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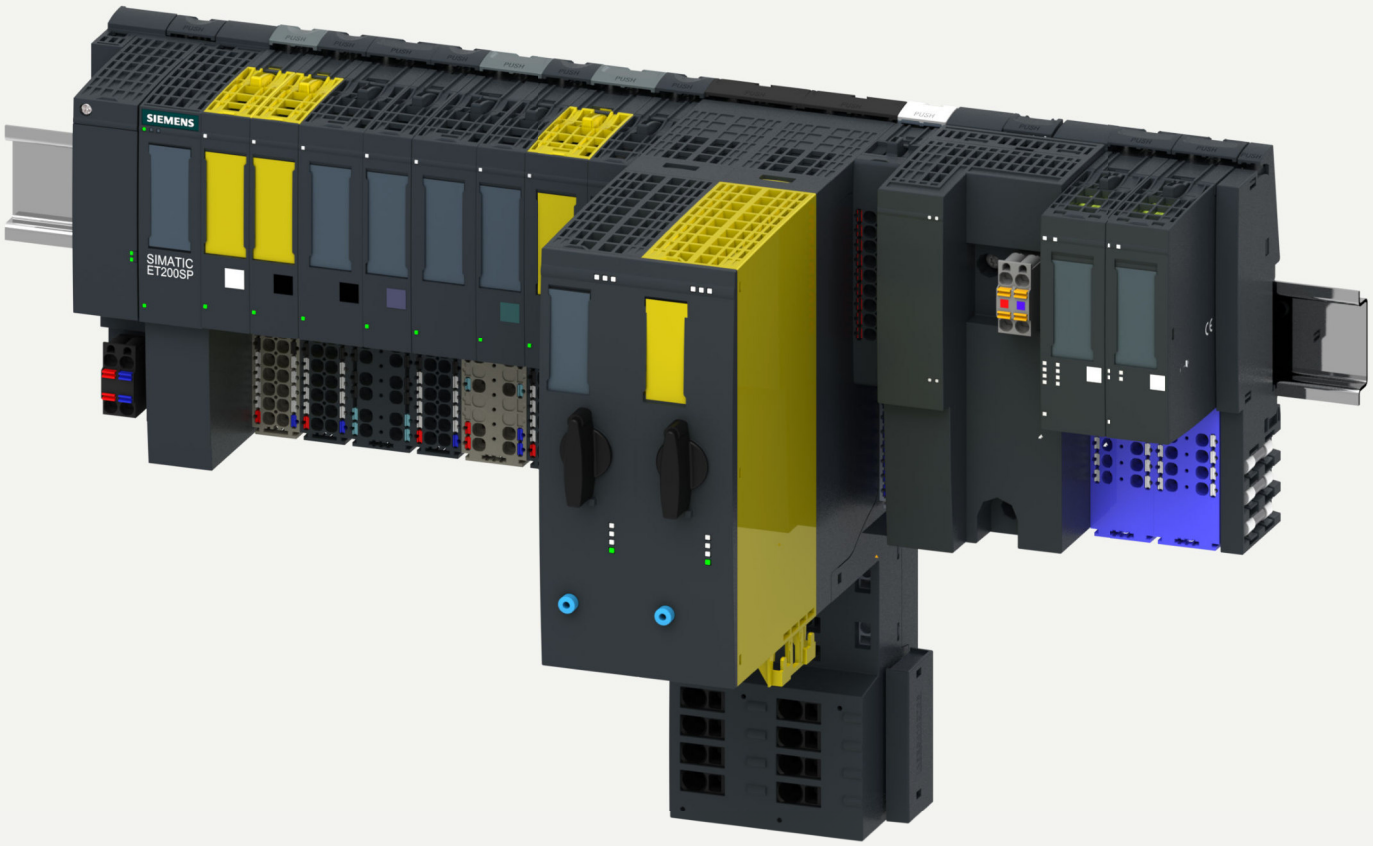


Edition 11/2023

SYSTEM MANUAL

SIMATIC

ET 200SP

ET 200SP Distributed I/O System

support.industry.siemens.com

System overview

5

5.1 What is the SIMATIC ET 200SP distributed I/O system?

SIMATIC ET 200SP

SIMATIC ET 200SP is a scalable and highly flexible distributed I/O system for connecting process signals to a higher-level controller via a fieldbus.

