SIEMENS

Industrial Communication

SCALANCE X – Industrial Ethernet Switches

Brochure Edition 2019

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
- Comprehensive consideration of cyber security measures in all phases of the product lifecycle

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 communication networks: the basis for digitalization

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 in the digital factory, from the field to the management level – regardless if wired or wireless – local or remote. Against this background, it becomes obvious, on the one hand, why efficient industrial networks can only be implemented based on communication standards that ensure a high level of openness and flexibility. And on the other hand, it becomes clear that professional planning and implementation with in-depth application know-how are required.

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. enterprise 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 19" rack variant, cost-optimized box variant and 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 Layer 2

<table>
<thead>
<tr>
<th>SCALANCE X-200IRT managed</th>
<th>SCALANCE X-300 managed</th>
<th>SCALANCE X-400 managed / Layer 3</th>
<th>SCALANCE X-500 managed / Layer 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acting in hard-real-time</td>
<td>Convincing performance – modular and powerful</td>
<td>Segmentation on all levels</td>
<td>Structuring high-performance plants and integrating them into the Office IT</td>
</tr>
</tbody>
</table>

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: The SCALANCE X-300 products are available as workgroup switches and 19" rack versions or in compact design and extend your plant networks with Gigabit Ethernet power – even under harsh conditions.

Expandable at any time: 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. Connect your production network to your Enterprise IT – for a network running from the machinery/cells to your backbone layer.

## Managed Layer 2/3

### 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

<table>
<thead>
<tr>
<th>Operations Level</th>
<th>Control Level</th>
<th>Field Level</th>
<th>X-300 managed</th>
<th>X-400 managed</th>
<th>X-100 unmanaged</th>
<th>Product line</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-000</td>
<td>X-200</td>
<td>X-200RNA</td>
<td>X-000</td>
<td>X-400</td>
<td>X-100</td>
<td>X-000</td>
</tr>
<tr>
<td></td>
<td>X-200P</td>
<td>X-200P</td>
<td>X-400</td>
<td>X-100</td>
<td>X-100</td>
<td>X-200P</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X-200IRT PRO</td>
<td></td>
<td></td>
<td>X-100</td>
<td>X-200IRT PRO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X-200P</td>
<td></td>
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<td>X-100</td>
<td>X-200P</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X-2000</td>
<td></td>
<td></td>
<td>X-100</td>
<td>X-2000</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Product type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Compact</td>
</tr>
<tr>
<td>R</td>
<td>Rack</td>
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<tr>
<td>M</td>
<td>Modular</td>
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<tr>
<td>F</td>
<td>Flat</td>
</tr>
<tr>
<td>B</td>
<td>Box</td>
</tr>
<tr>
<td>P</td>
<td>Protected</td>
</tr>
</tbody>
</table>

System of SCALANCE name assignment using SCALANCE XB205-3LD as an example.
## Functions and areas of application

<table>
<thead>
<tr>
<th></th>
<th>Layer 3 / Routing</th>
<th>19&quot; design</th>
<th>Modular through media modules</th>
<th>Support of Gigabit Ethernet</th>
<th>PROFINET</th>
<th>EtherCAT/IP</th>
<th>Office features (VLAN)</th>
<th>Diagnostic functions</th>
<th>Isochronous Real-time (IRT)</th>
<th>Power-over-Ethernet</th>
<th>Can be used under enhanced ambient conditions</th>
<th>Time synchronization to IEEE 1588</th>
<th>Additional interface for SIMATIC S7-300/ S7-1200 or LOGO!</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-500</td>
<td>●</td>
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<td>X-400</td>
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<td>X-300</td>
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<td>X-200</td>
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<td>X-100</td>
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<td>X-000</td>
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<tr>
<td>CSM</td>
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<td>●</td>
</tr>
</tbody>
</table>

● applies to selected versions

### Industrial Ethernet switches SCALANCE X: Overview of the functions

**Areas of application / Type of networks / Requires**

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

● applies to selected versions

**SCALANCE X Industrial Ethernet switches: Areas of application**
## Compact Switch Modules (CSM)
### More connection to SIMATIC

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

- 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!

