SIEMENS

SIMATIC NET

Industrial Ethernet switches SCALANCE XF-200BA

Operating Instructions

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Legal information

Warning notice system

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

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

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Disclaimer of Liability

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

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Introduction

Purpose of the Operating Instructions

These operating instructions support you when installing and connecting up devices of the SCALANCE XF-200BA 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 XF204-2BA
- SCALANCE XF204-2BA DNA

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

Designations used

Classification	Description	Terms used
Product line	The product line includes all devices and variants of all product groups. If information applies to all product groups within the product line, the term SCALANCE X-200 is used.	SCALANCE X-200
Product group	If information applies to all devices and variants of a product group, the term SCALANCE XF-200BA is used.	SCALANCE XF-200BA
Device	If information relates to a specific device, the device name is used.	e.g. SCALANCE XF204-2BA

Additional documentation

In addition, note the Operating Instructions of the SIMATIC BusAdapter.

You will find the supplementary documentation here:

- On the data medium that is supplied with some products:
  - Product CD/product DVD
  - SIMATIC NET Manual Collection
- On the Internet pages of Siemens Industry Online Support:
  - SCALANCE BusAdapter (https://support.industry.siemens.com/cs/ww/en/ps/25085/man)
  - SIMATIC BusAdapter (https://support.industry.siemens.com/cs/ww/en/ps/14072/man)

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/15291/man).

Further documentation

System manuals for SIMATIC NET products

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 partners that you require for the installation.

You will find the system manuals here:

- On the data medium that ships with some products:
  - Product CD / product DVD
  - SIMATIC NET Manual Collection
- On the Internet pages of Siemens Industry Online Support under the following entry IDs:
  - 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)

Manual Collection "Distributed I/O System ET 200SP"

In the reference manual for the scalable IO system ET 200SP you will find more information on the bus adapters.

You will find the reference manual on the Internet pages of Siemens Industry Online Support:

- SIMATIC ET 200SP Manual Collection (https://support.industry.siemens.com/cs/ww/en/view/84133942)

SIMATIC NET manuals

You will find the SIMATIC NET manuals here:

- On the data medium that ships with some products:
  - Product CD / product DVD
  - SIMATIC NET Manual Collection
- On the Internet pages of Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/15247).

SIMATIC NET glossary

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

You will find the SIMATIC NET glossary here:

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

Cybersecurity notes

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=/de&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.

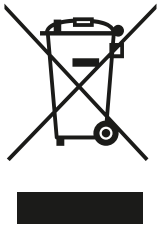
Decommissioning

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

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SCALANCE, C-PLUG, OLM

Industry Online Support

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

Apart from news, there you will also find:

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

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

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

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

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

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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)

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Safety notices

1

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
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.

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

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

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

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

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

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

Security recommendations

2

2.1 Security recommendations

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).
- 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

- The devices SCALANCE XF204G, SCALANCE XB206-2 as of firmware version V4.4 or SCALANCE XP-200G, SCALANCE XP-200G PP as of firmware version V4.5 use certificates for elliptic curve cryptography ("ECDSA certificates"). Only use ECDSA certificates in PEM format that were generated with the following curves:
  - secp256r1 (NIST P-256)
  - secp384r1 (NIST P-384)
  - secp521r1 (NIST P-521)

  On the device there is a preset SSL certificate with the key length 256 bits for the elliptic-curves cryptography. Replace this certificate with a self-made certificate with key. We recommend that you use a certificate signed either by a reliable external or by an internal certification authority.
- There is a preset SSL/TLS (RSA) certificate with 2048 bit key length in other devices. 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 a certification authority including key revocation and management to sign certificates.
- Make sure that user-defined private keys are protected and inaccessible to unauthorized persons.
- Verify certificates and fingerprints on the server and client to prevent "man in the middle" attacks.
- Change certificates and keys immediately if there is a suspicion of compromise.

Secure/non-secure protocols and services

- Avoid or disable non-secure protocols and services, for example 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.

2.2 Available services

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	-	✓	-	-
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	✓	✓	✓	-

Service	Protocol / Port number	Default port status	Configurable		Authentication	Encryption [5]
			Port	Service		
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	✓

Layer 2 service	Default port status	Service configurable
RSTP	Closed	✓
MSTP	Open	✓

1) Setting according to Security by Default.

Description of the device

3

3.1 Properties and functions

Y functionality

With the IE switch SCALANCE XF204-2BA DNA you can connect a redundant PROFINET ring consisting of S2 devices (field area) to a fault-tolerant PROFINET system (R1 system). DNA stands for Dual Network Access or also Y switch functionality. Devices with Y functionality do not support VLANs.

The SCALANCE XF204-2BA DNA is connected via both ring ports to a PROFINET ring. Via the two Y ports it is connected to a fault-tolerant PROFINET system. With this link the S2 devices are connected to an H system. Due to this, communication failures of the field devices to the CPU are further reduced and the availability of the entire network significantly increased.

Via the SCALANCE XF204-2BA the Y switch is connected to the H-CPU. The SCALANCE XF204-2BA does not have Y functionality, it supports VLANs.

