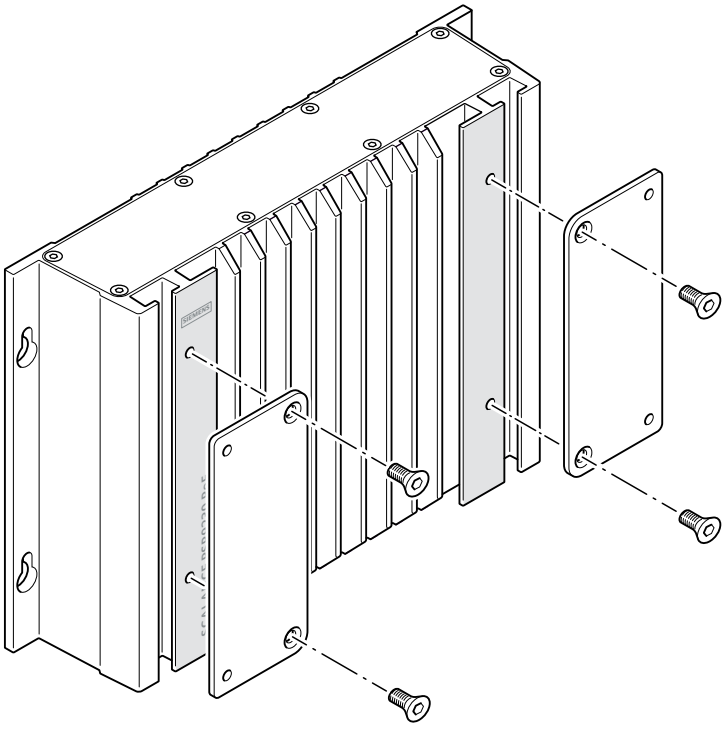
Mount the SCALANCE XP208 on the SCALANCE PSP9230PoE using four M5 x 20 screws (maximum head diameter 9.5 mm, tightening torque 3 Nm).



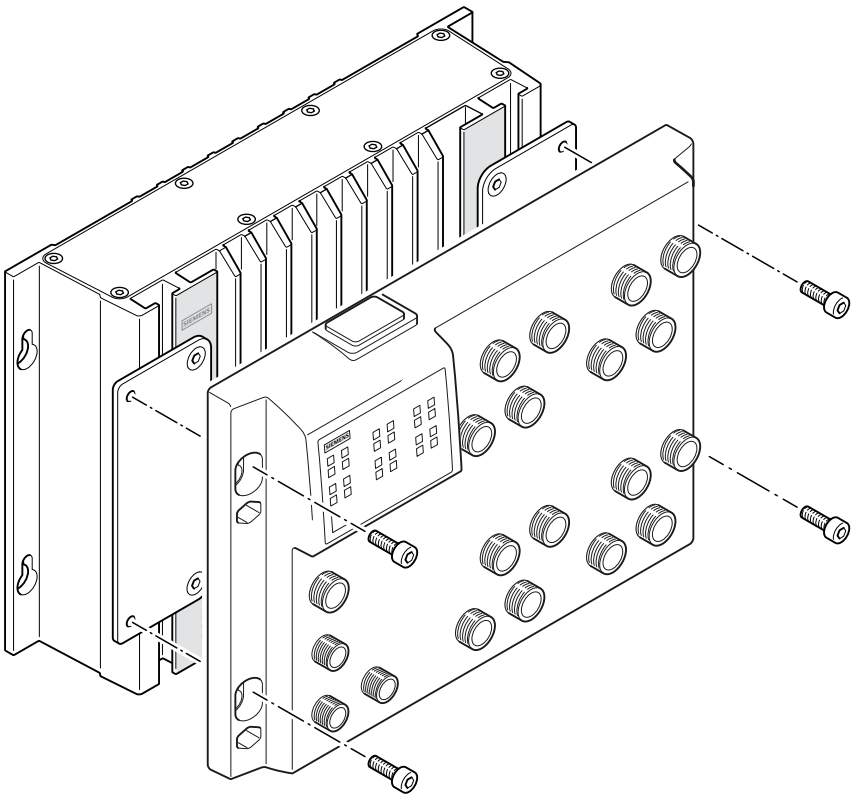
5.6.3 Mount a SCALANCE XP216 on the SCALANCE PSP9230PoE

To mount a SCALANCE XP216 to a SCALANCE PSP9230PoE, follow the steps below:

1. Screw the adapter plates onto the power supply in the position shown (tightening torque 3 Nm). The four countersunk head screw M5 x 16 in accordance with ISO 14581 ship with the SCALANCE PSP9230PoE.



2. Mount the SCALANCE XP216 on the SCALANCE PSP9230PoE using four M5 x 20 screws (maximum head diameter 9.5 mm, tightening torque 3 Nm).



5.7 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 up

6

6.1 Safety when connecting up

Safety notices

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

Safety extra low voltage

⚠ WARNING

Power supply

The device is designed for operation with a directly connectable safety extra-low voltage (SELV).

⚠ WARNING

Power supply

The device is designed for operation with a directly connectable safety extra low voltage (SELV) from a limited power source (LPS).

The power supply therefore needs to meet at least one of the following conditions:

- Only safety extra low voltage (SELV) with limited power source (LPS) complying with IEC 60950-1 / EN 60950-1 / VDE 0805-1 or IEC 62368-1 / EN 62368-1 / VDE 62368-1 may be connected to the power supply terminals.
- The power supply unit for the device must meet NEC Class 2 according to 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.

General notices

NOTICE

Suitable fusing for the power supply cables

The current on the terminal may not exceed 5 A. Use a fuse, that protects against currents > 5 A. The fuse must meet the following requirements:

- In areas where NEC or CEC applies:
  - Suitable for DC (min. 60 V / max. 5 A)
  - Breaking current at least 10 kA
  - Approval according to ANSI/UL 248-1 or CSA C22.2 No. 248.1
  - Classes R, J, L, T or CC
  - Suitable for the protection of DC power supply circuits
- In other areas:
  - Suitable for DC (min. 60 V / max. 5 A)
  - Breaking current at least 10 kA
  - Approval in compliance with IEC 60127-1 / EN 601127-1
  - Switch off characteristics: B or C for circuit breakers and fuses
  - Suitable for the protection of DC power supply circuits

With 24 VDC devices you do not need to fuse the supply cable if you only use power sources with a limited power source (LPS) or power sources according to NEC Class 2 for the power supply of the devices.

Note

Close unused sockets

Close all unused M12 sockets with protective caps (tightening torque at least 0.4 Nm) to achieve the specified type of protection.

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 SELECT/SET button when there is an 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

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.

⚠ 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).

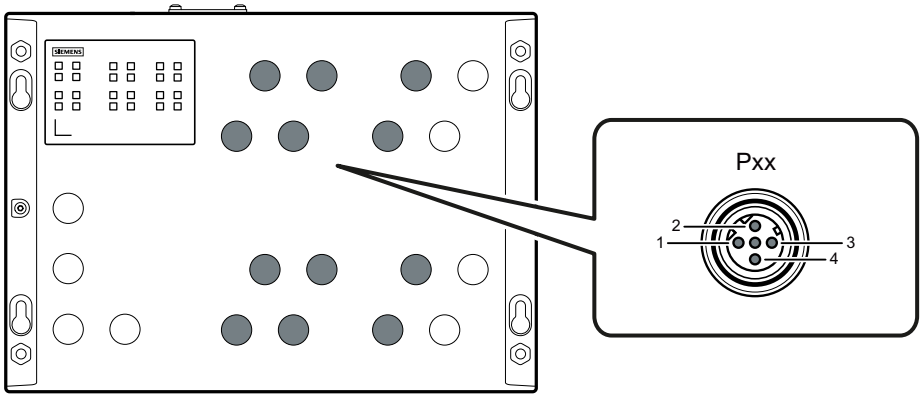
6.2 Industrial Ethernet

Ethernet ports

The attachment to Industrial Ethernet uses M12 connector technology with MDI-X assignment.

