

The Siemens logo is displayed in a white rectangular box. It consists of the word "SIEMENS" in a bold, teal, sans-serif font.

Technical
article

Unlimited communication in buildings

Network components for quick and easy data
transmission in building automation

Energy efficiency and flexibility are important buzzwords nowadays in all industry sectors. Approximately 40 percent of the worldwide energy is consumed by buildings. To reduce these energy costs, the Desigo building management system offers various functions for networking and controlling a building's technical systems. For the communication between these monitoring, control, regulation and optimization installations, SCALANCE network components from Siemens are ideally suited to handle the standardized BACnet connection.

As active network components, switches enable the structuring of a communication network into electrical or optical star, line and ring structures. They purposefully distribute data to defined addressees and thus structure the data traffic, which greatly increases data throughput and overall network performance. Unmanaged layer 2 switches are typically employed for the simple, direct network connection of Ethernet devices.

These products are used in the automation and field levels for the easy connection without requiring a pre-configuration, and – compared to an office network – allow the building automation network to adopt a more decentralized network layout as is customary in industrial automation.

Cost-effective entry-level switches for the use in building automation

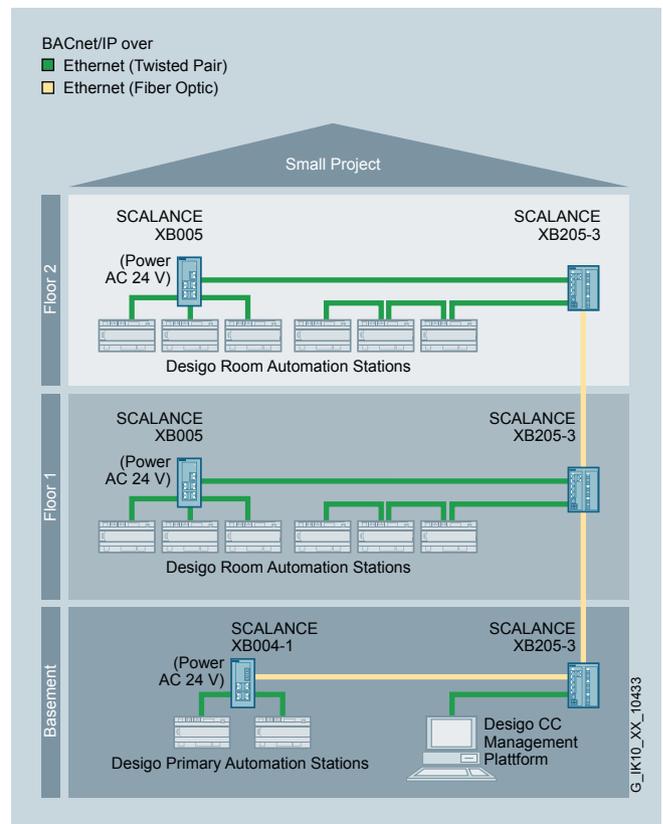
The new SCALANCE XB-100 switches also support the 24 V AC (50/60 Hz) voltage supply used in building automation. This eliminates additional power supplies, and thus costs. Another benefit: On each floor, up to 20 Designo room automation stations can be daisy-chained to SCALANCE XB-100 devices over the same line infrastructure. To bridge longer distances, fiber optic port variants with two ST/BFOC or SC connections are available. The fanless switches are maintenance-free and also permit the installation in partition walls. For 19-inch rack installations, rack switch variants with 24 RJ45 ports are available. Either 24 V DC with redundant power supply or 110-240 V AC can be chosen.