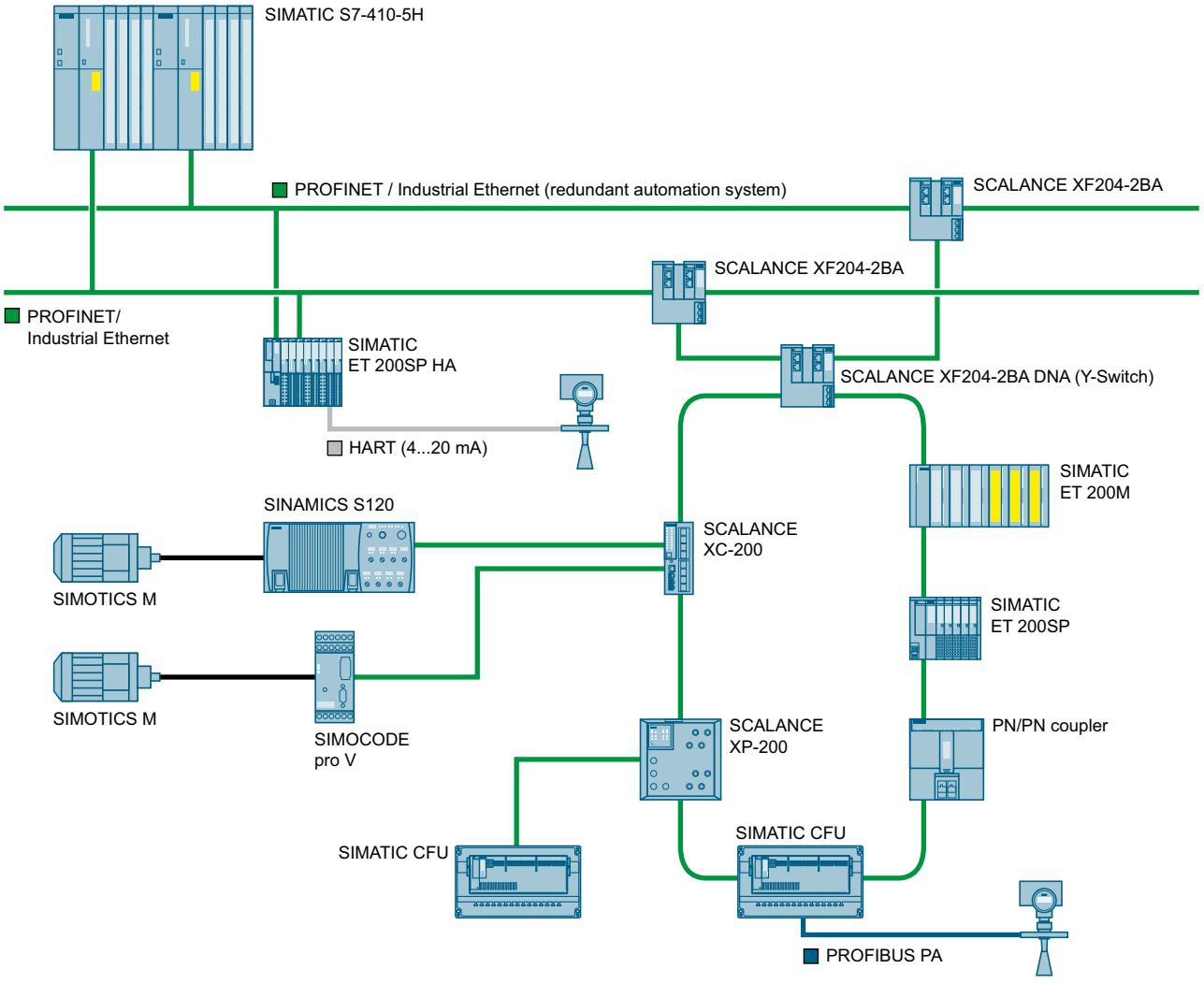


Figure 3-1 Linking S2 devices into a fault-tolerant H system with SCALANCE XF-200BA

Protection of the Y functionality

Between the two Y ports of the SCALANCE XF204-2BA DNA there is no device-internal communication.

if you change the ring ports in the configuration, the two remaining ports automatically become Y ports. This means that Y functionality is always present.

You cannot configure functions required for the Y functionality. Essentially this applies to the configuration of VLANs. You can configure all other functions.

3.2 Product overview

Article numbers

Basic devices

The following table shows the available basic devices that are delivered without BusAdapters:

Device	Description	Article number
SCALANCE XF204-2BA	Up to 4 x 10/100 Mbps ports via 2 bus adapter slots, PROFINET device, extended temperature range, coated printed circuit boards (conformal coating)	6GK5 204-2AA00-2GF2
SCALANCE XF204-2BA DNA	Up to 4 x 10/100 Mbps ports via 2 bus adapter slots, PROFINET device, extended temperature range, coated printed circuit boards (conformal coating), preconfigured and protected Y functionality (Dual Network Access): 2 ports are ring ports, 2 ports are Y ports	6GK5 204-2AA00-2YF2

Premounted variants

The following table shows premounted variants. In this delivery form, a basic device is equipped with two BusAdapters:

Variant	Article number of the variant	Component	Article number of component
SCALANCE XF204	6GK5 204-0BA00-2GF2	1 basic device SCALANCE XF204-2BA	6GK5 204-2AA00-2GF2
		2 BusAdapter BA 2xRJ45 HA	6DL1 193-6AR00-0AA0
SCALANCE XF204 DNA	6GK5 204-0BA00-2YF2	1 basic device SCALANCE XF204-2BA DNA	6GK5 204-2AA00-2YF2
		2 BusAdapter BA 2xRJ45 HA	6DL1 193-6AR00-0AA0

Factory settings

- 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

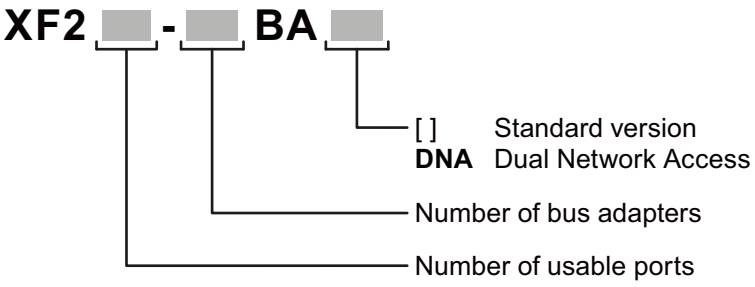
Article numbers

The factory setting defines the following ring ports:

Device	Factory setting ring ports	Factory setting Y ports
SCALANCE XF204-2BA	P1.1 and P2.1	-
SCALANCE XF204-2BA DNA	P1.1 and P2.1	P1.2 and P2.2

Type designation

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



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 XF-200BA:

- One device
- 2 covers for the bus adapter slots

- One 2-pin plug-in terminal block (signaling contact)
- Two 2-pin plug-in terminal blocks (power supply)
- One product DVD with documentation and software
- In addition with premounted variants:
  – 2 BusAdapter BA 2xRJ45 HA

3.2.1 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 configuration data, 256 MB	6GK1 900-0AB10

Note

The following restrictions apply to the **SCALANCE XF204-2BA DNA** (part number 6GK5 204-2AA00-2YF2) when using the **C-PLUG with 256 MB** (part number 6GK1 900-0AB10):

- The C-PLUG with 256 MB is supported by the SCALANCE XF204-2BA DNA with hardware revision **02** from firmware version **V4.0**.
- The C-PLUG with 256 MB is supported by the SCALANCE XF204-2BA DNA with hardware revision **01** from firmware version **V4.4**.

