

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Overview



SIMATIC ET 200SP video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6140549987001

SIMATIC ET 200SP



The scalable SIMATIC ET 200SP I/O system is a highly flexible, modular I/O system with degree of protection IP20. Via interface modules, it can exchange IO data of the connected I/O modules with a higher-level PLC. The following interface variants are available for this purpose:

- MultiFieldbus: IM 155-6MF with the Ethernet-based protocols PROFINET, EtherNet/IP and Modbus TCP
- PROFINET: IM 155-6 PN
- PROFIBUS: IM 155-6 DP

Alternatively, as further head-end stations, various PLC, F-PLC and Open Controllers are available as compact S7-1500 Controllers (Distributed Controllers). ET 200SP components in SIPLUS version meet extreme requirements and have a high degree of robustness.

An extensive range of I/O modules, including fail-safe and Ex versions, enable the flexible connection of sensors and actuators:

- Digital input modules (DI), with color coding white
- Digital output modules (DQ), with color coding black
- Analog input modules (AI), with color coding light blue
- Analog output modules (AQ), with color coding dark blue
- Technology modules (TM), with color coding turquoise
- Communications modules (CM), with color coding light gray
- Special modules, with color coding mint green
- Motor starters as direct-on-line starters (DS) and reversing starters (RS), also as F-variant in each case
- Pneumatics

Apart from the standard type of delivery in single-unit packaging, selected I/O modules and BaseUnits are also available in a pack of 10 units.

The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.

Compact design

- Modular configuration with up to 64 modules
- System-integrated, self-assembling potential groups, potential group supply without power module with infeed of supply voltage via light BaseUnits
- Small size and highly flexible due to the modular design and comprehensive product range
- Up to 16 channels per module
- Permanent wiring
- Hot swapping: Module replacement without tools in RUN
- Startup and operation with slot gaps (free spaces)

Flexible connection system

- Flexible fieldbus connection via BusAdapter (RJ45, M12, FastConnect, plastic or glass fiber-optic cables single-mode or multimode), also as integrated media converter
- Push-in terminals for cross-sections up to 1.5 mm² with wire end ferrule, and up to 2.5 mm² without wire end ferrule
- BaseUnits for 1-wire or direct multi-wire connection
- PotDis module for system-integrated and space-saving provision of additional potential terminals
- Optimum accessibility for wiring due to spring release and measuring tap next to the conductor opening
- System-integrated, space-saving shielding for installation without tools



EMV protection of SIMATIC ET 200SP

SIMATIC ET 200SP shielding video

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Safety Integrated

- Easy integration of fail-safe modules
- Easy F parameter assignment via software
- Group-by-group disconnection of non-fail-safe modules

High performance

- Isochronous PROFINET
- Internal data transfer with up to 100 Mbps
- Record analog values and output as of 50 µs
- Record digital values and output as of 1 µs

High-performance technology

- Modules for the functions Servodrive, Counting, Positioning, Weighing, Output cams, PWM, Force measurement, Flow measurement, etc.

Energy efficiency

- Energy Meter for recording electrical variables
- System-integrated PROFIenergy with interval substitute values

Extended functions

- Configuration control: application-based adaptation of the actual configuration via user software (option handling)
- Time-based IO: time stamping of the signals to the µs
- MSI/MSO: Simultaneous access to I/O data from up to 4 PLCs
- MtM: Direct data exchange between IO modules (**Module-to-Module** communication)
- Oversampling: n-fold acquisition or output of digital and analog signals within a PN cycle
- Adaptation of measuring range: increased resolution by adapting the measuring range to a limited section of a measuring range supported by the analog input module
- Scaling of measured values: permits the transmission of the analog value normalized to the required physical value as a REAL value (32-bit floating point)

Communication standards

- PROFINET IO
- EtherNet/IP
- Modbus TCP
- PROFIBUS DP V0/V1
- ET connection for connecting the ET 200AL (IP67)
- IO-Link V1.1
- CAN
- DALI
- AS-Interface
- Point-to-point (RS232, RS485, RS422)
- Freeport
- 3964(R)
- USS
- DMX
- Modbus RTU (master/slave)

CPU

- PROFINET connection with 3 ports
- IO Controller and PN IO device
- Optional expansion as DP master/slave
- Also as fail-safe variant and Open Controller

Labeling of I/O modules

- Meaningful labeling on the front of the I/O modules
 - Module type in plain text including function class, e.g. "DI 8x24VDC HF"
 - Article No.
 - 2D matrix code with article and serial number (with call via the "Industry Online Support" app, direct link to the support page of the module)
 - Hardware functional status and firmware version
 - Suitable BU type for the respective I/O module
 - Color code of the suitable color-coding plate
 - Connection diagram
- Optionally expandable with
 - Labeling strips
 - Equipment labeling plate

Overview of ET 200SP components

Basic components	Function
CPU	The CPU: • Executes the user program • Is used as IO Controller, I-Device on PROFINET IO, or as standalone CPU • Connects the ET 200SP with the IO devices or the IO Controller • Exchanges data with the I/O modules via the backplane bus. Further functions of the CPU: • Communication via PROFIBUS DP (in combination with the CM DP communications module, the CPU can be used as DP master or slave) • Integrated web server • Integrated technology • Integrated trace functionality • Integrated system diagnostics • Integrated safety

Basic components	Function
Open Controller	As the first controller of this type, the SIMATIC ET 200SP Open Controller combines the functions of a PC-based Software Controller with visualization, PC applications and central I/Os (inputs/outputs) in a single, compact device. • All in one • High system availability • Compact and modular • Rugged • User-friendly design • Efficient engineering in TIA Portal
Interface modules with MultiFieldbus interface (IM 155-6 MF)	The MF interface module: • Supports the three Ethernet protocols PROFINET IO, EtherNet/IP and Modbus TCP • Is easy to configure via MultiFieldbus Configuration Tool (MFCT) • Connects ET 200SP with the IO Controller • Exchanges data with the I/O modules via the backplane bus.

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Basic components	Function	Basic components	Function
Interface modules for PROFINET IO (IM 155-6 PN)	The interface module: - Is used as IO Device on PROFINET IO - Connects ET 200SP with the IO Controller - Exchanges data with the I/O modules via the backplane bus.	Potential distributor modules (PotDis BU, PotDis TB)	With the potential distributor modules for SIMATIC ET 200SP, additional potentials required within an ET 200SP station can be set up quickly and in a space-saving manner. Due to the free combinability of PotDis-BUs and PotDis-TBs, the potential distributor modules allow a large number of design variants and thus simple adaptation to individual needs. Within the station, existing potentials can be multiplied or even new potential groups can be formed. With 36 terminals per 15 mm width, the PotDis modules require very little space without compromising on the conductor cross-sections (maximum 2.5 mm²). They allow the connection of voltages up to 48 V DC with a maximum current carrying capacity of 10 A, and with the PotDis TB-BR-W even up to 230 V AC/10 A as well as the possibility to connect a protective conductor.
Interface module for PROFIBUS DP (IM 155-6 DP)	The interface module: - Is used as DP slave on PROFIBUS DP - Connects ET 200SP with the DP master - Exchanges data with the I/O modules via the backplane bus.	I/O modules and fail-safe I/O modules	The I/O module determines the function at the terminals. The PLC detects the current process state via the connected sensors and triggers corresponding responses via the connected actuators. Some I/O modules feature extended functions, in part they are also designed as individual operating mode. I/O modules are divided into the following module types; the fail-safe versions are identified by a preceding 'F-' and a yellow module case: - DI (digital input) - DQ (digital output) - AI (analog input) - AQ (analog output) - TM (technology modules) - CM (communications modules) - SM (special modules)
SIMATIC BusAdapter (BA)	SIMATIC BusAdapters permit the free selection of the connection system and physical connection for head-end stations with PROFINET or MultiFieldbus interface. Various variants are available for the connection of copper cables or plastic and glass fiber-optic cables. Hybrid copper/fiber-optic variants are also available as integrated media converters. Cable length between 2 stations: max. 100 m (copper), max. 50 m (POF), max 100 m (PCF), max. 3 km (multimode glass fiber-optic cable), max. 20 km (single-mode glass fiber-optic cable). For expanding the station with the I/O system ET 200AL via ET connection, the BA-Send BusAdapter is available	Protective cover (BU cover)	The ET 200SP system can be operated with any number of slot gaps (BU slot without I/O module). Applications for this include: - partial commissioning - prewired, and currently unequipped options To protect against damage, such slot gaps must be covered by a BU cover. Within the BU cover, an equipment labeling plate can be kept for the possible later use of an I/O module. Versions: - for BaseUnits with a width of 15 mm - for BaseUnits with a width of 20 mm
BaseUnit (BU)	The BaseUnits provide the electrical and mechanical connection for the ET 200SP components. - Bright BaseUnits permit a new potential group up to max. 10 A - Dark BaseUnits forward the self-assembling voltage busbars P1, P2 and AUX from the left to the right BaseUnit. - Suitable BaseUnits with 12 to 28 terminals are available for different connection systems (single or direct multi-conductor connection) and functions. - The I/O module is plugged onto the desired BaseUnit and determines the potential assignment of the terminals on the BaseUnit. - For expanding the station with the I/O system ET 200AL via ET connection, the BaseUnit BU-Send is available.		

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Basic components	Function
Server module	The server module concludes the setup of an ET 200SP station. On the server module there are holders for 3 spare fuses (5 × 20 mm). The server module is included in the scope of supply of all head-end stations.
DIN rail according to EN 60715	The DIN rail is the module rack of the ET 200SP I/O system. ET 200SP is mounted on the DIN rail.
SIMATIC system rail	For a redundant R1 setup of the ET 200SP I/O system, mounting on the SIMATIC system rail is mandatory.
Coding element	When plugging an I/O module onto a BaseUnit for the first time, the coding element moves from the I/O module to the BaseUnit. There it prevents the destruction of the ET 200SP components in the event of a subsequent module replacement with incorrectly selected I/O module. The coding element is available in two versions: • Mechanical coding element • Electronic coding element: additionally features an electronic, re-writable memory for the redundant storage of module-specific configuration data (e.g. F target address for fail-safe modules, parameter data for IO-Link master). Thus these data are automatically backed up during a module replacement.
System-integrated shield connection	The shield connection permits the connection of cable shields. Compared to external shield supports, the system offers the following advantages: • Quick installation without tools by plugging the shield connection element onto the BaseUnit • Automatic low-impedance connection to the functional grounding (DIN rail) • Optimized EMC properties by separating the supply voltage lines from the signal cables by means of the shield connection element and short, unshielded cable lengths • Requires little space
Labeling strips	Optionally, for system-specific marking the head-end stations and I/O modules can be equipped with labeling strips (13 x 31 mm). The labeling strips can be inscribed mechanically. Labeling strips are available in two versions in the colors light gray and yellow: • 500 strips on the roll, for printing on thermal-transfer printers. Core diameter 40 mm, outer diameter 70 mm, width 62 mm. • 10 DIN A4 sheets with 100 strips each, card 180 g/mm², perforated, for printing with a laser printer direct from TIA Portal or via print templates.

Basic components	Function
Equipment labeling plate	Optionally, one equipment labeling plate each can be plugged onto head-end stations, BusAdapters, BaseUnits, potential distributor modules (PotDis BU and PotDis TB), and I/O modules. Equipment labeling plates are supplied in packs of 10 sheets with 16 labels each. The labels can be printed with thermal-transfer card printers or plotters, or stickers can be attached to them. Advantages compared to labels that are attached directly: • The inscription on the front is not covered • Simple label replacement when replacing a module • No parallax errors when marking the BaseUnits on the mounting plate The size of the inscribable area of the labels is 14.8 x 10.5 mm (W x H)
Color-coded labels	The I/O modules that are plugged onto the BaseUnits determine the potentials connected at the process terminals. The +/- potentials can optionally be identified using module-specific color-coded labels. The potentials of the AUX and add-on terminals as well as potential distributor modules can also be marked using color-coded labels. Color-coded labels are supplied in packs of 10 or 50 labels. Advantages of the color-coded labels: • Quick installation (one label for marking up to 16 terminals) • Avoidance of wiring errors • Simple detection of potentials during servicing

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Interface modules > IM 155-6

Overview



SIMATIC ET 200SP MultiFieldbus video
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Thanks to their wide scope of functions, the interface modules of the scalable SIMATIC ET 200SP I/O system, even in their basic versions, cover a wide range of applications. The basic functions of the interface modules include:

- Short data update times of typically 1 ms
- Single Hot Swap (withdrawing and insertion of an I/O module during operation without impairing the communication with the remaining modules)
- Operation with gaps (empty BaseUnits)
- Complete diagnostic support, extending to channel-by-channel diagnostics
- Configuration control / option handling (adaptation of the actual configuration via user program)
- Device replacement without programming device, with automatic re-initialization, with and without topological configuring
- I&M data 0 to 3 (electronic rating plate with non-volatile storage of plant data)
- Firmware update
- Pluggable 24 V DC supply connection
- Mains/voltage failure buffering time of at least 5 ms or 10 ms
- Labeling option via optional labeling strips and equipment labeling plates

When using PROFINET interface modules, the following basic functions are also included:

- Media redundancy (MRP)
- Integrated 2-port switch
- Freely selectable connection system (Standard function class and above) and physical connection (High Feature function class and above) by means of SIMATIC BusAdapters, also as system-integrated media converter from fiber-optic to copper cable. Can also be used for interface modules with MultiFieldbus interface.
- Reset button for simple return to factory settings without the need for programming device
- Automatic synchronization of the backplane bus to the PROFINET cycle to minimize the response time fluctuations (jitter)

Listed below is a short overview of the interface modules available for the ET 200SP, showing the essential differences. An up-to-date, clear and more precise comparison of functions of the different interface modules is offered by the TIA Selection Tool.

SIMATIC IM 155-6 DP High Feature with PROFIBUS connection

- Max. 32 I/O modules, also PROFIsafe modules with complete diagnostic support.
- Expansion option with max. 16 modules from the ET 200AL series using the BU-Send BaseUnit and the BA-Send BusAdapter
- Max. 244 bytes in each case for input and output data per module and per station
- Data update time: typ. 5 ms
- PROFIBUS connection via 9-pin D-sub socket
- Package includes server module and PROFIBUS connector with PG socket

SIMATIC IM 155-6 PN Basic with PROFINET connection

- Max. 12 I/O modules, no PROFIsafe modules, with complete diagnostic support
- Max. 32 bytes in each case for input and output data per module and per station
- Data update time: typ. 1 ms
- PROFINET connection via 2 integrated RJ45 sockets (integrated 2-port switch)
- Package includes server module

SIMATIC IM 155-6 PN Standard with a PROFINET interface for SIMATIC BusAdapters

- Two types of delivery:
 - As package with IM155-6PN ST, with pre-assembled BA 2xRJ45 BusAdapter, including server module
 - As package with IM155-6PN ST, without BusAdapter, including server module
- Max. 32 I/O modules, also PROFIsafe modules, with complete diagnostic support
- Expansion option with max. 16 modules from the ET 200AL series using the BU-Send BaseUnit and the BA-Send BusAdapter
- Max. 288 bytes in each case for input and output data per module and max. 1440 bytes per station (depending on configuration)
- Data update time: typ. 1 ms
- Selection of the type of connection of the PROFINET by means of SIMATIC BusAdapter (BusAdapter for copper cables only)

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Interface modules > IM 155-6

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SIMATIC IM 155-6 PN/2 High Feature, 2-port IM with one slot for SIMATIC BusAdapters

- Max. 64 I/O modules, also PROFI-safe modules, with complete diagnostic support
- Expansion option with max. 16 modules from the ET 200AL series using the BU-Send BaseUnit and the BA-Send BusAdapter
- Max. 288 bytes in each case for input and output data per module and max. 1440 bytes per station (depending on configuration)
- Fast data refresh time from 250 µs, also in isochronous mode
- S2 system redundancy
- Choice of connection type and physical connection of the PROFINET by means of SIMATIC BusAdapter. All BusAdapters with a connection for copper and/or fiber-optic cables can be used; BusAdapter must be ordered separately
- Package includes server module

SIMATIC IM 155-6 MF High Feature, MultiFieldbus IM with two slots for SIMATIC BusAdapters

Differences from the 2-port IM 155-6 PN/2 High Feature:

- Multi-protocol capability
Operation on Ethernet controllers via the PROFINET, EtherNet/IP and Modbus protocols
- Compatible with IM 155-6 MF High Feature (as of 6ES7155-6AU01-0CN0);
Exception: Isochronous mode and prioritized startup
- Shared device:
Simultaneous access from different controllers via different Ethernet protocols PROFINET, EtherNet/IP and Modbus TCP
- Local data links:
Deterministic, easy-to-configure data exchange between controllers, also via different Ethernet protocols PROFINET, EtherNet/IP and Modbus TCP

SIMATIC IM 155-6 PN/3 High Feature, 3-port IM with two slots for SIMATIC BusAdapters

Additional functions compared with 2-port IM 155-6 PN/2 High Feature:

- Second slot for SIMATIC BusAdapter, max. 3 ports can be used
- Local IO data coupling between up to 4 controllers

SIMATIC IM 155-6 PN High Speed with a PROFINET interface for SIMATIC BusAdapters

- Max. 30 I/O modules, also PROFI-safe modules, with complete diagnostic support
- Max. 32 bytes in each case for input and output data per module and max. 968 bytes per station (depending on configuration)
- Fast data refresh time from isochronous mode from 125 µs
- Performance upgrade for PROFINET
- Choice of connection type and physical connection of the PROFINET by means of SIMATIC BusAdapter. All BusAdapters with a connection for copper and/or fiber-optic cables can be used; BusAdapter must be ordered separately
- Package includes server module

SIMATIC IM 155-6 PN R1 redundant interface module



SIMATIC ET 200SP R1 with two IM 155-6 PN R1, BaseUnit M0, BusAdapter, and system rail

- Can be used for high availability applications in combination with SIMATIC S7-1500H and TIA Portal
- Redundancy via two identical ET 200SP interface modules, which are selected as required
- Interface module switchover possible during operation
- SIMATIC system rail absolutely necessary

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Interface modules > IM 155-6

Ordering data	Article No.		Article No.
MultiFieldbus IM 155-6 MF High Feature interface module With server module, without SIMATIC BusAdapter; PROFINET, EtherNet/IP and Modbus TCP; isochronous mode; PROFINET Security Class 1	6ES7155-6MU01-0CN0	SIMATIC BA SCRJ/RJ45 BusAdapter For PROFINET interface modules from High Feature function class or above; with media converter FOC-Cu; for increased vibration and EMC loads; max. cable length 50 m (POF, copper) or 100 m (PCF)	6ES7193-6AP20-0AA0
PROFINET IM 155-6 PN Basic interface module With server module; two integrated RJ45 sockets	6ES7155-6AR01-0AN0	SIMATIC BA SCRJ/FC BusAdapter For PROFINET interface modules from High Feature function class or above; with media converter FOC-Cu; for increased vibration and EMC loads; max. cable length 50 m (POF, copper) or 100 m (PCF)	6ES7193-6AP40-0AA0
PROFINET IM 155-6 PN Standard interface module With server module - With mounted SIMATIC BA 2xRJ45 BusAdapter - Without SIMATIC BusAdapter	6ES7155-6AA02-0BN0 6ES7155-6AU02-0BN0		
PROFINET IM 155-6 PN/2 High Feature interface module 2-port IM, with server module, without SIMATIC BusAdapter	6ES7155-6AU01-0CN0	SIMATIC BA 2XLC BusAdapter For PROFINET interface modules from High Feature function class or above; with LC fiber-optic connection; for increased vibration and EMC load capacity; max. cable length 2 km	6ES7193-6AG00-0AA0
PROFINET IM 155-6 PN/3 High Feature interface module 3-port IM, with server module, without SIMATIC BusAdapter	6ES7155-6AU30-0CN0	SIMATIC BA LC/RJ45 BusAdapter For PROFINET interface modules from High Feature function class or above; with media converter FOC-Cu; for increased vibration and EMC loads; max. cable length 2 km (glass) or 50 m (copper)	6ES7193-6AG20-0AA0
PROFINET IM 155-6 PN High Speed interface module With server module, without SIMATIC BusAdapter	6ES7155-6AU00-0DN0	SIMATIC BA LC/FC BusAdapter For PROFINET interface modules from High Feature function class or above; with media converter FOC-Cu; for increased vibration and EMC loads; max. cable length 2 km (glass) or 50 m (copper)	6ES7193-6AG40-0AA0
PROFIBUS IM 155-6 DP High Feature interface module With server module, with PROFIBUS plug with PG socket	6ES7155-6BA01-0CN0	SIMATIC BA 2xLC-LD BusAdapter For IM 155-6 PN HF, IM 155-6 PN R1; 2 x LC-LD connections	6ES7193-6AG50-0AA0
Redundant PROFINET IM 155-6 PN R1 interface module 2-port IM, with server module, without SIMATIC BusAdapter, R1 redundancy	6ES7155-6AU00-0HM0	SIMATIC BA LC-LD/RJ45 BusAdapter For IM 155-6 PN HF, IM 155-6 PN R1; with media converter glass FOC - copper; 1 x LC-LD connection, 1 x RJ45 connection	6ES7193-6AG60-0AA0
Accessories		SIMATIC BA LC-LD/M12 BusAdapter For IM 155-6 PN HF, IM 155-6 PN R1; with media converter glass FOC - copper; 1 x LC-LD connection, 1 x M12 connection	6ES7193-6AG70-0AA0
Strain relief for the PROFINET cable System-integrated strain relief for High Feature PN interface modules (5 units)	6ES7193-6RA00-1AN0	Station expansion with IP67 I/O system ET 200AL	
SIMATIC BA 2xRJ45 BusAdapter For PROFINET interface modules, Standard function class or above; max. cable length 50 m	6ES7193-6AR00-0AA0	ET 200SP BA-Send 1 x FC BusAdapter	6ES7193-6AS00-0AA0
SIMATIC BA 2xFC BusAdapter For PROFINET interface modules, Standard function class or above; for increased vibration and EMC loads; max. cable length 50 m	6ES7193-6AF00-0AA0	BaseUnit BU-Send	6ES7193-6BN00-0NE0
BA 2xM12 BusAdapter For IM 155-6PN ST, HF; 2 x M12 push-pull sockets, D-coding, also suitable for standard M12. For PROFINET	6ES7193-6AM00-0AA0		
SIMATIC BA 2xSCRJ BusAdapter For PROFINET interface modules from High Feature function class or above; fiber-optic cable connection for POF or PCF; for increased vibration and EMC load capacity; max. cable length 50 m (POF) or 100 m (PCF)	6ES7193-6AP00-0AA0		

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Interface modules > IM 155-6

Ordering data	Article No.		Article No.
Other accessories		SIMATIC Manual Collection DL in 5 languages	6ES7998-8XE01-8YE0
Unlatching strap 10 units, for push-pull PROFINET plug, e. g. when using the BA 2xM12 BusAdapter	6ES7193-6DL00-2AA0	All manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering SW, Runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT Consignee email address required for delivery.	
BU cover for covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0	SIMATIC Manual Collection DL in 5 languages	6ES7998-8XE01-8YE2
Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer 1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer 1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	6ES7193-6LR10-0AA0 6ES7193-6LR10-0AG0 6ES7193-6LA10-0AA0 6ES7193-6LA10-0AG0	Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	
Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0	Spare parts	
SIMATIC system rail With DIN rail according to EN 60715 (35 × 7.5), with 6 mm profile grooves, B-type • Length: 482.6 mm for 19" cabinets • Length: 530 mm for 600 mm cabinets • Length: 830 mm for 900 mm cabinets • Length 2 m	6ES7193-6MR00-0AA0 6ES7193-6MR00-0BA0 6ES7193-6MR00-0CA0 6ES7193-6MR00-0DA0	Server module Terminates an ET 200SP station; included in the scope of supply of the interface modules, CPUs and Open Controllers	6ES7193-6PA00-0AA0
DIN rail 35 mm • Length: 483 mm for 19" cabinets • Length: 530 mm for 600 mm cabinets • Length: 830 mm for 900 mm cabinets • Length 2 m	6ES5710-8MA11 6ES5710-8MA21 6ES5710-8MA31 6ES5710-8MA41	Power supply connector for ET 200SP head-end stations (interface module, CPU and Open Controller) For connecting the 24 V DC supply voltage, push-in variant; included in scope of supply of the head-end station With push-in terminals (10 units)	6ES7193-4JB00-0AA0
Manuals for ET 200SP distributed I/O system SIMATIC ET 200SP Manual Collection: PDF file with the following content: • Basic information System manual, product information, overview tables, correction information or manual supplements • Device-specific information Device manuals for the interface modules, PLC, OC and I/O modules, including fail-safe and motor starters • Comprehensive information Function manuals The ET 200SP Manual Collection can be downloaded from the Internet as a PDF file under https://support.industry.siemens.com/cs/ww/en/view/84133942 .			

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Interface modules > IM 155-6

Technical specifications

Article number	6ES7155-6AR01-0AN0 ET 200SP, IM 155-6 PN Basic	6ES7155-6AA02-0BN0 ET 200SP, IM 155-6 PN ST incl. BA 2xRJ45	6ES7155-6AU02-0BN0 ET 200SP, IM 155-6 PN ST	6ES7155-6MU01-0CN0 ET 200SP, IM 155-6 MF HF
General information				
Product type designation	IM 155-6 PN BA	IM 155-6 PN ST incl. BA 2x RJ45 and server module	IM 155-6 PN ST	IM 155-6 MF HF
Product function				
• I&M data	Yes; I&M0 to I&M4	Yes; I&M0 to I&M4	Yes; I&M0 to I&M4	Yes; I&M0 to I&M4
• Module swapping during operation (hot swapping)	Yes; Multi-hot swapping	Yes; Multi-hot swapping	Yes; Multi-hot swapping	Yes; Multi-hot swapping
• Isochronous mode	No	No	No	Yes
• IRT	No	Yes		Yes
• Tool changer				Yes; Docking station and docking unit
• Local coupling, IO data - Number of coupling modules		6; 1x output + max. 5x input	6; 1x output + max. 5x input	6; 1x output + max. 5x input
Engineering with				
• STEP 7 TIA Portal configurable/integrated from version	V19	V20	V19	V20
• STEP 7 configurable/integrated from version	V5.7 SP3	V5.7 SP3	V5.7 SP3	V5.7 SP3
• PROFINET from GSD version/GSD revision	GSDML V2.43	GSDML V2.45	GSDML V2.43	GSDML V2.45
• Multi Fieldbus Configuration Tool (MFCT)				V1.5.2.0 or higher
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes	Yes
Input current				
Current consumption (rated value)	200 mA	350 mA	350 mA	550 mA
Address area				
Address space per station				
• Address space per station, max.	128 byte	1 440 byte	1 440 byte	1 440 byte
Hardware configuration				
Rack				
• Quantity of operable ET 200SP modules, max.	16	32	32	64
• Quantity of operable ET 200AL modules, max.	0	16	16	16
Submodules				
• Number of submodules per station, max.		256	256	256
Interfaces				
Number of PROFINET interfaces	1; 2 ports (switch)	1; 2 ports (switch)	1; 2 ports (switch)	1; 2 ports (switch)
1. Interface				
Interface types				
• RJ 45 (Ethernet)	Yes; 2 integrated RJ45 ports	Yes; with BusAdapter	Yes; with BusAdapter	Yes; with BusAdapter
• Number of ports	2; integrated RJ45 ports	2; with BusAdapter	2; with BusAdapter	2; with BusAdapter
• integrated switch	Yes	Yes	Yes	Yes
• BusAdapter (PROFINET)	No	Yes; BA 2x RJ45, BA 2x FC, BA 2x M12	Yes; BA 2x RJ45, BA 2x FC, BA 2x M12	Yes; BA 2x RJ45, BA 2x M12, BA 2x FC
Protocols				
• PROFINET IO Device	Yes	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes	Yes
• Media redundancy	Yes; PROFINET MRP client	Yes; PROFINET MRP client	Yes; PROFINET MRP client	Yes; PROFINET MRP client
PROFINET IO Device				
Services				
- IRT	No	Yes; 1 ms to 4 ms at an interval of 125 µs	Yes; 1 ms to 4 ms at an interval of 125 µs	Yes; 250 µs to 4 ms in 125 µs frame
- Dynamic Frame Packing (DFP)		Yes		Yes
- Fast Forwarding		Yes		Yes
- Fragmentation		Yes		Yes
- PROFIenergy	Yes	Yes	Yes	Yes
- Prioritized startup	No	Yes	Yes	Yes
- Shared device	No	Yes	Yes	Yes

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Interface modules > IM 155-6

Technical specifications

Article number	6ES7155-6AR01-0AN0	6ES7155-6AA02-0BN0	6ES7155-6AU02-0BN0	6ES7155-6MU01-0CN0
	ET 200SP, IM 155-6 PN Basic	ET 200SP, IM 155-6 PN ST incl. BA 2xRJ45	ET 200SP, IM 155-6 PN ST	ET 200SP, IM 155-6 MF HF
- Number of IO Controllers with shared device, max.		4	4	14; 2x PN controller + 2x EtherNet/IP scanner + 10x Modbus TCP master
Interface types				
RJ 45 (Ethernet)				
• Transmission procedure	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• 100 Mbps	Yes	Yes	Yes	Yes
• Autonegotiation	Yes	Yes	Yes	Yes
• Autocrossing	Yes	Yes	Yes	Yes
Protocols				
Supports protocol for PROFINET IO	Yes	Yes	Yes	Yes
PROFIsafe	No	Yes	Yes	Yes
PROFIBUS	No	No	No	No
EtherNet/IP	No	No	No	Yes
Modbus TCP	No	No	No	Yes
Number of connections				
• Number of MtM communication relationships/connections, max.				16
Redundancy mode				
• PROFINET system redundancy (S2)	No	No	No	Yes; NAP S2
• H-Sync forwarding				Yes
Media redundancy				
- MRP	Yes	Yes	Yes	Yes
- MRPD	No	Yes	Yes	Yes
EtherNet/IP				
Services				
- CIP Implicit Messaging				Yes
- CIP Explicit Messaging				Yes
- CIP Safety				No
- Configuration control via Explicit Messaging				No
- Shared device				Yes; 2x PN controller + 2x EtherNet/IP scanner + 10x Modbus TCP master
- Number of scanners with shared device, max.				2
Updating times				
- Requested Packet Interval (RPI)				2 ms
Address area				
- Address space per module, max.				288 byte; (246 byte outputs / 288 byte inputs)
- ForwardOpen (Class1 & 32 bit Header)				500 byte; (246 byte outputs / 500 byte inputs)
- LargeForwardOpen (Class3)				4 002 byte
Connections				
- Number of rack connections				2
Modbus TCP				
Services				
- read coils (code=1)				Yes
- read discrete inputs (code=2)				Yes
- Read Holding Registers (Code=3)				Yes
- Read Input Register (Code=4)				Yes
- write single coil (code=5)				Yes
- Write Single Register (Code=6)				Yes
- write multiple coils (code=15)				Yes
- Write Multiple Registers (Code=16)				Yes
- Read/Write Multiple Registers (Code=23)				Yes
- Parameter change by master				Yes
- Modbus TCP Security Protocol				No

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Interface modules > IM 155-6

Technical specifications

Article number	6ES7155-6AR01-0AN0 ET 200SP, IM 155-6 PN Basic	6ES7155-6AA02-0BN0 ET 200SP, IM 155-6 PN ST incl. BA 2xRJ45	6ES7155-6AU02-0BN0 ET 200SP, IM 155-6 PN ST	6ES7155-6MU01-0CN0 ET 200SP, IM 155-6 MF HF
Address space per station				
- Address space per station, max.				500 byte; (246 byte outputs / 500 byte inputs)
- Access-consistent address space				250 byte; (246 byte outputs / 250 byte inputs)
Updating time				
- I/O request interval				2 ms
Connections				
- number of connections per device				9; (1x inputs / 2x outputs / 4x volatile registers / 2x Device Info)
Open IE communication				
• TCP/IP	Yes	Yes	Yes	Yes
• UDP		Yes		Yes
• SNMP	Yes	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes	Yes
• ARP		Yes		Yes
• IGMP		Yes		Yes
• Multicast		Yes		Yes
• Broadcast		Yes		Yes
• IPv4		Yes		Yes
• IPv6		No		No
Isochronous mode				
Equidistance				Yes
shortest clock pulse				250 µs
max. cycle				4 ms
Bus cycle time (TDP), min.				250 µs
Interrupts/diagnostics/status information				
Status indicator	Yes	Yes	Yes	Yes
Alarms	Yes	Yes	Yes	Yes
Diagnostics function	Yes	Yes	Yes	Yes
Diagnostics indication LED				
• RUN LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED
• MAINT LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• NS LED				Yes; green/red LED
• MS LED				Yes; green/red LED
• IO LED				Yes; red-green-yellow LED
• Connection display LINK TX/RX	Yes; 2x green LED	Yes; 2x green link LEDs on BusAdapter	Yes; 2x green link LEDs on BusAdapter	Yes; 2x green link LEDs on BusAdapter
Standards, approvals, certificates				
Network loading class	3	3	3	3
product functions / security / header				
PROFINET Security Class	1	1	1	1
signed firmware update	Yes	Yes	Yes	Yes
Secure Boot	No			No
safely removing data	Yes	Yes	Yes	Yes
data integrity	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Interface modules > IM 155-6

Technical specifications

Article number	6ES7155-6AR01-0AN0 ET 200SP, IM 155-6 PN Basic	6ES7155-6AA02-0BN0 ET 200SP, IM 155-6 PN ST incl. BA 2xRJ45	6ES7155-6AU02-0BN0 ET 200SP, IM 155-6 PN ST	6ES7155-6MU01-0CN0 ET 200SP, IM 155-6 MF HF
Altitude during operation relating to sea level • Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
connection method				
ET-Connection • via BU/BA Send	No	Yes; + 16 ET 200AL modules	Yes; + 16 ET 200AL modules	Yes; + 16 ET 200AL modules
Mechanics/material				
Strain relief	No	Yes; Optional	Yes; Optional	Yes; Optional
Dimensions				
Width	35 mm	50 mm	50 mm	50 mm
Height	117 mm	117 mm	117 mm	117 mm
Depth	74 mm	74 mm	74 mm	74 mm
Weights				
Weight, approx.	125 g	120 g; without BusAdapter	120 g; without BusAdapter	120 g; without BusAdapter
Article number	6ES7155-6AU01-0CN0 ET 200SP, IM155-6PN/2 HF	6ES7155-6AU30-0CN0 ET 200SP, IM155-6PN/3 HF	6ES7155-6AU00-0HM0 ET 200SP, IM 155-6 PN R1	6ES7155-6AU00-0DN0 ET 200SP, IM155-6PN HS
General information				
Product type designation	IM 155-6 PN/2 HF	IM 155-6 PN/3 HF	IM 155-6 PN R1	IM 155-6 PN HS
Product function • I&M data • Module swapping during operation (hot swapping) • Isochronous mode • IRT • Tool changer • Local coupling, IO data - Number of coupling modules - Number of coupling submodules per module	Yes; I&M0 to I&M3 Yes; Multi-hot swapping Yes Yes; Docking station and docking unit Yes - Number of coupling modules - Number of coupling submodules per module	Yes; I&M0 to I&M3 Yes; Multi-hot swapping Yes Yes; Docking station and docking unit Yes 16 4	Yes; I&M0 to I&M4 Yes; Multi-hot swapping No No	Yes; I&M0 to I&M3 Yes; Multi-hot swapping Yes Yes
Engineering with • STEP 7 TIA Portal configurable/integrated from version • STEP 7 configurable/integrated from version • PROFINET from GSD version/GSD revision	V15.1 use GSD file GSDML V2.34	V15.1 use GSD file GSDML V2.34	V19 use GSD file GSDML V2.45	V14 V5.5 SP4 GSDML V2.32
CiR - Configuration in RUN Reparameterization possible in RUN reconfiguration possible in RUN			Yes Yes	
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes	Yes
Input current Current consumption (rated value)		175 mA; At 24 V, 2 slots 2x RJ45 BusAdapter, no I/O modules		
Address area				
Address space per station • Address space per station, max.	1 440 byte	1 440 byte	1 440 byte	968 byte
Hardware configuration				
Rack • Quantity of operable ET 200SP modules, max. • Quantity of operable ET 200AL modules, max.	64 16	64 16	64 0	30 0
Submodules • Number of submodules per station, max.	256	256	256	125

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Interface modules > IM 155-6

Technical specifications

Article number	6ES7155-6AU01-0CNO ET 200SP, IM155-6PN/2 HF	6ES7155-6AU30-0CNO ET 200SP, IM155-6PN/3 HF	6ES7155-6AU00-0HMO ET 200SP, IM 155-6 PN R1	6ES7155-6AU00-0DNO ET 200SP, IM155-6PN HS
Interfaces				
Number of PROFINET interfaces	1; 2 ports (switch)	1; 3 ports (switch)	1; 2 ports (switch)	1; 2 ports (switch)
1. Interface				
Interface types				
- RJ 45 (Ethernet) - Number of ports - integrated switch - BusAdapter (PROFINET)	Yes; with BusAdapter 2; with BusAdapter Yes Yes; BA 2x RJ45, BA 2x FC, BA 2x SCRJ, BA SCRJ/RJ45, BA SCRJ/FC, BA 2x LC, BA LC/RJ45, BA LC/FC	Yes; with BusAdapter 3; with 2 compatible BusAdapters: Yes Yes; BA 2x RJ45, BA 2x FC, BA 2x SCRJ, BA SCRJ/RJ45, BA SCRJ/FC, BA 2x LC, BA LC/RJ45, BA LC/FC	Yes; with BusAdapter 2; with BusAdapter Yes Yes; BA 2x RJ45, BA 2x M12, BA 2x FC, BA 2x SCRJ, BA SCRJ/RJ45, BA SCRJ/FC, BA 2x LC, BA LC/RJ45, BA LC/FC, BA 2x LC-LD, BA LC-LD/RJ45, BA LC-LD/M12	Yes; with BusAdapter 2; with BusAdapter Yes Yes; BA 2x RJ45, BA 2x FC, BA 2x SCRJ, BA SCRJ/RJ45, BA SCRJ/FC, BA 2x LC, BA LC/RJ45, BA LC/FC
Protocols				
- PROFINET IO Device - Open IE communication - Media redundancy	Yes Yes Yes; PROFINET MRP client	Yes Yes Yes; PROFINET MRP client	Yes Yes Yes; PROFINET MRP client	Yes Yes Yes; PROFINET MRP client / HRP client
PROFINET IO Device Services				
- IRT - PROFinergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, max.	Yes; 250 µs to 4 ms in 125 µs frame Yes Yes Yes 4	Yes; 250 µs to 4 ms in 125 µs frame Yes Yes Yes 4	No No No No	Yes; 125 µs to 4 ms in 125 µs frame Yes Yes Yes 4
Interface types				
RJ 45 (Ethernet)				
- Transmission procedure 100 Mbps - Autonegotiation - Autocrossing	PROFINET with 100 Mbit/s full duplex (100BASE-TX) Yes Yes Yes	PROFINET with 100 Mbit/s full duplex (100BASE-TX) Yes Yes Yes	PROFINET with 100 Mbit/s full duplex (100BASE-TX) Yes Yes Yes	PROFINET with 100 Mbit/s full duplex (100BASE-TX) Yes Yes Yes
Protocols				
Supports protocol for PROFINET IO PROFI-safe PROFIBUS EtherNet/IP Modbus TCP	Yes Yes No No No	Yes Yes No No No	Yes Yes No No No	Yes Yes No No No
Number of connections				
Number of MtM communication relationships/connections, max.	16	16		
Redundancy mode				
- PROFINET system redundancy (S2) - PROFINET system redundancy (R1) - H-Sync forwarding	Yes; NAP S2 Yes	Yes; NAP S2 Yes	No Yes Yes	No Yes Yes
Media redundancy				
- MRP - MRPD	Yes No	Yes No	Yes No	Yes Yes
Open IE communication				
- TCP/IP - SNMP - LLDP	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes
Isochronous mode				
Equidistance shortest clock pulse max. cycle Bus cycle time (TDP), min.	Yes 250 µs 4 ms 250 µs	Yes 250 µs 4 ms 250 µs		Yes 125 µs 4 ms 125 µs

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Interface modules > IM 155-6

Technical specifications

Article number	6ES7155-6AU01-0CN0 ET 200SP, IM155-6PN/2 HF	6ES7155-6AU30-0CN0 ET 200SP, IM155-6PN/3 HF	6ES7155-6AU00-0HM0 ET 200SP, IM 155-6 PN R1	6ES7155-6AU00-0DN0 ET 200SP, IM155-6PN HS
Interrupts/diagnostics/status information				
Status indicator	Yes	Yes	Yes	Yes
Alarms	Yes	Yes	Yes	Yes
Diagnostics function	Yes	Yes	Yes	Yes
Diagnostics indication LED				
• RUN LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED
• MAINT LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED
• ACT LED			Yes; green LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Connection display LINK TX/RX	Yes; 2x green link LEDs on BusAdapter	Yes; 2x green link LEDs on BusAdapter	Yes; 2x green link LEDs on BusAdapter	Yes; 2x green link LEDs on BusAdapter
Standards, approvals, certificates				
Network loading class	3	3		3
product functions / security / header				
signed firmware update			Yes	
Secure Boot			No	
safely removing data			No	
data integrity			Yes	
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation	-25 °C; No condensation
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation	-25 °C; No condensation
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	2 000 m	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
connection method				
ET-Connection				
• via BU/BA Send	Yes; + 16 ET 200AL modules	Yes; + 16 ET 200AL modules	No	No
Mechanics/material				
Strain relief	Yes; Optional	Yes; Optional		
Dimensions				
Width	50 mm	100 mm	50 mm	50 mm
Height	117 mm	117 mm	138 mm	117 mm
Depth	74 mm	74 mm	89 mm	74 mm
Weights				
Weight, approx.	120 g; without BusAdapter	220 g; without BusAdapter	192 g; without BusAdapter	147 g; without BusAdapter

Article number	6ES7155-6BA01-0CN0 ET 200SP, IM155-6DP HF incl. DP-Connect.
General information	
Product type designation	IM 155-6 DP HF
Product function	
• I&M data	Yes; I&M0 to I&M3
• Module swapping during operation (hot swapping)	Yes; Multi-hot swapping
• Isochronous mode	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V15 SP1
• STEP 7 configurable/integrated from version	As of V5.5 SP4, only up to FW V3.1
• PROFIBUS from GSD version/GSD revision	One GSD file each, Revision 3 and 5 and higher

Article number	6ES7155-6BA01-0CN0 ET 200SP, IM155-6DP HF incl. DP-Connect.
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Short-circuit protection	Yes
Address area	
Address space per station	
• Address space per station, max.	244 byte
Hardware configuration	
Rack	
• Quantity of operable ET 200SP modules, max.	32
• Quantity of operable ET 200AL modules, max.	16

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Interface modules > IM 155-6

Technical specifications

Article number	6ES7155-6BA01-0CN0 ET 200SP, IM155-6DP HF incl. DP-Connect.
Interfaces	
Number of PROFIBUS interfaces	1
1. Interface	
Interface types	
• RS 485	Yes
• Output current of the interface, max.	90 mA
Protocols	
• PROFIBUS DP device	Yes
Interface types	
RS 485	
• Transmission rate, max.	12 Mbit/s
Protocols	
Supports protocol for PROFINET IO	No
PROFIsafe	Yes
PROFIBUS	Yes
EtherNet/IP	No
Modbus TCP	No
Open IE communication	
• TCP/IP	No
PROFIBUS DP	
Services	
- SYNC capability	Yes
- FREEZE capability	Yes
- DPV0	Yes
- DPV1	Yes

Article number	6ES7155-6BA01-0CN0 ET 200SP, IM155-6DP HF incl. DP-Connect.
Interrupts/diagnostics/status information	
Status indicator	Yes
Alarms	Yes
Diagnostics function	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• MAINT LED	Yes; Yellow LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Connection display DP	Yes; green DP LED
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C; No condensation
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C; No condensation
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
connection method	
ET-Connection	
• via BU/BA Send	Yes; + 16 ET 200AL modules
Dimensions	
Width	50 mm
Height	117 mm
Depth	74 mm
Weights	
Weight, approx.	150 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Interface modules > SIPLUS interface modules

Overview



Thanks to their wide scope of functions, the interface modules of the scalable SIMATIC ET 200SP I/O system, even in their basic versions, cover a wide range of applications. The basic functions of the interface modules include:

- Short data update times of typically 1 ms
- Single Hot Swap (withdrawing and insertion of an I/O module during operation without impairing the communication with the remaining modules)
- Operation with gaps (empty BaseUnits)
- Complete diagnostic support, extending to channel-by-channel diagnostics
- Configuration control / option handling (adaptation of the actual configuration via user program)
- Device replacement without programming device, with automatic re-initialization, with and without topological configuring
- I&M data 0 to 3 (electronic rating plate with non-volatile storage of plant data)
- Firmware update
- Pluggable 24 V DC supply connection
- Mains/voltage failure buffering time of at least 5 ms or 10 ms
- Labeling option via optional labeling strips and equipment labeling plates

When using PROFINET interface modules, the following basic functions are also included:

- Media redundancy (MRP)
- Integrated 2-port switch
- Freely selectable connection system (Standard function class and above) and physical connection (High Feature function class and above) by means of SIMATIC BusAdapters, also as system-integrated media converter from fiber-optic to copper cable. Can also be used for interface modules with MultiFieldbus interface.
- Reset button for simple return to factory settings without the need for programming device
- Automatic synchronization of the backplane bus to the PROFINET cycle to minimize the response time fluctuations (jitter)

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS PROFINET IM 155-6 PN Standard interface module

(Extended temperature range and exposure to environmental substances)

IM 155-6 PN ST, max. 32 I/O modules, 16 ET 200AL modules, multi hot swap

6AG1155-6AA02-7BN0

IM 155-6PN ST, including server module, without BusAdapter, plus extended mains buffering time

6AG1155-6AU02-7BN0

SIPLUS High Feature interface module

(Extended temperature range and exposure to environmental substances)

IM 155-6 DP HF, with server module, with multi-hot swap, including PROFIBUS connector

6AG1155-6BA01-7CN0

IM 155-6 PN HF, incl. server module, without BusAdapter

6AG1155-6AU01-2CN0

IM155-6 MF HF, max. 64 I/O modules and 16 ET 200AL modules, multi hot swap

6AG1155-6MU01-2CN0

IM155-6 MF HF, max. 64 I/O modules and 16 ET 200AL modules, multi hot swap

6AG1155-6MU01-7CN0

Redundant SIPLUS PROFINET IM 155-6 PN R1 interface module

2-port interface module, with server module, without SIMATIC BusAdapter, R1 redundancy

6AG1155-6AU00-7HM0

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See SIMATIC ET 200SP, IM 155-6 interface module, page 10/11

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

Interface modules > SIPLUS interface modules

Technical specifications

Article number	6AG1155-6AA02-7BN0	6AG1155-6AU00-7HMO	6AG1155-6AU01-2CN0	6AG1155-6BA01-7CN0
Based on	6ES7155-6AA02-0BN0	6ES7155-6AU00-0HMO	6ES7155-6AU01-0CN0	6ES7155-6BA01-0CN0
	SIPLUS ET 200SP IM155-6PN ST / BA	SIPLUS ET 200SP IM155-6PN R1	SIPLUS ET 200SP IM155-6PN HF	SIPLUS ET 200SP IM155-6DP HF
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (OT4, ST1/ST2 acc. to EN 50155)	70 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude		Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)		Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/ 6AG1193-6AB00-0AA0)		Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Interface modules > SIPLUS interface modules

Technical specifications

Article number	6AG1155-6AA02-7BN0	6AG1155-6AU00-7HMO	6AG1155-6AU01-2CN0	6AG1155-6BA01-7CN0
Based on	6ES7155-6AA02-0BN0 SIPLUS ET 200SP IM155-6PN ST / BA	6ES7155-6AU00-0HMO SIPLUS ET 200SP IM155-6PN R1	6ES7155-6AU01-0CN0 SIPLUS ET 200SP IM155-6PN HF	6ES7155-6BA01-0CN0 SIPLUS ET 200SP IM155-6DP HF
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A
Article number	6AG1155-6MU01-2CN0	6AG1155-6AU02-7BN0	6AG1155-6MU01-7CN0	
Based on	6ES7155-6MU01-0CN0 SIPLUS ET 200SP IM155-6 MF HF	6ES7155-6AU02-0BN0 SIPLUS ET 200SP IM155-6PN ST	6ES7155-6MU01-0CN0 SIPLUS ET 200SP IM155-6 MF HF	
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax -40 °C; = Tmin 50 °C; = Tmax	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax -40 °C; = Tmin 50 °C; = Tmax	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax -40 °C; = Tmin 50 °C; = Tmax	
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3 - Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)	

I/O systemsSIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP**Interface modules > SIPLUS interface modules****Technical specifications**

Article number	6AG1155-6MU01-2CN0	6AG1155-6AU02-7BN0	6AG1155-6MU01-7CN0
Based on	6ES7155-6MU01-0CN0	6ES7155-6AU02-0BN0	6ES7155-6MU01-0CN0
	SIPLUS ET 200SP IM155-6 MF HF	SIPLUS ET 200SP IM155-6PN ST	SIPLUS ET 200SP IM155-6 MF HF
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/ 6AG1193-6AB00-0AA0)	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/ 6AG1193-6AB00-0AA0)	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/ 6AG1193-6AB00-0AA0)
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Digital input modules

Overview



- 4, 8 and 16-channel digital input (DI) modules
- Apart from the standard type of delivery in single-unit packaging, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.

