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Industrial Communication

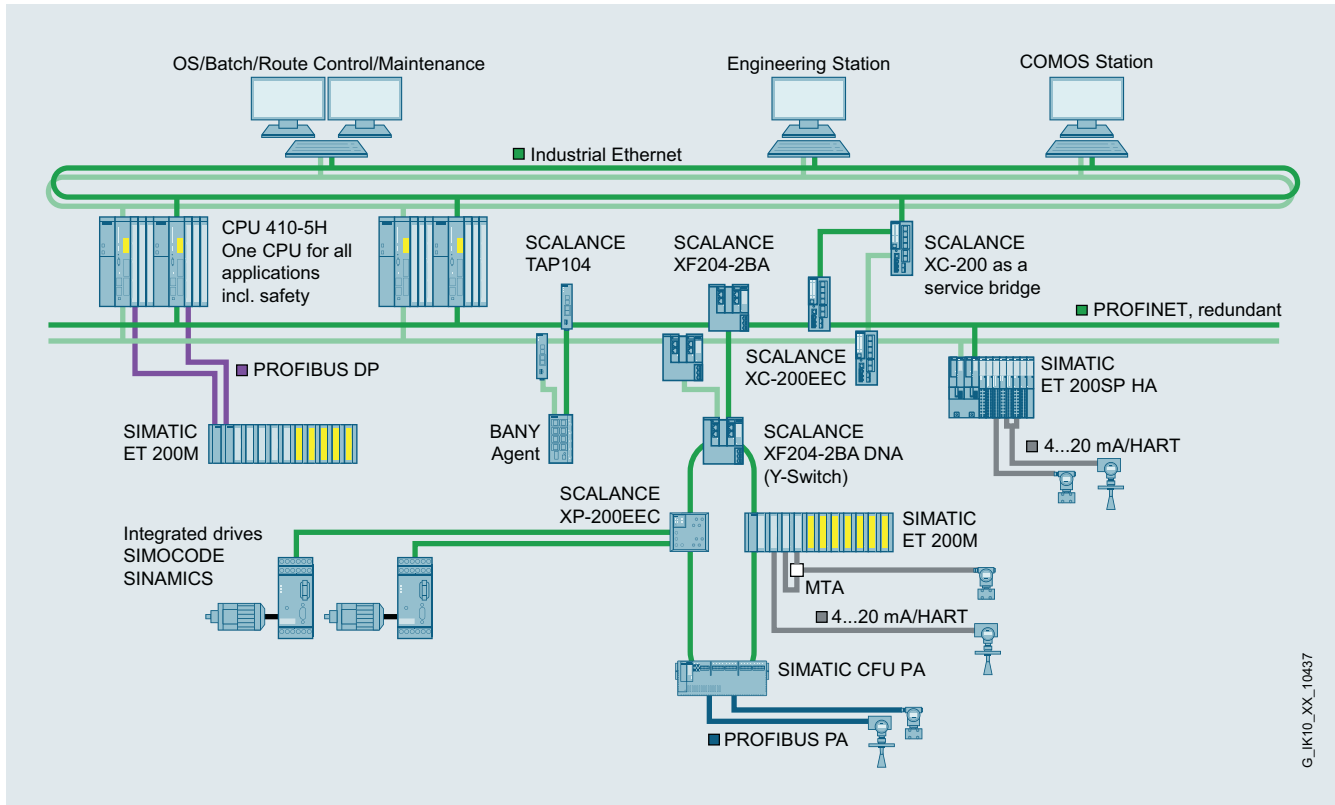
Industrial Ethernet Switches for Process Automation

SCALANCE XC-200EEC, SCALANCE XF-200BA
and SCALANCE XP-200EEC

Brochure

Edition
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Redundant PROFINET networks in the process industry with SCALANCE X switches

PROFINET in process automation

The increasing degree of digitalization in the process industry produces considerably more data (big data), necessitates end-to-end communication down to the field level and calls for flexible and secure industrial communication networks. PROFINET supports flexible network architectures and also allows the integration of existing PROFIBUS networks. Based on the Ethernet IEEE 802.3 standard, the PROFINET protocol is the reliable future-proof standard that paves the way for digitalization in the process environment, for high-performance communication all the way down to the field level.

Switches in process automation

Machines and systems must be able to exchange data reliably with higher-level systems. Industrial Ethernet switches are active network components and make it possible to set up an industrial communication network in electrical or optical line, star and ring topologies. They distribute data to defined addressees and organize the data traffic, which in turn significantly increases overall data throughput, network performance and availability.

