INDUSTRIAL ETHERNET

SCALANCE X Switches for Process Automation

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Brochure

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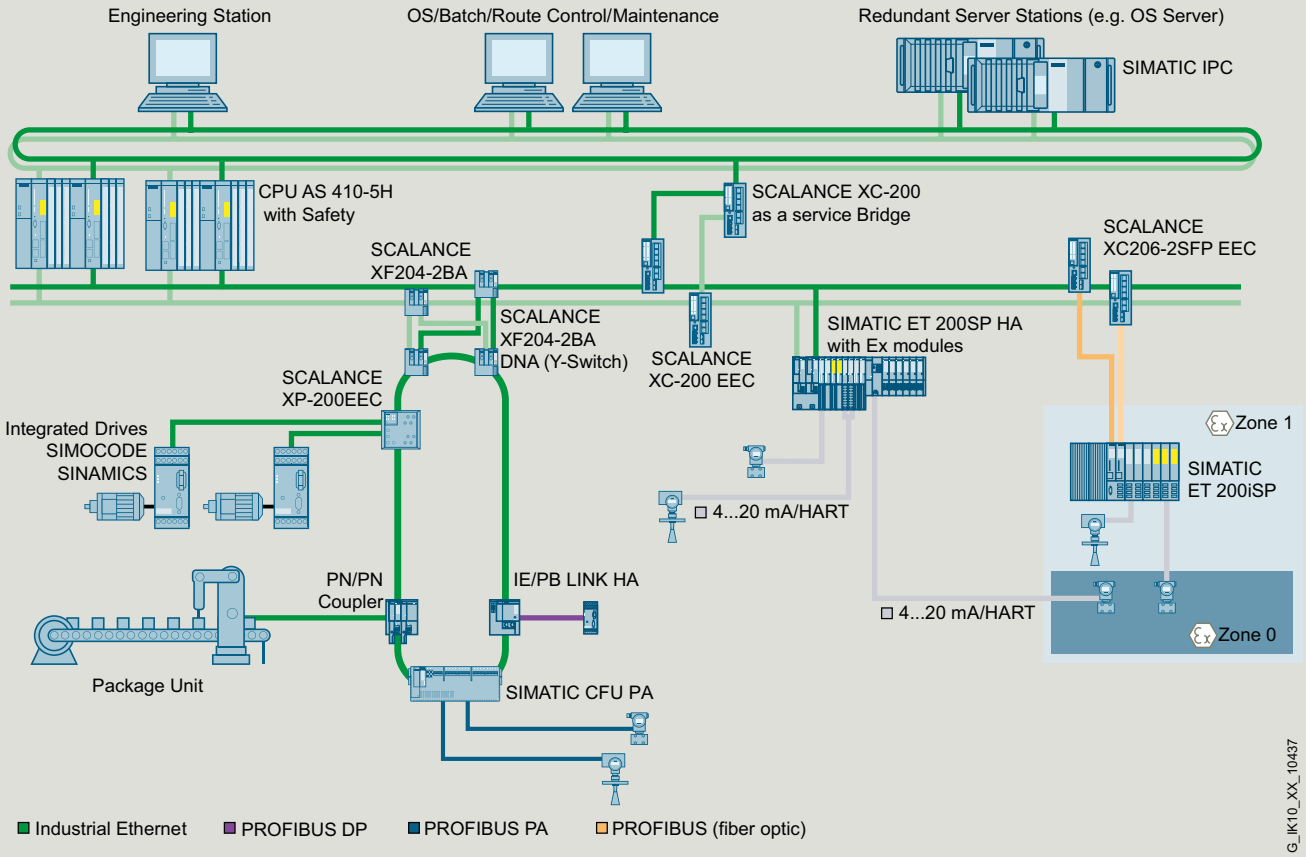

Redundant PROFINET networks in the process industry with SCALANCE X switches

PROFINET in process automation

The increasing degree of digitalization in the process industry produces more data (big data), necessitates end-to-end communication down to the field level, and calls for flexible and secure industrial networks. PROFINET supports flexible network architectures and also allows the integration of existing PROFIBUS networks.

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 allow setting up an industrial network in electrical or optical line, star and ring topologies. They distribute data to defined addresses 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 up the network into logical areas. In this way, very large Ethernet networks can be subdivided into smaller subnets with their own IP address range, thereby significantly increasing transparency and performance in the network.

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 SIMATIC PCS 7.

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

Industrial Ethernet Switches 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
- **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, electrical or optical connection of several PROFINET devices
- **SCALANCE XP-200EEC**
  For applications in IP65 protection class, slim design, for supplying PoE-capable devices, such as IP cameras

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 highly available R1 system. This redundant network structure increases the availability of automation systems. In the event of a fault, the highly available communication can take over automatically without any consequences for the plant. The Y-Switch can be connected to a PROFINET R1 network either singularly or redundantly.

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

Flexible network structure via BusAdapter

SCALANCE XF204-2BA and SCALANCE XF-204-2BA DNA switches can quickly and easily be installed in the control cabinet by simply snapping them 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 network can be configured over long distances in line with the specific application.

Using the BA 2 x RJ45VD HA BusAdapter, data transmission via 2-wire (single twisted pair) can be realized in addition to standard Ethernet cabling via 4-wire cables (twisted pair). This allows existing PROFIBUS infrastructures to continue being used, thus avoiding costly and time-consuming modifications especially at the field level.

Logical separation of fieldbuses

The SCALANCE XC-200 switch 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

SCALANCE XP-200EEC switches allow a cabinet-free installation in both indoor and outdoor areas. This ensures rugged, reliable operation in numerous sectors, e.g., the petrochemical industry.

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 throughput (big data)

Use in harsh environments

- Conformal coating
- NAMUR NE 21-compliant
- Temperature range –40 °C to +70 °C
- IP65 protection class
- 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

Further informations

siemens.com/xf-200
siemens.com/y-switch
siemens.com/xc-200
siemens.com/xp-200
siemens.com/profinet-process-automation

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