See also

SCALANCE XF-200BA (https://support.industry.siemens.com/cs/de/en/ps/24708/pm)

SCALANCE XF-200BA DNA (https://support.industry.siemens.com/cs/de/en/ps/24742/pm)

BusAdapter

Component	Description	Article number
BA 2×RJ45 *)	PROFINET BusAdapter with 2 Ethernet sockets for standard RJ45 plugs	6ES7 193-6AR00-0AA0
BA 2×RJ45 (Coated) *)	PROFINET BusAdapter with 2 Ethernet sockets for standard RJ45 plugs, extended temperature range, with coated printed circuit boards (conformal coating)	6AG1 193-6AR00-7AA0
BA 2×RJ45 HA	PROFINET BusAdapter with 2 Ethernet sockets for standard RJ45 plugs, extended temperature range, with coated printed circuit boards (conformal coating)	6DL1 193-6AR00-0AA0

Component	Description	Article number
BA 2xRJ45VD HA	PROFINET BusAdapter with 2 Ethernet sockets for standard RJ45 plugs, extended temperature range, with coated printed circuit boards (conformal coating) with 2-wire transfer function (variable distance)	6GK5 991-2VA00-8AA2
BA 2xM12	PROFINET BusAdapter with 2x M12 push-pull sockets, D-coding, also suitable for standard M12	6ES7 193-6AM00-0AA0
BA 2×FC *)	PROFINET bus adapter with 2 FastConnect Ethernet connectors for direct connection of the bus cable	6ES7 193-6AF00-0AA0
BA 2×FC (Coated) *)	PROFINET bus adapter with 2 FastConnect Ethernet connectors for direct connection of the bus cable, extended temperature range, with coated printed-circuit boards (conformal coating)	6AG1 193-6AF00-7AA0
BA 2×FC HA	PROFINET bus adapter with 2 FastConnect Ethernet connectors for direct connection of the bus cable, extended temperature range, with coated printed-circuit boards (conformal coating)	6DL1 193-6AF00-0AA0
BA 2xSCRJ	PROFINET BusAdapter with 2 fiber-optic connectors POF/PCF, SCRJ connection system	6ES7 193-6AP00-0AA0
BA 2xSCRJ (Coated)	PROFINET BusAdapter with 2 fiber-optic connectors POF/PCF, SCRJ connection system, extended temperature range, with coated printed circuit boards (conformal coating)	6AG1 193-6AP00-2AA0
BA SCRJ/RJ45	PROFINET BusAdapter with 1 fiber-optic connector POF/PCF, SCRJ connection system and 1 Ethernet socket for standard RJ45 plugs	6ES7 193-6AP20-0AA0
BA SCRJ/FC	PROFINET BusAdapter with 1 fiber-optic connector POF/PCF, SCRJ connection system and 1 FastConnect Ethernet connector for direct connection of the bus cable	6ES7 193-6AP40-0AA0
BA 2xLC *) From production version FS04	PROFINET BusAdapter with 2 glass fiber-optic connectors, LC connection system	6ES7 193-6AG00-0AA0
BA LC/RJ45 *) From production version FS05	PROFINET BusAdapter with 1 glass fiber-optic connector, LC connection system and 1 Ethernet socket for standard RJ45 plugs	6ES7 193-6AG20-0AA0
BA LC/FC *) From production version FS05	PROFINET BusAdapter with 1 glass fiber-optic connector, LC connection system and 1 FastConnect Ethernet connector for direct connection of the bus cable	6ES7 193-6AG40-0AA0
BA 2xLC-LD **)	PROFINET BusAdapter with 2 glass fiber-optic connectors (single-mode), LC connection system	6ES7 193-6AG50-0AA0
BA LC-LD/RJ45 **)	Media converter, PROFINET BusAdapter with 1 glass fiber-optic connector, LC connection system (single-mode) and 1 Ethernet socket for standard RJ45 plugs	6ES7 193-6AG60-0AA0
BA LC-LD/M12 **)	Media converter, PROFINET BusAdapter with 1 glass fiber-optic connector, LC connection system (single-mode) and 1 Ethernet socket with M12 connection system	6ES7 193-6AG70-0AA0

Component	Description	Article number
BA 2xLC HA *) From production version FS05	PROFINET BusAdapter with 2 glass fiber-optic connectors, LC connection system, extended temperature range, with coated printed circuit boards (conformal coating)	6DL1 193-6AG00-0AA0
BA LC/RJ45 SIMATIC ET 200SP HA From production version FS01	PROFINET BusAdapter with 1 glass fiber-optic connector, LC connection system and 1 Ethernet socket for standard RJ45 plugs (Conformal Coating)	6DL1 193-6AG20-0AA0
BA LC/FC SIMATIC ET 200SP HA From production version FS01	PROFINET BusAdapter with 1 glass fiber-optic connector, LC connection system and 1 FastConnect Ethernet connector for direct connection of the bus cable (Conformal Coating)	6DL1 193-6AG40-0AA0

*) The approvals for shipbuilding are only valid with the indicated bus adapters.

**) The marked BusAdapters are supported by the SCALANCE XF204-2BA devices with a hardware version (Page 59) ≥ 2.

Note

Note approvals of the bus adapters

Bus adapters do not always have the same approvals as the basic devices. If you operate a basic device with a bus adapter that does not meet the conditions of an approval, this approval no longer applies to the basic device.

The bus adapter BA 2xSCRJ (coated), for example has no FM approval. If you operate the basic device with a BA 2xSCRJ (coated) the FM approval of the basic device lapses.