With the aid of switches, a physically existing network, for example, can be subdivided into several virtual subnets, known as VLANs, in order to split the network up into logical areas. In this way, very large Ethernet networks can be subdivided into smaller subnets with their own IP address space, thereby significantly increasing transparency and performance in the network.

Furthermore, the SCALANCE X Industrial Ethernet switches are designed for use in PROFINET networks, which also fulfill the special requirements of the process industry.

As a result, all levels of data communication and network redundancy (S2 and R1) are available in all network topologies, such as line, star and ring, or as a mixed topology, and can even be adjusted during system operation thanks to Configuration in Run (CiR/H-CiR) in PCS 7.

The following Industrial Ethernet switches are recommended for use with SIMATIC PCS 7 systems and PROFINET at the field level:

- **SCALANCE XF204-2BA**
For flexible network configuration via copper or fiber-optic cables using different BusAdapters
- **SCALANCE XF204-2BA DNA (Y-Switch)**
For connecting PROFINET S2 devices to a redundant controller (AS) as an R1 system; BusAdapters support flexible network configuration
- **SCALANCE XC-200EEC**
 - Use as a so-called "service bridge" for protected access to the fieldbus from the system bus
 - Configuration of structured networks at the field level, e.g. ring or star topologies
 - Connection of several PROFINET devices electrically or optically (different product versions available)
- **SCALANCE XP-200EEC**
For applications in IP65 degree of protection, slim design, for supplying PoE-capable devices such as IP cameras, Gigabit-capable

Highlights at a glance

- Integrated system diagnostics with PROFINET
- Maximum availability thanks to configuration of redundant networks with S2 devices (device-side)
- Designed for use in harsh process industry environments
- High level of flexibility thanks to use of BusAdapters
- S2 support for diagnostics on the H-system
- Configuration in Run (CiR/H-CiR)
- Function as a media converter

No plant downtimes

The SCALANCE XF204-2BA DNA Y-Switch allows configuration of redundant network structures in a process automation environment using PROFINET, through the connection of S2 devices to a high-availability R1 system. This redundant network structure increases the availability of the automation systems. In the event of a fault, the high-availability communication can take over automatically without any consequences for the plant.

If an error occurs, PROFINET diagnostics facilitates fast troubleshooting and helps to avoid plant downtimes.

Flexible network structure via BusAdapter

The SCALANCE XF204-2BA and SCALANCE XF-204-2BA DNA switches can be quickly and easily installed in the control cabinet: simply snap onto the DIN rail. Thanks to the BusAdapter system, the switches support various transmission

media: there are different BusAdapter versions for copper or fiber-optic cables (e.g. electrical, optical), so that the relevant network can be configured over long distances in line with the specific application.

Using the BA 2xRJ45VD HA BusAdapter, data transfer via 2-wire (single twisted pair) can be realized in addition to standard Ethernet cabling via 4-wire lines (twisted pair). This allows existing PROFIBUS infrastructures to continue being used, thus avoiding costly and time-consuming modifications at the field level in particular.

Logical separation of fieldbuses

The SCALANCE XC-200 has a particular role in network architecture with PROFINET, as it can be specially configured as a "service bridge" by decoupling the interfaces. This enables dedicated, temporary access to be set up from the system bus to the fieldbus while maintaining logical separation between the fieldbuses.

Cabinet-free design

The cabinet-free design allows SCALANCE XP-200EEC switches to be used in both indoor and outdoor areas. This ensures rugged, reliable operation in numerous sectors, e.g. the petrochemical industry.

Functions

- **Switches for process automation**
 - Configuration of redundant and fail-safe PROFINET networks
 - Integration of S2 devices in R1 systems and for diagnostics connection on the H-system
 - Support for Configuration in Run (CiR/H-CiR)
 - End-to-end data communication down to field level
 - Real-time communication even for high data loads (big data)
- **Use in harsh environments**
 - Conformal coating
 - NAMUR NE 21-compliant
 - Temperature range -40 °C to +70 °C
 - IP65 degree of protection
 - Max. installation altitude 4 000 m
 - For use in hazardous areas (ATEX Zone 2)
- **Practical design**
 - C-PLUG removable data storage medium for simple replacement of devices
 - Different BusAdapters for copper and fiber-optic cables, as well as for VD technology

Get more information

[siemens.com/xf-200](https://www.siemens.com/xf-200)

[siemens.com/y-switch](https://www.siemens.com/y-switch)

[siemens.com/xc-200](https://www.siemens.com/xc-200)

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