SIEMENS

SIMATIC NET

Industrial Ethernet switches SCALANCE XR-300WG

Operating Instructions

04/2018

C79000-G8976-C454-04

Legal information

Warning notice system

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

⚠ WARNING

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

Trademarks

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

Disclaimer of Liability

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

Siemens AG
Division Process Industries and Drives
Postfach 48 48
90026 NÜRNBERG
GERMANY

C79000-G8976-C454-04
℗ 04/2018 Subject to change

Table of contents

Introduction

1

Purpose of the Operating Instructions

These operating instructions support you when installing and connecting up devices of the SCALANCE XR-300WG 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 XR324WG
- SCALANCE XR328-4C WG

Unless mentioned otherwise, the descriptions in these operating instructions refer to all devices of the SCALANCE XR-300WG product group named above in the section on validity.

Designations used

Classification	Description	Terms used
Product line	The product line includes all devices and variants of all product groups. If information applies to all product groups within the product line, the term SCALANCE X-300 is used.	SCALANCE X-300
Product group	If information applies to all devices and variants of a product group, the term SCALANCE XR-300WG is used.	SCALANCE XR-300WG
Device	If information relates to a specific device, the device name is used.	e.g. SCALANCE XR328-4C WG
Variant	For a variant of the device, the device name has the appropriate variant added to it in brackets. or the characteristic of the variant. With the variant SCALANCE XR328-4C WG (GE), all ports are capable of Gigabit Ethernet.	e.g. SCALANCE XR328-4C WG (GE) or 24 VDC variant

Additional documentation

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

You will find the supplementary documentation here:

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

Documentation on configuration

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

- SCALANCE XB-200/XC-200/XF-200BA/XP-200/XR-300WG Web Based Management
- SCALANCE XB-200/XC-200/XF-200BA/XP-200/XR-300WG Command Line Interface

You will find the configuration manuals here:

- on the data medium that ships with some products:
  - Product CD / product DVD
  - SIMATIC NET Manual Collection
- On the Internet pages of Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/24678/man).

Further documentation

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

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

You will find the system manuals here:

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

SIMATIC NET manuals

You will find the SIMATIC NET manuals here:

- On the 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)

Catalogs

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

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

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

Unpacking and checking

WARNING

Do not use any parts that show evidence of damage

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

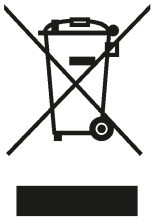
If you use damaged parts, this can lead to the following problems:

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

Use only undamaged parts.

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

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.

Security information

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

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

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For additional information on industrial security measures that may be implemented, please visit http://www.siemens.com/industrialsecurity (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 customers' exposure to cyber threats.

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

Trademarks

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

SIMATIC NET, SCALANCE, C-PLUG, OLM

Safety notices

2

Read the safety notices

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

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

⚠ CAUTION
To prevent injury, read the manual before use.

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) and FM.

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

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

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

2.1 Security recommendations

NOTICE
Information security Connect to the device and change the standard passwords for the users "admin" and "user" before you operate the device. To be able to change passwords you need to be logged in with write access to the configuration data.

To prevent unauthorized access, note the following security recommendations.

General

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

Physical access

- Restrict physical access to the device to qualified personnel.
- Lock unused physical ports on the device. Unused ports can be used to gain forbidden access to the plant.

Software (security functions)

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

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

Passwords

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

Certificates and keys

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

Secure/non-secure protocols and services

- Avoid or disable non-secure protocols and services, for example 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
  - MRP, HRP
  - IGMP snooping
  - LLDP
  - Syslog
  - RADIUS
  - DHCP Options 66/67
  - TFTP
  - GMRP and GVRP
- The following protocols provide secure alternatives:
  - HTTP → HTTPS
  - Telnet → SSH
  - SNMPv1/v2c → SNMPv3

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

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

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

Interfaces security

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

Available protocols

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

The table includes the following columns:

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

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

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

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

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

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

  Specifies whether or not the transfer is encrypted.

Protocol	Port	Port status	Factory setting	Authentication	Encryption
TELNET	TCP/23	Open (when configured)	Open	Yes	No
SSH	TCP/22	Open (when configured)	Open	Yes	Yes
HTTP	TCP/80	Open (when configured)	Open	Yes	No
HTTPS	TCP/443	Open	Open	Yes	Yes
SNMP	UDP/161	Open (when configured)	Open	Yes	Yes (when configured)

Protocol	Port	Port status	Factory setting	Authentication	Encryption
PROFINET	UDP/34964, UDP/49154 - UDP/49157	Open	Open	No	No
EtherNet/IP	TCP/44818, UDP/2222, UDP/44818	Open (when configured)	Closed (Open with Ethernet/IP variants)	No	No
DHCP	UDP/67, UDP/68	Open (when configured)	Closed	No	No

Description of the device

3

3.1 Product overview

Article numbers

Device	Properties	Article number
SCALANCE XR324WG	**24 VDC variant** • 24 x 10/100 Mbps RJ-45 ports • 2 x 24 VDC, connector for the power supply on the front	6GK5 324-0BA00-2AR3
	240 V AC variant • 24 x 10/100 Mbps RJ-45 ports • 1 x 100 to 240 VAC, power supply connector at rear	6GK5 324-0BA00-3AR3
SCALANCE XR328-4C WG	**24 VDC variant** • 24 x 10/100 Mbps RJ-45 ports • 4 x combo ports (4 x 10/100/1000 Mbps RJ-45 ports/4 x pluggable transceiver slots with 1000 Mbps) • 2 x 24 VDC, connector for the power supply on the front	6GK5 328-4FS00-2AR3
	240 V AC variant • 24 x 10/100 Mbps RJ-45 ports • 4 x combo ports (4 x 10/100/1000 Mbps RJ-45 ports/4 x pluggable transceiver slots with 1000 Mbps) • 1 x 100 to 240 VAC, power supply connector at rear	6GK5 328-4FS00-3AR3
	24 VDC Variant • 24 x 10/100 Mbps RJ-45 ports • 4 x combo ports (4 x 10/100/1000 Mbps RJ-45 ports/4 x pluggable transceiver slots with 1000 Mbps) • 2 x 24 VDC, connector for the power supply on the front • Reduced approvals	6GK5 328-4FS00-2RR3
	240 V AC variant • 24 x 10/100 Mbps RJ-45 ports • 4 x combo ports (4 x 10/100/1000 Mbps RJ-45 ports/4 x pluggable transceiver slots with 1000 Mbps) • 1 x 100 to 240 VAC, power supply connector at rear • Reduced approvals	6GK5 328-4FS00-3RR3