Reference identification labels

Component	Description	Article number	Figure
Reference identification labels	The reference identification plates (according to EN 81346) can be plugged into every bus adapter, see Manual Collection "Distributed IO system ET 200SP". You can find a link in the chapter "Introduction", section "Additional documentation". The plates allow reference identification of the ET 200SP components. They can be ordered on a mat for thermotransfer and ink jet printers. Due to the standard plotter frame, the reference identification plate is suitable for labeling with ECAD systems. Mat with 16 plates pack of 10	6ES7 193-6LF30-0AW0	

Strain relief

Component	Description	Article number
Strain relief	Screw-on strain relief for guiding the outgoing cables The strain relief is a mechanical protective device for the electrical and optical cables on the bus adapter. The strain relief is available as an optional accessory. 5 units per pack, including screws Cable ties are not included with the product.	6ES7 193-6RA00-1AN0

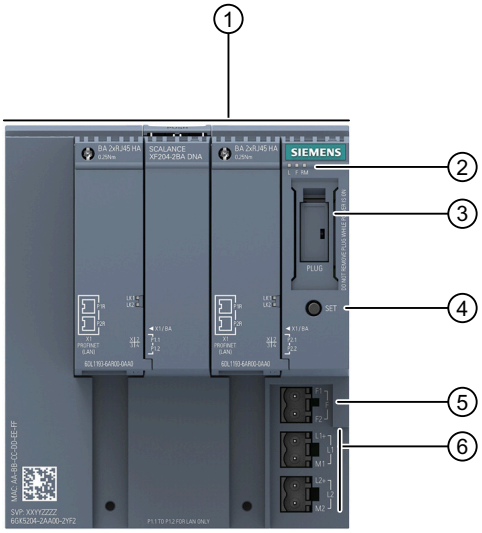
3.2.2 Spare parts

Cover

Component	Description	Article number
Cover for the bus adapter slots	Cover for the unused bus adapter slots With the cover the plug contacts are protected from contamination. pack of 5	6ES7 591-3AA00-0AA0

3.3 Device views

The following figure shows an overview of the components of the SCALANCE XF-200BA.



① BaseUnit with slots for 2 bus adapters without covers
The BaseUnit provides the electrical and mechanical connection of the bus adapters.

② LEDs
- L: Power LED, power supply
- F: Fault LED
- RM: Redundancy manager

③ Slot for C-PLUG

④ SET button

⑤ Connector for signaling contact

⑥ Connectors for power supply

3.4 SET button

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

Position

The "SET" button is located on the front of the SCALANCE XF-200BA.

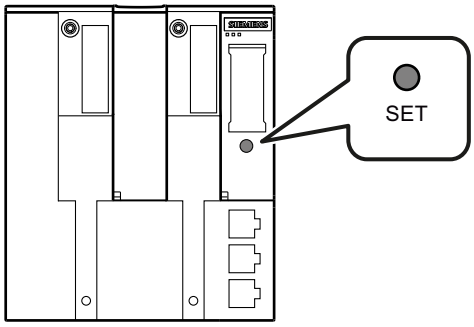


Figure 3-2 Position of the "SET" button on the SCALANCE XF-200BA

Resetting the device to factory defaults

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

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

Requirement

- The device is in operation.
- The function "Restore Factory Defaults" is enabled for the "SET" button.

Note

Resetting despite disabled "SET" button

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

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

Procedure

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

1. Press the "SET" button.
2. Hold down the button for approximately 12 seconds.
   After 9 seconds, the fault LED "F" flashes for 3 seconds.
   - If you release the button after approximately 12 seconds, the device is restarted and the factory settings are restored.
   - If you release the button before the 12 seconds have elapsed, the reset is canceled.

Enabling and disabling the button

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

3.5 LED display

3.5.1 LED "L"

The LED "L" shows whether the power supply is connected.

LED color	LED status	Meaning
Green	Lit	The power supply is connected. With a redundant power supply, you can use the configuration to show which power supply is connected.
-	Off	No external power supply is connected.

3.5.2 "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.

3.5.3 "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.

3.6 C-PLUG

3.6.1 Function of the C-PLUG

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

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.

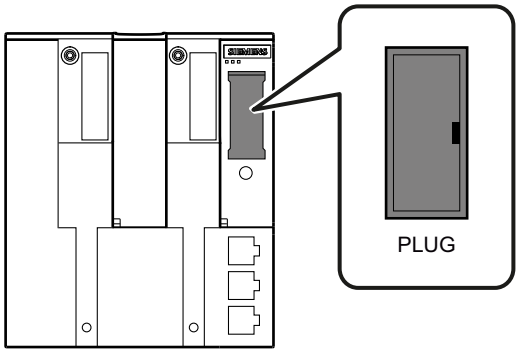
- Fault LED
- Web Based Management (WBM)
- SNMP
- Command Line Interface (CLI)
- PROFINET diagnostics

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

3.6.2 Position of the C-PLUG

Position of the C-PLUG

The C-PLUG slot is on the front of the device.



The procedure for pulling and plugging the PLUG can be found in the section "Replacing a C-PLUG. (Page 52)".

Installing and removing

4

4.1 Safety notices for installation

Safety notices

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

WARNING

If a device is operated in an ambient temperature of more than 50 °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 50 °C.

WARNING

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

WARNING

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

NOTICE

Improper mounting

Improper mounting may damage the device or impair its operation.

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

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

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

WARNING
The device is intended for indoor use only.

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

WARNING
Substitution of components may impair suitability of the equipment.

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

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

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

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

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

EXPLOSION HAZARD

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

WARNING

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

Note

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

WARNING

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

WARNING

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

WARNING

Substitution of components may impair suitability for Division 2.

WARNING

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

⚠ WARNING

Explosion hazard

Do not disconnect equipment when a flammable or combustible atmosphere is present.

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 (Page 3)", under "Further documentation".

4.2 Installation clearance

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

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

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

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

4.3 Mounting on DIN rails

Installation

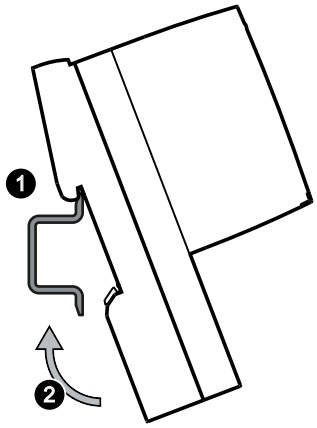


Figure 4-1 DIN rail mounting

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

1. Place the housing guide of the device on the top edge of the DIN rail ①.
2. Press the device down against the DIN rail until the spring catch locks in place ②.
3. Fit the connectors for the power supply, see the section "Connecting up (Page 43)".
4. Insert the terminal blocks into the sockets on the device.

Removal

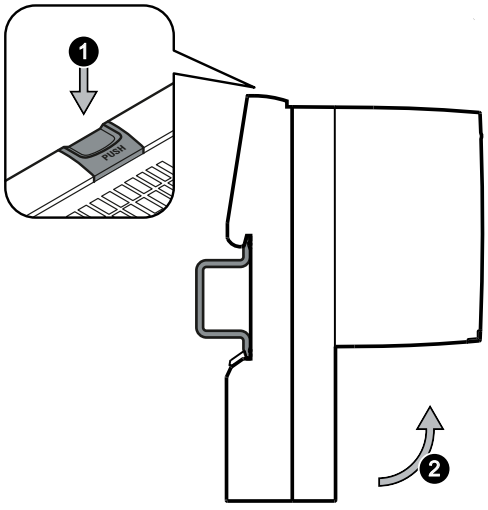


Figure 4-2 Removing from a DIN rail

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

1. Disconnect all connected cables.
2. Release the DIN rail locking mechanism by pressing down on the release button ①.
3. Pull the lower part of the device away from the DIN rail ②.