Fast Ethernet

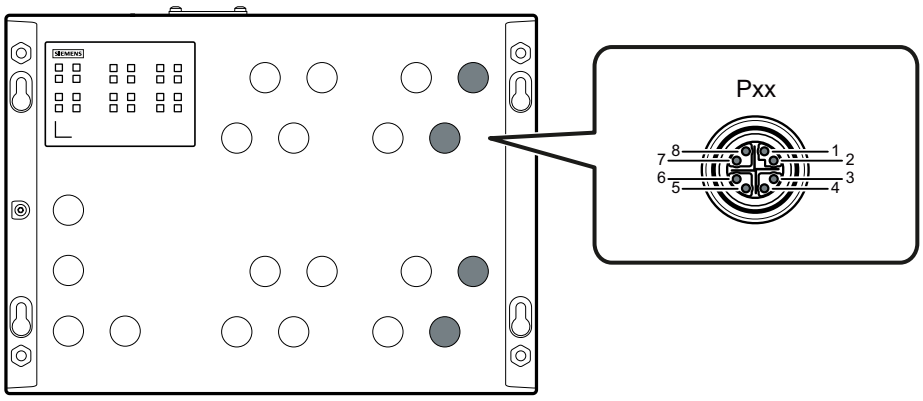
For connection to Industrial Ethernet at 10/100 Mbps, the device has the following M12 interfaces: D-coded, 4-pin, female.



Pin number	Assignment
1	TD+
2	RD+
3	TD-
4	RD-

Gigabit Ethernet

For connection to Industrial Ethernet at 10/100/1000 Mbps, the device has the following M12 interfaces: X-coded, 8-pin, female.

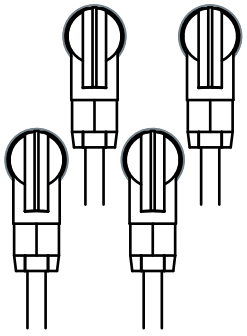


Pin number	Assignment
1	D0+
2	D0-
3	D1+
4	D1-
5	D3+
6	D3-
7	D2-
8	D2+

Connecting an Ethernet port

1. Connect the plug and socket. Make sure that they lock in place correctly.
2. Tighten the knurled screw (torque 1 Nm).

To allow an orderly cable outlet, you can arrange the angled M12 plug as follows:



IE FC M12 PLUG PRO

The IE FC M12 Plug PRO has a high degree of protection (IP65/67) and is suitable for connecting to Industrial Ethernet, see the section "Accessories (Page 28)".

Ring ports

When shipped the ring ports are marked by a label. The labels are only clipped on and you can remove them if necessary.

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 is set permanently to full duplex, the connected partner port must also be set to full duplex.
- 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 at 100 Mbps or 10 Mbps half duplex mode.
- If you disable the "Auto negotiation" function, the "MDI/MDI-X autocrossover" function remains active.

6.3 24 VDC power supply

Notes on the power supply

⚠ WARNING

Incorrect power supply

You do not need to fuse the supply cable if you only use power sources with a limited power source (LPS) or power sources according to NEC Class 2 for the power supply of the devices.

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

If you do not use power sources with a limited power source (LPS) or power sources according to NEC Class 2 for the power supply of the devices, you need to fuse the power sources externally, see the section "Safety when connecting up (Page 57)".

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 XP-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 XP-200 with suitable overvoltage protection.

Information on the power supply

- To connect to the power supply, the device has two M12 interfaces: A-coded, 4-pin, male.
- 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.
- To connect the power supply, use a copper cable of category 24 AWG or a cable with a cross-section ≥ 0.25 mm².
- To connect the functional ground, use a copper cable of category 20 AWG or a cable with a cross-section ≥ 0.75 mm².

Position and assignment

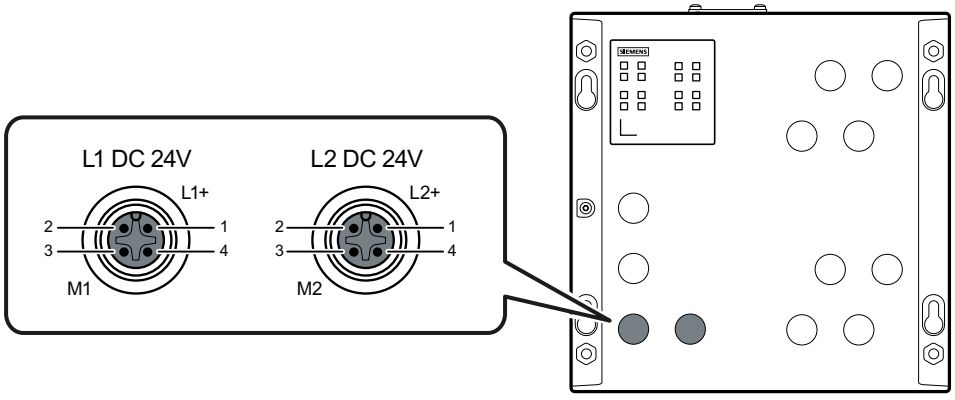


Figure 6-1 Position of the power supply, for example on the SCALANCE XP208

Connector	Pin number	Contact	Assignment
L1 24 V DC	1	L1+	24 V DC
	2	Do not connect	-
	3	M1	Ground
	4	Do not connect	-
L2 24 V DC	1	L2+	24 V DC
	2	Do not connect	-
	3	M2	Ground
	4	Do not connect	-

Connecting/disconnecting the power supply

NOTICE
Turn off the power supply before you insert or remove the plug of the power supply.

1. Connect the plug and socket. Make sure that they lock in place correctly.
2. Tighten the knurled screw (torque 1 Nm).

M12 Power T-Tap

To connect several devices to a power supply so that they are cascading, you can use an M12 Power T-Tap, see the section "Accessories (Page 28)".

The M12 Power T-Tap has two M12 sockets and one M12 plug.

Note

The M12 Power T-Tap has not been released for PoE power supply.

Note

The M12 Power T-Tap is only released for ambient temperatures from -25 °C to +85 °C. In the specified temperature range, you can load the M12 Power T-Tap with up to 2 A.

6.4 54 VDC power supply

Notes on the power supply

⚠ WARNING

Incorrect power supply

Never operate the PoE variants of the device with AC voltage or DC voltage higher than 60 V DC.

Information on the power supply

- Make sure that among other things the external power supply unit meets the following basic requirements:
  - 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 1500 VAC or 2250 VDC) to ground, to touchable conductive parts and (if they exist) other secondary voltages.
  - Fuse the output voltage (PoE voltage) externally, see the section "Safety when connecting up (Page 57)".
- Select a suitable power of the external power supply unit, so that the power supply to the power consumers is ensured, see the section "PoE properties of the devices (Page 43)".
- For the cable supplying the power supply, use a cable with a length of max. 3 m.
- To connect the power supply, use a copper cable of category 18 AWG or a cable with a cross-section ≥ 0.75 mm^2, see e.g. the section "Accessories (Page 28)".
- To connect to the power supply, the device has two M12 interfaces: A-coded, 4-pin, male.
- 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.
- To connect the functional ground, use a copper cable of category 18 AWG or a cable with a cross-section ≥ 0.75 mm^2.