Device	Properties	Article number
	24 VDC variant (GE) [1)] • 24 x 10/100/1000 Mbps RJ-45 ports • 4 x combo ports (4 x 10/100/1000 Mbps RJ-45 ports/4 x pluggable transceiver slots with 1000 Mbps) • 2 x 24 VDC, connector for the power supply on the front	6GK5 328-4SS00-2AR3
	240 VAC variant (GE) [1)] • 24 x 10/100/1000 Mbps RJ-45 ports • 4 x combo ports (4 x 10/100/1000 Mbps RJ-45 ports/4 x pluggable transceiver slots with 1000 Mbps) • 1 x 100 to 240 VAC, power supply connector at rear	6GK5 328-4SS00-3AR3

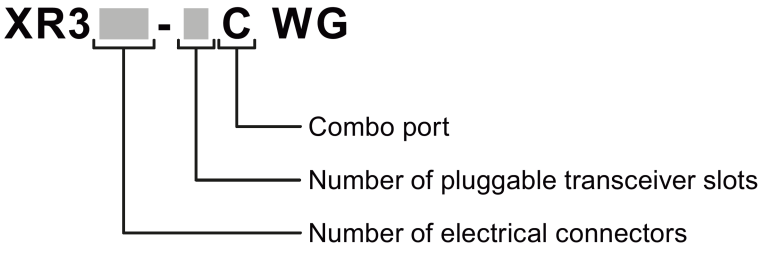
[1)] variant SCALANCE XR328-4C WG (GE): With the variant SCALANCE XR328-4C WG (GE), all ports are capable of Gigabit Ethernet.

Factory settings: Industrial Ethernet profile

- Industrial Ethernet protocol: PROFINET
- Base bridge mode: 802.1Q VLAN bridge
- Redundancy mechanism: RSTP
- Trust mode: Trust CoS-DSCP
- IGMP Snooping/IGMP Querier: Off
- IPv4 Address Collision Detection: Never give up

Type designation

The type designation of a SCALANCE XR-300WG is made up of several parts that have the following meaning:



Components of the product

The following components are supplied with a SCALANCE XR-300WG:

- One device
- One product DVD with documentation and software

The following components are also supplied with a 24 VDC variant:

- Two 2-terminal blocks for the power supply 24 V DC

The following components are also supplied with a SCALANCE XR328-4C WG:

- 4 covers for the pluggable transceiver slots

3.1.1 Accessories

The following accessories are available for SCALANCE XR-300WG:

Cable

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

Power cable

Type	Description	Article number
Power cable 100 to 240 VAC, straight, 3 m	For Germany, France, Spain, Netherlands, Belgium, Sweden, Austria, Finland	6ES7 900-0AA00-0XA0
Power cable 100 to 240 VAC, straight, 3 m	For Great Britain	6ES7 900-0BA00-0XA0
Power cable 100 to 240 VAC, straight, 3 m	For Switzerland	6ES7 900-0CA00-0XA0
Power cable 100 to 240 VAC, straight, 3 m	For America	6ES7 900-0DA00-0XA0
Power cable 100 to 240 VAC, straight, 3 m	For Italy	6ES7 900-0EA00-0XA0
Power cable 100 to 240 VAC, straight, 3 m	For China	6ES7 900-0FA00-0XA0

Pluggable transceiver SFP (1000 Mbps)

Type	Property	Article number
SFP992-1	1 x 1000 Mbps, LC port optical for glass FO cable (multimode), up to max. 750 m	6GK5 992-1AL00-8AA0
SFP992-1LD	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 10 km	6GK5 992-1AM00-8AA0
SFP992-1LH	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 40 km	6GK5 992-1AN00-8AA0
SFP992-1LH+	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 70 km	6GK5 992-1AP00-8AA0
SFP992-1ELH	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 120 km	6GK5 992-1AQ00-8AA0

Note

Restriction for pluggable transceivers

The maximum ambient temperature changes if you use pluggable transceivers:

- If you use pluggable transceivers of the types LH, LH+ or ELH, the maximum ambient temperature is reduced to 50 °C.

For the values of the ambient temperature without pluggable transceivers, refer to the section "Technical specifications (Page 49)".

Bidirectional plug-in transceiver SFP

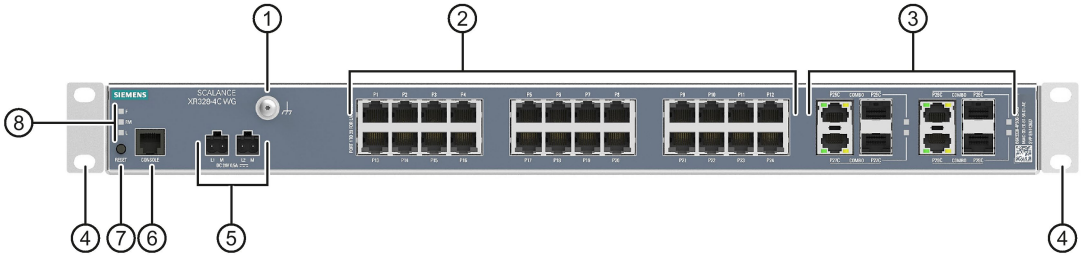
Bidirectional plug-in transceivers feature only one fiber connection. They transmit and receive on two different wavelengths. To establish a connection, you need two matching bidirectional SFPs. The connected SFPs must respectively transmit on the wavelength at which the connection partner receives.

