SIEMENS


Industrial Communication

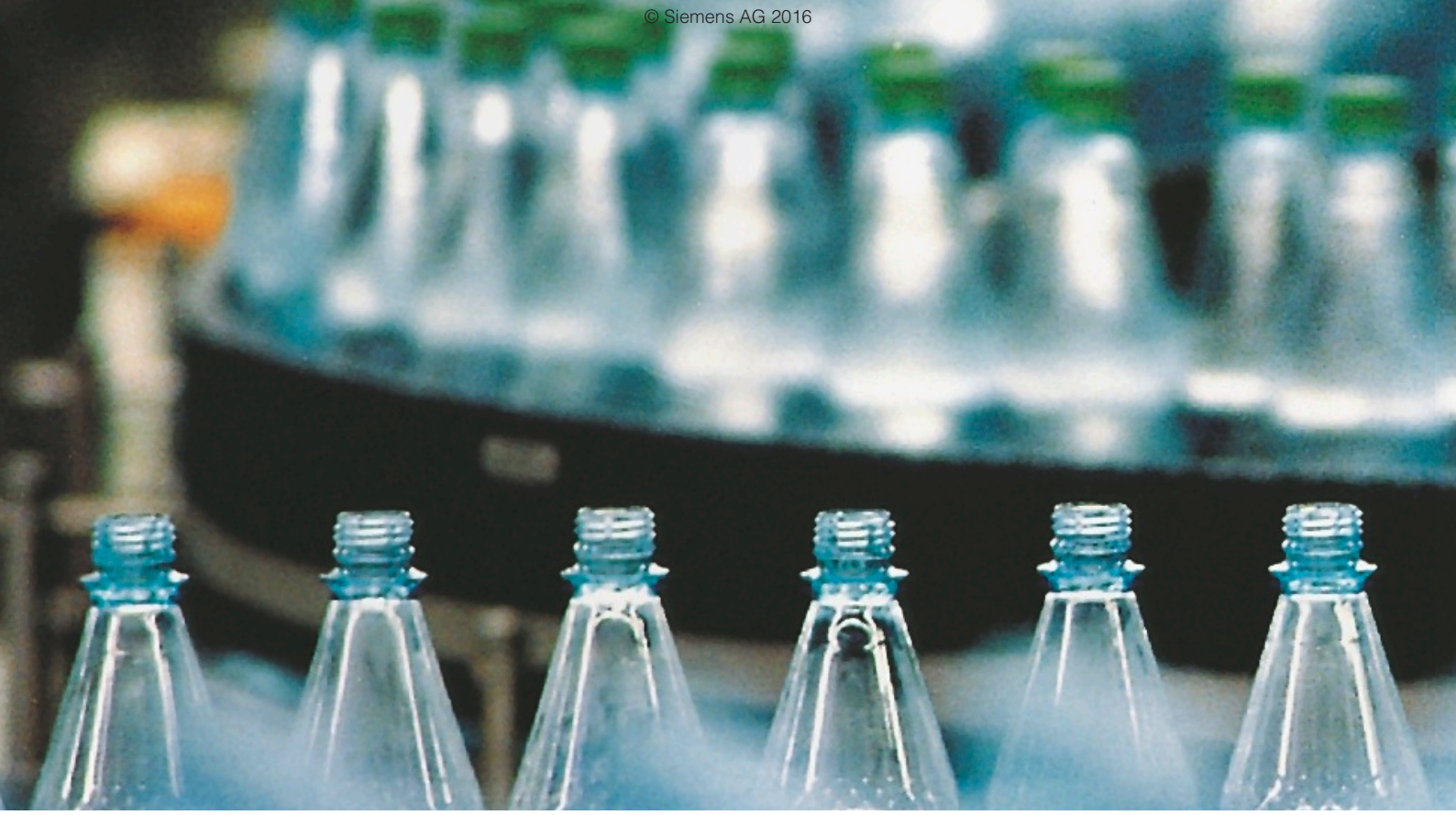
# SCALANCE X –

## Industrial Ethernet Switches

Brochure

Edition 2016

siemens.com/switches



Today's requirements on an industrial communication network are manifold:

- Open and integrated communication across the entire company and across company limits
- Uninterrupted flow of information from the sensor/actuator level all the way to the company level
- Fast data exchange between the plant components
- Availability of information at any location
- Easy and consistent configuration and efficient diagnostics, simple expansions and modernizations
- Integrated security functions which prevent unauthorized access

With the Industrial Ethernet switches from Siemens you can meet your specific challenges in a customized manner – our comprehensive product portfolio always has the right switch for you.

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**The Siemens Path to Digital Enterprise**

Already today, Siemens relies on four-core components to realize the Digital Enterprise: Digital Enterprise Software Suite, Industrial Communication, Industrial Security and Industry Services. On the way to Industry 4.0, industrial communication forms the basis for enabling the data flows needed along the added-value chains, which are required for the combination of the virtual world and the real world. This way you can drastically reduce throughput times with greatly increase flexibility in order to keep up with the increasingly strong trend toward individualized mass production while consistently reducing their consumption of energy and raw materials.

**Industrial networks**

Industrial communication is essential for any functioning automation. It provides the infrastructure and the required network mechanisms for a company-wide data exchange. This means: Along the entire value added chain, from the field to the management level–regardless if wired or wireless – local or remote. Against this background, it becomes obvious why efficient industrial networks can only be implemented based on communication standards that ensure a high level of openness and flexibility. And take into account the increasing requirements made on Industrial Security.

**Totally Integrated Automation**

With Totally Integrated Automation, Siemens is the only supplier of an integrated product and system range for automation in all branches of industry – from incoming goods via the production process all the way to the outgoing goods, from the equipment, through the aggregation level and the industrial backbone all the way to connection to the office network. Siemens offers all components required for industrial communication: From industry-compliant communication processors all the way to network components – also available wireless, if necessary. To achieve the highest level of consistency of the networks and seamless integration of the industrial plants, different Industrial Ethernet switches are used. They are used for the structured networking of machines and plants as well as for integrating them into the overall corporate network. A graduated portfolio of switches all the way to communication processors with integrated switch, offers the best solution for all types of industrial communication in any environment – from production in clean rooms all the way to operation in rough outdoor applications.

**Production vs. office network**

Industrial communication differs fundamentally from the communication that is used in the office environment. In the office environment, many clients communicate with one server; there are no cross-connections between clients. This type of data transmission can cause bottlenecks and delays when communication links are being established, when too many clients access a server simultaneously.

In an industrial environment, these restrictions are not acceptable for automation because the cyclic processing programs need the latest input data to output corresponding control commands to the components. The applications, communication relationships and network structures must be individually adapted in this case – regardless if for plants in the industry, in the energy sector, in traffic systems or infrastructures.
Plus the focus is on optimal utilization of the network capacity and thus plants or machines, and on minimizing possible downtimes.

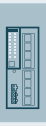
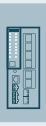
**High availability due to redundancy**

Production plants have been designed for and calculated to ensure high availability. This means plant failures often result in cost-intensive downtimes, high restart costs and the loss of valuable data or materials. Redundant control systems or networks in redundant design offer protection from automation system failures. To achieve the extremely fast response times required by industrial companies, Siemens has for many years used standardized network redundancy procedures that support reconfiguration times of a few milliseconds in the event of a fault.
This is especially important for process automation in which downtimes must be avoided at all costs. The benefits of these network redundancy processes are taken advantage of here with the SIMATIC PCS 7 distributed control system and PROFINET.

For critical applications which must be fault-tolerant and prevent any delay in communication, Siemens offers different solutions.

# Portfolio

## UNMANAGED

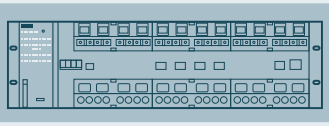
| Compact Switch Modules CSM | SCALANCE X-000 unmanaged | SCALANCE X-100 unmanaged | SCALANCE X-200 managed |
|---|---|---|---|
|  |  |  |  |
| More connection to SIMATIC | Space-saving, cost-efficient and industry-compliant entry-level solution | For a reliable network solution with all equipment details | For all network structures in machine-oriented applications up to linked units |
| These unmanaged switches, based in design on LOGO!, SIMATIC S7-300/ET 200M or S7-1200, are used for interface extension of the products listed above. | The switches of the SCALANCE X-000 product line are unmanaged Industrial Ethernet switches for implementing a simple machine network with transmission rates of up to 1 Gbps. | The switches of the SCALANCE X-100 product line are rugged unmanaged Industrial Ethernet switches with different port configurations – also available as media converter. | The universal managed switches of the SCALANCE X-200 product line are well suited for setting up line, star and ring structures up to 1 Gbps. They support real-time protocols such as PROFINET or EtherNet/IP. There are many versions, for example, in IP65/67 degree of protection, in ultra-flat design or for setting up bumpless redundant network structures. |
|  |  |  |  |

## Highlights

### Unmanaged Switches

- Rugged, industry-compliant design
- The right version for each application
- Investment protection: Existing networks can be extended with new products
- Wide range of usability in small or large networks, even outside the control cabinet
- Avoiding additional training and introduction costs by using standardized Ethernet technology
- Versions for connection of twisted pair and fiber optic cables
- 5 year warranty on all SCALANCE products