Position and assignment

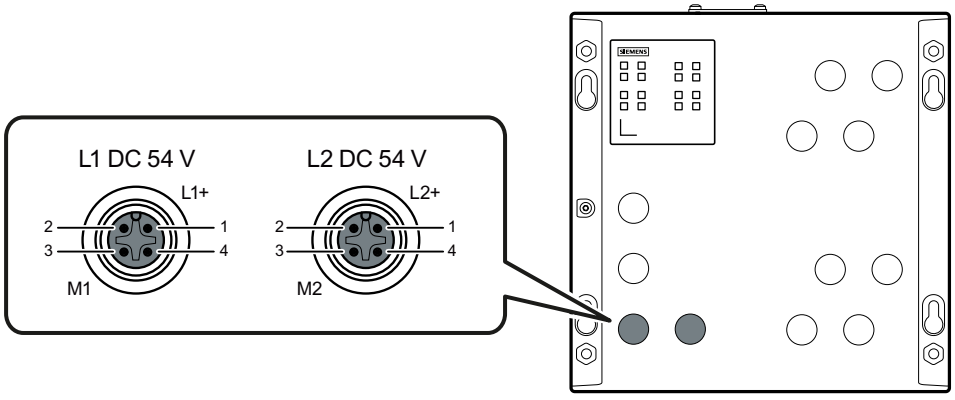


Figure 6-2 Position of the power supply, for example on the SCALANCE XP208PoE EEC

Connector	Pin number	Contact	Assignment
L1 54 V DC	1	L1+	54 V DC
	2	Do not connect	-
	3	M1	Ground
	4	Do not connect	-
L2 54 V DC	1	L2+	54 V DC
	2	Do not connect	-
	3	M2	Ground
	4	Do not connect	-

Connecting/disconnecting the power supply

NOTICE
Turn off the power supply before you insert or remove the plug of the power supply.

1. Connect the plug and socket. Make sure that they lock in place correctly.
2. Tighten the knurled screw (torque 1 Nm).

Note

Restriction of the power consumers

To supply Poe consumers of type 2 according to the standard, the power supply must provide an output voltage in the range 52 - 57 VDC.

6.5 Connect the power supply of the SCALANCE PSP9230PoE

⚠ WARNING

Danger to life from line voltage 100 to 240 V AC / 110 to 250 V DC

Contact with live parts can result in death or serious injury. Note the following information to prevent contact with live parts:

- Connecting and disconnecting may only be performed by an electrical specialist in accordance with IEC 62368-1.
- Before installation work is started, the main switch of the system must be switched off and secured against being switched on again.
- Power supply cables may only be connected or disconnected in the de-energized state.

NOTICE

No power supply interruption via the connectors

The connectors for input and output are not approved for power supply interruption and cannot be used as disconnectors. A suitable disconnector for interrupting the power supply should be provided in the end application.

NOTICE

Damage caused by faulty installation

Note the following information to avoid damage due to incorrect installation:

- The connection of the power supply 100 ... 240 V AC / 110 - 250 V DC must be designed according to IEC 60364 and EN 50178.
- Observe the relevant country-specific regulations during installation.

Note

For the connection between a SCALANCE PSP9230PoE and a SCALANCE XP-200, there are preassembled cables available in different lengths. You can find more information in the section "Accessories".

Note

For the connection between a SCALANCE PSP9230PoE and a SCALANCE XP-200PoE, note the following:

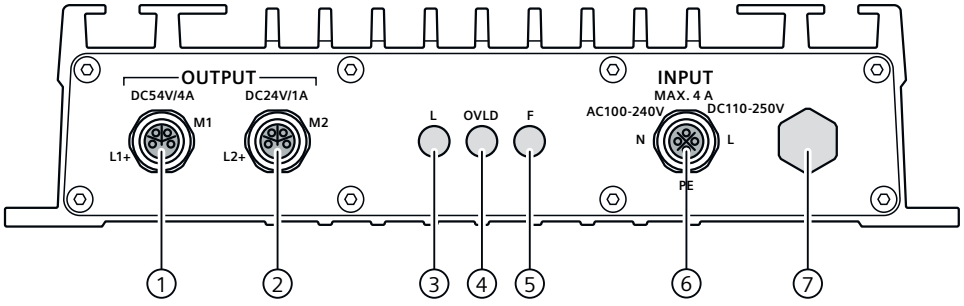
- If you use a cable length greater than 3 m, use shielded cables to supply the SCALANCE XP-200PoE devices.
- If you use a cable length less than 3 m, use unshielded cables to supply the SCALANCE XP-200PoE devices.

Note

Note that faults that affect the supply cable between SCALANCE PSP9230PoE and SCALANCE XP-200PoE are forwarded to the power consumers (Powered Device). Take care when laying the supply cables.

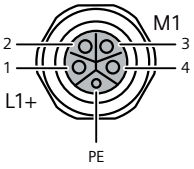
Overview

The connectors and LEDs of the SCALANCE PSP9230PoE are located on the bottom of the unit:



①	54 V DC output	Output voltage 54 V DC, M12 socket (L-coded)
②	24 V DC output	Output voltage 24 V DC, M12 socket (L-coded)
③	Green LED "L"	Lit when the power supply is ready for operation.
④	Orange LED "OVLD"	Lit when the power supply is operating in overload. In this case, check the configuration.
⑤	Red LED "F"	Lit when a fault/error has occurred, e.g. a short-circuit at the output. In this case, check the configuration.
⑥	100-240 V AC / 110-250 V DC input	Input voltage100 to 240 V AC / 110 to 250 V DC, M12 plug (S-coded)
⑦	-	Pressure equalizing membrane for degree of protection IP65.

54 V DC output

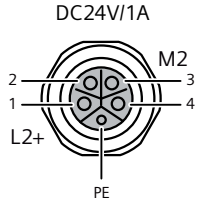
	Pin number	Contact	Assignment
DC54V/4A  	1	L1+	54 V DC (PoE)
	2	Do not connect	-
	3	M1	Mass (PoE)
	4	Do not connect	-
	PE	Do not connect	-

NOTICE
Damage to the device due to overvoltage Both the 54 V DC output and the 24 V DC output are designed as L-coded M12 sockets. Ensure assignment to the correct sockets when connecting the voltages. Supplying a device with voltage that is too high can damage the device.

To connect the power supply, proceed as follows:

1. For connection to the 54 V DC output, use a copper cable of category 15 AWG or a cable with a cross-section ≥ 1.5 mm^2
2. Connect the connector and socket. Make sure that they lock in place correctly.
3. Tighten the knurled screw (torque 1 Nm).

24 V DC output

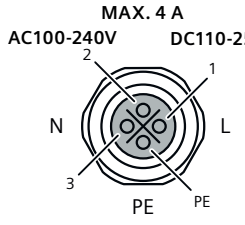
	Pin number	**Contact**	**Assignment**
	1	L2+	24 V DC
	2	Do not connect	-
	3	M2	Mass
	4	Do not connect	-
	PE	Do not connect	-

NOTICE
Damage to the device due to overvoltage Both the 54 V DC output and the 24 V DC output are designed as L-coded M12 sockets. Ensure assignment to the correct sockets when connecting the voltages. Supplying a device with voltage that is too high can damage the device.