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

3.2 Device views

3.2.1 Device view of a 24 VDC variant

The following figure shows an overview of the components of a 24 VDC variant of a SCALANCE XR-300WG based on the example of a SCALANCE XR328-4C WG.

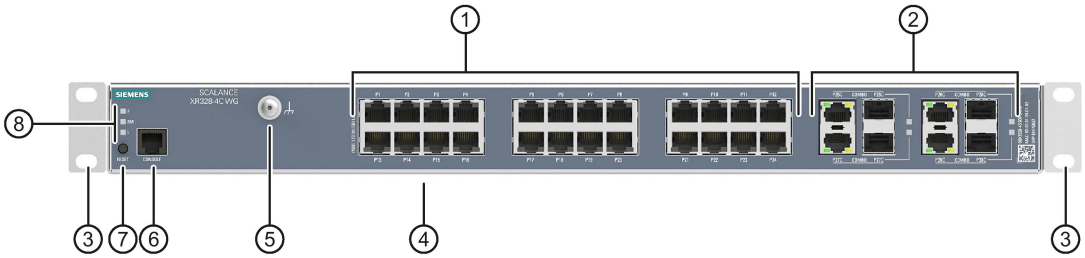


① Grounding screw
② Electrical ports with port LEDs
③ Combo port ports with port LEDs
④ Integrated brackets for 19" rack mounting
⑤ 24 VDC power supply, redundant
⑥ Serial interface
⑦ "RESET" button
⑧ LED display

- The "F" LED for faults
- The "RM" LED for the redundancy manager function
- LED "L" for the power supply

3.2.2 Device view of 240 VAC variant

The following figure shows an overview of the components of a 240 VAC variant of a SCALANCE XR-300WG based on the example of a SCALANCE XR328-4C WG.



① Electrical ports with port LEDs
② Combo port ports with port LEDs
③ Integrated brackets for 19" rack mounting
④ 240 V AC power supply (rear)
⑤ Grounding screw
⑥ Serial interface
⑦ "RESET" button
⑧ LED display

- The "F" LED for faults
- The "RM" LED for the redundancy manager function
- LED "L" for the power supply

3.3 LED display

3.3.1 Fault LED "F"

The fault LED "F" indicates the incorrect functioning of the device.

LED color	LED status	Meaning
-	Off	The device is switched off or has not detected a problem.
Red	Lit	The device has detected a problem. Using the WBM and CLI, you can set when the device signals an error and which errors should be signaled.

3.3.2 "RM" LED

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

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

3.3.3 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.

3.3.4 Port LEDs "P"

The port LEDs indicate the status of the ports.

RJ-45 ports

Each RJ-45 port has 2 integrated LEDs.

The upper green LED shows the status of the link.

LED color	LED status	Meaning
Green	Lit	link exists
-	Off	No link exists

The lower yellow LED shows the status of data reception.

LED color	LED status	Meaning
Yellow	Flashing	Data transfer at the port
-	Off	No data transfer at the port

Pluggable transceiver slots

There is an LED for each plug-in transceiver slot.

LED color	LED status	Meaning
Green	Lit	Link exists
Yellow	Flashing	Data transfer at the port
-	Off	No link exists

3.4 RESET button

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

Position

The "RESET" button is located on the front of the SCALANCE XR-300WG.

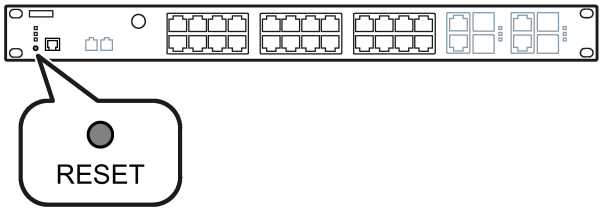


Figure 3-1 Position of the "RESET" button on the SCALANCE XR-300WG

Resetting the device to factory defaults

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

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

Requirement

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

Note

Reset despite disabled "RESET" button

If you have disabled the "Reset to Factory Defaults"function for the "RESET" button in the configuration, this does not apply during the startup phase, see section "Restoring the factory settings (Page 48)"

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 "RESET" 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 Combo ports

Characteristics

Combo port is the name for two communication ports. A combo port has the two following jacks:

- a fixed RJ-45 port
- an SFP transceiver slot that can be equipped individually

Of these two ports, only one can ever be active. Using the mode, you can decide how the ports are prioritized.

The port name is the same on both jacks of the combo port, for example "PxC".

There is an LED for each plug-in slot. The LEDs for the RJ-45 ports are located directly at the ports. THE LEDs for the pluggable transceiver slots are located to the right and labeled with the port name "PxC"

Setting the mode

The following modes can be configured for a combo port:

- Mode 1: **auto**

  The SFP transceiver port has priority. As soon as an SFP transceiver is plugged in, an existing connection at the fixed RJ-45 port is terminated. If no SFC transceiver is plugged in, a connection can be established via the fixed RJ-45 port.

- Mode 2: **rj45**

  The fixed RJ-45 port is independent of the SFP transceiver port.

- Mode 3: **sfp**

  The pluggable transceiver port is used independent of the fixed RJ-45 port.

The factory setting for the combo ports is mode 1: auto

You configure the mode with Web Based Management or the Command Line Interface.

Installation

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 40 °C, the temperature of the device housing may be higher than 70 °C. The device must therefore be installed so that it is only accessible to service personnel or users that are aware of the reason for restricted access and the required safety measures at an ambient temperature higher than 40 °C.

⚠ WARNING

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

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

WARNING

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

Safety notices for use according to ATEX and IECEx

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

WARNING

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

WARNING

If the temperature of the cable or housing socket 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 50 °C to 60 °C, only use cables with a permissible operating temperature of at least 85 °C.

