SIEMENS

SIMATIC NET

SCALANCE
Industrial Ethernet SCALANCE X-100 and SCALANCE X-200 Product Line

Commissioning Manual

Safety Guidelines

This manual contains notices which you should observe to ensure your own personal safety as well as to avoid property damage. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring to property damage only have no safety alert symbol.

Danger

indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Warning

indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution

used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Caution

used without safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Notice

used without the safety alert symbol indicates a potential situation which, if not avoided, may result in an undesirable result or state.

When several danger levels apply, the notices of the highest level (lower number) are always displayed. If a notice refers to personal damages with the safety alert symbol, then another notice may be added warning of property damage.

Qualified Personnel

The device/system may only be set up and operated in conjunction with this documentation. Only qualified personnel should be allowed to install and work on the equipment. Qualified persons are defined as persons who are authorized to commission, to earth, and to tag circuits, equipment and systems in accordance with established safety practices and standards.

Intended Use

Please note the following:

Warning

This device and its components may only be used for the applications described in the catalog or technical description, and only in connection with devices or components from other manufacturers approved or recommended by Siemens.

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

Trademarks

All designations marked with ® are registered trademarks of Siemens AG. Other designations in this documentation might be trademarks which, if used by third parties for their purposes, might infringe upon the rights of the proprietors.

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Preface

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1.1   Preface

Purpose of the Commissioning Manual

This commissioning manual supports you when commissioning networks with the devices of the product line SCALANCE X-100 and X-200.

Validity of this Commissioning Manual

This commissioning manual is valid for the following devices:

SIMATIC NET SCALANCE X108 6GK5108-0BA00-2AA3

SIMATIC NET SCALANCE X208 6GK5208-0BA00-2AA3

SIMATIC NET SCALANCE X208PRO 6GK5208-0CA00-2AA6

SIMATIC NET SCALANCE X204-2 6GK5204-2BB00-2AA3

SIMATIC NET SCALANCE X206-1 6GK5206-1BB00-2AA3

Further Documentation

The "SIMATIC NET Industrial Ethernet Twisted Pair and Fiber Optic Networks" manual contains additional information on other SIMATIC NET products that you can operate along with the devices of the SCALANCE X-100 and X-200 product lines in an Industrial Ethernet network.

Finding Information

To help you to find the information you require more quickly, the manual includes not only the table of contents but also the following sections in the Appendix:

- Index

Audience

This commissioning manual is intended for persons involved in commissioning networks with the devices of the SCALANCE X-100 and X-200 product lines.

Standards and Approvals

The devices of the SCALANCE X-100 and X-200 product lines meet the requirements for the CE mark. You will find detailed information in the section "Notes on CE Marking" in this commissioning manual.

Introduction

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2.1 Introduction

This chapter provides you with an overview of the functions of the Industrial Ethernet switches of the SCALANCE X-100 and X-200 product lines.

The devices of the SCALANCE X-100 are unmanaged Industrial Ethernet switches with up to eight ports and on-site diagnostics for applications in the vicinity of the machinery.

The devices of the SCALANCE X-200 are managed Industrial Ethernet switches that can be used universally for applications ranging from those in the vicinity of the machinery to networked units. Configuration engineering and remote diagnostics are integrated in the SIMATIC STEP 7 engineering tool increasing the plant availability. Devices with a high degree of protection allow installation without a cabinet.

What Is Possible?

The devices of the SCALANCE X-100 or SCALANCE X-200 product lines, allow the cost-effective installation of Industrial Ethernet bus, star, or ring structures with switching functionality.

Note

When using devices of the SCALANCE X-100 product line in a redundant ring, the redundancy function is not supported.

Note

The requirements of EN61000-4-5, surge test on power supply lines are met only when a Blitzductor VT AD 24V type no. 918 402 is used

Manufacturer:

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

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Warning

When used under hazardous conditions (zone 2), the devices of the SCALANCE X-100 and SCALANCE X-200 product lines must be installed in an enclosure.

To comply with ATEX100a (EN 50021), this enclosure must meet the requirements of at least IP54 in compliance with EN 60529.

WARNING - EXPLOSION HAZARD: DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS AREA IS KNOWN TO BE NONHAZARDOUS.

Note

The specified approvals apply only when the corresponding mark is printed on the product.

Network Topologies

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3.1 Network Topologies

Switching technology allows extensive networks to be set up with numerous nodes and simplifies network expansion.

Which topologies can be implemented?

Bus, ring, or star topologies can be implemented with the devices of the SCALANCE X-100 or SCALANCE X-200 product lines.

Bus Topology
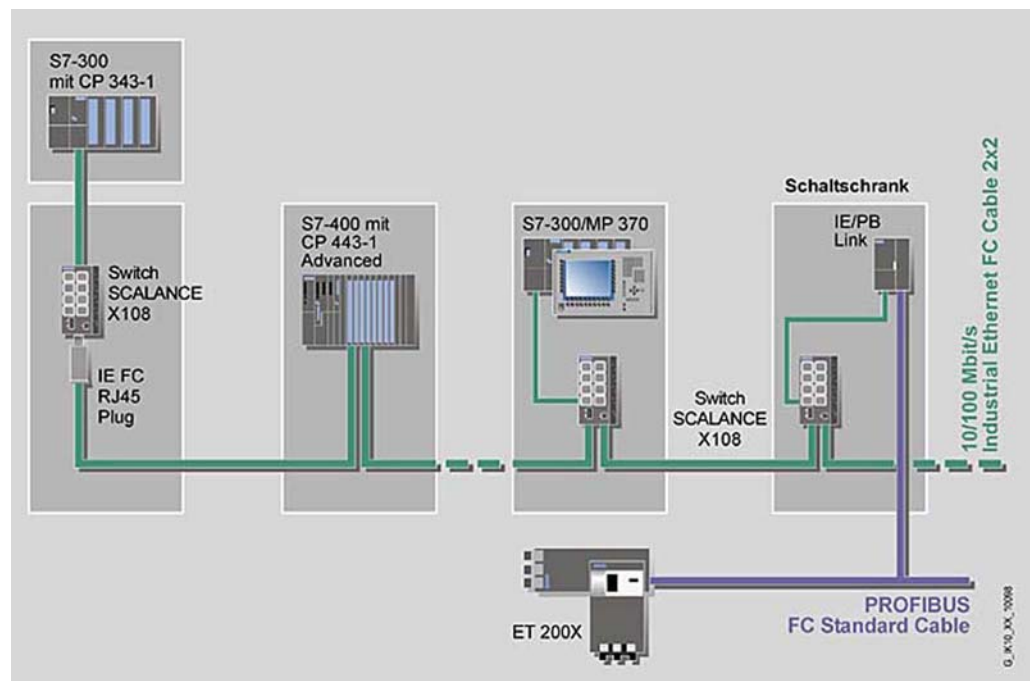
Figure 3-1   Bus Topology, Example with SCALANCE X108

Star Topology
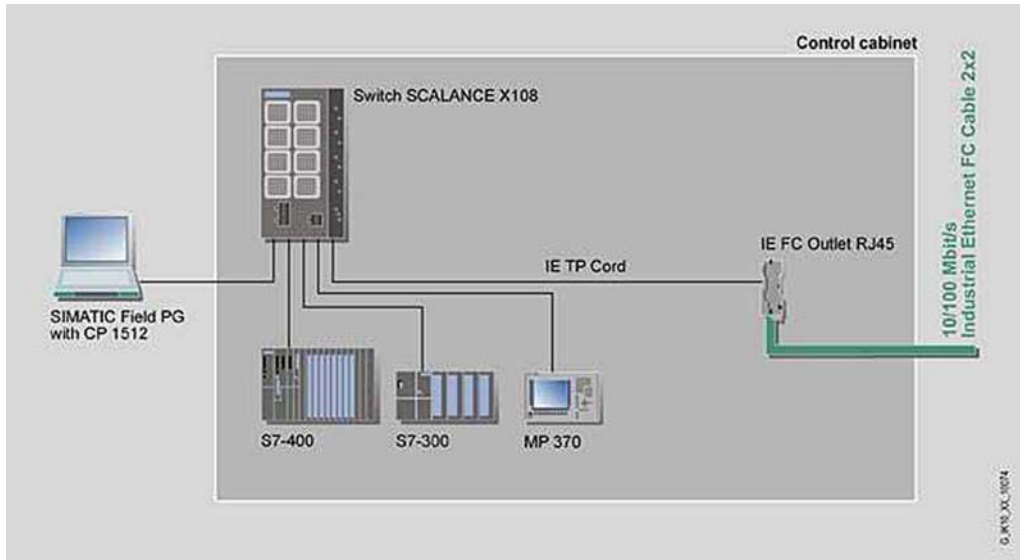
Figure 3-2   Electrical Star Topology, Example with SCALANCE X108
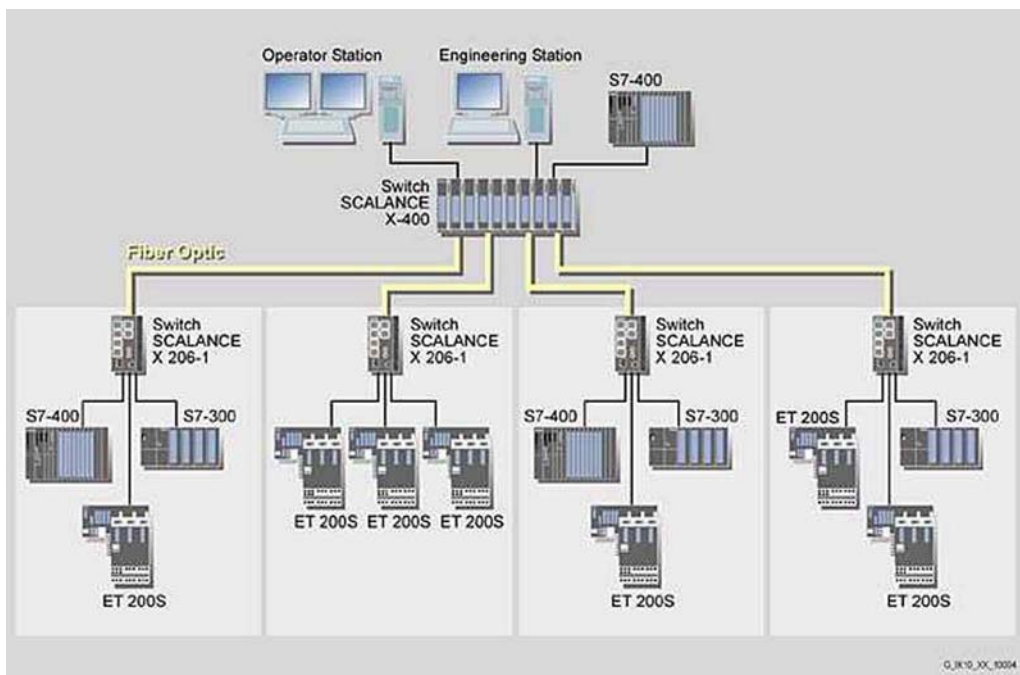
Figure 3-3   Optical Star Topology, Example with SCALANCE X-400 and SCALANCE X206-1

Ring Topology
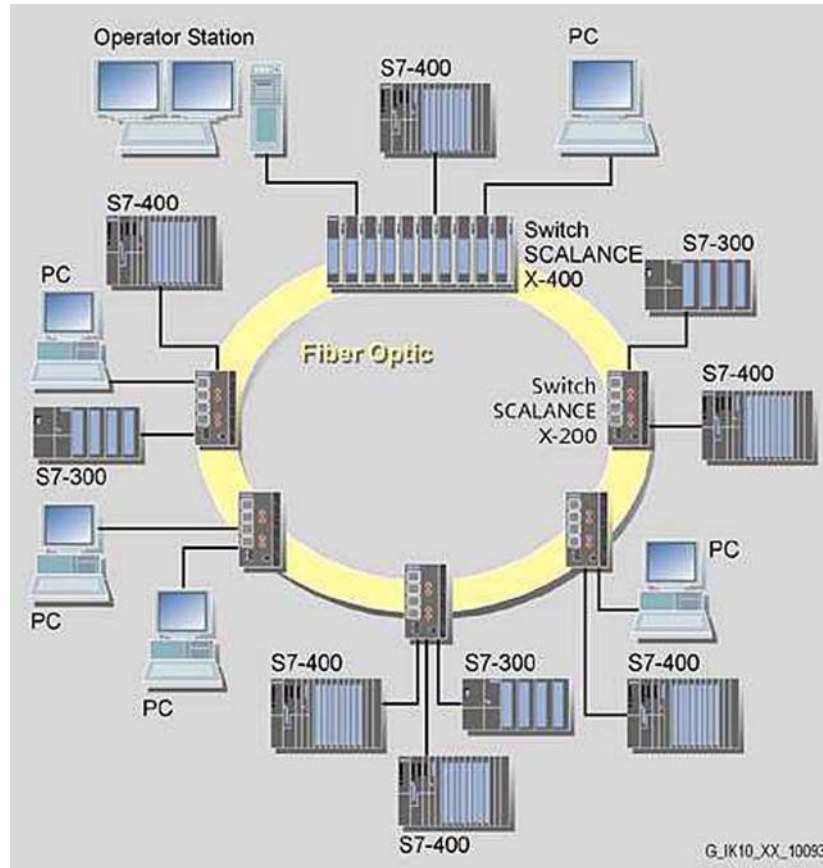
Figure 3-4   Ring Topology, Example with SCALANCE X204-2 and SCALANCE X-400 as Redundancy Manager

To increase availability, optical or electrical bus topologies made up of SCALANCE X-200 switches with a SCALANCE X414-3E, OSM version 2, or ESM version 2 configured as a redundancy manager can be closed to form a ring. The SCALANCE X-200 switches are first connected over their ring ports to form a bus. The two ends of the bus are closed to form a ring by a SCALANCE X414-3E or OSM / ESM operating in the redundancy manager mode. In contrast to the ring ports of the SCALANCE X-200 switches, the ring ports of the redundancy manager are disconnected from each other during problem-free network operation.

The SCALANCE X414-3E or OSM / ESM operating in the redundancy manager mode monitors the connected bus over its ring ports and switches the ring ports through if there is an interruption on the connected bus; in other words, it restores a functioning bus over this substitute path. Reconfiguration takes place within 0.3 s.

As soon as the problem has been eliminated, the original topology is restored; in other words, the ring ports in the redundancy manager are once again disconnected from each other.

Product Characteristics

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4.1   SCALANCE X108

4.1.1   Components of the SCALANCE X108 Product

What ships with the SCALANCE X108?

- SCALANCE X108 device
- 2-pin plug-in terminal block
- 4-pin plug-in terminal block
- Product information
- CD
  - Commissioning Manual
  - PST Tool (only for devices of the SCALANCE X-200 product line)

4.1.2   Unpacking and Checking

Unpacking, Checking

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

⚠ **Warning**

Do not use any parts that show evidence of damage!

⚠️ **Warning**

If the SCALANCE X108 device is operated in ambient temperatures between 65°C and 70°C, the temperature of the device housing may be higher than 70°C.

The subject unit must be located in a Restricted Access Location where access can only be gained by SERVICE PERSONNEL or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken when operated in an ambient air temperature of 65-70°C.

4.1.3 SCALANCE X108 Product Characteristics

Possible Attachments

The SCALANCE X108 has eight RJ-45 jacks for the connection of end devices or other network segments.

Figure 4-1   SCALANCE X108

4.1.4 SCALANCE X108 TP Ports

Connector Pinout

On the SCALANCE X108, the twisted-pair ports are implemented as RJ-45 jacks with MDI-X assignment (Medium Dependent Interface–Autocrossover) of a network component.

Notice

TP cords or TP-XP cords with a maximum length of 10 m can be connected to the RJ-45 TP port.

With the IE FC cables and IE FC RJ-45 plug 180, an overall cable length of a maximum of 100 m is permitted between two devices.

Autonegotiation

Autonegotiation means the automatic detection of the functionality of the port at the opposite end. Using autonegotiation, repeaters or DTEs can detect the functionality available at the port of a partner device allowing automatic configuration of different types of device. With autonegotiation, two components connected to a link segment can exchange parameters and set themselves to match the supported communication functionality.

Note

Devices not supporting autonegotiation must be set to 100 Mbps/ half duplex or 10 Mbps half duplex.

Note

The SCALANCE X108 is a plug and play device that does not require settings to be made for commissioning.

MDI /MDIX Autocrossover Function

The advantage of the MDI /MDIX autocrossover function is that straight-through cables can be used throughout and crossover Ethernet cables are unnecessary. This prevents malfunctions resulting from mismatching send and receive wires. This makes installation much easier for the user.

The devices of the SCALANCE X-100 and X-200 product lines all support the MDI / MDIX autocrossover function.

4.1.5   SCALANCE X108 Power Supply and Signaling Contact

Power Supply

The power supply is connected using a 4-pin plug-in terminal block. 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 X108 alone. The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up.

Figure 4-2   SCALANCE X108 Power Supply

> **Warning**
>
> The SCALANCE X108 is designed for operation with safety extra-low voltage. This means that only safety extra-low voltages (SELV) complying with IEC950/EN60950/ VDE0805 can be connected to the power supply terminals.
>
> The power supply unit to supply the SCALANCE W108 must comply with NEC Class 2 (voltage range 18 - 32 V, current requirement 350 mA)
>
> If the device is connected to a redundant power supply (two separate power supplies), both must meet these requirements.
>
> The signaling contact can be subjected to a maximum load of 100 mA (safety extra-low voltage (SELV), DC 24 V).
>
> Never connect the SCALANCE X108 to AC voltage or DC voltage higher than 32 V DC.

Signaling Contact

The signaling contact is connected to a 2-pin plug-in terminal block. The signaling contact is a floating switch with which error/fault states can be signaled by breaking the contact.

The following errors/faults can be signaled by the signaling contact:

* The failure of a link at a monitored port.
* The failure of one of the two redundant power supplies.

The connection or disconnection of a communication node on an unmonitored port does not lead to an error message.

The signaling contact remains activated until the error/fault is eliminated or until the current status is applied as the new desired status using the button.

When the device is turned off, the signaling contact is always activated (open).

Figure 4-3   Signaling Contact SCALANCE X108

4.1.6   SCALANCE X108 Button

What does the button do?

Using the button, you can display and modify the set fault mask.

After pressing the button, the currently valid fault mask is displayed for approximately 3 seconds. The LEDs of the monitored ports flash at a frequency of 5 Hz.

After 3 seconds the new fault mask is displayed. The flashing frequency is reduced to 2.5 Hz. After a further 3 seconds, the new fault mask is adopted and saved. The monitored ports are indicated by permanently lit LEDs until the button is released.

As long as the LEDs are still flashing, the saving of the mask can be interrupted by releasing the button.

If an empty fault mask is set (no port is monitored) or you want to set an empty mask, four 4 LEDs flash on and off alternating with their neighboring LEDs.

At the same time, you can also set the monitoring of the redundant power supply with the fault mask. Monitoring of the power supply is activated only when both power supplies are connected when the fault mask is saved.

The factory default is no port monitoring.

4.1.7   SCALANCE X108 LEDs

Fault indicator (red LED)

Status	Meaning
lit red	The SCALANCE X108 detects an error. At the same time, the signaling contact opens.
	The following faults are detected:
	1. Link down event on a monitored port
	2. Failure of one of the two redundant power supplies.
not lit	No fault detected by the SCALANCE X108.

Power indicator (green LED)

The status of the power supply is indicated by two green LEDs:

Status	Meaning
lit green	Power supply L1 or L2 is connected.
not lit	Power supply L+ is not connected or <14 V

Port status indicator (green/yellow LEDs)

The status of the ports is indicated by eight LEDs:

Status	Meaning
Port 1 through 8 LED lit green	TP link exists, no data reception
Port 1 through 8 LED lit yellow	TP link exists, data received at TP port
Ports 1 through 8 LED flash yellow	Setting or display of the fault mask

4.1.8 SCALANCE X108 Technical Specifications

Technical Specifications of the SCALANCE X108

Ports	
Attachment of DTEs or network components over twisted pair	8 x RJ-45 sockets with MDI-X pinning 10/100 Mbps (half/ full duplex)
Connector for power supply	1 x 4-pin plug-in terminal block
Connector for signaling contact	1 x 2-pin plug-in terminal block
Electrical Data	
Power supply	2 x 24 V DC (18 - 32 V DC) safety extra-low voltage (SELV)
Power loss at DC 24 V	3.36 W
Current consumption at rated voltage	140 mA
Overvoltage protection at input	PTC resetable fuse (0.6 A / 60 V)
Permitted Cable Lengths	
Network span parameter/TP cable length 0 – 100 m	 IE FC standard cable with IE FC RJ-45 plug 180 or over IE FC outlet RJ-45 with 0 - 90 m IE FC standard cable + 10 m TP cord
0 – 85 m	IE FC marine/trailing cable with IE FC RJ-45 plug 180 or 0 - 75 m IE FC marine/trailing cable + 10 m TP

	cord
Aging time	
Aging time	5 minutes

Permitted Environmental Conditions / EMC	
Operating temperature	-20° C through +70° C
Storage/transport temperature	-40° C through +80° C
Relative humidity in operation	‹ 95% (no condensation)
Operating altitude	2000 m at max 56 °C ambient temperature 3000 m at max. 50 °C ambient temperature
RF interference level	EN 50081-2 Class A
Noise immunity	EN 50082-2
Degree of protection	Tested to IP30
Approvals	
c-UL-us	UL 60950
	CSA C22.2 No. 60950
c-Ul-us for hazardous locations	UL 1604, UL 2279Pt.15
FM	FM 3611
C-TICK	AS/NZS 2064 (Class A).
CE	EN 50081-2, EN 50082-2
ATEX Zone 2	EN50021
MTBF	
MTBF	37.08 years
Construction	
Dimensions (W x H x D) in mm	60 x 125 x 124
Weight in g	780
Installation options	DIN rail S7-300 standard rail Wall Mounting
Order Numbers	
SCALANCE X108	6GK5108-0BA00-2AA3
"Industrial Ethernet TP and Fiber Optic Networks" manual	6GK1970-1BA10-0AA0
IE FC Stripping Tool	6GK1901-1GA00
IE FC blade cassettes	6GK1901-1GB00
IE FC TP standard cable	6XV1840 2AH10
IE FC TP trailing cable	6XV1840-3AH10
IE FC TP marine cable	6XV1840-4AH10
IE FC RJ-45 Plug 180 pack of 1	6GK1 901-1BB10-2AA0
IE FC RJ-45 Plug 180 pack of 10	6GK1 901-1BB10-2AB0
IE FC RJ-45 Plug 180 pack of 50	6GK1 901-1BB10-2AE0

Note

The number of connected SCALANCE X Industrial Ethernet Switches influences the frame propagation time.

When a frame passes through the devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines, it is delayed by the store and forward function of the switch:
- with a 64 byte frame length by approx. 10 µs (at 100 Mbps)
- with a 1500 byte frame length by approx. 130 µs (at 100 Mbps)
This means that the more devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines that a frame passes through, the higher the frame propagation time will be.

4.2 SCALANCE X208

4.2.1 Components of the SCALANCE X208

What ships with the SCALANCE X208?

- SCALANCE X208 Device
- 2-pin plug-in terminal block
- 4-pin plug-in terminal block
- Product information
- CD
    – Commissioning Manual
    – PST Tool

4.2.2 Unpacking and Checking

Unpacking, Checking

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

⚠ **Warning**

Do not use any parts that show evidence of damage!

⚠️ **Warning**

If the SCALANCE X208 device is operated in ambient temperatures between 65°C and 70°C, the temperature of the device housing may be higher than 70°C.

The subject unit must be located in a Restricted Access Location where access can only be gained by SERVICE PERSONNEL or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken when operated in an ambient air temperature of 65-70°C.

4.2.3 SCALANCE X208 Product Properties

Possible Attachments

The SCALANCE X208 has eight RJ-45 jacks for the connection of end devices or other network segments.

Figure 4-4   SCALANCE X208

4.2.4 SCALANCE X208 TP Ports

Connector Pinout

On the SCALANCE X208, the TP ports are implemented as RJ-45 sockets with MDI-X assignment (Medium Dependent Interface–Autocrossover) of a network component.

Notice

TP cords or TP-XP cords with a maximum length of 10 m can be connected to the RJ-45 TP port.

With the IE FC cables and IE FC RJ-45 plug 180, an overall cable length of a maximum of 100 m is permitted between two devices.

Autonegotiation

Autonegotiation means the automatic detection of the functionality of the port at the opposite end. Using autonegotiation, repeaters or DTEs can detect the functionality available at the port of a partner device allowing automatic configuration of different types of device. With autonegotiation, two components connected to a link segment can exchange parameters and set themselves to match the supported communication functionality.

Note

Devices not supporting autonegotiation must be set to 100 Mbps/ half duplex or 10 Mbps half duplex.

Note

The SCALANCE X208 is a plug-and-play device that does not require settings to be made for commissioning.