To connect the power supply, proceed as follows:

1. For connection to the 24 V DC output, use a copper cable of category 18 AWG or a cable with a cross-section ≥ 0.75 mm^2
2. Connect the connector and socket. Make sure that they lock in place correctly.
3. Tighten the knurled screw (torque 1 Nm).

100-240 V AC / 110-250 V DC input

	Pin number	Contact	Assignment
	1	L	100 to 240 V AC: Line conductor 110 to 250 V DC: L+
	2	Do not connect	-
	3	N	100 to 240 V AC: Neutral conductor 110 to 250 V DC: Mass
	PE	PE	Protective conductor

NOTICE
Turn off the power supply before you insert or remove the plug of the power supply.

To connect the power supply, proceed as follows:

1. For connection to the 100-240 V AC / 110-250V V DC output, use a copper cable of category 15 AWG or a cable with a cross-section 1.5 mm^2
2. Connect the connector and socket. Make sure that they lock in place correctly.
3. Tighten the knurled screw (torque 1 Nm).

6.6 Signaling contact

Information on the signaling contact

- To connect the signaling contact, the device has an M12 interface: B-coded, 5-pin, male.
- 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.
- To connect the signaling contact, use a copper cable of category 24 AWG or a cable with a cross-section of ≥ 0.25 mm^2; see, for example, section "Accessories (Page 28)".

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

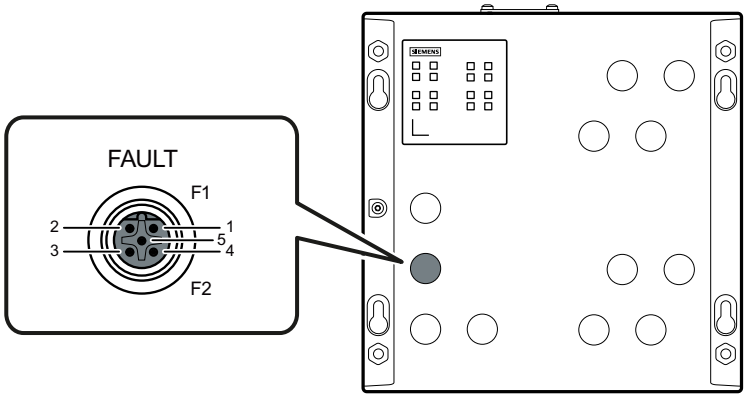


Figure 6-3 Position of the signaling contact, for example on the SCALANCE XP208

Pin number	Contact	Assignment
1	F1	Fault contact 1
4	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 34)".
  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.

Connecting the signaling contact

1. Connect the plug and socket. Make sure that they lock in place correctly.
2. Tighten the knurled screw (torque 1 Nm).

6.7 Serial interface

Information on the serial interface

- To connect the serial interface, the device has an M12 interface: A-coded, 5-pin, female.
- Via the serial interface, you can access the CLI of the device directly via an RS-232 connection (115200 8N1) without assigning an IP address.
- Access to the device is also possible independent of the Ethernet ports.
- To connect the serial interface to the PC, you require a cable with an M12 plug and 9-pin D-sub female connector. You can order the connecting cable for the serial interface as an accessory.
- When it ships, the cover for the serial interface is secured to the housing see "Device views (Page 24)".

Position and assignment

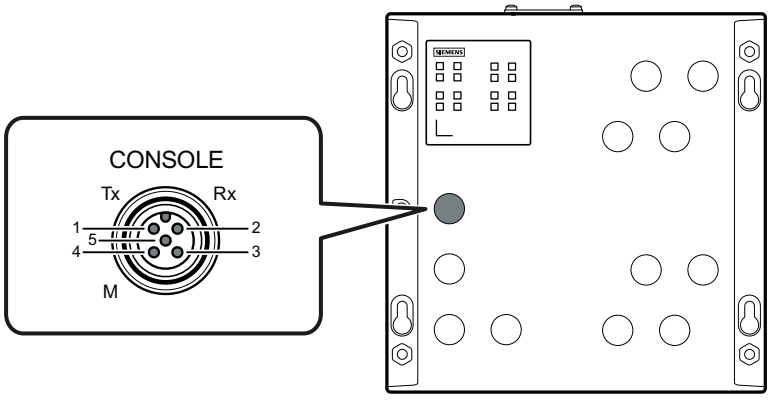


Figure 6-4 Position and pin assignment of the serial interface, for example on the SCALANCE XP208

Pin number	Assignment
1	Tx (Transmit Data)
2	Rx (Receive Data)
3	internal use only (do not connect)
4	M (Signal Ground)
5	internal use only (do not connect)

Assignment of the terminal block

The connecting cable listed in the "Accessories" section has the following pin assignment:

Pin number	Pin assignment of the M12 plug	Pin assignment of the D-sub female connector
1	Tx (Transmit Data)	-
2	Rx (Receive Data)	Rx (Receive Data)
3	-	Tx (Transmit Data)

Pin number	Pin assignment of the M12 plug	Pin assignment of the D-sub female connector
4	M (Signal Ground)	-
5	-	M (Signal Ground)
6		-
7		-
8		-
9		-

Connecting the serial interface

1. Connect the plug and socket. Make sure that they lock in place correctly.
2. Tighten the knurled screw (torque 1 Nm).

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

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

Protective earth/functional ground

The connection of the reference potential surface with the protective circuit is normally in the cabinet close to the power feed-in. This ground conducts fault currents to ground safely and according to 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) operational 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.

Position

The functional ground is established via a grounding screw.

The connector for the grounding cable is on the front of the housing.

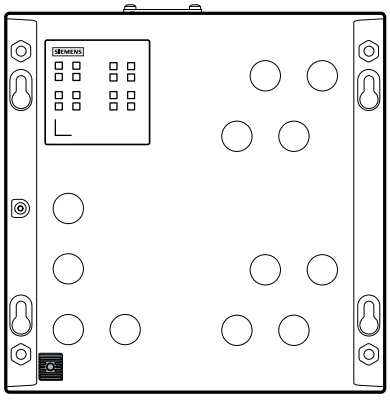
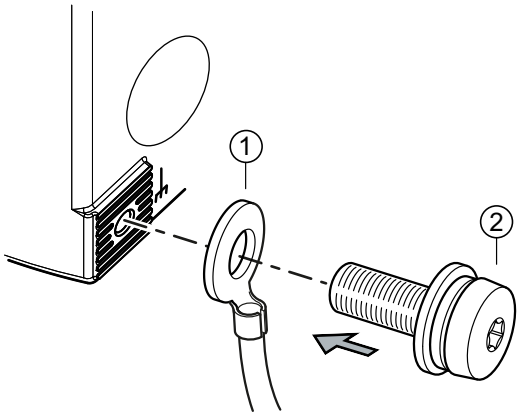


Figure 6-5 Position of the grounding screw on the SCALANCE XP-200

Connecting up functional ground



① Grounding terminal with cable
② Screw (M4 thread) with spring washer and washer

Follow the steps below to connect the functional ground:

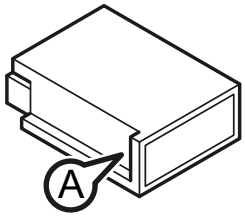
1. Put the grounding terminal ①, and the bolt ② together as shown in the drawing.
2. Screw in the bolt ② with a maximum tightening torque of 1.5 Nm.