Customer benefits of the system

Compact design

- Small size and high variability through scalability
- Maximum level of clarity through innovative labeling system in minimum space
- System-integrated load current supply

Easy to use

- Compact modules, fixed wiring with single-cable and multi-cable connection
- Less time due to connection technology with push-in terminals and without tools
- Adaptation of the configuration for future expansions through integrated configuration control

Safety Integrated

- Easy integration of fail-safe CPUs and modules
- All F-parameters set in software

Communication standards

- PROFINET IO
- PROFIBUS DP
- EtherNet/IP
- Modbus TCP
- ET-Connection
- AS-Interface
- IO-Link
- Point-to-point (RS232, RS485)
- DALI
- DMX

High performance

- Isochronous PROFINET IO with the PROFIsafe and PROFIenergy profiles

Energy efficiency

- PROFIenergy as integrated function

CPU

- PROFINET interface with 3 ports
- IO controller
- I-device
- Optional CM DP module for connection to PROFIBUS DP

Motor starter

- Easy integration of motor starters with overload and short-circuit protection
- Compact design with a maximum connectable motor output of up to 5.5 kW

Powerful technology

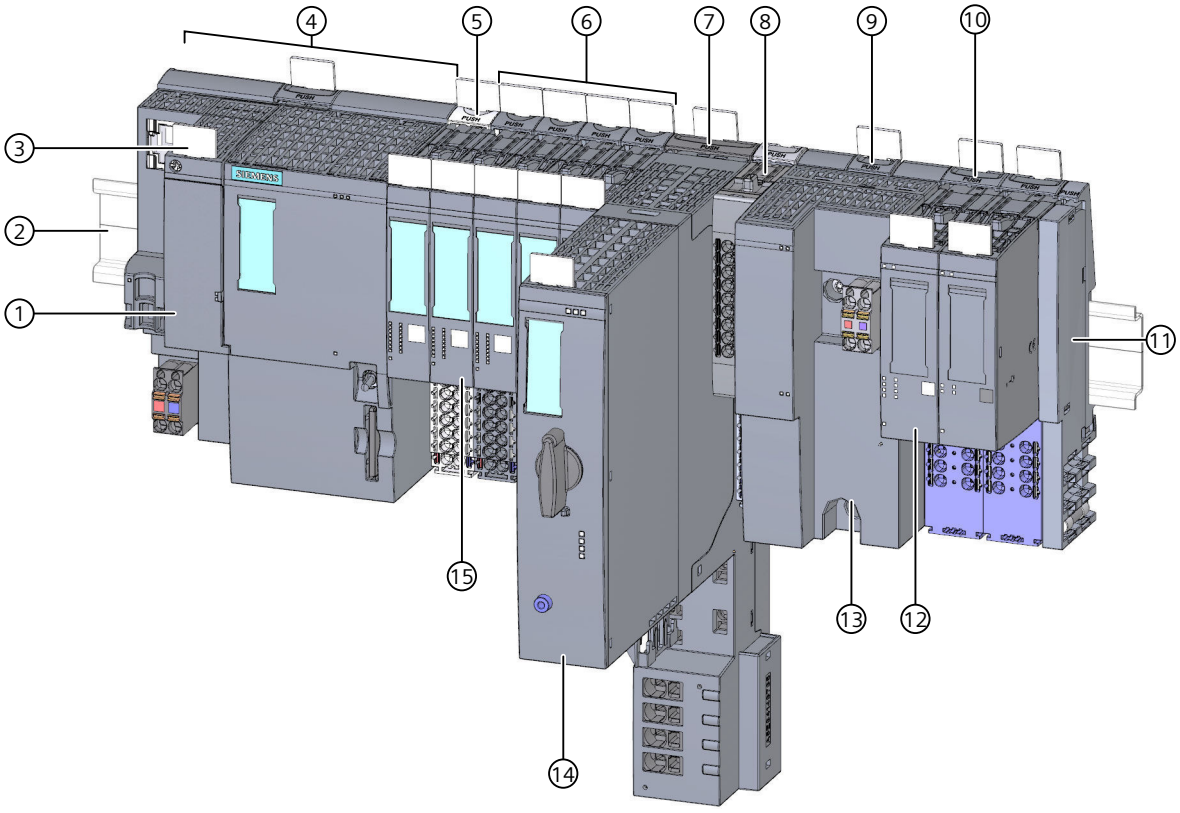
- Modules for Counting, Positioning, Weighing and Measuring functions of electrical parameters

Modules for hazardous area

- Modules for the connection of devices in hazardous areas of Zone 0 and Zone 1.