4.4 Mounting bus adapters

NOTICE
Do not install or uninstall a bus adapter during operation A bus adapter may only be installed or uninstalled if the device is turned off. If you install a bus adapter during operation it will not be recognized by the device. If you uninstall a bus adapter during operation the device will react as follows: • The bus adapter slot will be deactivated. • The red fault LED "F" lights up. • The event is shown in the log and error table. To reactivate the bus adapter slot, restart the device: • The bus adapter slot is active. • The red fault LED "F" goes off.

NOTICE
Cover unused bus adapter slots If you do not cover unused bus adapter slots, this can lead to the following problems: • Loss of the approvals • Violation of the EMC regulations • Failure of the data traffic Close unused bus adapter slots with the supplied covers. Remove the covers only immediately before you mount the bus adapter.

Required tool:

- Slotted screwdriver, blade width 3 to 3.5 mm

or

- Torx screwdriver, size T10

Installation

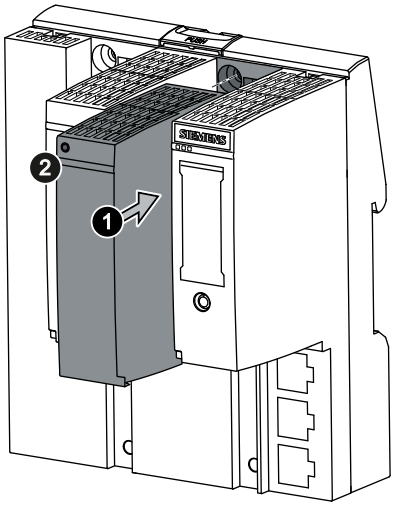


Figure 4-3 Mounting bus adapters

To fit a bus adapter, follow the steps below:

1. Turn off the power to the device.
2. Remove the cover of the bus adapter slot.
3. If necessary mount a strain relief, see section "Mounting tensile strain relief (Page 40)".
4. Plug the bus adapter parallel into the BaseUnit until it can be heard to lock in place ①.
5. Screw the bus adapter to the BaseUnit of the device with the supplied screw (tightening torque 0.2 Nm) ②.
   Use the specified tool for this.
6. Insert the connection plugs into the sockets intended for this on the bus adapter.

Removal

To remove a bus adapter, follow the steps below:

1. Turn off the power to the device.
2. Remove all connected cables from the BusAdapter.
3. Loosen the screw connection of the bus adapter.
4. Pull the bus adapter out of the Base Unit to the front.
5. If necessary remove the strain relief, see section "Mounting tensile strain relief (Page 40)".
6. Close the bus adapter slot with a cover.

4.5 Mounting tensile strain relief

Required tools

- Torx screwdriver, size T10
- Cable ties
  We recommend cable ties with a width of 4.8 mm. The maximum width is 7.0 mm. The length of the cable tie is min. 60 mm.

Installation

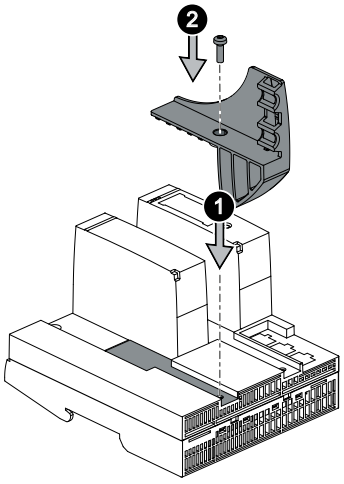


Figure 4-4 Mounting tensile strain relief

To mount tensile strain relief on the device, follow the steps below:

1. Bring the gap in the strain relied in line with the gap in the device ①.
2. Screw the strain relief with the supplied screw (tightening torque 0.8 Nm) ②.
   Use the specified tool for this.
3. Mount a bus adapter, see section "Mounting bus adapters (Page 38)".
4. Insert the connection plugs into the sockets intended for this on the bus adapter.
5. Use cable ties to secure the cable to the strain relief.

Removal

To remove strain relief from the device, follow the steps below:

1. Release the cable from the strain relief and pull the cable.
2. Remove the bus adapter, see section "Mounting bus adapters (Page 38)".
3. Loosen the screw connection.
4. Remove the strain relief.

4.6 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

5

5.1 Safety when connecting up

Safety notices

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

⚠ 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.

Notes on operation with PELV (protective extra-low voltage)

You can operate the device with PELV. When connecting the device, observe the safety information provided below.

Note

Safety extra-low voltage

The supply of the devices by PELV (Protective Extra Low Voltage) according to DIN VDE 0100-410 or IEC 60364-4-41 is permitted when the generated nominal voltage does not exceed the voltage limits 25 VAC or 60 VDC.

⚠ WARNING

Safety extra-low voltage

If you operate the device with PELV, the following approvals and certifications lose their validity:

UL, FM, ATEX, IECEx, UKEX, CCC-Ex

⚠ WARNING

Safety extra-low voltage

System power supplies with grounded 24 V DC output voltage require a safe connection to the protective conductor and limiting of the voltage (extra-low voltage) This protection is called PELV (protective extra-low voltage) in accordance with IEC 61131-2 or IEC 61010-2-201. The wiring of PELV circuits must be safely isolated from the wiring of other non-PELV circuits, or the insulation of all conductors must be rated for higher voltage.

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

⚠ WARNING

EXPLOSION HAZARD

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

⚠ WARNING

EXPLOSION HAZARD

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

⚠ WARNING

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).

⚠ 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.

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).

5.2 Industrial Ethernet

The connection to Industrial Ethernet uses the interfaces of the inserted BusAdapter. Therefore, when connecting to Industrial Ethernet, always take note of the information in the BusAdapter operating instructions. You can find additional information on the operating instructions in the "Introduction" section, paragraphs "Additional documentation" and "Further documentation".