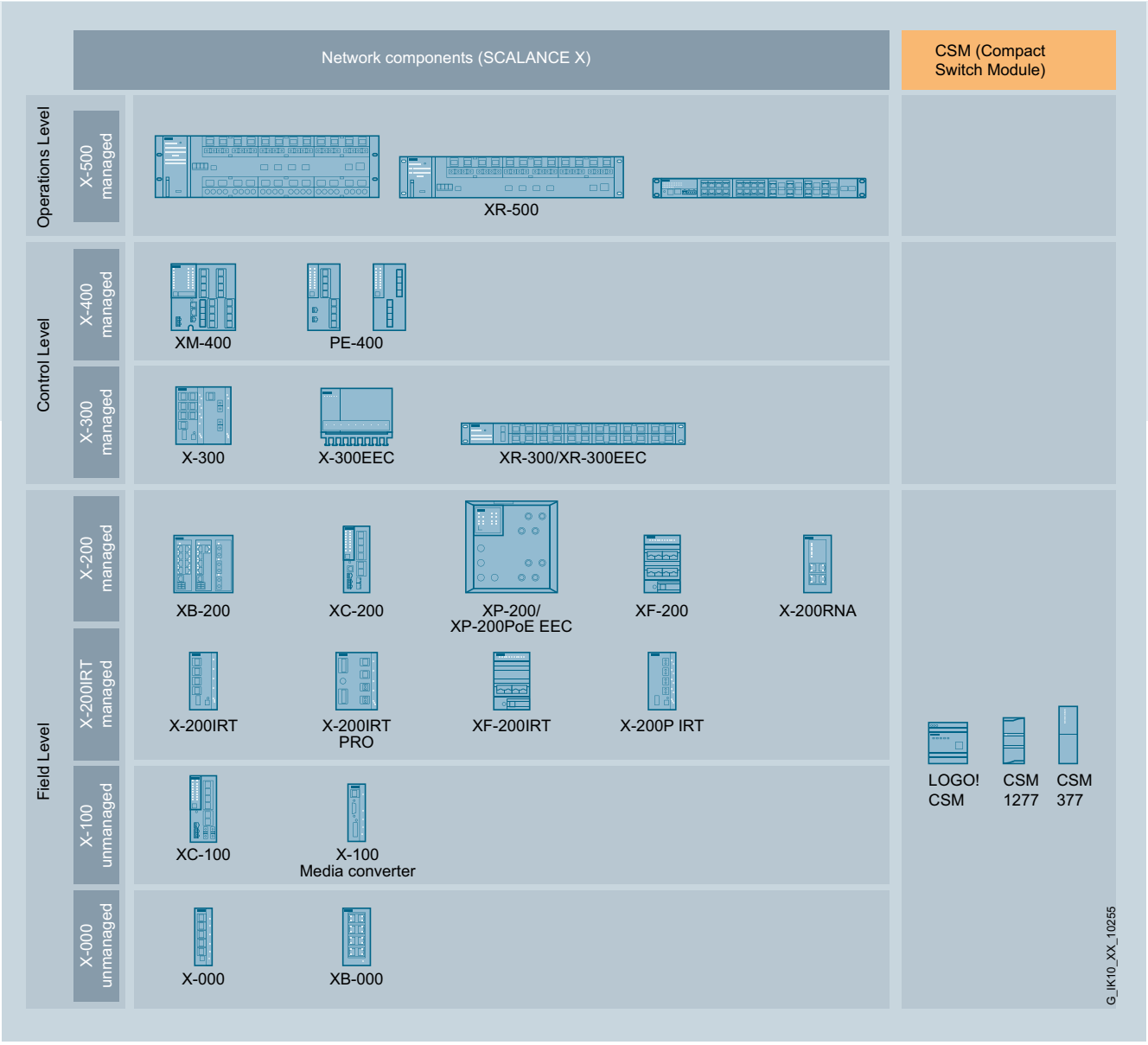
# MANAGED

| SCALANCE X-200IRT managed | SCALANCE X-300 managed | SCALANCE X-400 managed / Layer 3 | SCALANCE X-500 managed / Layer 3 |
|---|---|---|---|
|  |  |  |  |
| Acting in hard real time | Convincing performance – modular and powerful | Segmentation on all levels | Structuring high-performance plants and integrating them into the Office IT |
| The SCALANCE X-200IRT product line includes compact switches for hard real-time requirements (isochronous real time), for example, in high-performance, isochronous Motion Control applications. These switches can also be used to set up redundant ring structures. | High functionality and great flexibility:<br>The SCALANCE X-300 products are available as 19" rack versions or in compact design and extend your plant networks with Gigabit Ethernet power – even under harsh conditions. | Expandable at any time:<br>Thanks to its modular design, the SCALANCE X-400 product line offers maximum flexibility in the automation network–and high performance (1 Gbps) with very small space requirement – compact for DIN rail mounting as well. Large production networks can be easily and clearly segmented in this way. | You can structure your plant network with SCALANCE X-500 19" rack switches as central components. As 19" rack switch, these devices offer complete freedom in the selection of connection media, transmission rates of up to 10 Gbps and different redundancy concepts. Connection your production network to your Office-IT – for a network running from the machinery/ cells to your backbone layer. |
|  |  |  |  |

## Managed switches offer in addition

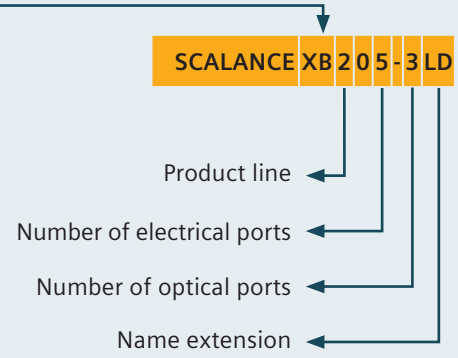
- A network for real time (PROFINET and EtherNet/IP) and standard TCP/IP, eliminating duplicate infrastructure
- High network availability due to integrated redundancy mechanisms (ring structures)
- Reduced downtimes by saving configuration data
- Integration into existing concepts for network security through integrated security functions
- Configuration through WBM or CLI, local or remote
- Diagnostics through LEDs on the device, through WBM or network management through SNMP with SINEMA server
- Integration in the STEP 7 and PCS 7 engineering tools
- Integrated system diagnostics with PROFINET
- High network and machine availability

# Overview of the portfolio




Portfolio of the Industrial Ethernet Switches SCALANCE X and Compact Switch Modules (CSM)

| Product type | Description |
|---|---|
| C | Compact |
| R | Rack |
| M | Modular |
| F | Flat |
| B | Box |
| P | Protected |




System of SCALANCE name assignment using SCALANCE XB205-3LD as an example

# Functions and areas of application

| | Layer 3 / Routing | 19" design | Modular through media modules | Support of Gigabit Ethernet | PROFINET | EtherNet/IP | Office features (VLAN) | Diagnostic functions | Isochronous Real-Time (IRT) | Power-over-Ethernet | Can be used under enhanced ambient conditions | Time synchronization to IEEE 1588 | Additional interface for SIMATIC S7-300/ ET 200M, S7-1200 or LOGO! |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X-500 | • | • | • | • | • | • | • | • | | • | | | |
| X-400 | • | | • | • | • | • | • | • | | • | | | |
| X-300 | | • | • | • | • | | • | • | | • | • | • | |
| X-200 | | | | • | • | • | • | • | • | | • | | |
| X-100 | | | | | | | | | | • | | | |
| X-000 | | | | • | | | | | | | • | | |
| CSM | | | | | | | | | | | | | • |

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• applies to selected versions

Industrial Ethernet switches SCALANCE X: Overview of the functions

| Areas of application / Type of networks / Requires | | Office connection | Plant networking | Industry-related applications | Power generation and distribution | Wind farms | Machinery and plant engineering | Unit networking | Standard mechanical engineering | Machine-internal networking | Network setup through SIMATIC S7-300, S7-1200 or LOGO! |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X-500 | Powerful backbone network with very high requirements on functionality / port density / availability as well as interface to Office IT | • | • | • | | | | | | | |
| X-400 | Powerful plant network with high demand on functionality and availability | • | • | • | | | | | | | |
| X-300 | Large networks with high demand on functionality and availability | | • | • | • | • | | | | | |
| X-200 | Networks with high demand on functionality and availability | | • | • | • | • | • | • | • | | |
| X-100 | Networks with low demand on functionality | | | | | • | • | • | • | | |
| X-000 | Networks with low demand on functionality and ruggedness | | | | | | | | • | • | |
| CSM | Networks or interface extension for SIMATIC S7-300, S7-1200, LOGO! | | | | | | | | | | • |

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• Applies

SCALANCE X Industrial Ethernet switches: Areas of application



| When do you use ... | Variants | | |
|---|---|---|---|
| **... CSM?** | **LOGO! CSM** | **CSM 1277** | **CSM 377** |
| ■ For fast, simple connection of SIMATIC S7-300/ET 200M, S7-1200 or LOGO! to an electrical Industrial Ethernet network<br>■ For integration of small machines into existing automation networks<br>■ Stand-alone operation of the machines<br>■ For setting up small, local Ethernet networks | ■ In LOGO! design<br>■ Transmission rate up to 100 Mbps<br>■ IP20 degree of protection<br>■ Temperature range 0 °C to +55 °C | ■ In SIMATIC S7-1200 design<br>■ Transmission rate up to 100 Mbps<br>■ IP20 degree of protection<br>■ Temperature range 0 °C to +60 °C | ■ In SIMATIC S7-300 design<br>■ Transmission rate up to 100 Mbps<br>■ IP20 degree of protection<br>■ Temperature range 0 °C to +60 °C |