MDI /MDIX Autocrossover Function

The advantage of the MDI /MDIX autocrossover function is that straight-through cables can be used throughout and crossover Ethernet cables are unnecessary. This prevents malfunctions resulting from mismatching send and receive wires. This makes installation much easier for the user.

The devices of the SCALANCE X-100 and X-200 product lines all support the MDI / MDIX autocrossover function.

4.2.5　SCALANCE X208 Power Supply and Signaling Contact

Power Supply

The power supply is connected using a 4-pin plug-in terminal block. 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 X208 alone. The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up.

Figure 4-5　　SCALANCE X208 Power Supply

⚠ **Warning**

The SCALANCE X208 is designed for operation with safety extra-low voltage. This means that only safety extra-low voltages (SELV) complying with IEC950/EN60950/ VDE0805 can be connected to the power supply terminals.

The power supply unit to supply the SCALANCE X208 must comply with NEC Class 2 (voltage range 18 - 32 V, current requirement 350 mA)

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

The signaling contact can be subjected to a maximum load of 100 mA (safety extra-low voltage (SELV), DC 24 V).

Never connect the SCALANCE X208 to AC voltage or DC voltage higher than 32 V DC.

Signaling Contact

The signaling contact is connected to a 2-pin plug-in terminal block. The signaling contact (relay contact) is a floating switch with which error/fault states can be signaled by breaking the contact.

Figure 4-6   SCALANCE X208 Signaling Contact

The following errors/faults can be signaled by the signaling contact:

- The failure of a link at a monitored port.

- The failure of one of the two redundant power supplies.

The connection or disconnection of a communication node on an unmonitored port does not lead to an error message.

The signaling contact remains activated until the error/fault is eliminated or until the current status is applied as the new desired status using the button.

When the device is turned off, the signaling contact is always activated (open).

4.2.6   SCALANCE X208 Button

What does the button do?

Using the button, you can display and modify the set fault mask.

After pressing the button, the currently valid fault mask is displayed for approximately 3 seconds. The monitored ports flash at a frequency of 5 Hz.

After 3 seconds the new fault mask is displayed. The flashing frequency is reduced to 2.5 Hz. After a further 3 seconds, the new fault mask is adopted and saved. The monitored ports are indicated by permanently lit LEDs until the button is released.

As long as the LEDs are still flashing, the saving of the mask can be interrupted by releasing the button.

If an empty fault mask is set (no port is monitored) or you want to set an empty mask, four 4 LEDs flash on and off alternating with their neighboring LEDs.

At the same time, you can also set the monitoring of the redundant power supply with the fault mask. Monitoring of the power supply is activated only when both power supplies are connected when the fault mask is saved.

The factory default is no port monitoring.

If the button is pressed longer (15 seconds), the device is reset to "factory defaults". This is indicated by all the Port LEDs flashing. During this activity, the device must not be turned off.

4.2.7   C-PLUG Configuration Memory

Area of Application

The C-PLUG is an exchangeable medium for storage of the configuration and project engineering data of the basic device. This means that the configuration data remains available if the basic device is replaced.

How It Works

Power is supplied by the end device. The C-PLUG retains all data permanently when the power is turned off.

If an empty C-PLUG (factory settings) is inserted, all configuration data of the SCALANCE X-200 is saved to it when the device starts up. Changes to the configuration during operation are also saved on the C-PLUG without any operator intervention being necessary.

A basic device with an inserted C-PLUG automatically uses the configuration data of the C-PLUG when it starts up. This is, however, only possible when the data was written by a compatible device type.

This allows fast and simple replacement of the basic device. If a device is replaced, the C-PLUG is taken from the failed component and inserted in the replacement. The first time it is started up, the replacement device has the same configuration as the failed device except for the MAC address set by the vendor.

Using a Previously Written C-PLUG

If you want to insert a C-PLUG that has already been written to in a new basic device requiring a different configuration, you must format the C-PLUG using the delete function in Web Based Management following device startup. If the C-PLUG was written by an incompatible device type, the basic device will not start up fully and signals an error. The delete function can nevertheless be used. When the device next starts up, the current configuration data of the basic device is written to the C-PLUG.

Diagnostics

Inserting a C-PLUG that does not contain the configuration of a compatible device type, inadvertently removing the C-PLUG, or general malfunctions of the C-PLUG are indicated by the diagnostic mechanisms of the switch (LEDs, PROFINET, SNMP, WBM, etc.).

Inserting in the C-PLUG Slot

The C-PLUG is not supplied with the devices of the SCALANCE X-200 product line. It is available as an optional accessory.

The slot for the C-PLUG is located on the back of the device.

To insert the C-PLUG, remove the screw cover. The C-PLUG is inserted in the receptacle. The screw cover must then be closed correctly.

Notice

The C-PLUG may only be inserted or removed when the power is off!

Removing the C-PLUG

It is only necessary to remove the C-PLUG if the basic device develops a fault.

The C-PLUG can be removed from the slot using flat pliers, tweezers, or a small screwdriver.

4.2.8   SCALANCE X208 Displays

Fault indicator (red LED)

Status	Meaning
lit red	The SCALANCE X208 detects an error. At the same time, the signaling contact opens. The following faults are detected: 1. Link down event on a monitored port 2. Failure of one of the two redundant power supplies. 3. Device startup, the LED is lit for approx. 20s.
flashes red	An internal fault was detected. Notify the maintenance personnel and, if necessary, send the device in for repair.
not lit	No fault detected by the SCALANCE X208.

Power indicator (green LED)

The status of the power supply is indicated by two green LEDs:

Status	Meaning
lit green	Power supply L1 or L2 is connected.
not lit	Power supply L1 and/or L2 not connected or <14 V.

Port status indicator (green/yellow LEDs)

The status of the ports is indicated by eight two-color LEDs:

Status	Meaning
Port 1 through 8 LED lit green	TP link exists, no data reception
Port 1 through 8 LED lit yellow	TP link exists, data received at TP port

	Device startup, the LED is lit for approx. 6s.
Ports 1 through 8 LED flash yellow	Setting or display of the fault mask
Port 1 through 8 LED flashes green	The "Show Location" function was activated over Ethernet (e.g. PST tool).
	PROFINET IO operation was started with the PN IO controller, the attempt to change the fault mask with the button was rejected by all the port LEDs flashing once.
	The button was pressed for longer than 15 s to reset the configuration.

LED Display during Startup

Following startup, the following LEDs light up in the following order:

- Power LEDs (green) light up immediately after turning on the power.
- Port LEDs (yellow) light up for approx. 6 s, the red LED is off.
- Port LEDs go off, the red LED is lit for approx. 20 s.

After the port LEDs go off, the correct link status is displayed after approx. 2 s.

The device is now ready for operation.

4.2.9 SCALANCE X208 Technical Specifications

Technical Specifications of the SCALANCE X208

Ports	
Attachment of DTEs or network components over twisted pair	8 x RJ-45 sockets with MDI-X pinning 10/100 Mbps (half/ full duplex)
Connector for power supply	1 x 4-pin plug-in terminal block
Connector for signaling contact	1 x 2-pin plug-in terminal block
Electrical Data	
Power supply	2 x 24 V DC (18 - 32 V DC) safety extra-low voltage (SELV)
Power loss at DC 24 V	4.4 W
Current consumption at rated voltage	185 mA
Overvoltage protection at input	PTC resetable fuse (0.6 A / 60 V)
Permitted Cable Lengths	
Network span parameter/TP cable length	
0 – 100 m	IE FC standard cable with IE FC RJ-45 plug 180 or over IE FC outlet RJ-45 with 0 - 90 m IE FC standard cable + 10 m TP cord
0 – 85 m	IE FC marine/trailing cable with IE FC RJ-45 plug 180

	or 0 - 75 m IE FC marine/trailing cable + 10 m TP cord
Aging time	
Aging time	5 minutes

Permitted Environmental Conditions / EMC	
Operating temperature	-20° C through +70° C
Storage/transport temperature	-40° C through +80° C
Relative humidity in operation	‹ 95% (no condensation)
Operating altitude	2000 m at max 56 °C ambient temperature 3000 m at max. 50 °C ambient temperature
RF interference level	EN 50081-2 Class A
Noise immunity	EN 50082-2
Degree of protection	Tested to IP30
Approvals	
c-UL-us	UL 60950
	CSA C22.2 No. 60950
c-Ul-us for hazardous locations	UL 1604, UL 2279Pt.15
FM	FM 3611
C-TICK	AS/NZS 2064 (Class A).
CE	EN 50081-2, EN 50082-2
ATEX Zone 2	EN50021
MTBF	
MTBF	25.56 years
Construction	
Dimensions (W x H x D) in mm	60 x 125 x 124
Weight in g	780
Installation options	DIN rail S7-300 standard rail Wall Mounting
Order Numbers	
SCALANCE X208	6GK5208-0BA00-2AA3
"Industrial Ethernet TP and Fiber Optic Networks" manual	6GK1970-1BA10-0AA0
IE FC Stripping Tool	6GK1901-1GA00
IE FC blade cassettes	6GK1901-1GB00
IE FC TP standard cable	6XV1840 2AH10
IE FC TP trailing cable	6XV1840-3AH10
IE FC TP marine cable	6XV1840-4AH10
IE FC RJ-45 Plug 180 pack of 1	6GK1 901-1BB10-2AA0
IE FC RJ-45 Plug 180 pack of 10	6GK1 901-1BB10-2AB0
IE FC RJ-45 Plug 180 pack of 50	6GK1 901-1BB10-2AE0

C-PLUG	6GK1 900-0AB00

Note

The number of connected SCALANCE X Industrial Ethernet Switches influences the frame propagation time.

When a frame passes through devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines, it is delayed by the store and forward function of the switch:
- with a 64 byte frame length by approx. 10 µs (at 100 Mbps)
- with a 1500 byte frame length by approx. 130 µs (at 100 Mbps)
This means that the more devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines that a frame passes through, the higher the frame propagation time will be.

4.3 SCALANCE X208PRO

4.3.1 Components of the SCALANCE X208PRO

What ships with the SCALANCE X208PRO?

- SCALANCE X208PRO Device
- 3 x dummy M12 connectors
- 8 x push pull dummy connectors
- Product information
- CD
  – Commissioning Manual
  – PST Tool

4.3.2 Unpacking and Checking

Unpacking, Checking

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

⚠ **Warning**

Do not use any parts that show evidence of damage!

> **Warning**
>
> If the SCALANCE X208PRO device is operated in ambient temperatures between 65°C and 70°C, the temperature of the device housing may be higher than 70°C.
>
> The subject unit must be located in a Restricted Access Location where access can only be gained by SERVICE PERSONNEL or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken when operated in an ambient air temperature of 65-70°C.

4.3.3 SCALANCE X208PRO Product Properties

Possible Attachments

The SCALANCE X208PRO has eight RJ-45 jacks designed as push pull for the connection of end devices or other network segments.

Figure 4-7   SCALANCE X208PRO without Protective Covers

4.3.4 SCALANCE X208PRO TP Ports

Connector Pinout

On the SCALANCE X208PRO, the TP ports are implemented as RJ-45 sockets designed as push pull with MDI-X assignment (Medium Dependent Interface–Autocrossover) of a network component.

Notice

TP cords or TP-XP cords with a maximum length of 10 m can be connected to the RJ-45 TP port.

With the IE FC cables and IP67 push pull connector, an overall cable length of a maximum of 100 m is permitted between two devices.

Autonegotiation

Autonegotiation means the automatic detection of the functionality of the port at the opposite end. Using autonegotiation, repeaters or DTEs can detect the functionality available at the port of a partner device allowing automatic configuration of different types of device. With autonegotiation, two components connected to a link segment can exchange parameters and set themselves to match the supported communication functionality.

Note

Devices not supporting autonegotiation must be set to 100 Mbps/ half duplex or 10 Mbps half duplex.

Note

The SCALANCE X208PRO is a plug-and-play device that does not require settings to be made for commissioning.

MDI /MDIX Autocrossover Function

The advantage of the MDI /MDIX autocrossover function is that straight-through cables can be used throughout and crossover Ethernet cables are unnecessary. This prevents malfunctions resulting from mismatching send and receive wires. This makes installation much easier for the user.

The devices of the SCALANCE X-100 and X-200 product lines all support the MDI / MDIX autocrossover function.

4.3.5 SCALANCE X208PRO Power Supply and Signaling Contact

Power Supply

The power supply is connected over two 4-pin M12 connectors (a-coded). 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 X208PRO alone. The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up.

Figure 4-8   SCALANCE X208PRO Power Supply

⚠️ **Warning**

The SCALANCE X208PRO is designed for operation with safety extra-low voltage. This means that only safety extra-low voltages (SELV) complying with IEC950/EN60950/VDE0805 can be connected to the power supply terminals.

The power supply unit to supply the SCALANCE X208PRO must comply with NEC Class 2 (voltage range 18 - 32 V, current requirement 350 mA)

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

The signaling contact can be subjected to a maximum load of 100 mA (safety extra-low voltage (SELV), DC 24 V).

Never connect the SCALANCE X208PRO to AC voltage or DC voltage higher than 32 V DC.

Signaling Contact

The signaling contact is connected over one 5-pin M12 connector (b-coded).

The signaling contact (relay contact) is a floating switch with which error/fault states can be signaled by breaking the contact.

Figure 4-9   SCALANCE X208PRO Signaling Contact

The following errors/faults can be signaled by the signaling contact:

• The failure of a link at a monitored port.

• The failure of one of the two redundant power supplies.

The connection or disconnection of a communication node on an unmonitored port does not lead to an error message.

The signaling contact remains activated until the error/fault is eliminated or until the current status is applied as the new desired status over WBM.

When the device is turned off, the signaling contact is always activated (open).

4.3.6 C-PLUG Configuration Memory

Area of Application

The C-PLUG is an exchangeable medium for storage of the configuration and project engineering data of the basic device. This means that the configuration data remains available if the basic device is replaced.

How It Works

Power is supplied by the end device. The C-PLUG retains all data permanently when the power is turned off.

If an empty C-PLUG (factory settings) is inserted, all configuration data of the SCALANCE X-200 is saved to it when the device starts up. Changes to the configuration during operation are also saved on the C-PLUG without any operator intervention being necessary.

A basic device with an inserted C-PLUG automatically uses the configuration data of the C-PLUG when it starts up. This is, however, only possible when the data was written by a compatible device type.

This allows fast and simple replacement of the basic device. If a device is replaced, the C-PLUG is taken from the failed component and inserted in the replacement. The first time it is started up, the replacement device has the same configuration as the failed device except for the MAC address set by the vendor.

Using a Previously Written C-PLUG

If you want to insert a C-PLUG that has already been written to in a new basic device requiring a different configuration, you must format the C-PLUG using the delete function in Web Based Management following device startup. If the C-PLUG was written by an incompatible device type, the basic device will not start up fully and signals an error. The delete function can nevertheless be used. When the device next starts up, the current configuration data of the basic device is written to the C-PLUG.

Diagnostics

Inserting a C-PLUG that does not contain the configuration of a compatible device type, inadvertently removing the C-PLUG, or general malfunctions of the C-PLUG are indicated by the diagnostic mechanisms of the switch (LEDs, PROFINET, SNMP, WBM, etc.).

Inserting in the C-PLUG Slot

The C-PLUG is not supplied with the devices of the SCALANCE X-200 product line. It is available as an optional accessory.

The slot for the C-PLUG is located on the back of the device.

To insert the C-PLUG, remove the screw cover. The C-PLUG is inserted in the receptacle. The screw cover must then be closed correctly.

Notice

The C-PLUG may only be inserted or removed when the power is off!

Removing the C-PLUG

It is only necessary to remove the C-PLUG if the basic device develops a fault.

The C-PLUG can be removed from the slot using flat pliers, tweezers, or a small screwdriver.

4.3.7   SCALANCE X208PRO Displays

Fault indicator (red LED)

Status	Meaning
lit red	The SCALANCE X208PRO detects an error. At the same time, the signaling contact opens. The following faults are detected: 1. Link down event on a monitored port 2. Failure of one of the two redundant power supplies. 3. Device startup, the LED is lit for approx. 20s.
flashes red	An internal fault was detected. Notify the maintenance personnel and, if necessary, send the device in for repair.
not lit	No fault detected by the SCALANCE X208PRO.

Power indicator (green LED)

The status of the power supply is indicated by two green LEDs:

Status	Meaning
lit green	Power supply L1 or L2 is connected.
not lit	Power supply L1 and/or L2 not connected or <14 V.

Port status indicator (green/yellow LEDs)

The status of the ports is indicated by eight two-color LEDs:

Status	Meaning
Port 1 through 8 LED lit green	TP link exists, no data reception
Port 1 through 8 LED lit yellow	TP link exists, data received at TP port
	Device startup, the LED is lit for approx. 6s.
Ports 1 through 8 LED flash yellow	Setting or display of the fault mask
Port 1 through 8 LED flashes green	The "Show Location" function was activated over Ethernet (e.g. PST tool).

LED Display during Startup

Following startup, the following LEDs light up in the following order:

• Power LEDs (green) light up immediately after turning on the power.

• Port LEDs (yellow) light up for approx. 6 s, the red LED is off.

• Port LEDs go off, the red LED is lit for approx. 20 s.

After the port LEDs go off, the correct link status is displayed after approx. 2 s.

The device is now ready for operation.

4.3.8 SCALANCE X208PRO Technical Specifications

Technical Specifications of the SCALANCE X208PRO

Ports	
Attachment of DTEs or network components over twisted pair	8 x RJ-45 sockets with MDI-X pinning 10/100 Mbps (half/ full duplex)
Connector for power supply	2 x 4-pin M12 port (a-coded)
Connector for signaling contact	5-pin M12 port (b-coded)
Electrical Data	
Power supply	2 x 24 V DC (18 through 32 V DC) safety extra-low voltage (SELV)
Power loss at DC 24 V	4.4 W
Current consumption at rated voltage	185 mA
Overvoltage protection at input	PTC resetable fuse (0.6 A / 60 V)
Permitted Cable Lengths	
Network span parameter/TP cable length 0 -100 m	IE FC standard cable with IP67 push pull connector
0 - 85 m	IE FC marine/trailing cable with IP 67 push pull

	connector
Aging time	
Aging time	5 minutes

Permitted Environmental Conditions / EMC	
Operating temperature	-20° C through +70° C
Storage/transport temperature	-40° C through +80° C
Relative humidity in operation	‹ 95% (no condensation)
Operating altitude	2000 m at max 56 °C ambient temperature 3000 m at max. 50 °C ambient temperature
RF interference level	EN 50081-2 Class A
Noise immunity	EN 50082-2
Degree of protection	IP65
Approvals	
c-UL-us	UL 60950
	CSA C22.2 No. 60950
c-Ul-us for hazardous locations	UL 1604, UL 2279Pt.15
FM	FM 3611
C-TICK	AS/NZS 2064 (Class A).
CE	EN 50081-2, EN 50082-2
ATEX Zone 2	EN50021
MTBF	
MTBF	25.56 years
Construction	
Dimensions (W x H x D) in mm	90 x 125 x 124
Weight in g	950
Installation options	Wall mounting DIN rail S7-300 standard rail
Order Numbers	
SCALANCE X208PRO	6GK5208-0CA00-2AA6
"Industrial Ethernet TP and Fiber Optic Networks" manual	6GK1970-1BA10-0AA0
IE FC Stripping Tool	6GK1901-1GA00
IE FC blade cassettes	6GK1901-1GB00
IE FC TP standard cable	6XV1840 2AH10
IE FC TP trailing cable	6XV1840-3AH10
IE FC TP marine cable	6XV1840-4AH10
C-PLUG	6GK1 900-0AB00
Power M12 cable connector PRO	6GK1 907-0DC10-6AA3
Signaling contact M12 cable connector PRO	6GK1 908-0DC10-6AA3
Power supply PS791-1PRO	6GK5 791-1PS00-0AA6
Power cord M12	6GK1 907-0AF00-0AA0

IP67 push pull connector	09 45 145 1100 Can be ordered directly from: HARTING Deutschland GmbH & Co. KG Postfach 2451 D-32381 Minden Tel. 0571 8896-0 Fax. 0571 8896 – 354 E-mail: Internet: hhttp://www.HARTING.com

Note

The number of connected SCALANCE X Industrial Ethernet Switches influences the frame propagation time.

When a frame passes through the devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines, it is delayed by the store and forward function of the switch:
- with a 64 byte frame length by approx. 10 µs (at 100 Mbps)
- with a 1500 byte frame length by approx. 130 µs (at 100 Mbps)
This means that the more devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines that a frame passes through, the higher the frame propagation time will be.

4.4 SCALANCE X206-1

4.4.1 Components of the SCALANCE X206-1

What ships with the SCALANCE X206-1?

- SCALANCE X206-1 device
- 2-pin plug-in terminal block
- 4-pin plug-in terminal block
- Product information
- CD
    – Commissioning Manual
    – PST Tool

4.4.2 Unpacking and Checking

Unpacking, Checking

1. Make sure that the package is complete.

2. Check all the parts for transport damage.

⚠️ **Warning**

Do not use any parts that show evidence of damage!

4.4.3 SCALANCE X206-1 Product Properties

Possible Attachments

The SCALANCE X206-1 has six RJ-45 jacks and a BFOC port for the connection of end devices or other network segments.

Note

The BFOC socket corresponds to the ST socket.

Figure 4-10   SCALANCE X206-1

4.4.4   SCALANCE X206-1 TP Ports

Connector Pinout

On the SCALANCE X206-1, the TP ports are implemented as RJ-45 sockets with MDI-X assignment (Medium Dependent Interface–Autocrossover) of a network component.

Notice

TP cords or TP-XP cords with a maximum length of 10 m can be connected to the RJ-45 TP port.

With the IE FC cables and IE FC RJ-45 plug 180, an overall cable length of a maximum of 100 m is permitted between two devices.

Autonegotiation

Autonegotiation means the automatic detection of the functionality of the port at the opposite end. Using autonegotiation, repeaters or DTEs can detect the functionality available at the port of a partner device allowing automatic configuration of different types of device. With

autonegotiation, two components connected to a link segment can exchange parameters and set themselves to match the supported communication functionality.

Note

Devices not supporting autonegotiation must be set to 100 Mbps/ half duplex or 10 Mbps half duplex.

Note

The SCALANCE X206-1 is a plug-and-play device that does not require settings to be made for commissioning.

MDI /MDIX Autocrossover Function

The advantage of the MDI /MDIX autocrossover function is that straight-through cables can be used throughout and crossover Ethernet cables are unnecessary. This prevents malfunctions resulting from mismatching send and receive wires. This makes installation much easier for the user.

The devices of the SCALANCE X-100 and X-200 product lines all support the MDI / MDIX autocrossover function.

4.4.5   SCALANCE X206-1 FO Ports

Transmission speed

The transmission rate of the optical Fast Ethernet ports is 100 Mbps.

Transmission Mode

The transmission mode for 100Base-FX is specified in the IEEE 802.3u standard.

Since the full duplex mode and the transmission rate cannot be modified for optical transmission, autonegotiation cannot be selected.

Transmission Medium

Data transmission is over multimode fiber-optic cable (FOC). The wavelength is 1310 nm.

Multimode FOC with a core diameter of 50 or 62.5 µm is used, the light source is an LED. To transmit a signal, many modes (light rays) are used

The outer diameter of the FOC is 125 µm.

Range

The maximum transmission range (segment length) is 3 km.

Connectors

The cables are connected over BFOC sockets.

4.4.6 SCALANCE X206-1 Power Supply and Signaling Contact

Power Supply

The power supply is connected using a 4-pin plug-in terminal block. 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 X206-1 alone. The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up.

Figure 4-11 SCALANCE X206-1 Power Supply

⚠ **Warning**

The SCALANCE X206-1 is designed for operation with safety extra-low voltage. This means that only safety extra-low voltages (SELV) complying with IEC950/EN60950/ VDE0805 can be connected to the power supply terminals.

The power supply unit to supply the SCALANCE X206-1 must comply with NEC Class 2 (voltage range 18 - 32 V, current requirement 350 mA)

The signaling contact can be subjected to a maximum load of 100 mA (safety extra-low voltage (SELV), DC 24 V).

Never connect the SCALANCE X206-1 to AC voltage or DC voltage higher than 32 V DC.

Signaling Contact

The signaling contact is connected to a 2-pin plug-in terminal block. The signaling contact (relay contact) is a floating switch with which error/fault states can be signaled by breaking the contact.

Figure 4-12   SCALANCE X206-1 Signaling Contact

The following errors/faults can be signaled by the signaling contact:

- The failure of a link at a monitored port.
- The failure of one of the two redundant power supplies.

The connection or disconnection of a communication node on an unmonitored port does not lead to an error message.

The signaling contact remains activated until the error/fault is eliminated or until the current status is applied as the new desired status using the button.

When the device is turned off, the signaling contact is always activated (open).

4.4.7   SCALANCE X206-1 Button

What does the button do?

Using the button, you can display and modify the set fault mask.

After pressing the button, the currently valid fault mask is displayed for approximately 3 seconds. The monitored ports flash at a frequency of 5 Hz.