Note

Strain relief for the Ethernet cables

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

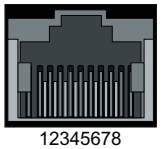
5.2.1 Electrical

R-45 connector technology

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

Pin assignment

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

Pin number	Assignment	R-45 connector
Pin 1	RD+	 12345678
Pin 2	RD-	
Pin 3	TD+	
Pin 4	n. c. (Not connected)	
Pin 5	n. c. (Not connected)	
Pin 6	TD-	
Pin 7	n. c. (Not connected)	
Pin 8	n. c. (Not connected)	

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.

5.2.2 Optical

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

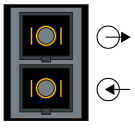
Note

No light power measurement (PROFINET diagnostics)

The devices do not support diagnostics with light power measurement.

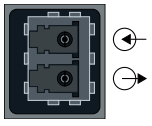
SCRJ connector technology

The attachment to Industrial Ethernet uses SCRJ connector technology.



LC connector technology

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



5.3 Wiring rules

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

Wiring rules for ...		**Spring-loaded terminals**
connectable cable cross sections for flexible cables ...	without wire end ferrule	0.25 - 2.5 mm^2
		AWG: 24 - 14
	with wire end ferrule**	0.25 - 2.5 mm^2
		AWG: 24 - 14
	with TWIN wire end ferrule**	2 x 0.25 - 2 x 1 mm^2
		AWG: 24 - 18
Stripped length of the cable		8 - 10 mm
Wire end ferrule according to DIN 46228 with plastic ferrule**		8 - 10 mm

* AWG: American Wire Gauge

** See note "Wire end ferrules"

Note

Wire end ferrules

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

Crimp shapes with wave-shaped profile are unsuitable.

5.4 Power supply

Notes on the power supply

WARNING

Incorrect power supply

Never operate the device to alternating voltage.

Never operate the device with DC voltage higher than 32 VDC.

⚠ 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 XF-200BA to electromagnetic interference, among others, is 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 XF-200BA with suitable overvoltage protection.

Information on the power supply

- The power supply is connected via two 2-pin plug-in terminal blocks that ship with the device.
- The power supply can be connected redundantly.
  - Both inputs are isolated.
  - No load distribution.
  - The power supply unit with the higher output voltage supplies the device alone.
- Power: 24 VDC
- Cable cross-section: max. 2.5 mm^2
- The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up.
- The power supply is non-floating.
- The signal cables of the electrical Ethernet interfaces are floating.

Position and assignment

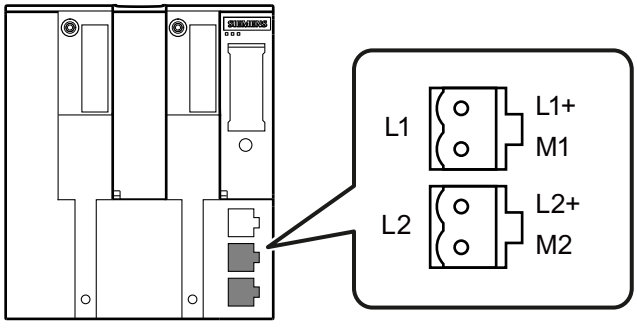


Figure 5-1 Position of the power supply and assignment of the terminal blocks

Contact	Assignment
L+	24 VDC
M	Ground

5.5 Signaling contact

Information on the signaling contact

- The signaling contact is a floating switch that signals error statuses by opening the contact. The signaling contact must be operated within the range of the operating voltage. If an error/fault occurs, the signaling contact opens. In normal operation, the signaling contact is closed.
- The signaling contact is connected using a 2-pin plug-in terminal block (spring-loaded terminal). The terminal block ships with the device and can also be ordered as a spare part.
- Note the wiring rules (Page 49).

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

Position and assignment

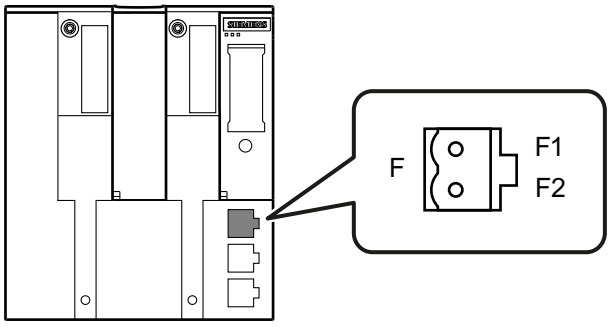


Figure 5-2 Position of the signaling contact on the SCALANCE XF-200BA and the assignment of the terminal block

Contact	Assignment
F1	Fault contact 1
F2	Fault contact 2

Signaling faults

- The signaling of errors by the signaling contact is synchronized with the fault LED "F", see section ""F" LED (Page 29)".
  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 the error has been eliminated.

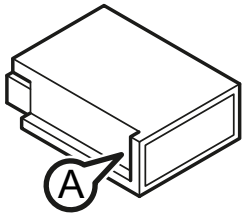
5.6 Grounding

The device is grounded over the DIN rail.

5.7 Replacing a C-PLUG.

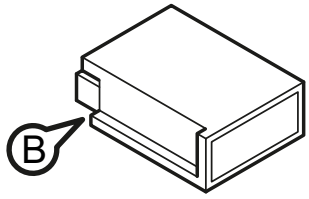
NOTICE
Do not remove or insert a C-PLUG during operation
The C-PLUG may only be removed or inserted when the device is turned off.
The device checks whether or not a C-PLUG is inserted at one second intervals. If it is detected that the PLUG was inserted or removed, there is a restart.

Removing a C-PLUG



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

Inserting a C-PLUG



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

Maintenance and cleaning

6

WARNING

Unauthorized repair of devices in explosion-proof design

Risk of explosion in hazardous areas

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

WARNING

Impermissible accessories and spare parts

Risk of explosion in hazardous areas

- Only use original accessories (Page 23) and original spare parts (Page 26).
- 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.

Error correction

7

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.

Procedure with Microsoft Windows

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

Follow the steps below to load new firmware using TFTP:

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

   Note

   This time only lasts a few seconds.

   The bootloader of the device waits in this status for a new firmware file that you can download by TFTP.
5. Connect a PC to port "P1.1" via an Ethernet cable.
6. Assign an IP address to the device using DHCP or SINEC PNI.
7. Open a Windows command prompt and change to the directory where the file with the new firmware is located and then execute the following command :
   `tftp -i <IP address> put <firmware file>`

   Note

   You can enable TFTP in Microsoft Windows as follows:

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

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 with further consequences in the configured network.