# Compact Switch Modules (CSM)

## More connection to SIMATIC

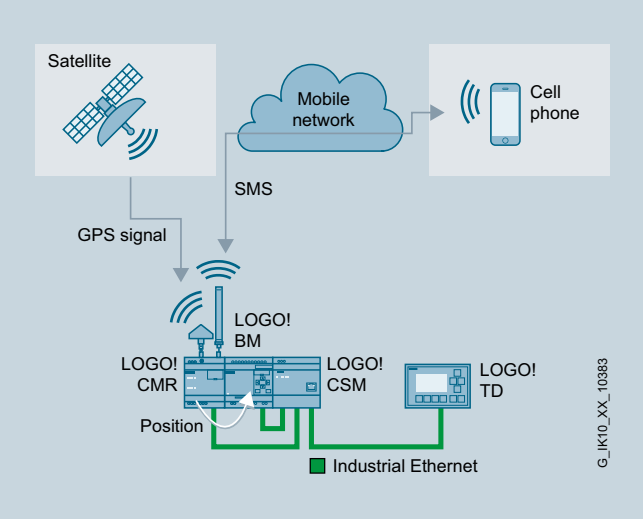
HIGHLIGHTS / FEATURES

- Multiplication of Ethernet interfaces
- Industry-compliant design, for example, retaining collars for PROFINET-compliant connector IE FC RJ45 Plug for additional strain relief

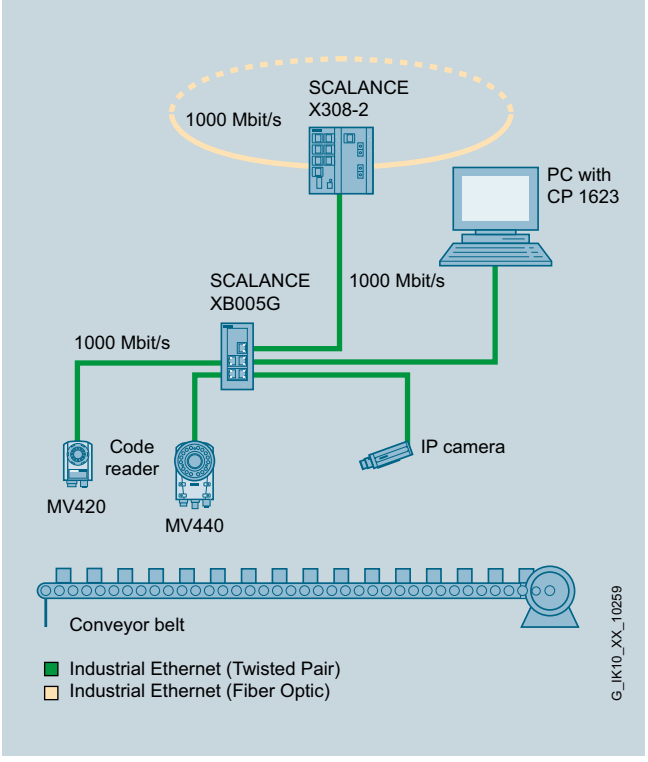
+ Affordable solution with SIMATIC S7-300/ET 200M, S7-1200 or LOGO!

siemens.com/csm

Network topology with LOGO! CSM and position detection with LOGO! CMR



| When do you use ... | Variants | |
|---|---|---|
| **... SCALANCE X-000/XB-000?** | **SCALANCE X005 / X005TS** | **SCALANCE XB-000** |
| ■ For implementing a simple machine networking or small Ethernet networks<br>■ For setting up small industrial line or star structures in machine or plant groups as well as use in railroad and road traffic | ■ 5x RJ-45 ports<br>■ Metal housing<br>■ Transmission rate up to 100 Mbps<br>■ IP30 degree of protection<br>■ Installation in control cabinet, on standard mounting rail, on SIMATIC S7-300 mounting rail or for direct wall mounting<br>■ Retaining collar<br>■ Temperature range 0°C to +65°C<br>■ Temperature range -40 °C to +70 °C, EN 50155 and e1/E1 (for SCALANCE X005TS) | ■ Up to 8x RJ45-Ports / 1x SC<br>■ Plastic housing<br>■ Transmission rate of up to 1 Gbps<br>■ IP20 degree of protection<br>■ Installation in control cabinet, control box<br>■ Temperature range -10 °C to +60 °C |




Electrical and optical network with SCALANCE XB005G and SCALANCE X308-2

# SCALANCE X-000 / XB-000 unmanaged

## Simple, space-saving, for industrial use



- Diagnostics on the device by means of LEDs (power, link status, data communication)
- Integrated autocrossover function makes the use of uncrossed connection cables possible
- Automatic detection and negotiation of data rate through autosensing and autonegotiation function

+ Affordable introduction-level solution with easy handling

siemens.com/x-000

| When do you use ... | Variants | |
|---|---|---|
| **... SCALANCE X-100?** | **SCALANCE XC-100** | **SCALANCE X108PoE** |
| ■ For setting up electrical and/or optical line and star structures in machine-oriented applications<br>■ When Power-over-Ethernet (PoE) is required | ■ Up to 24x RJ45 ports/ Up to 2x SC or ST/BFOC<br>■ Transmission rate up to 100 Mbps<br>■ IP20 degree of protection<br>■ Temperature range -40 °C to +70 °C<br>■ Metal/plastic housing<br>■ Motor vehicle approval E1 (SCALANCE XC108 only) | ■ 8x RJ45 ports, of which 2x RJ45 with Power-over-Ethernet (PoE)<br>■ Transmission rate to 100 Mbps<br>■ IP30 degree of protection<br>■ Temperature range -20 °C to +60 °C<br>■ Metal housing |

# SCALANCE X-100 unmanaged

## Full basic version for industrial use

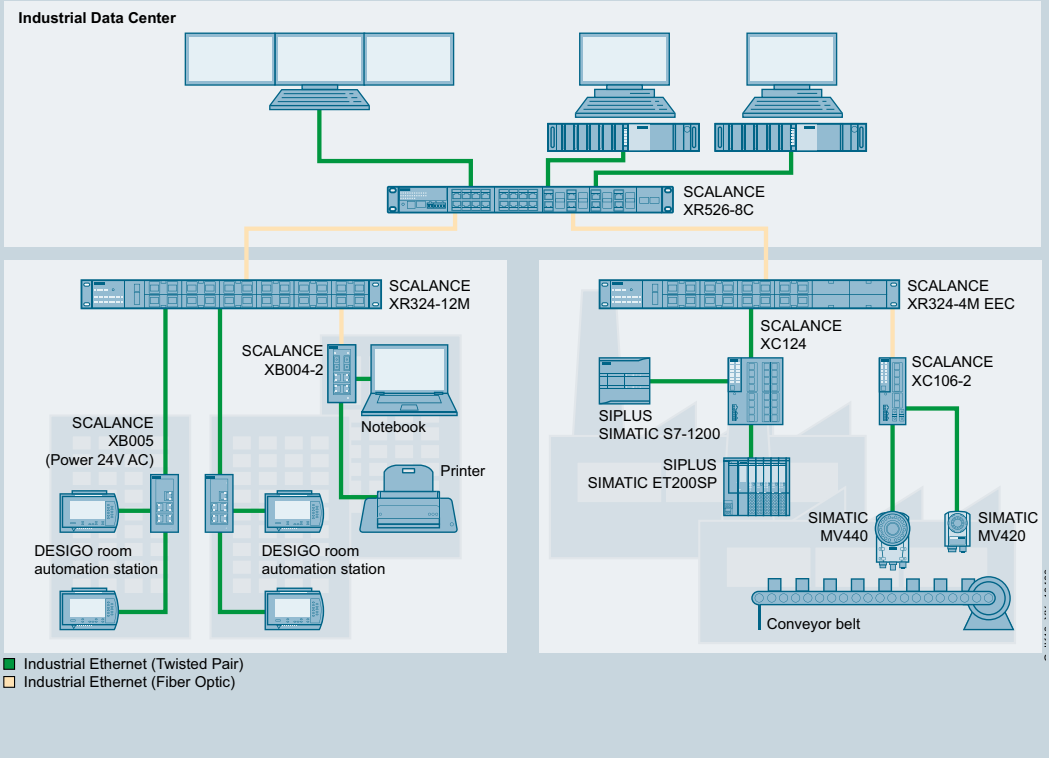
HIGHLIGHTS / FEATURES

- Robust housing
- Retaining collar
- Transmission rate up to 100 Mbps
- Diagnostics on the device via LEDs (power, link status, data traffic) and signaling contact
- Use of straight-through connecting cables thanks to integrated autocrossover function
- Automatic detection and negotiation of data rate through autosensing and autonegotiation function
- Redundant power supply
- Installation in control cabinet, on standard mounting rail, on SIMATIC mounting rail or or for direct wall mounting