Safety notices when using according to FM

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

WARNING

To fulfill the requirements of the FM approval rack mounting is only possible in a vent free, tool-secured enclosure.

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.

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.

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

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

WARNING

The devices are "open equipment" acc. to the standard UL 61010-2-201. To fulfill requirements for safe operation with regard to mechanical stability, flame retardation, stability, and protection against contact, the following alternative types of installation are specified:

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

WARNING

If the cable or housing socket exceeds 70 °C or the branching point of the cables exceeds 60 °C, special precautions must be taken. If the equipment is operated in an air ambient in excess of 40 °C, only use cables with admitted maximum operating temperature of at least 80 °C.

Further 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 chapter "Introduction", in the section "Further documentation".

4.2 19" rack mounting

Mounting

⚠ CAUTION
Risk of injury if subjected to irregular mechanical strain
The device must be mounted in the 19" rack so that even if there is irregular mechanical strain, no dangerous situation can result.

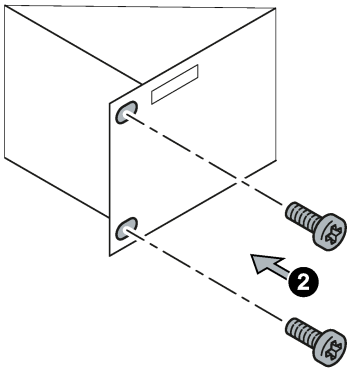


Figure 4-1 19" rack mounting

To install the device in a 19" rack, follow the steps below:

1. Position the device at the required location in the 19" rack.
2. Screw the two brackets to the 19" rack in each case with 2 securing screws ②.
3. Connect the electrical connecting cables, refer to the section "Connecting up (Page 35)".

Uninstalling

To remove the device from a 19" rack, follow the steps below:

1. Disconnect all connected cables.
2. Undo the securing screws on the mounting brackets
3. Remove the device from the 19" rack.

See also

Technical specifications (Page 49)

NOTICE

Rack-mount instructions

A) Elevated Operating Ambient - If installed in a closed or multi-unit rack, the operating ambient temperature of the rack environment may be greater than the room ambient. Therefore consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e. g. use of power strips).

4.3 Inserting and removing pluggable transceivers

4.3.1 General notes for SFP transceivers

⚠WARNING

Use only approved SFP transceivers

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

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

Use only approved pluggable transceivers.

Note

Plugging and pulling during operation

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

Documentation for SFP transceivers

You will find detailed information in the operating instructions of the pluggable transceivers, see the chapter "AUTOHOTSPOT" section "Additional documentation".

4.3.2 Using a pluggable transceiver (SFP)

Follow the steps below to insert a pluggable transceiver:

1. Remove the sealing plug of the pluggable transceiver slot.
2. Close the clip of the pluggable transceiver.
3. Insert the pluggable transceiver in the pluggable transceiver slot until you hear it engage.

   The pluggable transceiver is then firmly secured.
4. Insert the connecting cable into the pluggable transceiver until you hear it engage.

   The connecting cable is then firmly secured.

4.3.3 Removing a pluggable transceiver (SFP)

Notes on deinstallation

CAUTION

Risk of burns due to the high temperatures of the pluggable transceiver

The pluggable transceivers can be plugged and pulled during operation. Leave the transceiver to cool down as much as possible.

Procedure

Follow the steps below to remove a pluggable transceiver:

1. Remove the connecting cable of the pluggable transceiver.
2. Open the clip of the pluggable trabsceiver.
3. Remove the pluggable transceiver from the pluggable transceiver slot.

Note

Do not use force

It must be possible to remove the pluggable transceiver easily and without applying any force.

4. Close the pluggable transceiver slot with a sealing plug.

Connecting up

5

5.1 Safety when connecting up

Safety notices

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

If using power sources according to NEC Class 2 or LPS, please note the following information:

⚠ WARNING

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

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

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

⚠ WARNING

EXPLOSION HAZARD

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

⚠ WARNING

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

Note

No light power measurement (PROFINET diagnostics)

The devices do not support diagnostics with light power measurement.

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

WARNING

EXPLOSION HAZARD

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

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

If you use the device under HazLoc or 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

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

Explosion hazard

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

Safety notices for use according to ATEX and IECEx

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

WARNING

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

WARNING

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

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

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

5.2 Industrial Ethernet

5.2.1 Electrical

Note

Strain relief for the Ethernet cables

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

R-45 connector technology

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

Pin assignment

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

Pin number	Assignment		R-45 connector
	10 / 100 Mbps	10 / 100/ 1000 Mbps	
Pin 8	n. c.	D4-	 12345678
Pin 7	n. c.	D4+	
Pin 6	TD-	D2-	
Pin 5	n. c.	D3-	
Pin 4	n. c.	D3+	
Pin 3	TD+	D2+	
Pin 2	RD-	D1-	
Pin 1	RD+	D1+	

MDI / MDI-X autocrossover

With the MPI/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 is also turned off. Then use a crossover cable.

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. Close unused optical sockets and plugs as well as pluggable transceivers and slots with the supplied protective caps. Remove the protective caps only immediately before you use the plug-in connection.

5.2.2.1 Connection_System_LC

LC connector technology

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

Pluggable transceiver slot/ plugged in transceiver

5.3 Wiring rules

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

Wiring rules for ...		Spring-loaded terminals
connectable cable cross sections for flexible cables ...	without wire end ferrule	0.75 - 2.5 mm^2
		AWG: 20 - 14
	with wire end ferrule**	0.75 - 2.5 mm^2
		AWG: 20 - 14
	with TWIN wire end ferrule**	0.75 - 1 mm^2
		AWG: 20 - 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 24 VDC power supply

Safety extra low voltage

⚠ WARNING

Power supply

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

NOTICE

Suitable fusing for the power supply cables

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

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

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

CAUTION

Overvoltage protection for the power supply cables

If SCALANCE XR-300WGs are supplied over long 24 V power supply lines or networks, measures are necessary to prevent interference by strong electromagnetic pulses on the supply lines. These can result, for example, due to lightning or switching of large inductive loads.