For different requirements, the digital input modules offer:

- Function classes Basic, Standard, High Feature and High Speed as well as fail-safe DI (see "Fail-safe I/O modules")
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Potential distributor modules for system-integrated expansion with additional potential terminals
- Individual system-integrated potential group formation with self-assembling voltage busbars (a separate power module is no longer required for ET 200SP)

- Option of connecting sensors compliant with IEC 61131 type 1, 2 or 3 (module-dependent) for rated voltages of up to 24 V DC or 230 V AC
- PNP (sinking input) and NPN (sourcing input) versions
- Clear labeling on front of module
- LEDs for diagnostics, status, supply voltage and faults (e.g. wire break/short-circuit)
- Electronically readable and non-volatile writable nameplate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - MSI operating mode (simultaneous reading of input data from as many as three other controllers)
 - Counting operating mode (multi-channel counter for pulse generators with 32-bit counting width and up to 10 kHz counting frequency)
 - Oversampling operating mode (n-fold equidistant acquisition of digital values within one PN cycle for increasing the time resolution for slow CPU cycles)
 - Parameterizable input delay time
 - Isochronous mode (simultaneous equidistant reading of all input channels)
 - Hardware interrupts
 - Pulse stretching
 - Re-parameterization during operation
 - Firmware update
 - Diagnosis of wire break and short-circuit (on channel or module basis)
 - Value status (optional binary validity information of the input signal in the process image)
 - Supports the PROFlenergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shield terminal

A quick and clear comparison of the functions of the different DI modules is offered by the TIA Selection Tool.

Overview of digital input modules

Digital input	Pkg. unit	Article No.	CC code	BU type
DI 16 x 24 V DC ST	1	6ES7131-6BH01-0BA0	CC00	A0
DI 16 x 24 V DC ST	10	6ES7131-6BH01-2BA0	CC00	A0
DI 8 x 24 V DC BA	1	6ES7131-6BF01-0AA0	CC01	A0
DI 8 x 24 V DC BA	10	6ES7131-6BF01-2AA0	CC01	A0
DI 8 x 24 V DC SRC BA	1	6ES7131-6BF61-0AA0	CC02	A0
DI 8 x 24 V DC ST	1	6ES7131-6BF01-0BA0	CC01	A0
DI 8 x 24 V DC ST	10	6ES7131-6BF01-2BA0	CC01	A0
DI 8 x 24 V DC HF	1	6ES7131-6BF00-0CA0	CC01	A0
DI 8 x 24 V DC HF	10	6ES7131-6BF00-2CA0	CC01	A0
DI 8 x NAMUR HF	1	6ES7131-6TF00-0CA0	CC01	A0
DI 8 x 24 V DC HS With three operating modes: • High-speed isochronous DI • 4 pulse counters, 32-bit, 10 kHz • Oversampling	1	6ES7131-6BF00-0DA0	CC01	A0
DI 4 x 120 ... 230 V AC ST	1	6ES7131-6FD01-0BB1	CC41	B1
DI 8 x 24 V AC ... 48 V UC	1	6ES7131-6CF00-0AU0	CC20	U0

I/O systems

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I/O modules > Digital input modules

Overview

Overview of BaseUnits

BaseUnit	Pkg. unit	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC00 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC00 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC00 to CC05	--
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC00 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC00 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2BA0	CC00 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC00 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC00 to CC05	--
BU type B1 • Forwarding of the potential group (dark) • 12 process terminals • 2 x 2 (1L, 2L, 1N, 2N) direct infeed module • Without AUX terminals	1	6ES7193-6BP20-0BB1	CC41	--
BU type B1 • Forwarding of the potential group (dark) • 12 process terminals • 2 x 2 (1L, 2L, 1N, 2N) direct infeed module • Without AUX terminals	10	6ES7193-6BP20-2BB1	CC41	--
BU type U0 • New potential group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DU0	CC00	--
BU type U0 • New potential group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DU0	CC00	--
BU type U0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BU0	CC00	--
BU type U0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BU0	CC00	--

I/O systems

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I/O modules > Digital input modules

Overview

Overview of potential distributor modules

Potential distributor module	Pkg. unit	Article No.	CC codes for process terminals
PotDis BU Type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP1	CC00, CC62
PotDis BU Type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP1	CC00, CC62
PotDis BU Type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP2	CC00, CC63
PotDis BU Type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP2	CC00, CC63
PotDis TB Type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A)	1	6ES7193-6TP00-0TP0	CC10 to CC13
PotDis TB Type P1-R, 18x P1 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP1	CC10, CC12
PotDis TB Type P2-B, 18x P2 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP2	CC10, CC13
PotDis TB Type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	1	6ES7193-6TP00-0TN0	CC10

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Ordering data

Digital input modules

Types of delivery:
Apart from the standard type of delivery in single-unit package, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.
The number of modules required is the number of modules ordered. The pack type is selected by selecting the Article No. Packs of 10 can therefore only be ordered in integer multiples of 10.

Digital input module
DI 8x24VDC Basic, BU type A0, color code CC01

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10

Digital input module
DI 8x24VDC Source Input, Basic, BU type A0, color code CC02; Pkg. unit: 1 unit

Article No.

6ES7131-6BF01-0AA0
6ES7131-6BF01-2AA0

6ES7131-6BF61-0AA0

Digital input module
DI 8x24VDC Standard, BU type A0, color code CC01

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10

Digital input module
DI 16 x 24 V DC Standard, BU type A0, color code CC00

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10

Digital input module DI 8x24VDC High Feature, BU type A0, color code CC01, channel-specific diagnostics, isochronous mode, shared input (MSI); Pkg. unit: 1 unit

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10

Article No.

6ES7131-6BF01-0BA0
6ES7131-6BF01-2BA0

6ES7131-6BH01-0BA0
6ES7131-6BH01-2BA0

6ES7131-6BF00-0CA0
6ES7131-6BF00-2CA0

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I/O modules > Digital input modules

Ordering data	Article No.		Article No.
Digital input module DI 8x24VDC High Speed, BU type A0, color code CC01; 3 operating modes (fast isochronous DI, 4 pulse counters 32-bit 10 kHz, oversampling); Pkg. unit: 1 unit	6ES7131-6BF00-0DA0		
Digital input module DI 8xNAMUR High Feature, BU type A0, color code CC01; Pkg. unit: 1 unit	6ES7131-6TF00-0CA0		
Digital input module DI 4x120VAC-230VAC Standard, BU type B1, color code CC41; Pkg. unit: 1 unit	6ES7131-6FD01-0BB1		
Digital input module DI 8x24VAC-48VUC Basic, BU type U0, color code CC20, module diagnostics, Pkg. unit: 1 unit	6ES7131-6CF00-0AU0		
Suitable BaseUnits			
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1... 16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10		BU20-P12+A0+4B BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the potential group; 1 unit • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10	6ES7193-6BP20-0BB1 6ES7193-6BP20-2BB1
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	BU20-P16+A0+2D BU type U0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10	6ES7193-6BP00-0DU0 6ES7193-6BP00-2DU0
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0	BU20-P16+A0+2B BU type U0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10	6ES7193-6BP00-0BU0 6ES7193-6BP00-2BU0
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1... 16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0	Potential distributor modules	
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0	PotDis BU PotDis BU, type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A) PotDis BU, type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group PotDis BU, type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A) PotDis BU, type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	6ES7193-6UP00-0DP1 6ES7193-6UP00-0BP1 6ES7193-6UP00-0DP2 6ES7193-6UP00-0BP2
		PotDis TB PotDis TB, type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A) PotDis TB, type P1-R, 18x P1 potential, (total current max. 10 A) PotDis TB, type P2-B, 18x P2 potential, (total current max. 10 A) PotDis TB, type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	6ES7193-6TP00-0TP0 6ES7193-6TP00-0TP1 6ES7193-6TP00-0TP2 6ES7193-6TP00-0TN0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Digital input modules

Ordering data	Article No.	Article No.
Accessories		
Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0	
Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0	
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0	
1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer	6ES7193-6LA10-0AA0	
1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	6ES7193-6LA10-0AG0	
BU cover For covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0	
Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0	
Color-coded labels for 15 mm-wide BaseUnits Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units Color code CC01, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units Color code CC01, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units Color code CC02, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units Color code CC02, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 50 units Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 50 units	6ES7193-6CP00-2MA0 6ES7193-6CP00-4MA0 6ES7193-6CP01-2MA0 6ES7193-6CP01-4MA0 6ES7193-6CP02-2MA0 6ES7193-6CP02-4MA0 6ES7193-6CP71-2AA0 6ES7193-6CP72-2AA0 6ES7193-6CP73-2AA0 6ES7193-6CP73-4AA0	
Color-coded labels for 20 mm-wide BaseUnits Color code CC41, for 16 process terminals, BU type B1, gray (terminals 1 to 4), red (terminals 5 to 8), blue (terminals 9 to 12); 10 units		6ES7193-6CP41-2MB0
Color-coded labels for PotDis BU Color code CC62, for 16 process terminals, PotDis BU type P1, red (terminals 1 to 16); 10 units Color code CC63, for 16 process terminals, PotDis BU type P2, blue (terminals 1 to 16); 10 units		6ES7193-6CP62-2MA0 6ES7193-6CP63-2MA0
Color-coded labels for PotDis TB Color code CC10, for 18 process terminals, PotDis TB, gray (terminals 1 to 18); 10 units Color code CC11, for 18 process terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units Color code CC12, for 18 process terminals, PotDis TB, type P1 and BR, red (terminals 1 to 18); 10 units Color code CC13, for 18 process terminals, PotDis TB, type P2 and BR, blue (terminals 1 to 18); 10 units		6ES7193-6CP10-2MT0 6ES7193-6CP11-2MT0 6ES7193-6CP12-2MT0 6ES7193-6CP13-2MT0
Mechanical coding elements For automatic coding of I/O modules; spare part. 20 units Type A Type B Type C Type D		6ES7193-6KA00-3AA0 6ES7193-6KB00-3AA0 6ES7193-6KC00-3AA0 6ES7193-6KD00-3AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital input modules

Technical specifications

Article number	6ES7131-6BF01-0AA0 ET 200SP, DI 8x 24V DC Basic, PU 1	6ES7131-6BF61-0AA0 ET 200SP, DI 8x 24V DC SRC BA	6ES7131-6BF01-0BA0 ET 200SP, DI 8x 24V DC ST, PU 1	6ES7131-6BH01-0BA0 ET 200SP, DI 16x 24V DC ST, PU 1
General information				
Product type designation	DI 8x24VDC BA	DI 8x24 VDC SRC BA	DI 8x24 VDC ST	DI 16x24VDC ST
Product function				
• Isochronous mode	No	No	No	No
• suitable for operation on PROFINET R1 IMs	Yes	Yes	Yes	Yes
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	V14	V14	V14	V14
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 or higher	V5.5 SP3
• PCS 7 configurable/ integrated from version			V8.1 SP1	V8.1 SP1
• PCS neo can be configured/integrated from version			V3.1	from V1.0.0
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3
Operating mode				
• DI	Yes	Yes	Yes	Yes
• Counter	No	No	No	No
• Oversampling	No	No	No	No
• MSI	No	No	No	No
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes
Encoder supply				
Number of outputs	8		8	
Short-circuit protection	Yes; per module	No	Yes; per module	
24 V encoder supply				
• 24 V	Yes		Yes	No
• Short-circuit protection	Yes		Yes	
• Output current, max.			700 mA	
• Output current per channel, max.	700 mA		700 mA	
• Output current per module, max.	700 mA		700 mA	
Digital inputs				
Number of digital inputs	8	8	8	16
Digital inputs, parameterizable	Yes	Yes	Yes	Yes
Source/sink input	P-reading	Sourcing	P-reading	P-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes		
Input characteristic curve in accordance with IEC 61131, type 2	Yes			
Input characteristic curve in accordance with IEC 61131, type 3	Yes		Yes	Yes
Input voltage				
• Rated value (DC)	24 V	24 V	24 V	24 V
• for signal "0"	-30 to +5 V	30 V to -5 V (reference potential is L+)	-30 to +5 V	-30 to +5 V
• for signal "1"	+11 to +30V	-11 V to -30 V (reference potential is L+)	+11 to +30V	+11 to +30V
Input current				
• for signal "1", typ.	6.8 mA	6 mA	2.5 mA	2.5 mA
Input delay (for rated value of input voltage) for standard inputs				
- parameterizable	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital input modules

Technical specifications

Article number	6ES7131-6BF01-0AA0 ET 200SP, DI 8x 24V DC Basic, PU 1	6ES7131-6BF61-0AA0 ET 200SP, DI 8x 24V DC SRC BA	6ES7131-6BF01-0BA0 ET 200SP, DI 8x 24V DC ST, PU 1	6ES7131-6BH01-0BA0 ET 200SP, DI 16x 24V DC ST, PU 1
Encoder				
Connectable encoders				
• 2-wire sensor	Yes	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA	1.5 mA	1.5 mA	1.5 mA
Interrupts/diagnostics/status information				
Diagnostics function	Yes	Yes	Yes	Yes
Alarms				
• Diagnostic alarm	Yes	Yes	Yes	Yes
Diagnoses				
• Diagnostic information readable	Yes	Yes	Yes	Yes
• Monitoring the supply voltage	Yes	Yes	Yes	Yes
- parameterizable	Yes	Yes	Yes	Yes
• Monitoring of encoder power supply	No	No	Yes; Module-by-module, optional protective circuit for preventing wire-break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm	No
• Wire-break	No	No	Yes; Module-wise	Yes; Module-by-module, optional protective circuit for preventing wire-break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm
• Short-circuit	No	No	Yes; Module-wise	No
• Group error	Yes			Yes
Diagnostics indication LED				
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	No	No	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Standards, approvals, certificates				
Suitable for safety functions	No	No	No	No
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS02
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS02
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions				
Width	15 mm	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm
Weights				
Weight, approx.	28 g	28 g	28 g	28 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital input modules

Technical specifications

Article number	6ES7131-6BF00-0CA0 ET 200SP, DI 8x24VDC HF, PU 1	6ES7131-6BF00-0DA0 ET 200SP, DI 8x24VDC High Speed	6ES7131-6TF00-0CA0 ET 200SP, DI 8xNAMUR HF	6ES7131-6FD01-0BB1 ET 200SP, DI 4x 120...230V AC ST	6ES7131-6CF00-0AU0 ET 200SP, DI 8x 24VAC...48VUC BA, PU 1
General information					
Product type designation	DI 8x24 V DC HF	DI 8x24 V DC HS	DI 8xNAMUR HF	DI 4x120 ... 230 V AC ST	DI 8x24VAC/48VUC BA
Product function					
• Isochronous mode	Yes	Yes	No	No	No
• suitable for operation on PROFINET R1 IMs	Yes	Yes	Yes	Yes	Yes
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 / -	V13 SP1	V19	V14	V15
• STEP 7 configurable/ integrated from version	V5.5 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3	V5.6
• PCS 7 configurable/ integrated from version	V8.1 SP1	V10.0			
• PCS neo can be configured/ integrated from version	from V1.0.0	V3.1.1			
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	GSD Revision 5	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.42	GSDML V2.3	GSDML V2.3
Operating mode					
• DI	Yes	Yes	Yes	Yes	Yes
• Counter	No	Yes	Yes	No	No
• Oversampling	No	Yes	No	No	No
• MSI	Yes	No	No	No	No
Supply voltage					
Rated value (DC)	24 V	24 V	24 V		48 V
Rated value (AC)				230 V	48 V; 24 V/48 V; 50 Hz/60 Hz
Reverse polarity protection	Yes	Yes	Yes	No	Yes
Encoder supply					
Number of outputs	8		8	4	8
Short-circuit protection	Yes		Yes	No; when using BU type B1, a fuse with 10 A tripping current must be provided	Yes; Per module, 5x 20 mm fuse, 2 A/250 V, quick-response, replaceable
Output current					
• up to 60 °C, max.				10 A	1 A
24 V encoder supply					
• 24 V	Yes	Yes	No		No
• Short-circuit protection	Yes; per channel, electronic	Yes; per module, electronic	No		
• Output current, max.		700 mA			
• Output current per channel, max.	700 mA				
• Output current per module, max.	700 mA				
NAMUR encoder supply					
• 8.2 V			Yes		
• Short-circuit protection			Yes		
• Output current per channel, max.			8 mA		
• Output current per module, max.			64 mA		
Digital inputs					
Number of digital inputs	8	8	8; NAMUR	4	8
Digital inputs, parameterizable	Yes		Yes	Yes	
Source/sink input	P-reading	P-reading			P-reading
Input characteristic curve in accordance with IEC 61131, type 1					Yes
Input characteristic curve in accordance with IEC 61131, type 2					No
Input characteristic curve in accordance with IEC 61131, type 3	Yes			Yes	No

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital input modules

Technical specifications

Article number	6ES7131-6BF00-0CA0 ET 200SP, DI 8x24VDC HF, PU 1	6ES7131-6BF00-0DA0 ET 200SP, DI 8x24VDC High Speed	6ES7131-6TF00-0CA0 ET 200SP, DI 8xNAMUR HF	6ES7131-6FD01-0BB1 ET 200SP, DI 4x 120...230V AC ST	6ES7131-6CF00-0AU0 ET 200SP, DI 8x 24VAC...48VUC BA, PU 1
Pulse extension	Yes; Pulse duration from 4 µs	Yes	Yes; 0.5 s, 1 s, 2 s		No
• Length	2 s; 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s	2 s; 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s			
Edge evaluation	Yes; rising edge, falling edge, edge change		Yes; rising edge, falling edge, edge change		
Signal change flutter			Yes; 2 to 32 signal changes		
Flutter observation window			Yes; 0.5 s, 1 s to 100 s in 1-s steps		
Digital input functions, parameterizable					
• Gate start/stop		Yes	Yes		
• Freely usable digital input		Yes	Yes		
• Counter		Yes	Yes		
• Digital input with oversampling		Yes			
Input voltage					
• Rated value (DC)	24 V	24 V	8.2 V		
• Rated value (AC)				230 V	
• for signal "0"	-30 to +5 V	-30 to +5 V		0V AC to 40V AC	AC/DC < 10 V
• for signal "1"	+11 to +30V	+11 to +30V		74 V AC to 264 V AC	AC > 14 V, DC > 34 V
Input current					
• for signal "1", typ.	2.5 mA	6 mA		10.8 mA	3.5 mA
for 10 k switched contact					
- for signal "0", min.			0.35 mA		
- for signal "0", max.			1.2 mA		
- for signal "1", min.			2.1 mA		
- for signal "1", max.			7 mA		
for unswitched contact					
- for signal "0", max. (permissible quiescent current)			0.5 mA		
- for signal "1", typ.			8 mA		
for NAMUR encoders					
- for signal "0", min.			0.35 mA		
- for signal "0", max.			1.2 mA		
- for signal "1", min.			2.1 mA		
- for signal "1", max.			7 mA		
Input delay (for rated value of input voltage)					
• tolerated changeover time for changeover contacts			300 ms		
for standard inputs					
- parameterizable	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms	No	No	No
for interrupt inputs					
- parameterizable		Yes			
for technological functions					
- parameterizable		Yes			
for NAMUR inputs					
- at "0" to "1", max.			20 ms; See manual for details		
- at "1" to "0", max.			20 ms; See manual for details		

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital input modules

Technical specifications

Article number	6ES7131-6BF00-0CA0	6ES7131-6BF00-0DA0	6ES7131-6TF00-0CA0	6ES7131-6FD01-0BB1	6ES7131-6CF00-0AU0
	ET 200SP, DI 8x24VDC HF, PU 1	ET 200SP, DI 8x24VDC High Speed	ET 200SP, DI 8xNAMUR HF	ET 200SP, DI 4x 120...230V AC ST	ET 200SP, DI 8x 24VAC...48VUC BA, PU 1
Encoder					
Connectable encoders					
• NAMUR encoder/changeover contact according to EN 60947			Yes		
• Single contact / changeover contact unconnected			Yes		
• Single contact / changeover contact connected with 10 kΩ			Yes		
• 2-wire sensor	Yes	Yes		Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA			
Isochronous mode					
Filtering and processing time (TCI), min.	420 μs				
Bus cycle time (TDP), min.	500 μs	125 μs			
Interrupts/diagnostics/status information					
Diagnostics function	Yes	Yes	Yes		Yes
Alarms					
• Diagnostic alarm	Yes; channel by channel	Yes	Yes; channel by channel	No	Yes
• Maintenance interrupt				No	
• Hardware interrupt	Yes; Parameterizable, channels 0 to 7	Yes	Yes; Parameterizable, channels 0 to 7	No	
Diagnoses					
• Diagnostic information readable	Yes	Yes	Yes		Yes
• Monitoring the supply voltage	Yes	Yes	Yes	No	Yes
- parameterizable	Yes	Yes	Yes		
• Monitoring of encoder power supply	Yes; channel by channel	Yes; Module-wise	No		Yes
• Wire-break	Yes; Channel by channel, optional protective circuit for preventing wire-break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm	No	Yes; channel by channel	No	
• Short-circuit	Yes; channel by channel	Yes; Module-wise	Yes; channel by channel	No	
• Group error					Yes
Diagnostics indication LED					
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red LED	No	Yes; red LED	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates					
Suitable for safety functions	No	No	No	No	No
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C; < 0 °C as of FS07	-30 °C; < 0 °C as of FS04	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS07	-30 °C; < 0 °C as of FS04	-30 °C	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C	50 °C

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital input modules**Technical specifications**

Article number	6ES7131-6BF00-0CA0 ET 200SP, DI 8x24VDC HF, PU 1	6ES7131-6BF00-0DA0 ET 200SP, DI 8x24VDC High Speed	6ES7131-6TF00-0CA0 ET 200SP, DI 8xNAMUR HF	6ES7131-6FD01-0BB1 ET 200SP, DI 4x 120...230V AC ST	6ES7131-6CF00-0AU0 ET 200SP, DI 8x 24VAC...48VUC BA, PU 1
Altitude during operation relating to sea level • Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	2 000 m; On request: Installation altitudes greater than 2 000 m	2 000 m; On request: Installation altitudes greater than 2 000 m
Dimensions					
Width	15 mm	15 mm	15 mm	20 mm	20 mm
Height	73 mm	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm	58 mm
Weights					
Weight, approx.	28 g	28 g	32 g	36 g	40 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Overview



- 4, 8 and 16-channel digital output (DQ) modules
- Apart from the standard type of delivery in single-unit packaging, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.

For different requirements, the digital output modules offer:

- Function classes Basic, Standard, High Feature and High Speed as well as fail-safe DQ (see "Fail-safe I/O modules")
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Potential distributor modules for system-integrated expansion with potential terminals
- Individual system-integrated potential group formation with self-assembling voltage busbars (a separate power module is no longer required for ET 200SP)
- Option of connecting actuators with rated load voltages of up to 120 V DC or 230 V AC and load currents of up to 5 A (depending on module)

- Relay modules
 - NO contact or changeover contact
 - for load or signal voltages (coupling relay)
 - with manual operation (as simulation module for inputs and outputs, jog mode for commissioning or emergency operation on failure of PLC)
- PNP (sourcing output) and NPN (sinking output) versions
- Clear labeling on front of module
- LED displays for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable nameplate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - MSO operating mode (simultaneous reading of output data from as many as three other PLCs)
 - Pulse width modulation operating mode (output value as pulse-pause ratio of between 0.0% and 100.0% for controlling the output current)
 - Oversampling operating mode (n-fold equidistant output of digital values within a PN cycle for the precise time control of an output or a sequence of output values)
 - Isochronous mode (simultaneous equidistant output of all output channels)
 - Output of substitute value in the event of communication interruptions (0, 1 or last value retained)
 - Re-parameterization during operation
 - Firmware update
 - Valve control (output signal does not switch automatically after a set pickup time to a current-saving PWM output)
 - Diagnostics of wire break and short-circuit (on channel or module basis)
 - Value status (optional binary validity information of the output signal in the process image)
 - Supports the PROFIenergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shield terminal

A quick and clear comparison of the functions of the different DQ modules is offered by the TIA Selection Tool.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules**Overview**

Overview of digital output modules

Digital output	Pkg. unit	Article No.	CC code	BU type
DQ 16 x 24 V DC/0.5 A BA	1	6ES7132-6BH00-0AA0	CC00	A0
DQ 16 x 24 V DC/0.5 A BA	10	6ES7132-6BH00-2AA0	CC00	A0
DQ 16 x 24 V DC/0.5 A ST	1	6ES7132-6BH01-0BA0	CC00	A0
DQ 16 x 24 V DC/0.5 A ST	10	6ES7132-6BH01-2BA0	CC00	A0
DQ 16 x 24 V DC/0.5 A HF	1	6ES7132-6BH00-0CA0	CC00	A0
DQ 8 x 24 V DC/0.5 A SNK BA	1	6ES7132-6BF61-0AA0	CC01	A0
DQ 8 x 24 V DC/0.5 A BA	1	6ES7132-6BF01-0AA0	CC02	A0
DQ 8 x 24 V DC/0.5 A BA	10	6ES7132-6BF01-2AA0	CC02	A0
DQ 8 x 24 V DC/0.5 A ST	1	6ES7132-6BF01-0BA0	CC02	A0
DQ 8 x 24 V DC/0.5 A ST	10	6ES7132-6BF01-2BA0	CC02	A0
DQ 8 x 24 V DC/0.5 A HF	1	6ES7132-6BF00-0CA0	CC02	A0
DQ 8 x 24 V DC/0.5 A HF	10	6ES7132-6BF00-2CA0	CC02	A0
DQ 8 x 24 V DC/0.5 A HF	1	6ES7132-6BF01-0CA0	CC02	A0
DQ 8 x 24 V DC/0.5 A HF	10	6ES7132-6BF01-2CA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	1	6ES7132-6BD20-0BA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	10	6ES7132-6BD20-2BA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	1	6ES7132-6BD21-0BA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	10	6ES7132-6BD21-2BA0	CC02	A0
DQ 4 x 24 V DC/2 A HF	1	6ES7132-6BD20-0CA0	CC02	A0
DQ 4 x 24 V DC/2 A HF	1	6ES7132-6BD21-0CA0	CC02	A0
DQ 4 x 24 V DC/2 A HS With three operating modes: • Fast isochronous DQ with valve control • Pulse width modulation • Oversampling	1	6ES7132-6BD20-0DA0	CC02	A0
DQ 4 x 24 ... 230 V AC/2 A ST	1	6ES7132-6FD00-0BB1	CC41	B0, B1
DQ 4 x 24 ... 230 V AC/2 A ST	10	6ES7132-6FD00-2BB1	CC41	B0, B1
DQ 4 x 24 ... 230 V AC/2 A HF With two operating modes: • DQ • PC: Power control via phase angle, half-wave or full-wave control	1	6ES7132-6FD00-0CU0	CC20	U0
RQ 4 x 24 V UC/2 A CO ST	1	6ES7132-6GD51-0BA0	--	A0
RQ 4 x 120 V DC-230 V AC/5 A NO ST	1	6ES7132-6HD01-0BB1	--	B0, B1
RQ 4 x 120 V DC-230 V AC/5 A NO ST	10	6ES7132-6HD01-2BB1	--	B0, B1
RQ MA 4 x 120 V DC ... 230 V AC/5 A NO ST	1	6ES7132-6MD00-0BB1	--	B0, B1

Overview of BaseUnits

BaseUnit	Pkg. unit	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC01 to CC05	--
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC01 to CC05	--

I/O systems

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I/O modules > Digital output modules**Overview**

BaseUnit	Pkg. unit	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC01 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC01 to CC05	--
BU type B0 • Forwarding of the potential group (dark) • 12 process terminals • With 4 AUX terminals	1	6ES7193-6BP20-0BB0	CC41	CC81 to CC83
BU type B0 • Forwarding of the potential group (dark) • 12 process terminals • With 4 AUX terminals	10	6ES7193-6BP20-0BB0	CC41	CC81 to CC83
BU type B1 • Forwarding of the potential group (dark) • 12 process terminals • 2 x 2 (1L, 2L, 1N, 2N) direct infeed module • Without AUX terminals	1	6ES7193-6BP20-0BB1	CC41	--
BU type B1 • Forwarding of the potential group (dark) • 12 process terminals • 2 x 2 (1L, 2L, 1N, 2N) direct infeed module • Without AUX terminals	10	6ES7193-6BP20-2BB1	CC41	--
BU type U0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BU0	CC20	--
BU type U0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BU0	CC20	--
BU type U0 • New potential group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DU0	CC20	--
BU type U0 • New potential group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DU0	CC20	--

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Overview

Overview of potential distributor modules

Potential distributor module	Pkg. unit	Article No.	CC codes for process terminals
PotDis BU Type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP1	CC00, CC62
PotDis BU Type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP1	CC00, CC62
PotDis BU Type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP2	CC00, CC63
PotDis BU Type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP2	CC00, CC63
PotDis TB Type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A)	1	6ES7193-6TP00-0TP0	CC10 to CC13
PotDis TB Type P1-R, 18x P1 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP1	CC10, CC12
PotDis TB Type P2-B, 18x P2 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP2	CC10, CC13
PotDis TB Type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	1	6ES7193-6TP00-0TN0	CC10

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Ordering data

Digital output modules

Types of delivery:
Apart from the standard type of delivery in single-unit packaging, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.

The number of modules required is the number of modules ordered. The pack type is selected by selecting the Article No. Packs of 10 can therefore only be ordered in integer multiples of 10.

Digital output module
DQ 16x24VDC/0.5A Basic,
BU type A0, color code CC00

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this Article No. with an order quantity of 10.

6ES7132-6BH00-0AA0
6ES7132-6BH00-2AA0

Digital output module
DQ 16x24VDC/0.5A Standard,
sourcing output, BU type A0,
color code CC00

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this Article No. with an order quantity of 10.

6ES7132-6BH01-0BA0
6ES7132-6BH01-2BA0

Digital output module
DQ 16x24VDC/0.5A High Feature,
sourcing output, BU type A0,
color code CC00

- Pack of 1 unit

6ES7132-6BH00-0CA0

Digital output module
DQ 8x24VDC/0.5A Sink output,
Basic, BU type A0, color code CC01

- Pack of 1 unit

6ES7132-6BF61-0AA0

Digital output module
DQ 8x24VDC/0.5A Basic,
BU type A0, color code CC02

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this Article No. with an order quantity of 10.

6ES7132-6BF01-0AA0
6ES7132-6BF01-2AA0

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Ordering data	Article No.	Article No.
Digital output module DQ 8x24VDC/0.5A Standard, BU type A0, color code CC02 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7132-6BF01-0BA0 6ES7132-6BF01-2BA0	
Digital output module DQ 8x24VDC/0.5A High Feature, BU type A0, color code CC02 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7132-6BF00-0CA0 6ES7132-6BF00-2CA0	6ES7132-6FD00-0CU0
Digital output module DQ 8x24VDC/0.5A High Feature, BU type A0, color code CC02 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7132-6BF01-0CA0 6ES7132-6BF01-2CA0	6ES7132-6HD01-0BB1 6ES7132-6HD01-2BB1
Digital output module DQ 4x24VDC/2A Standard, BU type A0, color code CC02 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7132-6BD20-0BA0 6ES7132-6BD20-2BA0	6ES7132-6MD00-0BB1
Digital output module DQ 4x24VDC/2A Standard, BU type A0, color code CC02 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7132-6BD21-0BA0 6ES7132-6BD21-2BA0	6ES7132-6HC50-0BU0
Digital output module DQ 4x24VDC/2A Standard, BU type A0, color code CC02 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		6ES7132-6HC70-0BU0
Digital output module DQ 4x24VDC/2A High Feature, BU type A0, color code CC02, channel-specific diagnostics, isochronous mode, shared output (MSO) • Pack of 1 unit	6ES7132-6BD20-0CA0	
Digital output module DQ 4x24VDC/2A High Feature, BU type A0, color code CC02, channel-specific diagnostics, isochronous mode, shared output (MSO) • Pack of 1 unit	6ES7132-6BD21-0CA0	
Digital output module DQ 4x24VDC/2A High Speed, BU type A0, color code CC02, 3 operating modes (fast isochronous DQ with valve control, pulse width modulation, oversampling) • Pack of 1 unit	6ES7132-6BD20-0DA0	
Digital output module DQ 4x24VAC...230VAC/2A Standard for BU type B1, color code CC41 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7132-6FD00-0BB1 6ES7132-6FD00-2BB1	
Digital output module DQ 4x24VAC...230VAC/2A High Feature for BU type U0, color code CC20, 2 operating modes: DQ and PC (power control via phase angle, half-wave and full-wave control) • Pack of 1 unit		6ES7132-6FD00-0CU0
Signal relay module RQ CO 4x24VUC/2A Standard, changeover contact, BU type A0, color code CC00 • Pack of 1 unit		6ES7132-6GD51-0BA0
Relay module RQ NO 4x120VDC-230VAC/5A Standard, NO contact, BU type B0, B1 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		6ES7132-6HD01-0BB1 6ES7132-6HD01-2BB1
Relay module RQ NO 4x120VDC-230VAC/5A Standard, NO contact, with manual operation, BU type B0, B1 • Pack of 1 unit		6ES7132-6MD00-0BB1
Relay module RQ CO 3x120V DC..230VAC/5A Standard, changeover contact, isolated, BU type U0, color code CC20 • Pack of 1 unit		6ES7132-6HC50-0BU0
Relay module RQ COni 3x120V DC..230VAC/5A Standard, changeover contact, non-isolated, BU type U0, color code CC20 • Pack of 1 unit		6ES7132-6HC70-0BU0
Suitable BaseUnits		
BU15-P16+A10+2D		
BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0
BU15-P16+A0+2D		
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0
BU15-P16+A10+2B		
BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0

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Ordering data	Article No.		Article No.
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0	PotDis TB PotDis TB, type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A) PotDis TB, type P1-R, 18x P1 potential, (total current max. 10 A) PotDis TB, type P2-B, 18x P2 potential, (total current max. 10 A) PotDis TB, type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	6ES7193-6TP00-0TP0 6ES7193-6TP00-0TP1 6ES7193-6TP00-0TP2 6ES7193-6TP00-0TN0
BU20-P12+A4+0B BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally bridged AUX terminals (1 A to 4 A); for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP20-0BB0 6ES7193-6BP20-2BB0	Accessories Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0
BU20-P12+A0+4B BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP20-0BB1 6ES7193-6BP20-2BB1	Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer 1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer 1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	6ES7193-6LR10-0AA0 6ES7193-6LR10-0AG0 6ES7193-6LA10-0AA0 6ES7193-6LA10-0AG0
BU20-P16+A0+2D BU type U0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0DU0 6ES7193-6BP00-2DU0	BU cover For covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0
BU20-P16+A0+2B BU type U0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0BU0 6ES7193-6BP00-2BU0	Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0
Potential distributor modules		Color-coded labels for 15 mm-wide BaseUnits Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units Color code CC01, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units Color code CC01, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units Color code CC02, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units Color code CC02, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 50 units	6ES7193-6CP00-2MA0 6ES7193-6CP00-4MA0 6ES7193-6CP01-2MA0 6ES7193-6CP01-4MA0 6ES7193-6CP02-2MA0 6ES7193-6CP02-4MA0
PotDis BU PotDis BU, type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A) PotDis BU, type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group PotDis BU, type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A) PotDis BU, type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	6ES7193-6UP00-0DP1 6ES7193-6UP00-0BP1 6ES7193-6UP00-0DP2 6ES7193-6UP00-0BP2		

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Ordering data	Article No.		Article No.
Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units	6ES7193-6CP71-2AA0	Color-coded labels for PotDis TB Color code CC10, for 18 process terminals, PotDis TB, gray (terminals 1 to 18); 10 units Color code CC11, for 18 process terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units Color code CC12, for 18 process terminals, PotDis TB, type P1 and BR, red (terminals 1 to 18); 10 units Color code CC13, for 18 process terminals, PotDis TB, type P2 and BR, blue (terminals 1 to 18); 10 units	6ES7193-6CP10-2MT0
Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units	6ES7193-6CP72-2AA0		6ES7193-6CP11-2MT0
Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units	6ES7193-6CP73-2AA0		6ES7193-6CP12-2MT0
Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 50 units	6ES7193-6CP73-4AA0		6ES7193-6CP13-2MT0
Color-coded labels for 20 mm-wide BaseUnits		Mechanical coding elements	
Color code CC41, for 16 process terminals, BU type B1, gray (terminals 1 to 4), red (terminals 5 to 8), blue (terminals 9 to 12); 10 units	6ES7193-6CP41-2MB0	For automatic coding of I/O modules; spare part. 20 units	
Color code CC81, for 4 AUX terminals, BU type B0, yellow/green (terminals 1 A to 4 A); 10 units	6ES7193-6CP81-2AB0	Type A	6ES7193-6KA00-3AA0
Color code CC82, for 4 AUX terminals, BU type B0, red (terminals 1 A to 4 A); 10 units	6ES7193-6CP82-2AB0	Type B	6ES7193-6KB00-3AA0
Color code CC83, for 4 AUX terminals, BU type B0, blue (terminals 1 A to 4 A); 10 units	6ES7193-6CP83-2AB0	Type C	6ES7193-6KC00-3AA0
Color-coded labels for PotDis BU		Type D	6ES7193-6KD00-3AA0
Color code CC62, for 16 process terminals, PotDis BU type P1, red (terminals 1 to 16); 10 units	6ES7193-6CP62-2MA0		
Color code CC63, for 16 process terminals, PotDis BU type P2, blue (terminals 1 to 16); 10 units	6ES7193-6CP63-2MA0		

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Technical specifications

Article number	6ES7132-6BF61-0AA0	6ES7132-6BH00-0AA0	6ES7132-6BH01-0BA0	6ES7132-6BF01-0AA0	6ES7132-6BF01-0BA0	6ES7132-6BH00-0CA0
	ET 200SP, DQ 8x 24VDC/0,5A SINK BA, PU 1	ET 200SP, DQ 16x24VDC/0,5A BA, PU 1	ET 200SP, DQ 16x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 8x 24V DC/0,5A Basic, PU 1	ET 200SP, DQ 8x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 16x24VDC/0,5A HF, PU 1
General information						
Product type designation	DQ 8x24VDC/0,5A SNK BA	DQ 16x24VDC/0,5A BA	DQ 16x24VDC/0,5 ST	DQ 8x24VDC/0,5A BA	DQ 8x24VDC/0,5A ST	DQ 16x24VDC/0,5A HF
Product function						
• Isochronous mode	No	No	No	No	No	Yes
Engineering with						
• STEP 7 TIA Portal configurable/ integrated from version	V14	V14	STEP 7 TIA V14 with HSP0222 / integrated as of TIA V15	V14	STEP 7 TIA V14 with HSP0222 / integrated as of TIA V15	STEP 7 V18 or higher with HSP 0416
• STEP 7 configurable/ integrated from version	V5.5 SP3	STEP 7 V5.5 or higher	V5.5 SP3 with HSP0230 V7.0 / integrated as of V5.6 SP1	V5.5 SP3	V5.5 SP3 with HSP0230 V7.0 / integrated as of V5.6 SP1	V5.5 SP3 or higher
• PCS 7 configurable/ integrated from version			V8.1 SP1		V8.1 SP1	
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.43