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

Learn more at [siemens.com/csm](https://siemens.com/csm)

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### SCALANCE X-000 / XB-000 unmanaged

Simple, space-saving, for industrial use

<table>
<thead>
<tr>
<th>When do you use ...</th>
<th>Variants</th>
</tr>
</thead>
<tbody>
<tr>
<td>... SCALANCE X-000/XB-000?</td>
<td>SCALANCE X005 / X005EEC</td>
</tr>
<tr>
<td>For implementing a simple machine networking or small Ethernet networks</td>
<td>5x RJ-45 ports</td>
</tr>
<tr>
<td>For setting up small industrial line or star structures in machine or plant groups as well as use in railroad and road traffic</td>
<td>Metal housing</td>
</tr>
<tr>
<td></td>
<td>Transmission rate up to 100 Mbps</td>
</tr>
<tr>
<td></td>
<td>IP30 degree of protection</td>
</tr>
<tr>
<td></td>
<td>Installation in control cabinet, on standard mounting rail, or for direct wall mounting</td>
</tr>
<tr>
<td></td>
<td>Retaining collar</td>
</tr>
<tr>
<td></td>
<td>Temperature range 0°C to +65°C</td>
</tr>
<tr>
<td></td>
<td>5x RJ45-Ports / 1x SC</td>
</tr>
</tbody>
</table>

**Electrical and optical network with SCALANCE XB005G and SCALANCE XC206-2SFP G**

- 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**
## SCALANCE X-100 unmanaged

### Full basic version for industrial use

**When do you use ...**

<table>
<thead>
<tr>
<th>SCALANCE X-100</th>
<th>SCALANCE XR-100WG</th>
<th>SCALANCE XC-100</th>
<th>SCALANCE X108PoE</th>
</tr>
</thead>
<tbody>
<tr>
<td>For setting up electrical and/or optical line and star structures in machine-oriented applications</td>
<td>Up to 24x RJ45 ports, 2x SC or ST/BFOC</td>
<td>Up to 24x RJ45 ports, up to 2x SC or ST/BFOC</td>
<td>8x RJ45 ports, of which 2x RJ45 with Power-over-Ethernet (PoE)</td>
</tr>
<tr>
<td>When Power-over-Ethernet (PoE) is required</td>
<td>Transmission rate up to 100 Mbps.</td>
<td>Transmission rate up to 100 Mbps.</td>
<td>Transmission rate to 100 Mbps.</td>
</tr>
<tr>
<td></td>
<td>IP20 degree of protection</td>
<td>IP20 degree of protection</td>
<td>IP30 degree of protection</td>
</tr>
<tr>
<td></td>
<td>Temperature range 0 °C to +60 °C</td>
<td>Temperature range -40 °C to +70 °C</td>
<td>Temperature range -20 °C to +60 °C</td>
</tr>
<tr>
<td></td>
<td>Redundant power supply DC 24 V or AC 100-240 V</td>
<td>Power supply DC 24 V or AC 100-240 V</td>
<td>Metal housing</td>
</tr>
<tr>
<td></td>
<td>Plastic housing</td>
<td>IP30 degree of protection</td>
<td>Motor vehicle approval E1 (SCALANCE XC108 only)</td>
</tr>
<tr>
<td></td>
<td>PROFInet CC-A compliant</td>
<td>IP20 degree of protection</td>
<td></td>
</tr>
</tbody>
</table>

- For setting up electrical and/or optical line and star structures in machine-oriented applications
- Transmission rate up to 100 Mbps
- IP20 degree of protection
- Temperature range 0 °C to +60 °C
- Redundant power supply DC 24 V or AC 100-240 V
- Plastic housing
- PROFInet CC-A compliant

- For setting up electrical and/or optical line and star structures in machine-oriented applications
- Transmission rate up to 100 Mbps
- IP20 degree of protection
- Temperature range 0 °C to +60 °C
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- PROFInet CC-A compliant

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- Transmission rate up to 100 Mbps
- IP20 degree of protection
- Temperature range 0 °C to +60 °C
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- Plastic housing
- PROFInet CC-A compliant

- For setting up electrical and/or optical line and star structures in machine-oriented applications
- Transmission rate up to 100 Mbps
- IP20 degree of protection
- Temperature range 0 °C to +60 °C
- Redundant power supply DC 24 V or AC 100-240 V
- Plastic housing
- PROFInet CC-A compliant