One of the tests used to attest the immunity of the SCALANCE XR-300WG to electromagnetic interference is the "surge immunity test" according to EN 61000-4-5. This test requires overvoltage protection for the power supply lines. The following type is, for example, suitable:

Dehn Blitzductor BVT AVD 24, order number 918 422

Manufacturer: DEHN + SÖHNE GmbH + Co. KG, Hans Dehn Str. 1, Postfach 1640, D-92306 Neumarkt, Germany.

Information on the power supply

- The power supply is connected using two 2-pin plug-in terminal blocks). The terminal blocks ship with the device.
- 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 SCALANCE XR-300WG alone.
- The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up. The two power inputs are non-floating.
- Note the wiring rules.

Position and assignment

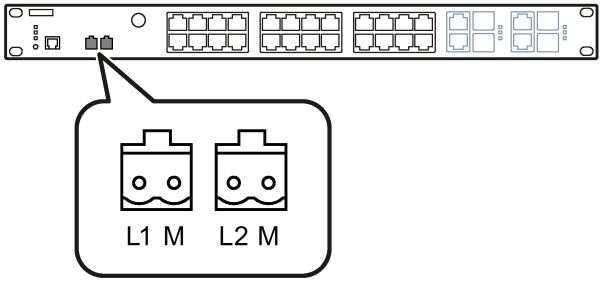


Figure 5-1 Position of the terminal block on the SCALANCE XR-300WG

Contact	Assignment	Contact	Assignment
L1	+24 VDC	L2	+24 VDC
M	Ground	M	Ground

5.5 Power supply 240 VAC

Notes on the power supply

⚠WARNING

Danger from line voltage for devices with a 240 VAC power supply

This device can only function correctly and safely if it is transported, stored, set up, and installed correctly, and operated and maintained as recommended.

Connecting and disconnecting may only be performed by an electrical specialist.

Connect or disconnect power supply cables only when the power is turned off!

⚠WARNING

Devices with a 240 VAC voltage supply do not have an approval for hazardous areas

Devices with a 240 VAC power supply are not approved for use in hazardous areas according to ATEX, IECEx, FM and UL HazLoc.

NOTICE

Securing cables with dangerous voltage

Make sure that the connector cannot be released accidentally by pulling on the connecting cable. Lay the cables in cable ducts or cable channels and secure the cables, where necessary, with cable ties.

Note

Use in IT networks

When used in IT networks, the power supply 240 VAC also applies to the connected IT network: Phase-to-phase.

Information on the power supply

- The power supply is connected using an IEC plug C13/C14. The device installation plug C14 is located on the rear panel of the device.
- The device installation plug is three pin with with neutral conductor ①, protective conductor ② and external conductor ③.
- The device is grounded via the power cable.
- The power supply is single (1 x 240 VAC).
- To connect the power supply, use the power cable listed in the section "Accessories (Page 19)".

Position

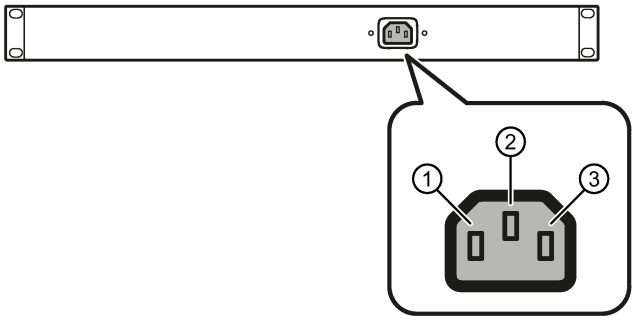


Figure 5-2 Position of the device installation connector

5.6 Serial interface

Information on the serial interface

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

Position and assignment

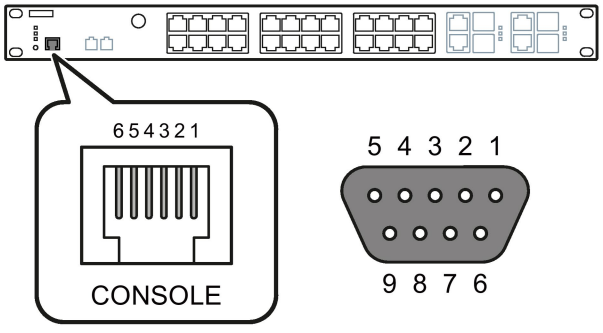


Figure 5-3 Position and pin assignment of the serial interface (RJ-11 socket) on the SCALANCE XR-300WG and pin assignment of the D-sub socket

Assignment of the connecting cable

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

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

Note

Pin assignment of the RJ-11 jack on the device

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

5.7 Functional ground

Grounding options

Grounding (functional ground) is via the mounting bracket on the device or via the grounding screw the front of the device.

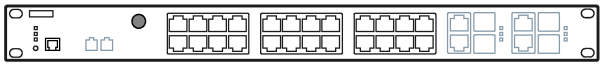


Figure 5-4 Position of the grounding screw on the SCALANCE XR-300WG

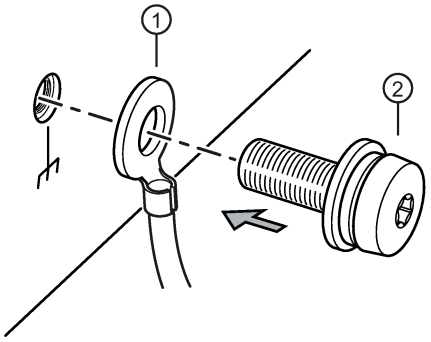
With 240 VAC variants the device is grounded via the power cable.