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Article number	6ES7132-6BF61-0AA0	6ES7132-6BH00-0AA0	6ES7132-6BH01-0BA0	6ES7132-6BF01-0AA0	6ES7132-6BF01-0BA0	6ES7132-6BH00-0CA0
	ET 200SP, DQ 8x 24VDC/0,5A SINK BA, PU 1	ET 200SP, DQ 16x 24VDC/0,5A BA, PU 1	ET 200SP, DQ 16x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 8x 24V DC/0,5A Basic, PU 1	ET 200SP, DQ 8x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 16x 24VDC/0,5A HF, PU 1
Operating mode						
• DQ	Yes	Yes	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	No	No	No	No
• PWM	No	No	No	No	No	No
• Cam control (switching at comparison values)						No
• Oversampling	No	No	No	No	No	No
• MSO	No	No	No	No	No	Yes
Supply voltage						
Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V
Reverse polarity protection		Yes	Yes	Yes	Yes	Yes
Digital outputs						
Type of digital output	Sink output (NPN)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)
Number of digital outputs	8	16	16	8	8	16
Current-sinking	Yes	No	No		No	No
Current-sourcing		Yes	Yes	Yes	Yes	Yes
Digital outputs, parameterizable output type acc. to IEC 61131, type 0.5	Yes	Yes	Yes	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes; Electronic	Yes; per channel, electronic	Yes; Electronic	Yes; Electronic
Open-circuit detection		No	Yes		Yes	Yes
Limitation of inductive shutdown voltage to	Typ. 47 V	Typ. L+ (-53 V)	Typ. L+ (-50 V)	Typ. L+ (-50 V)	Typ. L+ (-50 V)	Typ. L+ (-50 V)
Controlling a digital input	Yes	Yes	Yes	Yes	Yes	Yes
Switching capacity of the outputs						
• with resistive load, max.	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A
• with inductive load, max.			0.5 A		0.5 A	0.5 A
• on lamp load, max.	5 W	5 W	5 W	5 W	5 W	5 W
Load resistance range						
• lower limit	48 Ω	48 Ω	48 Ω	48 Ω	48 Ω	48 Ω
• upper limit	3 400 Ω	100 kΩ	12 kΩ	100 kΩ	12 kΩ	12 kΩ
Output current						
• for signal "1" rated value	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A
• for signal "0" residual current, max.	5 μA	30 μA	0.1 mA	10 μA	0.1 mA	0.1 mA
Output delay with resistive load						
• "0" to "1", typ.		80 μs; at rated load	50 μs			50 μs
• "0" to "1", max.	300 μs	150 μs; at rated load		100 μs; at rated load	50 μs; at rated load	
• "1" to "0", typ.		100 μs; at rated load	100 μs			100 μs
• "1" to "0", max.	600 μs	200 μs; at rated load		150 μs; at rated load	100 μs; at rated load	
Parallel switching of two outputs						
• for uprating	No	No	No	No	No	No
• for redundant control of a load	Yes	Yes	Yes	Yes	Yes	Yes
Switching frequency						
• with resistive load, max.	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	2 Hz	0.1 Hz; higher frequencies are possible, see Equipment Manual "Maximum permitted switching frequency of inductive loads"	2 Hz	0.1 Hz; higher frequencies are possible, see Equipment Manual "Maximum permitted switching frequency of inductive loads"	0.1 Hz; higher frequencies are possible, see Equipment Manual "Maximum permitted switching frequency of inductive loads"
• on lamp load, max.	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz

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I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6BF61-0AA0	6ES7132-6BH00-0AA0	6ES7132-6BH01-0BA0	6ES7132-6BF01-0AA0	6ES7132-6BF01-0BA0	6ES7132-6BH00-0CA0
	ET 200SP, DQ 8x 24VDC/0,5A SINK BA, PU 1	ET 200SP, DQ 16x 24VDC/0,5A BA, PU 1	ET 200SP, DQ 16x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 8x 24V DC/0,5A Basic, PU 1	ET 200SP, DQ 8x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 16x24VDC/0,5A HF, PU 1
Total current of the outputs						
• Current per channel, max.	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A
• Current per module, max.	4 A	8 A	8 A; see Equipment Manual "Derating curve"	4 A	4 A	8 A
Total current of the outputs (per module)						
horizontal installation						
- up to 40 °C, max.			8 A			8 A
- up to 50 °C, max.			6 A			6 A
- up to 60 °C, max.	4 A	8 A	4 A	4 A	4 A	4 A
vertical installation						
- up to 30 °C, max.			8 A			8 A
- up to 40 °C, max.			6 A			6 A
- up to 50 °C, max.	4 A	8 A	4 A	4 A	4 A	4 A
Isochronous mode						
Execution and activation time (TCO), min.						48 µs
Bus cycle time (TDP), min.						500 µs
Interrupts/diagnostics/status information						
Diagnostics function	Yes	Yes	Yes	Yes	Yes	Yes
Substitute values connectable	Yes	Yes	Yes	Yes	Yes	Yes
Alarms						
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes	Yes
Diagnoses						
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	Yes	Yes
• Wire-break	No	No	Yes; Module-wise	No	Yes; Module-wise	Yes; channel by channel
• Short-circuit	No	No		No		
• Short-circuit to M			Yes; Module-wise		Yes; Module-wise	Yes; channel by channel
• Short-circuit to L+			Yes; Module-wise		Yes; Module-wise	Yes; channel by channel
• Group error	Yes	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED						
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green PWR LED	Yes; green LED
• for channel diagnostics	No	No	No	No	No	Yes; green LED, see Alarms/diagnostics
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green PWR LED	Yes; green/red DIAG LED
Potential separation						
Potential separation channels						
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates						
Suitable for safety functions	No	No	No	No	No	No
Suitable for safety-related tripping of standard modules		No	No	Yes; see FAQ Entry ID: 39198632	No	Yes; see FAQ Entry ID: 39198632
Highest safety class achievable in safety mode						
• Performance level according to ISO 13849-1				PL d		
• SIL acc. to IEC 61508				SIL 2		

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6BF61-0AA0	6ES7132-6BH00-0AA0	6ES7132-6BH01-0BA0	6ES7132-6BF01-0AA0	6ES7132-6BF01-0BA0	6ES7132-6BH00-0CA0
	ET 200SP, DQ 8x 24VDC/0,5A SINK BA, PU 1	ET 200SP, DQ 16x24VDC/0,5A BA, PU 1	ET 200SP, DQ 16x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 8x 24V DC/0,5A Basic, PU 1	ET 200SP, DQ 8x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 16x24VDC/0,5A HF, PU 1
Highest safety class achievable for safety-related tripping of standard modules						PL d
• Performance level according to ISO 13849-1						Cat. 3
• Category according to ISO 13849-1						SIL 2
• SIL acc. to IEC 62061						
Ambient conditions						
Ambient temperature during operation						
• horizontal installation, min.	-25 °C	-30 °C	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS02	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-25 °C	-30 °C	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS02	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level						
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Dimensions						
Width	15 mm	15 mm	15 mm	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm	58 mm	58 mm
Weights						
Weight, approx.	30 g	30 g	30 g	30 g	30 g	26 g

Article number	6ES7132-6BF00-0CA0	6ES7132-6BF01-0CA0	6ES7132-6BD20-0BA0	6ES7132-6BD21-0BA0	6ES7132-6BD20-0CA0	6ES7132-6BD21-0CA0	6ES7132-6BD20-0DA0	6ES7132-6FD00-0BB1
	ET 200SP, DQ 8x24VDC/0,5A HF, PU 1	ET 200SP, DQ 8x24VDC/0,5A HF, PU 1	ET 200SP, DQ 4x24VDC/2A ST	ET 200SP, DQ 4x24VDC/2A ST, PU 1	ET 200SP, DQ 4x24VDC/2A HF	ET 200SP, DQ 4x24VDC/2A HF, PU 1	ET 200SP, DQ 4x24VDC/2A High Speed, PU 1	ET 200SP, DQ 4x24..230VAC/2A ST
General information								
Product type designation	DQ 8x24 V DC/0.5 A HF	DQ 8x24 V DC/0.5A HF	DQ 4x24 V DC/2 A ST	DQ 4x24 V DC/2A ST	DQ 4xDC 24 V/2 A HF	DQ 4x24V DC/2A HF	DQ 4x24 V DC/2 A HS	DQ 4x24 ... 230 V AC/ 2 A ST
Product function								
• Isochronous mode	Yes	Yes	No	No	Yes	Yes	Yes; Operating modes DQ and OVS only	No
Engineering with								
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 / -	as of TIA Portal V19 with HSP0428 / integrated as of TIA Portal V20	V11 SP2 / V13	STEP 7 V19 or higher with HSP0425 / integrated as of TIA Portal V20	V13 SP1 / -	as of TIA Portal V19 with HSP0426 / integrated as of TIA Portal V20	STEP 7 V15.1 or higher	V13 / V13
• STEP 7 configurable/ integrated from version	V5.5 / -	as of STEP 7 V5.5 SP3 with HSP0230 V11.0 / integrated as of STEP 7 V5.7 SP3	V5.5 SP3 / -	as of STEP 7 V5.5 SP3 with HSP0230 V11.0 / integrated as of STEP 7 V5.7 SP3	V5.5 / -	as of STEP 7 V5.5 SP3 with HSP0230 V11.0 / integrated as of STEP 7 V5.7 SP3	via GSD as of V5.6 HF4	V5.5 SP3 / -
• PCS 7 configurable/ integrated from version	V8.1 SP1		V8.1 SP1					
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	GSD Revision 5	One GSD file each, Revision 3 and 5 and higher	GSD Revision 5	GSD Revision 5	One GSD file each, Revision 3 and 5 and higher	GSD Revision 5

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6BF00-0CA0	6ES7132-6BF01-0CA0	6ES7132-6BD20-0BA0	6ES7132-6BD21-0BA0	6ES7132-6BD20-0CA0	6ES7132-6BD21-0CA0	6ES7132-6BD20-0DA0	6ES7132-6FD00-0BB1
	ET 200SP, DQ 8x24VDC/ 0,5A HF, PU 1	ET 200SP, DQ 8x24VDC/ 0,5A HF, PU 1	ET 200SP, DQ 4x24VDC/ 2A ST	ET 200SP, DQ 4x24VDC/ 2A ST, PU 1	ET 200SP, DQ 4x24VDC/ 2A HF	ET 200SP, DQ 4x24VDC/ 2A HF, PU 1	ET 200SP, DQ 4x24VDC/ 2A High Speed, PU 1	ET 200SP, DQ 4x24..230VAC/ 2A ST
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.43	GSDML V2.3	GSDML V2.43	GSDML V2.3	GSDML V2.43	GSDML V2.33	GSDML V2.3
Operating mode								
• DQ	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	No	No	No	No	Yes; Valve control	No
• PWM	No	No	No	No	No	No	Yes	No
• Cam control (switching at comparison values)							Yes; Via MtM (module-to-module communication)	
• Oversampling	No	No	No	No	No	No	Yes	No
• MSO	Yes	Yes	No	No	Yes	Yes	No	No
Supply voltage								
Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V	24 V	
Rated value (AC)								230 V
Reverse polarity protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Digital outputs								
Type of digital output	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)	Triac with zero point detection
Number of digital outputs	8	8	4	4	4	4	4	4
Current-sinking	No	No	No	No	No	No	No	No
Current-sourcing	Yes	Yes	Yes	Yes	Yes	Yes	Yes; Push-pull output	Yes
Digital outputs, parameterizable output type acc. to IEC 61131, type 0.5	Yes	Yes Yes	Yes	Yes	Yes	Yes	Yes	No
output type acc. to IEC 61131, type 2			Yes	Yes	Yes	Yes		
Short-circuit protection	Yes	Yes; Electronic	Yes; Electronic	Yes; Electronic	Yes; Electronic	Yes; Electronic	Yes	No; When using BU type B1, a miniature, quick-response fuse with 10 A tripping current must be provided
Open-circuit detection		Yes	Yes	Yes		Yes		
Limitation of inductive shutdown voltage to	Typ. L+ (-50 V)	Typ. L+ (-50 V)	Typ. L+ (-50 V)	Typ. L+ (-50 V)	L+ -(-37 to 41V)	Typ. L+ (-50 V)	M (-1 V)	
Controlling a digital input	Yes	Yes	Yes	Yes; supports input type 3 according to IEC 61131-2	Yes; Minimum current consumption 7 mA	Yes	No	Yes
Size of motor starters according to NEMA, max.								5
Digital output functions, parameterizable								
• Switching tripped by comparison values							Yes	
- Number of cam tracks, max.							4	
• Freely usable digital output							Yes	
• PWM output							Yes	
- Number, max.							4	
• Digital output with oversampling							Yes	
- Number, max.							4	
Switching capacity of the outputs								
• with resistive load, max.	0.5 A	0.5 A	2 A	2 A	2 A	2 A	2 A	2 A
• with inductive load, max.		0.5 A		2 A		2 A		
• on lamp load, max.	5 W	5 W	10 W	10 W	10 W	10 W	10 W	100 W

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6BF00-0CA0	6ES7132-6BF01-0CA0	6ES7132-6BD20-0BA0	6ES7132-6BD21-0BA0	6ES7132-6BD20-0CA0	6ES7132-6BD21-0CA0	6ES7132-6BD20-0DA0	6ES7132-6FD00-0BB1
	ET 200SP, DQ 8x24VDC/ 0,5A HF, PU 1	ET 200SP, DQ 8x24VDC/ 0,5A HF, PU 1	ET 200SP, DQ 4x24VDC/ 2A ST	ET 200SP, DQ 4x24VDC/ 2A ST, PU 1	ET 200SP, DQ 4x24VDC/ 2A HF	ET 200SP, DQ 4x24VDC/ 2A HF, PU 1	ET 200SP, DQ 4x24VDC/ 2A High Speed, PU 1	ET 200SP, DQ 4x24..230VAC/ 2A ST
Load resistance range								
• lower limit	48 Ω	48 Ω	12 Ω	12 Ω	12 Ω	12 Ω	12 Ω	
• upper limit	12 kΩ	12 kΩ	3 400 Ω	3 400 Ω	3 400 Ω	3 400 Ω	3 400 Ω	
Output voltage								
• for signal "1", min.								20.4 V
Output current								
• for signal "1" rated value	0.5 A	0.5 A	2 A	2 A	2 A	2 A	2 A	2 A
• for signal "0" residual current, max.	0.1 mA	0.1 mA	0.1 mA	0.1 mA	0.1 mA	0.1 mA	0.1 mA	460 µA
Output delay with resistive load								
• "0" to "1", typ.	50 µs	50 µs	50 µs	50 µs	50 µs	50 µs		
• "0" to "1", max.			50 µs				1 µs	10 ms
• "1" to "0", typ.	100 µs	100 µs	100 µs	100 µs	100 µs	100 µs		
• "1" to "0", max.			100 µs				1 µs	10 ms
Parallel switching of two outputs								
• for logic links	No	No	No	No	No	No	No	No
• for uprating	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• for redundant control of a load								
Switching frequency								
• with resistive load, max.	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	5 kHz	10 Hz
• with inductive load, max.	2 Hz	0.1 Hz; higher frequencies are possible, see Equipment Manual "Maximum permitted switching frequency of inductive loads"	2 Hz	0.1 Hz; higher frequencies are possible, see Equipment Manual "Maximum permitted switching frequency of inductive loads"	2 Hz	0.1 Hz; higher frequencies are possible, see Equipment Manual "Maximum permitted switching frequency of inductive loads"	5 kHz	0.5 Hz; Higher frequencies are possible, see Equipment Manual / Product Information
• on lamp load, max.	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz	5 kHz	1 Hz
Total current of the outputs								
• Current per channel, max.	0.5 A	0.5 A	2 A	2 A	2 A	2 A	2 A	2 A
• Current per module, max.	4 A	4 A	8 A	8 A; see Equipment Manual "Derating curve"	8 A	8 A; see Equipment Manual "Derating curve"	8 A	8 A
Total current of the outputs (per module)								
horizontal installation								
- up to 30 °C, max.				8 A		8 A	8 A; DQ mode	
- up to 40 °C, max.			8 A	8 A	8 A	8 A	6.9 A; DQ mode	8 A
- up to 50 °C, max.			6 A	6 A	6 A	6 A	4.7 A; DQ mode	6 A
- up to 60 °C, max.	4 A	4 A	4 A	4 A	4 A	4 A	2.5 A; DQ mode	4 A
vertical installation								
- up to 30 °C, max.			8 A	8 A	8 A	8 A	7.2 A; DQ mode	8 A
- up to 40 °C, max.			6 A	6 A	6 A	6 A	5.6 A; DQ mode	6 A
- up to 50 °C, max.	4 A	4 A	4 A	4 A	4 A	4 A	4 A; DQ mode	4 A
- up to 60 °C, max.			4 A					
Isochronous mode								
Execution and activation time (TCO), min.	48 µs	48 µs				75 µs	40 µs	
Bus cycle time (TDP), min.	500 µs	500 µs			500 µs	500 µs	125 µs	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6BF00-0CA0	6ES7132-6BF01-0CA0	6ES7132-6BD20-0BA0	6ES7132-6BD21-0BA0	6ES7132-6BD20-0CA0	6ES7132-6BD21-0CA0	6ES7132-6BD20-0DA0	6ES7132-6FD00-0BB1
	ET 200SP, DQ 8x24VDC/ 0,5A HF, PU 1	ET 200SP, DQ 8x24VDC/ 0,5A HF, PU 1	ET 200SP, DQ 4x24VDC/ 2A ST	ET 200SP, DQ 4x24VDC/ 2A ST, PU 1	ET 200SP, DQ 4x24VDC/ 2A HF	ET 200SP, DQ 4x24VDC/ 2A HF, PU 1	ET 200SP, DQ 4x24VDC/ 2A High Speed, PU 1	ET 200SP, DQ 4x24...230VAC/ 2A ST
Interrupts/diagnostics/ status information								
Diagnostics function	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Substitute values connectable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Alarms								
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Diagnoses								
• Diagnostic information readable							Yes	
• Monitoring the supply voltage - parameterizable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
• Wire-break	Yes; channel by channel	Yes; channel by channel	Yes; Module-wise	Yes; Module-wise	Yes; channel by channel	Yes; channel by channel	No	No
• Short-circuit	Yes; channel by channel		Yes; Module-wise				Yes; Module-wise	No
• Short-circuit to M		Yes; channel by channel		Yes; Module-wise	Yes; channel by channel	Yes; channel by channel		
• Short-circuit to L+		Yes; channel by channel		Yes; Module-wise	Yes; channel by channel	Yes; channel by channel		
• Group error	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED								
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red LED	Yes; red LED	No	No	Yes; red LED	Yes; red LED	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation								
Potential separation channels								
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates								
Suitable for safety functions	No	No	No	No	No	No	No	No
Suitable for safety-related tripping of standard modules	No; see FAQ Entry ID: 39198632	Yes; see FAQ Entry ID: 39198632	Yes; see FAQ Entry ID: 39198632		Yes; see FAQ Entry ID: 39198632	Yes; see FAQ Entry ID: 39198632	No	
Highest safety class achievable in safety mode								
• Performance level according to ISO 13849-1			PL d		PL d			
• SIL acc. to IEC 61508			SIL 2		SIL 2			
Highest safety class achievable for safety-related tripping of standard modules								
• Performance level according to ISO 13849-1		PL d				PL d		
• Category according to ISO 13849-1		Cat. 3				Cat. 3		
• SIL acc. to IEC 62061		SIL 2				SIL 2		
Ambient conditions								
Ambient temperature during operation								
• horizontal installation, min.	-30 °C; < 0 °C as of FS07	-30 °C	-30 °C; < 0 °C as of FS08	-30 °C	-30 °C; < 0 °C as of FS06	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS07	-30 °C	-30 °C; < 0 °C as of FS08	-30 °C	-30 °C; < 0 °C as of FS06	-30 °C	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C	50 °C	50 °C	50 °C	60 °C

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6BF00-0CA0 ET 200SP, DQ 8x24VDC/ 0,5A HF, PU 1	6ES7132-6BF01-0CA0 ET 200SP, DQ 8x24VDC/ 0,5A HF, PU 1	6ES7132-6BD20-0BA0 ET 200SP, DQ 4x24VDC/ 2A ST	6ES7132-6BD21-0BA0 ET 200SP, DQ 4X24VDC/ 2A ST, PU 1	6ES7132-6BD20-0CA0 ET 200SP, DQ 4x24VDC/ 2A HF	6ES7132-6BD21-0CA0 ET 200SP, DQ 4x24VDC/ 2A HF, PU 1	6ES7132-6BD20-0DA0 ET 200SP, DQ 4x24VDC/ 2A High Speed, PU 1	6ES7132-6FD00-0BB1 ET 200SP, DQ 4x24...230VAC/ 2A ST
Altitude during operation relating to sea level Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	2 000 m; On request: Installation altitudes greater than 2 000 m
Dimensions								
Width	15 mm	15 mm	15 mm	15 mm	15 mm	15 mm	15 mm	20 mm
Height	73 mm	73 mm	73 mm	73 mm	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm	58 mm	58 mm	58 mm	58 mm
Weights								
Weight, approx.	30 g	30 g	30 g	30 g	30 g	30 g	31 g	50 g
Article number	6ES7132-6FD00-0CU0 ET 200SP, DQ 4x24...230VAC/2A HF, PU 1		6ES7132-6GD51-0BA0 ET 200SP, RQ CO 4x 24V DC/2A ST, PU 1		6ES7132-6HD01-0BB1 ET 200SP, RQ NO 4x 120VDC...230VAC/5A, PU1		6ES7132-6MD00-0BB1 ET 200SP, RQ NO-mA 4x120VDC...230VAC/5A ST	
General information								
Product type designation	DQ 4x24 ... 230 V AC/2 A HF		RQ CO 4x24VDC/2A ST		RQ 4x120 VDC ... 230 VAC/ 5 A NO ST		RQ 4x120 V DC ... 230 V AC/ 5 A NO MA ST	
Product function Isochronous mode	No		No		No			
Engineering with - STEP 7 TIA Portal configurable/ integrated from version - STEP 7 configurable/ integrated from version - PCS 7 configurable/ integrated from version - PROFIBUS from GSD version/ GSD revision - PROFINET from GSD version/ GSD revision	V14 STEP 7 V5.5 or higher GSD as of Revision 5 GSDML V2.3		V14 V5.5 SP3 One GSD file each, Revision 3 and 5 and higher GSDML V2.3		V14 V5.5 SP3 V8.1 SP1 One GSD file each, Revision 3 and 5 and higher GSDML V2.3		V13 SP1 V5.5 SP3 / - One GSD file each, Revision 3 and 5 and higher GSDML V2.3	
Operating mode - DQ - DQ with energy-saving function - PWM - Oversampling - MSO - Phase control - Trailing-edge phase - Half-wave - Full-wave	Yes Yes No No No Yes; Control area: 8.5 ... 100% of the phase angle No Yes Yes		Yes No No No No		Yes No No No No		Yes No No No No	
Supply voltage								
Rated value (DC)			24 V		24 V		24 V	
Rated value (AC)	230 V; 47 ... 63 Hz, max. rate of change of frequency 1 mHz/s							
Reverse polarity protection			Yes		Yes		Yes	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6FD00-0CU0 ET 200SP, DQ 4x24..230VAC/2A HF, PU 1	6ES7132-6GD51-0BA0 ET 200SP, RQ CO 4x 24V DC/2A ST, PU 1	6ES7132-6HD01-0BB1 ET 200SP, RQ NO 4x 120VDC..230VAC/5A, PU1	6ES7132-6MD00-0BB1 ET 200SP, RQ NO-mA 4x120VDC..230VAC/5A ST
Digital outputs				
Type of digital output	Triac	Relays	Relays	Relays
Number of digital outputs	4	4	4	4
Current-sinking	No	Yes	Yes	
Current-sourcing	Yes	Yes	Yes	
Digital outputs, parameterizable	Yes	Yes	Yes	
Short-circuit protection	No; external fusing necessary	No	No	No
Open-circuit detection	Yes; channel by channel			
Overload protection	No; A miniature fuse with 10 tripping current and tripping characteristic "quick response" must be provided in the module supply			
Controlling a digital input	Yes			
Switching capacity of the outputs				
• with resistive load, max.	2 A; Max. 4 A, see additional description in manual			
• with inductive load, max.	2 A			
• on lamp load, max.	100 W; Tungsten rating in accordance with UL; for thermistors with higher power ratings, see the notes in the manual			
Output voltage				
• for signal "1", min.	20.4 V			
Output current				
• for signal "1" rated value	2 A			
• for signal "0" residual current, max.	3 mA			
Output delay with resistive load				
• "0" to "1", max.	40 ms; 2 AC cycles			
• "1" to "0", max.	20 ms; 1 AC cycle			
Parallel switching of two outputs				
• for logic links	No	Yes	Yes	
• for uprating	No	No	No	
• for redundant control of a load	Yes	Yes	Yes	
Switching frequency				
• with resistive load, max.	10 Hz; Applies to DQ mode; limited by line frequency in PC mode	2 Hz	2 Hz	2 Hz
• with inductive load (acc. to IEC 60947-5-1, DC13), max.			0.5 Hz; provide one freewheeling diode for switching frequencies higher than 0.1 Hz	0.5 Hz; provide one freewheeling diode for switching frequencies higher than 0.1 Hz
• with inductive load (acc. to IEC 60947-5-1, AC15), max.	10 Hz; Applies to DQ mode; limited by line frequency in PC mode		0.5 Hz	0.5 Hz
• on lamp load, max.	1 Hz; Applies to DQ mode; limited by line frequency in PC mode		2 Hz	2 Hz
Total current of the outputs				
• Current per channel, max.	2 A; Max. 4 A, see additional description in manual	2 A	5 A	5 A
• Current per module, max.	8 A	8 A	20 A	20 A

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6FD00-0CU0 ET 200SP, DQ 4x24...230VAC/2A HF, PU 1	6ES7132-6GD51-0BA0 ET 200SP, RQ CO 4x 24V DC/2A ST, PU 1	6ES7132-6HD01-0BB1 ET 200SP, RQ NO 4x 120VDC...230VAC/5A, PU1	6ES7132-6MD00-0BB1 ET 200SP, RQ NO-mA 4x120VDC...230VAC/5A ST
Total current of the outputs (per module)				
horizontal installation				
- up to 40 °C, max.	8 A	8 A		
- up to 50 °C, max.	6 A	6 A	20 A	20 A
- up to 60 °C, max.	4 A	4 A	16 A	16 A
vertical installation				
- up to 30 °C, max.	8 A	8 A		
- up to 40 °C, max.	6 A	6 A	20 A	20 A
- up to 50 °C, max.	4 A	4 A	16 A	16 A
Relay outputs				
• Number of relay outputs		4	4	4
• Rated supply voltage of relay coil L+ (DC)		24 V	24 V	24 V
• Current consumption of relays (coil current of all relays), max.		40 mA	40 mA	40 mA
• external protection for relay outputs			Yes, with miniature fuse max. 6 A tripping current and quick-response tripping characteristic	Yes, with miniature fuse max. 6 A tripping current and quick-response tripping characteristic
• Number of operating cycles, max.		500 000	7 000 000; see additional description in the manual	7 000 000; see additional description in the manual
Switching capacity of contacts				
- with inductive load, max.			2 A; see additional description in the manual	2 A; see additional description in the manual
- with resistive load, max.		2 A	5 A; see additional description in the manual	5 A; see additional description in the manual
- Thermal continuous current, max.		2 A	5 A; Max. 1 385 VA, 150 W	5 A
- Switching current, min.		1 mA; 5 V DC	100 mA; 5 V DC	100 mA; 5 V DC
- Rated switching voltage (DC)		24 V	24 V DC to 120 V DC	24 V DC to 120 V DC
- Rated switching voltage (AC)		24 V	24V AC to 230V AC	24V AC to 230V AC
Interrupts/diagnostics/status information				
Diagnostics function	Yes	Yes	Yes	Yes
Substitute values connectable	Yes	Yes	Yes	Yes
Alarms				
• Diagnostic alarm	Yes	Yes	Yes	Yes
Diagnoses				
• Diagnostic information readable	Yes			
• Monitoring the supply voltage	Yes	Yes	Yes	Yes
• Wire-break	Yes; channel by channel	No	No	No
• Short-circuit	No	No	No	No
• Group error	Yes			Yes
Diagnostics indication LED				
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red Fn LED	No	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Standards, approvals, certificates				
Suitable for safety functions	No	No	No	No
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6FD00-0CU0 ET 200SP, DQ 4x24...230VAC/2A HF, PU 1	6ES7132-6GD51-0BA0 ET 200SP, RQ CO 4x 24V DC/2A ST, PU 1	6ES7132-6HD01-0BB1 ET 200SP, RQ NO 4x 120VDC...230VAC/5A, PU1	6ES7132-6MD00-0BB1 ET 200SP, RQ NO-mA 4x120VDC...230VAC/5A ST
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m; On request: Installation altitudes greater than 2 000 m	2 000 m; On request: Installation altitudes greater than 2 000 m	2 000 m; On request: Installation altitudes greater than 2 000 m	2 000 m; On request: Installation altitudes greater than 2 000 m
Dimensions				
Width	20 mm	15 mm	20 mm	20 mm
Height	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm
Weights				
Weight, approx.	50 g	30 g	40 g	45 g
Article number	6ES7132-6HC50-0BU0 ET 200SP, RQ CO 3x120VDC.230VAC/5A ST		6ES7132-6HC70-0BU0 ET 200SP, RQ COni 3x120VDC.230VAC/5A ST	
General information				
Product type designation	RQ 3x120VDC-230VAC/5A CO ST		RQ 3x120VDC-230VAC/5A CO n.i. ST	
Product function				
• Isochronous mode	No		No	
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V16 or higher		TIA V19 or higher with HSP0463 / integrated as of TIA V20	
• STEP 7 configurable/ integrated from version	Configurable via GSD file			
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher		One GSD file each, Revision 3 and 5 and higher	
• PROFINET from GSD version/ GSD revision	GSDML V2.34		GSDML V2.45	
Supply voltage				
Rated value (DC)	24 V		24 V	
Reverse polarity protection	Yes		Yes	
Digital outputs				
Type of digital output	Relays		Relays	
Number of digital outputs	3		3	
Current-sinking	Yes		Yes	
Current-sourcing	Yes		Yes	
Digital outputs, parameterizable	Yes		Yes	
Short-circuit protection	No		No	
Switching capacity of the outputs				
• with resistive load, max.	5 A; for an additional description, see the Technical Data in the Equipment Manual		5 A; for an additional description, see the Technical Data in the Equipment Manual	
• with inductive load, max.	2 A; for an additional description, see the Technical Data in the Equipment Manual		2 A; for an additional description, see the Technical Data in the Equipment Manual	
Parallel switching of two outputs				
• for logic links	Yes		Yes	
• for uprating	No		No	
• for redundant control of a load	Yes		Yes	
Switching frequency				
• with resistive load, max.	2 Hz		2 Hz	
• with inductive load, max.	0.5 Hz		0.5 Hz	
• on lamp load, max.	2 Hz		2 Hz	
Total current of the outputs				
• Current per channel, max.	5 A		5 A	
• Current per module, max.	15 A		5 A	
Total current of the outputs (per module)				
horizontal installation				
- up to 50 °C, max.	15 A		5 A	
- up to 60 °C, max.	12 A; maximum channel current 4A		5 A	
vertical installation				
- up to 40 °C, max.	15 A		5 A	
- up to 50 °C, max.	12 A; maximum channel current 4A		5 A	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital output modules

Technical specifications

Article number	6ES7132-6HC50-0BU0 ET 200SP, RQ CO 3x120VDC.230VAC/5A ST	6ES7132-6HC70-0BU0 ET 200SP, RQ COni 3x120VDC.230VAC/5A ST
Relay outputs		
• Number of relay outputs	3; changeover contact, isolated	3; Changeover contact, non-floating
• Rated supply voltage of relay coil L+ (DC)	24 V	24 V
• Current consumption of relays (coil current of all relays), max.	30 mA	40 mA
• external protection for relay outputs	yes, with miniature fuse max. 6.3 A tripping current, quick-response tripping characteristic and 1 500 A breaking capacity	yes, with miniature fuse max. 6.3 A tripping current, quick-response tripping characteristic and 1 500 A breaking capacity
• Number of operating cycles, max.	1 000 000; see additional description in the manual	1 000 000; see additional description in the manual
Switching capacity of contacts		
- with inductive load, max.	2 A; see additional description in the manual	2 A; see additional description in the manual
- with resistive load, max.	5 A; see additional description in the manual	5 A; see additional description in the manual
- Thermal continuous current, max.	5 A; Max. 1 385 VA, 150 W	5 A; Max. 1 385 VA, 150 W
- Switching current, min.	10 mA; 5 V DC	10 mA; 5 V DC
- Rated switching voltage (DC)	24 V DC to 120 V DC	24 V DC to 120 V DC
- Rated switching voltage (AC)	24V AC to 230V AC	24V AC to 230V AC
Interrupts/diagnostics/status information		
Diagnostics function	Yes	Yes
Substitute values connectable	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnoses		
• Monitoring the supply voltage	Yes	Yes
• Wire-break	No	No
• Short-circuit	No	No
Diagnostics indication LED		
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED
• for channel diagnostics	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Standards, approvals, certificates		
Suitable for safety functions	No	No
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
Dimensions		
Width	20 mm	20 mm
Height	73 mm	73 mm
Depth	58 mm	58 mm
Weights		
Weight, approx.	40 g	40 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital input/output modules

Overview



- Digital hybrid module with 8 digital inputs and 8 digital outputs
- For different requirements, the digital input/output modules offer
- Function class standard
 - BaseUnits for single or multiple-conductor connection with automatic slot coding
 - Potential distributor modules for system-integrated expansion with potential terminals
 - Individual system-integrated potential group formation with self-assembling voltage busbars (a separate power module is no longer required for ET 200SP)
 - Option of connecting sensors compliant with IEC 61131 type 1 and 3 (module-dependent) for rated voltages of up to 24 V DC

- PNP (sinking input) variants
- PNP (sourcing output) variants
- Clear labeling on front of module
- LED displays for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable nameplate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - Output of substitute value in the event of communication interruptions (0, 1 or last value retained)
 - Hardware interrupts
 - Pulse stretching
 - Re-parameterization during operation
 - Firmware update
 - Diagnostics of wire break and short-circuit (on channel or module basis)
 - Value status (optional binary validity information of the output signal in the process image)
 - Supports the PROFlenergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shield terminal

A quick and clear comparison of the functions of the different DI/DQ modules is offered by the TIA Selection Tool

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Digital input/output modules

Overview

Overview of digital input/output modules

Digital input/output modules	Pkg. unit	Article No.	CC code	BU type
DI 8x/DQ 8x24VDC/0.5A ST	1	6ES7133-6BH00-0BA0	CC00	A0

Overview of BaseUnits

BaseUnit	Pkg. unit	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC01 to CC05	--
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC01 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC01 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC01 to CC05	--

Overview of potential distributor modules

Potential distributor module	Pkg. unit	Article No.	CC codes for process terminals
PotDis BU Type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP1	CC00, CC62
PotDis BU Type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP1	CC00, CC62
PotDis BU Type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP2	CC00, CC63
PotDis BU Type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP2	CC00, CC63
PotDis TB Type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A)	1	6ES7193-6TP00-0TP0	CC10 to CC13
PotDis TB Type P1-R, 18x P1 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP1	CC10, CC12

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Digital input/output modules

Overview

Potential distributor module	Pkg. unit	Article No.	CC codes for process terminals
PotDis TB Type P2-B, 18x P2 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP2	CC10, CC13
PotDis TB Type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	1	6ES7193-6TP00-0TN0	CC10

Ordering data

Article No.	Article No.
Digital input/output modules Digital input/output module DI 8x/DQ 8x24VDC/0.5A ST, BU type A0, color code CC00 • Pack of 1 unit 6ES7133-6BH00-0BA0	Potential distributor modules PotDis BU PotDis BU, type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A) 6ES7193-6UP00-0DP1 PotDis BU, type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group 6ES7193-6UP00-0BP1 PotDis BU, type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A) 6ES7193-6UP00-0DP2 PotDis BU, type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group 6ES7193-6UP00-0BP2
Suitable BaseUnits BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10. 6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	PotDis TB PotDis TB, type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A) 6ES7193-6TP00-0TP0 PotDis TB, type P1-R, 18x P1 potential, (total current max. 10 A) 6ES7193-6TP00-0TP1 PotDis TB, type P2-B, 18x P2 potential, (total current max. 10 A) 6ES7193-6TP00-0TP2 PotDis TB, type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX 6ES7193-6TP00-0TN0
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10. 6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0	Accessories Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter 6ES7193-6LF30-0AW0
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10. 6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0	Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer 6ES7193-6LR10-0AA0 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer 6ES7193-6LR10-0AG0 1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer 6ES7193-6LA10-0AA0 1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer 6ES7193-6LA10-0AG0
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10. 6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0	BU cover For covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide 6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Digital input/output modules

Ordering data	Article No.		Article No.
Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0	Color code CC81, for 4 AUX terminals, BU type B0, yellow/green (terminals 1 A to 4 A); 10 units	6ES7193-6CP81-2AB0
Color-coded labels for 15 mm-wide BaseUnits Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units	6ES7193-6CP00-2MA0	Color code CC82, for 4 AUX terminals, BU type B0, red (terminals 1 A to 4 A); 10 units	6ES7193-6CP82-2AB0
Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units	6ES7193-6CP00-4MA0	Color code CC83, for 4 AUX terminals, BU type B0, blue (terminals 1 A to 4 A); 10 units	6ES7193-6CP83-2AB0
Color code CC01, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units	6ES7193-6CP01-2MA0	Color-coded labels for PotDis BU Color code CC62, for 16 process terminals, PotDis BU type P1, red (terminals 1 to 16); 10 units	6ES7193-6CP62-2MA0
Color code CC01, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units	6ES7193-6CP01-4MA0	Color code CC63, for 16 process terminals, PotDis BU type P2, blue (terminals 1 to 16); 10 units	6ES7193-6CP63-2MA0
Color code CC02, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units	6ES7193-6CP02-2MA0	Color-coded labels for PotDis TB Color code CC10, for 18 process terminals, PotDis TB, gray (terminals 1 to 18); 10 units	6ES7193-6CP10-2MT0
Color code CC02, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 50 units	6ES7193-6CP02-4MA0	Color code CC11, for 18 process terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units	6ES7193-6CP11-2MT0
Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units	6ES7193-6CP71-2AA0	Color code CC12, for 18 process terminals, PotDis TB, type P1 and BR, red (terminals 1 to 18); 10 units	6ES7193-6CP12-2MT0
Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units	6ES7193-6CP72-2AA0	Color code CC13, for 18 process terminals, PotDis TB, type P2 and BR, blue (terminals 1 to 18); 10 units	6ES7193-6CP13-2MT0
Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units	6ES7193-6CP73-2AA0	Mechanical coding elements For automatic coding of I/O modules; spare part. 20 units	6ES7193-6KA00-3AA0
Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 50 units	6ES7193-6CP73-4AA0	Type A	
Color-coded labels for 20 mm-wide BaseUnits Color code CC41, for 16 process terminals, BU type B1, gray (terminals 1 to 4), red (terminals 5 to 8), blue (terminals 9 to 12); 10 units	6ES7193-6CP41-2MB0		

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Technical specifications

Article number	6ES7133-6BH00-0BA0 ET 200SP, DI8x+DQ8x 24V DC/ 0,5A ST, PU1	Article number	6ES7133-6BH00-0BA0 ET 200SP, DI8x+DQ8x 24V DC/ 0,5A ST, PU1
General information		Operating mode	
Product type designation	DI 8x/DQ 8x24VDC/0,5A ST	• DI	Yes
Product function		• DQ	Yes
• Isochronous mode	No	• DQ with energy-saving function	No
Engineering with		• PWM	No
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V18 or higher with HSP 0401	• Oversampling	No
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher	• MSO	No
• PROFINET from GSD version/ GSD revision	GSDML V2.42	Supply voltage	
		Rated value (DC)	24 V
		Reverse polarity protection	Yes

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Digital input/output modules

Technical specifications

Article number	6ES7133-6BH00-0BA0 ET 200SP, DI8x+DQ8x 24V DC/ 0,5A ST, PU1
Digital inputs	
Number of digital inputs	8
Digital inputs, parameterizable	Yes
Source/sink input	P-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+11 to +30V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage) for standard inputs	
- parameterizable	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
Digital outputs	
Type of digital output	Source output (PNP, current-sourcing)
Number of digital outputs	8
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
output type acc. to IEC 61131, type 0.5	Yes
Short-circuit protection	Yes; Electronic
Limitation of inductive shutdown voltage to	Typ. L+ (-50 V)
Controlling a digital input	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A
• with inductive load, max.	0.5 A; max. 1 H inductance
• on lamp load, max.	5 W
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• for signal "1", min.	L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	
• "0" to "1", max.	50 μs
• "1" to "0", max.	100 μs
Parallel switching of two outputs	
• for uprating	No
• for redundant control of a load	Yes
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load (acc. to IEC 60947-5-1, DC13), max.	0.1 Hz; higher frequencies are possible, see Equipment Manual "Maximum permitted switching frequency of inductive loads"
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per channel, max.	0.5 A
• Current per module, max.	4 A

Article number	6ES7133-6BH00-0BA0 ET 200SP, DI8x+DQ8x 24V DC/ 0,5A ST, PU1
Total current of the outputs (per module)	
horizontal installation	
- up to 60 °C, max.	4 A
vertical installation	
- up to 50 °C, max.	4 A
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; module-by-module, for DI: optional protective circuit for preventing wire-break diagnostics in the case of simple encoder contacts: 25 kΩm to 45 kΩm
• Short-circuit to M	Yes; module-by-module for DQ
• Short-circuit to L+	Yes; module-by-module for DQ
• Group error	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for channel diagnostics	No
• for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for safety functions	No
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	30 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Analog input modules

Overview

Energy Meter HF module for SIMATIC ET 200SP

Energy Meter HF module for SIMATIC ET 200SP video
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=5848889024001



- 2, 4 and 8-channel analog input (AI) modules
- Apart from the standard type of delivery in single-unit packaging, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.