6.9 Replacing a 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 device checks whether or not a C-PLUG is inserted at one second intervals. If it is detected that the PLUG was inserted or removed, there is a restart.

NOTICE
Loss of water and dust protection
If the cover is not mounted correctly, the device is not water and dust proof.

Removing a C-PLUG



1. Turn off the power to the device.
2. Loosen the screws of the cover.
3. Remove the cover.
4. Insert a screwdriver between the front edge of the C-PLUG (A) and the slot and release the C-PLUG.
5. Remove the C-PLUG.
6. Close the cover (tightening torque 0.8 Nm), to ensure that the device is closed and water- and dust-proof.

Note

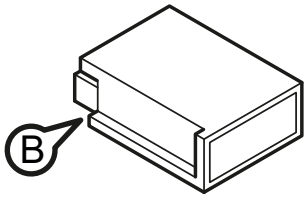
Loss of the configuration

The "RESET (Page 37)" button is located directly beside the slot for the C-PLUG. The button cannot be used to remove the C-PLUG.

If you hold down the "RESET" button, you reset all settings of the device to the factory defaults.

Remove the C-PLUG with a screwdriver.

Inserting a C-PLUG



1. Turn off the power to the device.
2. Loosen the screws of the cover.

3. Remove the cover.
4. 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.
5. Close the cover (tightening torque 0.8 Nm), to ensure that the device is closed and water- and dust-proof.

Upkeep and maintenance

7

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 28) and original spare parts (Page 32).
- 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.

7.1 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.

Pressing the "RESET" button

To load new firmware, you require the "RESET" button. When pressing the button, remember the information in the section "RESET button (Page 37)".

Procedure with Microsoft Windows

You can download new firmware to the device using TFTP. To do this, the device does not need to be reachable either using Web Based Management (WBM) or using the Command Line Interface (CLI). This can be the case if there was a power failure during a firmware update.

When pressing the button, observe the information in the section "AUTOHOTSPOT".

Follow the steps below to load new firmware using TFTP:

1. Turn off the power to the device.
2. Press the SELECT/SET button and reconnect the device to the power supply with the button pressed.
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..
   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 an Ethernet port of the device with an Ethernet cable.
6. Assign an IP address to the device using DHCP or SINEC PNI.
7. In a Windows command prompt, go to the directory where the file with the new firmware is located and use 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".

Once the firmware has been transferred completely to the device and validated, the device restarts. This may take a few minutes.

7.2 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 with further consequences.

With the RESET button

Restoring the factory settings during the startup phase

NOTICE
Reset despite disabled RESET button Using the **RESET** button, you can always restore 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 with the configuration, it is only disabled on completion of the startup phase.

When pressing the button, observe the information in the section "RESET button (Page 37)".

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. Loosen the screws of the cover.
3. Remove the cover.
4. Press the **RESET** button and reconnect the power supply to the device while holding down the button.
5. Hold down the button until the red error LED **F** stops flashing after approximately 20 seconds and is permanently lit.
6. Release the button and wait until the fault LED **F** goes out.
   The device starts automatically with the factory settings.
7. Close the cover (tightening torque 0.8 Nm), to ensure that the device is closed and water and dust proof.

Restoring the factory defaults during operation

You can reset the device to the factory defaults during operation, see section "RESET button (Page 37)".

With SINEC PNI

Follow the steps below to reset the device parameters to the factory settings with SINEC PNI:

1. Select the device whose parameters you want to reset.
2. Click **Reset device**.
   A dialog opens in which you can select one of the following options:
   - Reset to PROFINET default settings
     Resets the selected device to the respective default settings of the PROFINET IO profile. The settings that are reset depend on the functional scope of the device. This function is only available for devices that support the current PROFINET standard.

     Note

     Loss of the IP address

     When the settings are reset to the default settings of a PROFINET IO profile, the IP address is also lost. The device can then only be addressed via the serial interface, SINEC PNI or via DHCP.

   - Restore Factory Defaults
     Resets the selected device to factory settings.
3. Confirm the selection with **OK**.

During configuration

You will find detailed information on resetting the device parameters using the WBM and CLI in the configuration manuals see also section "Introduction (Page 5)":

- SCALANCE Layer 2 Switches Web Based Management (WBM) Vx.x, section "Restart"
- SCALANCE Layer 2 Switches Command Line Interface (CLI) Vx.x, section "Reset and Defaults"

Technical specifications

8

8.1 Technical specifications SCALANCE XP208 and SCALANCE XP208EEC

The following technical specifications apply to the following devices:

- SCALANCE XP208
- SCALANCE XP208EEC

Technical specifications		
Attachment to Industrial Ethernet		
	Quantity	8
	Connector	M12 socket
	Properties	D-coded, half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	M12 socket
Electrical data		
Power supply	Rated voltage	24 VDC
	Voltage range	19.2 to 28.8 V DC Safe Extra Low Voltage [1)]
	Design	M12 socket, 4-pin
	Cable cross-section	≥ 0.25 mm^2 (24 AWG)
	Property	Implemented redundantly
Current consumption	at 24 VDC	200 mA
Effective power loss	at 24 VDC	4.8 W
Fusing		5 A / at least 60 V Or power supply with LPS or NEC class 2
Permitted ambient conditions		
Ambient temperature	During operation up to 2000 m	-40 °C to +70 °C [2)]
	During storage	-40 °C to +70 °C
	During transportation	-40 °C to +70 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Aluminum	
Degree of protection	IP 65	
Dimensions (W x H x D)	200 x 200 x 49 mm (57 mm incl. protective caps)	
Weight	1800 g	

Technical specifications	
Installation options	• Wall mounting • Back wall mounting • Rack mounting
Mean time between failure (MTBF)	
MTBF (EN/IEC 61709; 40 °C)	> 67 years

1) The SCALANCE XP208EEC with EN 50155 support the voltage range: 16.8 ... 30 VDC. These values are not valid for other approvals.

2) EEC variants with EN 50155 support +85 °C for 10 minutes

8.2 Technical specifications of the SCALANCE XP208PoE EEC

The following technical specifications apply to the SCALANCE XP208PoE EEC.

Technical specifications		
Attachment to Industrial Ethernet		
	Quantity	8
	Connector	M12 socket
	Properties	D-coded, half/full duplex; MDI-X pin assignment, P5 - P8 with Power over Ethernet
	Transmission speed	10 / 100 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	M12 socket
Electrical data		
Power supply	Rated voltage	54 VDC
	Voltage range with PoE consumers type 1	46 to 57 VDC Safety Extra Low Voltage
	Voltage range with PoE consumers type 2	52 to 57 VDC Safety Extra Low Voltage
	Design	M12 socket, 4-pin
	Cable cross-section	≥ 0.75 mm^2 (18 AWG)
	Property	Implemented redundantly
Current consumption	At 54 VDC without PoE load	110 mA
	At 54 VDC with max. PoE load	2500 mA
Effective power loss	At 54 VDC	6 W
	At 54 VDC in PoE operation	9 W
Fusing		5 A / at least 60 V
PoE power per device	At 54 VDC	120 W
Permitted ambient conditions		
Ambient temperature	During operation up to 2000 m	-40 °C to +70 °C 1)
	During storage	-40 °C to +70 °C
	During transportation	-40 °C to +70 °C

