

SIEMENS

SIMATIC NET

Industrial Ethernet switches SCALANCE XR-100WG

Operating Instructions

Introduction

Safety notices

1

Description of the device

2

Installation and disassembly

3

Connecting up

4

Upkeep and maintenance

5

Technical specifications

6

Dimension drawings

7

Approvals

A

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.

Introduction

Purpose of the Operating Instructions

These operating instructions support you when installing and connecting up devices of the SCALANCE XR-100WG product group.

Validity of the Operating Instructions

These operating instructions apply to the following devices:

- SCALANCE XR108-2PoE WG
- SCALANCE XR124WG

Unless mentioned otherwise, the descriptions in these operating instructions refer to all devices of the SCALANCE XR-100WG 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-100 is used.	SCALANCE X-100
Product group	If information applies to all devices and variants of a product group, the term SCALANCE XR-100WG is used.	SCALANCE XR-100WG
Device	If information relates to a specific device, the device name is used.	SCALANCE XR124WG
Device group	If an item of information applies to all SCALANCE XR-100WG with Power over Ethernet, the following terms are used. You can recognize the PoE variants by the suffix "PoE" in the type designation.	SCALANCE XR-100PoE WG, PoE variants
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.	e.g. SCALANCE XR124WG (24 VDC) 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>)

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>)

Security information

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.

For additional information on industrial security measures that may be implemented, please visit

<https://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 customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

<https://www.siemens.com/cert> (<https://www.siemens.com/cert>).

Catalogs

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

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

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

Device defective

If a fault develops, send the device to your SIEMENS representative for repair. Repairs on-site are not possible.

Recycling and disposal



The products are low in pollutants, can be recycled and meet the requirements of the WEEE directive 2012/19/EU for the disposal of electrical and electronic equipment.

Do not dispose of the products at public disposal sites.

For environmentally friendly recycling and the disposal of your old device contact a certified disposal company for electronic scrap or your Siemens contact (Product return (<https://support.industry.siemens.com/cs/ww/en/view/109479891>)).

Note the different national regulations.

Trademarks

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

SCALANCE, C-PLUG, OLM

Table of contents

	Introduction	3
1	Safety notices	9
2	Description of the device	11
2.1	Product overview	11
2.2	Device views	12
2.2.1	24 V DC variant	12
2.2.2	240 V AC variant	13
2.2.3	SCALANCE XR108-2PoE WG	13
2.3	Accessories	13
2.4	LED display	16
2.4.1	Fault LED "F"	16
2.4.2	"OVERLOAD" LED	17
2.4.3	LED "L"	17
2.4.4	Port LEDs "P"	17
2.5	Power over Ethernet	17
2.5.1	Power and voltage range according to the standard	18
2.5.2	PoE properties of the devices	18
2.5.3	Voltage transmission and pin assignment (ports P1 to P8)	19
3	Installation and disassembly	21
3.1	Safety notices for installation	21
3.2	Types of installation	24
3.3	19" rack mounting	25
3.4	DIN rail mounting / wall mounting	26
3.5	Inserting and removing pluggable transceivers	29
3.5.1	General notes for SFP transceivers	29
3.5.2	Using a pluggable transceiver (SFP)	29
3.5.3	Removing a pluggable transceiver (SFP)	30
3.6	Disassembly	30
4	Connecting up	31
4.1	Safety when connecting up	31
4.2	Industrial Ethernet	34
4.2.1	Electrical	34
4.2.2	Optical	36
4.3	Wiring rules	36
4.4	24 VDC power supply	37
4.5	Power supply 240 VAC	38


- 4.6 Functional ground 40
- 5 Upkeep and maintenance..... 43**
- 6 Technical specifications 45**
 - 6.1 Technical specifications of SCALANCE XR108-2PoE WG 45
 - 6.2 Technical specifications of the SCALANCE XR124WG (24 VDC variant)..... 46
 - 6.3 Technical specifications of the SCALANCE XR124WG (240 VAC variant) 47
 - 6.4 Cable lengths..... 48
 - 6.5 Switching properties 48
 - 6.6 Mechanical stability (in operation) 49
- 7 Dimension drawings..... 51**
- A Approvals..... 53**
 - A.1 FDA and IEC XR-100WG marks..... 59
- Index..... 61**

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.

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.

Description of the device

2.1 Product overview

Article numbers

Device	Properties	Article number
SCALANCE XR108-2PoE WG	<ul style="list-style-type: none"> • 8 x 10/100/1000 Mbps RJ45 ports • 2 x plug-in transceiver slots with 1000/10000 Mbps • 1 x 100 to 240 V AC, power supply connector at rear • Grounding bolt on the back of the device • Power over Ethernet at 8 ports 	6GK5 108-2QS00-3AR3
SCALANCE XR124WG	24 VDC Variant <ul style="list-style-type: none"> • 24 x 10/100 Mbps RJ-45 ports • 2 x 24 VDC, connector for the power supply on the front • Grounding screw on the front of the device 	6GK5 124-0BA00-2AR3
	240 VAC variante <ul style="list-style-type: none"> • 24 x 10/100 Mbps RJ-45 ports • 1 x 240 VAC, connector for the power supply on the rear • Grounding screw on the front of the device 	6GK5 124-0BA00-3AR3

Components of the product

The following components are supplied with a SCALANCE XR-100WG:

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

The following parts are included in the scope of delivery of a SCALANCE XR-100WG with plug-in transceiver slots:

- 1 cover per pluggable transceiver slot

Unpacking and checking

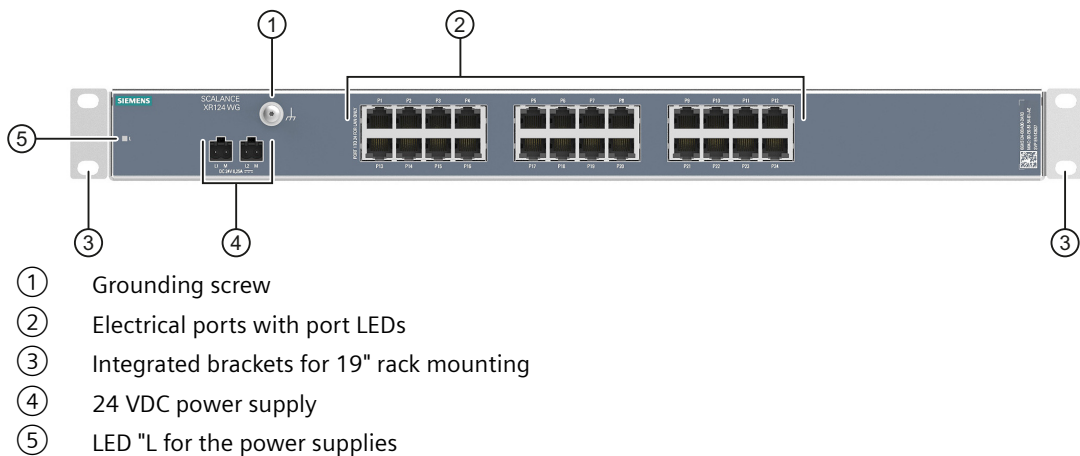
<p>⚠ WARNING</p> <p>Do not use any parts that show evidence of damage</p> <p>If you use damaged parts, there is no guarantee that the device will function according to the specification.</p> <p>If you use damaged parts, this can lead to the following problems:</p> <ul style="list-style-type: none">• Injury to persons• Loss of the approvals• Violation of the EMC regulations• Damage to the device and other components <p>Use only undamaged parts.</p>
--