Functional ground

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

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

Connecting up functional ground



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

To connect the functional ground, use a copper cable of category 20 AWG or a cable with a cross-section ≥ 0.75 mm^2.

Follow the steps below to connect the functional ground:

1. Loosen the grounding screw.
2. Put the grounding terminal ①, and the grounding screw ② together as shown in the drawing.
3. Tighten the grounding screw ② with a maximum tightening torque of 1.5 Nm.

Protective earth/functional ground

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

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

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

Upkeep and maintenance

6

6.1 Downloading new firmware using TFTP without WBM and CLI

Firmware

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

Procedure with Microsoft Windows

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

Follow the steps below to load new firmware using TFTP:

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

   Note

   This time only lasts a few seconds.

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

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

   Note

   You can enable TFTP in Microsoft Windows as follows:

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

6.2 Restoring the factory settings

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

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

With the "RESET" button

Restoring the factory settings during the startup phase

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

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

1. Turn off the power to the device.
2. Now press the "RESET" 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 reset the device to the factory defaults during operation, see section "RESET button (Page 24)".

Via the configuration

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

Technical specifications

7

7.1 Technical specifications of the SCALANCE XR324WG

7.1.1 24 VDC variant

The following technical specifications apply to the 24 VDC variant of the SCALANCE XR324WG.

Technical specifications		
Attachment to Industrial Ethernet		
Electrical connectors	Quantity	24
	Connector	RJ-45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	RJ-11 jack
Electrical data		
Power supply	Design	Terminal block, 2 terminals
	Rated voltage	24 VDC
	Voltage range	19.2 to 28.8 VDC Safe Extra Low Voltage (SELV)
	Cable cross section	≥ 0.75 mm^2 (20 AWG)
	Property	Implemented redundantly
Fusing		5 A / at least 60 V Or power supply with LPS or NEC class 2
Current consumption		300 mA
Effective power loss		7.2 W
Permitted ambient conditions		
Ambient temperature	During operation up to 3000 m	0 °C to +60 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	Rack	
Housing material	Metal	
Degree of protection	IP30	
Dimensions (W x H x D)	482.6 x 43.6 x 127 mm	

Technical specifications	
Weight	2700 g
Installation options	19" rack mounting
Mean time between failure (MTBF)	
MTBF (EN/IEC 61709; 40 °C)	> 56 years

7.1.2 240 VAC variant

The following technical specifications apply to the 240 VAC variant of the SCALANCE XR324WG.

Technical specifications		
Attachment to Industrial Ethernet		
Electrical connectors	Quantity	24
	Connector	RJ-45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Diagnostics interface		
Serial interface	Quantity	1
	Connector	RJ-11 jack
Electrical data		
Power supply	Design	Socket, 3 pin
	Rated voltage	100 to 240 VAC
	Voltage range	85 to 264 VAC
	Frequency	50 Hz to 60 Hz
	Frequency range	47 Hz to 63 Hz
	Properties	Not implemented redundantly
Fusing		4 A / 250 V
Current consumption	At 100 VAC	200 mA
	At 240 VAC	100 mA
Effective power loss		9 W
Permitted ambient conditions		
Ambient temperature	During operation up to 3000 m	0 ℃ to +60 ℃
	During storage	-40 ℃ to +85 ℃
	During transportation	-40 ℃ to +85 ℃
Relative humidity	During operation at 25 ℃	≤ 95 % no condensation
Housing, dimensions and weight		
Design	Rack	
Housing material	Metal	
Degree of protection	IP30	

Technical specifications	
Dimensions (W x H x D)	482.6 x 43.6 x 177 mm
Weight	3300 g
Installation options	19" rack mounting
Mean time between failure (MTBF)	
MTBF (EN/IEC 61709; 40 °C)	> 50 years

7.2 Technical specifications of the SCALANCE XR328-4C WG

7.2.1 24 VDC variant

The following technical specifications apply to the 24 VDC variant of the SCALANCE XR328-4C WG.

Technical specifications			
Attachment to Industrial Ethernet			
Electrical connectors		Quantity	24
		Connector	RJ-45 jack
		Properties	Half/full duplex, MDI-X pinning
		Transmission speed	10 / 100 Mbps
Combo ports	Quantity		4
	Electrical connectors	Quantity	4
		Connector	RJ-45 jack
		Properties	Half/full duplex, MDI-X pinning
		Transmission speed	10 / 100/ 1000 Mbps
	Slots for pluggable transceivers	Quantity	4
		Connector	SFP transceiver
		Transmission speed	1000 Mbps
Diagnostics interface			
Serial interface		Quantity	1
		Connector	RJ-11 jack
Electrical data			
Power supply		Design	Terminal block, 2 terminals
		Rated voltage	24 VDC
		Voltage range	19.2 to 28.8 VDC Safe Extra Low Voltage (SELV)
		Cable cross section	≥ 0.75 mm^2 (20 AWG)
		Property	Implemented redundantly
Fusing			5 A / at least 60 V Or power supply with LPS or NEC class 2

Technical specifications		
Current consumption		500 mA
Effective power loss		12 W
Permitted ambient conditions		
Ambient temperature [1]	During operation up to 3000 m	0 ℃ to +60 ℃
	During storage	-40 ℃ to +85 ℃
	During transportation	-40 ℃ to +85 ℃
Relative humidity	During operation at 25 ℃	≤ 95 % no condensation
Housing, dimensions and weight		
Design	Rack	
Housing material	Metal	
Degree of protection	IP30	
Dimensions (W x H x D)	482.6 x 43.6 x 127 mm	
Weight	2800 g	
Installation options	19" rack mounting	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 43 years	

[1] Depending on which pluggable transceiver you use, the maximum ambient temperature can change, see section "Accessories (Page 19)".

7.2.2 240 VAC variant

The following technical specifications apply to the 240 VAC variant of the SCALANCE XR328-4C WG.