For different requirements, the digital input modules offer:

- Function classes Basic, Standard, High Feature and High Speed
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Potential distributor modules for system-integrated expansion with potential terminals
- Individual system-integrated potential group formation with self-assembling voltage busbars (a separate power module is no longer required for ET 200SP)
- Option of connecting current, voltage and resistance sensors, as well as thermocouples
- Option of connecting force and torque sensors

- Energy Meter for recording up to 600 electrical variables
- Clear labeling on front of module
- LED displays for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable nameplate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - MSI operating mode (simultaneous reading of input data from as many as three other controllers)
 - Oversampling operating mode (n-fold equidistant acquisition of analog values within one PN cycle for increasing the time resolution for slow CPU cycles)
 - Isochronous mode (simultaneous equidistant reading in of all analog values)
 - Scalable measuring range (adaptation of measuring range, increase of the 16-bit resolution by adapting the measuring range to a limited section)
 - Scaling of the measured values (transmission of the analog value normalized to the required physical value as a 32-bit floating point value)
 - Internal compensation of the line resistance for thermocouples by means of terminal temperature measurement in the BaseUnit for BU type A1
 - Internal compensation also for 2-wire resistance test by means of adjustable line resistance
 - Calibration during runtime
 - Single-channel galvanic isolation
 - HART communication
 - Re-parameterization during operation
 - Firmware update
 - Diagnostics of wire break, short-circuit, overflow, underflow
 - Two upper and lower hardware interrupts in each case, interference frequency suppression, smoothing
 - Value status (optional binary validity information of the analog value in the process image)
 - Supports the PROFenergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shield terminal

A quick and clear comparison of the functions of the AI modules is offered by the TIA Selection Tool.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules**Overview**

Overview of analog input modules

Analog input	Pkg. unit	Article No.	CC code	BU type
AI 8 x I 2/4-wire BA	1	6ES7134-6GF00-0AA1	CC01	A0, A1
AI 2 x U ST	1	6ES7134-6FB00-0BA1	CC00	A0, A1
AI 8 x U BA	1	6ES7134-6FF00-0AA1	CC02	A0, A1
AI 4 x U/I 2-wire ST	1	6ES7134-6HD00-0BA1	CC03	A0, A1
AI 4 x U/I 2-wire ST	10	6ES7134-6HD00-2BA1	CC03	A0, A1
AI 2 x I 2/4-wire ST	1	6ES7134-6GB00-0BA1	CC05	A0, A1
AI 4 x I 2/4-wire ST	1	6ES7134-6GD00-0BA1	CC03	A0, A1
AI 4 x I 2/4-wire ST	10	6ES7134-6GD00-2BA1	CC03	A0, A1
AI 4 x I 2-wire 4 ... 20 mA HART	1	6ES7134-6TD00-0CA1	CC03	A0, A1
AI 2 x U/I 2/4-wire HF	1	6ES7134-6HB00-0CA1	CC05	A0, A1
AI 2 x U/I 2/4-wire HS With two operating modes: • High-speed isochronous AI • Oversampling	1	6ES7134-6HB00-0DA1	CC00	A0, A1
AI 8 x RTD/TC 2-wire HF	1	6ES7134-6JF00-0CA1	CC00	A0, A1
AI 8 x RTD/TC 2-wire HF	10	6ES7134-6JF00-2CA1	CC00	A0, A1
AI 4 x RTD/TC 2/3/4-wire HF	1	6ES7134-6JD00-0CA1	CC00	A0, A1
AI 4 x RTD/TC 2/3/4-wire HF	10	6ES7134-6JD00-2CA1	CC00	A0, A1
AI 4 x TC High Speed	1	6ES7134-6JD00-0DA1	CC00	A0, A1
AI 2 x SG 4/6-wire High Speed	1	7MH4134-6LB00-0DA0	CC00	A0
AI Energy Meter CT ST	1	6ES7134-6PA01-0BU0	--	U0
AI Energy Meter RC ST	1	6ES7134-6PA21-0BU0	--	U0
AI Energy Meter CT HF	1	6ES7134-6PA01-0CU0	--	U0
AI Energy Meter RC HF	1	6ES7134-6PA21-0CU0	--	U0

Overview of BaseUnits

BaseUnit	Pkg. unit	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC01 to CC05	--
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC01 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC01 to CC05	--

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I/O modules > Analog input modules

Overview

BaseUnit	Pkg. unit	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC01 to CC05	--
BU type A1 • New potential group (light) • With temperature sensor • 16 process terminals • With 2x5 additional terminals	1	6ES7193-6BP40-0DA1	CC01 to CC05	CC74
BU type A1 • New potential group (light) • With temperature sensor • 16 process terminals • Without 2x5 additional terminals	1	6ES7193-6BP00-0DA1	CC01 to CC05	--
BU type A1 • Forwarding of the potential group (dark) • With temperature sensor • 16 process terminals • With 2x5 additional terminals	1	6ES7193-6BP40-0BA1	CC01 to CC05	CC74
BU type A1 • Forwarding of the potential group (dark) • With temperature sensor • 16 process terminals • Without 2x5 additional terminals	1	6ES7193-6BP00-0BA1	CC01 to CC05	--
BU type U0 • New potential group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DU0	CC00	--
BU type U0 • New potential group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DU0	CC00	--
BU type U0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BU0	CC00	--
BU type U0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BU0	CC00	--

Overview of potential distributor modules

Potential distributor module	Pkg. unit	Article No.	CC codes for process terminals
PotDis BU Type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP1	CC00, CC62
PotDis BU Type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP1	CC00, CC62
PotDis BU Type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP2	CC00, CC63

I/O systems

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I/O modules > Analog input modules

Overview

Potential distributor module	Pkg. unit	Article No.	CC codes for process terminals
PotDis BU Type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP2	CC00, CC63
PotDis TB Type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A)	1	6ES7193-6TP00-0TP0	CC10 to CC13
PotDis TB Type P1-R, 18x P1 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP1	CC10, CC12
PotDis TB Type P2-B, 18x P2 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP2	CC10, CC13
PotDis TB Type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	1	6ES7193-6TP00-0TN0	CC10

Ordering data

Analog input modules

Types of delivery:
Apart from the standard type of delivery in a single-unit package, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.

The number of modules required is the number of modules ordered. The pack type is selected by selecting the Article No. Packs of 10 can therefore only be ordered in integer multiples of 10.

Analog input module
AI 8xI 2/4-wire BA, BU type A0 or A1, color code CC01

6ES7 134-6GF00-0AA1

Analog input module
AI 2xU ST, BU type A0 or A1, color code CC00

6ES7134-6FB00-0BA1

Analog input module
AI 8xU BA, BU type A0 or A1, color code CC02

6ES7 134-6FF00-0AA1

Analog input module
AI 4xU/I 2-wire Standard, BU type A0 or A1, color code CC03, 16-bit, $\pm 0.3\%$

6ES7134-6HD01-0BA1
6ES7134-6HD01-2BA1

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

Analog input module AI 2xI 2/4-wire Standard, BU type A0 or A1, color code CC05, 16-bit

- Pack of 1 unit

6ES7134-6GB00-0BA1

Analog input module
AI 4xI 2-wire Standard, BU type A0 or A1, color code CC03, 16-bit, $\pm 0.3\%$

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7134-6GD01-0BA1
6ES7134-6GD01-2BA1

Analog input module
AI 4xI 2-wire 4 ... 20 mA HART, BU type A0 or A1, color code CC03

6ES7134-6TD00-0CA1

Analog input module
AI 2xU/I 2/4-wire High Feature, BU type A0 or A1, color code CC05, 16-bit, $\pm 0.1\%$, independent channel galvanic isolation, isochronous mode above 1 ms

6ES7134-6HB00-0CA1

Analog input module
AI 2xU/I 2/4-wire High Speed, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.3\%$, isochronous mode above 250 μ s, oversampling above 50 μ s

6ES7134-6HB00-0DA1

Analog input module
AI 8xRTD/TC 2-wire High Feature, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.1\%$, scalable measuring range

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7134-6JF00-0CA1
6ES7134-6JF00-2CA1

Analog input module
AI 4xRTD/TC 2/3/4-wire High Feature, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.1\%$, scalable measuring range

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7134-6JD00-0CA1
6ES7134-6JD00-2CA1

I/O systems

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I/O modules > Analog input modules

Ordering data	Article No.		Article No.
Analog input module AI 4xTC High Speed, BU type A0 or A1, color code CC00, 16-bit, channel diagnostics	6ES7134-6JD00-0DA1	BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0
Analog input module AI 2x SG, 4/6-wire High Speed, BU type A0, color code CC00, channel diagnostics, 28/16-bit, ±0.05%, for DMS full bridges; for connecting force and torque sensors	7MH4134-6LB00-0DA0	Suitable type A1 BaseUnits (temperature detection)	
Analog input module AI Energy Meter CT ST, BU type U0	6ES7134-6PA01-0BU0	BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new potential group (max. 10 A)	6ES7193-6BP40-0DA1
Analog input module AI Energy Meter RC ST, BU type U0	6ES7134-6PA21-0BU0	BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A)	6ES7193-6BP00-0DA1
Analog input module AI Energy Meter CT HF, for 1 A or 5 A current transformers, with line analysis functions, channel diagnostics; BU type U0	6ES7134-6PA01-0CU0	BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the potential group	6ES7193-6BP40-0BA1
Analog input module AI Energy Meter RC HF, for Rogowski coils or 333 mV current/voltage transformers, with line analysis functions, channel diagnostics; BU type U0	6ES7134-6PA21-0CU0	BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group	6ES7193-6BP00-0BA1
Suitable type A0 BaseUnits		Suitable type U0 BaseUnits	
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	BU20-P16+A0+2D BU type U0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0DU0 6ES7193-6BP00-2DU0
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0		
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0		

I/O systems

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Ordering data	Article No.		Article No.
BU20-P16+A0+2B BU type U0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0BU0 6ES7193-6BP00-2BU0	Color-coded labels Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units Color code CC01, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units Color code CC01, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units Color code CC02, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units Color code CC02, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 50 units Color code CC03, for 16 process terminals, BU type A0, A1 gray (terminals 1 to 8), red (terminals 9 to 12), gray (terminals 13 to 16); 10 units Color code CC05, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 12), red (terminals 13 to 14), blue (terminals 15 to 16); 10 units Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units Color code CC74, for 2x5 additional terminals, BU type A1, red (terminals 1B to 5B), blue (terminals 1C to 5C); 10 units	6ES7193-6CP00-2MA0 6ES7193-6CP00-4MA0 6ES7193-6CP01-2MA0 6ES7193-6CP01-4MA0 6ES7193-6CP02-2MA0 6ES7193-6CP02-4MA0 6ES7193-6CP03-2MA0 6ES7193-6CP05-2MA0 6ES7193-6CP71-2AA0 6ES7193-6CP72-2AA0 6ES7193-6CP73-2AA0 6ES7193-6CP74-2AA0
Potential distributor modules			
PotDis BU PotDis BU, type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A) PotDis BU, type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group PotDis BU, type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A) PotDis BU, type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	6ES7193-6UP00-ODP1 6ES7193-6UP00-OBP1 6ES7193-6UP00-ODP2 6ES7193-6UP00-OBP2		
PotDis TB PotDis TB, type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A) PotDis TB, type P1-R, 18x P1 potential, (total current max. 10 A) PotDis TB, type P2-B, 18x P2 potential, (total current max. 10 A) PotDis TB, type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	6ES7193-6TP00-0TP0 6ES7193-6TP00-0TP1 6ES7193-6TP00-0TP2 6ES7193-6TP00-0TN0		
Accessories			
Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0		
Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer 1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer 1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	6ES7193-6LR10-0AA0 6ES7193-6LR10-0AG0 6ES7193-6LA10-0AA0 6ES7193-6LA10-0AG0	Color-coded labels for PotDis BU Color code CC62, for 16 process terminals, PotDis BU type P1, red (terminals 1 to 16); 10 units Color code CC63, for 16 process terminals, PotDis BU type P2, blue (terminals 1 to 16); 10 units	6ES7193-6CP62-2MA0 6ES7193-6CP63-2MA0
BU cover For covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0	Color-coded labels for PotDis TB Color code CC10, for 18 process terminals, PotDis TB, gray (terminals 1 to 18); 10 units Color code CC11, for 18 process terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units	6ES7193-6CP10-2MT0 6ES7193-6CP11-2MT0
Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0		

I/O systems

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I/O modules > Analog input modules

Ordering data

Article No.

Article No.

Color code CC12, for 18 process terminals, PotDis TB, type P1 and BR, red (terminals 1 to 18); 10 units

6ES7193-6CP12-2MT0

Color code CC13, for 18 process terminals, PotDis TB, type P2 and BR, blue (terminals 1 to 18); 10 units

6ES7193-6CP13-2MT0

Mechanical coding elements

For automatic coding of I/O modules; spare part.
20 units

Type A

Type B

Type C

Type D

6ES7193-6KA00-3AA0

6ES7193-6KB00-3AA0

6ES7193-6KC00-3AA0

6ES7193-6KD00-3AA0

Technical specifications

Article number	6ES7134-6GF00-0AA1 ET 200SP, AI 8xI 2-/4-Wire Basic	6ES7134-6FB00-0BA1 ET 200SP, AI 2xU Standard, PU 1	6ES7134-6FF00-0AA1 ET 200SP, AI 8xU Basic	6ES7134-6HD01-0BA1 ET 200SP, AI 4xU/I 2-Wire ST, PU 1	6ES7134-6GB00-0BA1 ET 200SP, AI 2xI 2-/4-Wire ST, PU 1
General information					
Product type designation	AI 8xI 2-/4-wire BA	AI 2xU ST	AI 8xU BA	AI 4x U/I 2-wire	AI 2xI 2-/4-wire ST
Product function					
• Isochronous mode	No	No	No	No	No
• Measuring range scalable	No	No	No	No	No
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1	V13 SP1	V13 SP1	V14 / -	V13 SP1
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.6 and higher	V5.5 SP3
• PCS 7 configurable/ integrated from version				V8.1 SP1	
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	V2.3 / -
Operating mode					
• Oversampling	No	No	No	No	No
• MSI	No	No	No	No	No
Supply voltage					
Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes	Yes
Analog inputs					
Number of analog inputs	8; Single-ended	2	8; Single-ended	4; Differential inputs	2
• For current measurement	8				2
• For voltage measurement		2	8		
permissible input voltage for voltage input (destruction limit), max.		30 V	30 V	30 V	
permissible input current for current input (destruction limit), max.	50 mA			50 mA	50 mA
Cycle time (all channels), min.	1 ms; per channel	500 µs	1 ms; per channel	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)	500 µs
Input ranges (rated values), voltages					
• 0 to +10 V		Yes; 15 bit	Yes; 15 bit	Yes; 15 bit	
• 1 V to 5 V		Yes; 15 bit		Yes; 15 bit	
• -10 V to +10 V		Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• -5 V to +5 V		Yes; 16 bit incl. sign		Yes; 16 bit incl. sign	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6GF00-0AA1	6ES7134-6FB00-0BA1	6ES7134-6FF00-0AA1	6ES7134-6HD01-0BA1	6ES7134-6GB00-0BA1
	ET 200SP, AI 8xI 2-/4-Wire Basic	ET 200SP, AI 2xU Standard, PU 1	ET 200SP, AI 8xU Basic	ET 200SP, AI 4xU/I 2-Wire ST, PU 1	ET 200SP, AI 2xI 2-/4-Wire ST, PU 1
Input ranges (rated values), currents					
• 0 to 20 mA	Yes			Yes; 15 bit	Yes; 15 bit
• -20 mA to +20 mA	Yes				Yes; 16 bit incl. sign
• 4 mA to 20 mA	Yes			Yes; 15 bit	Yes; 15 bit
Cable length					
• shielded, max.	200 m	200 m	200 m	1 000 m; 200 m for voltage measurement	1 000 m
Analog value generation for the inputs					
Integration and conversion time/resolution per channel					
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes	Yes	Yes	Yes
• Interference voltage suppression for interference frequency f1 in Hz	16.67 / 50 / 60 / 4 800 (16.67 / 50 / 60)	16.6 / 50 / 60 Hz / off	16.67 / 50 / 60 / 4 800 (16.67 / 50 / 60)	16.6 / 50 / 60 Hz	16.6 / 50 / 60 Hz / off
• Conversion time (per channel)	180 / 60 / 50 / 0.625 (67.5 / 22.5 / 18.75) ms	50 ms @ 60 Hz, 60 ms @ 50 Hz, 180 ms @ 16.6 Hz, 250 µs without filter	180 / 60 / 50 / 0.625 (67.5 / 22.5 / 18.75) ms	180 / 60 / 50 ms	50 ms @ 60 Hz, 60 ms @ 50 Hz, 180 ms @ 16.6 Hz, 500 µs without filter
Smoothing of measured values					
• Number of smoothing levels	4	4	4	4; None; 4/8/16 times	4
• parameterizable	Yes	Yes	Yes	Yes	Yes
Encoder					
Connection of signal encoders					
• for voltage measurement	No	Yes	Yes	Yes	
• for current measurement as 2-wire transducer	Yes			Yes	Yes
- Burden of 2-wire transmitter, max.	650 Ω			650 Ω	650 Ω
• for current measurement as 4-wire transducer	Yes		No	No	Yes
Errors/accuracies					
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to input range, (+/-)		0.3 %	0.3 %	0.3 %	
• Current, relative to input range, (+/-)	0.3 %			0.3 %	0.3 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency					
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB; With conversion time 67.5 / 22.5 / 18.75 ms: 40 dB	70 dB	70 dB; With conversion time 67.5 / 22.5 / 18.75 ms: 40 dB	70 dB	70 dB
• Common mode voltage, max.		10 V		10 V	10 V
• Common mode interference, min.		90 dB		90 dB	90 dB
Interrupts/diagnostics/ status information					
Diagnostics function	Yes	Yes	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
• Limit value alarm	No	No	No	No	No

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6GF00-0AA1 ET 200SP, AI 8xI 2-/4-Wire Basic	6ES7134-6FB00-0BA1 ET 200SP, AI 2xU Standard, PU 1	6ES7134-6FF00-0AA1 ET 200SP, AI 8xU Basic	6ES7134-6HD01-0BA1 ET 200SP, AI 4xU/I 2-Wire ST, PU 1	6ES7134-6GB00-0BA1 ET 200SP, AI 2xI 2-/4-Wire ST, PU 1
Diagnoses					
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	Yes
• Wire-break	Yes; at 4 to 20 mA	No	No	Yes; at 4 to 20 mA	Yes; at 4 to 20 mA
• Short-circuit	Yes; Sensor supply to M; module by module	Yes; at 1 to 5 V	No	Yes; with 1 to 5 V or 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes; Short-circuit of the encoder supply
• Group error	Yes	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes; Module-wise	Yes; Module-wise	Yes; Module-wise	Yes	Yes
Diagnostics indication LED					
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	No	No	No	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red LED	Yes; green/red DIAG LED
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates					
Suitable for applications according to AMS 2750				Yes; Declaration of Conformity, see online support entry 109757262	
Suitable for applications according to CQI-9				Yes	
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C; < 0 °C as of FS04	-30 °C; < 0 °C as of FS04	-30 °C; < 0 °C as of FS04	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS04
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS04	-30 °C; < 0 °C as of FS04	-30 °C; < 0 °C as of FS04	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS04
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm	58 mm
Weights					
Weight, approx.	31 g	31 g	31 g	31 g	32 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6GD01-0BA1 ET 200SP, AI 4xI 2-/4-Wire ST, PU 1	6ES7134-6TD00-0CA1 ET 200SP, AI 4xI 2-WIRE 4...20mA HART	6ES7134-6HB00-0CA1 ET 200SP AI 2 X U/I 2-, 4-Wire HF	6ES7134-6HB00-0DA1 ET 200SP AI 2 X U/I 2-, 4-Wire HS
General information				
Product type designation	AI 4xI 2-/4-wire ST	AI 4xI 2-wire HART	AI 2xU/I 2-/4-wire HF	AI 2xU/I 2-/4-wire HS
Product function				
• Isochronous mode	No	No	Yes	Yes
• Measuring range scalable	No	No	No	No
• Scalable measured values				No
• Adjustment of measuring range				No
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	V14 / -	V13 SP1	V13	V13 SP1
• STEP 7 configurable/ integrated from version	V5.6 and higher	V5.5 SP4 and higher	V5.5 / -	V5.5 SP3 / -
• PCS 7 configurable/ integrated from version	V8.1 SP1	V8.1 SP1	V8.1 SP1	
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher	GSD Revision 5	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3
Operating mode				
• Oversampling	No	No	No	Yes; 2 channels per module
• MSI	No	No	Yes	No
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes
Analog inputs				
Number of analog inputs	4; Differential inputs	4; Differential inputs	2; Differential inputs	2; Differential inputs
• For current measurement		4	2	2
• For voltage measurement			2	2
permissible input voltage for voltage input (destruction limit), max.			30 V	30 V
permissible input current for current input (destruction limit), max.	50 mA	50 mA	50 mA	50 mA
Cycle time (all channels), min.				125 µs
Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)				
Analog input with oversampling			No	Yes
• Values per cycle, max.				16
• Resolution, min.				50 µs
Standardization of measured values			Yes	
Input ranges (rated values), voltages				
• 0 to +10 V			Yes; 15 bit	Yes; 15 bit
• 1 V to 5 V			Yes; 15 bit	Yes; 13 bit
• -10 V to +10 V			Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• -5 V to +5 V			Yes; 16 bit incl. sign	Yes; 15 bit incl. sign
Input ranges (rated values), currents				
• 0 to 20 mA	Yes; 16 bit incl. sign	No	Yes; 15 bit	Yes; 15 bit
• -20 mA to +20 mA	Yes	No	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• 4 mA to 20 mA	Yes; 15 bit	Yes; 15 bit + sign	Yes; 15 bit	Yes; 14 bit
Cable length				
• shielded, max.	1 000 m	800 m	1 000 m; 200 m for voltage measurement	1 000 m; 200 m for voltage measurement

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6GD01-0BA1 ET 200SP, AI 4XI 2-/4-Wire ST, PU 1	6ES7134-6TD00-0CA1 ET 200SP, AI 4XI 2-WIRE 4...20MA HART	6ES7134-6HB00-0CA1 ET 200SP AI 2 X U/I 2-, 4-Wire HF	6ES7134-6HB00-0DA1 ET 200SP AI 2 X U/I 2-, 4-Wire HS
Analog value generation for the inputs				
Integration and conversion time/resolution per channel				
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes; channel by channel	Yes	
• Integration time (ms)			67.5 / 22.5 / 18.75 / 10 / 5 / 2.5 / 1.25 / 0.625 ms	
• Basic conversion time, including integration time (ms)			68.03 / 22.83 / 19.03 / 10.28 / 5.23 / 2.68 / 1.43 / 0.730 ms	
• Interference voltage suppression for interference frequency f1 in Hz	16.6 / 50 / 60 Hz	10 / 50 / 60 Hz	16.6 / 50 / 60 / 300 / 600 / 1 200 / 2 400 / 4 800	No
• Conversion time (per channel)	180 / 60 / 50 ms		68.2 / 23 / 19.2 / 10.45 / 5.40 / 2.85 / 1.6 / 0.9 ms	10 µs
• Basic execution time of the module (all channels released)			1 ms	
Smoothering of measured values				
• Number of smoothering levels	4; None; 4/8/16 times	4; None; 4/8/16 times	6; none; 2-/4-/8-/16-/32-fold	7; none; 2-/4-/8-/16-/32-/64-fold
• parameterizable	Yes	Yes	Yes	Yes
Encoder				
Connection of signal encoders				
• for voltage measurement	No	No	Yes	Yes
• for current measurement as 2-wire transducer	Yes	Yes	Yes	Yes
- Burden of 2-wire transmitter, max.	650 Ω		650 Ω	650 Ω
• for current measurement as 4-wire transducer	Yes		Yes	Yes
Errors/accuracies				
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to input range, (+/-)			0.05 %; 0.1 % at SFU 4.8 kHz	0.2 %
• Current, relative to input range, (+/-)	0.3 %	0.3 %	0.05 %; 0.1 % at SFU 4.8 kHz	0.2 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency				
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB	60 dB		
• Common mode voltage, max.	10 V		35 V	35 V
• Common mode interference, min.	90 dB		90 dB	90 dB
Isochronous mode				
Filtering and processing time (TCI), min.			800 µs	80 µs
Bus cycle time (TDP), min.			1 ms	125 µs; Starting from firmware Version V2.0.1
Interrupts/diagnostics/status information				
Diagnostics function	Yes	Yes	Yes	
Alarms				
• Diagnostic alarm	Yes	Yes	Yes	Yes
• Limit value alarm	No	Yes	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6GD01-0BA1 ET 200SP, AI 4XI 2-/4-Wire ST, PU 1	6ES7134-6TD00-0CA1 ET 200SP, AI 4XI 2-WIRE 4...20MA HART	6ES7134-6HB00-0CA1 ET 200SP AI 2 X U/I 2-, 4-Wire HF	6ES7134-6HB00-0DA1 ET 200SP AI 2 X U/I 2-, 4-Wire HS
Diagnoses				
• Monitoring the supply voltage	Yes	Yes	Yes	Yes
• Wire-break	Yes; at 4 to 20 mA	Yes; channel by channel	Yes; Measuring range 4 to 20 mA only	Yes; channel-by-channel, at 4 to 20 mA only
• Short-circuit	Yes; 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes; Channel-by-channel, short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes; channel-by-channel, at 1 to 5 V or for short-circuit in encoder supply	Yes; channel-by-channel, at 1 to 5 V or for current measuring ranges short-circuit in encoder supply
• Group error	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes	Yes; channel by channel	Yes	Yes; channel by channel
Diagnostics indication LED				
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	No	Yes; red LED	Yes; red LED	Yes; red LED
• for module diagnostics	Yes; green/red LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C; < 0 °C as of FS02	-30 °C	-30 °C; < 0 °C as of FS06	-30 °C; < 0 °C as of FS07
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS02	-30 °C	-30 °C; < 0 °C as of FS06	-30 °C; < 0 °C as of FS07
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Dimensions				
Width	15 mm	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm
Weights				
Weight, approx.	31 g	31 g	32 g	32 g
Article number	6ES7134-6JF00-0CA1 ET 200SP, AI 8xRTD/TC 2-Wire HF	6ES7134-6JD00-0CA1 ET 200SP, AI 4xRTD/TC 2-/3-/4-Wire HF	6ES7134-6JD00-0DA1 ET 200SP, AI 4x TC HS	
General information				
Product type designation	AI 8xRTD/TC 2-wire HF	AI 4xRTD/TC 2-/3-/4-wire HF	AI 4xTC HS	
Product function				
• Isochronous mode	No	No	No	
• Measuring range scalable	Yes		Yes	
• Adjustment of measuring range		Yes		
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	V16, V17 / V18	V12 SP1 / V13	V15 with HSP 265/integrated as of V15.1	
• STEP 7 configurable/ integrated from version	V5.5 SP3 / V5.5 SP4	V5.5 SP3 / V5.5 SP4	V5.5 SP3 or higher	
• PCS 7 configurable/ integrated from version	V8.1 SP1	V8.1 SP1		
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher	GSD Revision 5	One GSD file each, Revision 3 and 5 and higher	
• PROFINET from GSD version/ GSD revision	GSDML V2.35	GSDML V2.3	GSDML V2.3	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6JF00-0CA1 ET 200SP, AI 8xRTD/TC 2-Wire HF	6ES7134-6JD00-0CA1 ET 200SP, AI 4xRTD/TC 2-/3-/4-Wire HF	6ES7134-6JD00-0DA1 ET 200SP, AI 4x TC HS
Operating mode			
• Oversampling	No	No	No
• MSI	No	No	Yes
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Analog inputs			
Number of analog inputs	8	4	4
permissible input voltage for voltage input (destruction limit), max.	30 V	30 V	30 V
Constant measurement current for resistance-type transmitter, typ.	2 mA	2 mA	
Cycle time (all channels), min.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels); for line compensation in case of a three-wire connection, an additional cycle is necessary	5 ms; Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)
Technical unit for temperature measurement adjustable	Yes; °C/°F/K	Yes; °C/°F/K	Yes; °C/°F/K
Input ranges (rated values), voltages			
• -1 V to +1 V	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• -250 mV to +250 mV	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• -50 mV to +50 mV	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• -80 mV to +80 mV	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
Input ranges (rated values), thermocouples			
• Type B	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type C	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type E	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type J	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type K	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type L	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type N	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type R	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type S	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type T	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type U	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• Type TXK/TXK(L) to GOST	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
Input ranges (rated values), resistance thermometer			
• Cu 10		Yes; 16 bit incl. sign	
• Ni 100	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• Ni 1000	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• LG-Ni 1000	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• Ni 120	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• Ni 200	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• Ni 500	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• Pt 100	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• Pt 1000	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• Pt 200	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• Pt 500	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6JF00-0CA1 ET 200SP, AI 8xRTD/TC 2-Wire HF	6ES7134-6JD00-0CA1 ET 200SP, AI 4xRTD/TC 2-/3-/4-Wire HF	6ES7134-6JD00-0DA1 ET 200SP, AI 4x TC HS
Input ranges (rated values), resistors			
• 0 to 150 ohms	Yes; 15 bit	Yes; 15 bit	
• 0 to 300 ohms	Yes; 15 bit	Yes; 15 bit	
• 0 to 600 ohms	Yes; 15 bit	Yes; 15 bit	
• 0 to 3000 ohms	Yes; 15 bit	Yes; 15 bit	
• 0 to 6000 ohms	Yes; 15 bit	Yes; 15 bit	
• PTC	Yes; 15 bit	Yes; 15 bit	
Thermocouple (TC)			
Temperature compensation			
- parameterizable	Yes	Yes	Yes
Cable length			
• shielded, max.	200 m; 50 m with thermocouples	200 m; 50 m with thermocouples	200 m; 100 m for thermocouples
Analog value generation for the inputs			
Integration and conversion time/resolution per channel			
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes	Yes
• Interference voltage suppression for interference frequency f1 in Hz	16.6 / 50 / 60 Hz	16.6 / 50 / 60 Hz	16.6 / 50 / 60 Hz / off
• Conversion time (per channel)	180 / 60 / 50 / (67.5 / 22.5 / 18.75) ms	180 / 60 / 50 / (67.5 / 22.5 / 18.75) ms	180 / 60 / 50 / 1.25 ms
Smoothing of measured values			
• Number of smoothing levels	4; None; 4/8/16 times	4; None; 4/8/16 times	4; None; 4/8/16 times
• parameterizable	Yes	Yes	Yes
Encoder			
Connection of signal encoders			
• for voltage measurement	Yes	Yes	Yes
• for resistance measurement with two-wire connection	Yes	Yes	
• for resistance measurement with three-wire connection	No	Yes	
• for resistance measurement with four-wire connection	No	Yes	
Errors/accuracies			
Basic error limit (operational limit at 25 °C)			
• Voltage, relative to input range, (+/-)	0.05 %	0.05 %	0.05 %; 0.2 % when SFU OFF
• Resistance, relative to input range, (+/-)	0.05 %	0.05 %	
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, $f1 = \text{interference frequency}$			
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB; With conversion time 67.5 / 22.5 / 18.75 ms: 40 dB	70 dB; With conversion time 67.5 / 22.5 / 18.75 ms: 40 dB	70 dB
• Common mode voltage, max.	10 V	10 V	60 V; DC
• Common mode interference, min.	90 dB	90 dB	90 dB
Interrupts/diagnostics/status information			
Diagnostics function		Yes	Yes
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6JF00-0CA1 ET 200SP, AI 8xRTD/TC 2-Wire HF	6ES7134-6JD00-0CA1 ET 200SP, AI 4xRTD/TC 2-/3-/4-Wire HF	6ES7134-6JD00-0DA1 ET 200SP, AI 4x TC HS
Diagnoses			
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire-break	Yes; channel by channel	Yes; channel by channel	Yes; channel by channel
• Group error	Yes	Yes	Yes
• Overflow/underflow	Yes; channel by channel	Yes; channel by channel	Yes; channel by channel
Diagnostics indication LED			
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red LED	Yes; red LED	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red LED
Potential separation			
Potential separation channels			
• between the channels and backplane bus	Yes	Yes	Yes
Standards, approvals, certificates			
Suitable for applications according to AMS 2750			Yes; Declaration of Conformity, see online support entry 109757262
Suitable for applications according to CQI-9			Yes; Based on AMS 2750 E
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-30 °C	-30 °C; < 0 °C as of FS08	-30 °C; < 0 °C as of FS02
• horizontal installation, max.	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C; < 0 °C as of FS08	-30 °C; < 0 °C as of FS02
• vertical installation, max.	50 °C	50 °C	50 °C
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	2 000 m; On request: Installation altitudes greater than 2 000 m	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP System Manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions			
Width	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm
Weights			
Weight, approx.			33 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	7MH4134-6LB00-0DA0 Analog input module AI 2xSG 4-/6-wire HS
General information	
Product type designation	AI 2xSG 4-/6-wire HS
Product function	
• Isochronous mode	Yes
• Measuring range scalable	Yes
• Scalable measured values	No
• Adjustment of measuring range	Yes; $\pm 0.5 \dots 320$ mV/V
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V14 SP1
• STEP 7 configurable/ integrated from version	V5.6
• PROFIBUS from GSD version/ GSD revision	V03.01.105
• PROFINET from GSD version/ GSD revision	GSDML V2.33
Operating mode	
• Oversampling	Yes; 2 channels per module
• MSI	No
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Short-circuit protection	Yes
Analog inputs	
Number of analog inputs	2; Differential inputs
Cycle time (all channels), min.	100 μ s
Analog input with oversampling	Yes
• Values per cycle, max.	14
• Resolution, min.	100 μ s
Input ranges	
• Strain gauges (full bridges)	Yes
Cable length	
• shielded, max.	500 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	28 bit; 16 bits with oversampling
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	60 / 50 Hz / no
• Conversion time (per channel)	100 μ s
Smoothing of measured values	
• IIR low-pass filter frequency	0.01 ... 600 Hz
• IIR low-pass filter ordinal number	1 ... 4
• Notch filter frequency	0.1 ... 1 000 Hz
• Notch filter quality	5.00 ... 250.00
• Average value filter	0.1 ... 655.3 ms
Encoder	
Connection of signal encoders	
• For strain gauges (full bridges) with 4-conductor connection	Yes
• For strain gauges (full bridges) with 6-conductor connection	Yes
• Resistance of full bridge, min.	80 Ω
• Resistance of full bridge, max.	5 000 Ω

Article number	7MH4134-6LB00-0DA0 Analog input module AI 2xSG 4-/6-wire HS
Errors/accuracies	
Temperature coefficient, zero point	$\leq \pm 0.25$ μ V/K
Temperature coefficient, span, 4-wire connection (in relation to end value)	$\leq \pm 5$ ppm/K
Temperature coefficient, span, 6-wire connection (in relation to end value)	$\leq \pm 10$ ppm/K
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %; See manual for details
Isochronous mode	
Filtering and processing time (TCI), min.	87 μ s
Bus cycle time (TDP), min.	125 μ s
Interrupts/diagnostics/ status information	
Diagnostics function	Yes; Diagnostic alarm
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Limit value alarm	Yes; two upper and two lower limit values in each case
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
• Overflow/underflow	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 1 K/100 m) at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	30 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6PA01-0BU0 ET 200SP AI Energy Meter CT ST	6ES7134-6PA21-0BU0 ET 200SP AI Energy Meter RC ST	6ES7134-6PA01-0CU0 ET 200SP AI Energy Meter CT HF	6ES7134-6PA21-0CU0 ET 200SP AI Energy Meter RC HF
General information				
Product type designation	AI Energy Meter CT ST	AI Energy Meter RC ST	AI Energy Meter CT HF	AI Energy Meter RC HF
Product function				
• Voltage measurement	Yes	Yes	Yes	Yes
- without voltage transformer	Yes	Yes	Yes	Yes
- with voltage transformer	Yes	Yes	Yes	Yes
• Current measurement	Yes; max. 3 + neutral conductor	Yes; max. 3 + neutral conductor	Yes; Max. 4	Yes; Max. 4
- without current transformer	No	No	No	No
- with current transformer	Yes; 1 A or 5 A current transformer	No	Yes; 1 A or 5 A current transformer	No
- With Rogowski coil	No	Yes	No	Yes
- With current-voltage-converter	No	Yes; 333 mV interface	No	Yes; 333 mV interface
• Energy measurement	Yes	Yes	Yes	Yes
• Frequency measurement	Yes	Yes	Yes	Yes
• Power measurement	Yes	Yes	Yes	Yes
• Active power measurement	Yes	Yes	Yes	Yes
• Reactive power measurement	Yes	Yes	Yes	Yes
• Power factor measurement	Yes	Yes	Yes	Yes
• Active factor measurement	Yes	Yes	Yes	Yes
• Reactive power compensation	Yes	Yes	Yes	Yes
• Line analysis	No	No	Yes	Yes
- Monitoring of instantaneous and half-wave values			Yes	Yes
- THD measurement for current and voltage			Yes	Yes
- Harmonics for current and voltage			Yes	Yes
- Voltage dip (DIP)			Yes	Yes
- Voltage swell			Yes	Yes
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Isochronous mode	No	No	No	No
Engineering with				
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V16 or higher with HSP	STEP 7 V16 or higher with HSP	STEP 7 V16 or higher with HSP	STEP 7 V16 or higher with HSP
• STEP 7 configurable/integrated from version	Configurable via GSD file	Configurable via GSD file	V5.5 SP3 or higher	V5.5 SP3 or higher
• PROFIBUS from GSD version/GSD revision	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/GSD revision	V2.3	V2.3	V2.3	V2.3
Operating mode				
• Switching between operating modes in RUN	Yes; For module version 32 I/20 Q, it is possible to dynamically switch between 25 user data variants, 23 of which are pre-defined and 2 of which can be defined by the specific user	Yes; For module version 32 I/20 Q, it is possible to dynamically switch between 25 user data variants, 23 of which are pre-defined and 2 of which can be defined by the specific user	Yes; For module version 32 I/20 Q, it is possible to dynamically switch between 25 user data variants, 23 of which are pre-defined and 2 of which can be defined by the specific user	Yes; For module version 32 I/20 Q, it is possible to dynamically switch between 25 user data variants, 23 of which are pre-defined and 2 of which can be defined by the specific user
• Cyclic measured value access	Yes	Yes	Yes	Yes
• Acyclic measured value access	Yes	Yes	Yes	Yes
• Fixed measured value sets	Yes	Yes	Yes	Yes
• Freely definable measured value sets	Yes; For cyclic and acyclic measured value access	Yes; For cyclic and acyclic measured value access	Yes; For cyclic and acyclic measured value access	Yes; For cyclic and acyclic measured value access
Installation type/mounting				
Mounting position	any	any	any	any
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V

I/O systems

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I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6PA01-0BU0 ET 200SP AI Energy Meter CT ST	6ES7134-6PA21-0BU0 ET 200SP AI Energy Meter RC ST	6ES7134-6PA01-0CU0 ET 200SP AI Energy Meter CT HF	6ES7134-6PA21-0CU0 ET 200SP AI Energy Meter RC HF
Analog inputs				
Cycle time (all channels), typ.	50 ms; Time for consistent update of all measured and calculated values (cyclic and acyclic data)	50 ms; Time for consistent update of all measured and calculated values (cyclic and acyclic data)	50 ms; Time for consistent update of all measured and calculated values (cyclic and acyclic data)	50 ms; Time for consistent update of all measured and calculated values (cyclic and acyclic data)
Cable length				
• shielded, max.	200 m	200 m	200 m	200 m
Interrupts/diagnostics/ status information				
Alarms				
• Diagnostic alarm	Yes	Yes	Yes	Yes
• Limit value alarm	Yes	Yes	Yes	Yes
• Hardware interrupt	Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)	Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)	Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)	Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)
Diagnoses				
• Line quality			Yes	Yes
• Supply voltage	Yes	Yes	Yes	Yes
• Hardware interrupt lost	Yes	Yes	Yes	Yes
• Parameter assignment error	Yes	Yes	Yes	Yes
• Module fault	Yes	Yes	Yes	Yes
• Channel not available	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes	Yes	Yes	Yes
• Overload current	Yes	Yes	Yes	Yes
Diagnostics indication LED				
• Monitoring of the supply voltage (PWR-LED)	Yes	Yes	Yes	Yes
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red Fn LED	Yes; red Fn LED	Yes; red Fn LED	Yes; red Fn LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Integrated Functions				
Measuring functions				
• Measuring procedure for voltage measurement	TRMS	TRMS	TRMS	TRMS
• Measuring procedure for current measurement	TRMS	TRMS	TRMS	TRMS
• Type of measured value acquisition	seamless	seamless	seamless	seamless
• Curve shape of voltage	Sinusoidal or distorted	Sinusoidal or distorted	Sinusoidal or distorted	Sinusoidal or distorted
• Buffering of measured variables	Yes	Yes	Yes	Yes
• Parameter length	128 byte	128 byte	128 byte	128 byte
• Bandwidth of measured value acquisition	3.2 kHz; Harmonics: 63 / 50 Hz, 52 / 60 Hz	3.2 kHz; Harmonics: 63 / 50 Hz, 52 / 60 Hz	3.2 kHz; Harmonics: 63 / 50 Hz, 52 / 60 Hz	3.2 kHz; Harmonics: 63 / 50 Hz, 52 / 60 Hz
Measuring range				
- Frequency measurement, min.	40 Hz	40 Hz	40 Hz	40 Hz
- Frequency measurement, max.	70 Hz	70 Hz	70 Hz	70 Hz
Measuring inputs for voltage				
- Measurable line voltage between phase and neutral conductor	277 V	277 V	277 V	277 V
- Measurable line voltage between the line conductors	480 V	480 V	480 V	480 V
- Measurable line voltage between phase and neutral conductor, min.	3 V	3 V	3 V	3 V
- Measurable line voltage between phase and neutral conductor, max.	300 V	300 V	300 V	300 V
- Measurable line voltage between the line conductors, min.	6 V	6 V	6 V	6 V
- Measurable line voltage between the line conductors, max.	519 V	519 V	519 V	519 V

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog input modules**Technical specifications**

Article number	6ES7134-6PA01-0BU0 ET 200SP AI Energy Meter CT ST	6ES7134-6PA21-0BU0 ET 200SP AI Energy Meter RC ST	6ES7134-6PA01-0CU0 ET 200SP AI Energy Meter CT HF	6ES7134-6PA21-0CU0 ET 200SP AI Energy Meter RC HF
- Internal resistance line conductor and neutral conductor	1.5 MΩ	1.5 MΩ	1.5 MΩ	1.5 MΩ
- Power consumption per phase	60 mW; 300 V AC	60 mW; 300 V AC	60 mW; 300 V AC	60 mW; 300 V AC
- Impulse voltage resistance 1,2/50μs	2.5 kV	2.5 kV	2.5 kV	2.5 kV
- Measurement category for voltage measurement in accordance with IEC 61010-2-030	CAT II		CAT II	
- Overvoltage category		CAT II according to IEC 61010 Part 1		CAT II according to IEC 61010 Part 1
Measuring inputs for current				
- measurable relative current (AC), min.	1 %; Relative to measuring range; 1 A, 5 A		1 %; Relative to measuring range; 1 A, 5 A	
- measurable relative current (AC), max.	100 %; Relative to the secondary rated current 5 A		120 %; Relative to the secondary rated current 5 A	
- Continuous current with AC, maximum permissible	5 A		5 A; 6 A permanent thermal overload	
- Apparent power consumption per phase for measuring range 5 A	0.6 VA		0.6 VA	
- Rated value short-time withstand current restricted to 1 s	100 A		100 A	
- Input resistance measuring range 0 to 5 A	25 mΩ; At the terminal		25 mΩ; At the terminal	
- Surge strength	10 A; for 1 minute		10 A; for 1 minute	
- Zero point suppression	0 ... 20%, referred to the nominal current		0 ... 20%, referred to the nominal current	
Measuring inputs for current (Rog. or I/U converter)				
- Measurable current at AC, max.		424 mV		424 mV
- Continuous voltage, maximum permissible		2 V		2 V
- Rated value, short-time withstand voltage restricted to 1 s		30 V		30 V
- Input resistance		120 kΩ		120 kΩ
- Zero point suppression		Yes; 0 ... 20%, referred to the nominal current		Yes; 0 ... 20%, referred to the nominal current
Accuracy class according to IEC 61557-12				
- Measured variable voltage	0,2	0,2	0,2	0,2
- Measured variable current	0,2	0,2	0,2	0,2
- Measured variable apparent power	0.5	0.5	0.5	0.5
- Measured variable active power	0.5	0.5	0.5	0.5
- Measured variable reactive power	1	1	1	1
- Measured variable power factor	0.5	0.5	0.5	0.5
- Measured variable active energy	0.5	0.5	0.5	0.5
- Measured variable reactive energy	1	1	1	1
- Measured variable neutral current	0,2	0,2	0,2	0,2
- Measured variable phase angle	±0.5 °; not covered by IEC 61557-12	±0.5 °; not covered by IEC 61557-12	±0.5 °; not covered by IEC 61557-12	±0.5 °; not covered by IEC 61557-12
- Measured variable frequency	0.05; only valid for the permissible voltage measuring range	0.05; only valid for the permissible voltage measuring range	0.05; only valid for the permissible voltage measuring range	0.05; only valid for the permissible voltage measuring range
- Measured variable harmonic			1	1
- Measured variable THDU			1	1
- Measured variable THDI			1	1

I/O systems

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I/O modules > Analog input modules

Technical specifications

Article number	6ES7134-6PA01-0BU0 ET 200SP AI Energy Meter CT ST	6ES7134-6PA21-0BU0 ET 200SP AI Energy Meter RC ST	6ES7134-6PA01-0CU0 ET 200SP AI Energy Meter CT HF	6ES7134-6PA21-0CU0 ET 200SP AI Energy Meter RC HF
Accuracy class line analysis acc. to IEC 61000-4-30				
- Measured variable voltage			Class S	Class S
- Measured variable current			Class S	Class S
- Measured variable frequency			Class S	Class S
- Measured variable voltage interruption			Class S	Class S
- Measured variable voltage dip and swell			Class S	Class S
- Measured variable harmonic voltage			Class S	Class S
- Measured variable harmonic current			Class S	Class S
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	3 000 m; Restrictions for installation altitudes > 2 000 m, see manual	3 000 m; Restrictions for installation altitudes > 2 000 m, see manual	3 000 m; Restrictions for installation altitudes > 2 000 m, see manual	3 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions				
Width	20 mm	20 mm	20 mm	20 mm
Height	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm
Weights				
Weight, approx.	45 g	45 g	45 g	45 g
Other				
Data for selecting a voltage transformer				
• Secondary side, max.	300 V	300 V	300 V	300 V
Data for selecting a current transformer				
• Burden power current transformer x/1A, min.	As a function of cable length and cross section, see device manual		As a function of cable length and cross section, see device manual	
• Burden power current transformer x/5A, min.	As a function of cable length and cross section, see device manual		As a function of cable length and cross section, see device manual	

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Analog output modules

Overview



- 2 and 4-channel analog output (AQ) modules
- Apart from the standard type of delivery in single-unit packaging, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.