**Electrical and optical networks in industry and building automation**

- **Metal housing**, also in 19" design
- **Retaining collar**
- **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 for direct wall mounting**

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

[siemens.com/x-100](https://siemens.com/x-100)
### SCALANCE X-100 media converter

#### Customized conversion

Optical line topology with SCALANCE X101-1 and SCALANCE XC-100

<table>
<thead>
<tr>
<th>When do you use ...</th>
<th>SCALANCE X101-1</th>
<th>SCALANCE X101-1LD</th>
</tr>
</thead>
<tbody>
<tr>
<td>... SCALANCE X-100 media converter?</td>
<td>For the implementation of fiber-optic cables on copper cable in Industrial Ethernet networks</td>
<td>Implementation of 1x 10/100 Mbps RJ45 to 1x 100 Mbps ST/BFOC (multimode)</td>
</tr>
<tr>
<td></td>
<td>For integration of remote stations in glass fiber networks through fiber-optic cables</td>
<td>Distances up to 5 kilometers</td>
</tr>
<tr>
<td></td>
<td>For bridging large distances</td>
<td>Temperature range -10 °C to +60 °C</td>
</tr>
</tbody>
</table>

- Distances up to 5 kilometers
- Temperature range -10 °C to +60 °C
- 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

PROFINET/Industrial Ethernet (Twisted Pair)  
PROFINET/Industrial Ethernet (Fiber Optic)  
PROFIBUS  
FC Standard Cable

siemens.com/x-100
When do you use ...  

... SCALANCE X-200?

SCALANCE XF-200

SCALANCE XB-200

| For setting up Industrial Ethernet bus, star and ring structures for high network availability and increased demand on functionality | Flat design | Compact design |
| For machine-oriented applications | Plastic housing | Plastic housing |
| Flat design | Retaining collar | Up to 8x RJ45 / 2x ST/8FOC |
| Plastic housing | Up to 8x RJ45 / 2x ST/8FOC | Distances up to 5 kilometers |
| Retaining collar | Distances up to 5 kilometers | Slanted cable outlet for easy pulling and plugging connectors |
| Up to 8x RJ45 / 2x ST/8FOC | Slanted cable outlet for easy pulling and plugging connectors | Temperature range -40 °C to +60 °C |
| Distances up to 5 kilometers | Temperature range -40 °C to +60 °C | |
| Slanted cable outlet for easy pulling and plugging connectors | Temperature range -40 °C to +60 °C | |
| Temperature range -40 °C to +60 °C | |

SCALANCE X-200 managed

Universal and convenient

Machine networking with PROFINET and SCALANCE XB-200

Lightweight and rugged design

Transmission rate up to 100 Mbps

Redundant power supply

Installation in control cabinet, on DIN rail and wall mounting

✚ 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
<table>
<thead>
<tr>
<th>SCALANCE XC-200</th>
<th>SCALANCE XF-200BA</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Compact design</td>
<td>- Flat design with flexible bus adapter concept</td>
</tr>
<tr>
<td>- Metal/plastic housing</td>
<td>- Plastic housing</td>
</tr>
<tr>
<td>- Retaining collar</td>
<td>- Up to 4x RJ45 / 4x SC RJ</td>
</tr>
<tr>
<td>- Up to 24x RJ45 / 2x ST/BFOC, SC or SFP</td>
<td>- Temperature range -40 °C bis +70 °C</td>
</tr>
<tr>
<td>- Distances up to 200 km via SFPs</td>
<td>- NAMUR NE 21-konform, Conformal Coating, installation altitude up to 4000 m</td>
</tr>
<tr>
<td>- Integrated diagnostics for fiber optic (Fiber Monitoring)</td>
<td>- Integration of S2 devices in a high-availability R1 system (SCALANCE XF204-2BA DNA &quot;Y-switch&quot; only)</td>
</tr>
<tr>
<td>- For PROFINET and EtherNet/IP applications</td>
<td>- For EtherNet/IP applications (SCALANCE XF204-2BA only)</td>
</tr>
<tr>
<td>- Full Gigabit versions (SCALANCE XC-200G)</td>
<td>- Support for VLAN (SCALANCE XF204-2BA only)</td>
</tr>
<tr>
<td>- Temperature range -40 °C to +70 °C</td>
<td></td>
</tr>
<tr>
<td>- NAMUR NE21-compliant, conformal coating, installation altitude up to 4000 m (SCALANCE XC-200EEC)</td>
<td></td>
</tr>
<tr>
<td>- Trackside railway approval EN 50121-4</td>
<td></td>
</tr>
<tr>
<td>- Support of virtual networks (VLAN)</td>
<td></td>
</tr>
</tbody>
</table>

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
- Use in process automation
When do you use ... SCALANCE XP-200?