Technical specifications		
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Aluminum	
Degree of protection	IP 65	
Dimensions (W x H x D)	200 x 200 x 49 mm (57 mm incl. protective caps)	
Weight	1800 g	
Installation options	• Wall mounting • Back wall mounting • Rack mounting	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 49 years	

[1] EEC variants with EN 50155 support +85 °C for 10 minutes

8.3 Technical specifications SCALANCE XP216 and SCALANCE XP216EEC

The following technical specifications apply to the following devices:

- SCALANCE XP216
- SCALANCE XP216EEC

Technical specifications		
Attachment to Industrial Ethernet		
	Quantity	16
	Connector	M12 socket
	Properties	D-/X-coded, half/full duplex, MDI-X pin assignment
	Transmission speed	
	• P1 - P8, P9, P11, P13 and P15	• 10 / 100 Mbps
	• P10, P12, P14 and P16	• 10 / 100/ 1000 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	M12 socket
Electrical data		
Power supply	Rated voltage	24 VDC
	Voltage range	19.2 to 28.8 V DC Safe Extra Low Voltage [1]
	Design	M12 socket, 4-pin
	Cable cross-section	≥ 0.25 mm^2 (24 AWG)
	Property	Implemented redundantly

Technical specifications		
Current consumption	at 24 VDC	400 mA
Effective power loss	at 24 VDC	9.6 W
Fusing		5 A / at least 60 V Or power supply with LPS or NEC class 2
Permitted ambient conditions		
Ambient temperature	During operation up to 2000 m	-40 °C to +70 °C [2]
	During storage	-40 °C to +70 °C
	During transportation	-40 °C to +70 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Aluminum	
Degree of protection	IP 65	
Dimensions (W x H x D)	280 x 200 x 49 mm (57 mm incl. cover caps)	
Weight	2500 g	
Installation options	• Wall mounting • Back wall mounting • Rack mounting	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 39 years	

[1] The SCALANCE XP216EEC with EN 50155 support the voltage range: 16.8 ... 30 VDC. These values are not valid for other approvals.

[2] EEC variants with EN 50155 support +85 °C for 10 minutes

8.4 Technical specifications of the SCALANCE XP216PoE EEC

The following technical specifications apply to the SCALANCE XP216PoE EEC.

Technical specifications		
Attachment to Industrial Ethernet		
	Quantity	16
	Connector	M12 socket
	Properties	D-/X-coded, half/full duplex; MDI-X pin assignment, P5 - P8 and P13 - P16 with Power over Ethernet
	Transmission speed • P1 - P8, P9, P11, P13 and P15 • P10, P12, P14 and P16	 • 10 / 100 Mbps • 10 / 100/ 1000 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	M12 socket

Technical specifications		
Electrical data		
Power supply	Rated voltage	54 VDC
	Voltage range with PoE consumers type 1	46 to 57 VDC Safety Extra Low Voltage
	Voltage range with PoE consumers type 2	52 to 57 VDC Safety Extra Low Voltage
	Design	M12 socket, 4-pin
	Cable cross-section	≥ 0.75 mm^2 (18 AWG)
	Property	Implemented redundantly
Current consumption	At 54 VDC without PoE load	180 mA
	At 54 VDC with max. PoE load	2500 mA
Effective power loss	At 54 VDC	10 W
	At 54 VDC in PoE operation	13 W
Fusing		5 A / at least 60 V
PoE power per device	At 54 VDC	120 W
Permitted ambient conditions		
Ambient temperature	During operation up to 2000 m	-40 °C to +70 °C [1]
	During storage	-40 °C to +70 °C
	During transportation	-40 °C to +70 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Aluminum	
Degree of protection	IP 65	
Dimensions (W x H x D)	280 x 200 x 49 mm (57 mm incl. cover caps)	
Weight	2500 g	
Installation options	• Wall mounting • Back wall mounting • Rack mounting	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 29 years	

[1] EEC variants with EN 50155 support +85 °C for 10 minutes

8.5 Technical specifications of the SCALANCE PSP9230PoE

SCALANCE PSP9230PoE			
Input voltage	Rated voltage	100 to 240 V AC / 110 to 250 V DC	
	Voltage range	85 to 264 V AC / 88 to 300 V DC	
	Frequency	50 Hz / 60 Hz	
	Frequency range	47 Hz to 63 Hz	
	Design	M12 plug S-coded	
	Properties	Not redundant	
	Recommended fusing	Rated current max. 20 A Tripping characteristic: Inert T Class CC, Class RK5	
Current consumption (typical)	Input voltage 100 V AC	2.67 A	
	input voltage 240 V AC	1.1 A	
	Input voltage 110 V DC	2.5 A	
	Input voltage 250 V DC	1.1 A	
Active power loss (typical)	Input voltage 100 V AC	28 W	
	input voltage 240 V AC	24 W	
	Input voltage 110 V DC	26 W	
	Input voltage 250 V DC	20 W	
Output voltage of 24 V DC output	Rated voltage	24 V DC	
	Rated current	1 A	
	Design	M12 socket L-coded	
Output voltage of 54 V DC output (PoE)	Rated voltage	56 V DC	
	Rated current	0 A ... 4 A	
	Design	M12 socket L-coded	
Insulation voltage	Between 54 V DC output and 24 V DC output	2.5 kV DC	
	Between 54 V DC output and PE	1.5 kV AC	
	Between 100-240 V AC / 110-250 V DC input and PE	2.5 kV DC	
	Between 100-240 V AC input and 54 V DC or 24 V DC output	4 kV DC	
Permissible ambient conditions			
Ambient temperature during operation • Use of 24 V DC output • Any installation position		1 A [1]	-40 °C to +70 °C
Ambient temperature during operation • Use of 54 V DC output (PoE) • Recommended Installation position [2]	100 to 110 V AC / 110 V DC	2.5 A [3]	-40 °C to +70 °C
		4 A [3]	-40 °C to +60 °C
	220 to 240 V AC / 250 V DC	3 A [3]	-40 °C to +70 °C
		4 A [3]	-40 °C to +60 °C

SCALANCE PSP9230PoE			
Ambient temperature during operation • Use of 54 V DC output (PoE) • Any installation position	100 to 110 V AC / 110 V DC	2 A [3]	-40 °C to +70 °C
		3.5 A [3]	-40 °C to +60 °C
		4 A [3]	-40 °C to +55 °C
	220 to 240 V AC / 250 V DC	3 A [3]	-40 °C to +70 °C
		4 A [3]	-40 °C to +60 °C
Ambient temperature during storage		-40 °C ... +85 °C	
Ambient temperature during transportation		-40 °C ... +85 °C	
Relative humidity	During operation, at 25 °C	≤ 95% without condensation	
Housing, dimensions and weight			
Housing material	Aluminum		
Degree of protection	IP65		
Dimensions without connection sockets (W x H x D)	280 x 200 x 65 mm		
Weight	4500 g		
Installation options	• Wall mounting • Rack mounting		
Mean time between failure (MTBF)			
MTBF (EN/IEC 61709; 40 °C)	94.74 years		

[1] I_{max}: Maximum current for the 24 V DC output

[2] Recommended installation position: Housing vertical (connections at bottom). The specified values apply with and without mounted SCALANCE XP-200

[3] I_{max}: Maximum current for the 54 V DC output

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 XP208	●	●
SCALANCE XP208EEC	●	●
SCALANCE XP208PoE EEC	●	●
SCALANCE XP216	●	●
SCALANCE XP216EEC	●	●
SCALANCE XP216PoE EEC	●	●

8.6 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)

8.7 Cable lengths

The cable lengths listed below apply to the SCALANCE XP-200.

