

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6GK5208-0BA00-2AC2

SCALANCE XC-200. XC208 managed Industrial Ethernet switch.

OFFICIAL SOURCE

SCALANCE XC-200 Operating Instructions | C79000-G8976-C442-16
06/2025 | Original printed pages: 2, 13, 15-17, 22, 55, 72, 83-84, 119-120, 153-154

Open the original manufacturer document

Selected safety, security, identity, connection and exact-variant data. Tables covering other XC-200 devices remain unaltered; use only the XC208 and standard XC-200 columns identified for this order code.

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Amikon Limited prepared this independent reference package. Selected Siemens pages follow unchanged, retaining their original format and printed page numbers. This extract does not replace the complete applicable instructions.

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.

Safety notices

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

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

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

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

Security recommendations

3.1 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.

3.1 Security recommendations

- 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.

4.1 Product overview

Device	Description	Article number
SCALANCE XC208	8 x 10/100 Mbps RJ45 ports	PROFINET: 6GK5 208-0BA00-2AC2
SCALANCE XC208G	8 x 10/100/1000 Mbps RJ45 ports	PROFINET: 6GK5 208-0GA00-2AC2 EtherNet/IP: 6GK5 208-0GA00-2TC2
SCALANCE XC208G PoE	8 x 10/100/1000 Mbps RJ45 ports - Power over Ethernet at 6 ports - Rated voltage 24 V DC	PROFINET: 6GK5 208-0RA00-2AC2
SCALANCE XC208G PoE (54 V)	8 x 10/100/1000 Mbps RJ45 ports - Power over Ethernet at 6 ports - Rated voltage 54 V DC	PROFINET: 6GK5 208-0RA00-5AC2
SCALANCE XC208EEC	8 x 10/100 Mbps RJ45 ports - Coated printed circuit board	PROFINET: 6GK5 208-0BA00-2FC2
SCALANCE XC208G EEC	8 x 10/100/1000 Mbps RJ45 ports - Coated printed circuit board	PROFINET: 6GK5 208-0GA00-2FC2
SCALANCE XC216	16 x 10/100 Mbps RJ45 ports	PROFINET: 6GK5 216-0BA00-2AC2
SCALANCE XC216EEC	16 x 10/100 Mbps RJ45 ports - Coated printed circuit board	PROFINET: 6GK5 216-0BA00-2FC2
SCALANCE XC216-3G PoE	16 x 10/100/1000 Mbps RJ45 ports 1 x pluggable transceiver slots with 1000 Mbps 2 x pluggable transceiver slots with 1000/10000 Mbps - Power over Ethernet at 14 ports - Rated voltage 24 V DC	PROFINET: 6GK5 216-3RS00-2AC2
SCALANCE XC216-3G PoE (54 V)	16 x 10/100/1000 Mbps RJ45 ports 1 x pluggable transceiver slots with 1000 Mbps 2 x pluggable transceiver slots with 1000/10000 Mbps - Power over Ethernet at 14 ports - Rated voltage 54 V DC	PROFINET: 6GK5 216-3RS00-5AC2
SCALANCE XC216-4C	12 x 10/100 Mbps RJ45 ports 4 x combo ports (4 x 10/100 Mbps RJ45 ports/4 x pluggable transceiver slots with 1000 Mbps)	PROFINET: 6GK5 216-4BS00-2AC2
SCALANCE XC216-4C G	12 x 10/100/1000 Mbps RJ45 ports 4 x combo ports (4 x 10/100/1000 Mbps RJ45 ports/4 x pluggable transceiver slots with 1000 Mbps)	PROFINET: 6GK5 216-4GS00-2AC2 EtherNet/IP: 6GK5 216-4GS00-2TC2
SCALANCE XC216-4C G EEC	12 x 10/100/1000 Mbps RJ45 ports 4 x combo ports (4 x 10/100/1000 Mbps RJ45 ports/4 x pluggable transceiver slots with 1000 Mbps) - Coated printed circuit board	PROFINET: 6GK5 216-4GS00-2FC2

Installing and removing

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 55 °C, the temperature of the device enclosure 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 of the required safety measures at an ambient temperature higher than 55 to 70 °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.

⚠ WARNING**Power supply**

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

The power supply that is connected to the supply connections therefore needs to meet at least one of the following conditions:

- Limited energy according to UL 508
or
- Limited energy according to UL 61010-1 / IEC 61010-1 / EN IEC 61010-1
or
- NEC Class 2 according to the National Electrical Code (r) (ANSI / NFPA 70)

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

⚠ WARNING**Safety extra low voltage**

The device is designed for operation with a directly connectable power supply whose output power corresponds to "Limited Energy" according to UL/IEC 61010-1.

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

LC connector technology

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



Pluggable transceiver slot/
plugged in transceiver

6.6 Wiring rules

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

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

* AWG: American Wire Gauge

** See note "Wire end ferrules"

Note

Wire end ferrules

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

Crimp shapes with wave-shaped profile are unsuitable.