+ Compact solution, good price/ performance ratio, unmanaged and still many ports in small space

siemens.com/x-100

Electrical and optical networks in industry and building automation

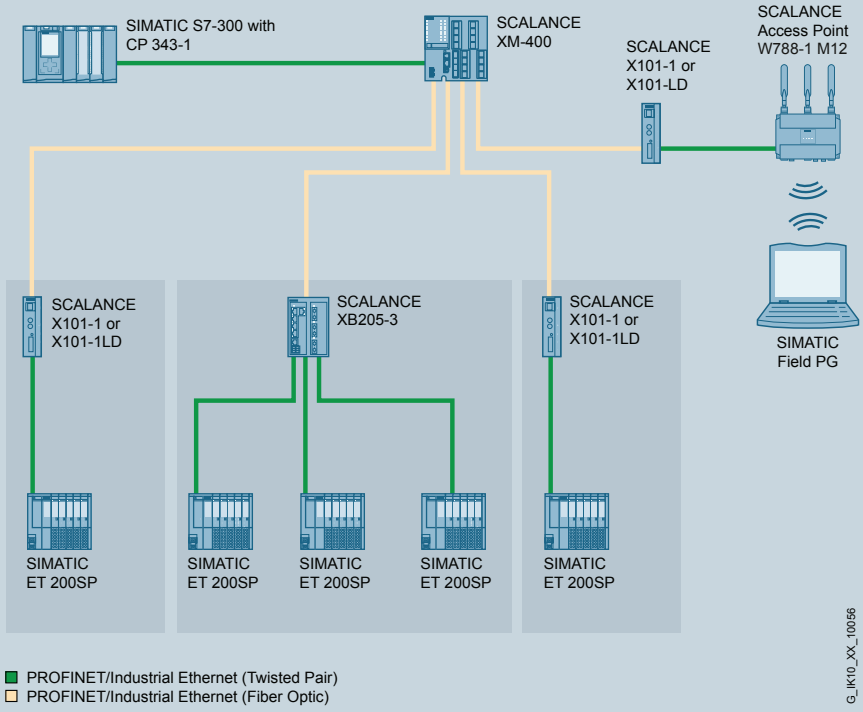


| When do you use ... | Variants | |
|---|---|---|
| **... SCALANCE X-100 media converter?** | **SCALANCE X101-1** | **SCALANCE X101-1LD** |
| ■ For the implementation of fiber-optic cables on copper cable in Industrial Ethernet networks<br>■ For integration of remote stations in glass fiber networks through fiber-optic cables<br>■ For bridging large distances | ■ 1x 100 Mbps ST/BFOC (multimode)<br>■ Distances up to 5 kilometers<br>■ Temperature range -10 °C to +60 °C | ■ 1x 100 Mbps ST/BFOC (single mode)<br>■ Distances up to 26 kilometers<br>■ Temperature range -10 °C to +60 °C |

# SCALANCE X-100 media converter

## Customized conversion

Optical star structure with SCALANCE X101-1






- Conversion of electrical signals into optical signals within Industrial Ethernet networks
- Retaining collar
- Transmission rate up to 100 Mbps
- Diagnostics on the device by means of LEDs (power, link status, data communication)
- Redundant power supply

✚ Very easy handling; enable flexible and cost-efficient combination of copper or fiber optic cables

siemens.com/x-100

| When do you use ... | Variants | |
|---|---|---|
| **... SCALANCE X-200?** | **SCALANCE X-200** | **SCALANCE XB-200** |
| ■ For setting up Industrial Ethernet bus, star and ring structures for high network availability and increased demand on functionality<br>■ For machine-oriented applications | ■ Compact design<br>■ Metal housing<br>■ Retaining collar<br>■ Up to 24x RJ45 / 2x ST/BFOC<br>■ Distances up to 26 kilometers<br>■ Variants for railway applications<br>■ Temperature range -40 °C to +60 °C<br>■ Temperature range -40 °C to +70 °C, EN 50155 and e1/E1 (for SCALANCE X204-2TS and X204-2LD TS) | ■ Compact design<br>■ Plastic housing<br>■ Up to 13x RJ45 / 3x ST/BFOC or SC<br>■ Distances up to 26 kilometers<br>■ Console port<br>■ Temperature range 0°C to +60°C<br>■ For PROFINET and EtherNet/IP applications |

# SCALANCE X-200 managed

## Universal and convenient

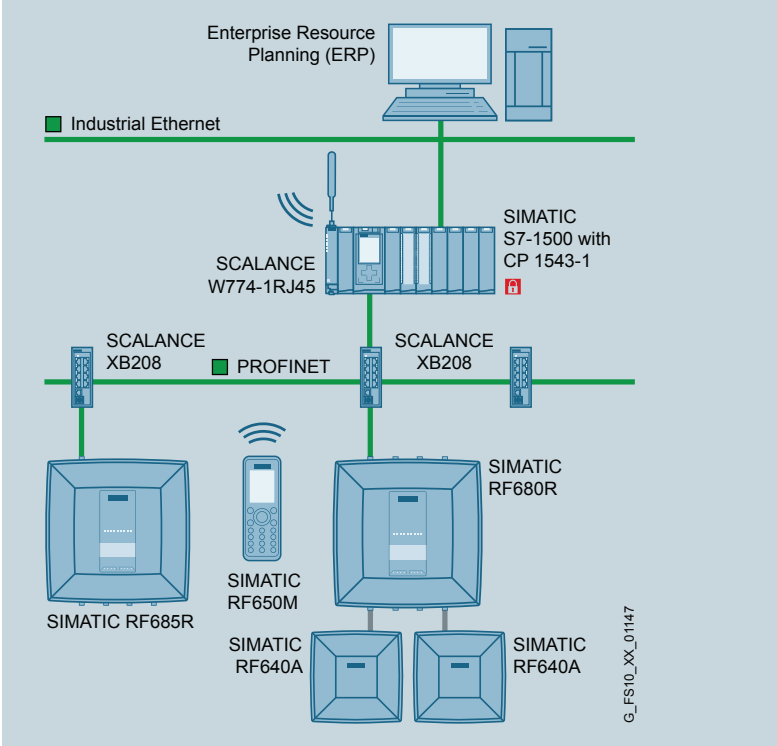
HIGHLIGHTS / FEATURES

- Lightweight and rugged design
- Transmission rate up to 100 Mbps
- Redundant power supply
- Installation in control cabinet, on DIN rail

- ✚ Increased plant availability due to integration of configuration and remote diagnostics
- ✚ High network availability
- ✚ Space-saving in control cabinet, control box

siemens.com/x-200

Machine networking with PROFINET and SCALANCE XB-200

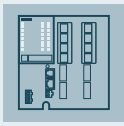


## SCALANCE XC-200

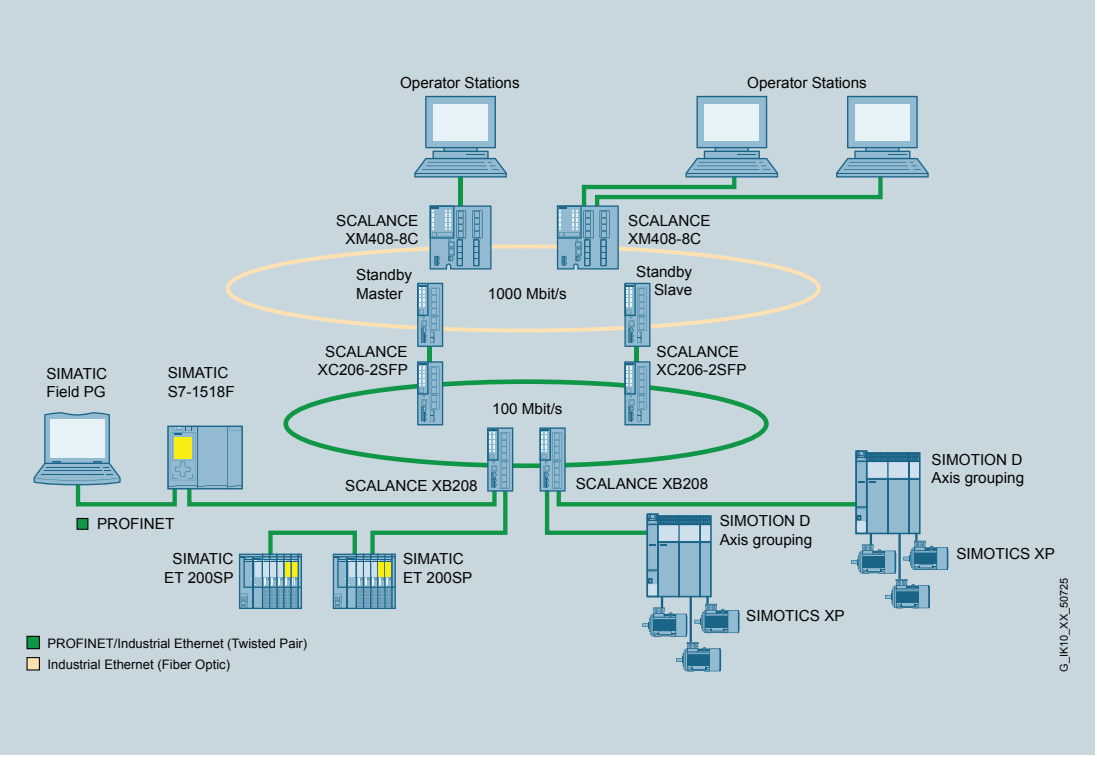
- Compact design
- Metal/plastic housing
- Retaining collar
- Up to 24x RJ45 / 2x ST/BFOC, SC or SFP
- Distances up to 200 km via SFPs
- Integrated diagnostics for fiber optic (Fiber Monitoring)
- For PROFINET and Ethernet/IP applications
- Temperature range -40 °C to +70 °C
- Trackside railway approval EN 50121-4
- Support of virtual networks (VLAN)
- Near Field Communication (NFC)

## SCALANCE XF-200

- Flat design
- Plastic housing
- Retaining collar
- Up to 8x RJ45 / 2x ST/BFOC
- Distances up to 5 kilometers
- Slanted cable outlet for easy pulling and plugging connectors
- Slot for C-PLUG removable medium for easy device replacement in fault scenario
- Temperature range -40 °C to +60 °C



Electrical and optical line and redundant ring structures using HRP standby coupling






- Compact design
- Transmission rate of up to 1 Gbps
- Slot for C-PLUG removable medium for easy device replacement in fault scenario
- Installation in control cabinet, on standard mounting rail, on SIMATIC mounting rail or for direct wall mounting
- Redundant power supply