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

2.2 Device views

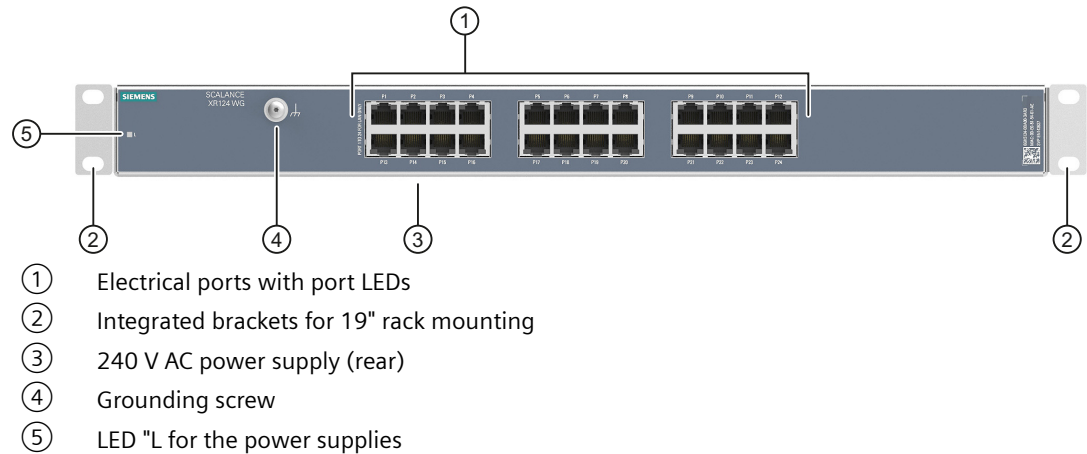
2.2.1 24 V DC variant

The following figure shows an overview of the components of a 24 VDC variant of a SCALANCE XR124WG.



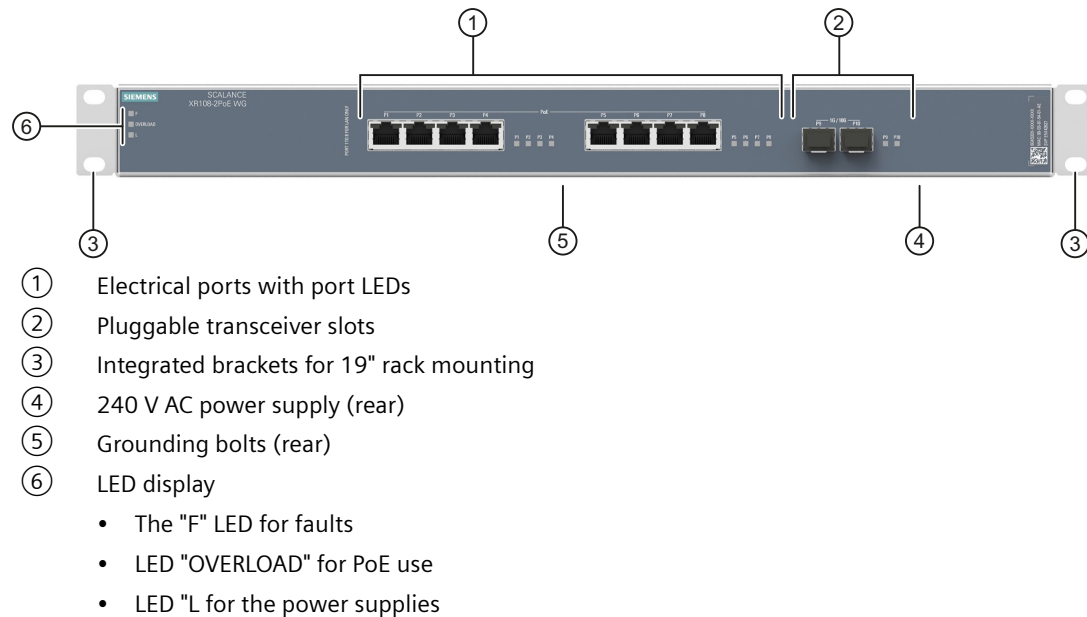
2.2.2 240 V AC variant

The following figure shows an overview of the components of a 240 VAC variant of a SCALANCE XR124WG.



2.2.3 SCALANCE XR108-2PoE WG

The following figure shows an overview of the components of a 240 V AC variant of a SCALANCE XR108-2PoE WG.



2.3 Accessories

The following accessories are available for SCALANCE XR-100WG:

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
	10 packing unit (VPE 10)	6GK5 992-1AL00-8AC0
SFP992-1 (C)	1 x 1000 Mbps, LC port optical, for glass FO cable (multimode), up to max. 750 m, varnished	6GK5 992-1AL00-8FA0
SFP992-1+	1 x 1000 Mbps, LC port optical for glass FO cable (multimode), up to max. 2 km	6GK5 992-1AG00-8AA0
SFP992-1LD	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 10 km	6GK5 992-1AM00-8AA0
	10 packing unit (VPE 10)	6GK5 992-1AM00-8AC0
SFP992-1LD (C)	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 10 km, varnished	6GK5 992-1AM00-8FA0
SFP992-1LD+	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 30 km	6GK5 992-1AM30-8AA0
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

Pluggable transceivers with the supplement (C) in the type name have varnished printed circuit boards (conformal coating).

Note**Restriction for pluggable transceivers**

The maximum ambient temperature changes if you use pluggable transceivers:

- If you use pluggable transceivers of the types +, LD+, 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 45)".

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 (multi-mode) with max. 500 m, transmits at 1550 nm, receives at 1310 nm	6GK5 992-1AL00-8TA0
SFP992-1BXM	1 x 1000 Mbps LC port optical for glass FO (multi-mode) with max. 500 m, transmits at 1310 nm, receives at 1550 nm	6GK5 992-1AL00-8RA0
SFP992-1BX10T	1 x 1000 Mbps LC port optical for glass FO (single mode) with max. 10 km, transmits at 1550 nm, receives at 1310 nm	6GK5 992-1AM00-8TA0
SFP992-1BX10R	1 x 1000 Mbps LC port optical for glass FO (single mode) with max. 10 km, transmits at 1310 nm, receives at 1550 nm	6GK5 992-1AM00-8RA0

Note**Restriction for pluggable transceivers**

The maximum ambient temperature changes if you use pluggable transceivers:

- If you use bidirectional pluggable transceivers, 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 45)".