With the button

Restoring the factory settings during the startup phase

NOTICE
Reset despite disabled button Using the 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 factory defaults" function was disabled in the configuration. This allows you to restore the device to the factory defaults in an emergency. If the function has been disabled in the configuration, it is only disabled on completion of the startup phase.

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

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

Restoring the factory defaults during operation

You can also restore the device to the factory defaults during operation, see section "SET button (Page 27)".

Via the configuration

You will find detailed information on resetting the device parameters using the web-based management and CLI in the configuration manuals see also section "Introduction (Page 3)":

Technical specifications

8

8.1 SCALANCE XF-200BA technical specifications

Technical specifications		
Connection to Industrial Ethernet		
Slots for bus adapters	Quantity	2
	Ports per bus adapter	2
	Connector	Depending on the bus adapter
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Optical data (basic device with corresponding bus adapters)		
POF cable	Transmitter output (optical)	
	• Minimum	• -8 dBm
	• Maximum	• -2 dBm
	Receiver input	
	• Sensitivity min.	• -23 dBm
	• Input power max.	• +1 dBm
HCS cable	Transmitter output (optical)	
	• Minimum	• -19 dBm
	• Maximum	• -11 dBm
	Receiver input	
	• Sensitivity min.	• -26.8 dBm
	• Input power max.	• -4 dBm
Glass fiber	Transmitter output (optical)	
	• Minimum (at 50 µm)	• -24 dBm
	• Minimum (at 62.5 µm)	• -18 dBm
	• Maximum	• -14 dBm
	Receiver input	
	• Sensitivity min.	• -31 dBm
	• Input power max.	• -12 dBm
Electrical data		
Power supply [1]	Rated voltage	24 V DC
	Voltage range (incl. tolerance)	19.2 V DC - 28.8 V DC safety extra low voltage (SELV)
	Design	Terminal block, 2 terminals
	Cable cross-section	≥ 0.75 mm^2 (20 AWG)
	Property	Implemented redundantly
Current consumption [2]	24 VDC	100 mA

Technical specifications			
Effective power loss [2]	24 VDC		2.4 W
Fusing			2.5 A (non-replaceable fuse F)
Signaling contact [1]	Quantity		1
	Design		Terminal block, 2 terminals
	Permitted voltage range		24 VDC
	Load capability		max. 100 mA
Permitted ambient conditions			
Ambient temperature	During operation [3]	Up to 2000 m	-40 ℃ to +70 ℃
		up to 3000 m	-40 ℃ to +66 ℃
		up to 4000 m	-40 ℃ to +63 ℃
	During storage		-40 °C to +85 °C
	During transportation		-40 °C to +85 °C
Relative humidity	During operation at 25 ℃		≤ 95% without condensation
Housing, dimensions and weight			
Design	compact		
Housing material	Polycarbonate (PC-GF10)		
Degree of protection	IP20		
Dimensions (W x H x D)	100 x 117.1 x 74 mm		
Weight	210 g		
Installation options	Wall mounting		
Mean time between failure (MTBF)			
MTBF (EN/IEC 61709; 40 °C)	> 72 years		

[1] Wiring rules

Observe the wiring rules (Page 49).

[2] Current consumption and power loss

The specified values are the values of the basic device without plugged in bus adapters. The values change depending on the port types of the plugged in bus adapters. Per port you need to add the following values to the values of the basic device:

Port type	Power loss	Current consumption
RJ45	0.2 W	8 mA
SCRJ	1.55 W	65 mA
LC/LC-LD	1.45 W	60 mA

The following table shows the power loss and current consumption as an example of the basic device with different bus adapters:

Plugged in bus adapter	Port types	Power loss	Current consumption
2 BA 2×RJ45	4 x RJ45	3.2 W	132 mA
2 BA 2xSCRJ	4 x SCRJ	8.6 W	360 mA
1 BA 2xSCRJ 1 BA SCRJ/RJ45	3 x SCRJ + 1 x RJ45	7.25 W	303 mA

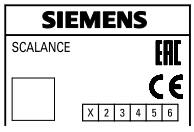
[3] Ambient temperature during operation

The maximum ambient temperature during operation depends on the bus adapters plugged in. The temperature values that apply to the bus adapters are specified on the bus adapters. If the temperature values of the plugged in bus adapters are lower than those of the basic device, the values of the bus adapters apply.

The derating values depend on the maximum ambient temperatures. For the bus adapters with the following maximum ambient temperatures the corresponding derating values apply.

Maximum ambient temperature during operation up to 2000 m	Derating	
-40 °C to +60 °C	up to 3000 m	-40 °C to +55 °C
	up to 4000 m	-40 °C to +51 °C
-40 °C to +50 °C	up to 3000 m	-40 °C to +44 °C
	up to 4000 m	-40 °C to +40 °C

Hardware version



You will find the hardware version of your device on the type plate. On the type plate, the hardware version is printed as a placeholder “X”.

Example: X 2 3 4 5 6

In this case, "X" would be the placeholder for hardware version 1.

8.2 Mechanical stability (in operation)

Device	IEC 60068-2-27 shock	IEC 60068-2-6 vibration
	15 g, 11 ms duration 6 shocks per axis	**10 - 58 Hz: 0.075 mm 85 - 150 Hz: 1 g 1 octave/min, 20 sweeps**
SCALANCE XF204-2BA	●	●
SCALANCE XF204-2BA DNA	●	●

8.3 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)

8.4 Cable lengths

8.4.1 Copper cable (RJ45 connector)

Cable	Permitted cable length
IE TP torsion cable with IE FC Outlet RJ45 + 10 m TP cord	0 to 45 m + 10 m TP cord
IE TP torsion cable with IE FC RJ45 Plug 180	0 to 55 m
IE FC TP Marine / Trailing / Flexible cable with IE FC Outlet RJ45 + 10 m TP cord	0 to 75 m + 10 m TP cord
IE FC TP Marine / Trailing / Flexible cable with IE FC RJ45 Plug 180	0 to 85 m
IE FC TP standard cable with IE FC Outlet RJ45 + 10 m TP cord	0 to 90 m + 10 m TP cord
IE FC TP standard cable with IE FC RJ45 Plug 180	0 to 100 m