- ✚ High network availability
- ✚ Fast mobile diagnostics through smartphone or tablet in existing WLAN

| When do you use ... | Variants | When do you use ... | Variants |
|---|---|---|---|
| **... SCALANCE XP-200?** | **SCALANCE XP-200** | **... SCALANCE X-200RNA?** | **SCALANCE X-200RNA** |
| ■ For installation outside the control cabinet<br>■ Outdoors even in areas requiring a high degree of protection and demanding climatic ambient conditions<br>■ When space is restricted<br>■ Support of virtual networks (VLAN) | ■ Up to 16x M12, of which 4x Power-over-Ethernet (PoE)<br>■ Metal housing with slim design<br>■ Transmission rate 10/100/1000 Mbps<br>■ High degree of protection IP65/67<br>■ Temperature range -40 °C to +70 °C<br>■ For PROFINET and Ethernet/IP applications<br>■ Slot for C-PLUG removable medium for easy device replacement in fault scenario<br>■ Coated printed circuit boards (conformal coating)<br>■ Variants for railway applications according to EN 50155, EN 45545 (EEC variants)<br>■ Motor vehicle approval e1/E1 | ■ For critical applications that require fault tolerance in connection with system redundancy: For very short reconfiguration times of the network<br>■ In process automation or power distribution plants | ■ For seamless networks with PRP/HSR<br>■ Up to 4x RJ45 ports / 2x FO<br>■ IP20 degree of protection<br>■ Temperature range -40°C to +60°C<br>■ Combo ports and temperature range -40 °C to 70°C (for EEC variants) |

# SCALANCE X-200 managed

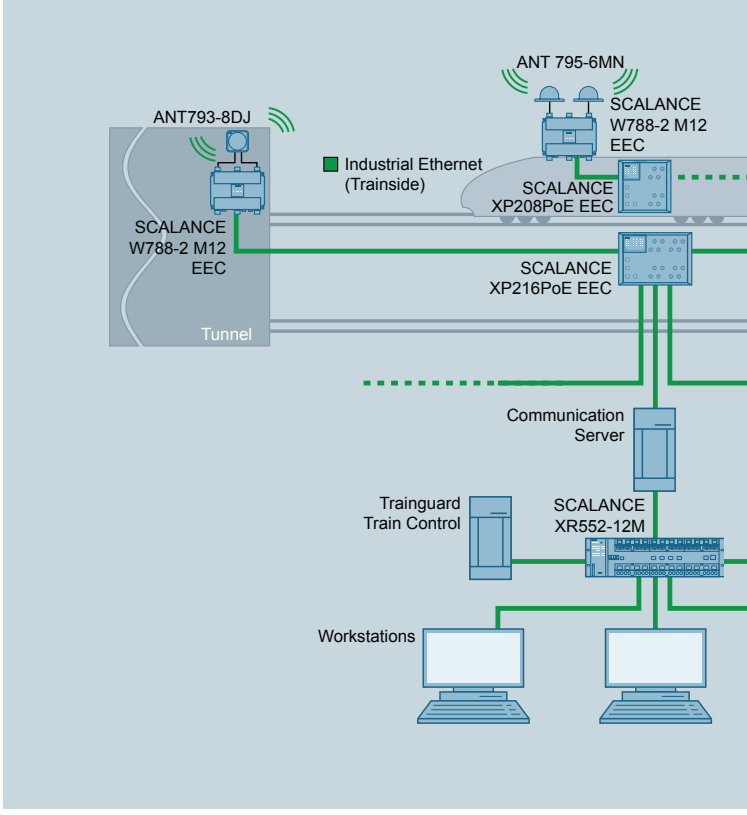
## Universal and convenient

HIGHLIGHTS / FEATURES

- Transmission rate 10/100/1000 Mbps
- Redundant power supply

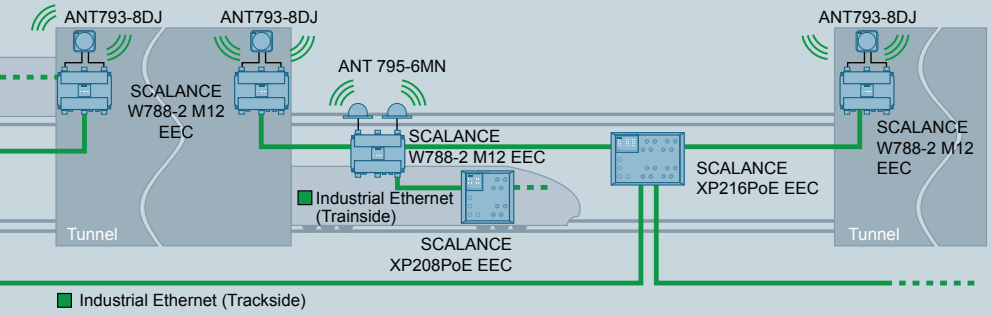
- ✚ Very high network availability
- ✚ Easy commissioning, diagnostics and device replacement
- ✚ Easy coupling of networks
- ✚ For harsh ambient conditions
- ✚ Use in hazardous areas

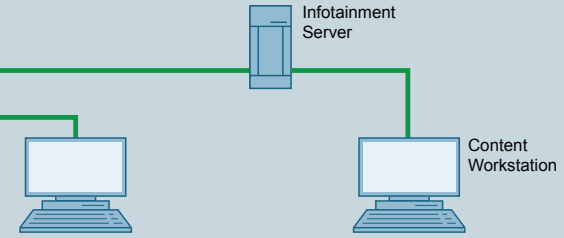
SCALANCE XP-200
trainside and trackside





| When do you use ... | Variants | | |
|---|---|---|---|
| **... SCALANCE X-200IRT?** | **SCALANCE X-200IRT** | **SCALANCE XF-200IRT** | **SCALANCE X-200IRT PRO** |
| ■ For PROFINET applications with IRT requirements (Isochronous Real Time)<br>■ For high-speed Motion Control applications<br>■ For plant concepts without control cabinet<br>■ For seamless switching in case of redundancy<br>■ For high-precision applications (isochronous mode) | ■ For hard real time<br>■ Up to 4x RJ45 / 4x ST/BFOC or SC RJ<br>■ IP30 degree of protection<br>■ Bumpless redundancy (MPRD)<br>■ Temperature range -25°C to +50°C | ■ Flat design<br>■ Plastic housing<br>■ Up to 4x RJ45 / 2x ST/ BFOC<br>■ For hard real time<br>■ Bumpless redundancy (MPRD)<br>■ Slanted cable outlet for easy pulling and plugging connectors<br>■ Temperature range -40°C to +60°C | ■ For hard real time<br>■ Up to 4x RJ45 / 3x SC RJ Push-Pull<br>■ With PROFINET-compliant push-pull connection technology<br>■ High degree of protection IP65/67<br>■ Bumpless redundancy (MPRD)<br>■ Temperature range -25 °C to +60 °C |

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- Transmission rate 10/100 Mbps
- Redundant power supply

- ✚ High network availability
- ✚ Hard real time
- ✚ Bumpless redundancy (MRPD) for seamless switches
- ✚ For harsh ambient conditions
- ✚ Rugged, industry-compliant device connector
- ✚ Implementation of isochronous applications

HIGHLIGHTS / FEATURES

siemens.com/x-200

| When do you use ... | Variants | |
|---|---|---|
| **... SCALANCE X-300 managed?** | **SCALANCE X-300** | **SCALANCE X-300 EEC** |
| ■ For large networks with high demand on functionality and availability | ■ For high-speed plant networks<br>■ Up to 20x RJ45 / 4x ST/BFOC, SC or SFP<br>■ Transmission rate of up to 1 Gbps<br>■ Distances up to 200 kilometers<br>■ Temperature range -40 °C to +70 °C<br>■ Up to 2x 2-port media modules (for SCALANCE X308-2M)<br>■ 2 ports with Power-over-Ethernet (for SCALANCE X308-2M PoE)<br>■ Railway approval in accordance with EN 50155 and e1/E1 (for SCALANCE X308-2TS) | ■ For substation automation<br>■ Up to 7x RJ45 ports / 7x LC<br>■ Transmission rate of up to 1 Gbps<br>■ Distances up to 5 kilometers<br>■ Temperature range -40 °C to +70 °C<br>■ Approval to IEC 61850-3 |