After 3 seconds the new fault mask is displayed. The flashing frequency is reduced to 2.5 Hz. After a further 3 seconds, the new fault mask is adopted and saved. The monitored ports are indicated by permanently lit LEDs until the button is released.

As long as the LEDs are still flashing, the saving of the mask can be interrupted by releasing the button.

If an empty fault mask is set (no port is monitored) or you want to set an empty mask, four 4 LEDs flash on and off alternating with their neighboring LEDs.

At the same time, you can also set the monitoring of the redundant power supply with the fault mask. Monitoring of the power supply is activated only when both power supplies are connected when the fault mask is saved.

The factory default is no port monitoring.

If the button is pressed longer (15 seconds), the device is reset to "factory defaults". This is indicated by all the Port LEDs flashing. During this activity, the device must not be turned off.

4.4.8   C-PLUG Configuration Memory

Area of Application

The C-PLUG is an exchangeable medium for storage of the configuration and project engineering data of the basic device. This means that the configuration data remains available if the basic device is replaced.

How It Works

Power is supplied by the end device. The C-PLUG retains all data permanently when the power is turned off.

If an empty C-PLUG (factory settings) is inserted, all configuration data of the SCALANCE X-200 is saved to it when the device starts up. Changes to the configuration during operation are also saved on the C-PLUG without any operator intervention being necessary.

A basic device with an inserted C-PLUG automatically uses the configuration data of the C-PLUG when it starts up. This is, however, only possible when the data was written by a compatible device type.

This allows fast and simple replacement of the basic device. If a device is replaced, the C-PLUG is taken from the failed component and inserted in the replacement. The first time it is started up, the replacement device has the same configuration as the failed device except for the MAC address set by the vendor.

Using a Previously Written C-PLUG

If you want to insert a C-PLUG that has already been written to in a new basic device requiring a different configuration, you must format the C-PLUG using the delete function in Web Based Management following device startup. If the C-PLUG was written by an incompatible device type, the basic device will not start up fully and signals an error. The delete function can nevertheless be used. When the device next starts up, the current configuration data of the basic device is written to the C-PLUG.

Diagnostics

Inserting a C-PLUG that does not contain the configuration of a compatible device type, inadvertently removing the C-PLUG, or general malfunctions of the C-PLUG are indicated by the diagnostic mechanisms of the switch (LEDs, PROFINET, SNMP, WBM, etc.).

Inserting in the C-PLUG Slot

The C-PLUG is not supplied with the devices of the SCALANCE X-200 product line. It is available as an optional accessory.

The slot for the C-PLUG is located on the back of the device.

To insert the C-PLUG, remove the screw cover. The C-PLUG is inserted in the receptacle. The screw cover must then be closed correctly.

Notice

The C-PLUG may only be inserted or removed when the power is off!

Removing the C-PLUG

It is only necessary to remove the C-PLUG if the basic device develops a fault.

The C-PLUG can be removed from the slot using flat pliers, tweezers, or a small screwdriver.

4.4.9   SCALANCE X206-1 Displays

Fault indicator (red LED)

Status	Meaning
lit red	The SCALANCE X206-1 detects an error. At the same time, the signaling contact opens. The following faults are detected: 1. Link down event on a monitored port 2. Failure of one of the two redundant power supplies. 3. Device startup, the LED is lit for approx. 20s.
flashes red	An internal fault was detected. Notify the maintenance personnel and, if necessary, send the device in for repair.
not lit	No fault detected by the SCALANCE X206-1.

Power indicator (green LED)

The status of the power supply is indicated by two green LEDs:

Status	Meaning
lit green	Power supply L1 or L2 is connected.
not lit	Power supply L1 and/or L2 not connected or <14 V.

Port status indicator (green/yellow LEDs)

The status of the ports is indicated by seven two-color LEDs:

Status	Meaning
Port 1 through 8 LED lit green	TP link exists, no data reception
Port 1 through 8 LED lit yellow	TP link exists, data received at TP port

	Device startup, the LED is lit for approx. 6s.
Ports 1 through 8 LED flash yellow	Setting or display of the fault mask
Port 1 through 8 LED flashes green	The "Show Location" function was activated over Ethernet (e.g. PST tool).
	PROFINET IO operation was started with the PN IO controller, the attempt to change the fault mask with the button was rejected by all the port LEDs flashing once.
	The button was pressed for longer than 15 s to reset the configuration.

LED Display during Startup

Following startup, the following LEDs light up in the following order:

• Power LEDs (green) light up immediately after turning on the power.

• Port LEDs (yellow) light up for approx. 6 s, the red LED is off.

• Port LEDs go off, the red LED is lit for approx. 20 s.

After the port LEDs go off, the correct link status is displayed after approx. 2 s.

The device is now ready for operation.

4.4.10   SCALANCE X206-1 Technical Specifications

Technical Specifications of the SCALANCE X206-1

Ports	
Attachment of DTEs or network components over twisted pair	6 x RJ-45 sockets with MDI-X pinning 10/100 Mbps (half/ full duplex)
Connection of further network components over FOC.	2 x BFOC sockets (100 Mbps, full duplex to 100 BaseFX)
Connector for power supply	1 x 4-pin plug-in terminal block
Connector for signaling contact	1 x 2-pin plug-in terminal block
Electrical Data	
Power supply	2 x 24 V DC (18 - 32 V DC) safety extra-low voltage (SELV)
Power loss at DC 24 V	4.8 W
Current consumption at rated voltage	200 mA
Overvoltage protection at input	PTC resetable fuse (0.6 A / 60 V)
Permitted Cable Lengths	
Network span parameter/TP cable length 0 – 100 m	IE FC standard cable with IE FC RJ-45 plug 180 or IE FC outlet RJ-45 with IE FC standard cable (0 - 90 m) + 10 m TP cord

0 – 85 m	IE FC marine/trailing cable with IE FC RJ-45 plug 180 or IE FC marine/trailing cable (0 - 75 m) + 10 m TP cord
0 -3,000 m	Glass FOC
	62.5/125 μm or 50/125 μm glass fiber;
	≤ 1 dB/km at 1300 nm; 600 MHz x km;
	6 dB max. permitted FO cable attenuation with 3 dB link power margin
Aging time	
Aging time	5 minutes

Permitted Environmental Conditions / EMC	
Operating temperature	0° C through +60° C
Storage/transport temperature	-40° C through +80° C
Relative humidity in operation	‹ 95% (no condensation)
Operating altitude	2000 m at max 56 °C ambient temperature 3000 m at max. 50 °C ambient temperature
RF interference level	EN 50081-2 Class A
Noise immunity	EN 50082-2
Degree of protection	Tested to IP30
Approvals	
c-UL-us	UL 60950
	CSA C22.2 No. 60950
c-Ul-us for hazardous locations	UL 1604, UL 2279Pt.15
FM	FM 3611
C-TICK	AS/NZS 2064 (Class A).
CE	EN 50081-2, EN 50082-2
ATEX Zone 2	EN50021

MTBF	
MTBF	42.56 years
Construction	
Dimensions (W x H x D) in mm	60 x 125 x 124
Weight in g	780
Installation options	Standard rail
	S7-300 standard rail
	Wall Mounting
Order Numbers	
SCALANCE X206-1	6GK5206-1BB00-2AA3

"Industrial Ethernet TP and Fiber Optic Networks" manual	6GK1970-1BA10-0AA0
IE FC Stripping Tool	6GK1901-1GA00
IE FC blade cassettes	6GK1901-1GB00
IE FC TP standard cable	6XV1840 2AH10
IE FC TP trailing cable	6XV1840-3AH10
IE FC TP marine cable	6XV1840-4AH10
IE FC RJ-45 Plug 180 pack of 1	6GK1 901-1BB10-2AA0
IE FC RJ-45 Plug 180 pack of 10	6GK1 901-1BB10-2AB0
IE FC RJ-45 Plug 180 pack of 50	6GK1 901-1BB10-2AE0
C-PLUG	6GK1 900-0AB00

Note

The number of connected SCALANCE X Industrial Ethernet Switches influences the frame propagation time.

When a frame passes through the devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines, it is delayed by the store and forward function of the switch:
- with a 64 byte frame length by approx. 10 μs (at 100 Mbps)
- with a 1500 byte frame length by approx. 130 μs (at 100 Mbps)
This means that the more devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines that a frame passes through, the higher the frame propagation time will be.

4.5   SCALANCE X204-2

4.5.1   Components of the SCALANCE X204-2

What ships with the SCALANCE X204-2?

- SCALANCE X204-2 Device
- 2-pin plug-in terminal block
- 4-pin plug-in terminal block
- Product information
- CD
  – Commissioning Manual
  – PST Tool

4.5.2 Unpacking and Checking

Unpacking, Checking

1. Make sure that the package is complete.

2. Check all the parts for transport damage.

	Warning
⚠	Do not use any parts that show evidence of damage!

4.5.3 SCALANCE X204-2 Product Properties

Possible Attachments

The SCALANCE X204-2 has four RJ-45 jacks and two BFOC ports for the connection of end devices or other network segments.

	Note
	The BFOC socket corresponds to the ST socket.

Figure 4-13   SCALANCE X204-2

4.5.4   SCALANCE X204-2 TP Ports

Connector Pinout

On the SCALANCE X204-2, the TP ports are implemented as RJ-45 sockets with MDI-X assignment (Medium Dependent Interface–Autocrossover) of a network component.

Notice

TP cords or TP-XP cords with a maximum length of 10 m can be connected to the RJ-45 TP port.

With the IE FC cables and IE FC RJ-45 plug 180, an overall cable length of a maximum of 100 m is permitted between two devices.

Autonegotiation

Autonegotiation means the automatic detection of the functionality of the port at the opposite end. Using autonegotiation, repeaters or DTEs can detect the functionality available at the

port of a partner device allowing automatic configuration of different types of device. With autonegotiation, two components connected to a link segment can exchange parameters and set themselves to match the supported communication functionality.

Note

Devices not supporting autonegotiation must be set to 100 Mbps/ half duplex or 10 Mbps half duplex.

Note

The SCALANCE X204-2 is a plug-and-play device that does not require settings to be made for commissioning.

MDI /MDIX Autocrossover Function

The advantage of the MDI /MDIX autocrossover function is that straight-through cables can be used throughout and crossover Ethernet cables are unnecessary. This prevents malfunctions resulting from mismatching send and receive wires. This makes installation much easier for the user.

The devices of the SCALANCE X-100 and X-200 product lines all support the MDI / MDIX autocrossover function.

4.5.5   SCALANCE X204-2 FO Ports

Transmission speed

The transmission rate of the optical Fast Ethernet ports is 100 Mbps.

Transmission Mode

The transmission mode for 100Base-FX is specified in the IEEE 802.3u standard.

Since the full duplex mode and the transmission rate cannot be modified for optical transmission, autonegotiation cannot be selected.

Transmission Medium

Data transmission is over multimode fiber-optic cable (FOC). The wavelength is 1310 nm.

Multimode FOC with a core diameter of 50 or 62.5 µm is used, the light source is an LED. To transmit a signal, many modes (light rays) are used

The outer diameter of the FOC is 125 µm.

Range

The maximum transmission range (segment length) is 3 km.

Connectors

The cables are connected over BFOC sockets.

4.5.6   SCALANCE X204-2 Power Supply and Signaling Contact

Power Supply

The power supply is connected using a 4-pin plug-in terminal block. 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 X204-2 alone. The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up.

Figure 4-14   SCALANCE 204-2 Power Supply

⚠️

Warning

The SCALANCE X204-2 is designed for operation with safety extra-low voltage. This means that only safety extra-low voltages (SELV) complying with IEC950/EN60950/ VDE0805 can be connected to the power supply terminals.

The power supply unit to supply the SCALANCE X204-2 must comply with NEC Class 2 (voltage range 18 - 32 V, current requirement 350 mA)

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

The signaling contact can be subjected to a maximum load of 100 mA (safety extra-low voltage (SELV), DC 24 V).

Never connect the SCALANCE X204-2 to AC voltage or DC voltage higher than 32 V DC.

Signaling Contact

The signaling contact is connected to a 2-pin plug-in terminal block. The signaling contact (relay contact) is a floating switch with which error/fault states can be signaled by breaking the contact.

Figure 4-15   SCALANCE X204-2 Signaling Contact

The following errors/faults can be signaled by the signaling contact:

• The failure of a link at a monitored port.

• The failure of one of the two redundant power supplies.

The connection or disconnection of a communication node on an unmonitored port does not lead to an error message.

The signaling contact remains activated until the error/fault is eliminated or until the current status is applied as the new desired status using the button.

When the device is turned off, the signaling contact is always activated (open).

4.5.7   SCALANCE X204-2 Button

What does the button do?

Using the button, you can display and modify the set fault mask.

After pressing the button, the currently valid fault mask is displayed for approximately 3 seconds. The monitored ports flash at a frequency of 5 Hz.

After 3 seconds the new fault mask is displayed. The flashing frequency is reduced to 2.5 Hz. After a further 3 seconds, the new fault mask is adopted and saved. The monitored ports are indicated by permanently lit LEDs until the button is released.

As long as the LEDs are still flashing, the saving of the mask can be interrupted by releasing the button.

If an empty fault mask is set (no port is monitored) or you want to set an empty mask, four 4 LEDs flash on and off alternating with their neighboring LEDs.

At the same time, you can also set the monitoring of the redundant power supply with the fault mask. Monitoring of the power supply is activated only when both power supplies are connected when the fault mask is saved.

The factory default is no port monitoring.

If the button is pressed longer (15 seconds), the device is reset to "factory defaults". This is indicated by all the Port LEDs (green) flashing. During this activity, the device must not be turned off.

4.5.8 C-PLUG Configuration Memory

Area of Application

The C-PLUG is an exchangeable medium for storage of the configuration and project engineering data of the basic device. This means that the configuration data remains available if the basic device is replaced.

How It Works

Power is supplied by the end device. The C-PLUG retains all data permanently when the power is turned off.

If an empty C-PLUG (factory settings) is inserted, all configuration data of the SCALANCE X-200 is saved to it when the device starts up. Changes to the configuration during operation are also saved on the C-PLUG without any operator intervention being necessary.

A basic device with an inserted C-PLUG automatically uses the configuration data of the C-PLUG when it starts up. This is, however, only possible when the data was written by a compatible device type.

This allows fast and simple replacement of the basic device. If a device is replaced, the C-PLUG is taken from the failed component and inserted in the replacement. The first time it is started up, the replacement device has the same configuration as the failed device except for the MAC address set by the vendor.

Using a Previously Written C-PLUG

If you want to insert a C-PLUG that has already been written to in a new basic device requiring a different configuration, you must format the C-PLUG using the delete function in Web Based Management following device startup. If the C-PLUG was written by an incompatible device type, the basic device will not start up fully and signals an error. The delete function can nevertheless be used. When the device next starts up, the current configuration data of the basic device is written to the C-PLUG.

Diagnostics

Inserting a C-PLUG that does not contain the configuration of a compatible device type, inadvertently removing the C-PLUG, or general malfunctions of the C-PLUG are indicated by the diagnostic mechanisms of the switch (LEDs, PROFINET, SNMP, WBM, etc.).

Inserting in the C-PLUG Slot

The C-PLUG is not supplied with the devices of the SCALANCE X-200 product line. It is available as an optional accessory.

The slot for the C-PLUG is located on the back of the device.

To insert the C-PLUG, remove the screw cover. The C-PLUG is inserted in the receptacle. The screw cover must then be closed correctly.

Notice

The C-PLUG may only be inserted or removed when the power is off!

Removing the C-PLUG

It is only necessary to remove the C-PLUG if the basic device develops a fault.

The C-PLUG can be removed from the slot using flat pliers, tweezers, or a small screwdriver.

4.5.9   SCALANCE X204-2 Displays

Fault indicator (red LED)

Status	Meaning
lit red	The SCALANCE X204-2 detects an error. At the same time, the signaling contact opens.
	The following faults are detected:
	1. Link down event on a monitored port
	2. Failure of one of the two redundant power supplies.
	3. Device startup, the LED is lit for approx. 20s.
flashes red	An internal fault was detected. Notify the maintenance personnel and, if necessary, send the device in for repair.
not lit	No fault detected by the SCALANCE X204-2.

Power indicator (green LED)

The status of the power supply is indicated by two green LEDs:

Status	Meaning
lit green	Power supply L1 or L2 is connected.
not lit	Power supply L1 and/or L2 not connected or <14 V.

Port status indicator (green/yellow LEDs)

The status of the ports is indicated by six LEDs:

Status	Meaning
Port 1 through 8 LED lit green	TP link exists, no data reception
Port 1 through 8 LED lit yellow	TP link exists, data received at TP port

	Device startup, the LED is lit for approx. 6s.
Ports 1 through 8 LED flash yellow	Setting or display of the fault mask
Port 1 through 8 LED flashes green	The "Show Location" function was activated over Ethernet (e.g. PST tool).
	PROFINET IO operation was started with the PN IO controller, the attempt to change the fault mask with the button was rejected by all the port LEDs flashing once.
	The button was pressed for longer than 15 s to reset the configuration.

LED Display during Startup

Following startup, the following LEDs light up in the following order:

- Power LEDs (green) light up immediately after turning on the power.
- Port LEDs (yellow) light up for approx. 6 s, the red LED is off.
- Port LEDs go off, the red LED is lit for approx. 20 s.

After the port LEDs go off, the correct link status is displayed after approx. 2 s.

The device is now ready for operation.

4.5.10   SCALANCE X204-2 Technical Specifications

Technical Specifications of the SCALANCE X204-2

Ports	
Attachment of DTEs or network components over twisted pair	4 x RJ-45 sockets with MDI-X pinning 10/100 Mbps (half/ full duplex)
Connection of further network components over FOC.	2 x 2 BFOC sockets (100 Mbps, full duplex to 100BaseFX)
Connector for power supply	1 x 4-pin plug-in terminal block
Connector for signaling contact	1 x 2-pin plug-in terminal block
Electrical Data	
Power supply	2 x 24 V DC (18 - 32 V DC) safety extra-low voltage (SELV)
Power loss at DC 24 V	5.16 W
Current consumption at rated voltage	215 mA
Overvoltage protection at input	PTC resetable fuse (0.6 A / 60 V)
Permitted Cable Lengths	
Network span parameter/TP cable length 0 – 100 m	IE FC standard cable with IE FC RJ-45 plug 180 or IE FC outlet RJ-45 with IE FC standard cable (0 - 90 m) + 10 m TP cord

0 – 85 m	IE FC marine/trailing cable with IE FC RJ-45 plug 180 or IE FC marine/trailing cable (0 - 75 m) + 10 m TP cord
0 -3,000 m	Glass FOC
	62.5/125 μm or 50/125 μm glass fiber;
	≤ 1 dB/km at 1300 nm; 600 MHz x km;
	6 dB max. permitted FO cable attenuation with 3 dB link power margin
Aging time	
Aging time	5 minutes

Permitted Environmental Conditions / EMC	
Operating temperature	0° C through +60° C
Storage/transport temperature	-40° C through +80° C
Relative humidity in operation	‹ 95% (no condensation)
Operating altitude	2000 m at max 56 °C ambient temperature 3000 m at max. 50 °C ambient temperature
RF interference level	EN 50081-2 Class A
Noise immunity	EN 50082-2
Degree of protection	Tested to IP30
Approvals	
c-UL-us	UL 60950
	CSA C22.2 No. 60950
c-Ul-us for hazardous locations	UL 1604, UL 2279Pt.15
FM	FM 3611
C-TICK	AS/NZS 2064 (Class A).
CE	EN 50081-2, EN 50082-2
ATEX Zone 2	EN50021
MTBF	
MTBF	37.56 years
Construction	
Dimensions (W x H x D) in mm	60 x 125 x 124
Weight in g	780
Installation options	DIN rail S7-300 standard rail Wall Mounting
Order Numbers	
SCALANCE X204-2	6GK5204-2BB00-2AA3
"Industrial Ethernet TP and Fiber Optic Networks" manual	6GK1970-1BA10-0AA0
IE FC Stripping Tool	6GK1901-1GA00

IE FC blade cassettes	6GK1901-1GB00
IE FC TP standard cable	6XV1840 2AH10
IE FC TP trailing cable	6XV1840-3AH10
IE FC TP marine cable	6XV1840-4AH10
IE FC RJ-45 Plug 180 pack of 1	6GK1 901-1BB10-2AA0
IE FC RJ-45 Plug 180 pack of 10	6GK1 901-1BB10-2AB0
IE FC RJ-45 Plug 180 pack of 50	6GK1 901-1BB10-2AE0
C-PLUG	6GK1 900-0AB00

Note

The number of connected SCALANCE X Industrial Ethernet Switches influences the frame propagation time.

When a frame passes through the devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines, it is delayed by the store and forward function of the switch:
- with a 64 byte frame length by approx. 10 µs (at 100 Mbps)
- with a 1500 byte frame length by approx. 130 µs (at 100 Mbps)
This means that the more devices of the SCALANCE X-100 and/or SCALANCE X-200 product lines that a frame passes through, the higher the frame propagation time will be.

Installation and Maintenance

5

5.1 Installation

Types of Installation

The Industrial Ethernet switches of the SCALANCE X-100 and X-200 product lines can be mounted in different ways:

- Installation on a 35 mm DIN rail
- Installation on a SIMATIC S7-300 Standard Rail
- Wall Mounting

Note

When installing and operating the device, keep to the installation instructions and safety-related notices as described here and in the manual SIMATIC NET Industrial Ethernet Twisted Pair and Fiber Optic Networks /2/.

Unless stated otherwise, the mounting options listed below apply to all Industrial Ethernet Switches of the SCALANCE X-100 and X-200 product lines.

5.2 Installation on a DIN Rail

Installation

Install the Industrial Ethernet switches of the SCALANCE X-100 and X-200 product lines on a 35 mm standard rail according to DIN EN 50022.

1. Place the upper catch of the device over the top of the rail and then push in the lower part of the device against the rail until it clips into place.
2. Fit the connectors for the power supply to the terminal block.
3. Fit the connectors for the signaling contact to the terminal block.
4. Insert the two terminal blocks into the sockets on the device.
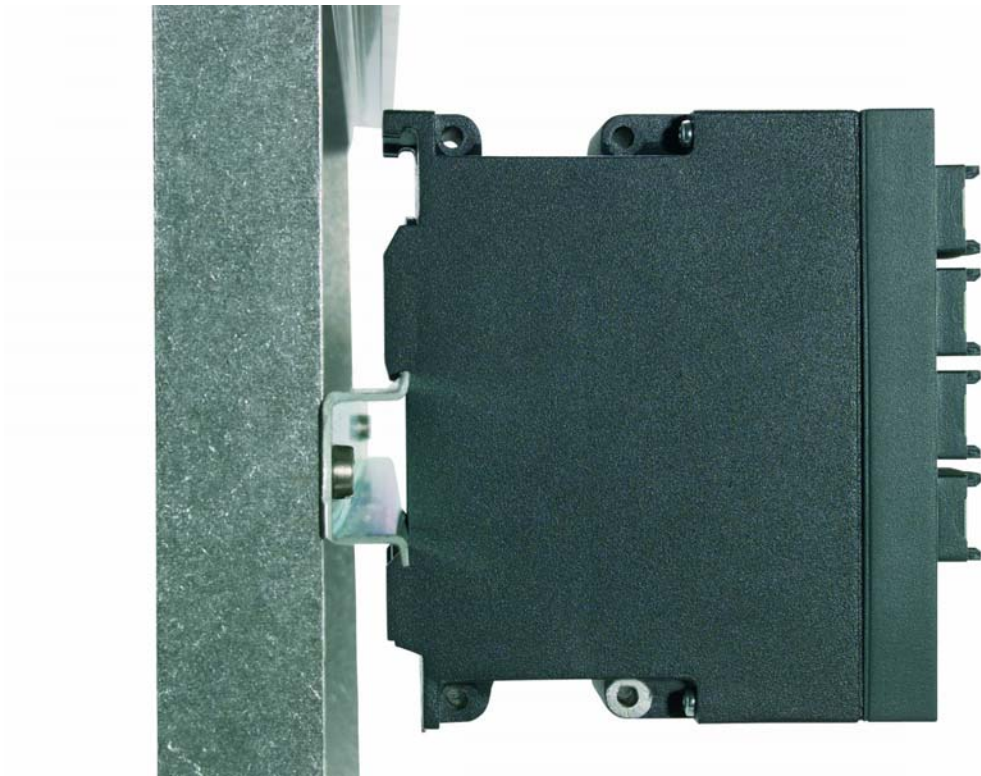
Figure 5-1   Installation of a SCALANCE X-100 and/or X-200 on a 35 mm Standard Rail

Uninstalling

To remove the Industrial Ethernet switches of the SCALANCE X-100 and X-200 product lines from the standard rail:

1. First disconnect the TP cables and pull out the terminal blocks for the power supply and the signaling contact.

2. Use a screwdriver to release the lower rail catch of the device and pull the lower part of the device away from the rail.
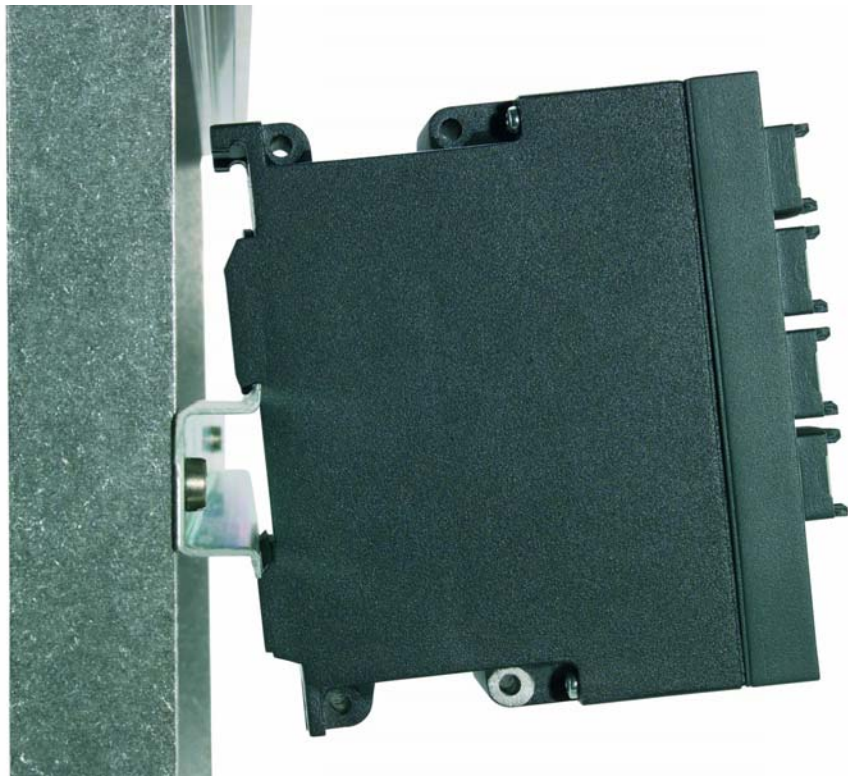
Figure 5-2   Removing a SCALANCE X-100 and/or X-200 from a 35 mm Standard Rail

5.3   Installation on a Standard Rail

Installation on a SIMATIC S7-300 Standard Rail

1. Place the upper guide at the top of the SCALANCE housing in the S7 standard rail.

2. Screw the Industrial Ethernet switches of the SCALANCE X-100 and X-200 product lines to the underside of the standard rail.