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

8.8 Switching properties

The switching properties listed below apply to the SCALANCE XP-200.

Switching properties	
Aging time	Can be configured (default value: 30 seconds)
Maximum frame size	1632
Max. number of learnable addresses	8192
Response to LLDP frames	Blocking
Response to spanning tree BPDU frames	Forwarding
CoS acc. to IEEE 802.1Q	Yes
QoS priority queues	4
Switching technique	Store and forward
Latency	10 microseconds

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

Dimension drawings

9

9.1 Dimension drawings SCALANCE XP-200

Note

Dimensions are specified in mm.

Front view of the SCALANCE XP208

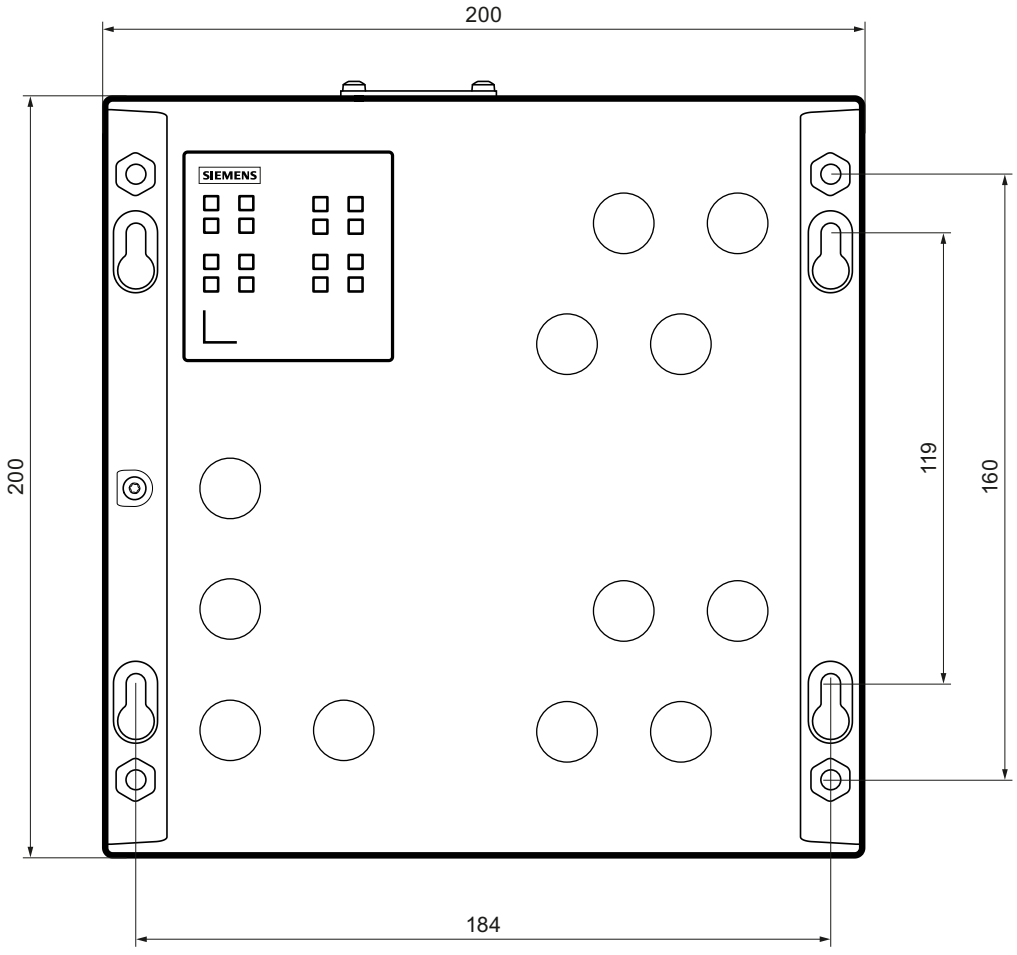


Figure 9-1 Width, height and dimensions for wall mounting

Front view of the SCALANCE XP216

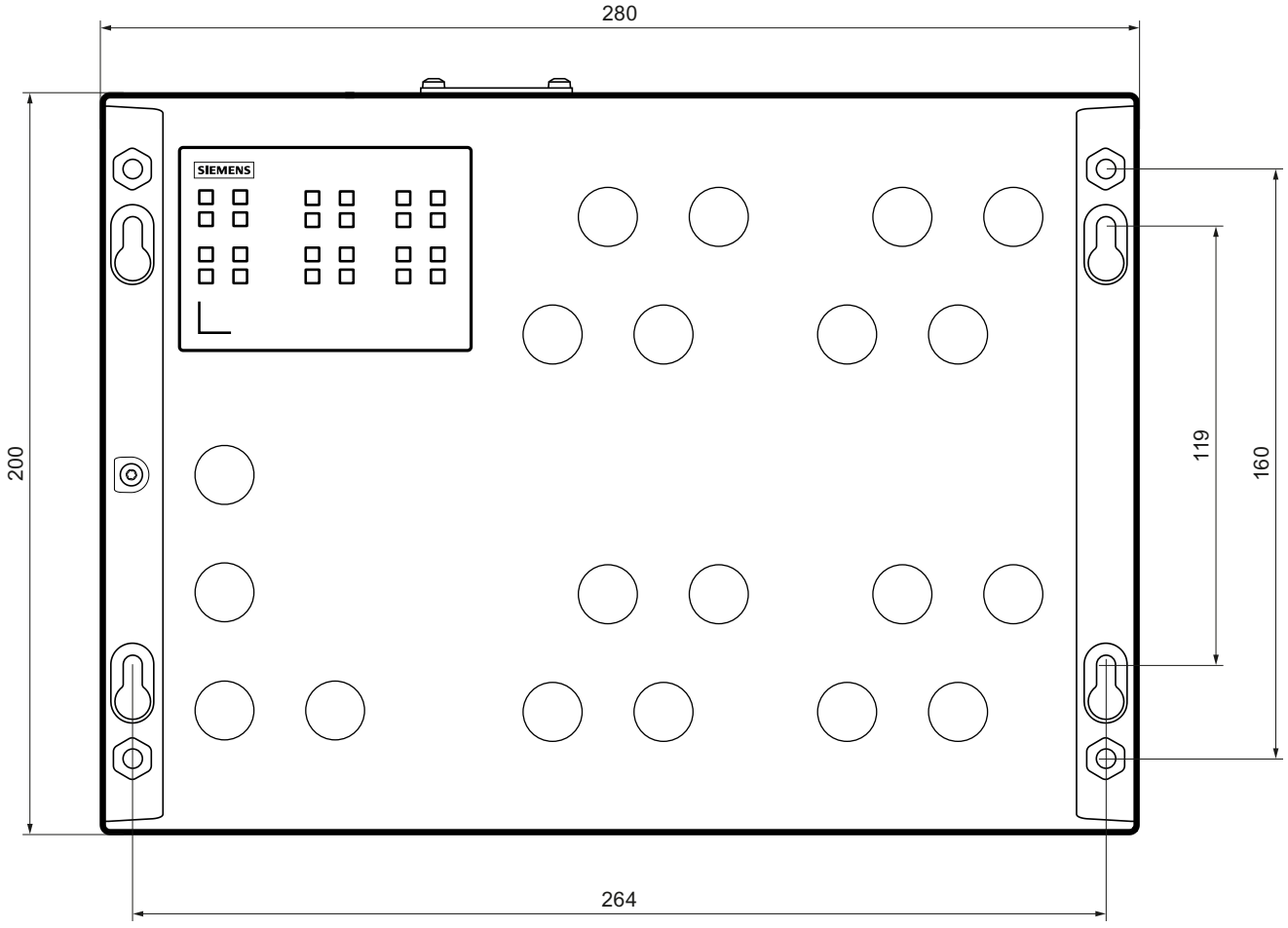


Figure 9-2 Width, height and dimensions for wall mounting

Side view of the SCALANCE XP-200

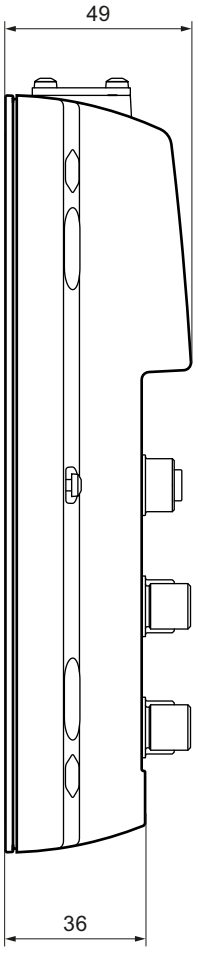


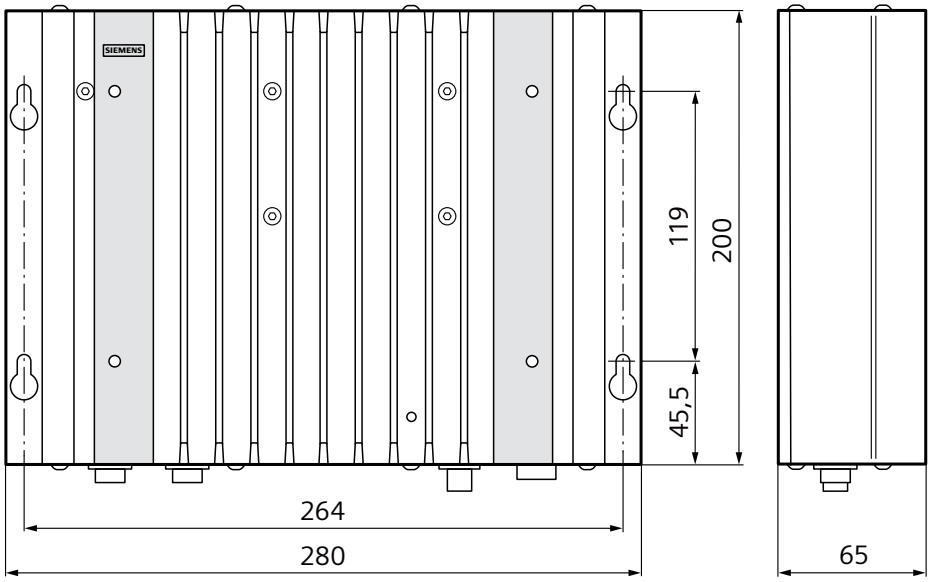
Figure 9-3 Depth

9.2 Dimension drawing SCALANCE PSP9230PoE

Note

Dimensions are specified in millimeters.

Front view and side view of the SCALANCE PSP9230PoE



Approvals

A

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.

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 for Information Technology Equipment

cULus Listed I. T. E.

Underwriters Laboratories Inc. complying with

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

Report no. E115352

cULus Approval Hazardous Location

HAZ. LOC.

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

E1

The device meets the requirements of the ECE R10 directive.

Test number 10 R - 057876

Railway approval

EEC variants of the device meet the requirements of the standards:

- EN 50155 "Railway applications - Electronic equipment used on rolling stock"
- EN 45545 "Railway applications - Fire protection on railway vehicles"

Note

When used on railway stock, a stabilized power supply with railway approval must be used to comply with EN50155.

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)

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.

Index

A

Accessories, 28
A-coded, 64, 66, 73
Ambient temperature, 83, 84, 86, 87
Approvals, 97
Article numbers, 21