Technical specifications			
Attachment to Industrial Ethernet			
Electrical connectors		Quantity	24
		Connector	RJ-45 jack
		Properties	Half/full duplex, MDI-X pinning
		Transmission speed	10 / 100 Mbps
Combo ports	Quantity		4
	Electrical connectors	Quantity	4
		Connector	RJ-45 jack
		Properties	Half/full duplex, MDI-X pinning
		Transmission speed	10 / 100/ 1000 Mbps
	Slots for pluggable transceivers	Quantity	4
		Connector	SFP transceiver
		Transmission speed	1000 Mbps

Technical specifications		
Diagnostics interface		
Serial interface	Quantity	1
	Connector	RJ-11 jack
Electrical data		
Power supply	Design	Socket, 3 pin
	Rated voltage	100 to 240 VAC
	Voltage range	85 to 264 VAC
	Frequency	50 Hz to 60 Hz
	Frequency range	47 Hz to 63 Hz
	Properties	Not implemented redundantly
Fusing		4 A / 250 V
Current consumption	At 100 VAC	300 mA
	At 240 V AC	150 mA
Effective power loss		15 W
Permitted ambient conditions		
Ambient temperature [1)]	During operation up to 3000 m	0 °C to +60 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95 % no condensation
Housing, dimensions and weight		
Design	Rack	
Housing material	Metal	
Degree of protection	IP30	
Dimensions (W x H x D)	482.6 x 43.6 x 177 mm	
Weight	3400 g	
Installation options	19" rack mounting	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 39 years	

[1)] Depending on which pluggable transceiver you use, the maximum ambient temperature can change, see section "Accessories (Page 19)".

7.3 Technical specifications of the SCALANCE XR328-4C WG (GE)

7.3.1 24 VDC variant

The following technical specifications apply to the 24 VDC variant of the SCALANCE XR328-4C WG (GE).

Technical specifications			
Attachment to Industrial Ethernet			
Electrical connectors		Quantity	24
		Connector	RJ-45 jack
		Properties	Half/full duplex, MDI-X pinning
		Transmission speed	10 / 100/ 1000 Mbps
Combo ports	Quantity		4
	Electrical connect-ors	Quantity	4
		Connector	RJ-45 jack
		Properties	Half/full duplex, MDI-X pinning
		Transmission speed	10 / 100/ 1000 Mbps
	Slots for pluggable transceivers	Quantity	4
		Connector	SFP transceiver
		Transmission speed	1000 Mbps
Diagnostics interface			
Serial interface		Quantity	1
		Connector	RJ-11 jack
Electrical data			
Power supply		Design	Terminal block, 2 terminals
		Rated voltage	24 VDC
		Voltage range	19.2 to 28.8 VDC Safe Extra Low Voltage (SELV)
		Cable cross section	≥ 0.75 mm^2 (20 AWG)
		Property	Implemented redundantly
Fusing			5 A / at least 60 V Or power supply with LPS or NEC class 2
Current consumption			900 mA
Effective power loss			21.6 W
Permitted ambient conditions			
Ambient temperature [1)]		During operation up to 3000 m	0 °C to +60 °C
		During storage	-40 °C to +85 °C
		During transportation	-40 °C to +85 °C
Relative humidity		During operation at 25 °C	≤ 95 % no condensation

Technical specifications	
Housing, dimensions and weight	
Design	Rack
Housing material	Metal
Degree of protection	IP30
Dimensions (W x H x D)	482.6 x 43.6 x 127 mm
Weight	2800 g
Installation options	19" rack mounting
Mean time between failure (MTBF)	
MTBF (EN/IEC 61709; 40 °C)	> 33 years

[1] Depending on which pluggable transceiver you use, the maximum ambient temperature can change, see section "Accessories (Page 19)".

7.3.2 240 VAC variant

The following technical specifications apply to the 240 VAC variant of the SCALANCE XR328-4C WG (GE).

Technical specifications			
Attachment to Industrial Ethernet			
Electrical connectors		Quantity	24
		Connector	RJ-45 jack
		Properties	Half/full duplex, MDI-X pinning
		Transmission speed	10 / 100/ 1000 Mbps
Combo ports	Quantity		4
	Electrical connectors	Quantity	4
		Connector	RJ-45 jack
		Properties	Half/full duplex, MDI-X pinning
		Transmission speed	10 / 100/ 1000 Mbps
	Slots for pluggable transceivers	Quantity	4
		Connector	SFP transceiver
		Transmission speed	1000 Mbps
Diagnostics interface			
Serial interface		Quantity	1
		Connector	RJ-11 jack

Technical specifications		
Electrical data		
Power supply	Design	Socket, 3 pin
	Rated voltage	100 to 240 VAC
	Voltage range	85 to 264 VAC
	Frequency	50 Hz to 60 Hz
	Frequency range	47 Hz to 63 Hz
	Properties	Not implemented redundantly
Fusing		4 A / 250 V
Current consumption	At 100 VAC	400 mA
	At 240 VAC	200 mA
Effective power loss		27 W
Permitted ambient conditions		
Ambient temperature	During operation up to 3000 m	0 °C ... +60 °C
	During storage	-40 ℃ to +85 ℃
	During transportation	-40 ℃ to +85 ℃
Relative humidity	During operation at 25 ℃	≤ 95 % no condensation
Housing, dimensions and weight		
Design	Rack	
Housing material	Metal	
Degree of protection	IP30	
Dimensions (W x H x D)	482.6 x 43.6 x 177 mm	
Weight	3400 g	
Installation options	19" rack mounting	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 31 years	

7.4 Mechanical stability (in operation)

The following technical specifications apply to the following devices:

- SCALANCE XR324WG
- SCALANCE XR328-4C WG

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

7.5 Cable lengths

The cable lengths listed below apply to the SCALANCE XR-300WG.

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

7.6 Switching properties

The switching properties listed below apply to the SCALANCE XR-300WG.