For different requirements, the analog output modules offer:

- Function classes Standard, High Feature and High-Speed
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Potential distributor modules for system-integrated expansion with potential terminals
- Individual system-integrated potential group formation with self-assembling voltage busbars (a separate power module is no longer required for ET 200SP)

- Option for connecting current and voltage actuators
- Clear labeling on front of module
- LEDs for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable nameplate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - Oversampling operating mode (n-fold equidistant output of an analog value within one PN cycle and thus the precisely timed output of an analog value or a sequence of analog values)
 - Isochronous mode (simultaneous equidistant output of analog values)
 - Output of substitute value in the event of communication interruptions (shutdown, output adjustable substitute value, or keep last value)
 - Calibration during runtime
 - Re-parameterization during operation
 - Firmware update
 - Diagnostics of wire break, short-circuit, overflow, underflow
 - Value status (optional binary validity information of the analog value status in the process image)
 - Supports the PROFlenergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shield terminal

A quick and clear comparison of the functions of the AQ modules is offered by the TIA Selection Tool.

Overview of analog output modules

Analog output	Pkg. unit	Article No.	CC code	BU type
AQ 2 x U ST	1	6ES7135-6FB00-0BA1	CC00	A0, A1
AQ 2 x I ST	1	6ES7135-6GB00-0BA1	CC00	A0, A1
AQ 4 x U/I ST	1	6ES7135-6HD00-0BA1	CC00	A0, A1
AQ 2 x U/I HF	1	6ES7135-6HB00-0CA1	CC00	A0, A1
AQ 2xU/I HS	1	6ES7135-6HB00-0DA1	CC00	A0, A1
With two operating modes:				
• High-speed isochronous AQ				
• Oversampling				
AQ 4xI HART HF	1	6ES7135-6TD00-0CA1	CC00	A0, A1

I/O systems

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I/O modules > Analog output modules

Overview

Overview of BaseUnits

BaseUnit	Pkg. unit	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC01 to CC05	--
BU type A0 • New potential group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC01 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC01 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC01 to CC05	--
BU type A1 • New potential group (light) • With temperature sensor • 16 process terminals • With 2x5 additional terminals	1	6ES7193-6BP40-0DA1	CC01 to CC05	CC74
BU type A1 • New potential group (light) • With temperature sensor • 16 process terminals • Without 2x5 additional terminals	1	6ES7193-6BP00-0DA1	CC01 to CC05	--
BU type A1 • Forwarding of the potential group (dark) • With temperature sensor • 16 process terminals • With 2x5 additional terminals	1	6ES7193-6BP40-0BA1	CC01 to CC05	CC74
BU type A1 • Forwarding of the potential group (dark) • With temperature sensor • 16 process terminals • Without 2x5 additional terminals	1	6ES7193-6BP00-0BA1	CC01 to CC05	--

I/O systems

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I/O modules > Analog output modules

Overview

Overview of potential distributor modules

Potential distributor module	Pkg. unit	Article No.	CC codes for process terminals
PotDis BU Type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP1	CC00, CC62
PotDis BU Type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP1	CC00, CC62
PotDis BU Type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A)	1	6ES7193-6UP00-0DP2	CC00, CC63
PotDis BU Type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	1	6ES7193-6UP00-0BP2	CC00, CC63
PotDis TB Type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A)	1	6ES7193-6TP00-0TP0	CC10 to CC13
PotDis TB Type P1-R, 18x P1 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP1	CC10, CC12
PotDis TB Type P2-B, 18x P2 potential, (total current max. 10 A)	1	6ES7193-6TP00-0TP2	CC10, CC13
PotDis TB Type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	1	6ES7193-6TP00-0TN0	CC10

I/O systems

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I/O modules > Analog output modules

Ordering data	Article No.		Article No.
Analog output modules		BU15-P16+A10+2B	
Analog output module AQ 2xU Standard, BU type A0 or A1, color code CC00, 16-bit	6ES7135-6FB00-0BA1	BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the potential group	
Analog output module AQ 2xI Standard, BU type A0 or A1, color code CC00, 16-bit	6ES7135-6GB00-0BA1	• Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0
Analog output module AQ 4xU/I Standard, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.3\%$	6ES7135-6HD00-0BA1	BU15-P16+A0+2B	
Analog output module AQ 2xU/I High Feature, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.1\%$	6ES7135-6HB00-0CA1	BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group	
Analog output module AQ 2xU/I High Speed, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.3\%$	6ES7135-6HB00-0DA1	• Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0
Analog output module AQ 4xI HART High Feature, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.3\%$	6ES7135-6TD00-0CA1		
Suitable type A0 BaseUnits		Suitable type A1 BaseUnits (temperature detection)	
Types of delivery: Apart from the standard type of delivery in a single-unit package, selected BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules. The number of modules required is the number of modules ordered. The pack type is selected by selecting the Article No. Packs of 10 can therefore only be ordered in integer multiples of 10.		BU15-P16+A0+12D/T	6ES7193-6BP40-0DA1
		BU type A1; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new potential group (max. 10 A)	
BU15-P16+A10+2D		BU15-P16+A0+2D/T	6ES7193-6BP00-0DA1
BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new potential group (max. 10 A)	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A)	
• Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		BU15-P16+A0+12B/T	6ES7193-6BP40-0BA1
		BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the potential group	
BU15-P16+A0+2D		BU15-P16+A0+2B/T	6ES7193-6BP00-0BA1
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A)	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0	BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group	
• Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.			

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Analog output modules

Ordering data	Article No.	Article No.
Potential distributor modules		
PotDis BU		
PotDis BU, type P1 (light), 17x P1 potential, 1x P2 potential, for starting a new potential group (max. 10 A)	6ES7193-6UP00-0DP1	6ES7193-6SC20-1AM0
PotDis BU, type P1 (dark), 17x P1 potential, 1x P2 potential, for continuing the potential group	6ES7193-6UP00-0BP1	
PotDis BU, type P2 (light), 1x P1 potential, 17x P2 potential, for starting a new potential group (max. 10 A)	6ES7193-6UP00-0DP2	
PotDis BU, type P2 (dark), 1x P1 potential, 17x P2 potential, for continuing the potential group	6ES7193-6UP00-0BP2	
PotDis TB		
PotDis TB, type BR-W, 18x internally bridged terminals, without reference to P1, P2 or AUX, (total current max. 10 A)	6ES7193-6TP00-0TP0	
PotDis TB, type P1-R, 18x P1 potential, (total current max. 10 A)	6ES7193-6TP00-0TP1	
PotDis TB, type P2-B, 18x P2 potential, (total current max. 10 A)	6ES7193-6TP00-0TP2	
PotDis TB, type n.c.-G, 18x n.c. (not connected) terminals, without reference to P1, P2 or AUX	6ES7193-6TP00-0TN0	
Accessories		
Equipment labeling plate	6ES7193-6LF30-0AW0	
10 sheets of 16 labels, for printing with thermal transfer card printer or plotter		
Labeling strips		
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0	
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0	
1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer	6ES7193-6LA10-0AA0	
1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	6ES7193-6LA10-0AG0	
BU cover		
For covering empty slots (gaps); 5 units	6ES7133-6CV15-1AM0	
• 15 mm • 20 mm	6ES7133-6CV20-1AM0	
Shield connection		
5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding		
Color-coded labels		
Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units		6ES7193-6CP00-2MA0
Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 50 units		6ES7193-6CP00-4MA0
Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units		6ES7193-6CP71-2AA0
Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units		6ES7193-6CP72-2AA0
Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units		6ES7193-6CP73-2AA0
Color code CC74, for 2x5 additional terminals, BU type A1, red (terminals 1B to 5B), blue (terminals 1C to 5C); 10 units		6ES7193-6CP74-2AA0
Color-coded labels for PotDis BU		
Color code CC62, for 16 process terminals, PotDis BU type P1, red (terminals 1 to 16); 10 units		6ES7193-6CP62-2MA0
Color code CC63, for 16 process terminals, PotDis BU type P2, blue (terminals 1 to 16); 10 units		6ES7193-6CP63-2MA0
Color-coded labels for PotDis TB		
Color code CC10, for 18 process terminals, PotDis TB, gray (terminals 1 to 18); 10 units		6ES7193-6CP10-2MT0
Color code CC11, for 18 process terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units		6ES7193-6CP11-2MT0
Color code CC12, for 18 process terminals, PotDis TB, type P1 and BR, red (terminals 1 to 18); 10 units		6ES7193-6CP12-2MT0
Color code CC13, for 18 process terminals, PotDis TB, type P2 and BR, blue (terminals 1 to 18); 10 units		6ES7193-6CP13-2MT0
Mechanical coding elements		
For automatic coding of I/O modules; spare part. 20 units		
Type A		6ES7193-6KA00-3AA0
Type B		6ES7193-6KB00-3AA0
Type C		6ES7193-6KC00-3AA0
Type D		6ES7193-6KD00-3AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog output modules

Technical specifications

Article number	6ES7135-6FB00-0BA1 ET 200SP, AQ 2xU Standard, PU 1	6ES7135-6GB00-0BA1 ET 200SP, AQ 2xI Standard, PU 1	6ES7135-6HD00-0BA1 ET 200SP, AQ 4xU/I ST	6ES7135-6HB00-0DA1 ET 200SP, AQ 2 X U/I High Speed	6ES7135-6HB00-0CA1 ET 200SP, AQ 2 X U/I High Feature
General information					
Product type designation	AQ 2xU ST	AQ 2xI ST	AQ 4xU/I ST	AQ 2xU/I HS	AQ 2xU/I HF
Product function					
• Isochronous mode	No	No	No	Yes	Yes
• Output range scalable	No	No	No		
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 / -	V13 SP1 / -	V11 SP2 / V13	V13 SP1	V13 / V13
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PCS 7 configurable/ integrated from version			V8.1 SP1		V8.1 SP1
• PROFIBUS from GSD version/ GSD revision	GSD Revision 5	GSD Revision 5	One GSD file each, Revision 3 and 5 and higher	GSD Revision 5	GSD Revision 5
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3
Operating mode					
• Oversampling	No	No	No	Yes; 2 channels per module	No
• MSO	No	No	No	No	No
Supply voltage					
Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes	Yes
Analog outputs					
Number of analog outputs	2	2	4	2	2
Cycle time (all channels), min.	1 ms	1 ms	5 ms	125 µs	750 µs
Analog output with oversampling	No	No	No	Yes	
• Values per cycle, max.				16	
• Resolution, min.				45 µs; (2 channels), 35 µs (1 channel)	
Output ranges, voltage					
• 0 to 10 V	Yes; 15 bit		Yes; 15 bit	Yes; 15 bit	Yes; 15 bit
• 1 V to 5 V	Yes; 13 bit		Yes; 13 bit	Yes; 13 bit	Yes; 13 bit
• -5 V to +5 V	Yes; 15 bit incl. sign		Yes; 15 bit incl. sign	Yes; 15 bit incl. sign	Yes; 15 bit incl. sign
• -10 V to +10 V	Yes; 16 bit incl. sign		Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
Output ranges, current					
• 0 to 20 mA		Yes; 15 bit	Yes; 15 bit	Yes; 15 bit	Yes; 15 bit
• -20 mA to +20 mA		Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• 4 mA to 20 mA		Yes; 14 bit	Yes; 14 bit	Yes; 14 bit	Yes; 14 bit
Connection of actuators					
• for voltage output two-wire connection	Yes		Yes	Yes	Yes
• for voltage output four-wire connection	No		Yes	Yes	Yes
• for current output two-wire connection		Yes	Yes	Yes	Yes
Load impedance (in rated range of output)					
• with voltage outputs, min.	2 kΩ		2 kΩ	2 kΩ	2 kΩ
• with voltage outputs, capacitive load, max.	1 µF		1 µF	1 µF	1 µF
• with current outputs, max.		500 Ω	500 Ω	500 Ω	500 Ω
• with current outputs, inductive load, max.		1 mH	1 mH	1 mH	1 mH
Cable length					
• shielded, max.	200 m	1 000 m	1 000 m; 200 m for voltage output	1 000 m; 200 m for voltage output	1 000 m; 200 m for voltage output

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog output modules

Technical specifications

Article number	6ES7135-6FB00-0BA1 ET 200SP, AQ 2xU Standard, PU 1	6ES7135-6GB00-0BA1 ET 200SP, AQ 2xI Standard, PU 1	6ES7135-6HD00-0BA1 ET 200SP, AQ 4xU/I ST	6ES7135-6HB00-0DA1 ET 200SP, AQ 2 X U/I High Speed	6ES7135-6HB00-0CA1 ET 200SP, AQ 2 X U/I High Feature
Analog value generation for the outputs					
Integration and conversion time/resolution per channel					
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit	16 bit	16 bit
Settling time					
• for resistive load	0.1 ms	0.1 ms; Typical value	0.1 ms	0.05 ms	0.05 ms
• for capacitive load	1 ms		1 ms	0.05 ms; Max. 47 nF and 20 m cable length	0.05 ms; Max. 47 nF and 20 m cable length
• for inductive load		0.5 ms	0.5 ms	0.05 ms	0.05 ms
Errors/accuracies					
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to output range, (+/-)	0.3 %	0.3 %	0.3 %	0.1 %	0.1 %
• Current, relative to output range, (+/-)	0.3 %	0.3 %	0.3 %	0.1 %	0.1 %
Isochronous mode					
Execution and activation time (TCO), min.				70 µs	500 µs
Bus cycle time (TDP), min.				125 µs	750 µs
Interrupts/diagnostics/status information					
Diagnostics function	Yes	Yes	Yes	Yes	Yes
Substitute values connectable	Yes	Yes	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
Diagnoses					
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	Yes
• Wire-break		Yes	Yes	Yes; channel-by-channel, only for output type "current"	Yes; channel-by-channel, only for output type "current"
• Short-circuit	Yes; Module-wise		Yes	Yes; channel-by-channel, only for output type "voltage"	Yes; channel-by-channel, only for output type "voltage"
• Group error	Yes	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes; Module-wise	Yes; Module-wise	Yes; Module-wise	Yes	Yes; channel by channel
Diagnostics indication LED					
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	No	No	No	Yes; red LED	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS07	-30 °C; < 0 °C as of FS06	-30 °C; < 0 °C as of FS04
• horizontal installation, max.	60 °C	60 °C	60 °C; Observe derating	60 °C	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS07	-30 °C; < 0 °C as of FS06	-30 °C; < 0 °C as of FS04
• vertical installation, max.	50 °C	50 °C	50 °C; Observe derating	50 °C	50 °C

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Analog output modules

Technical specifications

Article number	6ES7135-6FB00-0BA1 ET 200SP, AQ 2xU Standard, PU 1	6ES7135-6GB00-0BA1 ET 200SP, AQ 2xI Standard, PU 1	6ES7135-6HD00-0BA1 ET 200SP, AQ 4xU/I ST	6ES7135-6HB00-0DA1 ET 200SP, AQ 2 X U/I High Speed	6ES7135-6HB00-0CA1 ET 200SP, AQ 2 X U/I High Feature
Altitude during operation relating to sea level • Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm	58 mm
Weights					
Weight, approx.	31 g	31 g	31 g	31 g	31 g
Article number	6ES7135-6TD00-0CA1 ET 200SP, AQ 4xI HART HF				
General information					
Product type designation	AQ 4xI HART HF				
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V15 SP1				
• STEP 7 configurable/ integrated from version	V5.6 and higher				
• PCS 7 configurable/ integrated from version	V9.0 SP1				
• PROFIBUS from GSD version/ GSD revision	V04.02.14				
• PROFINET from GSD version/ GSD revision	GSDML V2.34				
Supply voltage					
Rated value (DC)	24 V				
Reverse polarity protection	Yes				
Analog outputs					
Number of analog outputs	4				
Cycle time (all channels), min.	3 ms				
Output ranges, current					
• 0 to 20 mA	Yes; 16 bit incl. sign				
• -20 mA to +20 mA	No				
• 4 mA to 20 mA	Yes; 16 bit incl. sign				
Connection of actuators					
• for current output two-wire connection	Yes				
Load impedance (in rated range of output)					
• with current outputs, max.	750 Ω				
• with current outputs, inductive load, max.	10 mH				
Cable length					
• shielded, max.	800 m				
Analog value generation for the outputs					
Settling time					
• for resistive load	2 ms; 750 ohm				
• for capacitive load	2 ms				
• for inductive load	2 ms				
Errors/accuracies					
Basic error limit (operational limit at 25 °C)					
• Current, relative to output range, (+/-)	0.1 %				
Protocols					
HART protocol	Yes				
Article number	6ES7135-6TD00-0CA1 ET 200SP, AQ 4xI HART HF				
Interrupts/diagnostics/ status information					
Diagnostics function	Yes				
Substitute values connectable	Yes				
Alarms					
• Diagnostic alarm	Yes				
Diagnoses					
• Monitoring the supply voltage	Yes; Module-wise				
• Wire-break	Yes; channel by channel				
• Short-circuit	Yes				
• Overflow/underflow	Yes; channel by channel				
Diagnostics indication LED					
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED				
• Channel status display	Yes; green LED				
• for channel diagnostics	Yes; red LED				
• for module diagnostics	Yes; green/red DIAG LED				
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes				
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C				
• horizontal installation, max.	60 °C				
• vertical installation, min.	-30 °C				
• vertical installation, max.	50 °C				
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual				
Dimensions					
Width	15 mm				
Height	73 mm				
Depth	58 mm				
Weights					
Weight, approx.	31 g				

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS digital inputs

Overview



- 4, 8 and 16-channel digital input (DI) modules

For different requirements, the digital input modules offer:

- Function classes Basic, Standard, High Feature and High Speed as well as fail-safe DI (see "Fail-safe I/O modules")
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Potential distribution modules for system-integrated expansion with additional potential terminals
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)
- Option of connecting sensors compliant with IEC 61131 type 1, 2 or 3 (module-dependent) for rated voltages of up to 24 V DC or 230 V AC
- PNP (sink input) and NPN (sourcing input) versions
- Clear labeling on front of module

- LEDs for diagnostics, status, supply voltage and faults (e.g. wire break/short-circuit)
- Electronically readable and non-volatile writable rating plate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - MSI operating mode (simultaneous reading of input data from as many as three other controllers)
 - Counting operating mode (multi-channel counter for pulse generators with 32-bits counting width and up to 10 kHz counting frequency)
 - Oversampling operating mode (n-fold equidistant acquisition of digital values within one PN cycle for increasing the time resolution for slow CPU cycles)
 - Parameterizable input delay time
 - Isochronous mode (simultaneous equidistant reading of all input channels)
 - Hardware interrupt pulse stretching
 - Re-parameterization during operation
 - Firmware update
 - Diagnosis of wire break and short-circuit (on channel or module basis)
 - Value status (optional binary validity information of the input signal in the process image)
 - Supports the PROFlenergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shielding terminal

A quick and clear comparison of the functions of the different DI modules is offered by the TIA Selection Tool.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS digital input modules

(Extended temperature range and exposure to environmental substances)

DI 8x24VDC Standard, BU type A0, color code CC01

6AG1131-6BF01-7BA0

DI 8x24VDC Source Input, Basic, BU type A0, color code CC02

6AG1131-6BF61-7AA0

DI 16x24VDC Standard, BU type A0, color code CC00

6AG1131-6BH01-7BA0

DI 8x24VDC High Feature, BU type A0, color code CC01, channel-specific diagnostics, isochronous mode, shared input (MSI)

6AG1131-6BF00-7CA0

DI 4x120VAC-230VAC Standard, BU type B1, color code CC41

6AG1131-6FD01-7BB1

DI 8xNAMUR High Feature, BU type A0, color code CC01

6AG1131-6TF00-7CA0

DI 8x24VAC-48VUC Basic, BU type U0, color code CC20, module diagnostics

6AG1131-6CF00-7AU0

Article No.

Suitable SIPLUS BaseUnits

BU15-P16+A0+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A0+2B

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

6AG1193-6BP00-7BA0

BU15-P16+A10+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

6AG1193-6BP20-7DA0

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > SIPLUS digital inputs

Technical specifications

Article number Based on	6AG1131-6BF61-7AA0 6ES7131-6BF61-0AA0 SIPLUS ET 200SP DI 8x24VDC SOURCE BA	6AG1131-6BF01-7BA0 6ES7131-6BF01-0BA0 SIPLUS ET 200SP DI 8x24VDC ST	6AG1131-6BH01-7BA0 6ES7131-6BH01-0BA0 SIPLUS ET 200SP DI 16x24VDC ST
Use on ships/at sea - to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6 - Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology - Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark - Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating • Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

Article number Based on	6AG1131-6BF00-7CA0 6ES7131-6BF00-0CA0 SIPLUS ET 200SP DI 8x24VDC HF	6AG1131-6FD01-7BB1 6ES7131-6FD01-0BB1 SIPLUS ET 200SP DI 4X120...230VAC ST	6AG1131-6TF00-7CA0 6ES7131-6TF00-0CA0 SIPLUS ET 200SP DI 8XNAMUR HF	6AG1131-6CF00-7AU0 6ES7131-6CF00-0AU0 SIPLUS ET 200SP DI 8x48VUC BA
Ambient conditions				
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max.	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax; > +60 °C encoder supply output current max. 350 mA per channel	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C 70 °C; = Tmax; > +60 °C number of simultaneously controllable inputs max. 4 (no adjacent points)	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax
Altitude during operation relating to sea level • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	5 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	5 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity • With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > SIPLUS digital inputs

Technical specifications

Article number	6AG1131-6BF00-7CA0	6AG1131-6FD01-7BB1	6AG1131-6TF00-7CA0	6AG1131-6CF00-7AU0
Based on	6ES7131-6BF00-0CA0	6ES7131-6FD01-0BB1	6ES7131-6TF00-0CA0	6ES7131-6CF00-0AU0
	SIPLUS ET 200SP DI 8x24VDC HF	SIPLUS ET 200SP DI 4x120...230VAC ST	SIPLUS ET 200SP DI 8xNAMUR HF	SIPLUS ET 200SP DI 8x48VUC BA
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS digital outputs

Overview



- 4, 8 and 16-channel DQ modules
- 4-channel RQ modules
- BaseUnits for single conductor or multiple-conductor connection
- Function classes Basic, Standard, High Feature and High-Speed as well as fail-safe DQ and RQ
- Clear labeling on front of module
- LEDs for diagnostics, status and errors
- Individual system-integrated load group formation with self-assembling potential multi-terminal busbars (power module not required for ET 200SP)
- Electronically readable nameplate (I&M data)
- Additional operating modes in some cases
- Optional accessories:
 - Labeling strips
 - Equipment marking label
 - Color-coded label with module-specific CC code
 - Shield terminal

Overview of digital output modules

Digital output	Pkg. unit	Article No.	CC code	BU type
DQ 16 x 24 V DC/0.5 A ST	1	6AG1132-6BH01-7BA0	CC00	A0
DQ 8 x 24 V DC/0.5 A SNK BA	1	6AG1132-6BF61-7AA0	CC01	A0
DQ 8 x 24 V DC/0.5 A ST	1	6AG1132-6BF01-7BA0	CC02	A0
DQ 8 x 24 V DC/0.5 A HF	1	6AG1132-6BF01-7CA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	1	6AG1132-6BD21-7BA0	CC02	A0
DQ 4 x 24 V DC/2 A HF	1	6AG1132-6BD21-7CA0	CC02	A0
DQ 4 x 24 ... 230 V AC/2 A HF With two operating modes: • DQ • PC: Power control via phase angle, half-wave or full-wave control	1	6AG1132-6FD00-7CU0	CC20	U0
RQ 4 x 24 V UC/2 A CO ST	1	6AG1132-6GD51-7BA0	--	A0
RQ 4 x 120 V DC-230 V AC/5 A NO ST	1	6AG1132-6HD01-7BB1	--	B0, B1

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > SIPLUS digital outputs

Technical specifications

Article number	6AG1132-6BF61-7AA0	6AG1132-6BF01-7BA0	6AG1132-6BD21-7BA0
Based on	6ES7132-6BF61-0AA0	6ES7132-6BF01-0BA0	6ES7132-6BD21-0BA0
	SIPLUS ET 200SP DQ 8x24VDC/0,5A SNK BA	SIPLUS ET 200SP DQ 8x24VDC/0,5A ST	SIPLUS ET 200SP DQ 4x24VDC/2A ST
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax; > +60 °C max. total current 1.0 A	70 °C; = Tmax; > +60 °C max. total current 2 A
• vertical installation, min.			-40 °C; = Tmin
• vertical installation, max.			50 °C; = Tmax
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity degree 3)
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0//6AG1193-6AB00-0AA0)
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity degree 3).
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0//6AG1193-6AB00-0AA0)
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > SIPLUS digital outputs

Technical specifications

Article number	6AG1132-6BF61-7AA0	6AG1132-6BF01-7BA0	6AG1132-6BD21-7BA0
Based on	6ES7132-6BF61-0AA0 SIPLUS ET 200SP DQ 8x24VDC/0,5A SNK BA	6ES7132-6BF01-0BA0 SIPLUS ET 200SP DQ 8x24VDC/0,5A ST	6ES7132-6BD21-0BA0 SIPLUS ET 200SP DQ 4x24VDC/2A ST
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A
Article number	6AG1132-6BH01-7BA0	6AG1132-6GD51-7BA0	6AG1132-6BF01-7CA0
Based on	6ES7132-6BH01-0BA0 SIPLUS ET 200SP DQ 16x24VDC/0,5A ST	6ES7132-6GD51-0BA0 SIPLUS ET 200SP RQ 4x24VDC/2A CO ST	6ES7132-6BF01-0CA0 SIPLUS ET 200SP DQ 8x24VDC/0,5A HF
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. total current 1 A	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. aggregate current 2 A per group	70 °C; = Tmax; > +60 °C max. total current 3 A
• vertical installation, min.			-40 °C; = Tmin
• vertical installation, max.			50 °C; = Tmax
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna)	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity degree 3)
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > SIPLUS digital outputs

Technical specifications

Article number Based on	6AG1132-6BH01-7BA0 6ES7132-6BH01-0BA0 SIPLUS ET 200SP DQ 16x24VDC/0.5A ST	6AG1132-6GD51-7BA0 6ES7132-6GD51-0BA0 SIPLUS ET 200SP RQ 4x24VDC/2A CO ST	6AG1132-6BF01-7CA0 6ES7132-6BF01-0CA0 SIPLUS ET 200SP DQ 8x24VDC/0.5A HF
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity degree 3).
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/6AG1193-6AB00-0AA0)
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A
Article number Based on	6AG1132-6HD01-7BB1 6ES7132-6HD01-0BB1 SIPLUS ET 200SP RQ 4x120VDC/230VAC/5A	6AG1132-6FD00-7CU0 6ES7132-6FD00-0CU0 SIPLUS ET 200SP DQ 4X24...230VAC/2A HF	6AG1132-6BD21-7CA0 6ES7132-6BD21-0CA0 SIPLUS ET 200SP DQ 4x24VDC/2A HF
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. continuous current of 3 A per relay	70 °C; = Tmax	70 °C
• vertical installation, min.	-40 °C; in all other mounting positions		-40 °C; = Tmin
• vertical installation, max.	50 °C; in all other mounting positions		50 °C; = Tmax
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	3 000 m	2 000 m	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 1 K/100 m) at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > SIPLUS digital outputs

Technical specifications

Article number	6AG1132-6HD01-7BB1	6AG1132-6FD00-7CU0	6AG1132-6BD21-7CA0
Based on	6ES7132-6HD01-0BB1	6ES7132-6FD00-0CU0	6ES7132-6BD21-0CA0
	SIPLUS ET 200SP RQ 4x120VDC/230VAC/5A	SIPLUS ET 200SP DQ 4X24...230VAC/2A HF	SIPLUS ET 200SP DQ 4x24VDC/2A HF
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity degree 3)
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity degree 3).
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS analog inputs

Overview



- 2, 4 and 8-channel analog input (AI) modules.
- Apart from the standard type of delivery in single-unit packaging, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time and cost of unpacking individual modules.

For different requirements, the digital input modules offer:

- Function classes Basic, Standard, High Feature and High Speed
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Potential distributor modules for system-integrated expansion with potential terminals
- Individual system-integrated potential group formation with self-assembling voltage busbars (a separate power module is no longer required for ET 200SP)
- Option of connecting current, voltage and resistance sensors, as well as thermocouples
- Option of connecting force and torque sensors
- Energy Meter for recording up to 600 electrical variables

- Clear labeling on front of module
- LED displays for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable nameplate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - MSI operating mode (simultaneous reading of input data from as many as three other controllers)
 - Oversampling operating mode (n-fold isochronous acquisition of analog values within one PN cycle for increasing the time resolution for slow CPU cycles)
 - Isochronous mode (simultaneous isochronous reading of analog values)
 - Scalable measuring range (adaptation of measuring range, increase of the 16-bit resolution by adapting the measuring range to a limited section)
 - Scaling of the measured values (transmission of the analog value normalized to the required physical value as a 32-bit floating point value)
 - Internal compensation of the line resistance for thermocouples by means of terminal temperature measurement in the BaseUnit for BU type A1
 - Internal compensation also for 2-wire resistance test by means of adjustable line resistance
 - Calibration during runtime
 - Single-channel galvanic isolation
 - HART communication
 - Re-parameterization during operation
 - Firmware update
 - Diagnostics of wire break, short-circuit, overflow, underflow
 - Two upper and lower hardware interrupts in each case, interference frequency suppression, smoothing
 - Value status (optional binary validity information of the analog value in the process image)
 - Supports the PROFinergy profile
- Optional accessories:
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shield terminal

A quick and clear comparison of the functions of the AI modules is offered by the TIA Selection Tool.

Overview of SIPLUS analog input modules

Analog input	Pkg. unit	Article No.	CC code	BU type
AI 8 x I 2/4-wire BA	1	6AG1134-6GF00-7AA1	CC01	A0, A1
AI 8 x U BA	1	6AG1134-6FF00-2AA1	CC02	A0, A1
AI 4 x U/I 2-wire ST	1	6AG1134-6HD01-7BA1	CC03	A0, A1
AI 4 x I 2/4-wire ST	1	6AG1134-6GD01-7BA1	CC03	A0, A1
AI 4 x I 2-wire 4 ... 20 mA HART	1	6AG1134-6TD00-2CA1	CC03	A0, A1
AI 2 x U/I 2/4-wire HF	1	6AG1134-6HB00-2CA1	CC05	A0, A1
AI 2 x U/I 2/4-wire HS	1	6AG1134-6HB00-2DA1	CC00	A0, A1
With two operating modes: • High-speed isochronous AI • Oversampling				
AI 8 x RTD/TC 2-wire HF	10	6AG1134-6JF00-2CA1	CC00	A0, A1
AI 2 x SG 4/6-wire High Speed	1	6AG1134-6LB00-2DA0	CC00	U0
AI 4 x RTD/TC 2/3/4-wire HF	10	6AG1134-6JD00-2CA1	CC00	A0, A1
AI 4 x TC High Speed	1	6AG1134-6JD00-2DA1	CC00	A0, A1
AI Energy Meter CT ST, for 1 A or 5 A current transformers	-	6AG1134-6PA01-7BU0	--	U0

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS analog inputs

Ordering data	Article No.		Article No.
SIPLUS analog input modules (Extended temperature range and exposure to environmental substances) Analog input module AI 8xI 2/4-wire BA, BU type A0 or A1, color code CC01 Analog input module AI 8xU BA, BU type A0 or A1, color code CC02 Analog input module AI 4xU/I 2-wire Standard, BU type A0 or A1, color code CC03, 16-bit, $\pm 0.3\%$ Analog input module AI 4xI 2/4-wire Standard, BU type A0 or A1, color code CC03, 16-bit, $\pm 0.3\%$ Analog input module AI 4xRTD/TC 2/3/4-wire High Feature, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.1\%$, scalable measuring range Analog input module AI 4xTC High Speed, BU type A0 or A1, color code CC00, channel diagnostics, 16-bit, $\pm 0.1\%$ Analog input module AI 4xI 2-wire 4 ... 20 mA HART, BU type A0 or A1, color code CC03 Analog input module AI 2xU/I 2/4-wire High Feature, BU type A0 or A1, color code CC05, 16-bit, $\pm 0.1\%$, independent channel galvanic isolation, isochronous mode above 1 ms Analog input module AI 2xU/I 2/4-wire High Speed, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.3\%$, isochronous mode above 250 μs , oversampling above 50 μs Analog input module AI 8xRTD/TC 2-wire High Feature, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.1\%$, scalable measuring range Analog AI 2xSG 4/6 wire HS, 4/6-wire High Speed, two-channel analog input module for strain gauges (full bridges), color code CC00, module diagnostics, 28/16 bit, 2xLC load cell interface (1-4 mV/V), suitable for BU type U0 Analog input module AI Energy Meter CT ST, for 1 A or 5 A current transformers	6AG1134-6GF00-7AA1 6AG1134-6FF00-2AA1 6AG1134-6HD01-7BA1 6AG1134-6GD01-7BA1 6AG1134-6JD00-2CA1 6AG1134-6JD00-2DA1 6AG1134-6TD00-2CA1 6AG1134-6HB00-2CA1 6AG1134-6HB00-2DA1 6AG1134-6JF00-2CA1 6AG1134-6LB00-2DA0 6AG1134-6PA01-7BU0	BU15-P16+A10+2D (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A) BU15-P16+A10+2B (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group Suitable SIPLUS BaseUnits type A1 (temperature detection) BU15-P16+A0+2D/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A) BU15-P16+A0+2B/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group BU15-P16+A0+12D/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A) BU15-P16+A0+12B/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	6AG1193-6BP20-7DA0 6AG1193-6BP20-7BA0 6AG1193-6BP00-7DA1 6AG1193-6BP00-7BA1 6AG1193-6BP40-7DA1 6AG1193-6BP40-7BA1
Suitable SIPLUS BaseUnits type A0		Accessories	
BU15-P16+A0+2D (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	6AG1193-6BP00-7DA0	SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm	6AG1193-6AA00-0AA0
BU15-P16+A0+2B (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BA0	SIPLUS Mounting Kit ET 200SP with maximum width of 19" Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.	6AG1193-6AB00-0AA0
		Other accessories	See SIMATIC ET 200SP, Analog input modules, page 10/63

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS analog inputs

Technical specifications

Article number	6AG1134-6GF00-7AA1	6AG1134-6FF00-2AA1	6AG1134-6HD01-7BA1	6AG1134-6GD01-7BA1	6AG1134-6TD00-2CA1
Based on	6ES7134-6GF00-0AA1	6ES7134-6FF00-0AA1	6ES7134-6HD01-0BA1	6ES7134-6GD01-0BA1	6ES7134-6TD00-0CA1
	SIPLUS ET 200SP AI 8XI 2-/4-WIRE BA	SIPLUS ET 200SP AI 8xU BASIC	SIPLUS ET 200SP AI 4xU/I 2-w ST	SIPLUS ET 200SP AI 4xI 2-/4-w ST	SIPLUS ET 200SP AI 4XI 2-WIRE 4...20mA H
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost); start-up @ -30 °C
• horizontal installation, max.	70 °C; = Tmax	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module	70 °C; = Tmax; > 60 °C max. 1x ±20 mA or 4x ±10 V permissible	70 °C; = Tmax; > 60 °C max. 1x ±20 mA permissible	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.			-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin (incl. condensation/frost); start-up @ -30 °C
• vertical installation, max.			50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity					
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance					
Coolants and lubricants					
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems					
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > SIPLUS analog inputs

Technical specifications

Article number	6AG1134-6GF00-7AA1	6AG1134-6FF00-2AA1	6AG1134-6HD01-7BA1	6AG1134-6GD01-7BA1	6AG1134-6TD00-2CA1
Based on	6ES7134-6GF00-0AA1	6ES7134-6FF00-0AA1	6ES7134-6HD01-0BA1	6ES7134-6GD01-0BA1	6ES7134-6TD00-0CA1
	SIPLUS ET 200SP AI 8xI 2-/4-WIRE BA	SIPLUS ET 200SP AI 8xU BASIC	SIPLUS ET 200SP AI 4xU/I 2-w ST	SIPLUS ET 200SP AI 4xI 2-/4-w ST	SIPLUS ET 200SP AI 4xI 2-WIRE 4...20MA H
Use on ships/at sea					
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology					
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark					
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating					
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS analog inputs

Technical specifications

Article number	6AG1134-6HB00-2CA1	6AG1134-6HB00-2DA1	6AG1134-6JF00-2CA1	6AG1134-6LB00-2DA0	6AG1134-6JD00-2CA1	6AG1134-6JD00-2DA1
Based on	6ES7134-6HB00-0CA1 SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HF	6ES7134-6HB00-0DA1 SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HS	6ES7134-6JF00-0CA1 SIPLUS ET 200SP AI 8XRTD/TC 2-WIRE HF	6ES7134-6LB00-0DA0 SIPLUS ET 200SP AI 2xSG 4/6 wire HS	6ES7134-6JD00-0CA1 SIPLUS ET 200SP AI 4xRTD/TC HF	6ES7134-6JD00-0DA1 SIPLUS ET 200SP AI 4x TC HS
Ambient conditions						
Ambient temperature during operation						
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module including derating of the encoder supply to max. 50 mA per channel	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module	60 °C	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module	60 °C; = Tmax; +70 °C with configured empty slots to the left and right of the module
• vertical installation, min.			-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.			50 °C; = Tmax	40 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax
Altitude during operation relating to sea level						
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m		5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa ... (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa ... (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa ... (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa ... (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 1 K/100 m) at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)	Tmin ... Tmax at 1 080 hPa ... 795 hPa ... (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 080 hPa ... 795 hPa ... (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity						
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/ frost (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/ frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/ frost (no commissioning under condensation conditions)
Resistance						
Coolants and lubricants						
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > SIPLUS analog inputs

Technical specifications

Article number	6AG1134-6HB00-2CA1	6AG1134-6HB00-2DA1	6AG1134-6JF00-2CA1	6AG1134-6LB00-2DA0	6AG1134-6JD00-2CA1	6AG1134-6JD00-2DA1
Based on	6ES7134-6HB00-0CA1	6ES7134-6HB00-0DA1	6ES7134-6JF00-0CA1	6ES7134-6LB00-0DA0	6ES7134-6JD00-0CA1	6ES7134-6JD00-0DA1
	SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HF	SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HS	SIPLUS ET 200SP AI 8XRTD/TC 2-WIRE HF	SIPLUS ET 200SP AI 2xSG 4/6 wire HS	SIPLUS ET 200SP AI 4xRTD/TC HF	SIPLUS ET 200SP AI 4x TC HS
Use in stationary industrial systems						
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/6AG1193-6AB00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea						
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust, *	Yes; Class 6S3 incl. sand, dust, *	Yes; Class 6S3 incl. sand, dust, *	Yes	Yes; Class 6S3 incl. sand, dust, *	Yes; Class 6S3 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/6AG1193-6AB00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology						
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark						
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!		* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > SIPLUS analog inputs

Technical specifications

Article number	6AG1134-6HB00-2CA1	6AG1134-6HB00-2DA1	6AG1134-6JF00-2CA1	6AG1134-6LB00-2DA0	6AG1134-6JD00-2CA1	6AG1134-6JD00-2DA1
Based on	6ES7134-6HB00-0CA1 SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HF	6ES7134-6HB00-0DA1 SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HS	6ES7134-6JF00-0CA1 SIPLUS ET 200SP AI 8XRTD/TC 2-WIRE HF	6ES7134-6LB00-0DA0 SIPLUS ET 200SP AI 2xSG 4/6 wire HS	6ES7134-6JD00-0CA1 SIPLUS ET 200SP AI 4xRTD/TC HF	6ES7134-6JD00-0DA1 SIPLUS ET 200SP AI 4x TC HS
Conformal coating						
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	6AG1134-6PA01-7BU0
Based on	6ES7134-6PA01-0BU0 SIPLUS ET 200SP AI EM CT ST
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	3 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)

Article number	6AG1134-6PA01-7BU0
Based on	6ES7134-6PA01-0BU0 SIPLUS ET 200SP AI EM CT ST
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/ 6AG1193-6AB00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS analog outputs

Overview



- 2 and 4-channel analog output (AQ) modules

For different requirements, the digital output modules offer:

- Function classes Standard, High Feature and High-Speed
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Potential distributor modules for system-integrated expansion with potential terminals
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)

- Option for connecting current and voltage actuators
- Clear labeling on front of module
- LED displays for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable nameplate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - Oversampling operating mode (n-fold equidistant output of an analog value within one PN cycle and thus the precisely timed output of an analog value or a sequence of analog values)
 - Isochronous mode (simultaneous equidistant output of analog values)
 - Output of substitute value in the event of communication interruptions (shutdown, output adjustable substitute value, or keep last value)
 - Calibration during runtime
 - Re-parameterization during operation
 - Firmware update
 - Diagnostics of wire break, short-circuit, overflow, underflow
 - Value status (optional binary validity information of the analog value in the process image)
 - Supports the PROFlenergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shield terminal

A quick and clear comparison of the functions of the AQ modules is offered by the TIA Selection Tool.

Overview of analog output modules

Analog output	Pkg. unit	Article No.	CC code	BU type
AQ 2 x I ST	1	6AG1135-6GB00-7BA1	CC00	A0, A1
AQ 4 x U/I ST	1	6AG1135-6HD00-7BA1	CC00	A0, A1
AQ 2 x U/I HF	1	6AG1135-6HB00-7CA1	CC00	A0, A1
AQ 2 x U/I HS	1	6AG1135-6HB00-2DA1	CC00	A0, A1
With two operating modes: • High-speed isochronous AQ • Oversampling				
AQ 4xI HART HF	1	6AG1135-6TD00-2CA1	CC00	A0, A1

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme-specific information was added.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS analog outputs

Ordering data	Article No.	Article No.
SIPLUS analog output modules (Extended temperature range and exposure to environmental substances) Analog output module AQ 2xI Standard, BU type A0 or A1, color code CC00, 16-bit Analog output module AQ 4xU/I Standard, BU type A0 or A1, color code CC03 Analog output module AQ 2xU/I High Feature, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.1\%$ Analog output module AQ 2xU/I High Speed, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.3\%$ Analog output module AQ 4xI HART High Feature, BU type A0 or A1, color code CC00, 16-bit, $\pm 0.3\%$	6AG1135-6GB00-7BA1 6AG1135-6HD00-7BA1 6AG1135-6HB00-7CA1 6AG1135-6HB00-2DA1 6AG1135-6TD00-2CA1	Suitable SIPLUS BaseUnits type A1 (temperature detection) BU15-P16+A0+2D/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A) BU15-P16+A0+2B/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group BU15-P16+A0+12D/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A) BU15-P16+A0+12B/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group Accessories SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm SIPLUS Mounting Kit ET 200SP with maximum width of 19" Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0. Other accessories
Suitable SIPLUS BaseUnits type A0 BU15-P16+A0+2D (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A) BU15-P16+A0+2B (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group BU15-P16+A10+2D (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A) BU15-P16+A10+2B (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group	6AG1193-6BP00-7DA0 6AG1193-6BP00-7BA0 6AG1193-6BP20-7DA0 6AG1193-6BP20-7BA0	6AG1193-6BP00-7DA1 6AG1193-6BP00-7BA1 6AG1193-6BP40-7DA1 6AG1193-6BP40-7BA1 6AG1193-6AA00-0AA0 6AG1193-6AB00-0AA0 See SIMATIC ET 200SP, Analog output modules, page 10/82

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > SIPLUS analog outputs

Technical specifications

Article number	6AG1135-6GB00-7BA1	6AG1135-6HD00-7BA1	6AG1135-6HB00-2DA1	6AG1135-6HB00-7CA1	6AG1135-6TD00-2CA1
Based on	6ES7135-6GB00-0BA1 SIPLUS ET 200SP AQ 2xI Standard	6ES7135-6HD00-0BA1 SIPLUS ET 200SP AQ 4xU/I ST	6ES7135-6HB00-0DA1 SIPLUS ET 200SP AQ 2 X U/I High Speed	6ES7135-6HB00-0CA1 SIPLUS ET 200SP AQ 2xU/I HF	6ES7135-6TD00-0CA1 SIPLUS ET 200SP AQ 4xI HART High Feature
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax; > +60 °C max. 2x ±10 V permissible	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module	70 °C; = Tmax	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.		-40 °C; = Tmin		-40 °C; = Tmin	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.		50 °C; = Tmax		60 °C; = Tmax	50 °C; = Tmax
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity					
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance					
Coolants and lubricants					
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems					
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/ 6AG1193-6AB00-0AA0)

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > SIPLUS analog outputs

Technical specifications

Article number	6AG1135-6GB00-7BA1	6AG1135-6HD00-7BA1	6AG1135-6HB00-2DA1	6AG1135-6HB00-7CA1	6AG1135-6TD00-2CA1
Based on	6ES7135-6GB00-0BA1	6ES7135-6HD00-0BA1	6ES7135-6HB00-0DA1	6ES7135-6HB00-0CA1	6ES7135-6TD00-0CA1
	SIPLUS ET 200SP AQ 2xI Standard	SIPLUS ET 200SP AQ 4xU/I ST	SIPLUS ET 200SP AQ 2 X U/I High Speed	SIPLUS ET 200SP AQ 2xU/I HF	SIPLUS ET 200SP AQ 4xI HART High Feature
Use on ships/at sea					
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/ 6AG1193-6AB00-0AA0)
Usage in industrial process technology					
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark					
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating					
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM Count 1x24V counter module

Overview



Technical properties

- Counter module for ET 200SP
- Interfaces:
 - 24 V encoder signals A, B and N from P, M or push-pull-switching encoders and sensors
 - 24 V encoder supply output, short-circuit proof
 - 3 digital inputs for controlling the count operation, for saving or for setting the count value
 - 2 digital outputs for fast reactions depending on the counter status or measured value

- Counting frequency 200 kHz (800 kHz with quadruple evaluation)
- Counting range: +/- 31-bit
- Measurement function
- Parameterizable hardware interrupts
- Parameterizable input filters for suppressing interferences at sensor and digital inputs

Supported types of encoders/signals

- 24 V incremental encoder with and without N signal
- 24 V pulse encoder with direction signal
- 24 V pulse encoder without direction signal
- 24 V pulse encoder for pulse up and down respectively

Supported system functions

- Isochronous mode
- Firmware update
- Identification data I&M

Ordering data

Article No.