2.4 LED display

SFP+ transceiver

Type	Properties	Article number
SFP993-1	1 x 10 Gbps, LC port optical for glass FO cable (multimode), up to max. 550 m	6GK5 993-1AT00-8AA0
SFP993-1LD	1 x 10 Gbps, LC port optical for glass FO cable (single mode), up to max. 10 km	6GK5 993-1AU00-8AA0
SFP993-1LH	1 x 10 Gbps, LC port optical for glass FO cable (single mode), up to max. 40 km	6GK5 993-1AV00-8AA0

Can only be operated in SFP+ slots.

Note**Restriction for pluggable transceivers**

The maximum ambient temperature changes if you use pluggable transceivers:

- If you use the pluggable transceivers SFP993-1 or SFP993-1LD pluggable transceivers, the maximum ambient temperature is reduced to 50 °C.
- If you use pluggable transceiver SFP993-1LH, the maximum ambient temperature is reduced to 40 °C.

For the values of the ambient temperature without pluggable transceivers, refer to the section "Technical specifications (Page 45)".

2.4 LED display

2.4.1 Fault LED "F"

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

LED color	LED status	Meaning
Red	Lit	The device has detected a problem. Possible errors/faults: <ul style="list-style-type: none"> • Internal power supply error • Short-circuit at power supply
-	Off	The device is switched off or has not detected a problem.

2.4.2 "OVERLOAD" LED

The "OVERLOAD" LED indicates the range in which the PoE consumption takes place.

LED color	LED status	Meaning
Orange	Lit	The device is operated above the limit range. More power is supplied than specified. Example: The device has a PoE power budget of 200 W. If the connected PoE consumers use a total greater than 200 W, the LED lights up. The power supply can only provide the higher power for a short time. Check the PoE consumers and reduce consumption.
-	Off	The device is operated within the specified range.

2.4.3 LED "L"

The LED "L" shows the range of the power supply at connector L1.

LED color	LED status	Meaning
Green	Lit	The power supply is connected.
-	Off	No external power supply is connected.

2.4.4 Port LEDs "P"

The port LEDs indicate the status of the ports.

RJ-45 ports

Each RJ-45 port has 1 integrated LED.

The green LED shows the status of the link and the data transfer.

LED color	LED status	Meaning
Green	Lit	link exists
Green	Flashing	Link exists and there is data transmission at the port
-	Off	No link exists

2.5 Power over Ethernet

Function

The "Power over Ethernet" function supplies connected devices with power via the Ethernet cable. Devices supplied with power via an Ethernet cable do not require a separate voltage source.

2.5 Power over Ethernet

PoE-compliant devices can be divided into the following groups:

- Power source (PSE - Power Sourcing Equipment)
These inject power onto the Ethernet cable.
- Power consumer (PD - Powered Device)
These are supplied with power via the Ethernet cable.

2.5.1 Power and voltage range according to the standard

Note the values specified for the power of the power source, so that the power supply is ensured at the power consumers according to the standard.

PoE class	Power supplied by the power source	Available power at the power source	Type	Standard	Designation
0	15.4 W	12.95 W	1	IEEE802.3af	PoE
1	4	3.84 W			
2	7	6.49 W			
3	15.4 W	12.95 W			
4	30	25.5 W	2	IEEE802.3at	PoE+
5	45	40 W	3	IEEE802.3bt	4-pair PoE
6	60	51 W			

2.5.2 PoE properties of the devices

Note

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

Power source

- The device can supply energy consumers of the standards IEEE802.af Type 1, IEEE802.at Type 2 or IEEE802.3bt Type 3.
- A power source can make provide a total of 210 W available (including line losses). The power can be distributed to the ports as desired.

PoE ports

- The PoE ports are not isolated from each other. This means that they meet the conditions named in Environment A (IEEE 802.3): Power supply over Ethernet within a power supply system.
- The electrical isolation of the ports is designed for 1500 Vrms (1 minute).
- Ports P1 to P8 support PoE classes 0 to 6. They supply connected devices with up to 60 W per port (according to IEEE802.3af, IEEE802.3at and IEEE802.3bt).

Power

- If the maximum power is exceeded, the supply is switched off port by port (according to priority).
- In the case of an incorrect configuration, the supply is switched off port by port (according to priority) if the permissible minimum voltage according to IEEE 802.3bt is fallen below.

2.5.3 Voltage transmission and pin assignment (ports P1 to P8)

The table below shows the most important power transfer and pin assignment for ports P1 to P8.

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

2.5 Power over Ethernet

Installation and disassembly

3.1 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.

 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.
--

NOTICE

Improper mounting

Improper mounting may damage the device or impair its operation.
--

- | |
|---|
| <ul style="list-style-type: none">• Before mounting the device, always ensure that there is no visible damage to the device.• Mount the device using suitable tools. Observe the information in the respective section about mounting. |
|---|

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

 **WARNING**

EXPLOSION HAZARD

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

 **WARNING**

The device is intended for indoor use only.

 **WARNING**

The device may only be operated in an environment of contamination class 1 or 2 (see EN/IEC 60664-1, GB/T 16935.1).

 **WARNING**

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

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

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

 **WARNING**

To comply with EU Directive 2014/34 EU (ATEX 114), UK-Regulation SI 2016/1107 or the conditions of IECEx or CCC-Ex, the housing or cabinet must meet the requirements of at least IP54 (according to EN/IEC 60529, GB/T 4208) in compliance with EN IEC/IEC 60079-7, GB 3836.8.

 **WARNING**

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

Safety notices when using according to FM

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

 **WARNING**

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**

Open equipment


The devices are "open equipment" according to the standard IEC 61010-2-201 or UL 61010-2-201 / CSA C22.2 No. 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 temperature at the cable or housing socket or at the branching points of the cables exceeds 60 °C, special precautions must be taken. If the equipment is operated at ambient temperatures in excess of 40 °C, only use cables with permitted operating temperature of at least 80 °C.

Additional notes

 **CAUTION**

Use only approved components

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

Only use components approved for the SIMATIC NET devices.

NOTICE

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

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

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

Note

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

You will find information on the system manuals in the section "Introduction (Page 3)", under "Further documentation".

3.2 Types of installation

The devices can be installed in the following ways:

- 19" rack mounting
- DIN rail
- Wall mounting

Installation position for PoE variants

Horizontal installation position is recommended for PoE variants (inscription is in the read direction). Vertical installation position is also permissible.

3.3 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.

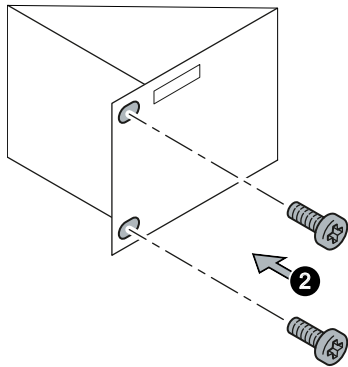


Figure 3-1 19" rack mounting

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 cables, see section "Connecting up (Page 31)".

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.

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 (T_{ma}) 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).

3.4 DIN rail mounting / wall mounting

Installation

DIN rail mounting and wall mounting are described in this section, because a DIN rail is required also for wall mounting.