# SCALANCE X-300 managed

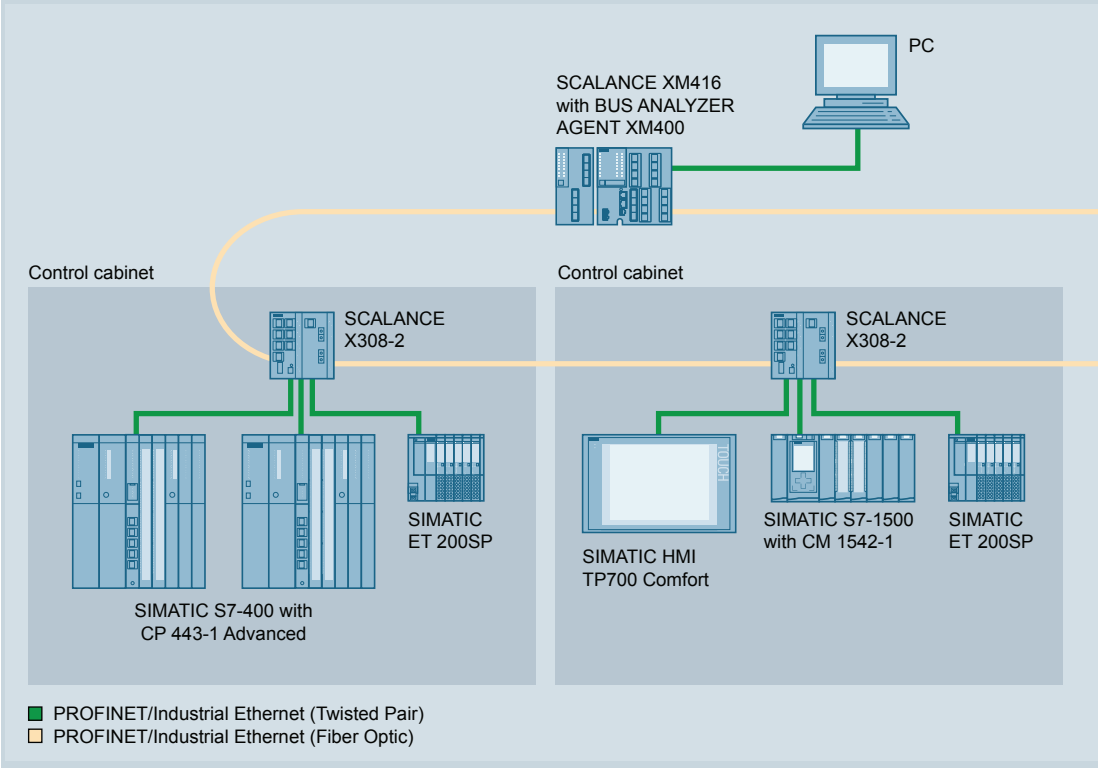
## Compact high performance

HIGHLIGHTS / FEATURES

- Compact design
- Rugged metal housing
- Retaining collar
- Support of virtual networks (VLAN)
- Redundant power supply

- ✚ High performance and network availability
- ✚ Use in railway applications
- ✚ No need for additional network components and cabling
- ✚ Easy network configuration and network extension
- ✚ Flexible adaptation to different network structures

Integration of control cabinets with SCALANCE X-300 into an optical Gigabit ring, under adverse ambient conditions with SCALANCE X-300EEC



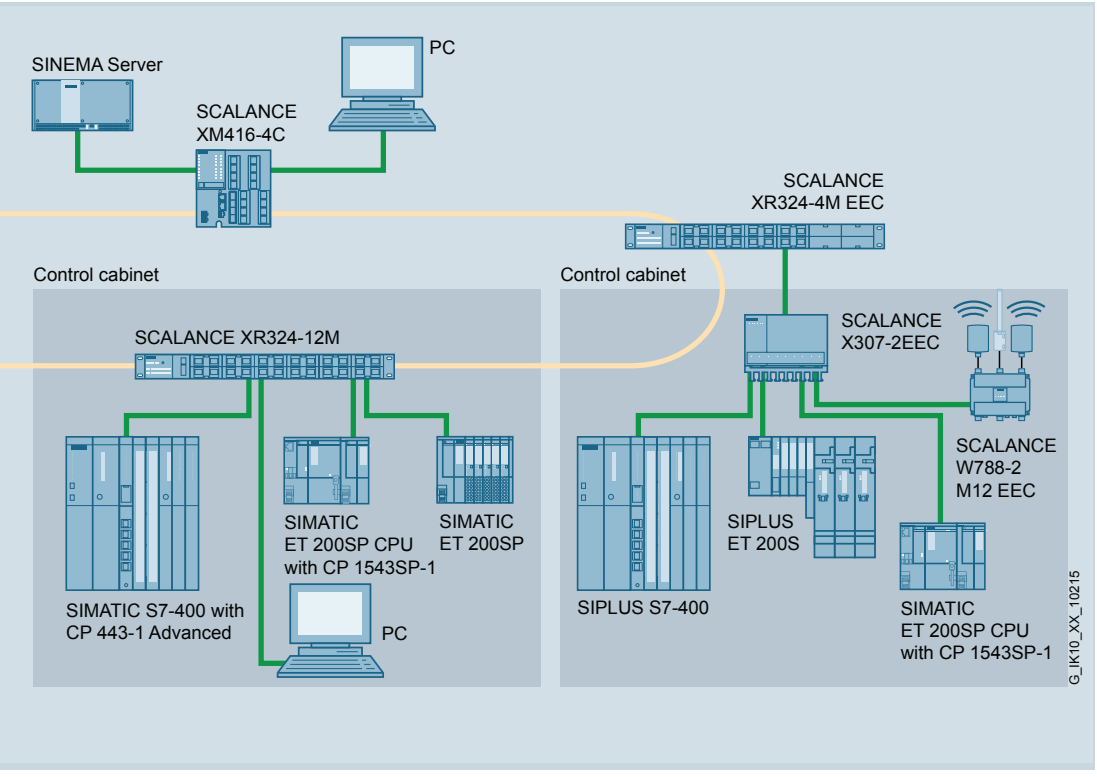


| When do you use ... | Variants | | Accessories |
|---|---|---|---|
| **... SCALANCE XR-300 managed?** | **SCALANCE XR-300** | **SCALANCE XR-300EEC** | **Media modules and plug-in transceivers** |
| ■ For large networks with high demand on functionality and availability | ■ For modular network configuration<br>■ Up to 12x 2-port media modules<br>■ 8x RJ45- ports with Power-over-Ethernet (for SCALANCE XR324-4M PoE)<br>■ Overall height 1 HU<br>■ Transmission rate of up to 1 Gbps<br>■ Distances up to 200 kilometers<br>■ Temperature range -40 °C to +70 °C<br>■ EN 50155 and e1/E1 (for SCALANCE XR324-12M TS and XR324-12M PoE TS) | ■ For harsh ambient conditions<br>■ Up to 4x 2-port media modules<br>■ Overall height 1 HU<br>■ Transmission rate of up to 1 Gbps<br>■ Distances up to 200 kilometers<br>■ Temperature range -40 °C to +70 °C<br>■ Approval to IEC 61850-3 | ■ 2-port media modules<br>■ Electrical variants: RJ45, M12, VD (Variable Distance)<br>■ Optical versions: SC, ST/BFOC<br>■ Variants for plug-in transceivers<br>■ Temperature range -40 °C to +70 °C |




# SCALANCE XR-300 managed

## Flexible high performance






- 19" design in 1 height unit (HU)
- Rugged metal housing
- Support of virtual networks (VLAN)
- Modular with media modules
- Redundant power supply

- ✚ High performance and network availability
- ✚ Use in railway applications
- ✚ Easy network configuration and network extension
- ✚ Flexible adaptation to different network structures

siemens.com/x-300



| When do you use ... | Variants | Extension modules | |
|---|---|---|---|
| **... SCALANCE XM-400 managed?** | **SCALANCE XM-400** | **Function extender BUS ANALYZER AGENT XM400** | **Port Extender** |
| ■ For high-performance plant networks<br>■ For communication in Layer 3 networks | ■ For flexible plant networks<br>■ 8x or 16x RJ45 ports<br>■ Can be extended up to 24x ports (with port and function extender)<br>■ 4x or 8x combo ports, optionally RJ45 or ST/BFOC, SC or SFP<br>■ Near Field Communication (NFC)<br>■ Transmission rate 10/100/1000 Mbps<br>■ Temperature range -40 °C to +70 °C | ■ Telegram recording through backplane bus of SCALANCE XM-400 as well as standalone on controller device distance<br>■ PROFINET analysis<br>■ Online value tracking<br>■ Package generator<br>■ Temperature range -40 °C to +70 °C | ■ 8x RJ45 ports with PE408<br>■ 8x RJ45 ports with Power-over-Ethernet with PE408 PoE<br>■ 8x SFP slots with PE400-8SFP<br>■ Temperature range -40 °C to +70 °C |