Article No.

TM Count 1x24V counter module

With one channel, max. 200 kHz;
for 24 V encoder

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

6ES7138-6AA01-0BA0
6ES7138-6AA01-2BA0

Suitable BaseUnits

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with
16 process terminals (1 ... 16)
to the module and an additional
10 internally jumpered
AUX terminals (1 A to 10 A);
for starting a new load group
(max. 10 A)

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

6ES7193-6BP20-0DA0
6ES7193-6BP20-2DA0

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with
16 process terminals to the module;
for starting a new load group
(max. 10 A)

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

6ES7193-6BP00-0DA0
6ES7193-6BP00-2DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with
16 process terminals (1 ... 16)
to the module and an additional
10 internally jumpered
AUX terminals (1 A to 10 A);
for continuing the load group

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

6ES7193-6BP20-0BA0
6ES7193-6BP20-2BA0

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with
16 process terminals to the module;
for continuing the load group

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

6ES7193-6BP00-0BA0
6ES7193-6BP00-2BA0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM Count 1x24V counter module

Ordering data	Article No.		Article No.
Accessories		Color-coded labels	
Equipment labeling plate	6ES7193-6LF30-0AW0	Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	6ES7193-6CP71-2AA0
10 sheets of 16 labels		Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	6ES7193-6CP72-2AA0
Labeling strips	6ES7193-6LR10-0AA0	Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	6ES7193-6CP73-2AA0
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer		Mechanical coding elements	
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0	For automatic coding of I/O modules; spare part. 20 units	
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	6ES7193-6LA10-0AA0	Type A	6ES7193-6KA00-3AA0
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	6ES7193-6LA10-0AG0	Type B	6ES7193-6KB00-3AA0
BU cover		Type C	6ES7193-6KC00-3AA0
For covering empty slots (gaps); 5 units		Type D	6ES7193-6KD00-3AA0
15 mm wide 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0		
Shield connection	6ES7193-6SC20-1AM0		
5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding			

Technical specifications

Article number	6ES7138-6AA01-0BA0 ET 200SP, TM Count 1x24V	Article number	6ES7138-6AA01-0BA0 ET 200SP, TM Count 1x24V
General information		Digital input functions, parameterizable	
Product type designation	TM Count 1x24V	- Gate start/stop - Capture - Synchronization - Freely usable digital input - Probe	Yes Yes Yes Yes Yes
Product function		Input voltage	
- I&M data - Isochronous mode	Yes; I&M0 to I&M3 Yes	- Rated value (DC) - for signal "0" - for signal "1" - permissible voltage at input, min. - permissible voltage at input, max.	24 V -5 ... +5 V +11 to +30V -30 V; -5 V continuous, -30 V brief reverse polarity protection 30 V
Engineering with		Input current	
- STEP 7 TIA Portal configurable/ integrated from version - STEP 7 configurable/ integrated from version - PROFIBUS from GSD version/ GSD revision - PROFINET from GSD version/ GSD revision	STEP 7 V15 SP1 or higher V5.6 and higher One GSD file each, Revision 3 and 5 and higher GSDML V2.34	for signal "1", typ.	2.5 mA
Supply voltage		Input delay (for rated value of input voltage) for standard inputs	
Rated value (DC)	24 V	- parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
Load voltage L+		for technological functions	
- Rated value (DC) - Reverse polarity protection	24 V Yes	- parameterizable	Yes
Encoder supply		Digital outputs	
Number of outputs	1	Type of digital output	Transistor
24 V encoder supply		Number of digital outputs	2
24 V - Short-circuit protection - Output current, max.	Yes; L+ (-0.8 V) Yes; electronic/thermal 300 mA	Digital outputs, parameterizable	Yes
Digital inputs		Short-circuit protection	Yes; electronic/thermal
Number of digital inputs	3	Limitation of inductive shutdown voltage to	L+ (-53 V)
Digital inputs, parameterizable	Yes	Controlling a digital input	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM Count 1x24V counter module

Technical specifications

Article number	6ES7138-6AA01-0BA0 ET 200SP, TM Count 1x24V
Digital output functions, parameterizable	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A; Per digital output
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	50 µs
• "1" to "0", max.	50 µs
Switching frequency	
• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per module, max.	1 A
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
• Input voltage	24 V
• Input frequency, max.	200 kHz
• Counting frequency, max.	800 kHz; with quadruple evaluation
• Cable length, shielded, max.	600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz
• Signal filter, parameterizable	Yes
• Incremental encoder with A/B tracks, 90° phase offset	Yes
• Incremental encoder with A/B tracks, 90° phase offset and zero track	Yes
• pulse encoder	Yes
• pulse encoder with direction	Yes
• pulse encoder with one impulse signal per count direction	Yes
Interface types	
• Source/sink input	Yes
• Input characteristic curve in accordance with IEC 61131, type 3	Yes

Article number	6ES7138-6AA01-0BA0 ET 200SP, TM Count 1x24V
Interrupts/diagnostics/status information	
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
• Group error	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for module diagnostics	Yes; green/red DIAG LED
• Status indicator forward counting (green)	Yes
• Status indicator backward counting (green)	Yes
Integrated Functions	
Counter	Yes
• Number of counters	1
• Counting frequency, max.	800 kHz; with quadruple evaluation
Fast mode	Yes
Counting functions	
• Can be used with TO High_Speed_Counter	Yes
• Continuous counting	Yes
• Counter response parameterizable	Yes
• Hardware gate via digital input	Yes
• Software gate	Yes
• Event-controlled stop	Yes
• Synchronization via digital input	Yes
• Counting range, parameterizable	Yes
Comparator	
- Number of comparators	2
- Direction dependency	Yes
- Can be changed from user program	Yes
Position detection	
• Incremental acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM Count 1x24V counter module

Technical specifications

Article number	6ES7138-6AA01-0BA0 ET 200SP, TM Count 1x24V
Measuring functions	
• Measuring time, parameterizable	Yes
• Dynamic measurement period adjustment	Yes
• Number of thresholds, parameterizable	2
Measuring range	
- Frequency measurement, min.	0.04 Hz
- Frequency measurement, max.	800 kHz
- Cycle duration measurement, min.	1.25 µs
- Cycle duration measurement, max.	25 s
Accuracy	
- Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
- Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
- Velocity measurement	100 ppm; depending on measuring interval and signal evaluation
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for safety functions	No

Article number	6ES7138-6AA01-0BA0 ET 200SP, TM Count 1x24V
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	45 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM PosInput 1 counter and position detection module

Overview



- Counter frequency 1 MHz (4 MHz with quadruple evaluation)
- Counting range: +/- 31 bits
- Measurement function
- Parameterizable hardware interrupts
- Parameterizable input filters for suppressing interferences at sensor and digital inputs

Supported types of encoders/signals

- Incremental encoders with or without N signal
- Pulse encoders with directional signal
- Pulse encoders without directional signal
- Pulse encoders for forward or reverse pulses
- SSI encoders with a frame length of 10 to 40 bits, of which up to 31 bits position value

Supported system functions

- Isochronous mode
- Firmware update
- Identification data I&M

Technical properties

- Counter and position detection module for ET 200SP
- Interfaces:
 - Encoder signals A, B and N for 5 V TTL or RS422 differential signals
 - SSI interface with clock and data for RS422 differential signals
 - 24 V encoder supply, short-circuit proof
 - 5 V encoder supply, short-circuit proof
 - 2 digital inputs for controlling the counting process, for saving or setting the counter or position value
 - 2 digital outputs for fast reactions depending on the counter reading, position value or measured value

10

Ordering data

Article No.

Article No.

TM PosInput 1 counter and position detection module

With one channel, max. 1 MHz for 5 V TTL or RS422 differential signals or SSI absolute encoder

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7138-6BA01-0BA0
6ES7138-6BA01-2BA0

Suitable BaseUnits

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0DA0
6ES7193-6BP20-2DA0

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP00-0DA0
6ES7193-6BP00-2DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0BA0
6ES7193-6BP20-2BA0

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP00-0BA0
6ES7193-6BP00-2BA0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM PosInput 1 counter and position detection module

Ordering data	Article No.	Article No.
Accessories		
Equipment labeling plate 10 sheets of 16 labels	6ES7193-6LF30-0AW0	6ES7193-6CP71-2AA0
Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0	6ES7193-6CP72-2AA0
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0	6ES7193-6CP73-2AA0
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	6ES7193-6LA10-0AA0	
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	6ES7193-6LA10-0AG0	
BU cover For covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0	
Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0	
		Color-coded labels - Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units - Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units - Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units Mechanical coding elements For automatic coding of I/O modules; spare part. 20 units Type A Type B Type C Type D

Technical specifications

Article number	6ES7138-6BA01-0BA0 ET 200SP, TM Posinput 1	Article number	6ES7138-6BA01-0BA0 ET 200SP, TM Posinput 1
General information		Input characteristic curve in accordance with IEC 61131, type 3	Yes
Product type designation	TM PosInput 1	Digital input functions, parameterizable	
Product function		• Gate start/stop	Yes; only for pulse and incremental encoders
• I&M data	Yes; I&M0 to I&M3	• Capture	Yes
• Isochronous mode	Yes	• Synchronization	Yes; only for pulse and incremental encoders
Engineering with		• Freely usable digital input	Yes
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V16 or higher	Input voltage	
• STEP 7 configurable/integrated from version	V5.6 (use previous version *6BA00*)	• Rated value (DC)	24 V
• PROFIBUS from GSD version/GSD revision	GSD Revision 5	• for signal "0"	-5 ... +5 V
• PROFINET from GSD version/GSD revision	GSDML V2.34	• for signal "1"	+11 to +30V
Supply voltage		• permissible voltage at input, min.	-30 V; -5 V continuous, -30 V brief reverse polarity protection
Rated value (DC)	24 V	• permissible voltage at input, max.	30 V
Load voltage L+		Input current	
• Rated value (DC)	24 V	• for signal "1", typ.	2.5 mA
• Reverse polarity protection	Yes	Input delay (for rated value of input voltage) for standard inputs	
Encoder supply		- parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
Number of outputs	2	for technological functions	
5 V encoder supply		- parameterizable	Yes
• 5 V	Yes		
• Short-circuit protection	Yes; electronic/thermal		
• Output current, max.	300 mA; Total current of all encoders		
24 V encoder supply			
• 24 V	Yes; L+ (-0.8 V)		
• Short-circuit protection	Yes; electronic/thermal		
• Output current, max.	300 mA; Total current of all encoders		
Digital inputs			
Number of digital inputs	2		
Digital inputs, parameterizable	Yes		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM Posinput 1 counter and position detection module

Technical specifications

Article number	6ES7138-6BA01-0BA0 ET 200SP, TM Posinput 1
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	2
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Limitation of inductive shutdown voltage to	L+ (-53 V)
Controlling a digital input	Yes
Digital output functions, parameterizable	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A; Per digital output
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	50 μs
• "1" to "0", max.	50 μs
Switching frequency	
• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per module, max.	1 A
Encoder	
Encoder signals, incremental encoder (symmetrical)	
• Input voltage	RS 422
• Input frequency, max.	1 MHz
• Counting frequency, max.	4 MHz; with quadruple evaluation
• Cable length, shielded, max.	32 m; at 1 MHz
• Signal filter, parameterizable	Yes
• Incremental encoder with A/B tracks, 90° phase offset	Yes
• Incremental encoder with A/B tracks, 90° phase offset and zero track	Yes
• pulse encoder	Yes
• Pulse encoder with direction	Yes
• pulse encoder with one impulse signal per count direction	Yes

Article number	6ES7138-6BA01-0BA0 ET 200SP, TM Posinput 1
Encoder signals, incremental encoder (asymmetrical)	
• Input voltage	5 V TTL (push-pull encoders only)
• Input frequency, max.	1 MHz
• Counting frequency, max.	4 MHz; with quadruple evaluation
• Signal filter, parameterizable	Yes
• Incremental encoder with A/B tracks, 90° phase offset	Yes
• Incremental encoder with A/B tracks, 90° phase offset and zero track	Yes
• pulse encoder	Yes
• pulse encoder with direction	Yes
• pulse encoder with one impulse signal per count direction	Yes
Encoder signals, absolute encoder (SSI)	
• Input signal	to RS-422
• Telegram length, parameterizable	10 ... 40 bit
• Clock frequency, max.	2 MHz; 125 kHz, 250 kHz, 500 kHz, 1 MHz, 1.5 MHz or 2 MHz
• Binary code	Yes
• Gray code	Yes
• Cable length, shielded, max.	320 m; Cable length, RS-422 SSI absolute encoders, Siemens type 6FX2001-5, 24 V supply: 125 kHz, 320 meters shielded, max.; 250 kHz, 160 meters shielded, max.; 500 kHz, 60 meters shielded, max.; 1 MHz, 20 meters shielded, max.; 1.5 MHz, 10 meters shielded, max.; 2 MHz, 8 meters shielded, max.
• Parity bit, parameterizable	Yes
• Monoflop time	16, 32, 48, 64 μs & automatic
• Multiturn	Yes
• Singleturn	Yes
Interface types	
• TTL 5 V	Yes; push-pull encoders only
• RS 422	Yes
Interrupts/diagnostics/status information	
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
• Telegram error at SSI encoder	Yes
• Group error	Yes

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM Posinput 1 counter and position detection module

Technical specifications

Article number	6ES7138-6BA01-0BA0 ET 200SP, TM Posinput 1
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for module diagnostics	Yes; green/red DIAG LED
• Status indicator forward counting (green)	Yes
• Status indicator backward counting (green)	Yes
Integrated Functions	
Counter	Yes
• Number of counters	1
• Counting frequency, max.	4 MHz; with quadruple evaluation
Fast mode	Yes
Counting functions	
• Can be used with TO High_Speed_Counter	Yes; only for pulse and incremental encoders
• Continuous counting	Yes
• Counter response parameterizable	Yes
• Hardware gate via digital input	Yes
• Software gate	Yes
• Event-controlled stop	Yes
• Synchronization via digital input	Yes
• Counting range, parameterizable	Yes
Comparator	
- Number of comparators	2
- Direction dependency	Yes
- Can be changed from user program	Yes
Position detection	
• Incremental acquisition	Yes
• Absolute acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes
Measuring functions	
• Measuring time, parameterizable	Yes
• Dynamic measurement period adjustment	Yes
• Number of thresholds, parameterizable	2
Measuring range	
- Frequency measurement, min.	0.04 Hz
- Frequency measurement, max.	4 MHz
- Cycle duration measurement, min.	0.25 µs
- Cycle duration measurement, max.	25 s
Accuracy	
- Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
- Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
- Velocity measurement	100 ppm; depending on measuring interval and signal evaluation

Article number	6ES7138-6BA01-0BA0 ET 200SP, TM Posinput 1
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for safety functions	No
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C; Observe derating
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	45 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM Timer DIDQ 10x24V time-based IO module

Overview



- 4 digital inputs, 6 digital outputs
- Inputs for detecting the input edges with μ s accuracy
- Outputs for outputting the switching signals with μ s accuracy
- 32x oversampling
- PWM output
- Counter function
- Outputs can be switched between 0.5 A standard and especially fast 0.1 A high-speed mode

Ordering data

TM Timer DIDQ 10x24V time-based IO module

4 time-controlled inputs, 6 time-controlled outputs

Article No.

6ES7138-6CG00-0BA0

Suitable BaseUnits

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0DA0
6ES7193-6BP20-2DA0

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP00-0DA0
6ES7193-6BP00-2DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0BA0
6ES7193-6BP20-2BA0

Article No.

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP00-0BA0
6ES7193-6BP00-2BA0

Accessories

Equipment labeling plate

10 sheets of 16 labels

6ES7193-6LF30-0AW0

Labeling strips

500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer

6ES7193-6LR10-0AA0

500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer

6ES7193-6LR10-0AG0

1000 labeling strips DIN A4, light gray, card, for inscription with laser printer

6ES7193-6LA10-0AA0

1000 labeling strips DIN A4, yellow, card, for inscription with laser printer

6ES7193-6LA10-0AG0

BU cover

For covering empty slots (gaps); 5 units

- 15 mm wide
- 20 mm wide

6ES7133-6CV15-1AM0
6ES7133-6CV20-1AM0

Shield connection

5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding

6ES7193-6SC20-1AM0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM Timer DIDQ 10x24V time-based IO module

Ordering data

Color-coded labels

- Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units
- Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units
- Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units

Article No.

6ES7193-6CP71-2AA0

6ES7193-6CP72-2AA0

6ES7193-6CP73-2AA0

Article No.

Mechanical coding elements

For automatic coding of I/O modules; spare part.
20 units

Type A

Type B

Type C

Type D

6ES7193-6KA00-3AA0

6ES7193-6KB00-3AA0

6ES7193-6KC00-3AA0

6ES7193-6KD00-3AA0

Technical specifications

Article number	6ES7138-6CG00-0BA0 ET 200SP, TM Timer DIDQ 10x24V
General information	
Product type designation	TM Timer DIDQ 10x24V
Product function	
• I&M data	Yes; I&M 0
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13 Update 3
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -
Supply voltage	
Rated value (DC)	24 V
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes; against destruction
Encoder supply	
Number of outputs	1
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	500 mA; Observe derating
Digital inputs	
Number of digital inputs	4
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Digital input with time stamp - Number, max.	Yes 4
• Counter - Number, max.	Yes 3
• Counter for incremental encoder - Number, max.	Yes 1
• Digital input with oversampling - Number, max.	Yes 4
• HW enable for digital input - Number, max.	Yes 1
• HW enable for digital output - Number, max.	Yes 3

Article number	6ES7138-6CG00-0BA0 ET 200SP, TM Timer DIDQ 10x24V
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-5 ... +5 V
• for signal "1"	+11 to +30V
• permissible voltage at input, min.	-30 V; -5 V continuous, -30 V brief reverse polarity protection
• permissible voltage at input, max.	30 V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
• Minimum pulse width for program reactions	3 µs for parameterization "none"
for standard inputs	
- parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 ms
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	6
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Limitation of inductive shutdown voltage to	-0.8 V
Digital output functions, parameterizable	
• Digital output with time stamp - Number, max.	Yes 6
• PWM output - Number, max.	Yes 6
• Digital output with oversampling - Number, max.	Yes 6
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; 0.1 A with High Speed output
• on lamp load, max.	5 W; 1 W with High Speed output
Load resistance range	
• lower limit	48 Ω; 240 ohm with High Speed output
• upper limit	12 kΩ

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM Timer DIDQ 10x24V time-based IO module

Technical specifications

Article number	6ES7138-6CG00-0BA0 ET 200SP, TM Timer DIDQ 10x24V
Output voltage	
• Type of output voltage	DC
• for signal "0", max.	1 V; With High Speed output
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A; 0.1 A with High Speed output, observe derating
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	1 µs; With High Speed output, 5 µs with Standard output
• "1" to "0", max.	1 µs; With High Speed output, 6 µs with Standard output
Switching frequency	
• with resistive load, max.	10 kHz
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per module, max.	3.5 A; Observe derating
Encoder	
Connectable encoders	
• Incremental encoder (asymmetrical)	Yes
• 24 V initiator	Yes
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
• Input voltage	24 V
• Input frequency, max.	50 kHz
• Counting frequency, max.	200 kHz; with quadruple evaluation
• Cable length, shielded, max.	600 m; Depending on input frequency, encoder and cable quality; max. 200 m at 50 kHz
• Incremental encoder with A/B tracks, 90° phase offset	Yes
• pulse encoder	Yes
Interface types	
• Input characteristic curve in accordance with IEC 61131, type 3	Yes
Isochronous mode	
Bus cycle time (TDP), min.	375 µs

Article number	6ES7138-6CG00-0BA0 ET 200SP, TM Timer DIDQ 10x24V
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Short-circuit	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes
• for module diagnostics	Yes; green/red DIAG LED
Integrated Functions	
Counter	Yes
• Number of counters	3
• Counting frequency, max.	200 kHz; with quadruple evaluation
Counting functions	
• Continuous counting	Yes
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for safety functions	No
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C; Observe derating
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Decentralized operation	
to SIMATIC S7-1500	Yes
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	45 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM Pulse 2x24V pulse output module

Overview



2-channel pulse output module for ET 200SP

- Operating modes:
 - Single pulse with defined length
 - Pulse chain with defined number of pulses
 - Pulse width modulation (with flexible ON period, optional current control and dither function)
 - PWM signal for controlling a DC motor
 - ON and OFF delay; rising and falling edge can be delayed separately to the microsecond
 - Frequency output with defined output frequency
- Hardware:
 - 2 channels 24 V, 2 A output current
 - Parallel switching for enhanced performance on 4 A output current
 - Switching frequencies to 10 kHz; at reduced output current to 0.1 A up to 100 kHz
 - Push-pull output driver for especially steep edges at the outputs
 - Polarity change in DC motor operation for direction reversal
 - 1 high-speed 24 V digital input per channel with parameterizable input delay from 4 µs
- Channel functions:
 - HW enable; start of signal output with the onboard digital input
 - Parameterizable ON delay; for precise delay between the HW enable and the start of output
 - Current measurement in the operating modes pulse-width modulation and pulse chain; enables control of the output current mean value over a period. This allows you to compensate for the effect of temperature on the actuator resistance.
 - Cyclic control of the respective main setpoint from the PLC in every operating mode; other values can be modified flexibly from the user program.
- Supported system functions:
 - Isochronous mode; enables precision-timed connection of the setpoint output to a higher-level controller
 - Firmware update
 - Identification data I&M

Ordering data

Article No.

TM Pulse 2x24V pulse output module

PWM and pulse output, 2 channels of 2 A for proportional valves and DC motors

6ES7138-6DB00-0BB1

Suitable BaseUnits

BU20-P12+A0+4B

BU type B1; BaseUnit (dark); without AUX terminals; for continuing the load group

6ES7193-6BP20-0BB1

Accessories

Equipment labeling plate

10 sheets of 16 labels

6ES7193-6LF30-0AW0

Labeling strips

500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer

6ES7193-6LR10-0AA0

500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer

6ES7193-6LR10-0AG0

1 000 labeling strips DIN A4, light gray, card, for inscription with laser printer

6ES7193-6LA10-0AA0

1 000 labeling strips DIN A4, yellow, card, for inscription with laser printer

6ES7193-6LA10-0AG0

BU cover

For covering empty slots (gaps); 5 units

- 15 mm wide
- 20 mm wide

6ES7133-6CV15-1AM0

6ES7133-6CV20-1AM0

Mechanical coding elements

For automatic coding of I/O modules; spare part. 20 units

Type A

6ES7193-6KA00-3AA0

Type B

6ES7193-6KB00-3AA0

Type C

6ES7193-6KC00-3AA0

Type D

6ES7193-6KD00-3AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM Pulse 2x24V pulse output module

Technical specifications

Article number	6ES7138-6DB00-0BB1 ET 200SP, TM Pulse 2x24V
General information	
Product type designation	TM Pulse 2x24 V
Product function	
• I&M data	Yes; I&M 0
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 + HSP
• STEP 7 configurable/ integrated from version	V5.5 SP4 and higher
• PROFIBUS from GSD version/ GSD revision	GSD Revision 5
• PROFINET from GSD version/ GSD revision	GSDML V2.31
Supply voltage	
Rated value (DC)	24 V
Load voltage L+	
• Rated value (DC)	24 V
• Short-circuit protection	Yes
• Reverse polarity protection	Yes; against destruction
Encoder supply	
Number of outputs	2; A common 24V encoder supply for both channels
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes; per module, electronic
• Output current, max.	300 mA
Digital inputs	
Number of digital inputs	2; 1 per channel
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Freely usable digital input	Yes
• HW enable for digital output	Yes
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-5 ... +5 V
• for signal "1"	+11 to +30V
• permissible voltage at input, min.	-30 V; -5 V continuous, -30 V brief reverse polarity protection
• permissible voltage at input, max.	30 V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage) for standard inputs	
- parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms

Article number	6ES7138-6DB00-0BB1 ET 200SP, TM Pulse 2x24V
Digital outputs	
Type of digital output	P- and M-switching
Number of digital outputs	2; 1 per channel
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Limitation of inductive shutdown voltage to	-0.8 V
Controlling a digital input	Yes
Digital output functions, parameterizable	
• Freely usable digital output	Yes
• PWM output	Yes
- Number, max.	2; 1 per channel
- Cycle duration, parameterizable	Yes; Max. 85 s
• Connection of a proportional valve	Yes
• Dithering	Yes
• Current measurement	Yes
• Current control	Yes
• Connection of a DC motor	Yes
• ON-delay	Yes
• OFF-delay	Yes
• Frequency output	Yes
• Pulse train	Yes
• Pulse output	Yes
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	10 W; 1 W with High Speed output
Load resistance range	
• lower limit	12 Ω; 240 ohm with High Speed output
• upper limit	12 kΩ
Output voltage	
• Type of output voltage	DC
• for signal "0", max.	1 V
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	2 A; 0.1 A with High Speed output, observe derating
Output delay with resistive load	
• "0" to "1", typ.	0 μs; With High Speed output, 4.5 μs with Standard output
• "0" to "1", max.	0.8 μs; With High Speed output, 9 μs with Standard output
• "1" to "0", typ.	0 μs; With High Speed output, 4.5 μs with Standard output
• "1" to "0", max.	0.8 μs; With High Speed output, 9 μs with Standard output
Parallel switching of two outputs	
• for uprating	Yes

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM Pulse 2x24V pulse output module

Technical specifications

Article number	6ES7138-6DB00-0BB1 ET 200SP, TM Pulse 2x24V
Switching frequency	
• with resistive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
• with inductive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per channel, max.	2 A
• Current per group, max.	4 A
• Current per module, max.	4 A
Isochronous mode	
Bus cycle time (TDP), min.	250 µs; with 1 channel configuration, 375 µs with 2 channel configuration
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Short-circuit	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes
• for module diagnostics	Yes; green/red DIAG LED
Integrated Functions	
Counter	No
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for safety functions	No

Article number	6ES7138-6DB00-0BB1 ET 200SP, TM Pulse 2x24V
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C; Observe derating
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	50 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM PTO 2x24V interface module for PTO (Pulse Train Output)

Overview



- 2-channel interface module in ET 200SP for PTO (Pulse Train Output)
- Signal interface for speed and direction: 24 V asymmetrical up to 200 kHz
- 3 signal types can be configured:
 - **PTO pulse/direction:**
The pulse signal defines the speed and distance and the direction signal determines the direction.
 - **PTO count up/ count down:**
A signal defines the pulses in the forward direction and the other signal defines the pulses in the reverse direction.
 - **PTO A/B phase-shifted:**
2 tracks are output, whose signals are phase-shifted by 90°. Based on the signal sequence, the direction, the distance and the speed can be determined. It can be selected whether a full period lasts for 1 increment or whether all 4 edge transitions will be counted.
- The pulses output are also counted internally in the module and signaled to the CPU as the current actual position.
- Supported technology objects:
 - Speed axis (S7-1500, S7-1500T)
 - Positioning axis (S7-1200, S7-1500, S7-1500T)
 - Synchronous axis (S7-1500, S7-1500T)
 - Measuring input (S7-1500, S7-1500T)

Ordering data

Article No.

TM PTO 2x24V interface module for PTO (Pulse Train Output)

6ES7138-6EB00-0BA0

With two channels for Pulse Train Output PTO, 24 V; 2 DQ PTO, 3 DI 24 V and 1 DQ 24 V per channel

Suitable BaseUnits

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0DA0
6ES7193-6BP20-2DA0

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP00-0DA0
6ES7193-6BP00-2DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0BA0
6ES7193-6BP20-2BA0

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP00-0BA0
6ES7193-6BP00-2BA0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM PTO 2x24V interface module for PTO (Pulse Train Output)

Ordering data	Article No.	Article No.
Accessories		Mechanical coding elements
Equipment labeling plate 10 sheets of 16 labels	6ES7193-6LF30-0AW0	For automatic coding of I/O modules; spare part. 20 units
Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0	Type A 6ES7193-6KA00-3AA0
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0	Type B 6ES7193-6KB00-3AA0
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	6ES7193-6LA10-0AA0	Type C 6ES7193-6KC00-3AA0
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	6ES7193-6LA10-0AG0	Type D 6ES7193-6KD00-3AA0
BU cover For covering empty slots (gaps); 5 units		SIMATIC Manual Collection DL in 5 languages All manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering SW, Runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT Consignee email address required for delivery.
• 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0	SIMATIC Manual Collection DL in 5 languages Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0	6ES7998-8XE01-8YE0 6ES7998-8XE01-8YE2
Color-coded labels • Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units • Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units • Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	6ES7193-6CP71-2AA0 6ES7193-6CP72-2AA0 6ES7193-6CP73-2AA0	

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Technical specifications

Article number	6ES7138-6EB00-0BA0 ET 200SP, TM PTO 2x24V	Article number	6ES7138-6EB00-0BA0 ET 200SP, TM PTO 2x24V
General information		Digital input functions, parameterizable	
Product type designation	TM PTO 2x24V	• Synchronization	Yes
Product function		• Probe	Yes
• I&M data	Yes; I&M0 to I&M3	• Drive ready	Yes
• Isochronous mode	Yes	Input voltage	
Engineering with		• Rated value (DC)	24 V
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V17 with HSP or higher	• for signal "0"	-5 ... +5 V
• PROFIBUS from GSD version/GSD revision	One GSD file each, Revision 3 and 5 and higher	• for signal "1"	+11 to +30V
• PROFINET from GSD version/GSD revision	GSDML V2.35	• permissible voltage at input, min.	-30 V; -5 V continuous, -30 V brief reverse polarity protection
Supply voltage		• permissible voltage at input, max.	30 V
Rated value (DC)	24 V	Input current	
Load voltage L+		• for signal "1", typ.	2.5 mA
• Rated value (DC)	24 V	Input delay (for rated value of input voltage) for standard inputs	
• Reverse polarity protection	Yes	- parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
Digital inputs			
Number of digital inputs	6; 3 per channel		
Digital inputs, parameterizable	Yes		
Input characteristic curve in accordance with IEC 61131, type 3	Yes		

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM PTO 2x24V interface module for PTO (Pulse Train Output)

Technical specifications

Article number	6ES7138-6EB00-0BA0 ET 200SP, TM PTO 2x24V
Digital outputs	
Number of digital outputs	6; 3 per channel
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Controlling a digital input	Yes
Digital output functions, parameterizable	
• PTO (pulse train output) signal interface	Yes
- 24 V asymmetrical	Yes
• PTO (pulse train output) signal type	
- Pulse and direction	Yes
- Count up, count down	Yes
- Incremental encoder (A, B phase shift)	Yes
- Incremental encoder (A, B phase shift, quadruple)	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.1 A; 0.5 A for CHn.ED
• on lamp load, max.	1 W; 5 W for CHn.ED
Load resistance range	
• lower limit	240 Ω; 48 ohms for CHn.ED
• upper limit	12 kΩ
Output voltage	
• for signal "1", min.	23.2 V; L+ (-1.3 V), L+ (-0.8 V) for CHn.ED
Output current	
• for signal "1" rated value	0.1 A; 0.5 A for CHn.ED
• for signal "0" residual current, max.	0.5 mA
Switching frequency	
• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; According to IEC 60947-5-1, DC-13
• on lamp load, max.	10 Hz
• For signal interface 24 V asymmetrical	200 kHz; For 24 V PTO outputs
Total current of the outputs	
• Current per module, max.	1.4 A

Article number	6ES7138-6EB00-0BA0 ET 200SP, TM PTO 2x24V
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Short-circuit	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C; Observe derating
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Decentralized operation	
to SIMATIC S7-300	Yes; Via control and feedback interface
to SIMATIC S7-400	Yes; Via control and feedback interface
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes; Via control and feedback interface
to standard PROFINET controller	Yes; Via control and feedback interface
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	45 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM StepDrive 24...48V/5A stepper motor control (Phytron Co.)

Overview



The TM StepDrive module from Phytron is a high-precision stepper motor control with integrated power output stage for use in the SIMATIC ET 200SP distributed I/O system. It is the 1-step-drive successor model for SIMATIC ET 200S.

The module can be used together with system and I/O components of the ET 200SP distributed I/O system. Operation is possible with the following head modules:

- IM PROFIBUS
- IM PROFINET
- ET 200SP CPU

Corresponding GSD files and an HSP are available.

The ET 200SP TM StepDrive 24...48V/5A is a product of our Phytron GmbH product partner and is only available from the Phytron GmbH company.

Note

Product partners are external companies outside Siemens AG and its associated companies. Information about and descriptions of products made by product partners are non-binding, and are the responsibility of the product partners. These products are manufactured independently and under the responsibility of the respective product partner, and are sold and supplied by it under its terms of business and delivery.

Unless compulsory by law, Siemens assumes no liability or warranty for these products or for connection with these products of the product partners.

Ordering data

Article No.

TM StepDrive stepper motor control

More information and ordering options via Phytron under <http://www.phytron.com/tm-stepdrive>.

High-precision stepper motor control for ET 200SP

Suitable BaseUnits

BU20-P12+A0+4B

6ES7193-6BP20-0BB1

BU type B1; BaseUnit (dark); without AUX terminals; for continuing the load group

Accessories

Mechanical coding elements

For automatic coding of I/O modules; spare part. 20 units

Type A

6ES7193-6KA00-3AA0

Type B

6ES7193-6KB00-3AA0

Type C

6ES7193-6KC00-3AA0

Type D

6ES7193-6KD00-3AA0

Technical specifications

- Suitable for bipolar control of 2-phase stepper motors of 4-, (6-) or 8-wire design (in 4-wire system)
- 5 A peak phase current with adjustable current steps
- Supply voltage from 24 to 48 V DC
- Up to 1/256 micro step (physical resolution: approx. 51 200 positions per revolution (0.007°/step)).
- Maximum stepping rate: 250 000 steps/s
- 2 digital inputs for limit and reference switches
- Diagnostics LEDs (overcurrent, overtemperature, traversing task or motor running ...)
- Short-circuit-proof, overload-proof
- Data record transfer for power output stage parameter assignment and diagnostics during runtime
- Booster: Enhanced torque during acceleration or braking
- Adjustable response to CPU stop

More information

You can find more information on the module and associated contact information on the internet under <https://www.phytron.eu/tm-stepdrive>.

Here you will also find the manual, the data sheet, the HSP, a link to the GSD files as well as sample function blocks for SIMATIC.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > F-TM ServoDrive HF

Overview



SIMATIC MICRO-DRIVE F-TM ServoDrive HF with BaseUnit

In combination with EC Motors and stepper motors up to 280 W the ET 200SP technology module F-TM ServoDrive HF allows positioning and speed control in very confined spaces. The triple overload capability and the support of BiSS-C multi-turn encoders extend the scope of applications of the TM Drive product family.

Engineering in the TIA Portal stands for consistency in a single tool. This facilitates drive dimensioning, commissioning and servicing.

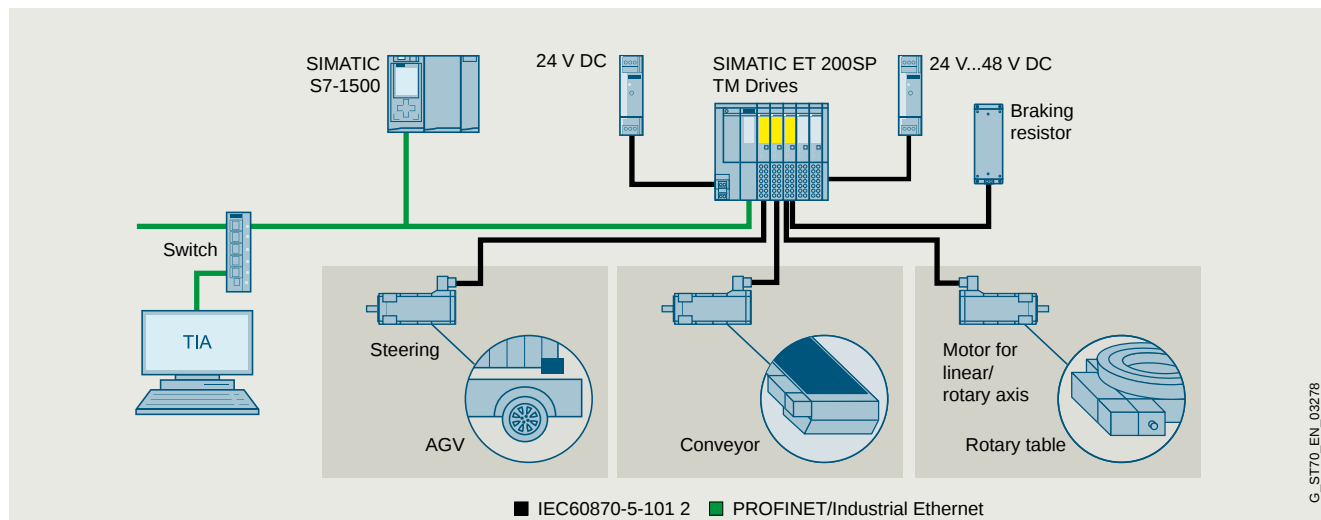
The new drive system consists of:

- The F-TM ServoDrive HF,
- The BaseUnit (U0),
- Motors with gearbox for flexible use and
- Connecting cables.

Further information on the distributed I/O system SIMATIC ET 200SP is available in the ST 70 Catalog and on the internet at <https://www.siemens.com/et200sp>

Characteristics

- PROFINET RT/IRT from firmware FW2.1
- Hardware-STO (SIL 3)
- Triple overload
- Digital input
- Integrated braking chopper
- Encoder connection for
 - IQ encoders
 - Incremental encoders
 - BiSS-C encoders
 - Hall encoder



Application example TM Drives

Variant	Power	Peak power	Device width
High Feature	280 W	840 W	20 mm

More information:

<https://www.siemens.com/micro-drive>

Ordering data

Article No.

Article No.

F-TM ServoDrive HF for SIMATIC MICRO-DRIVE

- High Feature V1; 24 ... 48 V, 5 A with hardware STO and integrated braking chopper

6BK1136-6AB01-0CU0

Accessories

ET 200SP BaseUnit type U0

- For constructing a new potential group (white)
- For continuing an existing potential group (gray)

Shield connection for ET 200SP
Includes 5 shield connections

6ES7193-6BP00-0DU0
6ES7193-6BP00-0BU0

6ES7193-6SC20-1AM0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > F-TM ServoDrive HF

Technical specifications

Article number	6BK1136-6AB01-0CU0 F-TM ServoDrive HF
General information	
Product type designation	F-TM ServoDrive HF
Product description	control of EC and stepper motors
Product function	
• I&M data	Yes
• Isochronous mode	Yes
• Four-quadrant operation	Yes
• Speed control with encoder	Yes
• Speed control without encoder	No
• Safety Functions	Yes; Drive controller with hardwired STO
Protection function	
• Undervoltage protection	Yes
• Overvoltage protection	Yes
• Overload protection	Yes
• Ground-fault protection	No
• Short-circuit protection	Yes
Installation type/mounting	
Type of ventilation	Convection cooling
Supply voltage	
Design of the power supply	24 ... 48 V DC, SELV / PELV
Output voltage	
Rated value, min.	24 V
Rated value, max.	48 V
Output current	
Current output (rated value)	5 A
Output current, max.	15 A
Output frequency	599 Hz; 1 500 Hz with stepper motors
Encoder supply	
Number of outputs	1
5 V encoder supply	
• 5 V	Yes
• Short-circuit protection	Yes
• Output current, max.	150 mA
Digital inputs	
Number of digital inputs	1; input for message signal
Number of safety inputs	1; For STO, antivalent (2-pin) - 24 V DC
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes; up to 500 Hz per channel
• Absolute encoder (SSI)	Yes; BiSS-C
• Hall encoder	Yes
• BiSS-C encoder	Yes
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Telegram error at SSI encoder	Yes; BiSS-C
• Group error	Yes
Diagnostics indication LED	
• RUN LED	Yes
• ERROR LED	Yes
Integrated Functions	
Position detection	
• Incremental acquisition	Yes
• Absolute acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes

Article number	6BK1136-6AB01-0CU0 F-TM ServoDrive HF
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UKCA mark	Yes
cULus	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
RoHS conformity	Yes
China RoHS compliance	Yes
Standard for EMC according to EN 61800-3	Yes
Standard for drive acc. to EN 61800-5-1	Yes
Standard for drive acc. to EN 61800-5-2	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	Category 3, performance level d, according to EN ISO 13849-1:2015
• SIL acc. to IEC 61508	SIL 3
• SIL according to DIN EN 61800-5-2	SIL 3
Ambient conditions	
Pollution degree during storage and transport	2
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; No condensation, splash water, icing, salt spray or oil mist permitted.
• horizontal installation, max.	60 °C; No condensation, splash water, icing, salt spray or oil mist permitted. Note the derating data!
• vertical installation, min.	-30 °C; No condensation, splash water, icing, salt spray or oil mist permitted.
• vertical installation, max.	50 °C; No condensation, splash water, icing, salt spray or oil mist permitted. Note the derating data!
Ambient temperature during storage/transportation	
• Storage, min.	-30 °C
• Storage, max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	3 000 m
Cables	
Cable length for motor, shielded, max.	10 m
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	55 g
Other	
Brake design	holding brake control via the process image
Braking chopper	Yes

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > F-TM ServoDrive ST

Overview



SIMATIC MICRO-DRIVE F-TM ServoDrive ST video
https://players.brightcove.net/1813624294001/70fec0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6136815418001



In combination with EC motors, the ET 200SP technology module F-TM ServoDrive ST allows positioning and speed control of EC motors up to 280 W in very confined spaces.

Engineering in the TIA Portal stands for consistency in a single tool. This facilitates drive dimensioning, commissioning and servicing.

The new drive system consists of

- The F-TM ServoDrive ST
- The BaseUnit (U0)
- Motors with gearbox for flexible use and
- Connecting cables.