Note that PoE variants have a different guide rail.

Follow these steps to install the device with a DIN rail:

1. In the recess on the top of the housing, there are two guides for receiving a DIN rail. Push the DIN rail into the guides as shown in the following figure:

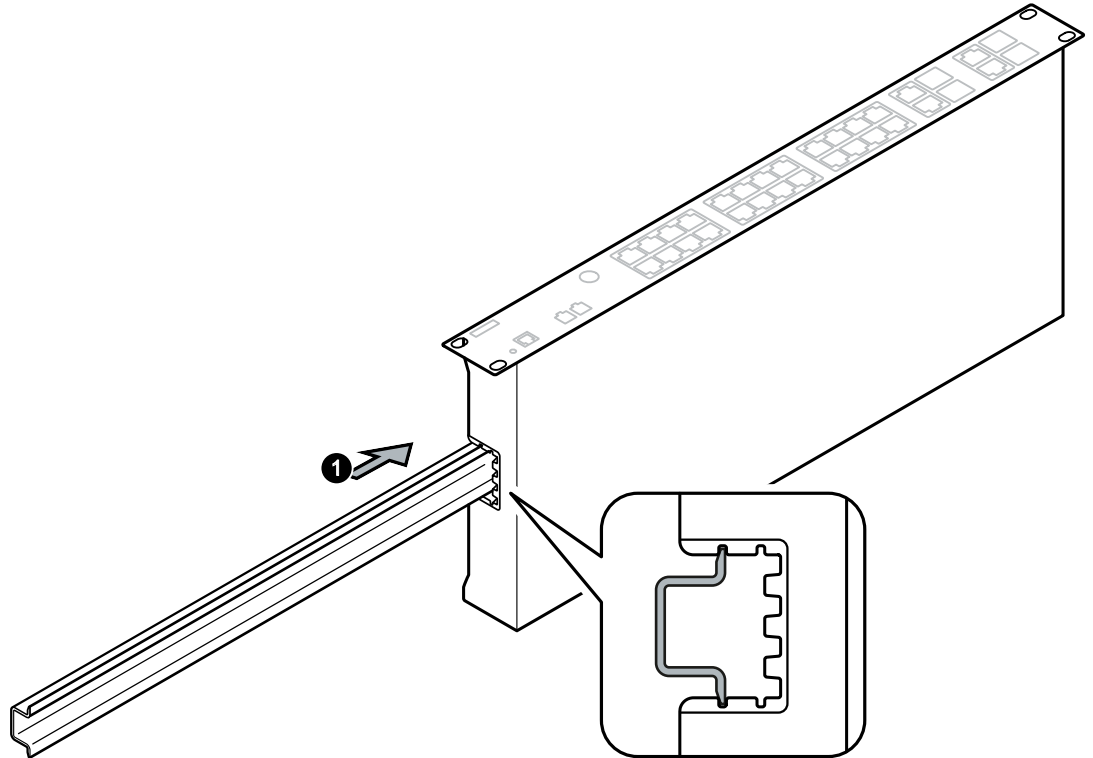


Figure 3-2 Connecting SCALANCE and DIN rail

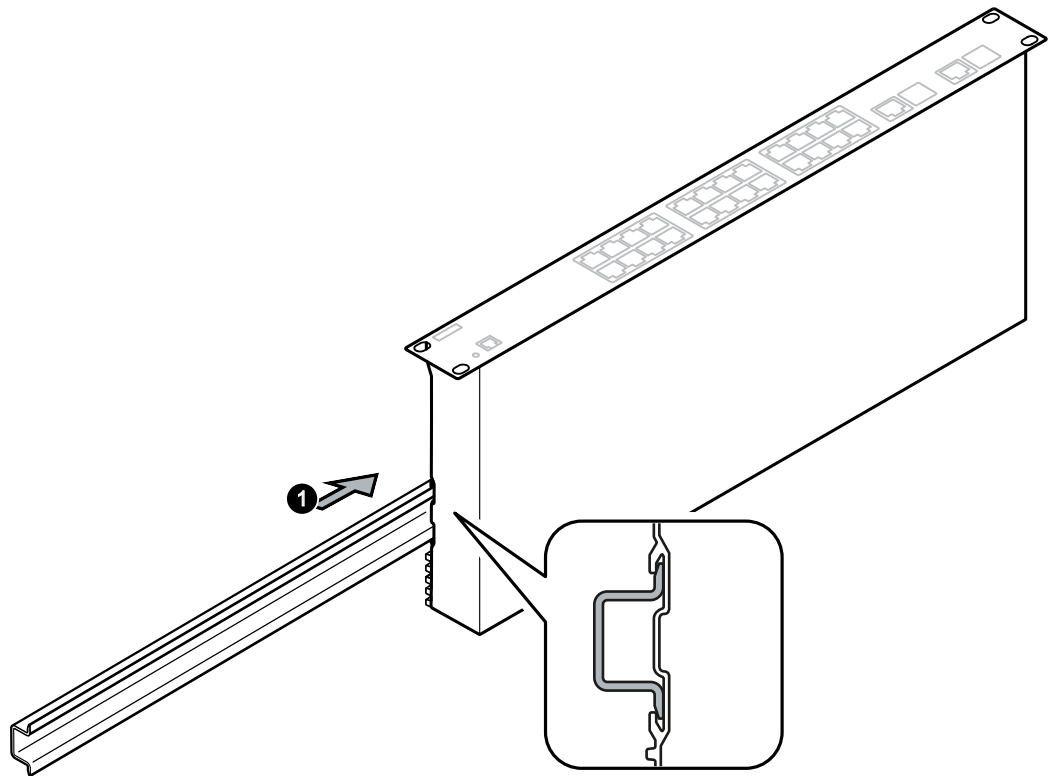
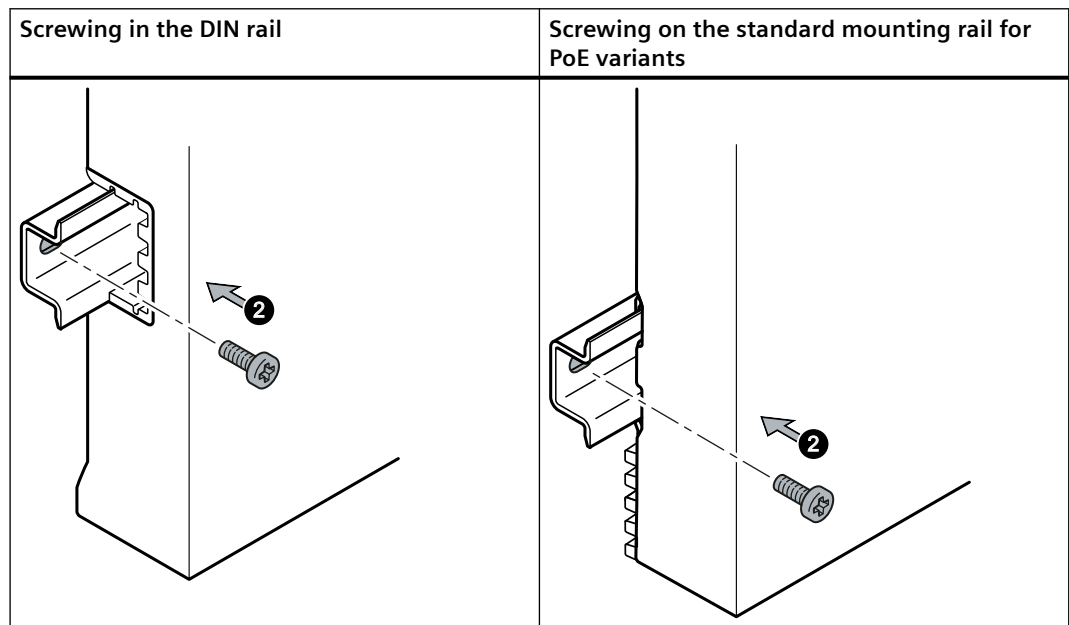