3. Fit the connectors for the power supply to the terminal block.

4. Fit the connectors for the signaling contact to the terminal block.

5. Insert the two terminal blocks into the sockets on the device.

Figure 5-3   Installation of a SCALANCE X-100 and/or X-200 on a SIMATIC S7-300 Standard Rail

Uninstalling

To remove the Industrial Ethernet switches of the SCALANCE X-100 and X-200 product lines from the SIMATIC S7-300 standard rail:

1. First disconnect the TP cables and pull out the terminal blocks for the power supply and the signaling contact.

2. Loosen the screws on the underside of the standard rail and lift the device away from the standard rail.

5.4   Wall Mounting

Wall Mounting

1. For wall mounting, use suitable mounting fittings for the wall
   (for example, for a concrete wall, four plugs 6 mm diameter and 30 mm long, 4 screws 3.5 mm diameter and 40 mm long).

2. Connect the electrical wiring to the terminal block.

3. Fit the connectors for the signaling contact to the terminal block.

4. Insert the two terminal blocks into the sockets on the device.

For more exact dimensions, please refer to the section "Dimension Drawings".

Note

The wall mounting must be capable of supporting at least four times the weight of the device.

5.5 Grounding

Installation on a DIN Rail

The device is grounded over the DIN rail.

S7 Standard Rail

The device is grounded over its rear panel and the neck of the screw.

Wall Mounting

The device is grounded by the securing screw in the unpainted hole.

Please note that the SCALANCE X108 must be grounded over one securing screw with minimum resistance.

5.6 Fitting the IE FC RJ-45 Plug 180

Assembly of the IE FC RJ-45 Plug 180 on an IE FC Standard Cable

For information on assembling an IE FC RJ-45 Plug 180 on a SIMATIC NET Industrial Ethernet FastConnect cable, please refer to the instructions supplied with the IE FC RJ-45 Plug.
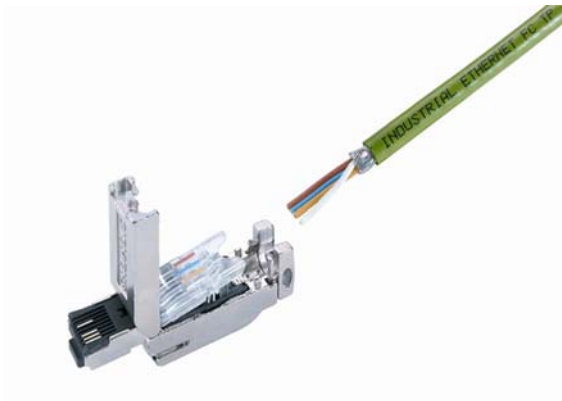
Figure 5-4   IE FC RJ-45 Plug 180

Inserting the IE FC RJ-45 Plug 180

1. Insert the IE FC RJ-45 Plug 180 into the devices of the SCALANCE X-100 or X-200 product line until it locks in place.

Figure 5-5   Inserting the IE FC RJ-45 Plug 180

The flush fit and locking mechanism of the PROFINET-compliant IE FC RJ-45 Plug 180 along with the securing collar on the TP port of the SCALANCE X-100 and X-200 guarantee a robust node connection suitable for industrial conditions providing tensile and bending strain relief for the twisted pair socket.

Note

This does not apply to the SCALANCE X208PRO device

Removing the IE FC RJ-45 Plug 180

1. Press on the locking mechanism of the IE FC RJ-45 Plug 180 gently to remove the plug.

Figure 5-6   Releasing the RJ-45 Plug

If there is not enough space to release the lock with your hand, you can also use a 2.5 mm screwdriver. You can then remove the IE FC RJ-45 Plug 180 from the twisted pair socket.

Figure 5-7   Releasing the RJ-45 Plug with a Screwdriver

5.7   Maintenance

Maintenance

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

Diagnostics over Industrial Ethernet

6

The diagnostics over Industrial Ethernet described in the following section is possible only with devices of the SCALANCE X-200 product line.

6.1 Configuration with the Primary Setup Tool

6.1.1 Introduction

Initial Assignment of an IP Address

There are three ways of assigning an IP address to an unconfigured device, using:

- DHCP
- STEP 7 V 5.3 plus SVP 1
- Primary Setup Tool V3 or higher
  Before the IP address can be assigned with the setup tool, the SCALANCE X-200 must be accessible over Ethernet.
- The initial assignment of an IP address for an Industrial Ethernet switch of the SCALANCE X-200 product line is not possible with Web Based Management because this configuration tool requires that an IP address is already available.

Supported Operating Systems

The Primary Setup Tool can be installed and run under the following operating systems:

- Windows XP Professional
- Windows 2000 Professional SP2

6.1.2 Installing the Primary Setup Tool

Procedure

Follow the steps outlined below to install the Primary Setup Tool on your computer:

1. Double-click on the setup.exe file name in the Windows Explorer or start the program with the Windows menu Start > Run.

2. In the Choose Setup Language dialog box, select the language in which you want to make the installation.

3. The first dialog box of the Installation Wizard appears. Click on the Next button.

4. The dialog box for selecting the installation folder appears. Click on the Next but if you want to accept the default C:\Program Files\Siemens\Primary Setup Tool\ . If you want to specify a different folder, you can open a dialog box for selecting a folder by clicking the Browse button.

   Start installation by clicking the Next button.

5. A final dialog box confirms successful installation. Click the Finish button to close this dialog box.

6. The Primary Setup Tool is now available in the installation folder under the name s7wnpstx.exe. Before you can use this program, the DLC protocol must be installed on the computer.

6.1.3 The DLC Protocol

Checking

The Primary Setup Tool uses the DLC protocol for communication with the modules. This protocol is not supplied with Windows XP and is not installed automatically by the installation program of the Primary Setup Tool. This means that it must be installed separately with this operating system.

Procedure

Follow the steps below to check whether or not the DLC protocol is installed on a computer:

1. Select the menu Start > Settings > Control Panel > Network and Dial-up Connections.

2. Select the connection to your Ethernet communications module.

3. Open the Properties dialog using the context-sensitive menu (right mouse button). The General tab lists all the protocols and services. The DLC protocol should be listed and selected:
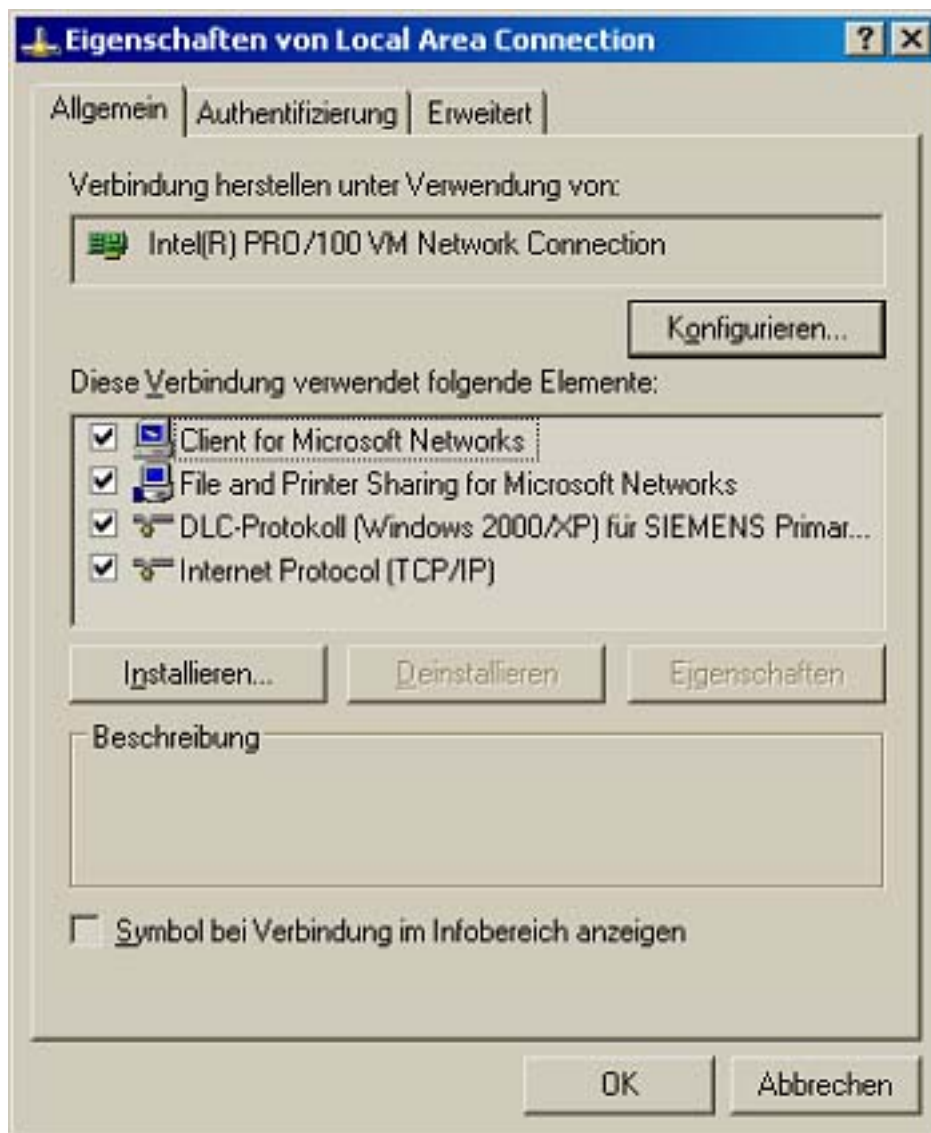
Figure 6-1   Properties of Local Area Connection-1

6.1.4   Installing the DLC Protocol

Procedure

Follow the steps below to install the DLC protocol on a computer:

1. Select the menu Start > Settings > Control Panel > Network and Dial-up Connections.

2. Select the connection to your Ethernet communications module.

3. Open the Properties dialog using the context-sensitive menu (right mouse button).

4. Click the Install button in the General tab .

5. In the Network Component Type dialog, select Protocol and click the Add button. .

6. In the Network Protocol dialog box, Have Disk button. .

7. In the Install from Disk dialog box, click the Browse button. .

8. In the file selection dialog, change to the installation folder of the Primary Setup Tool (default C:\Program Files\Siemens\Primary Setup Tool\) and open the DLC Protocol subfolder.

9. Select the NETDLC.INF file and click the Open button.

10. In the Install from Disk dialog box, click the OK button. The protocol is installed, the DLC Protocol entry is added to the list box in the Properties dialog box of the communications module (Windows 2000/XP) for Siemens Primary Setup Tool.

11. Close the Properties dialog box by clicking on the OK button

6.1.5 Working with the Primary Setup Tool

Language Selection

After starting the Primary Setup Tool for the first time, a dialog box opens in which you set the language for the program. You can also set the language separately in the Settings > Language menu.

Selecting the Network Adapter

If there is more than one network adapter in your computer, you can open the Settings > Network Adapter menu and specify which adapter is used by the Primary Setup Tool for network access. This menu displays a maximum of four network adapters, however only those for which the DLC protocol is activated are shown.

Browsing the Network

Before you assign IP addresses with the PST, you must first locate the configurable devices in the network. Start this search with the steps outlined below:

• Select the Network > Browse menu command.

• Press the F5 function key.

• Click on the magnifier icon in the toolbar below the menu bar.

While the Primary Setup Tool browses the network, the Browse Network dialog is displayed with a progress bar. On completion of the search, the Primary Setup Tool displays a list with all the devices it has found in the left-hand pane.

6.1.6 Configuring a Module

If you click an entry in the list, the Primary Setup Tool displays information on the selected device in the right-hand pane.

Procedure

Follow the steps below to configure a device:

1. Click on the plus symbol in front of the device symbol or double-click on the device symbol to display all interfaces of the device.

2. Click on the interface you want to configure. The Primary Setup Tool displays the input dialog for the configuration data in the right-hand pane of the program window. Depending on the selected settings, some text boxes or check boxes may be disabled. The MAC address box is always disabled because this address is a property of the device that cannot be modified. The Client ID parameter and DNS is also not supported by the SCALANCE X-200.

3. Decide how the device will obtain its IP address:

   – Dynamically from a DHCP server:
     Select the Obtain IP address from DHCP server option button.

   – Manual assignment by the user:
     Select the Assign IP parameters option button.

4. Make the following entries if you have decided to assign the IP address manually:

   – Enter the IP address for the device in the IP Address box. In each subarea separated by periods, you can enter a number between 0 and 255, other entries are rejected by the program.

   – Enter the subnet mask in the subnet mask box.

   – When necessary, select the Router check box and enter the IP address of the router in the relevant text box. The information on the router is necessary if the computer with which you are creating the configuration is not in the same subnet as the device you are configuring.
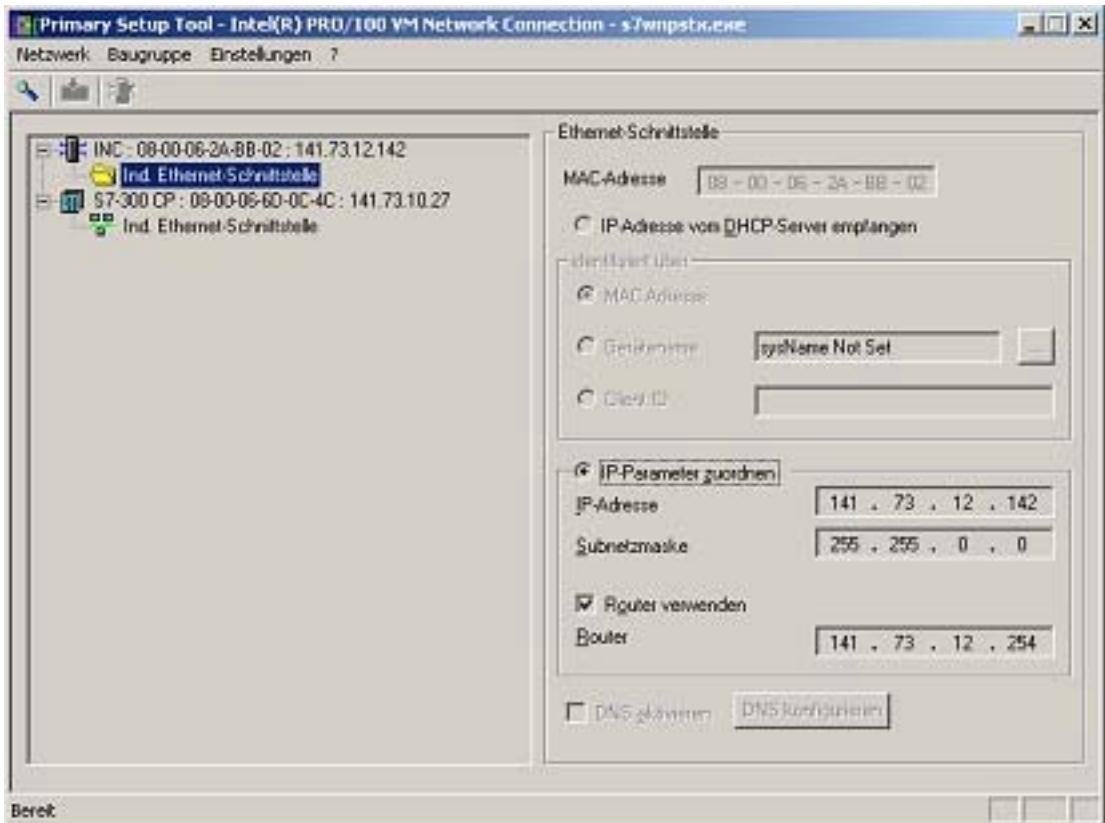
Figure 6-2   Configuring a Module

Downloading Configuration Data to the Module

Transfer the configuration data to the device by following the steps outlined below:

1. Select the module you want to configure in the left half of the program window. If an interface is selected and the input screen for the configuration data is displayed, it is not possible to download the configuration data.

2. Start the download with the steps outlined below:

   − Select the Module **>** Download menu command.

   − Click on the second button from the left in the toolbar (S7 modules with yellow arrow).

Figure 6-3   Downloading the Module

Starting Web Based Management

INC devices (Industrial Network Component) such as the SCALANCE X-200 have a Web Based Management. Select the device you want to configure with Web Based Management and perform one of the following steps to start Web Based Management:

•   Select the Module > INC Browser menu command.

•   Click on the third button from the left in the toolbar (module with four blue cords).
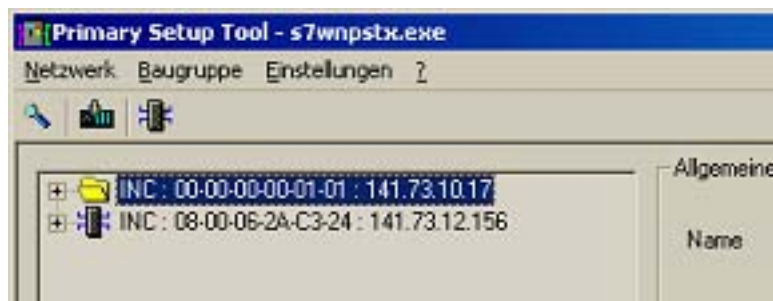
Figure 6-4   Starting Web Based Management

If the Module > Start INC Browser and the module icon are deactivated, there is no Web Based Management for the selected module.

Removing a Module

You can remove a module from the list in the left part of the program window by selecting the Module > Remove Module menu command. Using this menu has no effect on the existence of a module in the network, after browsing the network again, all modules would be displayed again.

Assigning a PN IO Device Name

You can assign a PN IO device name to PROFINET IO-compliant devices. After selecting the Module > Assign Name menu, a dialog box opens in which you can enter the required name. The name can be a maximum of 255 characters long and over and above letters and numbers can contain only the special characters slash, hyphen, and underscore.

Finding the Location of a Device

With the Module > Buzz command, you can make the LEDs of the relevant device flash. After selecting this menu, a dialog appears with which you can start and finish signaling.

The activity of the LEDs indicates which device is assigned to a particular list entry in the program window.

6.2 Web Based Management (WBM)

6.2.1 General Information on Web Based Management

With Web Based Management, the Industrial Ethernet switches of the SCALANCE X-200 product line provide various diagnostic functions that can be controlled using an Internet browser (for example the Microsoft Internet Explorer or Netscape).

The functions are controlled using a Java script stored on the Industrial Ethernet switches of the SCALANCE X-200 product line that can be loaded by the browser.

To access Industrial Ethernet switches of the SCALANCE X-200 product line, the IP address of the device must be entered in the address box of the browser.

6.2.2 Requirements for Web Based Management

To access Industrial Ethernet switches of the SCALANCE X-200 product line over WBM, the following requirements must be met:

Internet Browser

You require a PC with an Internet browser. We recommend that you use a Microsoft Internet Explorer, version 5.5 or higher or a Netscape Browser, version 6.1 or higher. To execute the script, Java script must be activated in the browser.

Note

Firewall

When using a firewall, access to the following ports must be possible:

- Telnet Port 23/TCP

- http Port 80/TCP

- SNMP Port 161/UDP

- SNMP trap Port 162/UDP

6.2.3   Access over WBM

How to Access Industrial Ethernet Switches of the SCALANCE X-200 Product Line over WBM

1. Open the Internet browser.

2. Enter the IP address or the URL of the Industrial Ethernet switch of the SCALANCE X-200 product line in the address box of the Internet browser as follows:
    for example http://141.73.10.89
    and confirm with [RETURN].

3. You can log on as administrator or as user. An administrator can read and modify parameters. A user has only read access.

    A dialog appears. You are prompted to enter your login and your password.

    –   To log in as administrator:
        The login and the password are "admin"

    –   To log in as user:
        The login and the password are "user"

The administrator can change both passwords.

Note

After resetting to the factory defaults, the login and password are once again admin and user.

Note

Make sure that the passwords are kept in a safe place because they are required for access when configuring the devices!

Figure 6-5   Logon Screenshot

6.2.4   WBM Menus

6.2.4.1   Management Menus - The Start Menu

The Start Dialog

The following start the dialog appears after you start the WBM.

Select the required function from the menu on the left-hand side.
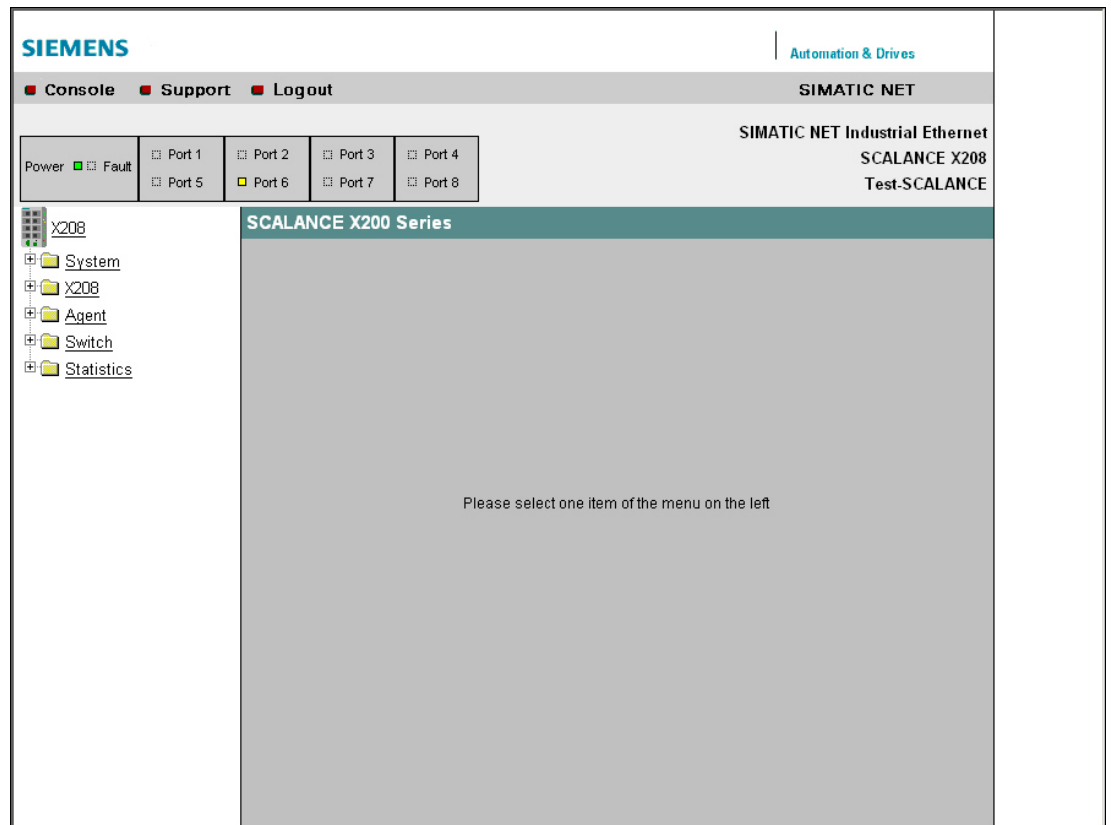
Figure 6-6   Start Dialog

6.2.4.2   The "System Configuration" WBM Menu

System Configuration

The following dialog appears when you click on the System folder icon:

The first three text boxes are read-only and display general information on the device.