Attachment to Industrial Ethernet, 83, 84, 85, 86
Autonegotiation, 63

B

B-coded, 71
Button
  Cover, 24, 25, 26, 27
  Function, 38, 40
  Overview, 24, 25, 26, 27
  RESET, 24, 25, 26, 27, 38
  SELECT/SET, 24, 25, 26, 27, 40

C

CE mark, 97
CLI, 73
Command Line Interface, 73
Command Line Interface (CLI), 42, 80
Components of the product, 23
Configuration, 39
Configuration manuals, 82
Connecting up
  Grounding, 74
C-PLUG
  Configuration, 41
  Cover, 24, 25, 26, 27, 42
  Overview, 24, 25, 26, 27
  Replacing, 42

D

Defining the fault mask, 40
Dimensions, 83, 85, 86, 87
Display mode, 34, 40

E

E1, 101
Electrical data, 83, 84, 85, 87
Environmental conditions, 83, 84, 86, 87
ESD directives, 9

F

Factory defaults, 38, 81
Factory setting, 38, 81
Fast Ethernet
  Connecting up, 61
  Overview, 24, 25, 26, 27
Fault mask, 40
Fault/error status, 34
Firmware, 34
Functional ground
  Connecting up, 74

G

Gigabit Ethernet
  Connecting up, 61
  Overview, 26, 27
Glossary, 6
Grounding, 74
  Connecting up, 74
  Overview, 24, 25, 26, 27
Grounding point, 24, 25, 26, 27, 74

H

Hexagonal nut
  Installation, 51
  Overview, 24, 25, 26, 27
Housing, 83, 85, 86, 87

I

IE FC M12 Plug PRO, 28
Industrial Ethernet
  Connecting up, 61
Installation, 83, 85, 86, 87
  Installation on a standard rail, 51
  Rack, 52
Installation on a standard rail, 51

K

Keyhole hang-up mechanism
Installation, 52
Overview, 24, 25, 26, 27

L

LED, 33
Display, 33
Overview, 24, 25, 26, 27, 33

M

M12 data plug-in connector, 28
M12 Power T-Tap, 31, 65
MDI / MDI-X autocrossover, 63
MTBF, 84, 85, 86, 87

P

Permitted ambient conditions, 83, 84, 86, 87
PLUG, 41
PoE, 25, 27, 43
Power over Ethernet, 43
Power supply
Connecting up, 64, 66
Overview, 24, 25, 26, 27
Power T tap, 65
Protective cap, 32
Protective caps, 23

R

Rack, 52
Reset device, 38, 81
Reset to Factory Defaults, 39, 81

S

S7-300, 51
Safety notices, 58
for installation, 47
general, 11
Use in hazardous areas, 11, 47, 57
when connecting up, 57
SELECT/SET button, 35, 80
Serial interface
Connecting up, 73
Cover, 24, 25, 26, 27, 73
Overview, 24, 25, 26, 27
Signaling contact, 34
Connecting up, 71
Overview, 24, 25, 26, 27
SIMATIC NET glossary, 6
SIMATIC NET manual, 6
Spare parts, 32
Startup phase, 34, 39, 81
System manual, 6, 49, 102

W

Web Based Management (WBM), 42, 80
Weight, 83, 85, 86, 87