Figure 3-3 Assembling PoE variants and standard mounting rail

2. Screw the protruding ends of the DIN rail to the wall or other surface for attaching the DIN rail.



3. Connect the cables, see section "Connecting up (Page 31)"


Uninstalling

To uninstall the device, follow the steps below:

1. Remove all connected cables.
2. Loosen the screws of the DIN rail.
3. Take the DIN rail out of the housing.

3.5 Inserting and removing pluggable transceivers

3.5.1 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: <ul style="list-style-type: none">• Damage to the device• Loss of the approvals• Violation of the EMC regulations Use only approved pluggable transceivers.

Note

Plugging and pulling during operation

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

Documentation for SFP transceivers

You will find detailed information in the operating instructions of the pluggable transceivers, see the chapter "Introduction (Page 3)" section "Additional documentation".

3.5.2 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.

3.6 Disassembly

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.

3.5.3 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.

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 transceiver.
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.

3.6 Disassembly

! WARNING

Improper disassembly

Improper disassembly may result in a risk of explosion in hazardous areas.

For proper disassembly, observe the following:

- Before starting work, ensure that the electricity is switched off.
- Secure remaining connections so that no damage can occur as a result of disassembly if the system is accidentally started up.

Connecting up

4.1 Safety when connecting up


Safety notices


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

Safety information for devices with 24 V DC power supply

Observe the following note for device variants with supply voltage 24 V DC:


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


 WARNING
<p>Power supply</p> <p>The device is designed for operation with a directly connectable safety extra low voltage (SELV) from a limited power source (LPS).</p> <p>The power supply therefore needs to meet at least one of the following conditions:</p> <ul style="list-style-type: none"> • Only safety extra low voltage (SELV) with limited power source (LPS) complying with IEC 60950-1 / EN 60950-1 / VDE 0805-1 or IEC 62368-1 / EN 62368-1 / VDE 62368-1 may be connected to the power supply terminals. • The power supply unit for the device must meet NEC Class 2 according to the National Electrical Code (r) (ANSI / NFPA 70). <p>If the equipment is connected to a redundant power supply (two separate power supplies), both must meet these requirements.</p>


 WARNING
<p>Do not remove or replace while circuit is live when a flammable or combustible atmosphere is present.</p>


Safety notices on use in hazardous areas


General safety notices relating to protection against explosion


 WARNING
<p>EXPLOSION HAZARD</p> <p>Do not connect or disconnect cables to or from the device when a flammable or combustible atmosphere is present.</p>

 WARNING
Suitable cables at high ambient temperatures in hazardous area
At an ambient temperature of $\geq 60\text{ }^{\circ}\text{C}$, use heat-resistant cables designed for an ambient temperature at least $20\text{ }^{\circ}\text{C}$ higher. The cable entries used on the enclosure must comply with the IP degree of protection required by EN IEC / IEC 60079-0, GB 3836.1.

 WARNING
Unsuitable cables or connectors
Risk of explosion in hazardous areas
<ul style="list-style-type: none">• Only use connectors that meet the requirements of the relevant type of protection.• If necessary, tighten the connector screw connections, device fastening screws, grounding screws, etc. according to the specified torques.• Close unused cable openings for electrical connections.• Check the cables for a tight fit after installation.

 WARNING
Lack of equipotential bonding
If there is no equipotential bonding in hazardous areas, there is a risk of explosion due to equalizing current or ignition sparks.
<ul style="list-style-type: none">• Ensure that equipotential bonding is available for the device.

 WARNING
Unprotected cable ends
There is a risk of explosion due to unprotected cable ends in hazardous areas.
<ul style="list-style-type: none">• Protect unused cable ends according to IEC/EN 60079-14.

 WARNING
Improper installation of shielded cables
There is a risk of explosion due to equalizing currents between the hazardous area and the non-hazardous area.
<ul style="list-style-type: none">• Ground shielded cables that cross hazardous areas at one end only.• Lay a potential equalization conductor when grounding at both ends.

 WARNING**Insufficient isolation of intrinsically safe and non-intrinsically safe circuits**

Risk of explosion in hazardous areas

- When connecting intrinsically safe and non-intrinsically safe circuits, ensure that the galvanic isolation is performed properly in compliance with local regulations (e.g. IEC 60079-14).
- Observe the device approvals applicable for your country.

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

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

 WARNING**Transient overvoltages**

Take measures to prevent transient overvoltages of more than 40% of the rated voltage (or more than 119 V). This is the case if you only operate devices with SELV (safety extra-low voltage).

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:

 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.

<p>⚠ WARNING</p> <p>Safety notice for connecting with a LAN ID (Local Area Network)</p> <p>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.</p> <p>Do not connect any electrical connectors directly to the telephone network (telephone network voltage) or a WAN (Wide Area Network).</p>
--

4.2 Industrial Ethernet

4.2.1 Electrical

Note

Strain relief for the Ethernet cables

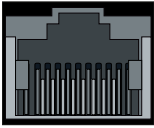
In order to avoid mechanical stress on the Ethernet cables and resulting interruption of the contact, fasten the cables at a short distance from the connector using a cable guide or busbar.

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 1	RD+	D1+	 <p>12345678</p>
Pin 2	RD-	D1-	
Pin 3	TD+	D2+	
Pin 4	n. c. (Not connected)	D3+	
Pin 5	n. c. (Not connected)	D3-	
Pin 6	TD-	D2-	
Pin 7	n. c. (Not connected)	D4+	
Pin 8	n. c. (Not connected)	D4-	

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 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.
 - Devices not supporting "Auto negotiation" must be set permanently to 100 Mbps or 10 Mbps half duplex.
-

4.2.2 Optical

<p>NOTICE</p> <p>Failure of the data traffic due to contamination of optical plug-in connections</p> <p>Optical sockets and plugs are sensitive to contamination of the end face. Contamination can lead to the failure of the optical transmission network. Take the following precautions to avoid functional impairments:</p> <ul style="list-style-type: none"> • Clean the end face of field-assembled connectors carefully before connecting. No residues of processing may remain on the connector. • Only remove the dust caps of optical transceivers and pre-configured cables shortly before connecting the cables. • Close unused optical sockets and plugs as well as pluggable transceivers and slots with the supplied protective caps.