- For installation outside the control cabinet
- Outdoors even in areas requiring a high degree of protection and demanding climatic ambient conditions
- When space is restricted
- Support of virtual networks (VLAN)

Variants

- Up to 16x M12, of which 4x Power-over-Ethernet (PoE)
- Up to 4x 1 Gbps Ports (SCALANCE XP216 only)
- Metal housing with slim design
- High degree of protection IP65
- Temperature range -40 °C bis +70 °C
- NAMUR NE21-compliant, conformal coating, installation altitude up to 4000 m (SCALANCE XP200EEC)
- For PROFINET and EtherNet/IP applications
- Slot for C-PLUG removable medium for easy device replacement in fault scenario
- Variants for railway applications according to EN 50155, EN 45545 (EEC variants)
- Motor vehicle approval e1/E1

When do you use ... SCALANCE X-200RNA?

- For critical applications that require fault tolerance in connection with system redundancy: For very short reconfiguration times of the network
- In process automation or power distribution plants

Variants

- For seamless networks with PRP/HSR
- Up to 4x RJ45 ports / 2x FO
- IP20 degree of protection
- Temperature range -40°C to +60°C
- Combo ports and temperature range -40 °C to 70°C (for EEC variants)

SCALANCE X-200 managed

Universal and convenient

- Transmission rate up to 1 Gbps
- 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

siemens.com/x-200
**When do you use ...**

... **SCALANCE X-200IRT**?

**Variants**

<table>
<thead>
<tr>
<th>SCALANCE X-200IRT</th>
<th>SCALANCE XF-200BA IRT</th>
<th>SCALANCE X-200IRT PRO</th>
</tr>
</thead>
<tbody>
<tr>
<td>For PROFINET applications with IRT requirements (Isochronous Real Time)</td>
<td>For hard real-time</td>
<td>For hard real-time</td>
</tr>
<tr>
<td>For high-speed Motion Control applications</td>
<td>Up to 4x RJ45 / 4x ST/BFOC or SC RJ</td>
<td>Up to 4x RJ45 / 3x SC RJ Push-Pull</td>
</tr>
<tr>
<td>For plant concepts without control cabinet</td>
<td>IP30 degree of protection</td>
<td>With PROFINET-compliant push-pull connection technology</td>
</tr>
<tr>
<td>For seamless switching in case of redundancy</td>
<td>Bumpless redundancy (MPRD)</td>
<td>Bumpless redundancy (MPRD)</td>
</tr>
<tr>
<td>For high-precision applications (isochronous mode)</td>
<td>Temperature range -25°C to +50°C</td>
<td>Temperature range -40 °C bis +70 °C</td>
</tr>
</tbody>
</table>

**Highlights / Features**

- Transmission rate 10/100 Mbps
- Redundant power supply
- High network availability
- Hard real-time
- Bumpless redundancy (MPRD) for seamless switches
- For harsh ambient conditions
- Rugged, industry-compliant device connector
- Implementation of isochronous applications
- PROFINET CC-C compliant

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When do you use ... Varianten

**... SCALANCE X-300 or SCALANCE XR-300 managed?**

**SCALANCE X-300**
- For high-speed plant networks
- Up to 20x RJ45 / 4x ST/BFOC, SC or SFP
- Transmission rate of up to 1 Gbps
- Distances up to 200 kilometers
- Temperature range -40 °C to +70 °C
- Up to 2x 2-port media modules (for SCALANCE X308-2M)
- 2 ports with Power-over-Ethernet (for SCALANCE X308-2M PoE)
- Railway approval in accordance with EN 50155 and e1/E1 (for SCALANCE X308-2TS)

**SCALANCE XR-300WG**
- Short design for double-sided installation in 19" control cabinets
- Up to 24x RJ45-ports, 4x comboports
- Overall height 1 HU
- Transmission rate of up to 1 Gbps
- DC 24 V or AC 100-240 V
- IP30 degree of protection
- Temperature range -40 °C to +70 °C
- Switchable between PROFINET and EtherNet/IP diagnostics