You can specify parameters in the lower three fields.

You can change the System Contact, System Location, and System Name.
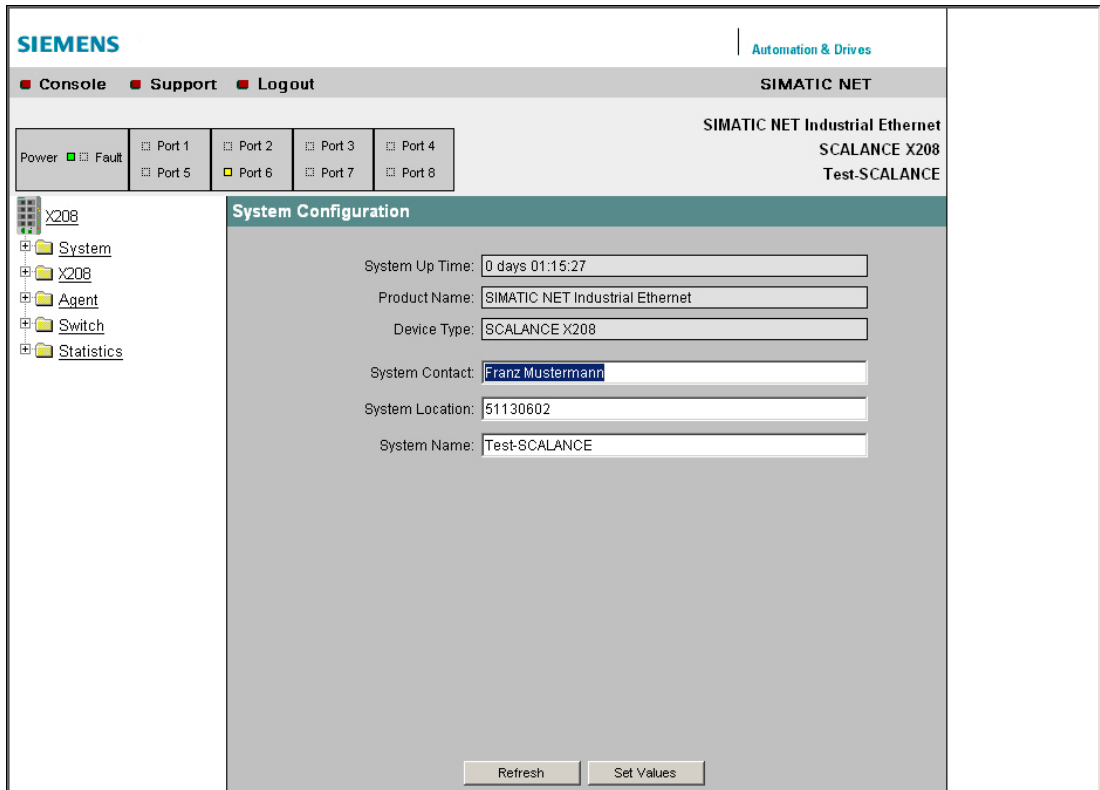
Figure 6-7   "System Configuration" Dialog

System Up Time Text Box

The system up time displays the operating time of the device since the last restart.

Product Name Text Box

Displays the product name.

Device Type Text Box

Displays the device type.

System Contact Text Box

Enter the name of a contact person responsible for managing the device in this box.

System Location Text Box

In this box, you enter a location for the device, for example a room number.

System Name Text Box

Enter a description of the device in this box.

You apply your settings with Set Values.

6.2.4.3 The "System Restart & Defaults" WBM Menu

System Restart & Defaults

In this screen, there is a button with which you can restart the device and various options for resetting to the device defaults.
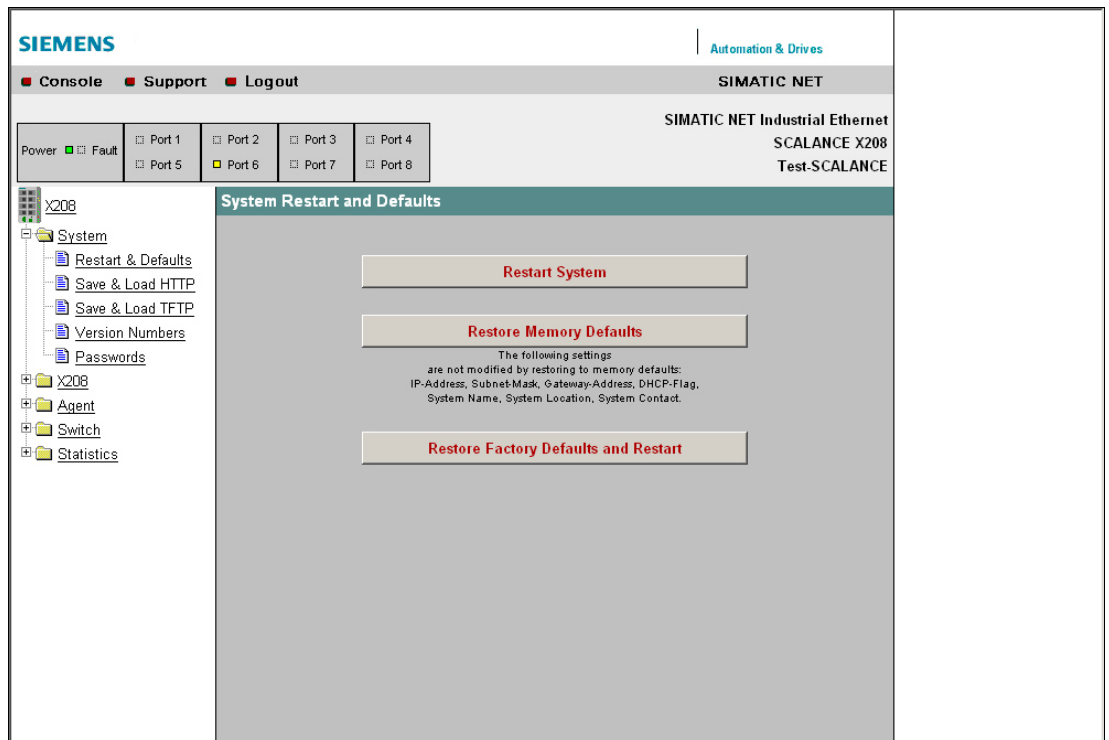
Figure 6-8   "System Restart & Defaults" Dialog

Restart System Button

Click this button to restart the SCALANCE X-200. You must confirm the restart in a dialog box. During a restart, the SCALANCE X-200 is reinitialized, the internal firmware is reloaded, and the SCALANCE X-200 runs a self-test. The learned entries in the address table are deleted. You can leave the browser window open while the SCALANCE X-200 restarts.

Restore Memory Defaults Button

Click on this button to restore the factory configuration settings with the exception of the following parameters:

- IP address
- Subnet mask
- Gateway address
- IP address of the default router
- DHCP flag
- System name
- System location

- System contact

There is no automatic restart, the parameters take effect immediately. In the user mode, this button is invisible.

Restore Factory Defaults and Restart Button

Click this button to restore the factory defaults for the configuration. The protected defaults are also reset. In the user mode, this button is invisible.

6.2.4.4 The "System Save & Load HTTP" WBM Menu

System Save & Load HTTP

The WBM allows you to store configuration information in an external file on your client PC or to load such data from an external file from the PC to the SCALANCE X-200.

You can also load new firmware from a file located on your client PC. You can make the entries required for this on the page of the System Save & Load HTTP menu.
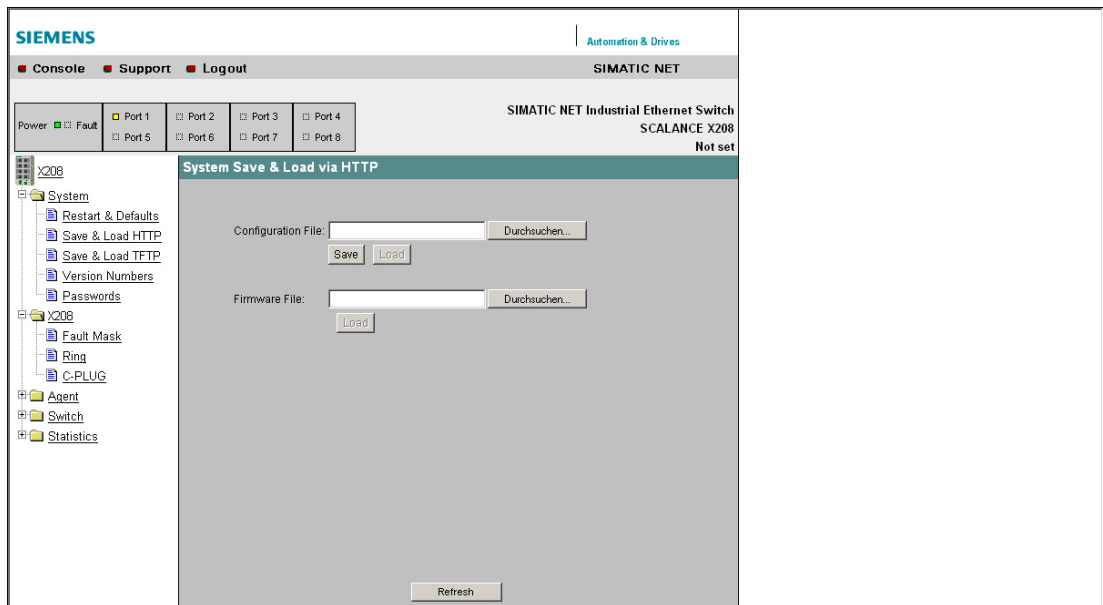
Figure 6-9   "System Save & Load via HTTP" Dialog

Configuration File Text Box

Name and possibly also folder path of the configuration file (maximum 32 characters) that you want to load on the SCALANCE X-200 or where you want to store the current configuration information

Firmware File Text Box

Name and possibly also folder path of the file (maximum 32 characters) from which you want to load the new firmware.

6.2.4.5 The "System Save & Load TFTP" WBM Menu

System Save & Load TFTP

The WBM allows you to store configuration information in an external file on a TFTP server or to load such data from an external file from the TFTP server to the SCALANCE X-200.

You can also load new firmware from a file located on the TFTP server. You can make the entries required for this on the page of the System Save & Load TFTP menu.
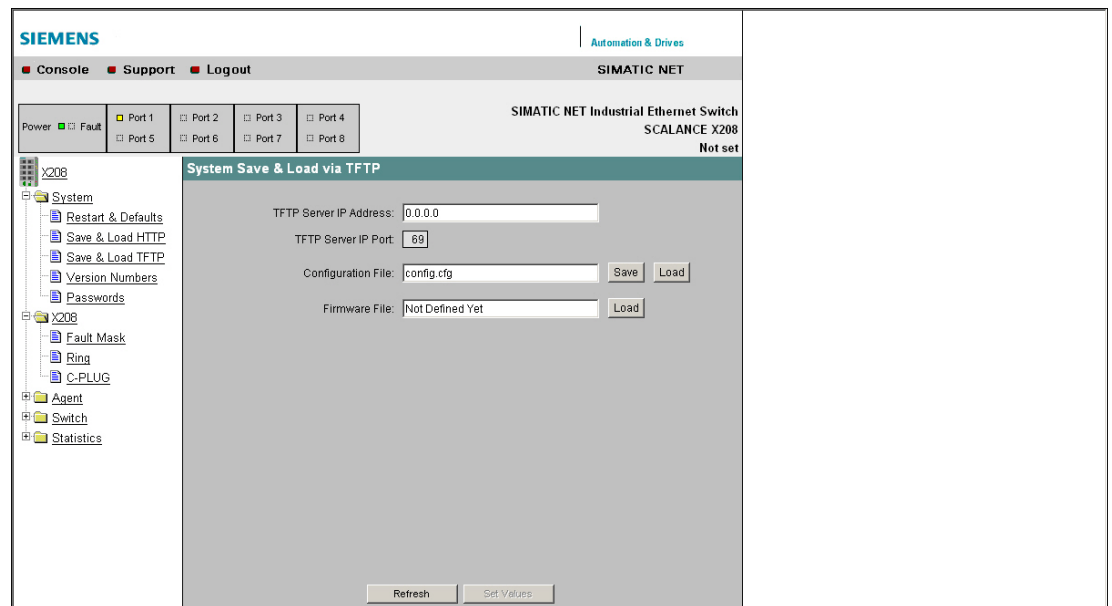
Figure 6-10   "System Save & Load via TFTP" Dialog

TFTP Server IP Address Text Box

The IP address of the TFTP server with which you want to exchange data.

TFTP Server IP Port Text Box

The port of the TFTP server over which data exchange will be handled. If necessary, you can change the default value 69 to your own requirements.

Configuration File Text Box

Name and possibly also folder path of the configuration file (maximum 32 characters) that you want to load on the SCALANCE X-200 or where you want to store the current configuration information.

Firmware File Text Box

Name and possibly also folder path of the file (maximum 32 characters) from which you want to load the new firmware.

6.2.4.6 The "System Version Numbers" WBM Menu

System Version Numbers

This dialog informs you about the current versions of the boot software, firmware, and hardware.
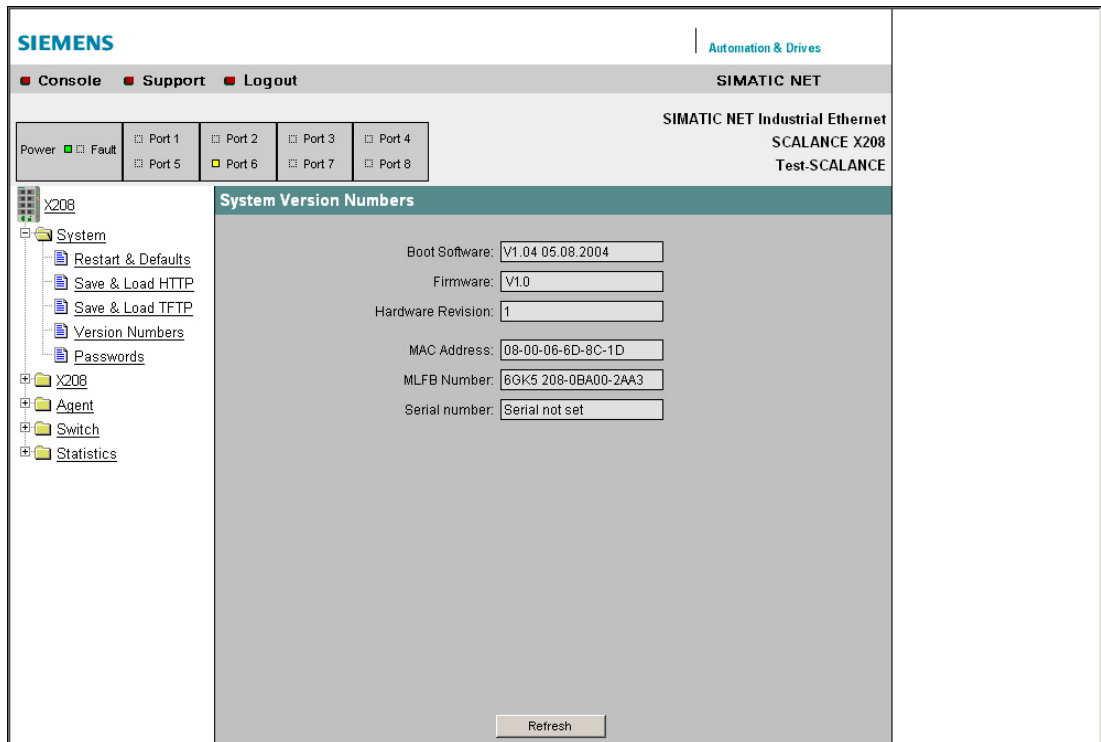
Figure 6-11 "System Version Numbers" Dialog

Boot Software Text Box

The version of the boot software is displayed. The boot software is stored permanently on the switch and is used to load new firmware.

Firmware Text Box

The version of the firmware running on the SCALANCE X-200.

Hardware Revision Text Box

Displays the version of the device.

MAC Address Text Box

Displays the MAC address of the device.

MLFB Number Text Box

Displays the MLFB number of the device.

Serial number Text Box

Displays the serial number of the device.

6.2.4.7 The "System Passwords" WBM Menu

System Passwords

In this dialog, if you are the administrator, you can change the passwords for Admin and User

You apply your settings with Set Value.

Note

Default password when supplied: admin
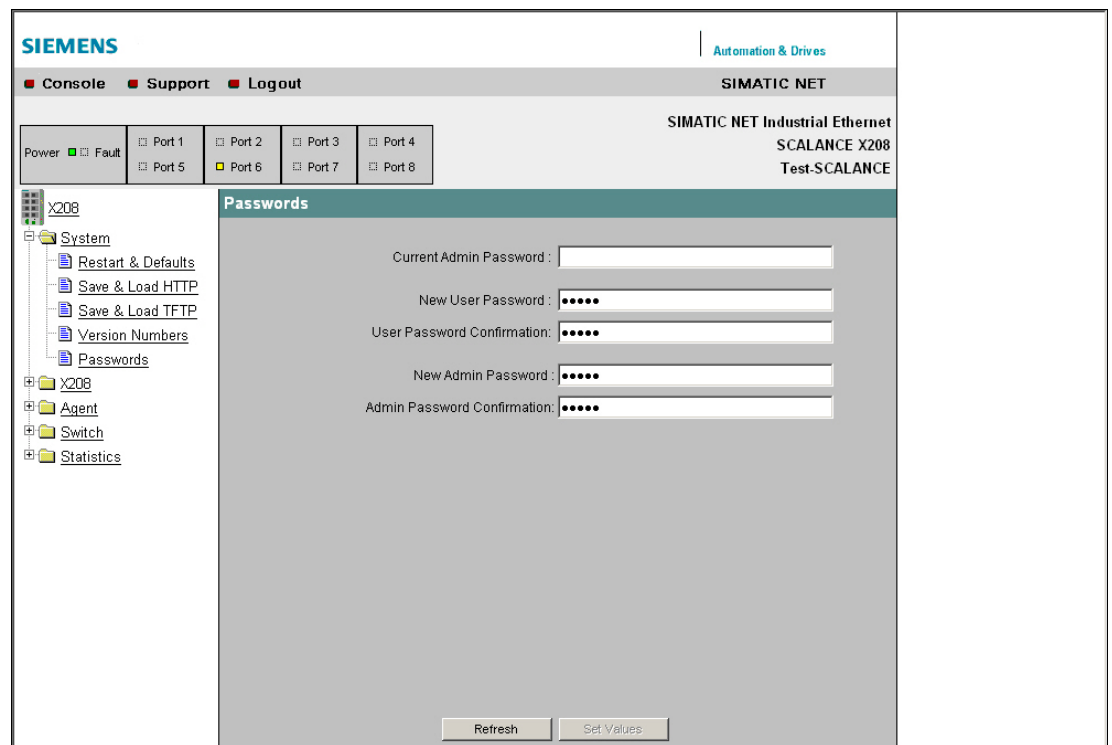
Figure 6-12   "System Passwords" Dialog

6.2.4.8 The "Status" WBM Menu

Status

This page provides information on operating states such as power supply and fault status.
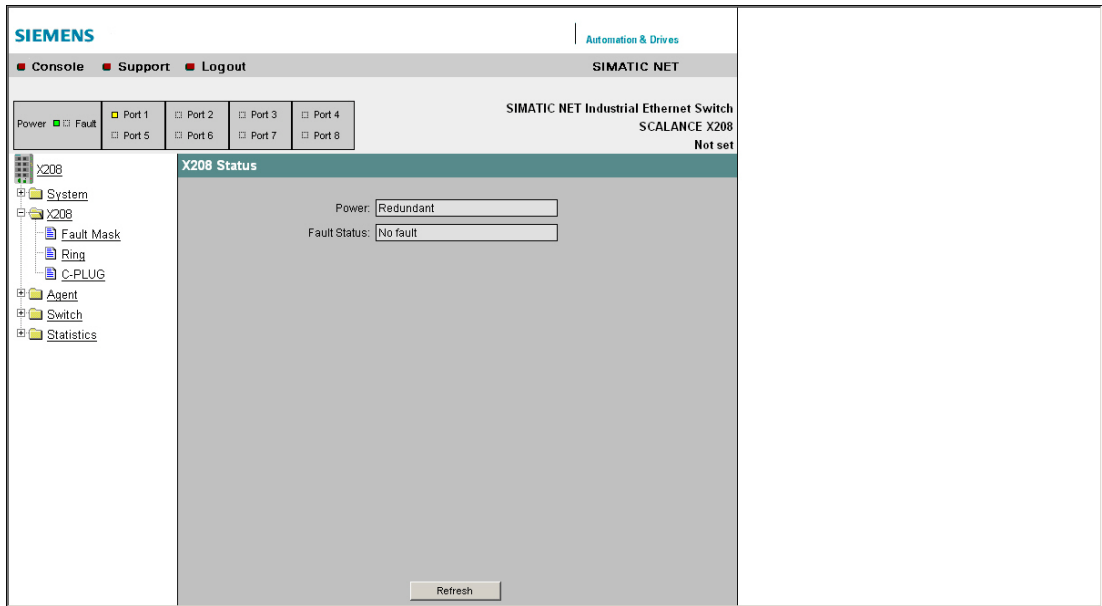
Figure 6-13   "Status" Dialog

Power Text Box

This displays how the power is supplied.

Fault Status Text Box

Indicates whether faults have occurred.

6.2.4.9   The "Fault Mask" WBM Menu

Fault Mask

The settings in this dialog allow you to monitor the link status and the redundant power supply.

The values of the settings that can be made with the button configuration are also displayed.

Figure 6-14   "Fault Mask" Dialog

Redundant power supply List Box

Here, the monitoring of the redundant power supply can be activated/deactivated.

Ports enabled List Box

Here, the monitoring of the link status of the individual ports can be activated/deactivated.

6.2.4.10 The "Ring Redundancy" WBM Menu

Ring Redundancy

This page allows you to set the ring ports used to integrate the device in a ring topology.
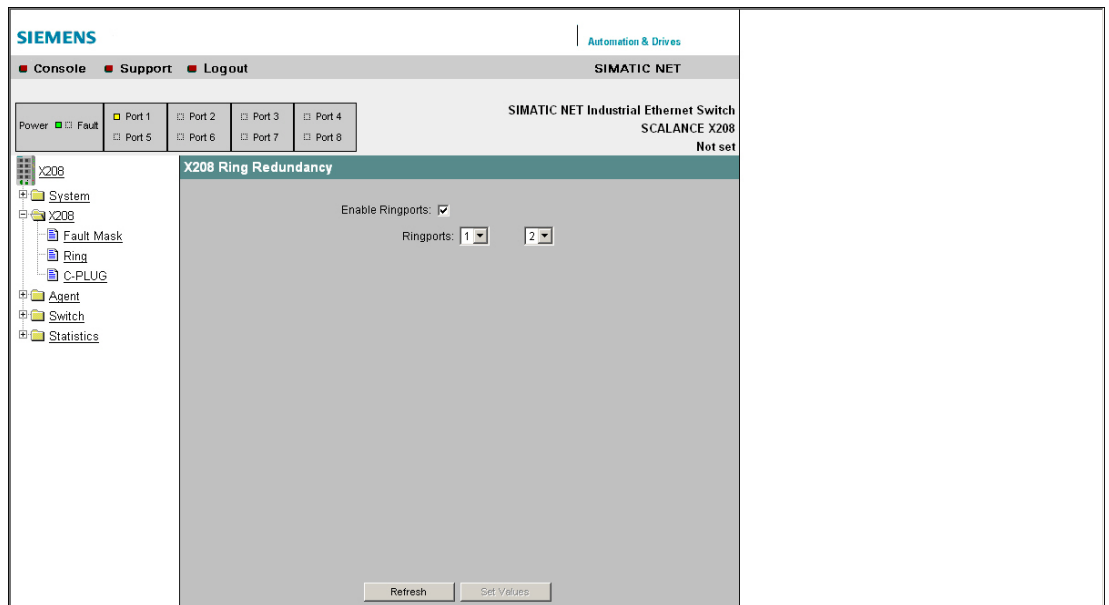
Figure 6-15   "Ring Redundancy" Dialog

Enable Ringports Text Box

Enables/disables ring redundancy.

Ringports Text Box

Here, you can set the Ethernet ports with which the switch is connected to the redundant ring.