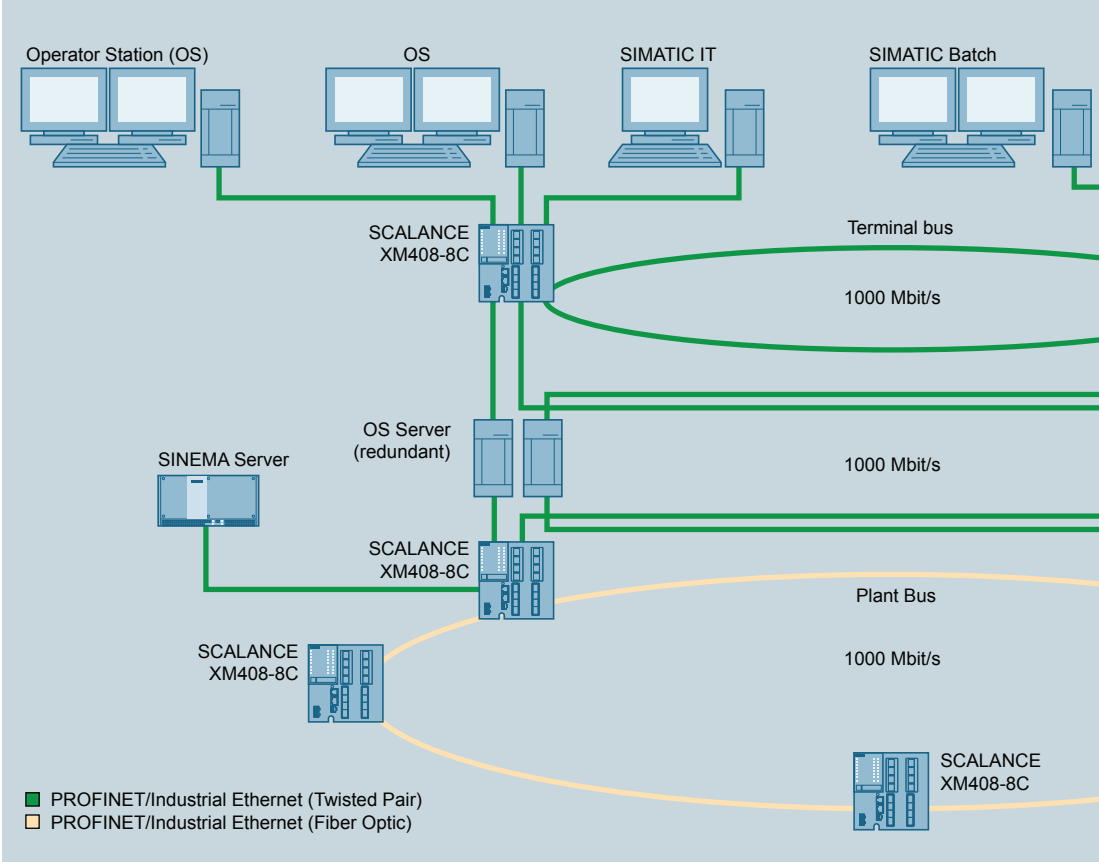
# SCALANCE X-400 managed

## Powerful networking of plants

HIGHLIGHTS / FEATURES

- Compact design
- Retaining collar
- Can be extended with modules
- Optical connection of layer 3 functionality
- Installation in control cabinet, on standard mounting rail, on SIMATIC mounting rail
- Support of virtual networks (VLAN)
- Console port
- Redundant power supply

- ✚ High performance and network availability
- ✚ Fast mobile diagnostics through smartphone or tablet in existing WLAN
- ✚ Easy expansion of the network

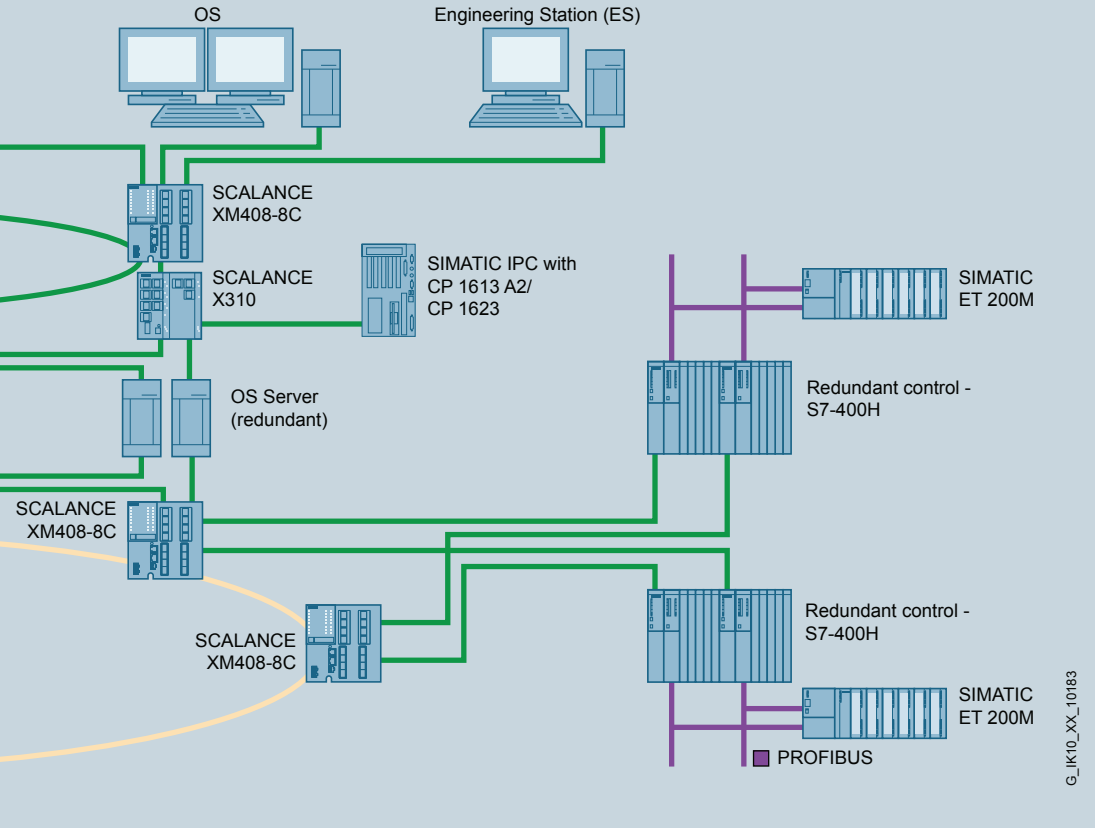



Structuring of a network with SCALANCE XM-400

## Accessories

| Power Supplies | Plug-in transceiver | Pluggables |
|---|---|---|
| ■ Power supplies for 54 V DC supply for Power-over-Ethernet according to IEEE 802.3at<br>■ Input current 24 V DC for PS924 PoE<br>■ Input current 85 - 265 V AC for PS9230 PoE<br>■ High power for connected terminal devices possible (up to 30 watts)<br>■ Temperature range -40 °C to +70 °C | ■ Optical connection to cables with LC connectors<br>■ Transmission rates 100 or 1000 Mbps<br>■ Can be used in conjunction with SCALANCE XM408-8C, XM416-4C and PE400-8SFP<br>■ Temperature range -40 °C to +85 °C | ■ Optical connection to existing cables with SC or ST/BFOC connectors<br>■ Transmission rates 100 or 1000 Mbps<br>■ Can only be used in conjunction with SCALANCE XM408-4C<br>■ Temperature range -40 °C to +85 °C |

# Accessories




■ Port extender in design of SCALANCE XM-400

✚ Expansion of the network without tools
✚ Extension during operation (hot swappable)
✚ No need for additional network components and cabling
✚ Space-saving design
✚ Distances up to 200 kilometers



siemens.com/x-400

| When do you use ... | Variants | |
|---|---|---|
| **... SCALANCE XR-500?** | **SCALANCE XR524-8C** | **SCALANCE XR526-8C** |
| ■ For structuring high-speed production networks with connection to the Office IT<br>■ For transmission of high data rates (10 Gbps) | ■ For large scales (24 ports)<br>■ Overall height 1 HU<br>■ 24x RJ45 ports with 10/100/1000 Mbps<br>■ 8x combo ports, optionally RJ45 or SFP<br>■ Temperature range 0 °C to +50 °C | ■ For large scales (26 ports)<br>■ Overall height 1 HU<br>■ 2x SFP+ ports with 10 Gbps<br>■ 26x RJ45 ports with 10/100/1000 Mbps<br>■ 8x combo ports, optionally RJ45 or SFP<br>■ Temperature range 0 °C to +50 °C |

# SCALANCE X-500 managed

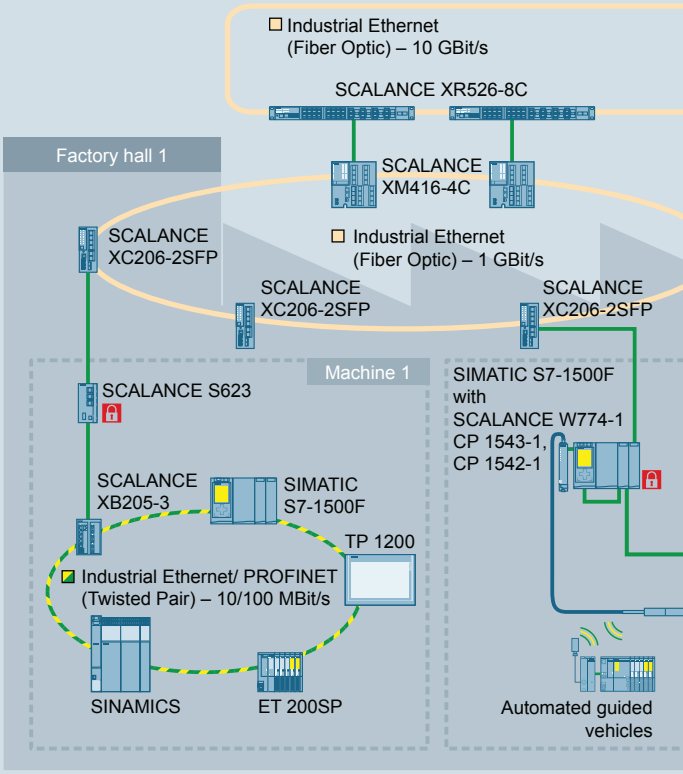
## Flexible high performance

HIGHLIGHTS / FEATURES

- 19" design in different height units (HU)
- Rugged metal housing
- Support of virtual networks (VLAN)
- Modular with media modules or SFP and SFP+ plug-in transceivers
- Redundant power supply
- Console port