LC connector technology

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



Pluggable transceiver slot/
plugged in transceiver

4.3 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.

4.4 24 VDC power supply

**CAUTION****Overvoltage protection for the power supply cables**

If SCALANCE XR-100WGs 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-100WG 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-100WG 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

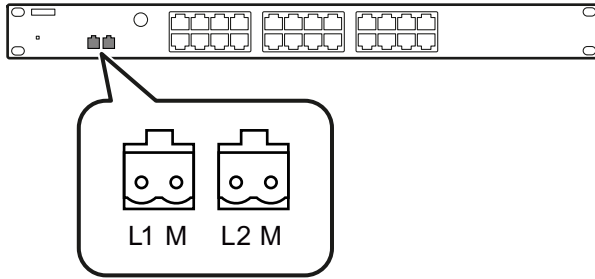


Figure 4-1 Position of the terminal block on a SCALANCE XR-100WG

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

4.5 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 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 13)".

Position

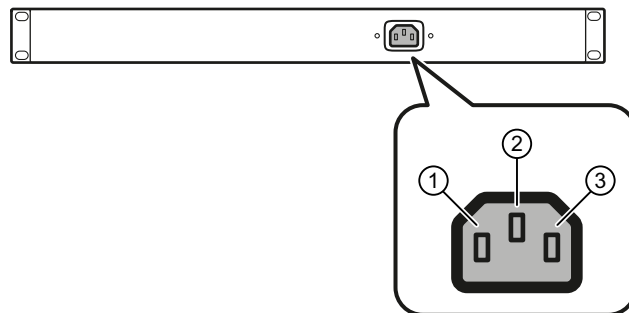


Figure 4-2 Position of the device installation connector

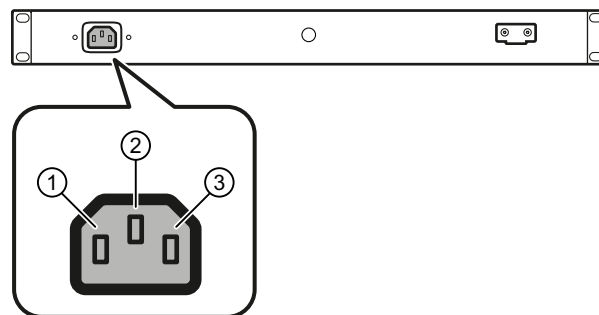


Figure 4-3 Position of the device installation connector in PoE variants

4.6 Functional ground

Grounding options

The grounding (functional grounding) is implemented via the mounting brackets on the device or via the grounding screw or the grounding bolt of the device.

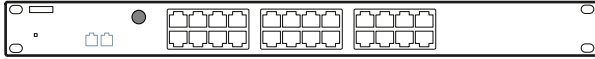


Figure 4-4 Position of the grounding screw on the front of the device.



Figure 4-5 Position of the grounding bolt on the back of the device for PoE variants.

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

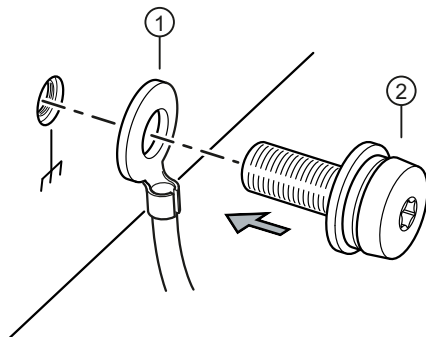
Functional ground

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.

To connect the functional ground, use a copper cable of category 20 AWG or a cable with a cross-section $\geq 0.75 \text{ mm}^2$.

Connect functional grounding via an grounding screw

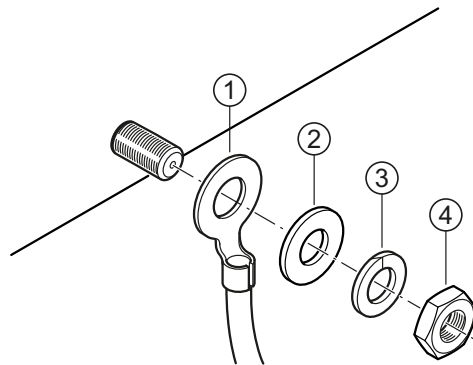


- ① Grounding terminal with cable
- ② Grounding screw with spring washer and washer

To connect the functional grounding for devices with a grounding screw, proceed as follows:

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.

Connect functional grounding via an grounding bolt



- ① Grounding terminal with cable
- ② Washer
- ③ Spring washer
- ④ Nut

To connect the functional grounding for devices with a grounding bolt, proceed as follows:

1. Put the parts ①, ② and ③ together on the grounding bolt as shown in the drawing.
2. Tighten the nut ④ 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

 WARNING
Unauthorized repair of devices in explosion-proof design
Risk of explosion in hazardous areas
<ul style="list-style-type: none"> • Repair work may only be performed by personnel authorized by Siemens.

 WARNING
Impermissible accessories and spare parts
Risk of explosion in hazardous areas
<ul style="list-style-type: none"> • Only use original accessories (Page 13) and original spare parts. • Observe all relevant installation and safety instructions described in the manuals for the device or supplied with the accessories or spare parts.



 CAUTION
Hot surfaces
Risk of burns during maintenance work on parts with a surface temperature above 70 °C (158 °F).
<ul style="list-style-type: none"> • Take appropriate protective measures, for example, wear protective gloves. • Once maintenance work is complete, restore the touch protection measures.

NOTICE
Cleaning the housing
If the device is not in a hazardous area, only clean the outer parts of the housing with a dry cloth.
If the device is in a hazardous area, use a slightly damp cloth for cleaning.
Do not use solvents.

LED display when voltage is too low

If the power supply is too low, then the internal power supply will switch off causing the "L" LED and all port LEDs to go off. The functionality of the SCALANCE XR-100WG is no longer available. For correct operation, a power supply of at least 19.2 V for 24 V DC versions or 85 V for 240 V AC versions is required.

Device defective

If a fault develops, send the device to your SIEMENS representative for repair. Repairs on-site are not possible.

Technical specifications

6.1 Technical specifications of SCALANCE XR108-2PoE WG

The following technical specifications apply to the SCALANCE XR108-2PoE WG.

Technical specifications		
Connection to Industrial Ethernet		
Electrical connectors	Quantity	8
	Connector	RJ45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 / 1000 Mbps
Slots for pluggable transceivers	Quantity	2
	Connector	SFP transceiver
	Transmission speed	1000 / 10000 Mbps
Electrical data		
Power supply	Design	Socket, 3 pin
	Rated voltage	100 to 240 V AC
	Voltage range	85 to 264 VAC
	Frequency	50 Hz to 60 Hz
	Frequency range	47 Hz to 63 Hz
	Properties	Not implemented redundantly
Current consumption	At 100 VAC	Max. 4 A
	At 240 V AC	
Effective power loss		Max. 280 W Depending on the effective power loss of the connected PoE consumers
Permitted ambient conditions		
Ambient temperature	During operation up to 3000 m above mean sea level	During operation in permitted installation positions 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% without 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 133 mm	
Weight	2900 g	

6.2 Technical specifications of the SCALANCE XR124WG (24 VDC variant)

Technical specifications	
Installation options	<ul style="list-style-type: none"> • 19" rack mounting • DIN rail • Wall mounting
Mean time between failure (MTBF)	
MTBF (EN/IEC 61709; 40 °C)	> 47 years

6.2 Technical specifications of the SCALANCE XR124WG (24 VDC variant)

The following technical specifications apply to the SCALANCE XR124WG.