Note

SCALANCE X-200 devices can be operated in a redundant ring if one of the following devices is used as a redundancy manager:

OSM ITP62 order number: 6GK1105-2AA10
OSM ITP62-LD order number: 6GK1105-2AC10
OSM ITP53 order number: 6GK1105-2AD10
OSM TP62 order number: 6GK1105-2AB10
OSM BC08 order number: 6GK1105-4AA00
OSM TP22 order number: 6GK1105-2AE00
ESM TP40 order number: 6GK1105-3AC00
ESM TP80 order number: 6GK1105-3AB10
ESM ITP80 order number: 6GK1105-3AA10
SCALANCE X414-3E order number: 6GK5414-3FC00-2AA2

6.2.4.11 The "C-PLUG Information" WBM Menu

C-PLUG Information

This dialog tells you whether a C-PLUG is inserted and whether it is valid for the device.

If a C-PLUG is inserted, the dialog displays the configuration data it contains.

You cannot modify the contents of the boxes.
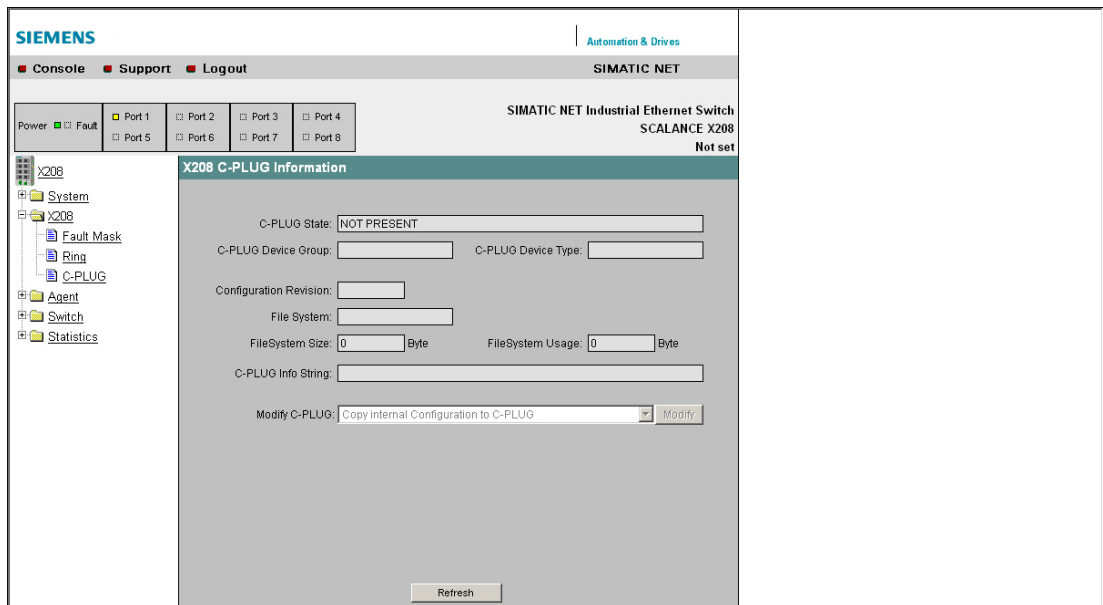
Figure 6-16   "C-PLUG Information" Dialog

6.2.4.12 The "Agent Configuration" WBM Menu

Agent Configuration

This menu item provides you with options for the IP address. You can specify whether or not the SCALANCE X-200 obtains its IP address dynamically or has a fixed address. You can also enable options for accessing the device such as TELNET or SNMP.
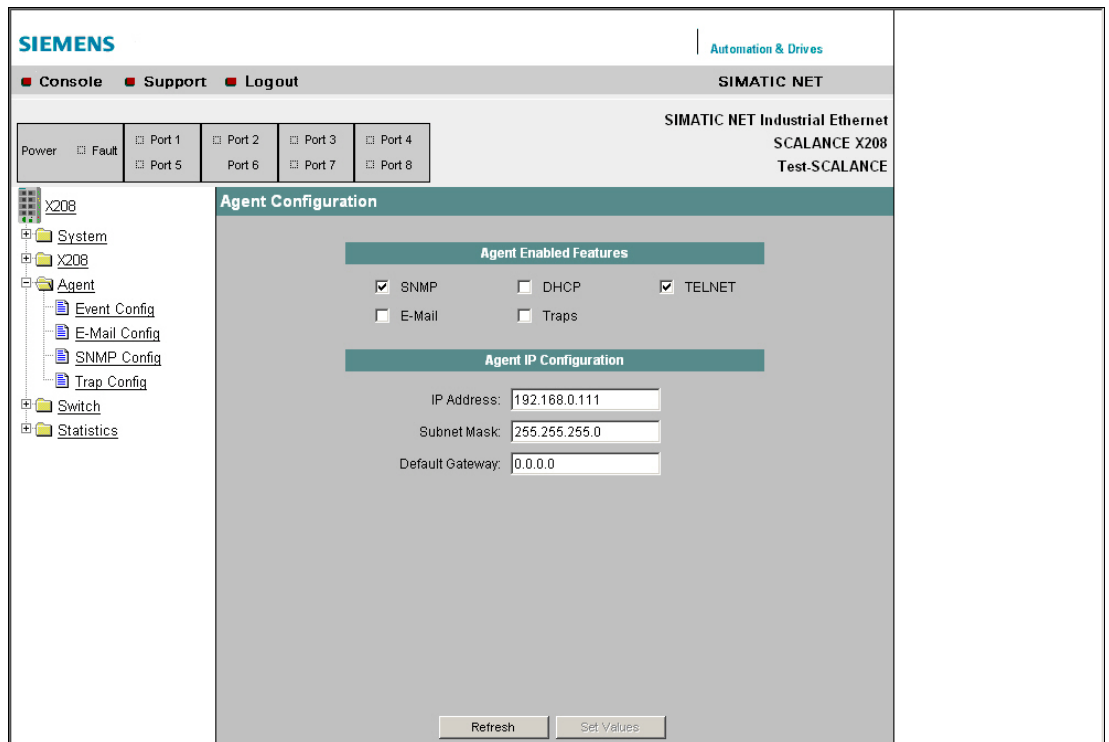
Figure 6-17   "Agent Configuration" Dialog

IP Address Text Box

The IP address of the SCALANCE X-200. If you make a change here, the WBM loses the connection to the SCALANCE X-200. Enter the new address in the Internet browser to reestablish the connection.

Subnet Mask Text Box

Here, you enter the subnet mask of the SCALANCE X-200.

Default Gateway Text Box

If the PC with the Internet browser is not in the same subnet as the SCALANCE X-200, you must enter the IP address of the default gateway here.

6.2.4.13   The "Agent Event Configuration" WBM Menu

Agent Event Configuration

On this page, you specify how the SCALANCE X-200 reacts to system events. By selecting the corresponding check box, you specify how the SCALANCE X-200 reacts to the various events The following options are available:

- The SCALANCE X-200 sends an E-mail.
- The SCALANCE X-200 triggers an SNMP trap.
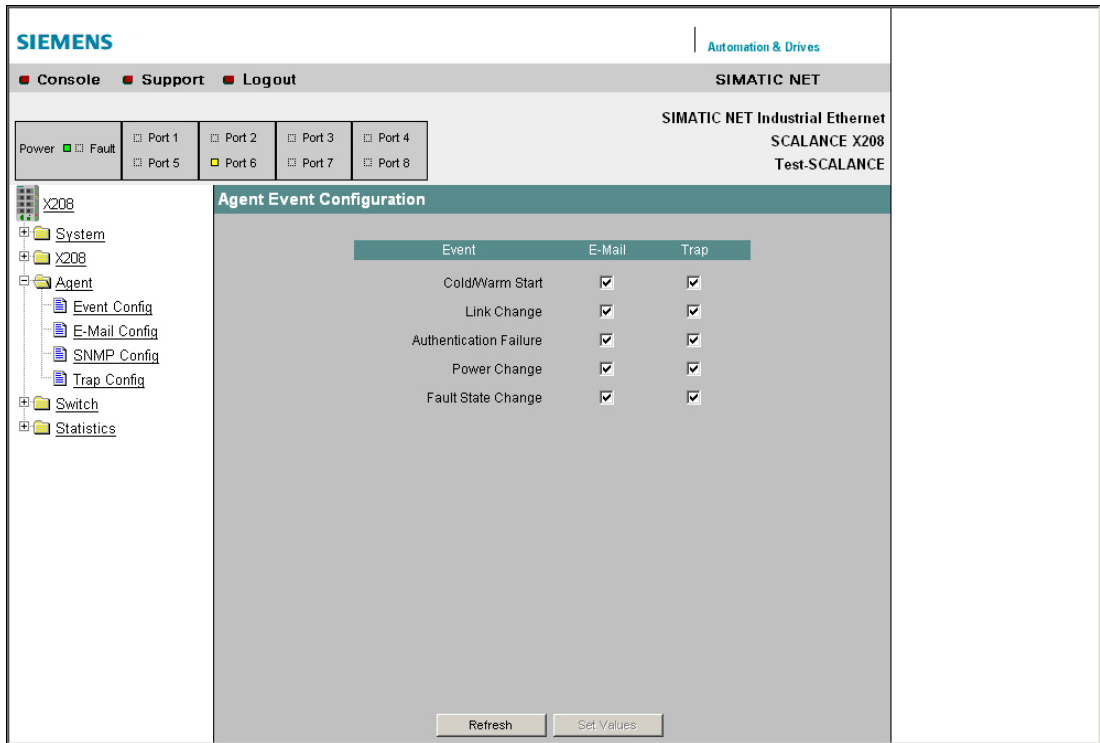
Figure 6-18   "Agent Event Configuration" Dialog

You can configure the reaction of the SCALANCE X-200 for the following events:

E-Mail List Box

Displays and allows you to set the events that would cause an E-mail to be sent.

Trap List Box

Displays and allows you to set the events that would cause an SNMP trap to be sent.

Cold/Warm Start Text Box

The SCALANCE X-200 was turned on or reset by the user.

Link Change Text Box

A port has failed or data traffic is being handled again over a port that had previously failed.

Authentication Failure Text Box

There was an SNMP access with a bad password or inadequate access rights.

Power Change Text Box

This event occurs only when the power supply line 1 and line 2 is monitored. It indicates that there was a change to line 1 or line 2.

Fault State Change Text Box

The fault status has changed. The fault status can relate to the activated port monitoring, the response of the signaling contact or the power supply monitoring.

6.2.4.14   The "Agent E-Mail Configuration" WBM Menu

Agent E-Mail Configuration - Network Monitoring with E-Mails

The SCALANCE X-200 provides you with the option of automatically sending an E-mail (for example to a network administrator) if an alarm event occurs. The E-mail contains the identification of the sending device, a description of the cause of the alarm in plain language, and a time stamp. This allows centralized network monitoring to be set up for networks with few nodes based on an E-mail system. When an E-mail event message is received, the WBM can be started by the browser using the identification of the sender to read out further diagnostic information.

E-mails can only be sent when

* the E-mail function is activated on the SCALANCE X-200 and the E-mail address of the recipient is configured.

* the E-mail function is enabled for the relevant event.

* there is an SMPT server in your network that can be reached by the SCALANCE X-200.

* the IP address of the SMPT server is entered on the SCALANCE X-200.

Figure 6-19   "Agent E-Mail Configuration" Dialog

E-Mail Address Text Box

Here, you enter the E-mail address to which the SCALANCE X-200 sends an E-mail if a fault occurs.

SMTP Server IP Address Text Box

Here, you enter the IP address of the SMTP server over which the E-mail is sent.

SMTP Server IP Port

The IP port over which the mail is sent. If necessary, you can change the default value 25 to your own requirements.

"From" Field

Address of the sender of the E-mail.

6.2.4.15   The "Agent SNMP Configuration" WBM Menu

Agent SNMP Configuration - Configuration of SNMP for a SCALANCE X-200 Switch

On the SNMP Configuration page, you make basic settings for SNMP. For detailed settings (traps, groups, users), there are separate menu items in WBM.
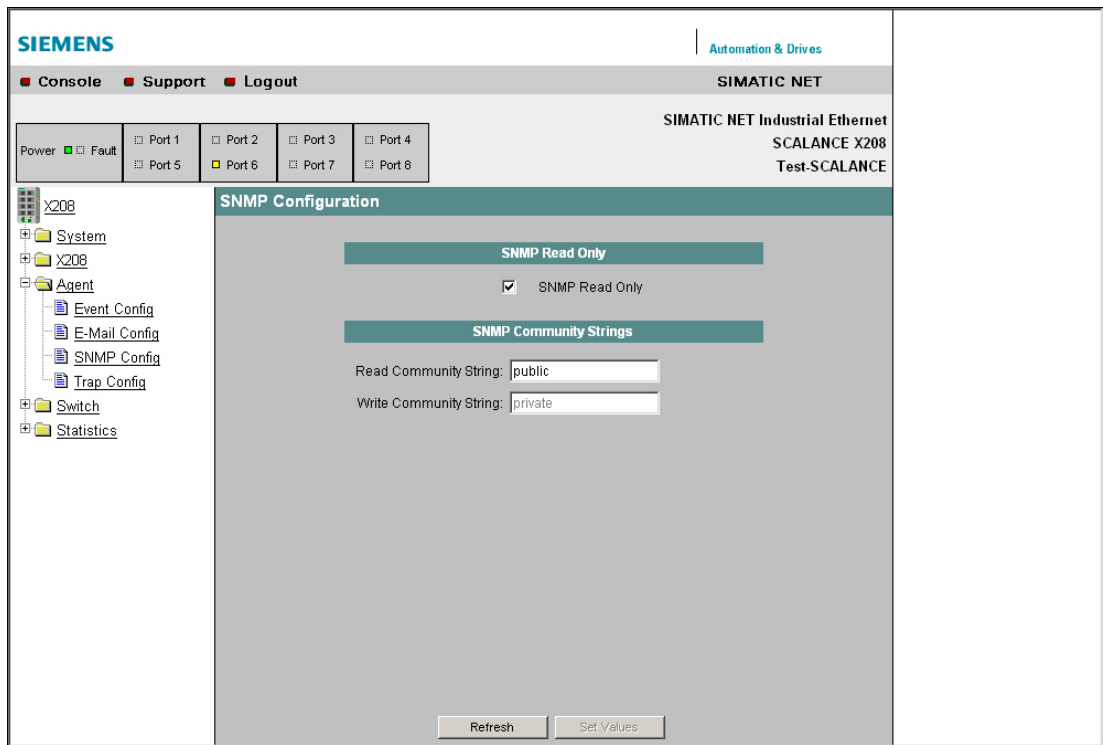
Figure 6-20   "Agent SNMP Configuration" Dialog

SNMP Read Only Check Box

Enables/disables write protection for SNMP variables.

Read Community String Text Box

Displays the user name for read access to SNMP variables.

Write Community String Text Box

Displays the user name for write access to SNMP variables. Here, changes can only be made, when write protection (SNMP read only) has been disabled.

6.2.4.16   The "Agent Trap Configuration" WBM Menu

Agent Trap Configuration - SNMP Traps for Alarm Events

If an alarm event occurs, the SCALANCE X-200 can send traps (alarm frames) to up to two different (network management) stations at the same time. Traps are sent only for events specified in the Agent Event Configuration menu.
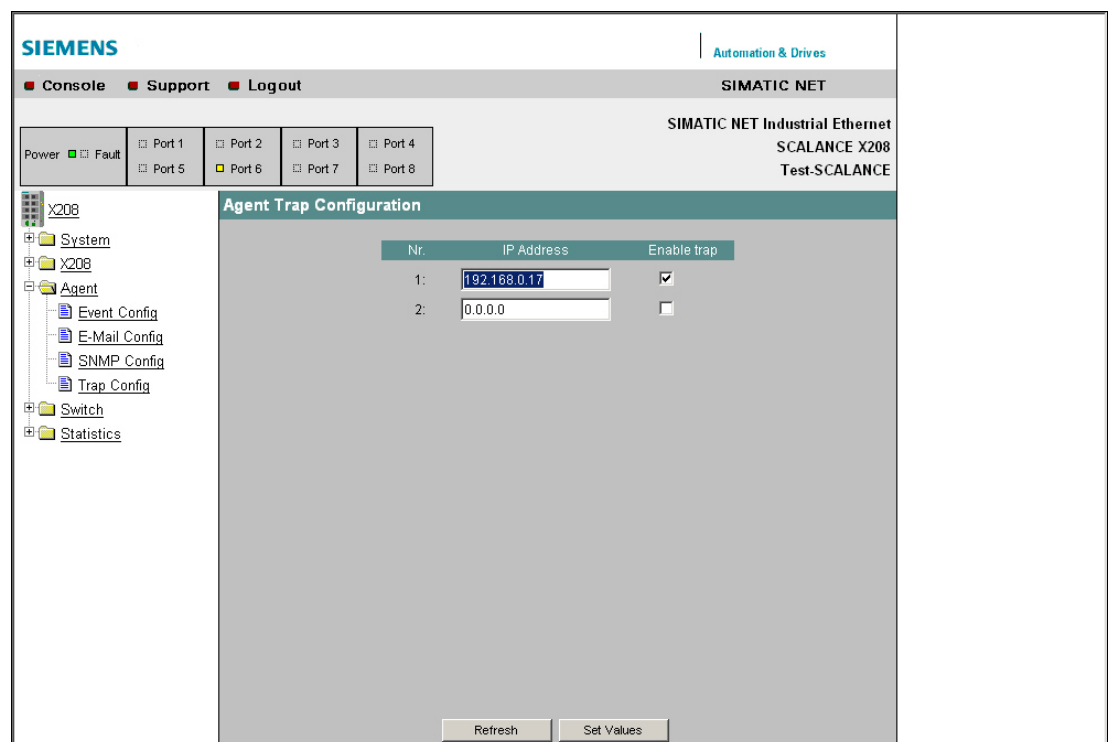
Figure 6-21   "Agent Trap Configuration" Dialog

IP Address Text Boxes

Here, you enter the addresses of the stations to which the SCALANCE X-200 will send traps.

Enable Trap Check Box

Click on the check box next to the IP addresses to enable the sending of traps to the corresponding stations.

6.2.4.17 The "Switch Configuration (Port Mirroring)" WBM Menu

Port Mirroring

With this dialog, you can enable or disable port mirroring; in other words, mirroring the data traffic from the mirror port to the monitor port.

Apart from the device be monitored, no other communication node should be connected to the monitor port.
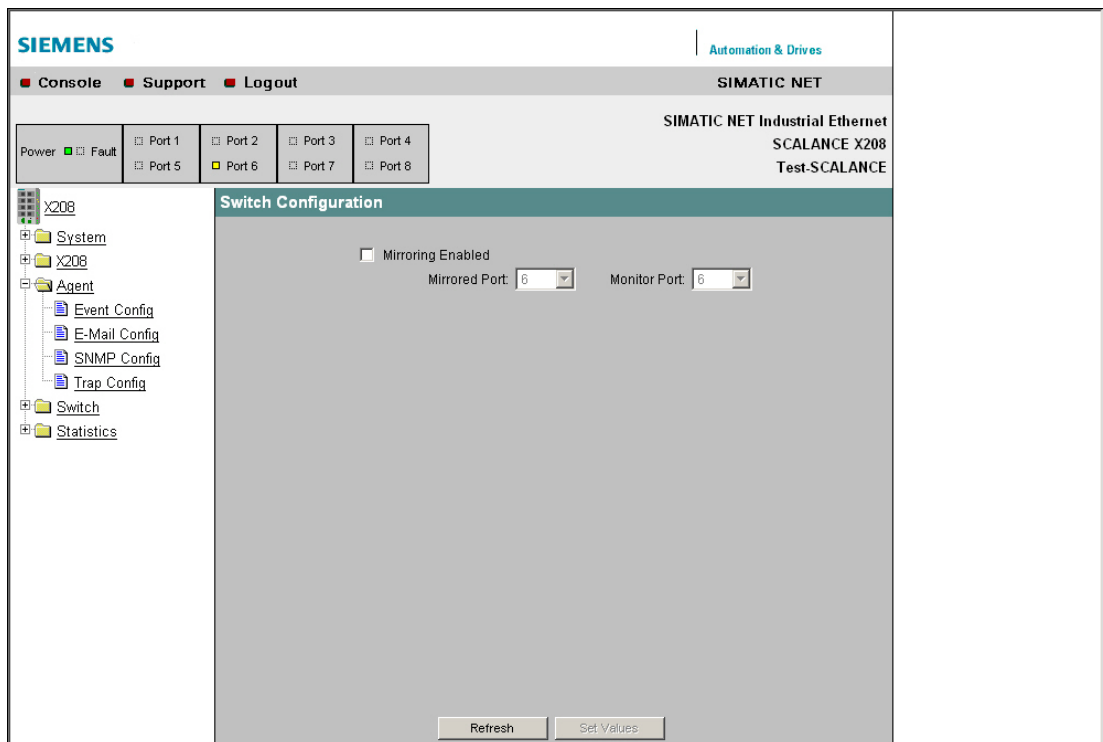
Figure 6-22   "Switch Configuration" Dialog

Mirroring Port Text Box

Under mirrored port, enter the port to be monitored.

Monitor Port Text Box

Under monitor port, enter the port that will do the monitoring.

You apply your settings with Set Value.

6.2.4.18 The "Switch Ports Status" WBM Menu

Switch Ports Status

This dialog informs you about the current status of the ports.
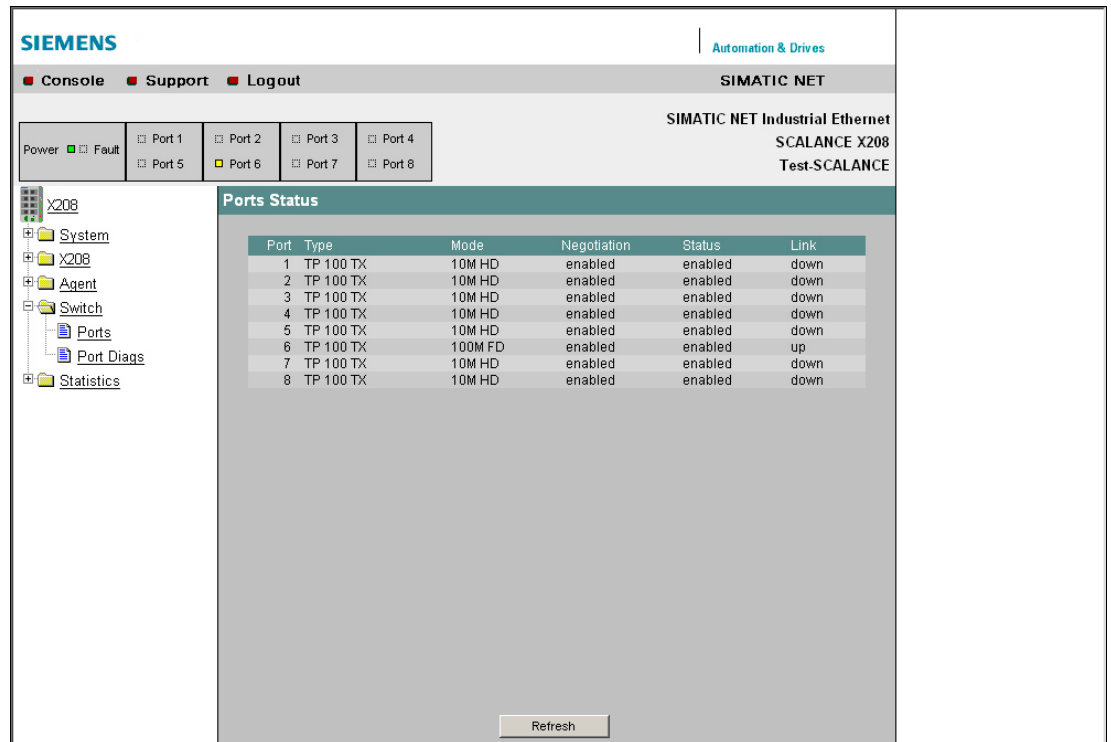
Figure 6-23   "Switch Ports Status" Dialog

Type Information Box

Displays the type of port. This information is important because difference modules and therefore different ports can be used in some slots. The following port types are supported:

TP 10 TX

TP 100 TX

FO 100 FX

Mode Information Box

The transmission rate (10 or 100 Mbps) and the transmission mode (for duplex (FD) or half duplex (HD)).

Negotiation Information Box

Indicates whether autonegotiation is enabled or disabled.

Status Information Box

Indicates that the port is enabled.

Link Information Box

Status of the link to the network. The following alternatives are possible:

- up
  The port has a valid link to the network, a link integrity signal is being received.

- down
  The link is down, for example because the connected device is turned off.

6.2.4.19   The "Switch Port Diagnostics" WBM Menu

Switch Port Diagnostics

With this dialog, each individual Ethernet port can run independent fault diagnostics on the cable. This test can be made without the cable being connected if a cable tester is connected and a loopback module is installed at the other end. This allows short-circuits and cable breaks to be localized to within a few meters.