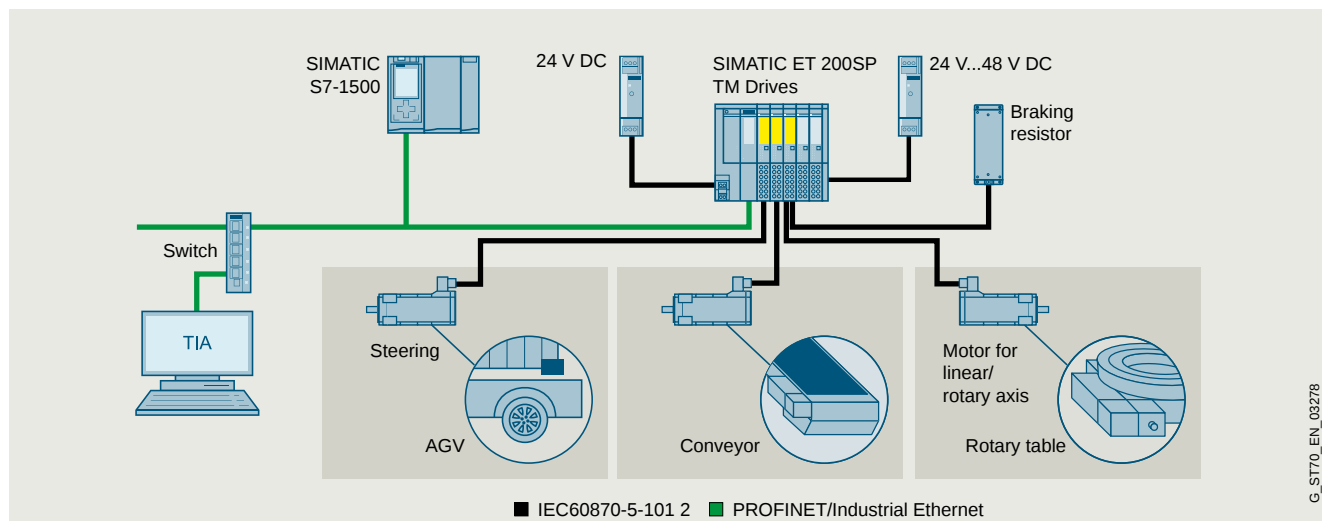
Further information on the distributed I/O system SIMATIC ET 200SP is available in the ST 70 Catalog and on the internet at

<http://www.siemens.com/et200sp>

Characteristics

- PROFINET RT/IRT from firmware FW2.1
- Hardware STO (SIL 2)
- Double overload
- Digital input
- Integrated braking chopper
- Encoder connection for
 - IQ encoders
 - Incremental encoders
 - Hall encoder

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Application example TM Drives

Variant	Power	Device width
Standard	280 W	20 mm

More information:

<https://www.siemens.com/micro-drive>

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > F-TM ServoDrive ST

Ordering data	Article No.	Article No.
F-TM ServoDrive ST for SIMATIC MICRO-DRIVE Standard V1; 24 ... 48 V, 5 A with hardware STO and integrated braking chopper	6BK1136-6AB01-0BU0	Accessories SIMATIC F-TM ServoDrive ST Starter Kit Scope of supply: - SIMATIC MICRO-DRIVE F-TM ServoDrive ST - SIMATIC ET 200SP PROFINET IM 155-6PN ST Interface Module - SIMATIC ET 200SP BaseUnit type U0 - All-in-one plug-in cable CSD_LAI02, length 1.5 m - ebm-papst motor ECI42.20 24 V ET 200SP BaseUnit type U0 - For constructing a new potential group (white) - For continuing an existing potential group (gray) Shield connection for ET 200SP Includes 5 shield connections
		6BK1637-6AB00-0BU0
		6ES7193-6BP00-0DU0 6ES7193-6BP00-0BU0
		6ES7193-6SC20-1AM0

Technical specifications

Article number	6BK1136-6AB01-0BU0	Article number	6BK1136-6AB01-0BU0
	F-TM ServoDrive ST		F-TM ServoDrive ST
General information		Digital inputs	
Product type designation	F-TM ServoDrive ST	Number of digital inputs	1; input for message signal
Product description	Control of EC motors	Number of safety inputs	1; For STO, antivalent (2-pin) - 24 V DC
Product function		Encoder	
• I&M data	Yes	Connectable encoders	
• Isochronous mode	Yes	• Incremental encoder (symmetrical)	Yes; up to 500 Hz per channel
• Four-quadrant operation	Yes	• Hall encoder	Yes
• Speed control with encoder	Yes	Interrupts/diagnostics/status information	
• Speed control without encoder	No	Alarms	
• Safety Functions	Yes; Drive controller with hardwired STO	• Diagnostic alarm	Yes
Protection function		• Hardware interrupt	No
• Undervoltage protection	Yes	Diagnoses	
• Overvoltage protection	Yes	• Monitoring the supply voltage	Yes
• Overload protection	Yes	• Wire-break	Yes
• Ground-fault protection	No	• Short-circuit	Yes
• Short-circuit protection	Yes	• Group error	Yes
Installation type/mounting		Diagnostics indication LED	
Type of ventilation	Convection cooling	• RUN LED	Yes
Supply voltage		• ERROR LED	Yes
Design of the power supply	24 ... 48 V DC, SELV / PELV	Integrated Functions	
Output voltage		Position detection	
Rated value, min.	24 V	• Incremental acquisition	Yes
Rated value, max.	48 V	• Absolute acquisition	No
Output current		• Suitable for S7-1500 Motion Control	Yes
Current output (rated value)	5 A	Potential separation	
Output current, max.	10 A	Potential separation channels	
Output frequency	599 Hz	• between the channels and backplane bus	Yes
Encoder supply		Degree and class of protection	
Number of outputs	1	IP degree of protection	IP20
5 V encoder supply			
• 5 V	Yes		
• Short-circuit protection	Yes		
• Output current, max.	150 mA		

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > F-TM ServoDrive ST**Technical specifications**

Article number	6BK1136-6AB01-0BU0 F-TM ServoDrive ST
Standards, approvals, certificates	
CE mark	Yes
UKCA mark	Yes
cULus	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
RoHS conformity	Yes
China RoHS compliance	Yes
Standard for EMC according to EN 61800-3	Yes
Standard for drive acc. to EN 61800-5-1	Yes
Standard for drive acc. to EN 61800-5-2	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	Category 3, performance level d, according to EN ISO 13849-1:2015
• SIL acc. to IEC 61508	SIL 3
• SIL according to DIN EN 61800-5-2	SIL 3

Article number	6BK1136-6AB01-0BU0 F-TM ServoDrive ST
Ambient conditions	
Pollution degree during storage and transport	2
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; No condensation, splash water, icing, salt spray or oil mist permitted.
• horizontal installation, max.	60 °C; No condensation, splash water, icing, salt spray or oil mist permitted. Note the derating data!
• vertical installation, min.	-30 °C; No condensation, splash water, icing, salt spray or oil mist permitted.
• vertical installation, max.	50 °C; No condensation, splash water, icing, salt spray or oil mist permitted. Note the derating data!
Ambient temperature during storage/transportation	
• Storage, min.	-30 °C
• Storage, max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	3 000 m
Cables	
Cable length for motor, shielded, max.	10 m
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	55 g
Other	
Brake design	holding brake control via the process image
Braking chopper	Yes

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > F-TM StepDrive ST

Overview



The ET 200SP technology module F-TM StepDrive ST allows positioning and speed control of stepper motors up to 10 A peak current in very confined spaces.

Engineering in the TIA Portal stands for consistency in a single tool. This facilitates drive dimensioning, commissioning and servicing.

The new drive system consists of

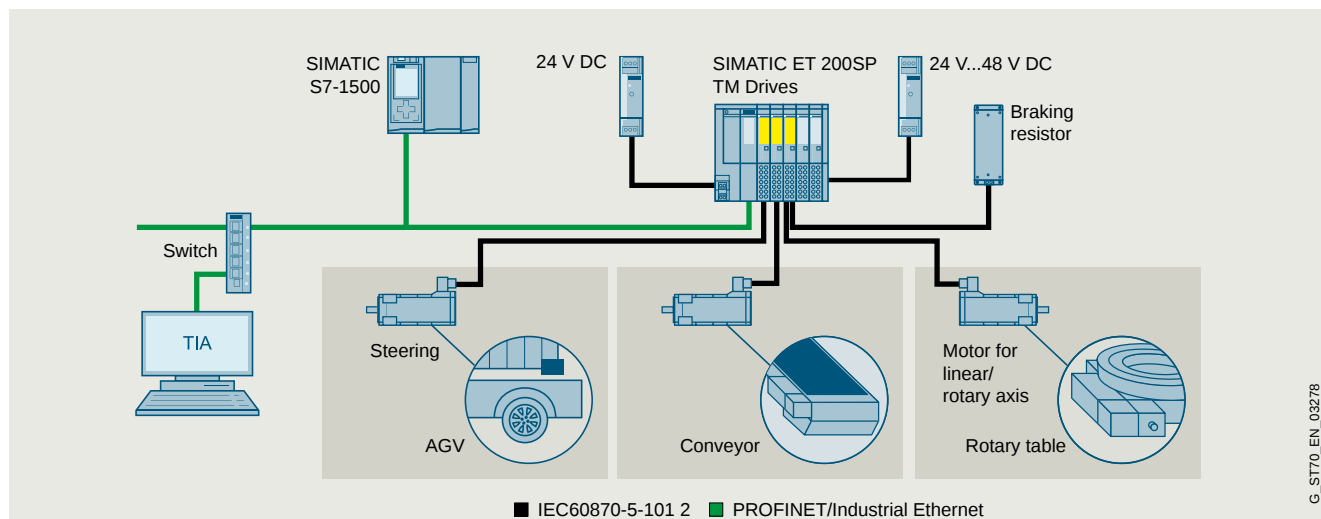
- The F-TM StepDrive ST,
- The BaseUnit (U0)

Further information on the distributed I/O system SIMATIC ET 200SP is available in the ST 70 Catalog and on the internet at

<http://www.siemens.com/et200sp>

Characteristics

- Bipolar stepper motors
- PROFINET RT/IRT from firmware FW2.1
- Hardware STO (SIL3)
- Digital input
- Encoderless open-loop controlled operation
- Closed-loop operation with encoder feedback
- Encoder connection for
 - Incremental encoders
 - BiSS-C encoders



Application example TM Drives

Variant	Power	Device width
Standard	280 W	20 mm

More information:

<https://www.siemens.com/micro-drive>

Ordering data

Article No.

F-TM StepDrive ST for SIMATIC MICRO-DRIVE

- Standard V1; 24 ... 48 V, 5 A with hardware STO

6BK1136-6SB01-0BU0

Accessories

ET 200SP BaseUnit type U0

- For constructing a new potential group (white)
- For continuing an existing potential group (gray)

6ES7193-6BP00-0DU0

6ES7193-6BP00-0BU0

Shield connection for ET 200SP

6ES7193-6SC20-1AM0

Includes 5 shield connections

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > F-TM StepDrive ST

Technical specifications

Article number	6BK1136-6SB01-0BU0 F-TM StepDrive ST
General information	
Product type designation	F-TM StepDrive ST
Product description	control of stepper motors
Product function	
• I&M data	Yes
• Isochronous mode	Yes
• Four-quadrant operation	Yes
• Speed control with encoder	Yes
• Speed control without encoder	No
• Safety Functions	Yes; Drive controller with hardwired STO
Protection function	
• Undervoltage protection	Yes
• Overvoltage protection	Yes
• Overload protection	Yes
• Ground-fault protection	No
• Short-circuit protection	Yes
Installation type/mounting	
Type of ventilation	Convection cooling
Supply voltage	
Design of the power supply	24 ... 48 V DC, SELV / PELV
Output voltage	
Rated value, min.	24 V
Rated value, max.	48 V
Output current	
Current output (rated value)	5 A
Output current, max.	10 A
Output frequency	1 500 Hz
Encoder supply	
Number of outputs	1
5 V encoder supply	
• 5 V	Yes
• Short-circuit protection	Yes
• Output current, max.	150 mA
Digital inputs	
Number of digital inputs	1; input for message signal
Number of safety inputs	1; For STO, antivalent (2-pin) - 24 V DC
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes; up to 500 Hz per channel
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
Diagnostics indication LED	
• RUN LED	Yes
• ERROR LED	Yes
Integrated Functions	
Position detection	
• Incremental acquisition	Yes
• Absolute acquisition	No
• Suitable for S7-1500 Motion Control	Yes

Article number	6BK1136-6SB01-0BU0 F-TM StepDrive ST
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UKCA mark	Yes
cULus	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
RoHS conformity	Yes
China RoHS compliance	Yes
Standard for EMC according to EN 61800-3	Yes
Standard for drive acc. to EN 61800-5-1	Yes
Standard for drive acc. to EN 61800-5-2	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	Category 3, performance level d, according to EN ISO 13849-1:2015
• SIL acc. to IEC 61508	SIL 3
• SIL according to DIN EN 61800-5-2	SIL 3
Ambient conditions	
Pollution degree during storage and transport	2
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; No condensation, splash water, icing, salt spray or oil mist permitted.
• horizontal installation, max.	60 °C; No condensation, splash water, icing, salt spray or oil mist permitted. Note the derating data!
• vertical installation, min.	-30 °C; No condensation, splash water, icing, salt spray or oil mist permitted.
• vertical installation, max.	50 °C; No condensation, splash water, icing, salt spray or oil mist permitted. Note the derating data!
Ambient temperature during storage/transportation	
• Storage, min.	-30 °C
• Storage, max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	3 000 m
Cables	
Cable length for motor, shielded, max.	10 m
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	55 g
Other	
Brake design	holding brake control via the process image
Braking chopper	No

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIMATIC ET 200SP ECC charging controllers

Overview

SIPLUS and SIMATIC Electrical Charging Controllers are the key components in infrastructure solutions for the conductive charging of electric vehicles.

They perform the following functions:

- Detection of the charging cable and its permissible current carrying capacity
- Transfer of the maximum charging current from the charging station to the electric vehicle
- Evaluation of the status signals from the electric vehicle:
 - Ready for charging
 - Charging
 - Charging with ventilation
- Cost-optimized, space-saving charging infrastructure solutions due to compact design based on SIMATIC ET 200SP.

ET 200SP TM ECC 2xPWM ST AC module



- Control of charging outputs according to IEC 61851 by parameterizable SIMATIC ET 200SP TM ECC 2xPWM ST charging controller
- Control of load tap-off
- Control of connector lock
- Evaluation of connector lock or load contactor status

ET 200SP TM ECC PL ST DC module



- The SIMATIC ET 200SP TM ECC PL ST charging controller fully controls a DC charging process according to DIN SPEC 70121.
- The following sequences are performed:
 - Session Setup
 - Service Discovery
 - Service and Payment Selection
 - Contract Authentication
 - Charge Parameter Discovery
 - Power Delivery
 - Charging Status
 - Cable Check
 - Pre Charging
 - Current Demand
 - Welding Detection
 - Session Stop

Accessories: Calibration Kit TM ECC CCS2

Expansion kit for calibration of the power line signal strength of an EVSE.

- According to DIN SPEC 70121 / ISO15118 or design guidelines for CCS charging stations Type 2
- Suitable for the SIMATIC ET 200SP TM ECC PL ST technology module

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > SIMATIC ET 200SP ECC charging controllers

Technical specifications

Article number	6FE1242-6TM10-0BB1 SIMATIC ET 200SP TM ECC 2xPWM ST	6AG1242-6TM10-2BB1 SIPLUS ET 200SP TM ECC 2xPWM ST	6FE1242-6TM20-0BB1 SIMATIC ET 200SP TM ECC PL ST
Digital inputs			
Number of digital inputs	2; 1 per channel		0
Digital inputs, parameterizable	Yes; 12 V / 24 V		No
Digital input functions, parameterizable			
• Freely usable digital input	No; Readback contact contactor / connector lock		
Input voltage			
• Type of input voltage	DC		
• for signal "0"	<0.2 V (nom)		
• for signal "1"	>0.6 V (nom)		
• permissible voltage at input, min.	0 V		
• permissible voltage at input, max.	30 V		
Cable length			
• shielded, max.			10 m
• unshielded, max.	30 m		
Digital outputs			
Type of digital output	Transistor		
Number of digital outputs	2; 1 per channel		2; 1x digital out TRIP function as open collector, 1x digital out (DQ P) as open collector
Current-sinking			Yes
short-circuit proof	Yes		
Short-circuit protection	Yes; electronic/thermal		
Digital output functions, parameterizable			
• PWM output	Yes; According to IEC 61851		Yes; acc. to DIN SPEC 70121 and ISO 15118
- Number, max.	2; 1 per channel		1; 1 per channel
• Connection of a DC motor	Yes; ACT p/n connector locking		No; Only fixed charging cables are permitted for DC charging systems
Switching capacity of the outputs			
• with resistive load, max.	1.3 A		0.6 A; Per digital output
Output voltage			
• Type of output voltage	DC		
• Rated value (DC)	24 V		
Cable length			
• unshielded, max.	30 m; when using a PROFIBUS line	30 m	10 m
Analog inputs			
Number of analog inputs			1; plug present according to IEC 61851
Analog outputs			
Number of analog outputs	2; Control pilot acc. to IEC 61851-1 and/or SAE J1772		1
Type of analog output			Control pilot including Powerline Green Phy, acc. to DIN SPEC 70121
Connection of a DC motor	Yes; Motor for connector lock		No
Protocols			
Bus communication	Yes		Yes; Backplane bus
Vehicle communication according to IEC 61851	Yes; MODE 3		Yes; Mode 4
Interrupts/diagnostics/ status information			
Alarms			
• Diagnostic alarm	Yes		
Diagnoses			
• Monitoring the supply voltage	No		No; Supply voltage diagnostics
• Wire-break			No
• Short-circuit	Yes		No

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > SIMATIC ET 200SP ECC charging controllers

Technical specifications

Article number	6FE1242-6TM10-0BB1	6AG1242-6TM10-2BB1	6FE1242-6TM20-0BB1
	SIMATIC ET 200SP TM ECC 2xPWM ST	SIPLUS ET 200SP TM ECC 2xPWM ST	SIMATIC ET 200SP TM ECC PL ST
Diagnostics indication LED			
• ERROR LED	Yes; red LED		No
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED		
• Channel status display	Yes; green LED		
• for module diagnostics	Yes; green/red DIAG LED		
Potential separation			
Potential separation channels			
• between the channels	No		No; Only one channel is available
• between the channels and backplane bus	Yes		
EMC			
Electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge		
Field-related interference acc. to IEC 61000-4-3	10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)		
Conducted interference due to burst acc. to IEC 61000-4-4	2 kV signal lines		
Conducted interference due to surge acc. to IEC 61000-4-5	On DC supply lines: 0.5 kV symmetrical and asymmetrical		
Conducted interference due to high-frequency radiation acc. to IEC 61000-4-6	10 V (0.15 ... 80 MHz)		
Degree and class of protection			
IP degree of protection	IP20		
Standards, approvals, certificates			
Certificate of suitability	CE / RCM / EAC / UL / KC	CE	CE / RCM / EAC / UL / KC
Ambient conditions			
Ambient temperature during operation			
• min.	-30 °C		-30 °C
• max.	60 °C		60 °C
• horizontal installation, min.	-30 °C	-30 °C; = Tmin	-30 °C
• horizontal installation, max.	60 °C	60 °C; = Tmax	60 °C
• vertical installation, min.	-30 °C	-30 °C; = Tmin	-30 °C
• vertical installation, max.	50 °C	50 °C; = Tmax	50 °C
Ambient temperature during storage/transportation			
• Storage, min.	-40 °C		
• Storage, max.	70 °C		
• Transportation, min.	-40 °C		
• Transportation, max.	70 °C		
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	2 000 m	5 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity			
• Operation, min.	5 %		5 %
• Operation, max.	95 %; no condensation		95 %; no condensation
• With condensation, tested in accordance with IEC 60068-2-38, max.		100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	
Vibrations			
• Vibration resistance during operation acc. to IEC 60068-2-6	10 ... 58 Hz / 0.075 mm, 58 ... 150 Hz / 1 g		
Shock testing			
• Shock resistance acc. to IEC 60068-2-27	15 g / 11 ms		

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > SIMATIC ET 200SP ECC charging controllers

Technical specifications

Article number	6FE1242-6TM10-0BB1 SIMATIC ET 200SP TM ECC 2xPWM ST	6AG1242-6TM10-2BB1 SIPLUS ET 200SP TM ECC 2xPWM ST	6FE1242-6TM20-0BB1 SIMATIC ET 200SP TM ECC PL ST
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants		Yes; Incl. diesel and oil droplets in the air	
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	
- to chemically active substances according to EN 60721-3-3		Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-3		Yes; Class 3S4 incl. sand, dust, *	
- Against mechanical environmental conditions acc. to EN 60721-3-3		Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4		Yes; Class 3 (excluding trichlorethylene)	
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04		Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04		* The supplied plug covers must remain in place over the unused interfaces during operation!	
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086		Yes; Class 2 for high reliability	
• Protection against fouling acc. to EN 60664-3		Yes; Type 1 protection	
• Military testing according to MIL-I-46058C, Amendment 7		Yes; Discoloration of coating possible during service life	
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A		Yes; Conformal coating, Class A	
Decentralized operation			
to SIMATIC S7-1500	Yes		
Dimensions			
Width	20 mm		
Height	73 mm		
Depth	58 mm		
Weights			
Weight, approx.	32 g		51 g
Other			
Note:			The Tone Mask of the Green Phy defined in DIN 70121 for North America applies

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > SIMATIC ET 200SP ECC charging controllers

Technical specifications

Article number	6FE1244-0AD10-0AA0 SIMATIC Calibration Kit TM ECC CCS2
General information	
Product type designation	Calibration kit TM ECC CCS2
Product description	Expansion kit for adjusting the powerline signal strength of an EVSE in accordance with DIN SPEC 70121/ISO 15118 or design guidelines for CCS charging stations
Installation type/mounting	
Mounting type	standard rail
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V; Optional: external infeed
Reverse polarity protection	Yes
Load voltage L+	
• Short-circuit protection	Yes
• Reverse polarity protection	Yes
Input current	
Current consumption, max.	0.5 A
Interfaces	
Number of other interfaces	2; 1x CCS (Combined Charging System) acc. to IEC 62196 1x power supply DC adapter (5.50 mm x 2.10 mm x 9.5 mm) 24 V
Protocols	
Vehicle communication according to IEC 61851	Yes; Mode 4
EMC	
Electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge
Field-related interference acc. to IEC 61000-4-3	10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)
Degree and class of protection	
IP degree of protection	IP30
Standards, approvals, certificates	
Certificate of suitability	CE

Article number	6FE1244-0AD10-0AA0 SIMATIC Calibration Kit TM ECC CCS2
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	40 °C
Ambient temperature during storage/transportation	
• Storage, min.	-30 °C
• Storage, max.	85 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Up to max. 2 000 m
Relative humidity	
• Operation, min.	5 %
• Operation, max.	95 %
Mechanics/material	
Material of housing	Plastic: polycarbonate, abbreviation: PC- GF 10 FR
Dimensions	
Width	250 mm
Height	122 mm
Depth	160 mm
Weights	
Weight, approx.	1.5 kg

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM SIWAREX WP321 ST weighing electronics

Overview



SIWAREX WP321 is a versatile and flexible weigh beam for the seamless integration of a static scale into the SIMATIC automation environment.

The weighing electronics are integrated within the SIMATIC ET 200SP system series and use all the features of a modern automation system, such as integrated communication, operator control and monitoring, diagnostics units and the project planning tools in the TIA portal, SIMATIC Step 7, WinCC flexible and PCS 7.

In conjunction with the digital SIWAREX DB junction box, up to four connected load cells can be diagnosed separately. This enables the weigh beam module to detect the failure of individual load cells and, in the event of an error, to provide relevant load cell data such as order number and location designation directly in the CPU or at the HMI. This increases the operational reliability of the scale, reduces downtimes, makes commissioning easier and simplifies servicing.

All messages and process values of the individual load cell channels are of course available in the SIMATIC controller.

Ordering data

Article No.

TM SIWAREX WP321 weighing electronics

Single-channel, for platform scales or hopper scales with analog load cells (1 ... 4 mV/V), 1 × LC, 1 × RS 485

7MH4138-6AA00-0BA0

SIWAREX WP321 Equipment Manual

Available in a range of languages

Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWAREX WP321 "Ready-for-use"

TIA Portal and SIMATIC Manager sample configuration

Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01

SIWAREX PCS 7 AddOn Library for PCS7 V8.x and V9.0

Supports PROFINET

APL faceplates and function blocks for:

- SIWAREX U
- SIWAREX FTA
- SIWAREX FTC_B (belt scale)
- SIWAREX WP321

Classic faceplate and function block for:

- SIWAREX FTC_L (Loss-in-weight)

7MH4900-1AK61

Accessories (mandatory requirement)

BaseUnit (Type A0 – one BaseUnit required for each WP321)

For opening a new potential group

- BU15P-16+A0+2D
- BU15P-16+A10+2D

6ES7193-6BP00-0DA0
6ES7193-6BP20-0DA0

For continuing the potential group

- BU15P-16+A0+2B
- BU15P-16+A10+2B

6ES7193-6BP00-0BA0
6ES7193-6BP20-0BA0

Shield connection for BaseUnit (5 units / for 5 scales)

For laying load cell cable

6ES7193-6SC20-1AM0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Technology modules > TM SIWAREX WP321 ST weighing electronics

Ordering data	Article No.		Article No.
Accessories (optional)		Cable (optional)	
SIWAREX EB extension box For extending sensor cables	7MH4710-2AA	Cable Li2Y 1 × 2 × 0.75 ST + 2 × (2 × 0.34 ST) – CY For connecting SIWAREX electronic to junction box (JB), extension box (EB), digital junction box (DB), Ex interface (IS) or between two extension boxes. For permanent installation. Occasional bending is possible. External diameter: approx. 10.8 mm (0.43 inch) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F) Sold by the meter. • Sheath color: orange • Sheath color (for hazardous atmospheres): blue	7MH4702-8AG 7MH4702-8AF
SIWAREX JB junction box, aluminum enclosure For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes	7MH5001-0AA20		
SIWAREX JB junction box, stainless steel enclosure For connecting up to 4 load cells in parallel	7MH5001-0AA00		
SIWAREX JB junction box, stainless steel enclosure (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate)	7MH5001-0AA01	RS 485/USB interface converter Commercially available interface converter with FTDI chip, e.g. USB-Nano from CTI https://www.cti-shop.com/en/rs485-converter/usb-nano-485	
SIWAREX DB digital junction box For enhanced diagnostic and monitoring options in conjunction with SIWAREX WP electronics Enclosure made of: • Aluminum • Stainless steel	7MH5001-0AD20 7MH5001-0AD01	Remote display The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX WP321 via an RS 485 interface. Siebert Industrieelektronik GmbH PO Box 1180D-65565 Eppelborn, Germany Tel: +49 6806/980-9 Fax: +49 6806/980-999 https://www.siebert-group.com/en/ Detailed information is available from the manufacturer.	
SIWAREX IS Ex interface For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing systems. Compatibility of load cells must be checked separately. Approved for use in the EU • Short-circuit current < 199 mA DC • Short-circuit current < 137 mA DC	7MH4710-5BA 7MH4710-5CA		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM SIWAREX WP321 ST weighing electronics

Technical specifications

SIWAREX WP321	
Integration in automation systems	
SIMATIC S7-300, S7-400, S7-1200 and S7-1500	Via SIMATIC ET 200SP interface module (PROFIBUS or PROFINET)
Other manufacturers (with restrictions)	Via SIMATIC ET 200SP interface module (PROFIBUS or PROFINET)
Communication interfaces	• SIMATIC ET 200SP backplane bus • RS 485 (SIWATOOL, Siebert remote display)
Commissioning options	• Using SIWATOOL V7 • Using function block in SIMATIC CPU / Touch Panel
Measuring accuracy	
According to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	± 2 million parts
Measuring frequency	100 / 120 / 600 Hz
Digital filter	Variable adjustable low-pass and average filter
Typical applications	• Non-automatic weighing instruments • Force measurements • Fill-level monitoring • Belt tension monitors
Weighing functions	
Weight values	• Gross • Net • Tare
Limit values	• 2 × min/max • Empty
Zeroing	Via command by controller or HMI
Tare	Via command by controller or HMI
External tare specification	Via command by controller or HMI
Calibration commands	Via command by controller or HMI

SIWAREX WP321	
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage (value applies at sensor, cable-related voltage drops of up to 5 V are controlled)	4.85 V DC ±2%
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4 100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4 100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible range of measuring signal (at greatest set characteristic value)	-21.3 ... +21.3 mV
Max. distance of load cells	1000 m (459.32 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface (compatibility of the load cells must be checked)
Approvals/certificates	• ATEX Zone 2 • UL • FM • EAC • KCC • IECEx • RCM
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	Typ. 0.1 A @ 24 V DC (0.2 A max.)
Max. power consumption SIMATIC Bus	30 mA
IP degree of protection to EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min(IND)} \dots T_{max(IND)}$ (operating temperature)	
• Vertical installation in SIMATIC S7 ¹⁾	-25 ... +50 °C (-13 ... 122 °F)
• Horizontal installation in SIMATIC S7 ¹⁾	-25 ... +60 °C (-13 ... 140 °F)
EMC requirements	According to IEC 61000-6-2, IEC 61000-6-4, OIML R76-1
Dimensions (width)	15 mm (0.6 inch)

¹⁾ The S7 standard modules may not be operated at temperatures below 0 °C (32 °F). For operating conditions below 0 °C (32 °F), SIMATIC modules from the SIPLUS series must be used.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM SIWAREX WP341 HF weighing electronics

Overview



The SIWAREX WP341 is a compact, precise weighing electronics in the SIMATIC ET 200SP format.

With a width of just 20 mm it is one of the slimmest weighing electronics on the market, yet its firmware includes the functionalities of a continuous belt weighing electronics. Optionally the WP341 can be used for operation of solids flowmeters.

The load cells and the speed sensor are directly connected to the ET 200SP Base Unit (type U0) and therefore the complete system is directly integrated into the automation system.

Ordering data

Article No.

TM SIWAREX WP341 weighing electronics **7MH4138-6CA00-0CU0**

SIMATIC ET 200SP,
TM SIWAREX WP341 HF, weighing
electronics for continuous belt
weighing applications

SIWAREX WP341 Equipment Manual

Available in a range of languages

Free download on the Internet at:

[http://www.siemens.com/weighing/
documentation](http://www.siemens.com/weighing/documentation)

SIWAREX WP341 "Getting Started" sample project

Sample software shows beginners
how to program the scales in
TIA Portal V16

Free download on the Internet at:

[https://support.industry.siemens.com/
cs/products?dtp=Download&mf=ps
&pnid=17781&lc=en-WW](https://support.industry.siemens.com/cs/products?dtp=Download&mf=ps&pnid=17781&lc=en-WW)

ET 200SP BaseUnit type U0

- For opening a new potential group (white) **6ES7193-6BP00-0DU0**
- For continuing an existing potential group (gray) **6ES7193-6BP00-0BU0**

**Shield connection for BaseUnit
(5 units/for 5 scales)** **6ES7193-6SC20-1AM0**

For laying load cell cable

Accessories

SIWAREX EB extension box **7MH4710-2AA**

For extending sensor cables

**SIWAREX JB junction box,
aluminum enclosure** **7MH5001-0AA20**

For connecting up to 4 load cells in
parallel, and for connecting multiple
terminal boxes.

**SIWAREX JB junction box,
stainless steel enclosure** **7MH5001-0AA00**

For connecting up to 4 load cells in
parallel.

**SIWAREX JB junction box,
stainless steel enclosure (ATEX)** **7MH5001-0AA01**

For parallel connection of up to 4 load
cells (for zone allocation, see manual
or prototype test certificate).

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM SIWAREX WP341 HF weighing electronics

Ordering data	Article No.	Article No.
SIWAREX DB digital junction box For enhanced diagnostic and monitoring options in conjunction with SIWAREX WP electronics. Enclosure made of: - Aluminum - Stainless steel incl. ATEX and IECEx approval II 3 G Ex ec IIC T4 Gc and II 3 D Ex tc IIIC T120 °C Dc	7MH5001-0AD20 7MH5001-0AD01	Cable (optional) Cable Li2Y 1 × 2 × 0.75 ST + 2 × (2 × 0.34 ST) – CY For connecting SIWAREX electronic to junction box (JB), extension box (EB), digital junction box (DB), Ex interface (IS) or between two extension boxes. For permanent installation. Occasional bending is possible. External diameter: approx. 10.8 mm (0.43 inch) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F) Sold by the meter. - Sheath color: orange - Sheath color (for hazardous atmospheres): blue
SIWAREX IS Ex interface For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX weighing electronics. Compatibility of load cells must be checked separately. - With short-circuit current < 199 mA DC - With short-circuit current < 137 mA DC	7MH4710-5BA 7MH4710-5CA	7MH4702-8AG 7MH4702-8AF

Technical specifications

Article number	7MH4138-6CA00-0CU0	Article number	7MH4138-6CA00-0CU0
General information		Digital outputs	
Product type designation	TM SIWAREX WP341 HF	Number of digital outputs	3
Product function		Digital outputs, parameterizable	Yes
• I&M data	Yes; I&M0 to I&M3	Short-circuit protection	Yes
• Isochronous mode	No	Digital output functions, parameterizable	
• Adjustment of measuring range	Yes; ±0 ... 4 mV/V	• Freely usable digital output	Yes
Engineering with		Switching capacity of the outputs	
• STEP 7 TIA Portal configurable/ integrated from version	V16	• with resistive load, max.	0.5 A
• STEP 7 configurable/ integrated from version	- / -	Output voltage	
• PROFIBUS from GSD version/ GSD revision	GSD as of Revision 5	• Type of output voltage	DC
• PROFINET from GSD version/ GSD revision	GSDML V2.34	Output delay with resistive load	
Supply voltage		• "0" to "1", typ.	20 µs
Load voltage L+		• "1" to "0", typ.	30 µs
• Rated value (DC)	24 V	Parallel switching of two outputs	
• Short-circuit protection	Yes	• for uprating	No
• Reverse polarity protection	Yes	Switching frequency	
Digital inputs		• with resistive load, max.	500 Hz
Number of digital inputs	3	Total current of the outputs	
Digital inputs, parameterizable	Yes	• Current per channel, max.	0.5 A; the total current of all outputs ≥ 0.6 A, the ambient temperature is reduced by -1 °C per 100 mA
Input characteristic curve in accordance with IEC 61131, type 3	Yes	• Current per module, max.	1.5 A; Observe derating
Input voltage		Encoder	
• Type of input voltage	24 V DC	Connection of signal encoders	
• Rated value (DC)	24 V	• For strain gauges (full bridges) with 4-conductor connection	Yes
• for signal "0"	< 5 V DC	• For strain gauges (full bridges) with 6-conductor connection	Yes
• for signal "1"	+11 to +30V	• Resistance of full bridge, min.	56 Ω; when using SIWAREX IS 87 ohm for 7MH4710-5BA; 180 ohm when using 7MH4710-5CA
• permissible voltage at input, min.	-30 V	• Resistance of full bridge, max.	4 100 Ω
• permissible voltage at input, max.	30 V		
Input current			
• for signal "1", typ.	1.6 mA		
Input delay (for rated value of input voltage)			
for technological functions			
- parameterizable	Yes		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM SIWAREX WP341 HF weighing electronics

Technical specifications

Article number	7MH4138-6CA00-0CU0
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.001 %
Error limit according to DIN 1319-1	0.002 %; of full-scale value
Accuracy class	III
Temperature coefficient, zero point	≤ ±0.015 µV/K
Temperature coefficient, span	≤ ±5 ppm/K
1. Interface	
Interface types	
• RS 485	Yes; Terminated internally with 390 Ω / 220 Ω / 390 Ω
2. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; 10/100 Mbit/s
• Number of ports	1
Protocols	
• IP protocol	Yes; IPv4
• Web server	Yes
Interface types	
RJ 45 (Ethernet)	
• Autonegotiation	Yes
• Autocrossing	Yes
RS 485	
• Transmission rate, max.	115.2 kbit/s
• Cable length, max.	1 000 m; ≤ 115 kbps, shielded cable
Protocols	
Web server	
• HTTP	Yes
• HTTPS	Yes
Interrupts/diagnostics/status information	
Diagnostics function	Yes; Diagnostic alarm
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes; green/red DIAG LED
Diagnostics indication LED	
• ERROR LED	Yes; green/red DIAG LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED

Article number	7MH4138-6CA00-0CU0
Integrated Functions	
Counter	Yes
• Number of counters	1
• Counting frequency, max.	8 kHz
Load cell	
• permissible input signal per verification interval, min.	0.4 µV/e
• Sampling rate	1 024 Hz
• Resolution of input signal	±20 000 000 parts at 0 ... 4 mV/V
• Common mode voltage, min.	2.8 V
• Common mode voltage, max.	7.7 V
• input resistance of signal line, typ.	8 MΩ
• input resistance of sense line, typ.	300 MΩ
• Cable length, max.	500 m; when using the SIWAREX 7MH4702-8AG cable
Measuring functions	
Measuring range	
- -1 mV/V to +1 mV/V	Yes
- -2 mV/V to +2 mV/V	Yes
- -4 mV/V to +4 mV/V	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; more than 2 000 m above sea level, the ambient temperature is reduced by -1 °C per 100 m
• Ambient air temperature-barometric pressure-altitude	1 080 ... 533 hPa (-1 000 ... 5 000 m above sea level)
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	20 mm
Height	57 mm
Depth	72 mm
Weights	
Weight, approx.	50 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > TM SIWAREX WP351 HF weighing electronics

Overview



The SIWAREX WP351 is a compact, precise weighing module in the SIMATIC ET 200SP format.

With a width of just 20 mm it is one of the slimmest weighing modules on the market, yet its firmware includes the functionalities of an automatic totalizing weighing instrument and checking, bagging and filling scale.

All operation modes are part of the firmware and certified according to OIML R-51, R-61, R-76 and R-107. This means the WP351 can be used in both scales requiring official calibration and those that do not, where demands are high regarding speed and accuracy.

Ordering data

Article No.

Shield connection for BaseUnit (5 units/for 5 scales) **6ES7193-6SC20-1AM0**

For laying load cell cable

SIWAREX EB extension box **7MH4710-2AA**

For extending sensor cables.

SIWAREX JB junction box, aluminum enclosure **7MH5001-0AA20**

For connecting up to 4 load cells in parallel, and for connecting multiple terminal boxes.

SIWAREX JB junction box, stainless steel enclosure **7MH5001-0AA00**

For connecting up to 4 load cells in parallel.

SIWAREX JB junction box, stainless steel enclosure (ATEX) **7MH5001-0AA01**

For parallel connection of up to 4 load cells (for zone allocation, see manual or prototype test certificate).

SIWAREX IS Ex interface

For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing systems. Compatibility of load cells must be checked separately.

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

Cable (optional)

Cable Li2Y 1 × 2 × 0.75 ST + 2 × (2 × 0.34 ST) – CY

For connecting SIWAREX electronic to junction box (JB), extension box (EB), digital junction box (DB), Ex interface (IS) or between two extension boxes.

For permanent installation. Occasional bending is possible.

External diameter: approx. 10.8 mm (0.43 inch)

Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F)

Sold by the meter.

- Sheath color: orange
- Sheath color (for hazardous atmospheres): blue

7MH4702-8AG

7MH4702-8AF

Ordering data

Article No.

TM SIWAREX WP351 HF weighing electronics

7MH4138-6BA00-0CU0

SIMATIC ET 200SP,
TM SIWAREX WP351 HF,
legal-for-trade weighing module for automatic dosing, filling and checking scales and totalizing weighing instruments

SIWAREX WP351 Equipment Manual

Available in a range of languages

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX WP351 "Getting Started" sample project

Sample software shows beginners how to program the scales in TIA Portal V15.1

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

Calibration set SIWAREX WP351

7MH4138-6BA00-0AY0

For verification of up to 3 scales, comprising:

- 3 × inscription foil for ID label
- 1 × protective film
- 3 × unlocking protection
- 6 × screw

For applications requiring official calibration, follow the calibration regulations of the country of destination.

ET 200SP BaseUnit type U0

- For constructing a new potential group (white)
- For continuing an existing potential group (gray)

6ES7193-6BP00-0DU0

6ES7193-6BP00-0BU0

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > Technology modules > TM SIWAREX WP351 HF weighing electronics

Technical specifications

SIWAREX WP351	
Firmware version	V1.0
• FW update possible	Yes
Usable BaseUnits	BU type U0
Reliability	
Mean time between failures (MTBF)	62 years @ TA = 40 °C
Product function	
I&M data	Yes, I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/ integrated	Configurable as of V15 using HSP0281
• PROFIBUS as of GSD version/ GSD revision	GSD V04.02.41
• PROFINET as of GSD version/ GSD revision	GSDML V2.34
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Permissible range, low limit, static (DC)	19.2 V
• Permissible range, high limit, static (DC)	28.8 V
• Permissible range, low limit, dynamic (DC)	18.5 V
• Permissible range, high limit, dynamic (DC)	30.2 V
• Reverse polarity protection	Yes
• Non-periodic overvoltages	35 V DC for 500 ms with a recovery time of 50 s
Input current	
Current consumption, max.	Max. 140 mA @ 24 V DC + [DQ 3 × 0.5 A]
Power loss	
Typical power loss	1.7 W
Address range	
Assigned address range	
• Inputs	32 bytes
• Outputs	32 bytes
Power supply from SIMATIC S7 backplane bus	
Current consumption from ET 200SP backplane bus	Max. 27 mA @ 3.5 V (SBK4)
Analog load cell interface connection	
Error limit according to DIN 1319-1 at 20 °C (-4 °F) +/-10 K	≤ 0.002% of end value
Relative accuracy (absolute accuracy can only be achieved with local calibration using calibration standards)	
Measuring accuracy in accordance with OIML R76-1:2006/EN 45501:2015	
• Class	III
• Resolution (d=e)	3 × 6000 d
• Error percentage pi	0.4
• Step voltage	0.4 µV/e

SIWAREX WP351	
Accuracy delivery state	Typ. 0.1% of end value
The accuracy is relevant for module exchange or theoretical adjustment	
Sampling rate	1.024 ms
Input signal resolution	± 20 000 000
Measuring ranges	0 ... ±1 mV/V 0 ... ±2 mV/V 0 ... ±4 mV/V
Common mode voltage range	+2.8 ... 7.7 V
Strain gauge supply (constant voltage)	10 V DC (+1 % / -3 %) at the EXC terminals
Short-circuit and overload protection	Yes
Connection	6-wire or 4-wire (parameterizable)
Sensor voltage monitoring	Typ. ≤ 5.0 V
Min. strain gauge input resistance per channel	
• Without SIWAREX IS Ex-i interface	56 Ω
• With SIWAREX IS Ex-i interface	Lower impedance by means of external supply possible 87 Ω @ type 7MH4710-5BA 180 Ω @ type 7MH4710-5CA
Max. strain gauge resistance	4 100 Ω
Temperature coefficient range	≤ ±5 ppm/K
Temperature coefficient zero point	≤ ±0.015 µV/K
Linearity error	≤ 0.001%
Measured value filtering	Low-pass and average value filter configurable (DR3)
Galvanic isolation	500 V AC
50 Hz / 60 Hz noise suppression CMRR	> 80 dB
Input resistance	
• Signal line	Typ. 8*10 ⁶ Ω
• Sense line	Typ. 300*10 ⁶ Ω
Cable length	
• When using SIWAREX cable 7MH4702-8AG	Max. 500 m
Ambient conditions	
Ambient temperature in operation	
• Horizontal mounting position *	Min. -30 °C Max. +60 °C
• Vertical mounting position *	Min. -30 °C Max. +50 °C
Storage and transport temperature	-40 ... +70 °C (-40 ... +158 °F)

1) At a height of more than 2 000 m above sea level, a derating of the ambient temperature of -1 °C / 100 m has to be adhered to. The maximum permissible height is 5 000 meters above sea level. At over 0.6 A total current of the digital outputs DQ, a derating of the ambient temperature of -1 °C per 100 mA has to be adhered to. The max. permissible total current is 1.5 A.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS TM Count 1x24V counter module

Overview



Technical properties

- Counter module for ET 200SP
- Interfaces:
 - 24 V encoder signals A, B and N from P, M or push-pull-switching encoders and sensors
 - 24 V encoder supply output, short-circuit proof
 - 3 digital inputs for controlling the count operation, for saving or for setting the count value
 - 2 digital outputs for fast reactions regardless of the counter status or measured value

- Counting frequency 200 kHz (800 kHz with quadruple evaluation)
- Counting range: +/- 31 bits
- Measurement function
- Parameterizable hardware interrupts
- Parameterizable input filters for suppressing interferences at sensor and digital inputs

Supported types of encoders/signals

- 24 V incremental encoder with and without signal N
- 24 V pulse encoder with direction signal
- 24 V pulse encoder without direction signal
- 24 V pulse encoder for pulse up and down respectively

Supported system functions

- Isochronous mode
- Firmware update
- Identification data I&M

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Ordering data

Article No.