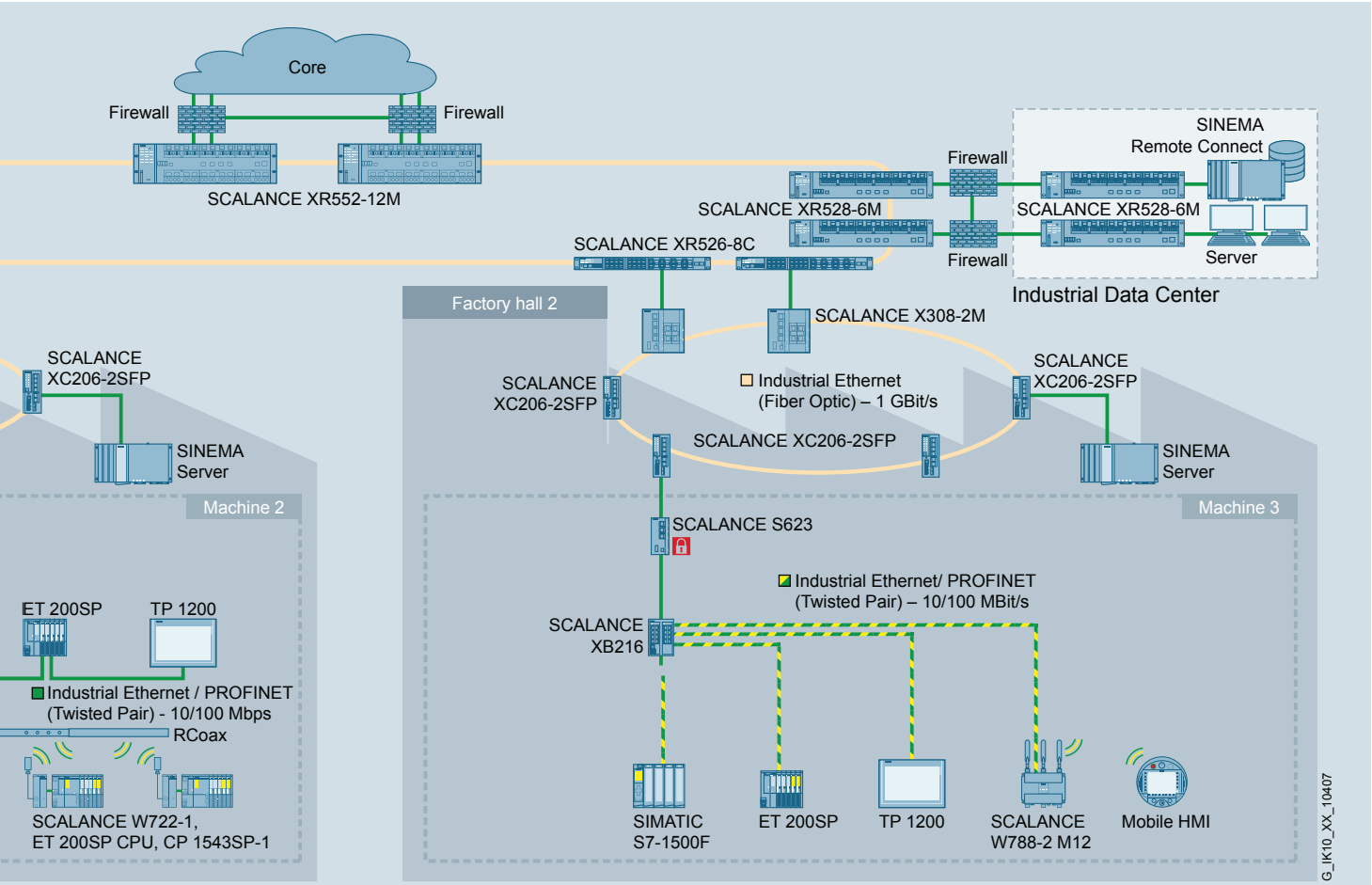
- ✚ Very high performance and network availability
- ✚ Granular network extension to 10 Gbps during operation
- ✚ Flexible adaptation to different network structures

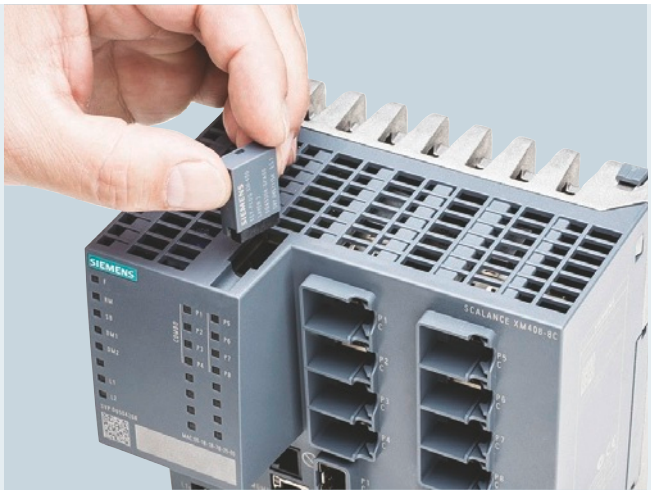
siemens.com/x-500




Connection of automation networks to the Office IT over the Industrial Ethernet backbone

| | | Accessories | |
|---|---|---|---|
| **SCALANCE XR528-6M** | **SCALANCE XR552-12M** | **Media modules** | **Plug-in transceiver** |
| ■ For large scales (28 ports)<br>■ Up to 6x 4-port media modules for electrical and optical connections<br>■ Overall height 2 HU<br>■ 4x SFP+ ports with 1 or 10 Gbps<br>■ 24 ports with transmission rates of up to 1 Gbps<br>■ Temperature range 0 °C to +60 °C | ■ For very large scales (52 ports)<br>■ Up to 12x 4-port media modules for electrical and optical connections<br>■ Overall height 3 HU<br>■ 4x SFP+ ports with 10 Gbps<br>■ 48 ports with transmission rates of up to 1 Gbps<br>■ Temperature range 0 °C to +60 °C | ■ 4-port media modules<br>■ Electrical and optical variants<br>■ Can be used in SCALANCE XR552-12M and XR528-6M<br>■ Temperature range 0 °C to +60 °C | ■ Optical connection to cables with LC connectors<br>■ SFP plug-in transceiver with transmission rates 100 or 1000 Mbps<br>■ SFP+ plug-in transceiver with 10 Gbps<br>■ Temperature range -40 °C to +85 °C |







# Switches ... and more

## C-PLUG/KEY-PLUG

Update your network components to minimize plant downtimes.

The KEY-PLUG removable medium allows you to enable additional functions especially for industrial use.

The C-PLUG is used for fast and easy device replacement when an error occurs through automatic backup of configuration data.

The KEY-PLUG supports the C-PLUG functionality and is also used for extending or retrofitting additional device functions, for example, enabling software extension to Layer 3 switching (routing) for SCALANCE XM-400 and SCALANCE XR-500.

**siemens.com/plugs**

### Mobile diagnostics

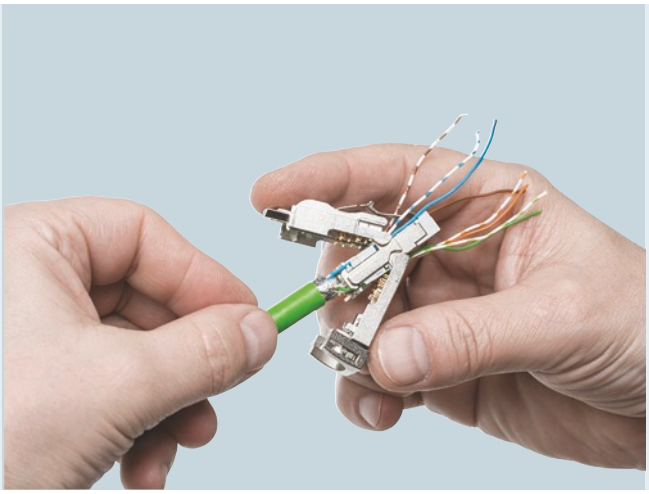
Fast mobile diagnostics with smartphone or tablet is possible with SCALANCE XC-200 or SCALANCE XM-400: The address of the mobile website is read by means of Near Field Communication (NFC), a mobile terminal unit starts the browser with this address and offers powerful diagnostics over an existing WLAN.

**siemens.com/xc-200**
**siemens.com/x-400**

## SIMATIC NET Selection Tool

The SIMATIC NET Selection Tool is your reliable wizard for selecting Industrial Ethernet switches. The selection can either take place directly from the product portfolio or by specifying the technical requirements as well as by type of application. Integrated configurators help you select modules and accessories as well as during checking of correct function and during ordering.

**siemens.com/snst**




## FastConnect cabling system

Can be assembled on site – easy, fast and without errors. With FastConnect, Siemens has developed a sophisticated fast connection system for cables, connectors and assembly tools that you can use to make changes quickly and without errors on site. FastConnect is available for PROFINET/Industrial Ethernet and PROFIBUS, for RJ45, M12 or Sub-D/RS-485. And also for Fiber Optic (fiber optic cables) ST/BFOC, SC, SC RJ and LC for different lengths.

**siemens.com/fastconnect**

## Network management SINEMA server

Not only do plant operators lose access to the field devices due to a network failure, but often the field devices cannot communicate with each other either.
In the worst case scenario, production will stop completely.

The SINEMA server software was specifically developed for industrial applications. This way automation environments and network can be centrally monitored over SNMP and SIMATIC and PROFINET diagnostics.

**siemens.com/sinema-server**

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## Security information

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

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

Customers are responsible for preventing unauthorized access to their plants, systems, machines, and networks themselves. Systems, machines, and components should only be connected to the company network or the Internet if necessary and even then only to the extent required, and with appropriate protective measures in place (e.g. use of firewalls and network segmentation).

In addition, you should inform yourself about Siemens' recommendations on appropriate protective measures. You can find more information about Industrial Security by visiting
**http://www.siemens.com/industrialsecurity.**

Siemens' products and solutions undergo continuous development to improve their security. Siemens strongly recommends applying product updates as soon as they become available and always using the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To ensure that you are always informed about product updates, subscribe to the Siemens Industrial Security RSS feed at
**http://www.siemens.com/industrialsecurity**.

**siemens.com/switches**