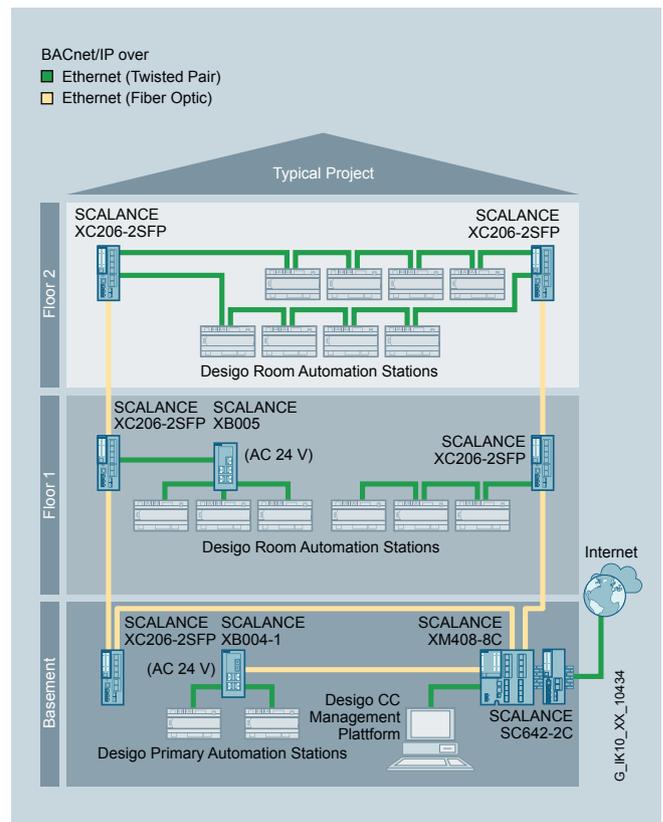
Industrial Ethernet unmanaged switches for the easy connection to Designo controllers and panels on a floor.

Easy management with more functions

For the connection of the building's technical systems between floors, switches with fiber optic cables are needed, which also must be configurable (managed). Various configuration possibilities are available for this purpose – from the integrated web interface of the SCALANCE X devices to the console port to the integrated engineering in the TIA Portal framework. Furthermore, all SCALANCE X components provide many diagnostic options. In addition to a web-based management for the direct configuration and diagnosis of each individual switch, central diagnostic options are also offered. The SNMP function in particular provides many possibilities, as it allows the switches to be easily integrated into network management systems, such as SINEMA Server, and be centrally monitored.



Cost-effective Industrial Ethernet unmanaged switches with 24 V AC voltage supply for the effortless configuration of star topologies.



The segmentation of a larger building network by means of Ethernet network components increases the scalability of the solution from a single provider.

The integration into the PROFINET as well as the EtherNet/IP diagnosis make the switches ideal for the automation of many machines and plants. Thanks to various port configurations and device widths, the SCALANCE XB-200 managed switches, for example, can be optimally deployed depending on the requirements. They enable the setup of virtual networks via the VLAN function (virtual local area network) and can even be used in potentially explosive areas (IECEx/ATEX Zone 2/UL HazLoc). Various system integrity functions make the SCALANCE XB-200 switches a perfect fit for applications in network security.

The right components, even for larger network structures

In larger buildings, where more than 500 room automation stations are installed, switches with 1 Gbps are necessary. The SCALANCE XC-200 represents the perfect solution for this. There are different port variations available for electrical RJ45 as well as optical connections. By using SFP transceivers (small form-factor pluggable), the switches offer a flexible option for connecting optical participants, in addition to the permanently installed SC and ST/BFOC fiber optic interfaces. Depending on the bandwidth and range required, the switches can be equipped with a wide selection of optical transceivers. Another advantage of the SFP variant is the configuration with SFPs with up to 1 Gbps, e.g., for the setup of fast Gigabit connections when networking several floors in a building. Furthermore, there is a slot for a removable storage medium (C-Plug), on which the device configuration can be saved and, in the event of a replacement, be quickly loaded – without expert knowledge or aids – onto the new device.

In addition, a central layer 3 switch is installed per building, which restricts the access of devices to the corporate network by means of access control lists. The SCALANCE XM-400 switch product line supporting up to 16,000 MAC addresses is suitable for that. These layer 3 switches are typically installed in the building distributor of a building to protect against attacks on software and hardware components. Besides the device properties that directly result in a higher availability of the network and thus of the overall system, e.g., redundant power supply, fanless operation or the use of special redundancy protocols such as MRP and RSTP, the simple diagnosis as well as quickly available correction options further reduce possible downtimes in the event of a fault.

Complete solution from a single source

The Ethernet network components from Siemens are easy to configure and suitable for the use in industrial as well as building automation applications. They are characterized by rugged industrial enclosures and high-quality components without wearing parts, such as fans. These are important features for setting up a building automation system, since the floors and distribution rooms of a building are often very dusty and not air conditioned during the commissioning phase. With years of experience as the market leader in automation, Siemens has developed a comprehensive portfolio of network components for different industry sectors and use cases. This experience is also constantly present during the analysis, planning and implementation of industrial networks – making Siemens a competent and trustworthy partner for customers. Consequently, the customer receives a complete end-to-end solution, whose individual components are perfectly coordinated and harmonize with each other.

Security information

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 only form one element of such a concept. For more information about industrial security, please visit <http://www.siemens.com/industrialsecurity>

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