Figure 5-1 SIMATIC ET 200SP distributed I/O system - Customer benefits

Configuration example



① BusAdapter
② Mounting rail
③ Reference identification label
④ CPU/interface module
⑤ Light-colored BaseUnit BU..D with infeed of supply voltage
⑥ Dark-colored BaseUnits BU..B for conducting the potential group further
⑦ BaseUnit for motor starters
⑧ Potential distributor module
⑨ Ex BaseUnit for Ex power module
⑩ Ex BaseUnit for Ex I/O module
⑪ Server module (included in the scope of supply of the CPU/interface module)
⑫ Ex I/O module
⑬ Ex power module
⑭ ET 200SP motor starter
⑮ I/O module

Figure 5-2 Configuration example of the ET 200SP

5.3 How are SIMATIC Safety F-systems structured with ET 200SP?

SIMATIC Safety F-system with ET 200SP

The figure below shows an example of a configuration for a SIMATIC Safety F-system with ET 200SP distributed I/O system and PROFINET IO. You can configure the PROFINET IO lines with copper cable, fiber-optic cable or WLAN.

Fail-safe I/O modules and non-fail-safe I/O modules can be combined in an ET 200SP configuration.

The fail-safe IO controller (F-CPU) exchanges safety-related and non-safety-related data with fail-safe and non-fail-safe ET 200SP modules.

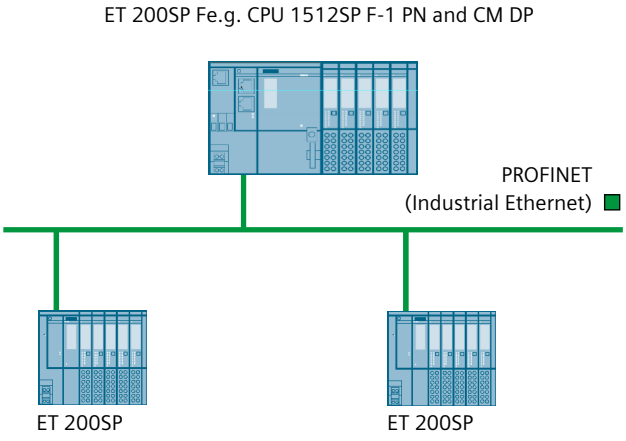


Figure 5-3 Fail-safe SIMATIC Safety automation system (sample configuration)

Fail-safe ET 200SP I/O modules

The following fail-safe I/O modules are available for the ET 200SP distributed I/O system:

- Fail-safe power modules are used to supply the potential group load voltage and for the safety-related tripping of the load voltage for non-fail-safe output modules.
- Fail-safe digital input modules detect the signal states of safety-related sensors and send the relevant safety frames to the F-CPU.
- Fail-safe digital output modules are suitable for safety-related shutdown procedures with short circuit and cross-circuit protection up to the actuator.

ET 200SP fail-safe motor starters

Fail-safe motor starters are suitable for safety-related tripping of motor loads.

5.4 Components

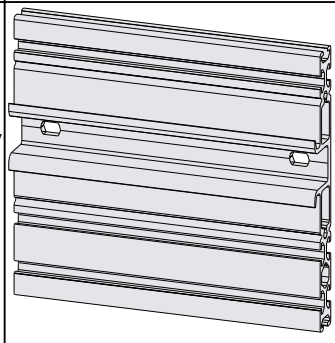
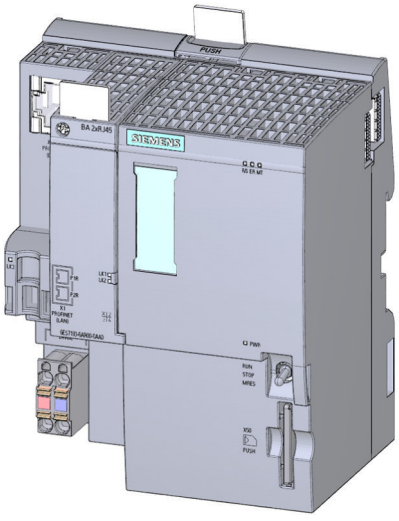
Overview of ET 200SP modules and accessories