Technical specifications		
Connection to Industrial Ethernet		
Electrical connectors	Quantity	24
	Connector	RJ45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
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	250 mA	
Effective power loss	6 W	
Permitted ambient conditions		
Ambient temperature ¹⁾	During operation up to 3000 m above mean sea level	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% without 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	2700 g	

6.3 Technical specifications of the SCALANCE XR124WG (240 VAC variant)

Technical specifications	
Installation options	<ul style="list-style-type: none"> • 19" rack mounting • DIN rail • Wall mounting
Mean time between failure (MTBF)	
MTBF (EN/IEC 61709; 40 °C)	> 90 years

6.3 Technical specifications of the SCALANCE XR124WG (240 VAC variant)

The following technical specifications apply to the SCALANCE XR124WG.

Technical specifications		
Connection to Industrial Ethernet		
Electrical connectors	Quantity	24
	Connector	RJ45 jack
	Properties	Half/full duplex, MDI-X pinning
	Transmission speed	10 / 100 Mbps
Electrical data		
Power supply	Design	Socket, 3 pin
	Rated voltage	100 to 240 V AC
	Voltage range	85 to 264 VAC
	Frequency	50 Hz to 60 Hz
	Frequency range	47 Hz to 63 Hz
	Properties	Not implemented redundantly
Current consumption	At 100 VAC	150 mA
	At 240 V AC	75 mA
Effective power loss		7.5 W
Permitted ambient conditions		
Ambient temperature ¹⁾	During operation up to 3000 m above mean sea level	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% without 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	3300 g	

6.5 Switching properties

Technical specifications	
Installation options	<ul style="list-style-type: none"> • 19" rack mounting • DIN rail • Wall mounting
Mean time between failure (MTBF)	
MTBF (EN/IEC 61709; 40 °C)	> 76 years

6.4 Cable lengths

The following technical specifications apply to SCALANCE XR-100WG.

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

6.5 Switching properties

The following technical specifications apply to SCALANCE XR-100WG.

Switching properties	
Aging time	45 seconds
Max. number of learnable addresses	1024
Response to LLDP frames	Blocking
Response to spanning tree BPDU frames	Forwarding
CoS acc. to IEEE 802.1Q	Yes
QoS priority queues	8
IEEE 802.1Q tags (VLAN ID, priority) transparent forwarding	Yes
Maximum frame size	1536 bytes

6.6 Mechanical stability (in operation)

Switching properties				
Forwarding of PRP frames (Parallel Redundancy Protocol)	Yes			
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	844595	8445946
	256	45290	452899	4528986
	512	23496	234962	2349664
	1024	11973	119732	1197318
	1280	9615	96154	961538
	1518	8127	81274	811688

Note

The number of SCALANCE XR-100WG modules connected in a line influences the frame delay. When a frame passes through IE switches of the SCALANCE XR-100WG 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-100WG product line that the frame passes through, the longer the frame delay.

6.6 Mechanical stability (in operation)

The following technical specifications apply to SCALANCE XR-100WG.

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

6.6 Mechanical stability (in operation)

Dimension drawings

Note

Dimensions are specified in mm.

Front view of the SCALANCE XR-100WG



Figure 7-1 Width and height based on the example of a 24 V DC variant

SCALANCE XR-100WG 24 VDC variant view from above

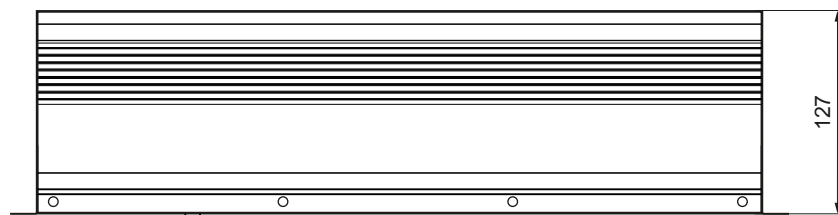


Figure 7-2 Depth

SCALANCE XR-100WG 240 VAC variant view from above

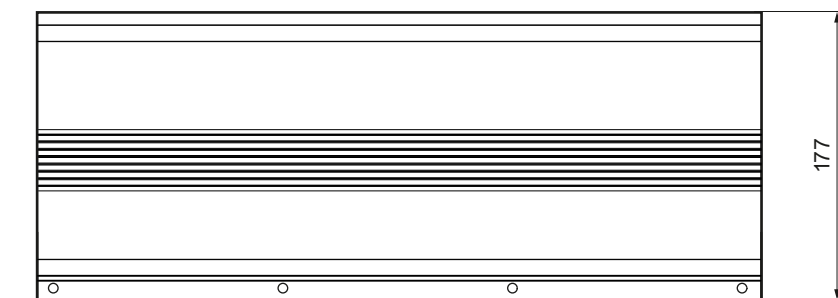


Figure 7-3 Depth

Top view for SCALANCE XR-100WG PoE variant

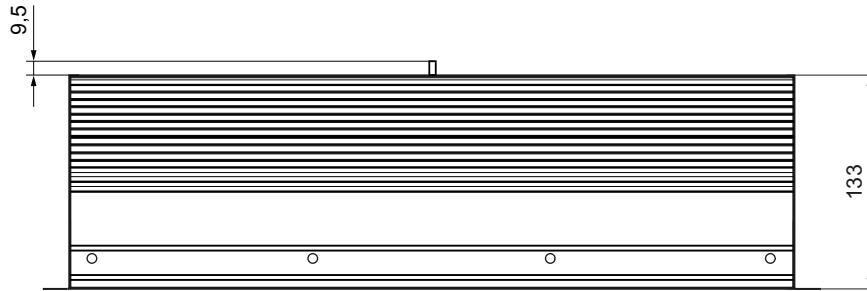


Figure 7-4 Depth

Approvals

The SIMATIC NET products described in these Operating Instructions have the approvals listed below.

Note

Issued approvals on the type plate of the device

The specified approvals apply only when the corresponding mark is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate.

Current approvals on the Internet

You will find the current approvals for the product on the Internet pages of Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/15273/cert>).

Notes for the manufacturers of machines

This product is not a machine in the sense of the EC Machinery Directive or the Supply of Machinery (Safety) Regulations (UK).

There is therefore no declaration of conformity relating to the EC Machinery Directive 2006/42/EEC or the Supply of Machinery (Safety) Regulations 2008 (UK) for this product.