---

**SCALANCE X-300 managed**
Compact high performance

Integration of control cabinets with SCALANCE XC-200 into an optical Gigabit ring, under adverse ambient conditions with SCALANCE XR-300EEC

- **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**

[siemens.com/x-300](https://siemens.com/x-300)
### SCALANCE XR-300 managed

**Flexible high performance**

<table>
<thead>
<tr>
<th>SCALANCE XR-300</th>
<th>SCALANCE XR-300EEC</th>
<th>Media modules and plug-in transceivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>For modular network configuration</td>
<td>For harsh ambient conditions</td>
<td>2-port media modules</td>
</tr>
<tr>
<td>Up to 12x 2-port media modules</td>
<td>Up to 4x 2-port media modules</td>
<td>Electrical variants: RJ45, M12, VD (Variable Distance)</td>
</tr>
<tr>
<td>8x RJ45- ports with Power-over-Ethernet (for SCALANCE XR324-4M PoE)</td>
<td>Overall height 1 HU</td>
<td>Optical versions: SC, ST/BFOC</td>
</tr>
<tr>
<td>Overall height 1 HU</td>
<td>Transmission rate of up to 1 Gbps</td>
<td>Variants for plug-in transceivers</td>
</tr>
<tr>
<td>Transmission rate of up to 1 Gbps</td>
<td>Distances up to 200 kilometers</td>
<td>Temperature range -40 °C to +70 °C</td>
</tr>
<tr>
<td>Distances up to 200 kilometers</td>
<td>Temperature range -40 °C to +70 °C</td>
<td>Variants with conformal coating</td>
</tr>
<tr>
<td>Temperature range -40 °C to +70 °C</td>
<td>Approval to IEC 61850-3</td>
<td></td>
</tr>
<tr>
<td>EN 50155 and e1/E1 (for SCALANCE XR324-12M TS and XR324-12M PoE TS)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 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]
### SCALANCE X-400 managed

**Powerful networking of plants**

<table>
<thead>
<tr>
<th>When do you use ...</th>
<th>Variants</th>
<th>Extension modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>... SCALANCE XM-400 managed?</td>
<td>SCALANCE XM-400</td>
<td>Port Extender</td>
</tr>
</tbody>
</table>

- For high-performance plant networks
- For communication in Layer 3 networks
- For flexible plant networks
- 8x or 16x RJ45 ports
- Can be extended up to 24x ports (with port and function extender)
- 4x or 8x combo ports, optionally RJ45 or ST/BFOC, SC or SFP
- Transmission rate of up to 1 Gbps
- Temperature range -40 °C to +70 °C

- 8x RJ45 ports with PE408
- 8x RJ45 ports with Power-over-Ethernet with PE408 PoE
- 8x SFP slots with PE400-8SFP
- Temperature range -40 °C to +70 °C

---

### Structuring of a network with SCALANCE XM-400

- 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
- Easy expansion of the network
## Accessories

### Power Supplies
- Power supplies for 54 V DC supply for Power-over-Ethernet according to IEEE 802.3at
- Input current 24 V DC for PS924 PoE
- Input current 85 - 265 V AC for PS9230 PoE
- High power for connected terminal devices possible (up to 30 watts)
- Temperature range -40 °C to +70 °C

### Plug-in transceiver
- Optical connection to cables with LC connectors
- Transmission rates 100 or 1000 Mbps
- Can be used in conjunction with SCALANCE XM408-8C, XM416-4C and PE400-8SFP
- Temperature range -40 °C to +85 °C
- Variants with conformal coating

### Pluggables
- Optical connection to existing cables with SC or STBFOC connectors
- Transmission rates 100 or 1000 Mbps
- Can only be used in conjunction with SCALANCE XM408-4C
- Temperature range -40 °C to +85 °C

## Additional Information
- 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 ...  

... SCALANCE XR-500?