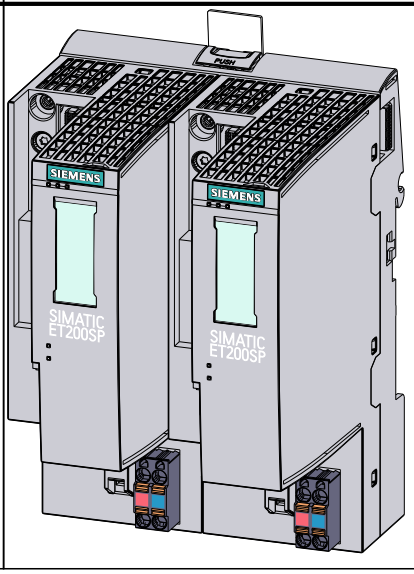
NOTE

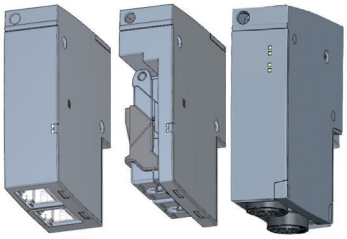
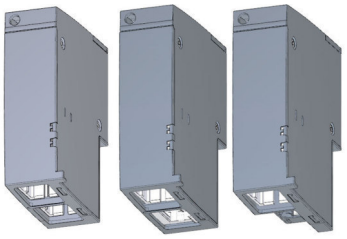
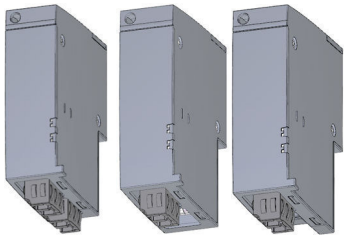
A complete overview of the ET 200SP modules and accessories is available in the Product information on documentation of the ET 200SP distributed I/O system (https://support.industry.siemens.com/cs/de/de/view/73021864/en).

Basic components of the ET 200SP distributed I/O system

Table 5-2 Basic components of the ET 200SP

Basic component	Function	Figure
Mounting rail in accordance with EN 60715	The mounting rail is the rack of the ET 200SP distributed I/O system. You install the ET 200SP system on the mounting rail. The mounting rail is 35 mm high.	
SIMATIC system rail	The system rail is the mounting rack of the ET 200SP R1 distributed I/O system. The ET 200SP R1 system must be installed on the system rail. You can also mount all other interface modules on the system rail to improve the stability of the system.	
CPU/Fail-safe CPU	The (F) CPU: • Runs the user program. The F-CPU also runs the safety program. • Can be used as an IO controller or I-Device on PROFINET IO or as a standalone CPU • Links the ET 200SP to the IO devices or the IO controller • Exchanges data with the I/O modules via the backplane bus. Additional CPU functions: • Communication via PROFIBUS DP (the CPU can be used as a DP master or DP slave in combination with the CM DP communication module) • Integrated Web server • Integrated technology • Integrated trace functionality • Integrated system diagnostics • Integrated safety • Safety mode (when using fail-safe CPUs)	

Basic component	Function	Figure
Interface modules and BaseUnit BU type M0 for redundant connection	The ET 200SP R1 system: • Use as redundant IO device on PROFINET IO • Connects the ET 200SP to the IO controller • Exchanges data with the I/O modules via the backplane bus.	

Basic component	Function	Figure
BusAdapter	The BusAdapters allow free selection of the connection technology for PROFINET IO. The following versions are available for PROFINET CPU/interface modules: • For standard RJ45 connector (BA 2×RJ45) ① • For direct connection of the bus cable (BA 2×FC) ② • For standard M12 connector (D-coded) with screw-type terminal or plug-in push-pull version (BA 2xM12) ③ • For POF/PCF fiber-optic cable (BA 2xSCRJ) ④ • As media converter for POF/PCF fiber-optic cable ⇔ standard RJ45 plug (BA SCRJ/RJ45) ⑤ • As media converter for POF/PCF fiber-optic cable ⇔ direct connection of the bus cable (BA SCRJ/FC) ⑥ • For glass fiber-optic cable (BA 2xLC) ⑦ • As media converter for glass fiber-optic cable ⇔ standard RJ45 plug (BA LC/RJ45) ⑧ • As media converter for glass fiber-optic cable ⇔ direct connection of the bus cable (BA LC/FC) ⑨ • For single-mode fiber-optic cable with maximum length of 20 km (BA 2xLC-LD, long distance) ⑩ • As media converter for glass fiber-optic cable with an LC plug connector ⇔ standard RJ45 connector (BA LC-LD/RJ45) ⑪ • As media converter for glass fiber-optic cable with an LC plug connector ⇔ standard M12 plug or M12 push-pull connector (BA LC-LD/M12) ⑫	① ② ③  ④ ⑤ ⑥  ⑦ ⑧ ⑨  ⑩ ⑪ ⑫
	For mixed ET 200SP/ET 200AL configuration, you require the BusAdapter BA-Send 1xFC ① (plugged into the BaseUnit BU-Send). Connect the bus cable for ET-Connection to the BusAdapter BA-Send 1xFC.	①