8.4.2 Plastic Optical Fiber (SCRJ connector)

Properties		
Transmission method	100Base-FX complying with IEEE 802.3	
Transmission speed	100 Mbps (Fast Ethernet)	
Transmission medium	Multimode fiber-optic cable	
Light source	LED	
Wavelength	650 nm	
Cable length (max.)	50 m	
Fiber core diameter	980 µm	
Signal attenuation	0.230 dB/m	
Transmitter output (optical)	Minimum	-8 dBm
	Maximum	-2 dBm
Receiver input	Sensitivity min.	-23 dBm
	Input power max.	+1 dBm

8.4.3 Polymer Cladded Fiber (SCRJ connector)

Properties		
Transmission method	100Base-FX complying with IEEE 802.3	
Transmission speed	100 Mbps (Fast Ethernet)	
Transmission medium	Multimode fiber-optic cable	
Light source	LED	
Wavelength	650 nm	
Cable length (max.)	100 m	
Fiber core diameter	200 µm	
Signal attenuation	0.01 dB/m	
Transmitter output (optical)	Minimum	-19 dBm
	Maximum	-11 dBm
Receiver input	Sensitivity min.	-26.5 dBm
	Input power max.	-4 dBm

8.4.4 Glass fiber (LC connector)

Properties			
Transmission mode	100Base-FX complying with IEEE 802.3		
Transmission rate	100 Mbps (Fast Ethernet)		
Transmission medium	Multimode fiber-optic cable		
Light source	LED/Class1-LASER "Eye safe"		
Wavelength	1300 nm		
Cable length (max.) *)	At 50 µm fiber core diameter		3 km
	At 62.5 µm fiber core diameter		3 km
Transmitter output (optical)	Minimum	At 50 µm	-24 dBm
		At 62.5 µm	-20 dBm
	Maximum		-14 dBm
Receiver input	Sensitivity min.		-31 dBm
	Input power max.		-12 dBm

*) Depending on the cable used:

- If you are using at least OM1 fibers (attenuation ≤ 1.5 dB/km, bandwidth length product ≥ 500 MHz*km), you can reach a cable length of up to 3 km.
- When are using fibers with attenuation values ≤ 1 dB/km, you can reach a cable length of up to 5 km.

You can find additional information in the "Industrial Ethernet / PROFINET Passive network components" System Manual, see also section "Introduction", paragraph "Additional documentation".

8.5 Switching properties

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	
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

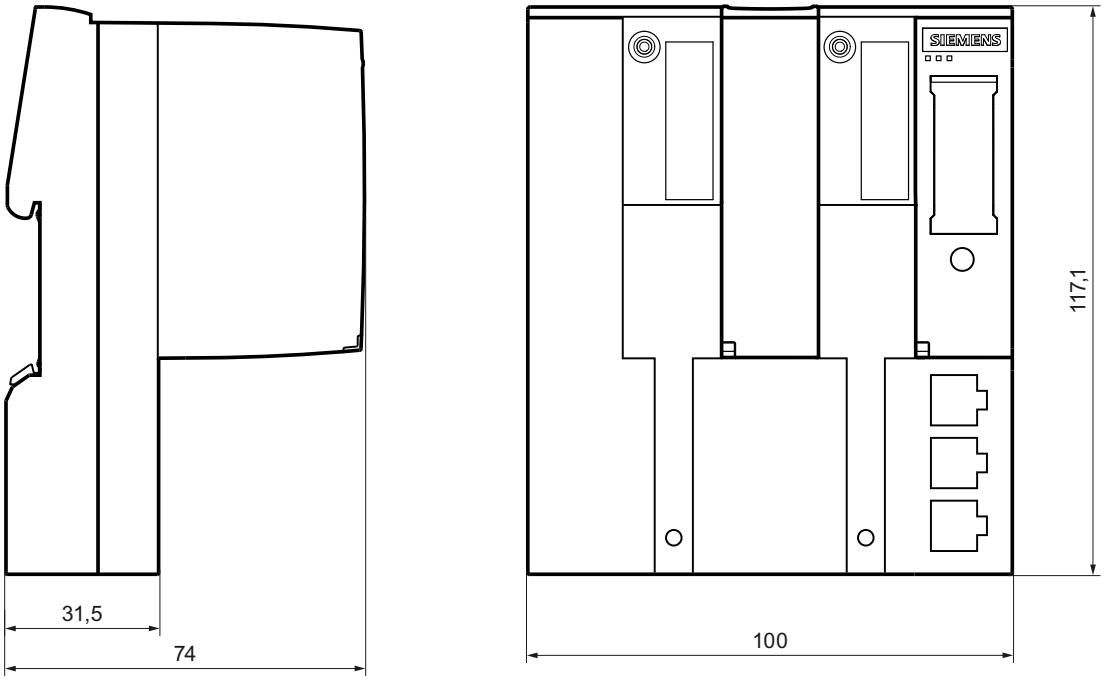
The number of SCALANCE XF-200BA modules connected in a line influences the frame delay. When a frame passes through the IE switch, this is delayed by the store-and-forward function of the SCALANCE XF-200BA by 10-130 microseconds (at 100 Mbps).

Dimension drawings

9

Note

The dimensions are specified in mm.



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.

Note for devices with CLASS 1 LASER

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

Note

CLASS 1 LASER

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

EMC (electromagnetic compatibility)

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

Applied standards:

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

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

RoHS

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

Applied standard:

- EN IEC 63000

FM

The product meets the requirements of the standards:

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

cULus approval for industrial control equipment



cULus Listed IND. CONT. EQ.

Underwriters Laboratories Inc. complying with

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

Report no. E85972

cULus Approval Hazardous Location

cULus Listed IND. CONT. EQ. FOR HAZ. LOC.

Underwriters Laboratories Inc. complying with

- UL 61010-2-201 (Industrial Control 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. E223122

Note for Australia - RCM

The product meets the requirements of the RCM standard.

Applied standards:

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

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

MSIP 요구사항 - For Korea only

A급 기기(업무용 방송통신기자재)

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

Marking for the customs union



EAC (Eurasian Conformity)

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

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

FDA and IEC marking

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

Device	CLASS 1 LASER Product
SCALANCE XF204-2BA	(*)
SCALANCE XF204-2BA DNA	(*)

* In modular devices, you can find the marking in the operating instructions for the BusAdapter used.

CAUTION

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

Installation guidelines

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

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

WARNING

Personal injury and property damage can occur

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

Only use expansions that are approved for the system.

Note

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

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

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