<table>
<thead>
<tr>
<th>Variants</th>
<th>SCALANCE XR524-8C</th>
<th>SCALANCE XR526-8C</th>
</tr>
</thead>
<tbody>
<tr>
<td>For structuring high-speed production networks with connection to the Enterprise IT</td>
<td>For large scales (24 ports)</td>
<td>For large scales (26 ports)</td>
</tr>
<tr>
<td>For transmission of high data rates (10 Gbps)</td>
<td>Overall height 1 HU</td>
<td>Overall height 1 HU</td>
</tr>
<tr>
<td></td>
<td>24x RJ45 ports with transmission rates of up to 1 Gbps</td>
<td>2x SFP+ ports with 10 Gbps</td>
</tr>
<tr>
<td></td>
<td>8x combo ports, optionally RJ45 or SFP</td>
<td>8x combo ports, optionally RJ45 or SFP</td>
</tr>
<tr>
<td></td>
<td>Temperature range 0 °C to +50 °C</td>
<td>Temperature range 0 °C to +50 °C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19&quot; design in different height units (HU)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rugged metal housing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support of virtual networks (VLAN)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular with media modules or SFP and SFP+ plug-in transceivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redundant power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Console port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very high performance and network availability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granular network extension to 10 Gbps during operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexible adaptation to different network structures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

siemens.com/x-500

SCALANCE X-500 managed

Structuring high-performance systems and connecting corporate IT systems

Connection of automation networks to the Office IT over the Industrial Ethernet backbone
### SCALANCE XR528-6M
- For large scales (28 ports)
- Up to 6x 4-port media modules for electrical and optical connections
- Overall height 2 HU
- 4x SFP+ ports with 1 or 10 Gbps
- 24 ports with transmission rates of up to 1 Gbps
- Temperature range 0 °C to +60 °C

### SCALANCE XR552-12M
- For very large scales (52 ports)
- Up to 12x 4-port media modules for electrical and optical connections
- Overall height 3 HU
- 4x SFP+ ports with 10 Gbps
- 48 ports with transmission rates of up to 1 Gbps
- Temperature range 0 °C to +60 °C

### Media modules
- 4-port media modules
- Electrical and optical variants
- Can be used in SCALANCE XR552-12M and XR528-6M
- Temperature range 0 °C to +60 °C

### Plug-in transceiver
- Cables with LC connectors
- SFP plug-in transceiver with transmission rates 100 or 1000 Mbps
- SFP+ plug-in transceiver with 10 Gbps
- Temperature range -40 °C to +85 °C
- Variants with conformal coating

---

**MindSphere**

Factory hall 2

SCALANCE XR552-12M

Industrial Data Center

SCALANCE XR552-12M

SCALANCE XR552-6M

Factory hall 2

SCALANCE XR528-6M

Industrial Data Center

SCALANCE XR528-6M

**Factory hall 2**

SCALANCE XR528-6M

Industrial Data Center

SCALANCE XR528-6M

**Server + SINEC NMS Control**

MindConnect

Nano

PROFINET/Industrial Ethernet

PROFINET/Industrial Ethernet

PROFINET/Industrial Ethernet

Industrial Ethernet (Fiber Optic) – 1 GBit/s

Industrial Ethernet (Fiber Optic) – 1 GBit/s

Industrial Ethernet (Fiber Optic) – 1 GBit/s

Industrial Ethernet (Fiber Optic) – 1 GBit/s

Industrial Ethernet (Fiber Optic) – 1 GBit/s

Industrial Ethernet (Fiber Optic) – 1 GBit/s

Industrial Ethernet (Fiber Optic) – 1 GBit/s

Industrial Ethernet (Fiber Optic) – 1 GBit/s

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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

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-standalone
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
SINEC NMS

The degree of networking, scope of data, and complexity of network structures are constantly increasing. This calls for a powerful and future-proof network management system to pave the way for the digital transformation in industry.

The new SINEC NMS network management system has been specially designed for the high demands placed on industrial communication networks in the Digital Enterprise. It is capable of mastering these challenges in all sectors.

For example, through comprehensive detection and monitoring of the entire network, rule-based configuration of the network infrastructure, and central firmware management with topology-based rollout. Thanks to its distributed approach, SINEC NMS makes it easy to adapt flexibly to the requirements of all types of plant networks.

siemens.com/sinec-nms
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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 holistic, state-of-the-art industrial security concept. Siemens’ products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit https://www.siemens.com/industrialsecurity.

Siemens’ products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer’s exposure to cyber threats.

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