Notice

Please note that this test is permitted only when no data connection is established on the port to be tested.
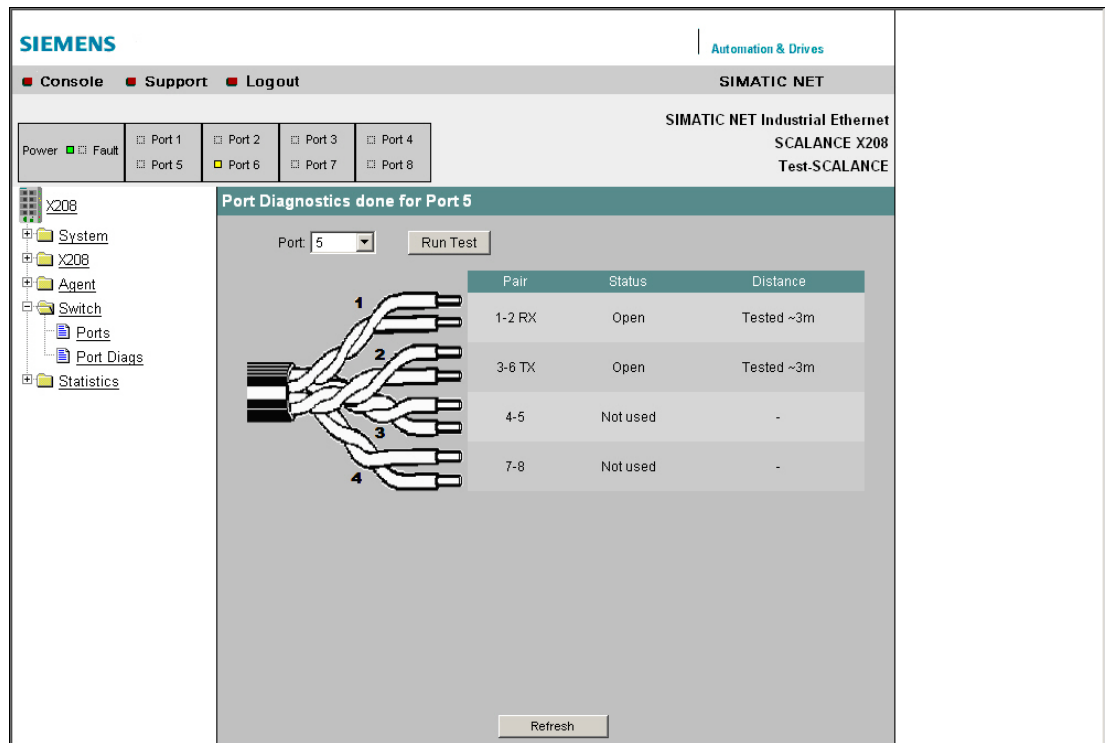
Figure 6-24   "Switch Port Diagnostics" Dialog

Port Text Box

The port to be tested is specified here.

Run Test Button

This button activates the test.

Pair Information Box

Displays the pair of cores in the cable.
Pairs 4-5 and 7-8 are not used.

Status Information Box

Displays the status of the cable.

Distance

Displays the distance to the cable end, cable break, or short-circuit.

6.2.4.20 The "Statistics" WBM Menu

Statistics - Counting and Evaluation of Received and Sent Frames

The SCALANCE X-200 has internal statistics counters (RMON counters) with which it counts the number of received frames according to the following criteria:

- Frame length
- Frame type
- Bad frames

This information provides you with an overview of the data traffic and any problems on the network.
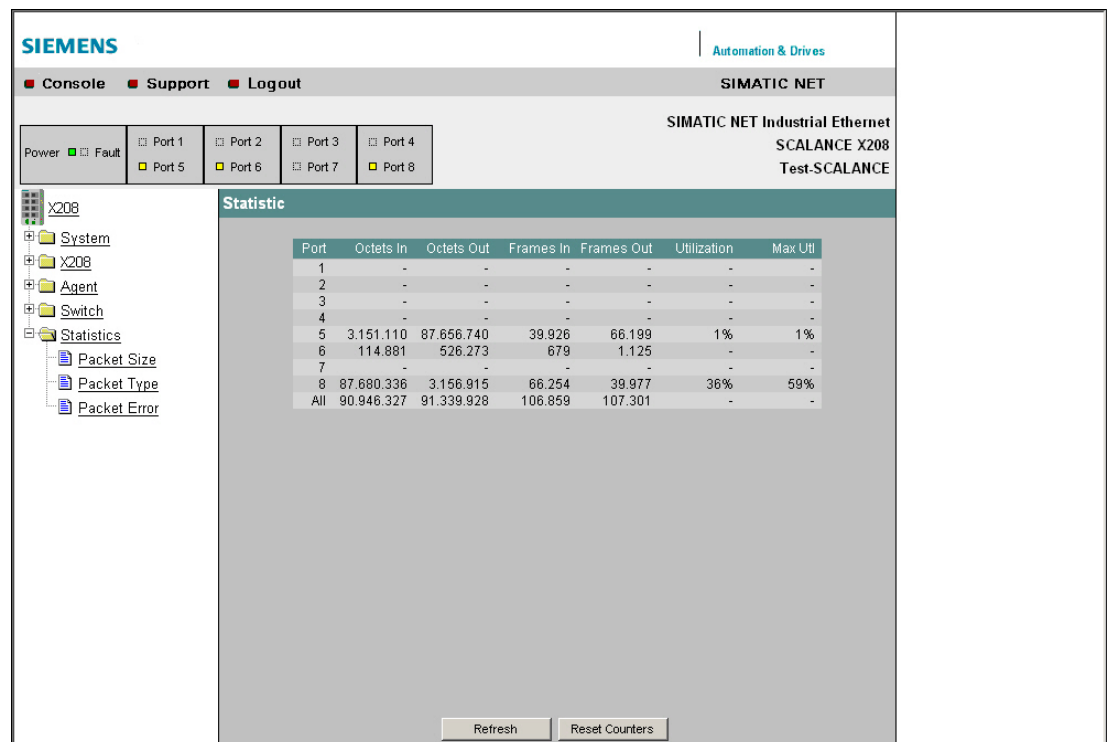
Figure 6-25   "Statistics" Dialog

Octets In Information Box

Displays the number of received bytes.

Octets Out Information Box

Displays the number of sent bytes.

Frames In Information Box

Displays the number of received frames.

Frames Out Information Box

Displays the number of sent frames.

Utilization Information Box

Displays the bus utilization as a percentage (%). If the bus utilization is less than 1%, nothing is displayed.

Max. Utilization Information Box

Displays the value of bus utilization as a percentage (%).

6.2.4.21 The "Packet Size Statistic" WBM Menu

Packet Size Statistics - Received Packets Sorted According to Length

The Packet Size Statistics page displays how many packets of which size were received at each port.

If you click the Reset Counters button, you reset the counters for all ports.

If you click on an entry in the Port column, the Packet Size Statistics graphic is displayed for the selected port. You then see a graphical representation of the counter value.
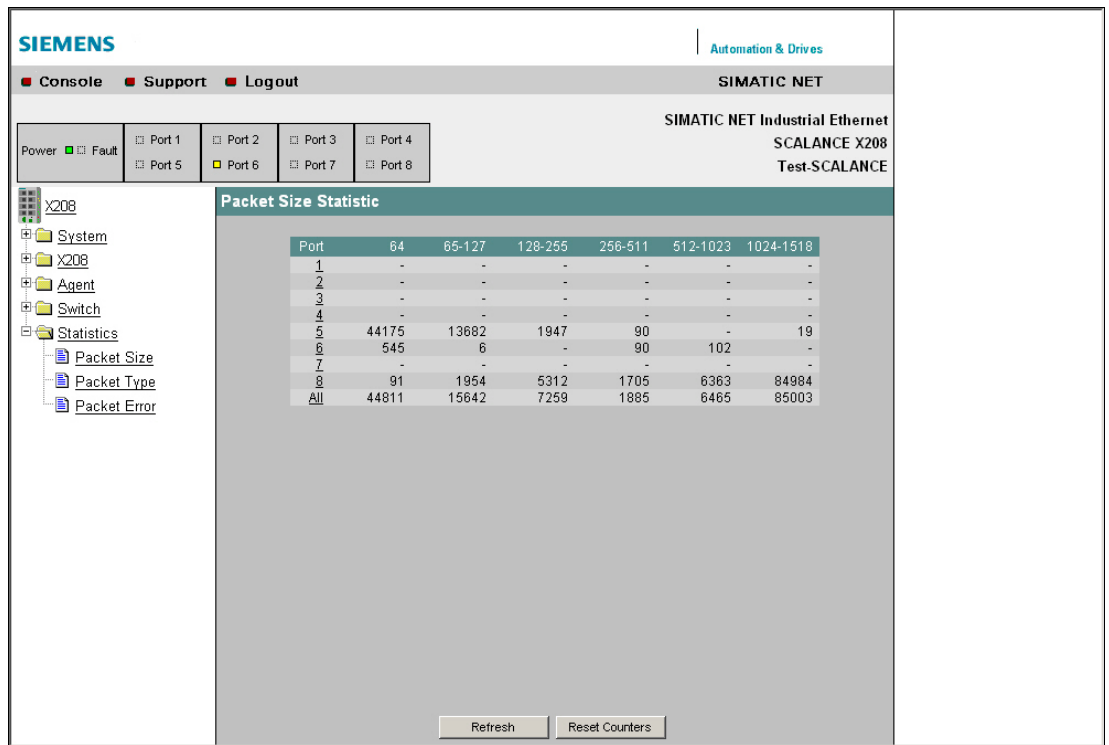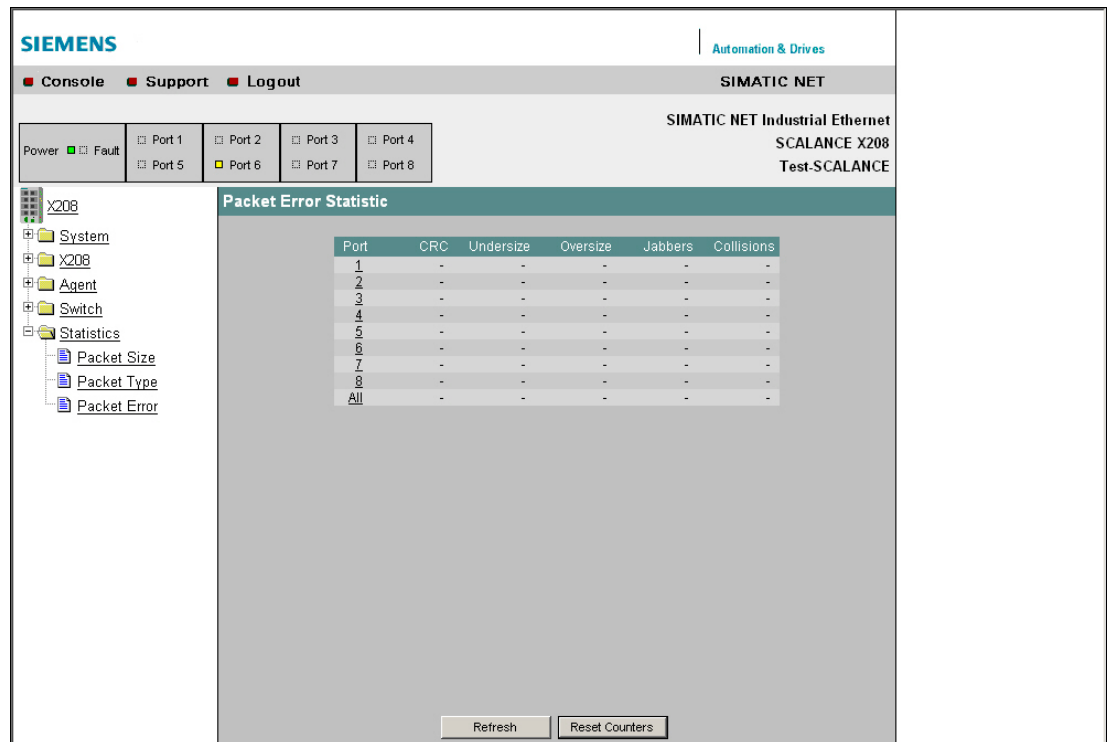
Figure 6-26   "Packet Size Statistics" Dialog

64 Information Box

Displays the number of packets with a length of 64 bytes.

65-127 Information Box

Displays the number of packets with a length of 65-127 bytes.

128-255 Information Box

Displays the number of packets with a length of 128-255 bytes.

256-511 Information Box

Displays the number of packets with a length of 256-511 bytes.

512-1023 Information Box

Displays the number of packets with a length of 512-1023 bytes.

1024-1518 Information Box

Displays the number of packets with a length of 1024-1518 bytes.

6.2.4.22   The "Packet Type Statistic" WBM Menu

Packet Type Statistics - Received Packets Sorted According to Type

The Packet Type Statistics page displays how many frames of the type unicast, multicast, and broadcast were received at each port.

If you click the Reset Counters button, you reset the counters for all ports.

If you click on an entry in the Port column, the Packet Type Statistics graphic is displayed for the selected port. You then see a configurable graphical representation of the counter value.
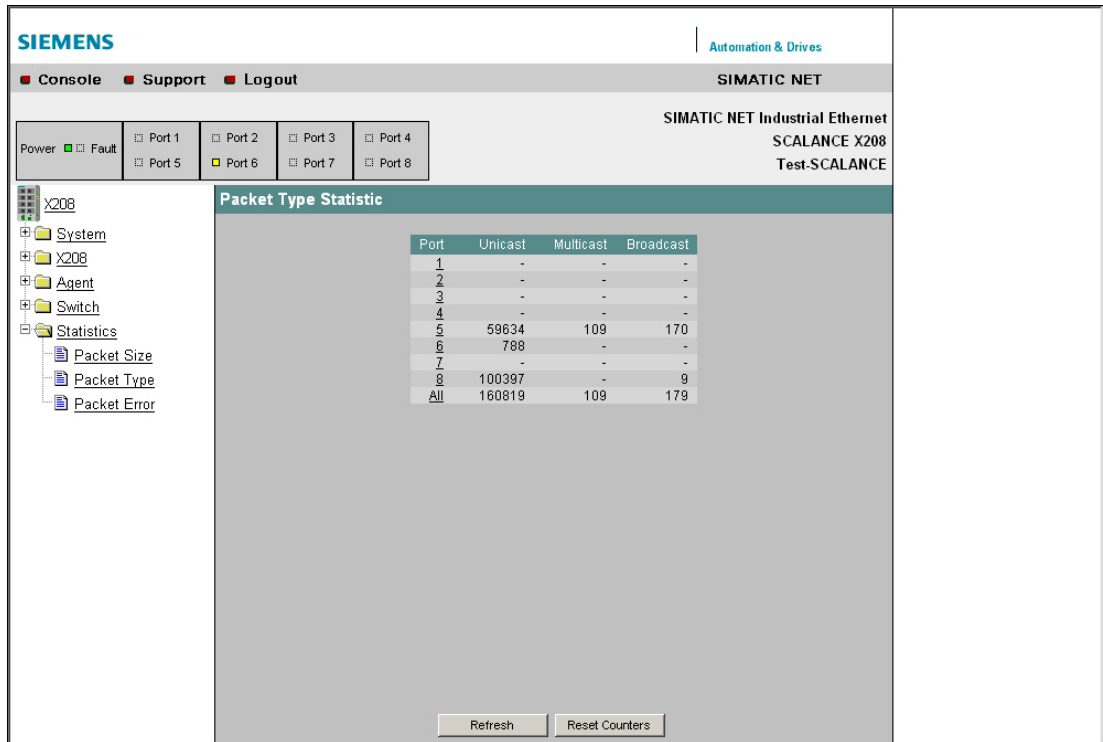
Figure 6-27   "Packet Type Statistics" Dialog

Unicast Information Box

Displays the number of packets to the unicast recipient address.

Multicast Information Box

Displays the number of packets to the multicast recipient address.

Broadcast Information Box

Displays the number of packets to the broadcast recipient address.

6.2.4.23   The "Packet Error Statistic" WBM Menu

Packet Error Statistics - Counting and Evaluation of Transmission Errors

This dialog displays information on any errors that may have occurred and allows diagnostics for the port on which the error occurred. You can reset the error counters with the "Reset Counters" button.

If you click on an entry in the Port column, the Packet Error Statistics graphic is displayed for the selected port. You then see a graphical representation of the counter value.

Figure 6-28   "Packet Error Statistics" Dialog

The following errors can be detected:

CRC

Packets with a valid length but bad checksum.

Undersize

Packets too short with valid checksum.

Oversize

Packets too long with valid checksum.

Jabbers

Packets too long without valid checksum.

Collisions

Indicates the number of collisions that have occurred.

7

PROFINET IO Functionality

7.1 Configuring with PROFINET IO

Using PROFINET IO

One option for diagnostics, parameter assignment, and generation of alarm messages of the connected SCALANCE X-200 is to use PROFINET IO.

Here, we will show you how you can use the options of PROFINET IO for a connected switch of the SCALANCE X-200 product line.

In the example, it is assumed that an S7 station is already configured with a PN IO chain (see also PN IO System Manual).

An example of a hardware configuration with a PN IO chain is shown in the following figure.
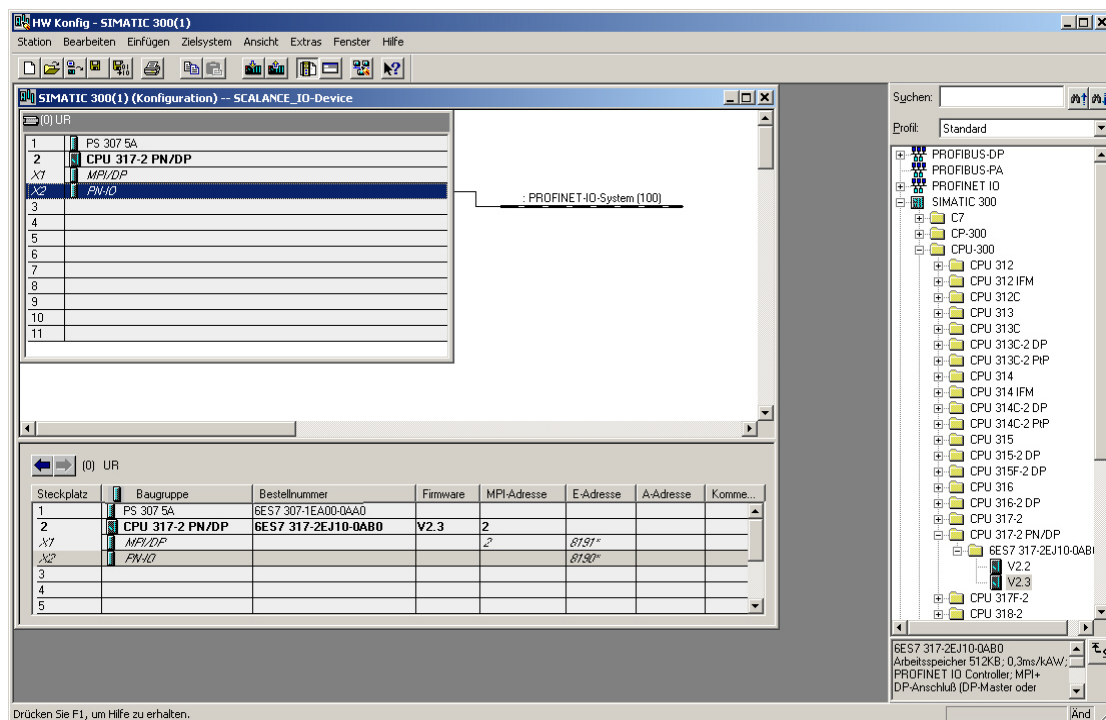
Figure 7-1   Station Setup

Including the SCALANCE X-200

To include the individual switches as PN IO devices, the devices of the SCALANCE X-200 product line must exist in the module catalog under PROFINET IO.

Procedure

To add the devices of the SCALANCE X-200 product line to the catalog for the first time, follow the steps outlined below:

1. In the dialog, select HW Config -> Options "Install GSD files".
    The following dialog opens:
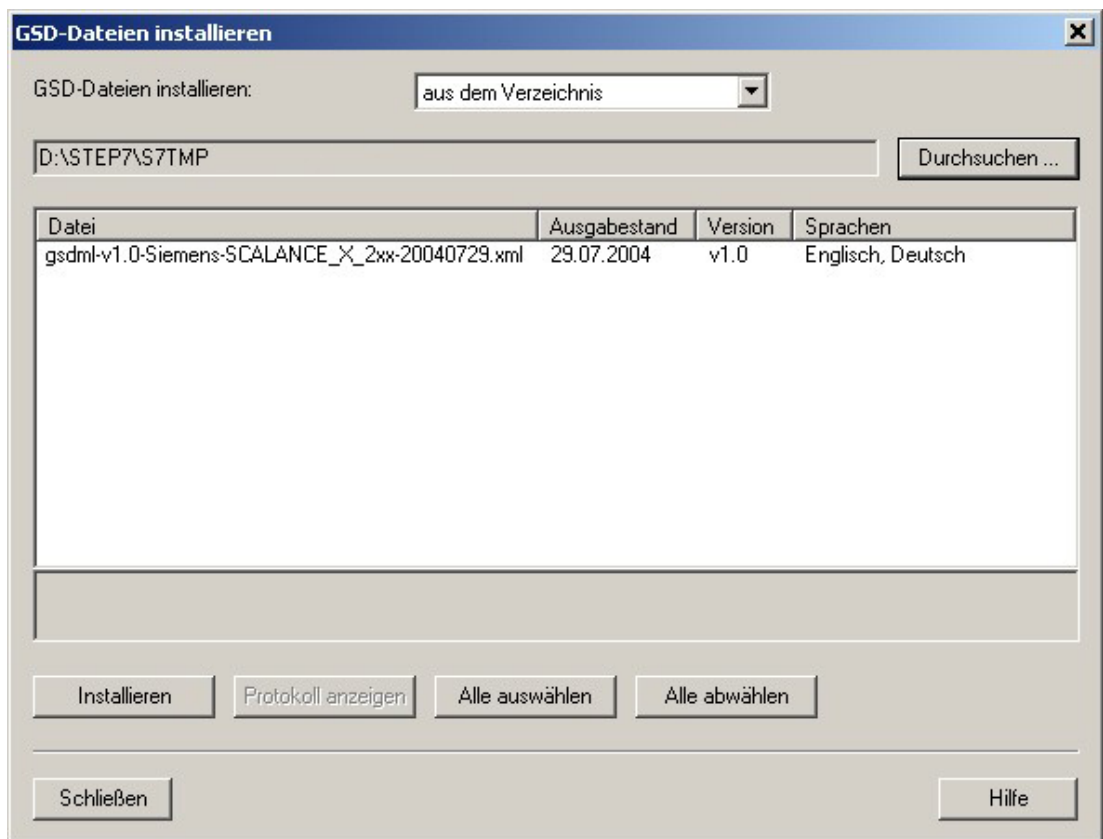
Figure 7-2   Installing GSD Files

2. Use the browse function to locate the supplied xml file (for example gsdml-v1.0-Siemens-SCALANCE_X_2xx-20040729.xml).

3. Then adopt the file using the "Install" function.
    The devices of the SCALANCE X-200 product line are now included in the module catalog (refer to the module catalog in the following figure).