Switching properties		
Aging time	Can be configured (default value: 30 seconds)	
Maximum frame size	2048	
Max. number of learnable addresses	16382	
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 XR-300WG modules connected in a line influences the frame delay. When a frame passes through IE switches of the SCALANCE XR-300WG product line, it is delayed by the store and forward function of the device:

- with a 64 byte frame length by approx. 10 microseconds (at 100 Mbps)
- with a 1500 byte frame length by approx. 130 microseconds (at 100 Mbps)

This means the more devices of the SCALANCE XR-300WG product line that the frame passes through, the longer the frame delay.

Dimension drawings

8

Note

Dimensions are specified in mm.

Front view of the SCALANCE XR-300WG

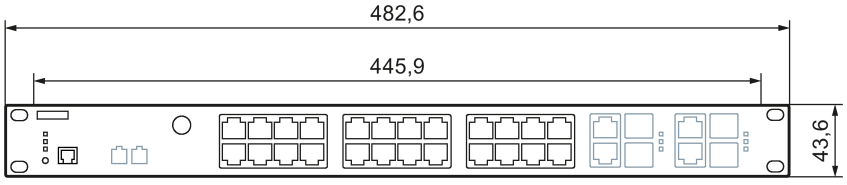


Figure 8-1 Width and height

SCALANCE XR-300WG 24 VDC variant view from above

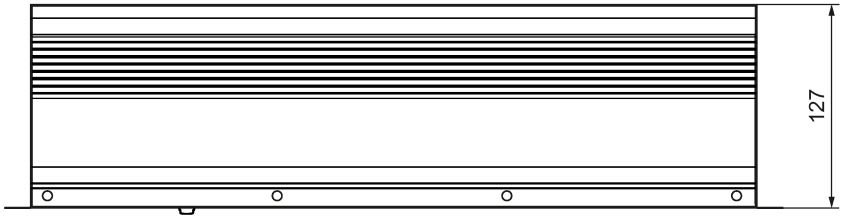


Figure 8-2 Depth

SCALANCE XR-300WG 240 VAC variant view from above

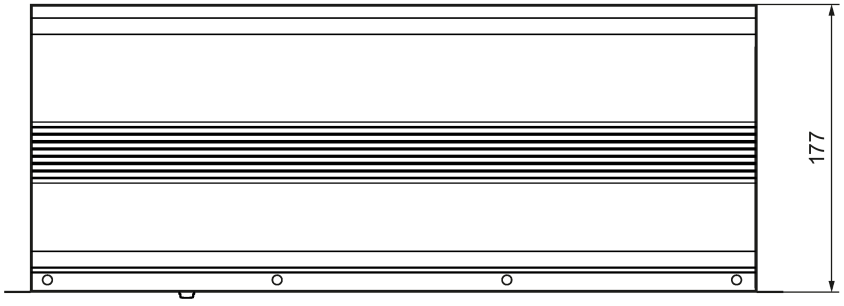


Figure 8-3 Depth

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 (http://support.automation.siemens.com/WW/view/en/33118389/134200).

EC declaration of conformity

CE

The SIMATIC NET products described in these operating instructions meet the requirements and safety objectives of the following EC directives and comply with the harmonized European standards (EN) which are published in the official documentation of the European Union.

- **2014/34/EU (ATEX explosion protection directive)**

  Directive of the European Parliament and the Council of 26 February 2014 on the approximation of the laws of the member states concerning equipment and protective systems intended for use in potentially explosive atmospheres, official journal of the EU L96, 29/03/2014, pages. 309-356

- **2014/30/EU (EMC)**

  EMC directive of the European Parliament and of the Council of February 26, 2014 on the approximation of the laws of the member states relating to electromagnetic compatibility; official journal of the EU L96, 29/03/2014, pages. 79-106

- **2011/65/EU (RoHS)**

  Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

You will find the EC declaration of conformity for these products on the Internet pages of Siemens Industry Online Support (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

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

ATEX (explosion protection directive)

WARNING

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

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

You will find this document

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

Enter the document identification number C234 as the search term.

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

ATEX classification:

II 3 G Ex nA IIC T4 Gc

KEMA 07ATEX0145 X

The products meet the requirements of the following standards:

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

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

Note

Only variants with 24 VDC power supply meet the requirements of this approval.

IECEx

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

IECEx classification:

Ex nA IIC T4 Gc

DEK 14.0025X

The products meet the requirements of the following standards:

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

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

Note

Only variants with 24 VDC power supply meet the requirements of this approval.

EMC directive (electromagnetic compatibility)

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

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

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

RoHS

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

Applied standard:

- EN 50581

FM

The product meets the requirements of the standards:

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

Note

Only variants with 24 VDC power supply meet the requirements of this approval.

cULus approval for industrial control equipment

cULus Listed IND. CONT. EQ.

Underwriters Laboratories Inc. complying with

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

Report no. E85972

cULus Approval for Information Technology Equipment

cULus Listed I. T. E.

Underwriters Laboratories Inc. complying with

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

Report no. E115352

cULus Approval Hazardous Location

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

Underwriters Laboratories Inc. complying with

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

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

Report no. E240480

Note

Only variants with 24 VDC power supply meet the requirements of this approval.

Safety of electrical equipment

In the version put into circulation by Siemens AG, the SIMATIC NET products described in these Operating Instructions conform to the regulations of the following European directive:

- EN 60950-1
  Information technology equipment - Safety - Part 1: General requirements

RCM

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

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)

Customs union of Russia, Belarus and Kazakhstan

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

FDA and IEC marks

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

Device	Fulfills FDA and IEC requirements
SCALANCE XR324WG	-
SCALANCE XR328-4C WG	With modular devices, the marking is on the pluggable transceivers.

Figure A-1 FDA and IEC approvals

CAUTION

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

Installation guidelines

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

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

WARNING

Personal injury and property damage can occur

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

Only use expansions that are approved for the system.

Note

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

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

Index

R

S

W