If the product is part of the equipment of a machine, it must be included in the procedure for obtaining the EU/UK conformity assessment by the manufacturer of the machine.

Machinery directive

The product is a component in compliance with the EC Machinery Directive 2006/42/EEC and the Supply of Machinery (Safety) Regulations 2008 (UK).

According to the Machinery Directive respectively the Supply of Machinery (Safety) Regulations (UK), we are obliged to point out that the product described is intended solely for installation in a machine.

Before the final product can be put into operation, it must be tested to ensure that it conforms with the Machinery Directive 2006/42/EEC and the Supply of Machinery (Safety) Regulations 2008 (UK).

EC declaration of conformity



The SIMATIC NET products described in these operating instructions meet the requirements and safety objectives of the following EU directives and comply with the harmonized European

standards (EN) which are published in the official documentation of the European Union and here.

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

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

Note

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

- **2014/35/EU (Low Voltage Directive)**

Directive of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits; official journal of the EU L96, 29/03/2014, p. 357-374.

Note

Only variants with 240 V AC power supply meet the requirements of this approval.

- **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, p. 79-106

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

Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, official journal of the EC L174, 01/07/2011, p. 88-110

You will find the EC declaration of conformity for these products on the Internet pages of Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/15273/cert>).

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

Siemens Aktiengesellschaft

Digital Industries
DE-76181 Karlsruhe
Germany

UK Declaration of Conformity



The UK declaration of conformity is available to all responsible authorities at:

Siemens Aktiengesellschaft
Digital Industries
Process Automation
DE-76181 Karlsruhe
Germany

Importer UK:


Siemens plc,
Manchester M20 2UR

You can find the current UK Declaration of Conformity for these products on the Internet pages under Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/15273/cert>).

The SIMATIC NET products described in this document meet the requirements of the following directives:

- UK-Regulation
SI 2016/1107 Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016, and related amendments
- Low-Voltage Directive
SI 2016/1101 Electrical Equipment (Safety) Regulations 2016
- EMC Regulation
SI 2016/1091 Electromagnetic Compatibility Regulations 2016, and related amendments
- RoHS Regulation
SI 2012/3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012, and related amendments

ATEX, IECEx, UKEX and CCC Ex certification

 WARNING
Risk of explosion in hazardous areas
When using SIMATIC NET products in hazardous area zone 2, make absolutely sure that the associated conditions in the following document are adhered to: "SIMATIC NET Product Information Use of subassemblies/modules in a Zone 2 Hazardous Area".
You will find this document
<ul style="list-style-type: none">• on the data medium that ships with some devices.• on the Internet pages under Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/view/78381013).
Enter the document identification number "C234" as the search term.

The markings of the electrical devices are:



II 3 G Ex ec IIC T4 Gc

DEKRA 18ATEX0025 X

DEKRA 21UKEX0001 X

IECEX DEK 18.0017X

Importer UK:

Siemens plc,

Manchester

M20 2UR

(Ex na IIC T4 Gc, not on the nameplate)

2020322310002626

2020322310002915

2020322310002987

The products meet the requirements of the following standards:

- EN/IEC 60079-7, GB 3836.8
- EN IEC/IEC 60079-0, GB 3836.1

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

Note

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

Note for devices with CLASS 1 LASER

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

Note

CLASS 1 LASER

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

Safety of electrical equipment (Low Voltage Directive)

The SIMATIC NET products described in these operating instructions meet the requirements of EU directive 2014/35/EU "Low Voltage Directive".

Applied standard:

- EN 62368-1 Equipment for audio/video, information and communication technology – Part 1: Safety requirements

Note

Only variants with 100 to 240 V AC power supply meet the requirements of this approval.

EMC (electromagnetic compatibility)

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

Applied standards:

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

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

RoHS

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

Applied standard:

- EN IEC 63000

FM

The product meets the requirements of the standards:

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

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. according to either

- UL 60950-1 (information technology equipment)
- CSA C22.2 No. 60950-1 (information technology equipment)

or

- UL 62368-1 (information/communication technology)
- CSA C22.2 No. 62368-1 (information/communication technology)

Report no. E115352

cULus Approval Hazardous Location



HAZ. LOC.

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

Underwriters Laboratories Inc. complying with

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

Approved for use in

Cl. 1, Div. 2, GP A, B, C, D T4

Cl. 1, Zone 2, GP IIC T4

Report no. E240480

Note

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

Note for Australia - RCM

The product meets the requirements of the RCM standard.

Applied standards:

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

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

MSIP 요구사항 - For Korea only**A급 기기(업무용 방송통신기자재)**

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

Marking for the customs union

EAC (Eurasian Conformity)

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

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

A.1 FDA and IEC XR-100WG marks**FDA and IEC marking**

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

Device	CLASS 1 LASER Product
SCALANCE XR124WG	-
SCALANCE XR108-2PoE WG	(*)

* In modular devices, you can find the marking on the plug-in transceiver used or in the relevant operating instructions.

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

1

19" rack mounting, 12, 13, 25

A

Approvals, 53
Article number, 11
Autonegotiation, 35
AWG, 36

B

Bracket, 12, 13, 25, 40

C

Cable cross section, 36
CE mark, 53
Clip, 29
Components of the product, 11
Connection to Industrial Ethernet, 45, 46, 47
Cross section, 36

D

Dimensions, 45, 46, 47

E

Electrical data, 45, 46, 47
Environmental conditions, 45, 46, 47
Error
 LED display when voltage is too low, 43

F

Fault LED, 16
Functional ground, 40

G

Glossary, 4
Grounding screw, 12, 13, 40

H

Housing, 45, 46, 47

I

Installation, 45, 46, 47
Installation on a DIN rail, 26

L

LED display, 43
 Fault LED, 16
 Port LED, 12, 17
LED L, 12, 13

M

MDI / MDI-X autocrossover, 35
Mounting
 Bracket, 12, 13, 25
 Rack, 12, 13, 25
MTBF, 46, 47, 48

O

Overvoltage protection, 37

P

Permitted ambient conditions, 45, 46, 47
Pin assignment, 34
Pluggable transceiver
 Inserting, 29
 Notes on deinstallation, 30
 Removing, 30
 SFP, 14
Pluggable transceiver slot, 29, 30
Plug-in transceiver
 SFP bidirectional, 15
PoE, 17
Port LED, 12, 13, 17
Power cable, 13, 39, 40
Power over Ethernet, 17

Power supply, 45, 46, 47
 230 VAC, (Power cable)
 24 VDC, 11, 12, 37
 240 VAC, 11, 13, (Power cable)

R

Rack mounting, 12, 13, 25
Reduced voltage, 43

S

Safety notices
 for installation, 21
 general, 9
 Use in hazardous areas, 9, 21, 31
 when connecting up, 31
Sealing plug, 29, 30
SFP transceiver, 14
SFP+ transceiver, 16
SIMATIC NET glossary, 4
SIMATIC NET manual, 4
Slot, 29
System manual, 4, 24, 60

W

Wall mounting, 26
Weight, 45, 46, 47
Wiring, 36