4. Drag the required SCALANCE X-200 from the hardware catalog, here, for example SCALANCE X208, - PROFINET IO > Switching Devices > SCALANCE > SCALANCE X-208 to the PROFINET IO system.
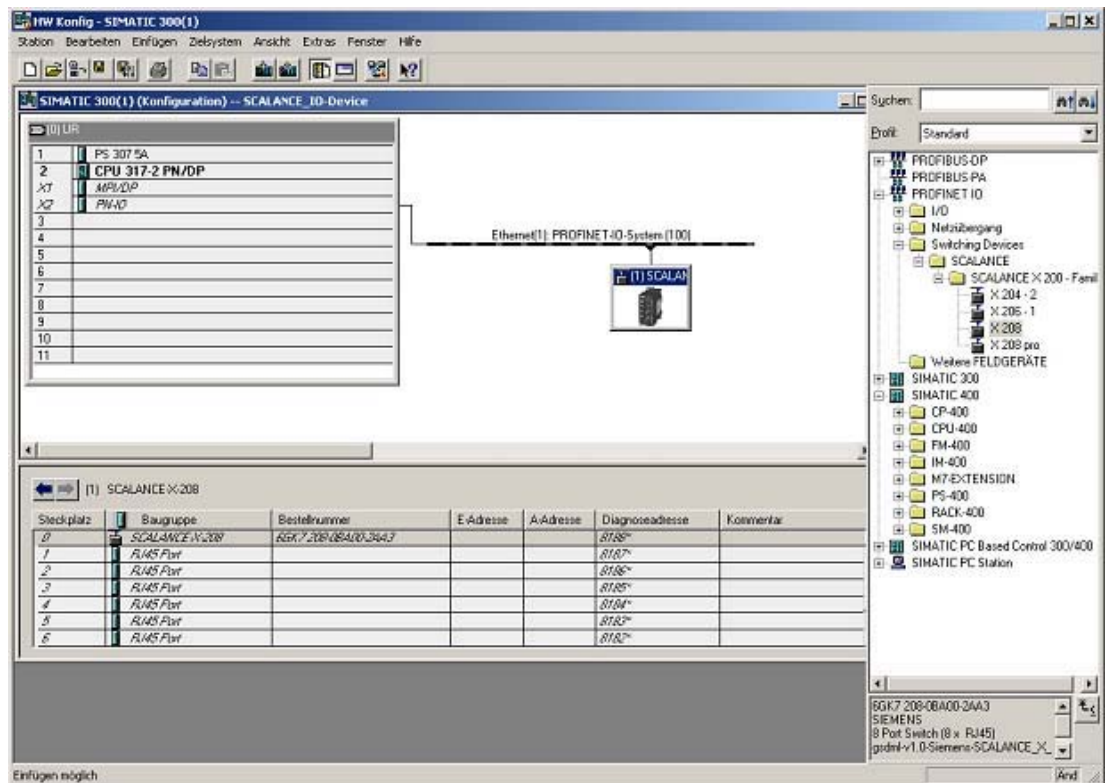
Figure 7-3   Inserting a SCALANCE X208

1. Click on the "(1)SCALANCE" icon so that the slots of the SCALANCE are displayed in the lower part of the screen. By double-clicking on slot=0, you can set the global parameters of the SCALANCE (substitute module) as shown in the figure.
2. Click on the slots of the ports and set the specific parameters.
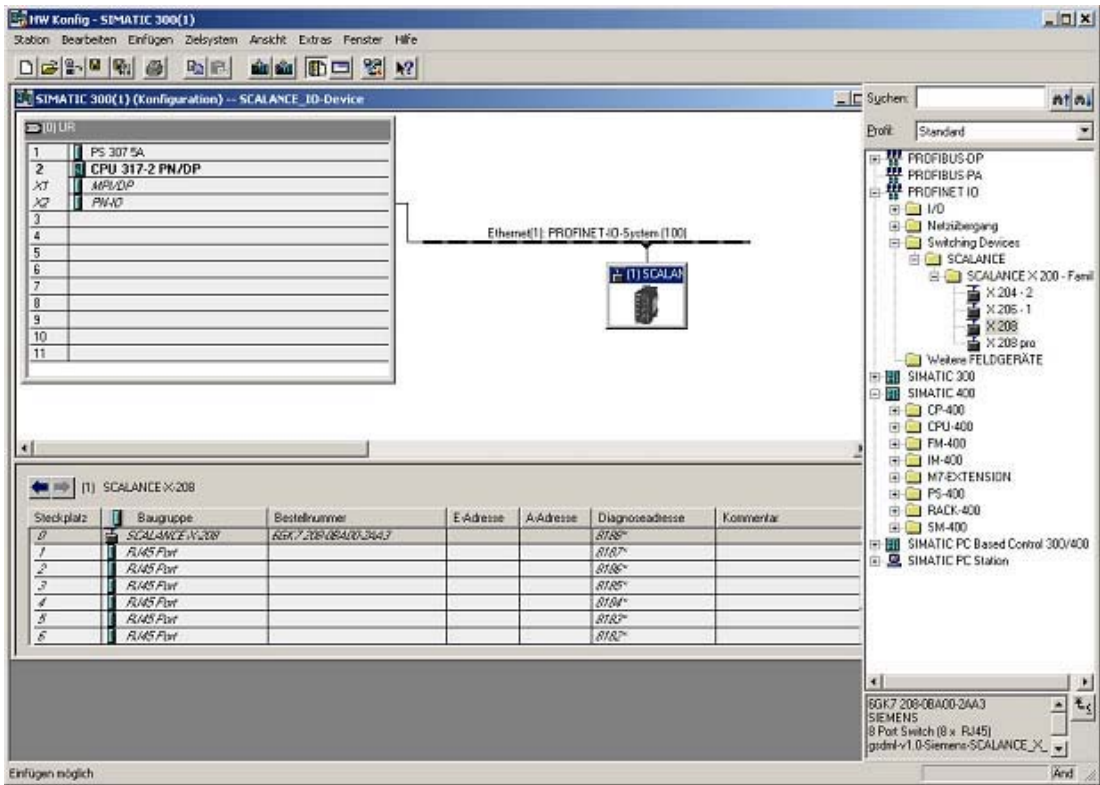
Figure 7-4   Setting Global Parameters
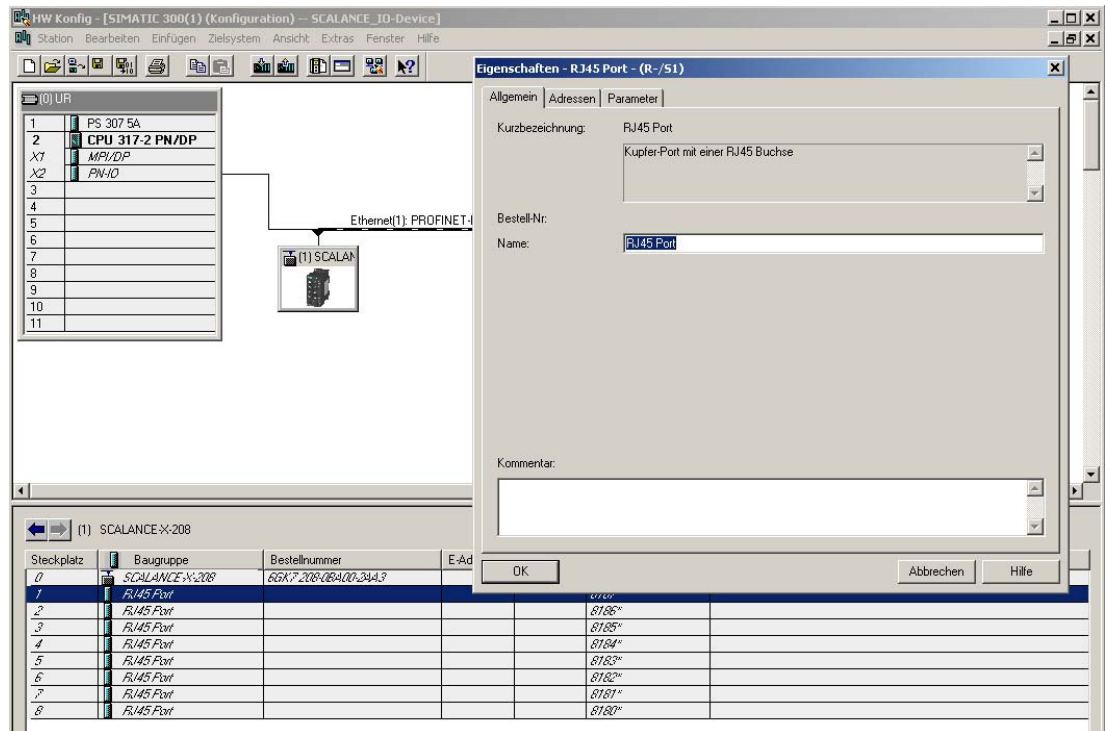
Figure 7-5   Setting Specific Parameters

1. In HW Config, open the Properties - SCALANCE X-208 dialog and enter the device name for the IO device:
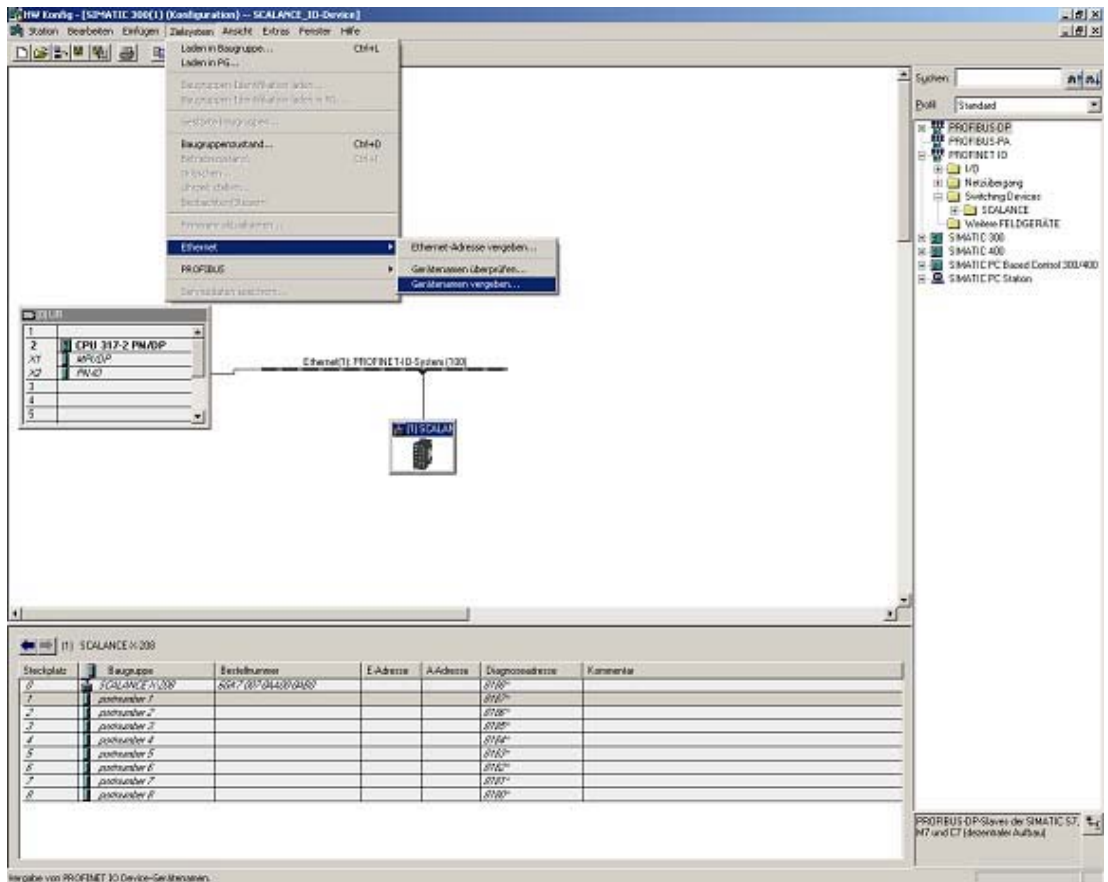
Figure 7-6   Assigning the Device Name

1. Save and compile the hardware configuration.

2. Select the Station > Save and Compile menu command.

3. Interconnect the devices over the network and turn on the power supply on the CPU317 and the SCALANCE.

To transfer the name to the SCALANCE X-208, you require an online connection from the PG to the IO device.

1. You transfer the device name to the SCALANCE X-208 with PLC > Ethernet > Assign Device Name.
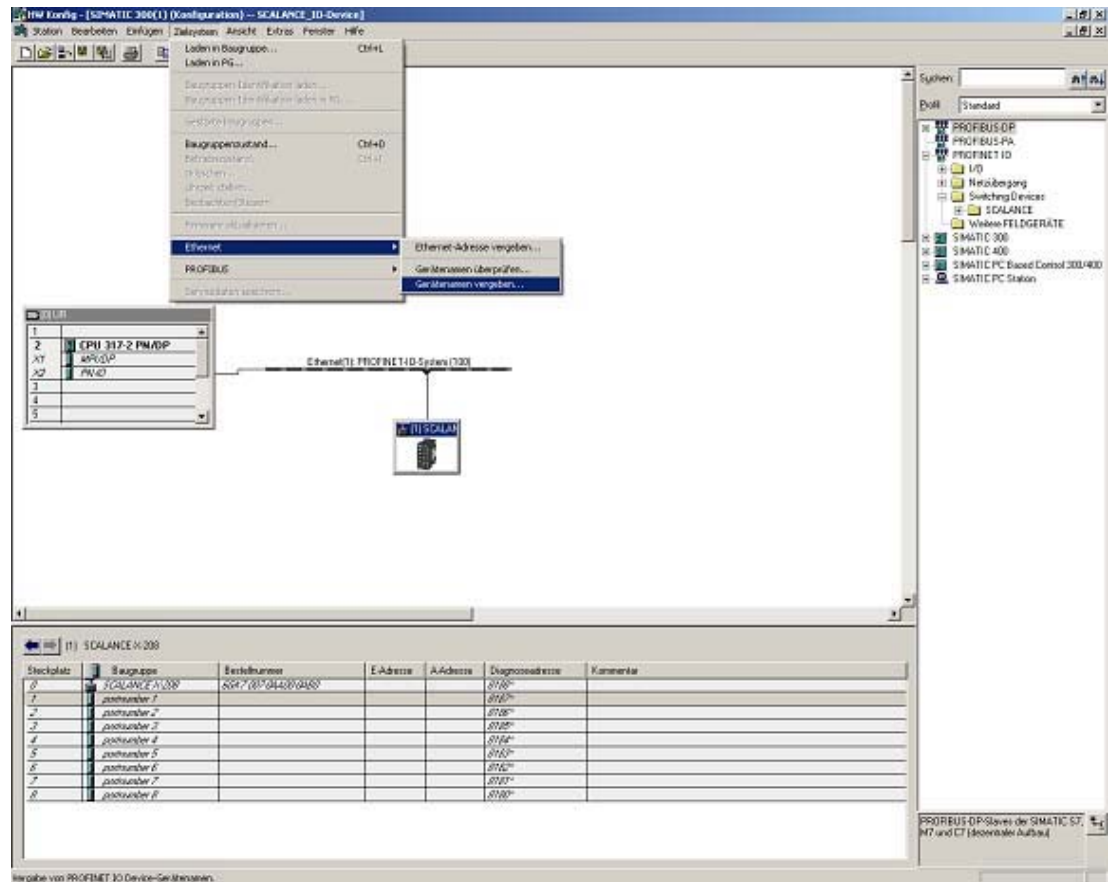
Figure 7-7   Assigning the Device Name
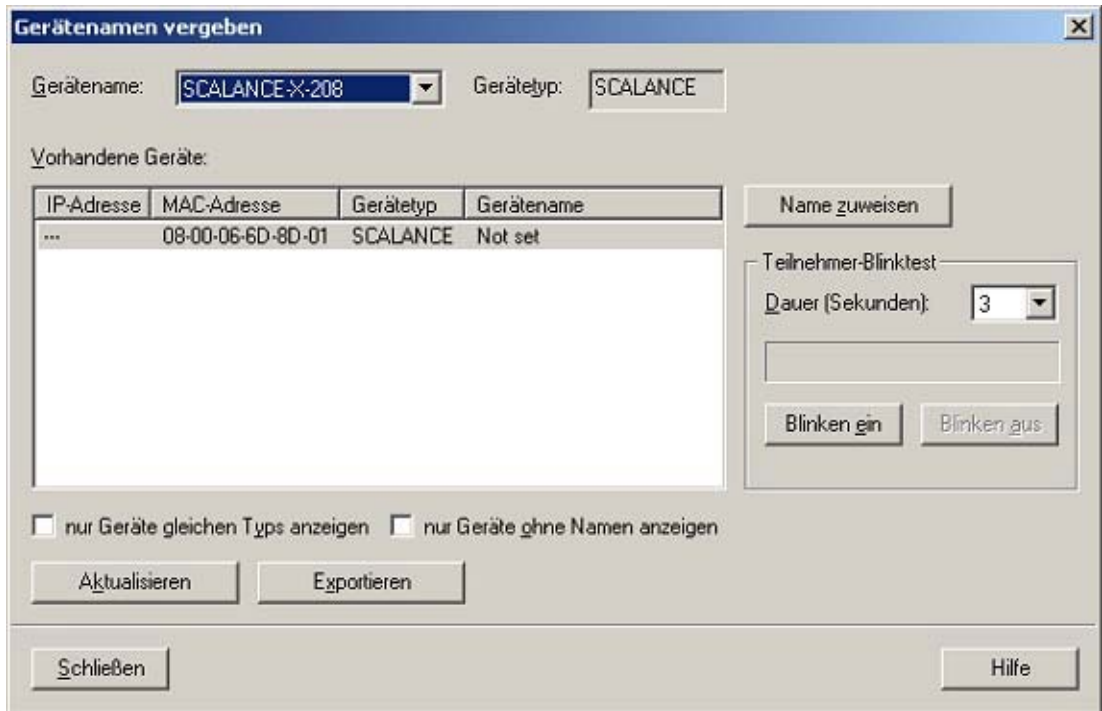
Figure 7-8   Assign Device Name Dialog

If you use more than one IO device, the Assign Device Names dialog also displays more than one IO device. In this case, compare the MAC address of the device with the displayed MAC address and then select the correct IO device. You can also check the assignment visually with the "Flashing On/Off" button (all the LEDs of the selected SCALANCE flash).

1. Click on the Assign Name button in the Device Names dialog box. The device name is stored permanently on the SCALANCE.
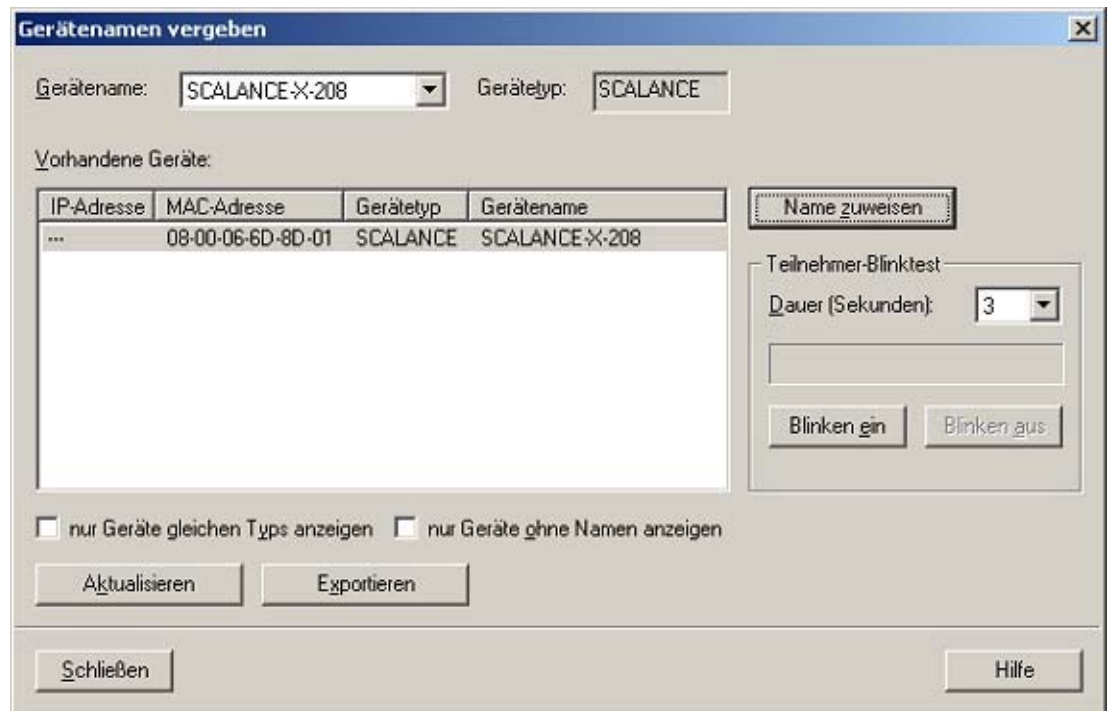
Figure 7-9   Assign Device Name Dialog for Further Devices

After assigning the name, the device name you assigned appears in the dialog box.

1. Download the hardware configuration to the CPU317-2PN/DP.

2. Select PLC > Download to Module

Notes on the CE Mark

<div style="text-align: right; font-size: 3em;">8</div>

8.1 Notes on the CE Mark

Product Name:

SIMATIC NET	SCALANCE X108	6GK5 108-0BA00-2AA3
SIMATIC NET	SCALANCE X208	6GK5 208-0BA00-2AA3
SIMATIC NET	SCALANCE X208PRO	6GK5 208-0CA00-2AA6
SIMATIC NET	SCALANCE X206-1	6GK5 206-1BB00-2AA3
SIMATIC NET	SCALANCE X204-2	6GK5 204-2BB00-2AA3

EMC Directive

89/336/EEC "Electromagnetic Compatibility"

Area of Application

The product is designed for use in an industrial environment:

Area of Application	Requirements	
	Noise emission	Noise immunity
Industrial operation	EN 50081-2 : 1993	EN 50082-2 : 1995

Installation Guidelines

The product meets the requirements if you keep to the installation instructions and safety-related notices as described here and in the manual SIMATIC NET Industrial Ethernet Twisted Pair and Fiber Optic Networks /2/ when installing and operating the device.

Conformity Certificates

The EU declaration of conformity is available for the responsible authorities according to the above-mentioned EU directive at the following address:

Siemens Aktiengesellschaft
Bereich Automatisierungs- und Antriebstechnik
Industrielle Kommunikation (A&D PT2)

Postfach 4848
D-90327 Nürnberg

Notes for the Manufacturers of Machines

This product is not a machine in the sense of the EU directive on machines. There is therefore no declaration of conformity for the EU directive on machines 89/392/EEC.

If the product is part of the equipment of a machine, it must be included in the procedure for the declaration of conformity by the manufacturer of the machine.

References

9

9.1 References

Sources of Information and Other Documentation

1. SIMATIC NET Industrial Twisted Pair and Fiber-Optic Networks,
   Order numbers:
   6GK1970-1BA10-0AA0 German
   6GK1970-1BA10-0AA1 English
   6GK1970-1BA10-0AA2 French
   6GK1970-1BA10-0AA4 Italian

2. PROFINET Installation Guide
   Can be ordered from the PROFIBUS User Organization (PNO)

Dimension Drawings

<div style="text-align: right; font-size: large;">10</div>

10.1   Dimension Drawing
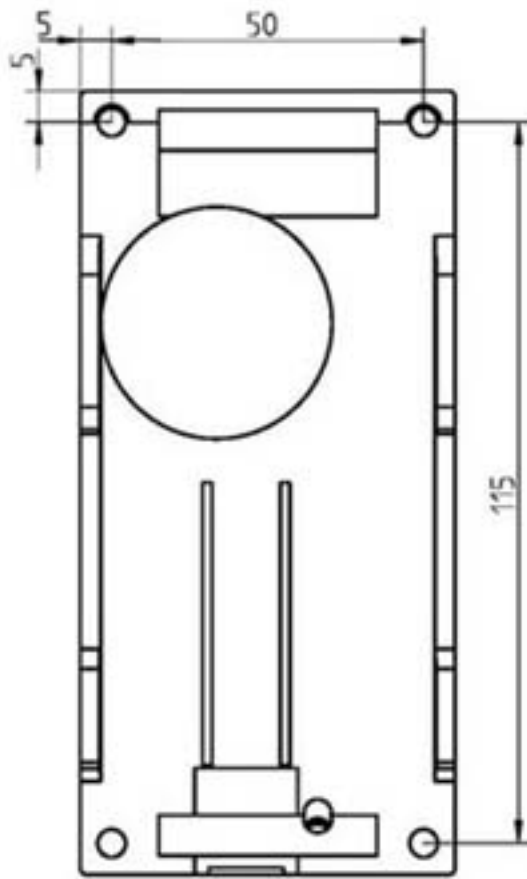
Figure 10-1   Diemension Drawing SCALANCE X108, X208, X206-1, X204-2
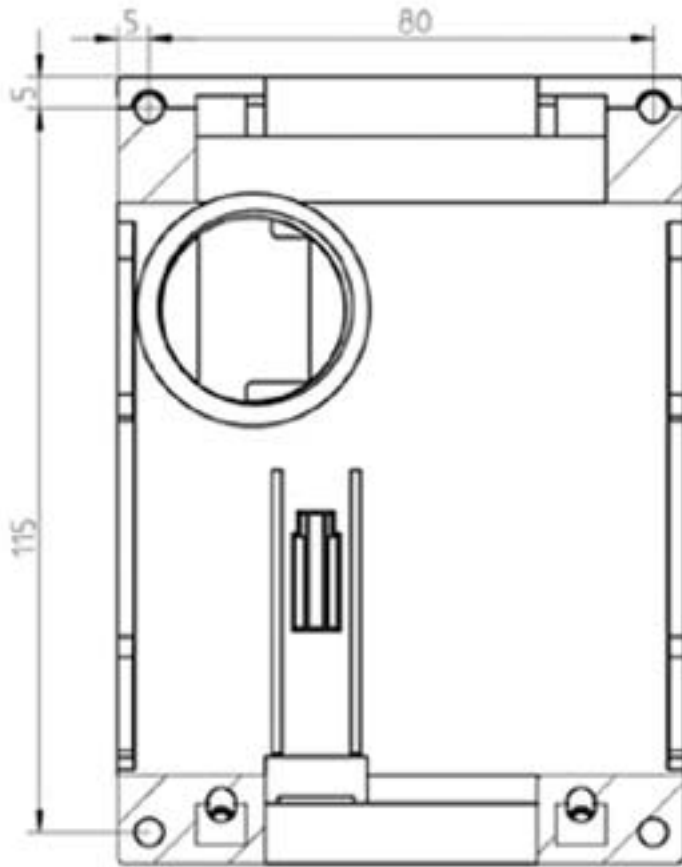
Figure 10-2   Dimension Drawing SCALANCE X208PRO

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