Note

Wiring with PoE variants

PoE variants have a high current consumption. Design the cable cross-section based on the maximum current consumption.

6.7 24 V DC power supply

Notes on the power supply

**WARNING****Incorrect power supply**

If the power supply is designed redundantly (two separate power supplies), the combination of the two power supplies must meet these requirements.

Never operate the device with AC voltage or DC voltage higher than 32 V DC.

**CAUTION****Damage to the device due to overvoltage**

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

One of the tests used to attest the immunity of devices of the IE switches SCALANCE XC-200 to electromagnetic interference was the "surge immunity test" according to EN61000-4-5. This test requires overvoltage protection for the power supply lines. A suitable device is, for example, the Dehn Blitzductor BVT AVD 24, article number 918 422 or a comparable protective element.

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

Operate the SCALANCE XC-200 with suitable overvoltage protection.

Note

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

Information on the power supply

- The "L1" and "L2" LEDs indicate the current range of the power supply, see the section "LEDs "L1" and "L2" (Page 46)".
- The power supply is connected using a 4-pin plug-in terminal block (spring-loaded terminal). The terminal block ships with the device and can also be ordered as a spare part, see section "Product overview (Page 21)".
- The power supply can be connected redundantly. Both inputs are isolated. There is no distribution of load. When a redundant power supply is used, the power supply unit with the higher output voltage supplies the device alone.
- The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up. The two power inputs are non-floating.
- Note the wiring rules (Page 83).

9.10 Technical specifications of the SCALANCE XC208

The following technical specifications apply to the SCALANCE XC208.

Technical specifications		
Connection to Industrial Ethernet		
Electrical connectors	Quantity	8
	Connector	RJ-45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	RJ-11 jack
Electrical data		
Power supply ¹⁾	Rated voltage	12 to 24 V DC
	Voltage range (incl. tolerance)	9.6 to 31.2 V DC Safe Extra Low Voltage (SELV)
	Design	Terminal block, 4 terminals
	Property	Implemented redundantly; The connected power supply must meet the requirements of NEC Class 2.
Current consumption	12 VDC	350 mA
	24 VDC	175 mA
Effective power loss		4.2 W
Overvoltage category		CAT II
Fusing		2.5 A / 125 V
Signaling contact ¹⁾	Quantity	1
	Design	Terminal block, 2 terminals
	Permitted voltage range	24 VDC
	Load capability	max. 100 mA
Permitted ambient conditions		
Ambient temperature	With operation up to 2000 m above sea level	During operation in horizontal installation position: -40 °C to +70 °C
		During operation in a different installation position: -40 °C to +70 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95% without condensation
Housing, dimensions and weight		
Design	compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP20	

9.10 Technical specifications of the SCALANCE XC208

Technical specifications	
Dimensions (W x H x D)	60 x 147 x 125 mm
Weight	520 g
Installation options	• Wall mounting • Installation on a DIN rail • Mounting on an S7-300 standard rail • Mounting on an S7-1500 standard rail
Mean time between failure (MTBF)	
MTBF (EN/IEC 61709; 40 °C)	> 48 years

¹⁾ Note the wiring rules (Page 83).

9.28 RF radiation according to NAMUR NE21

The devices listed in the scope of validity meet the following requirements regarding RF radiation:

RF radiation according to IEC 61000-4-3/NAMUR NE21	
80 MHz - 2.0 GHz	2.0 GHz - 2.7 GHz
10 V/m	3 V/m
80% AM (1kHz)	

9.29 Cable lengths

The cable lengths listed below apply to the SCALANCE XC-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

9.30 Switching properties

The switching properties listed below apply to the SCALANCE XC-200. The following device versions differ from the other SCALANCE XC-200 devices in some switching properties:

- Gigabit versions (Page 7) (suffix "G" in the type designation)
- Devices with combo ports (Page 7) (suffix "C" in the type designation)

You will find additional information on the devices in the section "Product overview (Page 21)".

Switching properties	SCALANCE XC-200	Gigabit versions/ Devices with combo ports
Aging time	Can be configured (default value: 30 seconds)	
Maximum frame size	1632	10240
Max. number of learnable addresses	8192	16000

9.30 Switching properties

Switching properties	SCALANCE XC-200	Gigabit versions/ Devices with combo ports
Response to LLDP frames		Blocking
Response to spanning tree BPDU frames		Forwarding
CoS acc. to IEEE 802.1Q		Yes
QoS priority queues	4	8
Switching technique		Store and forward
Latency		10 microseconds

Full wire speed switching			
Frame length (bytes)	Number of frames per second		
	At 100 Mbps	At 1000 Mbps	At 10000 Mbps
64	148810	1488095	14880952
128	84459	844594	8445946
256	45290	452898	4528986
512	23496	234962	2349664
1024	11973	119731	1197318
1280	9615	96153	961538
1518	8127	81274	811688

Note

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