SIPLUS TM Count 1x24V counter module

(Extended temperature range and exposure to environmental substances)

With one channel, max. 200 kHz; for 24 V encoder

6AG1138-6AA01-2BA0

Suitable BaseUnits

(Extended temperature range and exposure to environmental substances)

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

6AG1193-6BP00-7BA0

Article No.

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

6AG1193-6BP20-7DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

6AG1193-6BP20-7BA0

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See SIMATIC TM Count 1x24V counter module, page 10/108

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS TM Count 1x24V counter module

Technical specifications

Article number	6AG1138-6AA01-2BA0
Based on	6ES7138-6AA01-0BA0 SIPLUS ET 200SP TM Count 1X24V
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Article number	6AG1138-6AA01-2BA0
Based on	6ES7138-6AA01-0BA0 SIPLUS ET 200SP TM Count 1X24V
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS TM PosInput 1 counter and position detection module

Overview



Technical properties

- Counter and position detection module for ET 200SP
- Interfaces:
 - Encoder signals A, B and N for 5 V TTL or RS 422 differential signals
 - SSI interface with clock and data for RS 422 differential signals
 - 24 V encoder supply output, short-circuit-proof
 - 2 digital inputs for controlling the counting process, for saving or setting the counter or position value
 - 2 digital outputs for fast reactions depending on the counter reading, position value or measured value
- Counter frequency 1 MHz (4 MHz with fourfold evaluation)
- Counting range: +/- 31 bits
- Measurement function
- Parameterizable hardware interrupts
- Parameterizable input filters for suppressing interferences at sensor and digital inputs

Supported types of encoders/signals

- Incremental encoders with or without N signal
- Pulse encoders with directional signal
- Pulse encoders without directional signal
- Pulse encoders for forward or reverse pulses
- SSI encoders with a telegram length of 10 to 40 bits, of which up to 31 bits position value

Supported system functions

- Isochronous mode
- Firmware update
- Identification data I&M

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS TM PosInput 1 counter and position detection module

(Extended temperature range and exposure to environmental substances)

For RS-422 incremental encoders or SSI absolute encoders, 2DI, 2DQ suitable for BU type A0, ambient temperature -40 °C...60 °C;

6AG1138-6BA01-2BA0

Suitable BaseUnits

(Extended temperature range and exposure to environmental substances)

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

6AG1193-6BP00-7BA0

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

6AG1193-6BP20-7DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

6AG1193-6BP20-7BA0

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See TM PosInput 1 counter and position detection module, page 10/112

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS TM Posinput 1 counter and position detection module

Technical specifications

Article number	6AG1138-6BA01-2BA0
Based on	6ES7138-6BA01-0BA0 SIPLUS ET 200SP TM Posinput 1
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-40 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax; see Derating BasedOn (e.g. manual)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Article number	6AG1138-6BA01-2BA0
Based on	6ES7138-6BA01-0BA0 SIPLUS ET 200SP TM Posinput 1
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS TM Timer DIDQ 10x24 V time-based IO module

Overview



- 4 digital inputs, 6 digital outputs
- Inputs for detecting the input edges with μ s accuracy
- Outputs for outputting the switching signals with μ s accuracy
- 32x oversampling
- PWM output
- Counter function
- Outputs can be switched between 0.5 A standard and especially fast 0.1 A high-speed mode

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Ordering data

Article No.

SIPLUS TM Timer DIDQ 10x24 V time-based IO module

(Extended temperature range and exposure to environmental substances)

4 time-controlled inputs,
6 time-controlled outputs

6AG1138-6CG00-2BA0

Suitable BaseUnits

(Extended temperature range and exposure to environmental substances)

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

6AG1193-6BP00-7BA0

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

6AG1193-6BP20-7DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

6AG1193-6BP20-7BA0

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See SIMATIC TM Timer DIDQ 10x24V time-based IO module, page 10/115

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS TM Timer DIDQ 10x24 V time-based IO module

Technical specifications

Article number	6AG1138-6CG00-2BA0
Based on	6ES7138-6CG00-0BA0 SIPLUS ET 200SP TM Timer DIDQ 10x24V
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	50 °C; = Tmax; see Derating BasedOn (e.g. manual)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Article number	6AG1138-6CG00-2BA0
Based on	6ES7138-6CG00-0BA0 SIPLUS ET 200SP TM Timer DIDQ 10x24V
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS TM Pulse 2x24V pulse output module

Overview



2-channel pulse output module for SIPLUS ET 200SP

- Operating modes:
 - Single pulse with defined length
 - Pulse chain with defined number of pulses
 - Pulse width modulation (with flexible ON period, optional current control and dither function)
 - PWM signal for controlling a DC motor
 - ON and OFF delay; rising and falling edge can be delayed separately to the microsecond
 - Frequency output with defined output frequency
- Hardware:
 - 2 channels 24 V, 2 A output current output current can be switched in parallel to boost performance to 4 A of output current
 - Switching frequencies to 10 kHz; at reduced output current to 0.1 A up to 100 kHz
 - Push/pull output driver for especially steep edges at the outputs
 - Polarity change in DC motor operation for direction reversal
 - 1 high-speed 24 V digital input per channel with parameterizable input delay from 4 µs
- Channel functions:
 - HW enable; Start of signal output with the onboard digital input
 - Parameterizable ON delay; for precise deceleration between the HW enable and the start of output
 - Current measurement in the operating modes pulse-width modulation and pulse chain; enables control of the output current mean value over a period. Temperature influences can thus be balanced to the resistance of the actuator.
 - Cyclic control of the respective main setpoint from the PLC in every operating mode; other values can be modified flexibly from the user program.
- Supported system functions:
 - Isochronous mode; enables precision-timed connection of the setpoint output to a higher-level controller
 - Firmware update
 - Identification data I&M

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS TM Pulse 2x24V pulse output module

6AG1138-6DB00-2BB1

(Extended temperature range and exposure to environmental substances)

PWM and pulse output, 2 channels of 2 A for proportional valves and DC motors

Suitable BaseUnits

(Extended temperature range and exposure to environmental substances)

BU20-P12+A0+4B

6AG1193-6BP20-7BB1

BU type B1; BaseUnit (dark); without AUX terminals; for continuing the load group

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See SIMATIC TM Pulse 2x24V pulse output module, page 10/118

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS TM Pulse 2x24V pulse output module

Technical specifications

Article number	6AG1138-6DB00-2BB1
Based on	6ES7138-6DB00-0BB1 SIPLUS ET 200SP TM Pulse 2x24V
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	50 °C; Observe derating
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Article number	6AG1138-6DB00-2BB1
Based on	6ES7138-6DB00-0BB1 SIPLUS ET 200SP TM Pulse 2x24V
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS ET 200SP ECC charging controllers

Overview



SIPLUS Electrical Charging Controllers are the key components in infrastructure solutions for the conductive charging of electric vehicles.

They perform the following functions:

- Detection of the charging cable and its permissible current carrying capacity
- Transfer of the maximum charging current from the charging station to the electric vehicle
- Evaluation of the status signals from the electric vehicle:
 - Ready for charging
 - Charging
 - Charging with ventilation
- Cost-optimized, space-saving charging infrastructure solutions due to compact design based on SIMATIC ET 200SP

SIPLUS ET 200SP TM ECC 2xPWM ST AC module

- Control of charging outputs according to IEC 61851 by parameterizable SIPLUS ET 200SP TM ECC 2xPWM ST charging controller
- Control of load tap-off
- Control of connector lock
- Evaluation of connector lock or load contactor status

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

SIPLUS ET 200SP TM ECC 2xPWM ST charging controller

(Exposure to environmental substances)

Designed for controlling charging outputs according to IEC 61851 and parameterizable, with 2 charging outputs, ambient temperature -30 °C ... 60 °C;

2x control pilot, 2x plug present, 2x DQ switching contact for load contactor as open collector, 2x DI for load contactor feedback or connector lock;

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Article No.

6AG1242-6TM10-2BB1

6AG1193-6AA00-0AA0

6AG1193-6AB00-0AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS ET 200SP ECC charging controllers

Technical specifications

Article number	6AG1242-6TM10-2BB1
Based on	6FE1242-6TM10-0BB1 SIPLUS ET 200SP TM ECC 2xPWM ST
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; = Tmin
• horizontal installation, max.	60 °C; = Tmax
• vertical installation, min.	-30 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax
Ambient temperature during storage/transportation	
• Storage, min.	-40 °C
• Storage, max.	70 °C
• Transportation, min.	-40 °C
• Transportation, max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Vibrations	
• Vibration resistance during operation acc. to IEC 60068-2-6	10 ... 58 Hz / 0.075 mm, 58 ... 150 Hz / 1 g
Shock testing	
• Shock resistance acc. to IEC 60068-2-27	15 g / 11 ms
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air

Article number	6AG1242-6TM10-2BB1
Based on	6FE1242-6TM10-0BB1 SIPLUS ET 200SP TM ECC 2xPWM ST
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS SIWAREX WP321

Overview



SIPLUS WP321 is a versatile and flexible weighing module for the seamless integration of a static scale into the SIMATIC automation environment.

The weighing electronics system is integrated in the SIPLUS ET 200SP series and uses all the features of a modern automation system, such as integrated communication, operator control and monitoring, diagnostic system and configuration tools in the TIA Portal, SIMATIC STEP 7, WinCC flexible and PCS 7.

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information has been added.

Ordering data	Article No.		Article No.
SIPLUS WP321 weighing module Single-channel, for platform or hopper scales with analog load cells (1–4 mV/V), 1 x LC, 1 x RS 485. Extended temperature range and exposure to environmental substances	6AG1138-6AA00-2BA8	SIWAREX JB junction box, stainless steel enclosure For connecting up to 4 load cells in parallel.	7MH5001-0AA00
Accessories		SIWAREX JB junction box, stainless steel enclosure (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or prototype test certificate).	7MH5001-0AA01
Mandatory		Ex interface, type SIWAREX IS For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX weighing electronics. Compatibility of the load cells must be checked separately. • With short-circuit current < 199 mA DC • With short-circuit current < 137 mA DC	7MH4710-5BA 7MH4710-5CA
Consumables		Cables (optional)	
Shield connection for BaseUnit Set for 5 shield connections, with 5 shield connection clamps, 5 supports, 5 support elements	6ES7193-6SC20-1AM0	Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath For connecting SIWAREX weighing electronics to junction boxes (JB), extension boxes (EB) and Ex interface or between two EBs. For permanent installation. Occasional bending is permitted. Outer diameter: approx. 10.8 mm (0.43 inch) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F) Sold by the meter • Sheath color: orange • For hazardous areas. Sheath color: blue	7MH4702-8AG 7MH4702-8AF
Shield connection element Sufficient for one SIWAREX FTA module	6ES7390-5AA00-0AA0		
SIWAREX JB junction box, aluminum casing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes	7MH5001-0AA20		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Technology modules > SIPLUS SIWAREX WP321

Ordering data	Article No.	Article No.
Configuration software SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01	Documentation SIWAREX WP321 Equipment Manual Available in a range of languages Free download from the Internet at https://www.siemens.com/weighing/documentation .
SIWAREX PCS 7 AddOn Library for PCS 7 V8.x and V9.0 • Supports PROFINET APL faceplates and function blocks for: • SIWAREX U • SIWAREX FTA • SIWAREX FTC_B (belt scales) • SIWAREX WP321 Classic faceplate and function block for: • SIWAREX FTC_L (loss in weight)	7MH4900-1AK61	SIWAREX WP321 "Ready for use" TIA Portal and SIMATIC Manager sample configuration Free download from the Internet at https://www.siemens.com/weighing/documentation .

Technical specifications

Article number	6AG1138-6AA00-2BA8	Article number	6AG1138-6AA00-2BA8
Based on	7MH4138-6AA00-0BA8 SIPLUS WP321	Based on	7MH4138-6AA00-0BA8 SIPLUS WP321
Ambient conditions		Use on ships/at sea	
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 60 °C -40 °C; = Tmin (incl. condensation/frost) 50 °C	- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6 - Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Altitude during operation relating to sea level • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	5 000 m Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Usage in industrial process technology - Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Relative humidity • With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	Remark - Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Resistance Coolants and lubricants - Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Conformal coating • Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A
Use in stationary industrial systems - to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3 - Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM PtP serial interface

Overview



SIMATIC ET 200SP CM PtP video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6136809673001



- CM PtP communications module; module for serial communication connections with RS232, RS422 and RS485 interfaces for the Freeport, 3964(R), Modbus RTU, USS and DMX512 protocols, max. 250 kbps, 2 KB frame length, 4 KB receive buffer.
- Protocols supported
 - Freeport: User-parameterizable frame format for universal communication, also known as ASCII frame
 - 3964(R) for improved transmission reliability
 - Modbus RTU master (requires instructions in SIMATIC S7)
 - Modbus RTU slave (requires instructions in SIMATIC S7)
 - USS, implemented through instructions
 - DMX512, can be implemented through instructions
- Interface properties
 - RS232 with auxiliary signals
 - RS422 for full-duplex connections
 - RS485 for half-duplex and multi-point connections
 - Transmission rates from 300 to 115200 bps for RS232 and RS422
 - Transmission rates from 300 to 250000 bps for RS485
- Frame lengths
 - In universal operation: 2 KB each in send and receive direction
 - In performance-optimized operation: 30 bytes in send direction, 24 bytes in receive direction
- Diagnostic trace: simple determination of the causes of connection faults
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for errors, operation and supply voltage
- Communication display for sending and receiving
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (article and serial number)
 - Connection diagram
 - Color coding of the module type
 - Hardware and firmware version
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional system-integrated shield connection

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM PtP serial interface

Ordering data	Article No.		Article No.
CM PtP communications module For serial communication connections with RS232, RS422, RS485 interfaces, BU type A0, color code CC00 • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	6ES7137-6AA01-0BA0 6ES7137-6AA01-2BA0		
Accessories			
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 push-in terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0		
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 push-in terminals to the module; for starting a new load group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0		
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 push-in terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0		
		BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the load group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0
		Equipment labeling plate 10 sheets of 16 labels	6ES7193-6LF30-0AW0
		Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0
		Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional ground	6ES7193-6SC20-1AM0
		Mechanical coding elements For automatic coding of I/O modules; spare part. 20 units Type A Type B Type C Type D	6ES7193-6KA00-3AA0 6ES7193-6KB00-3AA0 6ES7193-6KC00-3AA0 6ES7193-6KD00-3AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM PtP serial interface

Technical specifications

Article number	6ES7137-6AA01-0BA0 ET 200SP, CM PTP, PU 1
General information	
Product type designation	CM PtP
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V17 or higher
• STEP 7 configurable/ integrated from version	via GSD as of V5.6 HF4
• PROFIBUS from GSD version/ GSD revision	GSD as of Revision 5
• PROFINET from GSD version/ GSD revision	GSDML V2.34
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
1. Interface	
Interface types	
• RS 485	Yes
• RS 422	Yes
• RS 232	Yes
• Design of the connection	Push-in terminal
Interface types	
RS 232	
• Transmission rate, max.	115.2 kbit/s
• Cable length, max.	15 m
• RS 232 auxiliary signals	RTS, CTS, DTR, DSR, RI, DCD
RS 485	
• Transmission rate, max.	250 kbit/s
• Cable length, max.	1 200 m; 100 to 1200 m, depending on transmission speed
RS 422	
• Transmission rate, max.	115.2 kbit/s
• Cable length, max.	1 200 m
• 4-wire full duplex connection	Yes
• 4-wire multipoint connection	Yes
Protocols	
Integrated protocols	
Freeport	
- Telegram length, max.	2 kbyte; performance mode: receive data max. 24 byte and send data max. 30 byte
- Bits per character	7 or 8
- Number of stop bits	1 or 2 bit
- Parity	None, even, odd, always 1, always 0, any
3964 (R)	
- Telegram length, max.	2 kbyte; performance mode: receive data max. 24 byte and send data max. 30 byte
- Bits per character	7 or 8
- Number of stop bits	1 or 2 bit
- Parity	None, even, odd, always 1, always 0, any

Article number	6ES7137-6AA01-0BA0 ET 200SP, CM PTP, PU 1
Modbus RTU master	
- Address area	1 to 247, extended 1 to 65535
- max. number of devices	32
Protocols / Modbus RTU device	
- Address area	1 to 247, extended 1 to 65535
Telegram buffer	
• Buffer memory for telegrams	4 kbyte
• Number of telegrams which can be buffered	255
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnoses	
• Wire-break	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• for module diagnostics	Yes; green/red DIAG LED
• Receive RxD	Yes; green LED
• Transmit TxD	Yes; green LED
Potential separation	
between backplane bus and interface	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	30 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM 4x IO-Link

Overview



- CM 4x IO-Link communications module
Serial communications module for connecting up to 4 IO-Link devices in accordance with IO-Link specification V1.0 and V1.1. The IO-Link parameters are configured using the Port Configuration Tool (PCT), version V3.0 and higher.
- Time-based IO
Time-based IO ensures that signals are output with a precisely defined response time. By combining inputs and outputs, for example, passing products can be accurately measured or fluids dosed in precise quantities.
- Supported data transfer rates
 - COM1 (4.8 kbps)
 - COM2 (38.4 kbps)
 - COM3 (230.4 kbps)

- Expansion limits
 - Length of cable: Max. 20 m
 - Max. 32 bytes of input and output data per port
 - Max. 144 bytes of input data and 128 bytes of output data per module
- Supported ET 200SP system functions
 - Replacement without PG with automatic backup without the engineering tool of the IO-Link device parameters (V1.1 devices only) and the IO-Link master parameters by means of redundant saving of parameters on the e-coding element
 - Re-parameterization during operation
 - Identification data I&M
 - Firmware update
 - PROFIenergy
- Can be plugged into Type A0 BaseUnits (BU) with automatic e-coding
- LED indicators
 - DIAG: Operating state indicator (green/red) of the module
 - C1..C4: Port status indicator (green) for Port 1, 2, 3 and 4
 - Q1..Q4: Channel status indicator (green) for Port 1, 2, 3 and 4
 - F1..F4: Port fault indicator (red) for Port 1, 2, 3 and 4
 - PWR: Supply voltage indicator (green)
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color-coding of the CM module class: silver
 - Hardware and firmware version
 - Complete Article No.
- Optional accessories
 - Labeling strips
 - Equipment labeling plate
 - Color-coding plate with color code CC04
- Optional system-integrated shield connection

Overview of CM 4x IO-Link

Communications module	Article No.	CC code	BU type	Pkg. unit
CM 4x IO-Link	6ES7137-6BD00-0BA0	CC04	A0	1

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > CM 4x IO-Link**Overview**Overview of BaseUnits

BaseUnit	Article No.	CC codes for process terminals	CC codes for AUX terminals	Pkg. unit
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73	1
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73	10
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	6ES7193-6BP00-0DA0	CC01 to CC05	--	1
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	6ES7193-6BP00-2DA0	CC01 to CC05	--	10
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73	1
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	6ES7193-6BP20-2BA0	CC01 to CC05	CC71 to CC73	10
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	6ES7193-6BP00-0BA0	CC01 to CC05	--	1
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	6ES7193-6BP00-2BA0	CC01 to CC05	--	10

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM 4x IO-Link

Ordering data	Article No.		Article No.
CM 4x IO-Link master V1.1 Standard communications module Serial communications module for connecting up to 4 IO-Link devices, time-based IO, BU type A0, color code CC04	6ES7137-6BD00-0BA0	Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer 1 000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer 1 000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	6ES7193-6LR10-0AA0 6ES7193-6LR10-0AG0 6ES7193-6LA10-0AA0 6ES7193-6LA10-0AG0
Accessories			
Suitable type A0 BaseUnits			
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 push-in terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	Color-coded labels Color code CC04, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 12), blue (terminals 13 to 16); 10 units Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units	6ES7193-6CP04-2MA0 6ES7193-6CP71-2AA0 6ES7193-6CP72-2AA0 6ES7193-6CP73-2AA0
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 push-in terminals to the module; for starting a new load group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0		
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 push-in terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0	Spare parts Electronic coding element type H Pack of 5 units; included in scope of supply of CM 4x IO-Link module Mechanical coding elements For automatic coding of I/O modules; spare part. 20 units Type A Type B Type C Type D	6ES7193-6EH00-1AA0 6ES7193-6KA00-3AA0 6ES7193-6KB00-3AA0 6ES7193-6KC00-3AA0 6ES7193-6KD00-3AA0
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the load group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0		
Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0		

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > Communication > CM 4x IO-Link

Technical specifications

Article number	6ES7137-6BD00-0BA0 ET 200SP, CM 4 X IO-Link ST
General information	
Product type designation	CM 4 x IO-Link ST
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	No; Only for PROFINET and configuration as version with FW V2.0 or V2.1
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V15 or higher
• STEP 7 configurable/ integrated from version	STEP 7 V5.5 or higher
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/ GSD revision	GSDML V2.3
Operating mode	
• IO-Link	Yes
• DI	Yes
• DQ	Yes; max. 100 mA per channel
Supply voltage	
Rated value (DC)	24 V
Encoder supply	
Number of outputs	4
Output current	
• Rated value	700 mA; Per channel
24 V encoder supply	
• Short-circuit protection	Yes
• Output current, max.	2.1 A
IO-Link	
Number of ports	4
• of which simultaneously controllable	4
IO-Link protocol 1.0	Yes
IO-Link protocol 1.1	Yes
Transmission rate	4.8 kBaud (COM1); 38.4 kBaud (COM2), 230.4 kBaud (COM3)
Cycle time, min.	2 ms; dynamic, depending on user data length
Size of process data, input per port	32 byte; max.
Size of process data, input per module	144 byte; max.
Size of process data, output per port	32 byte; max.
Size of process data, output per module	128 byte; max.
Memory size for device parameter	2 kbyte; for each port
Master backup	Yes
Configuration without S7-PCT	Yes
Cable length unshielded, max.	20 m
Time Based IO	
• TIO IO-Link IN	No; Only for PROFINET and configuration as version with FW V2.0 or V2.1
• TIO IO-Link OUT	No; Only for PROFINET and configuration as version with FW V2.0 or V2.1
• TIO IO-Link IN/OUT	No; Only for PROFINET and configuration as version with FW V2.0 or V2.1

Article number	6ES7137-6BD00-0BA0 ET 200SP, CM 4 X IO-Link ST
Connection of IO-Link devices	
• Port type A	Yes
• Port type B	Yes; 24 V DC via external terminal
• via three-wire connection	Yes
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes; The port diagnosis is available in the IO-Link mode only.
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; one green LED for channel status Qn (SIO mode) and port status Cn (IO-Link mode) per channel
• for channel diagnostics	Yes; red Fn LED
• for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m; On request: Installation altitudes greater than 2 000 m
Dimensions	
Width	13 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	30 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM 1xDALI

Overview



SIMATIC ET 200SP DALI video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6153144008001



- DALI 2 multimaster module for 1 bus strand
- Allows the control, diagnostics and parameter assignment of up to 64 luminaires and 63 sensors via a 2-wire bus line
- Typical areas of application: Lighting in tunnels, (factory) halls or ships
- Realization of the control via prefabricated blocks of a function block library in TIA Portal
- DALI (Digital Addressable Lighting Interface) certification according to DALI V2 for IEC 62386-101/-103 parts
- Different DALI device types, such as LED modules, fluorescent lamps, discharge lamps, low-voltage halogen lamps and others, can be used

Ordering data

Article No.

CM 1xDALI, DALI V2 multimaster module

For control of lighting solutions with DALI V2, BU type U0, color code CC20

6ES7137-6CA00-0BU0

Accessories

Suitable type U0 BaseUnits

BU20-P16+A0+2D

BU type U0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.

6ES7193-6BP00-0DU0
6ES7193-6BP00-2DU0

BU20-P16+A0+2B

BU type U0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.

6ES7193-6BP00-0BU0
6ES7193-6BP00-2BU0

Equipment labeling plate

10 sheets of 16 labels

6ES7193-6LF30-0AW0

Labeling strips

500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer

6ES7193-6LR10-0AA0

Mechanical coding elements

For automatic coding of I/O modules; spare part. 20 units

Type A

6ES7193-6KA00-3AA0

Type B

6ES7193-6KB00-3AA0

Type C

6ES7193-6KC00-3AA0

Type D

6ES7193-6KD00-3AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > CM 1xDALI

Technical specifications

Article number	6ES7137-6CA00-0BU0 ET 200SP, CM 1x DALI
General information	
Product type designation	CM 1xDALI
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V15.1 or higher
• PROFIBUS from GSD version/ GSD revision	GSD Revision 5
• PROFINET from GSD version/ GSD revision	GSDML V2.34
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Interface types	
DALI	
• Integrated power supply	Yes
- Supply current, min.	160 mA
- Supply current, max.	250 mA
- Can be switched off	Yes
• Cable length, max.	300 m
Protocols	
DALI	
• Standard according to DALI	DALI V2 Multi-Master
Supported operating devices	
- Fluorescent lamps (device type 0)	Yes
- Emergency lighting with single battery (device type 1)	Yes
- Discharge lamps (device type 2)	Yes
- Low-voltage halogen lamps (device type 3)	Yes
- Incandescent lamps (device type 4)	Yes
- Direct voltage (device type 5)	Yes
- LED modules (device type 6)	Yes
- Switching function (device type 7)	Yes
- Color control (device type 8)	Yes
- Further operating devices	Yes; general device type
Supported input devices	
- Pushbuttons	Yes
- Absolute input devices	Yes
- Presence detector	Yes
- Light sensor	Yes
- Further input devices	Yes; general device type

Article number	6ES7137-6CA00-0BU0 ET 200SP, CM 1x DALI
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Short-circuit	Yes; On DALI bus
Diagnostics indication LED	
• ERROR LED	Yes
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Receive RxD	Yes; green LED
• Transmit TxD	Yes; green LED
Potential separation	
between backplane bus and interface	Yes
Standards, approvals, certificates	
CE mark	Yes
RoHS conformity	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	3 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Decentralized operation	
to SIMATIC S7-1200	Yes; FW V4.0 or higher
to SIMATIC S7-1500	Yes
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	50 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM CAN

Overview



- For data exchange between an ET 200SP system and CAN Bus 2.0A/B or CANopen Manager or Slave (according to CiA 301 & 302)
- CANopen features:
 - Node / lifeguarding
 - Heartbeat
 - SYNC (producer / consumer)
- Integrated in TIA via HSP, TIA Portal V15.1 or higher
- CAN connection with push-in terminals
- Integrated CAN bus terminating resistor
- Up to 60 CAN nodes
- 128 receiver and 128 transmitter PDOs
- Galvanic isolation between the two networks
- Diagnostic interrupts
- Optionally with function block SIMATIC ECC CHAdEMO: Realization of digital communication as basis for conductible DC charging of electric vehicles in line with the CHAdEMO standard

Ordering data

Article No.

ET 200SP CM CAN communications modules

To connect ET 200SP with CAN bus or CANopen networks CAN bus 2.0A/B, CANopen Manager according to CiA301/302, CANopen Slave according to CiA301/302

6ES7137-6EA00-0BA0

Accessories

SIMATIC ECC CHAdEMO function block

For realization of digital communication between a DC charging station and an electric vehicle according to CHAdEMO 1.x-2.0 specification; can be used with TIA Portal as of V15.1; Single license

6FE1263-8FB10-0AA0

Suitable type A0 BaseUnits

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.

6ES7193-6BP00-0DA0
6ES7193-6BP00-2DA0

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.

6ES7193-6BP00-0BA0
6ES7193-6BP00-2BA0

Mechanical coding elements

For automatic coding of I/O modules; spare part. 20 units

Type A

6ES7193-6KA00-3AA0

Type B

6ES7193-6KB00-3AA0

Type C

6ES7193-6KC00-3AA0

Type D

6ES7193-6KD00-3AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > CM CAN

Technical specifications

Article number	6ES7137-6EA00-0BA0 ET 200SP CM CAN
General information	
Product type designation	CM 1x CAN ST
Product function	
• I&M data	Yes; I&M0 to I&M3
• Module swapping during operation (hot swapping)	Yes
• Isochronous mode	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V15.1 or higher
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
1. Interface	
Interface type	CAN according to CiA 303-1
Isolated	Yes; 500 V AC or 707 V DC
Interface types	
• Number of ports	1
• Design of the connection	Push-in terminal
CAN	
• CAN operating modes	CAN Standard CAN 2.0A/B; CANopen Manager / Slave acc. to CiA
• Specification acc. to CiA	CiA 301 & CiA 302
• Transmission rate, min.	10 kbit/s
• Transmission rate, max.	1 000 kbit/s
• max. number of devices	60
• Number of SDOs in parallel	16; Parallel
• Number of PDOs	128; Send / receive
Services	
- Node/life-guarding	Yes
- Heartbeat	Yes
- SYNC	Yes
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostics function	Yes
Diagnostics indication LED	
• RUN LED	Yes
• ERROR LED	Yes
• MAINT LED	No
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED

Article number	6ES7137-6EA00-0BA0 ET 200SP CM CAN
Potential separation	
between backplane bus and interface	Yes
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes; Reg. No.: R-R-S49-ET200SPCMCAN
EAC (formerly Gost-R)	Yes
RoHS conformity	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
Decentralized operation	
to SIMATIC S7-300	No
to SIMATIC S7-400	No
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	32 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM AS-i Master ST for SIMATIC ET 200SP

Overview



CM AS-i Master ST for SIMATIC ET 200SP



Video: AS-Interface – Powerful integration in SIMATIC ET 200SP,
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6136807004001

More information

Equipment Manual, see
<https://support.industry.siemens.com/cs/ww/en/view/71756485>

SIMATIC ET 200SP Manual Collection, see
<https://support.industry.siemens.com/cs/ww/en/view/84133942>

Diagnostics blocks with visualization, see
<https://support.industry.siemens.com/cs/ww/en/view/109479103>

AS-Interface block library for SIMATIC PCS 7
for easy connection of AS-Interface to PCS 7, see
<https://support.industry.siemens.com/cs/ww/en/view/109759605>

Released combinations of the AS-i modules for ET 200SP, see
<https://support.industry.siemens.com/cs/ww/en/view/103624653>

AS-Interface I/O modules and other AS-Interface system components
see Catalog IC 10, <https://www.siemens.com/ic10>

More information see <https://www.siemens.com/as-interface>

The CM AS-i Master ST communications module is designed for use in the SIMATIC ET 200SP distributed I/O system and has the following features:

- Connection of up to 62 AS-Interface slaves
- Supports all AS-Interface master functions according to the AS-Interface specification V3.0
- User-friendly configuration with graphic or tabular display of the AS-i line in TIA Portal or STEP 7 (Classic) or via GSD in other systems
- Supply via AS-Interface cable
- Suitable for AS-i Power24V and for AS-Interface with 30 V voltage
- Extended temperature range from -25 °C (from hardware functional status FS20 onwards)
- Integrated ground fault monitoring for the AS-Interface cable
- Through connection to AS-Interface, the number of digital inputs and outputs available for the control system is greatly increased (max. 496 DI/496 DQ on the AS-Interface per CM AS-i Master ST)
- Integrated analog value processing

AS-i gateways with ET 200SP

An AS-i gateway or AS-i link enables access to the AS-Interface data via PROFINET, PROFIBUS, EtherNet/IP, or Modbus TCP.

With the CM AS-i Master ST module, flexible and powerful solutions or autonomous ET 200SP CPU stations with an AS-i connection are set up. Depending on the requirements, even several AS-i masters can be plugged into one ET 200SP station, so that the setup can easily be extended from a single master to double masters or multiple masters.

The maximum number of modules is determined by the ET 200SP interface module (IM): Up to 32 AS-i masters with PROFINET IM 155-6PN Standard (6ES7155-6AU02-0BN0), up to 43 AS-i masters with IM 155-6PN High Feature, or a single AS-i master with IM 155-6PN Basic. For the connection to PROFIBUS, the IM 155-6DP HF interface module with up to 7 AS-i master modules is used. With the MultiFieldbus interface module IM 155-6MF, the AS-i master modules are connected to PROFINET, EtherNet/IP, and Modbus TCP.

Since in many plants an ET 200SP station is provided with I/O, motor starter or other peripheral modules, the AS-i master modules are simply plugged in without any additional effort. There are countless possible combinations.

An AS-i Safety gateway can also be implemented without any problems by adding the safety-related module F-CM AS-i Safety ST in the ET 200SP station. This greatly simplifies the cabling and connection of distributed EMERGENCY-STOP buttons and protective door monitoring systems to a Failsafe CPU. The AS-i Safety application is completely configured in TIA Portal/STEP 7.

The ET 200SP modules CM AS-i Master ST and F-CM AS-i Safety ST (see page 10/245 onwards) can of course also be used directly on an ET 200SP CPU or F-CPU, so that an extremely compact SIMATIC control system with AS-i bus connection can be set up.

For further application possibilities, see the brochure "The modular AS-i Master" at
<https://assets.new.siemens.com/siemens/assets/api/uuid:224667a8-5f20-4a68-8bfd-ae33dfac7a2/dfcp-b10157-00-as-i-master-144.pdf>.

More information, see
SIMATIC ET 200SP Manual Collection,
<https://support.industry.siemens.com/cs/ww/en/view/84133942>.

Design

The CM AS-i Master ST module has an ET 200SP module enclosure with a width of 20 mm. A C0 type BaseUnit (BU) is required for use in the ET 200SP.

The communications module has LED displays for diagnostics, operation, AS-i voltage and AS-i slave status and offers informative module inscription on the front for

- Plain-text marking of the module type and function class
- 2D matrix code (article number and serial number)
- Circuit diagram
- Color coding module type communications module: light gray
- Hardware and firmware version
- Supported BaseUnit type BU: C0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM AS-i Master ST for SIMATIC ET 200SP

Overview

Function

The CM AS-i Master ST communications module supports all specified functions of the AS-Interface specification V3.0.

The input/output values of the digital AS-i slaves can be activated via the cyclic process image. The values of the analog AS-i slaves are accessible via the cyclic process image or via data record transfer.

If required, master calls can be performed with the command interface, e.g. read/write parameters, read/write configuration.

Changeover of the operating mode, automatic application of the slave configuration and the re-addressing of a connected AS-i slave can be implemented via the online functions in STEP 7/TIA Portal.

For the implementation of modular machine concepts, the AS-i slaves can be activated or deactivated via the PLC program (option handling). The configuration of AS-i slaves can be modified while being executed, thus enabling variable machine setups and tool changing with integrated input/output modules during ongoing operation. AS-i input/output modules can be added to the system without deactivating the controller.

An existing AS-i installation can be read into the STEP 7 hardware configuration and adapted and documented in the project. Analog values are transmitted via the cyclic process image, the length of which is adjustable and extendable up to 288 bytes (depending on the interface module (IM) used).

Diagnostic information is accessed via automatic alarm indications, via the status information in the process image or via the graphical status display in the online diagnostics of the TIA Portal. The transmission quality of the AS-i network can also be read out. To avoid configuration errors, duplicate addresses can be detected on the AS-i network.

Configuration is possible with SIMATIC CPUs S7-400 up to S7-1500 and with a SINUMERIK or other controller.

The online diagnostic status of the AS-i slaves can be displayed directly on the slaves in the network view in TIA Portal.

Notes on security

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 cybersecurity concept. Siemens products and solutions represent one component of such a concept.

For more information on industrial cybersecurity, see <https://www.siemens.com/cybersecurity-industry>.

Configuration

The following software is required for configuration of the CM AS-i Master ST module:

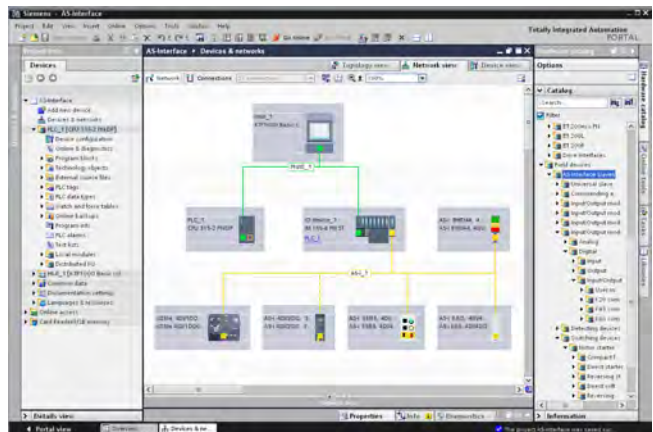
- STEP 7 (TIA Portal) or
- STEP 7 (Classic) or
- the GSD file of the ET 200SP with STEP 7 or another engineering tool

STEP 7 enables user-friendly configuration and diagnostics of the AS-i master and any connected slaves.

Alternatively, you can also apply the AS-Interface ACTUAL configuration as the TARGET configuration at the "touch of a button" via the online function integrated in the TIA Portal or an optional expansion button. Configuration with the GSD file is possible only with the button.

In the default setting, the CM AS-i Master ST module occupies 32 input/output bytes. To adapt the number and type of AS-i slaves used, the I/O address space can be reduced, or expanded up to 288 bytes.

Together with an ET 200SP CPU 1510SP, 1512SP, 1514SP or 1515SP PC, preprocessing of safe AS-i signals directly in the ET 200SP station and setting up of an independent AS-i station without a higher-level CPU are possible.



Configuration of an AS-Interface network with CM AS-i Master ST via the TIA Portal

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM AS-i Master ST for SIMATIC ET 200SP

Benefits

The CM AS-i Master ST communications module for ET 200SP enables modular, simple and high-performance expansion of AS-interface networks via engineering in the TIA Portal.

Up to 32 CM AS-i Master ST units can be plugged into one ET 200SP station with IM 155-6PN Standard. When using the IM 155-6PN High Feature, the number of CM AS-i Master ST in the ET 200SP station can be further increased. The maximum configuration depends on the interface module used. Multiple masters as well as single masters can thus be implemented in the ET 200SP depending on the number of modules.

Together with the interface module, a scalable PROFINET/AS-i link or PROFIBUS/AS-i link can be assembled.

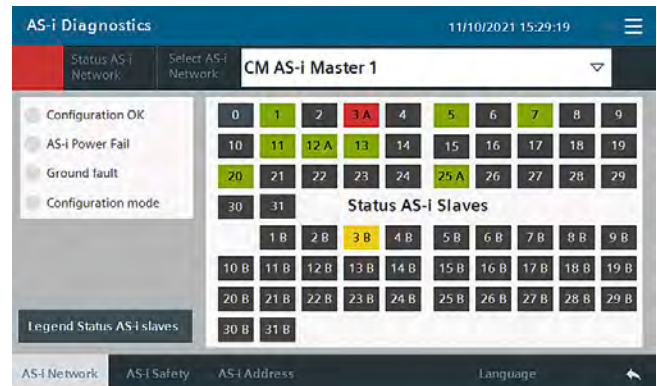
For the connection of an AS-i network to systems with EtherNet/IP and Modbus TCP, the ET 200SP MultiFieldbus interface module IM 155-6MF in combination with the CM AS-i Master ST module is available.

Using TIA Portal/STEP 7, the AS-i network in the SIMATIC controller is consistently configured and programmed with only one configuration tool.

The PRONETA PC program (for ET 200SP with PROFINET interface module) is available for convenient input/output testing during the commissioning of an AS-i network without a CPU; see <https://www.siemens.com/proneta>.

The CM AS-i Master ST module can be used in a system with PROFINET system redundancy S2. Furthermore, the CM AS-i Master ST module (from FW version V1.1.11 onwards or from FW version 2.0 onwards) can be used in a system with PROFINET system redundancy R1 with SIMATIC S7-1500R/H CPU.

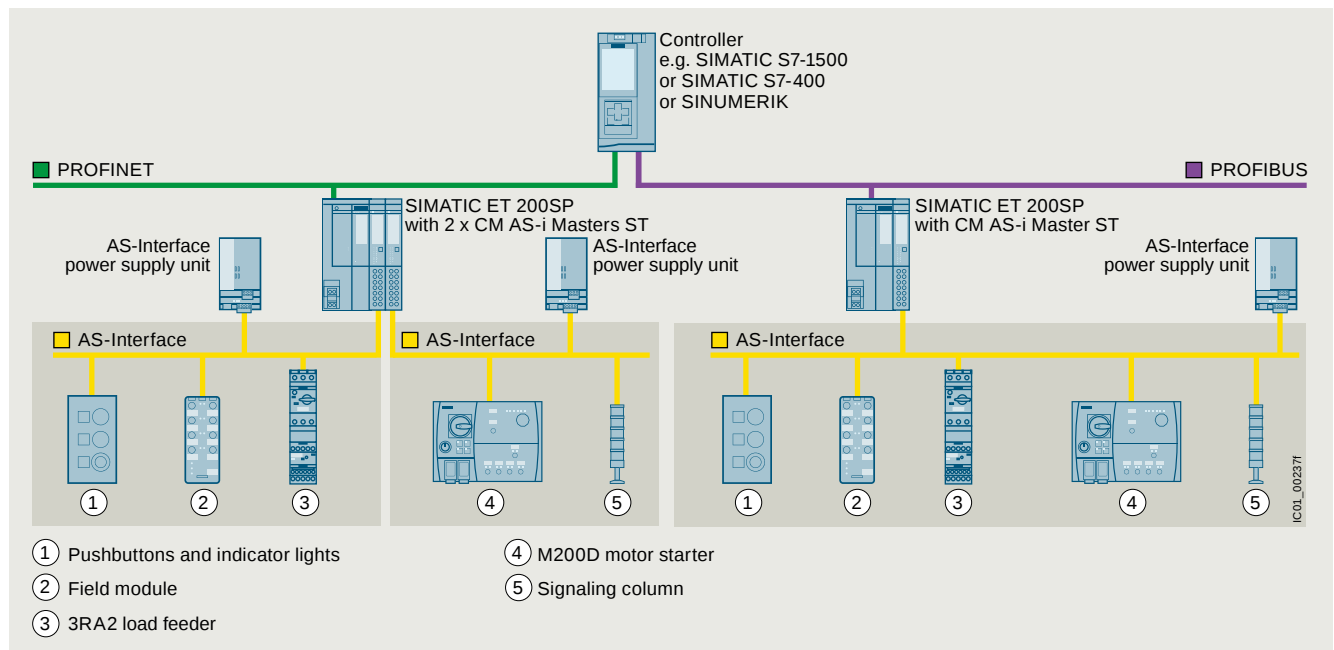
For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see <https://support.industry.siemens.com/cs/ww/en/view/109479103>.



CM AS-i Master ST diagnostics block

Application

Configuration examples of AS-Interface networks with CM AS-i Master ST for SIMATIC ET 200SP



Configuration of AS-Interface networks under a SIMATIC ET 200SP

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM AS-i Master ST for SIMATIC ET 200SP

Ordering data	Article No.		Article No.
CM AS-i Master ST communications module - AS-Interface master for SIMATIC ET 200SP, can be plugged onto BaseUnit type C0 - Corresponds to AS-Interface specification V3.0 - Dimensions (W x H x D) mm: 20 x 73 x 58	3RK7137-6SA00-0BC1	PROFIBUS interface module IM 155-6DP High Feature Max. 32 I/O modules, max. 244 bytes I/O data per station Including server module and PROFIBUS plug	6ES7155-6BA01-0CN0
Accessories		MultiFieldbus interface module IM 155-6MF High Feature For operation on PROFINET, EtherNet/IP or Modbus TCP controllers, one slot for BusAdapter, max. 64 I/O modules, max. 1 440 bytes of I/O data per station Including server module (BusAdapter must be ordered separately, see below) For more information, see https://support.industry.siemens.com/cs/ww/en/view/109779189.	6ES7155-6MU01-0CN0
BaseUnit BU20-P6+A2+4D - BaseUnit (light), BU type C0 - Suitable for the CM AS-i Master ST module - For connection of the AS-Interface cable to the CM AS-i Master ST - Start of an AS-i network, isolation of the AS-i voltage from the left-hand module - With spring-loaded terminals	6ES7193-6BP20-0DC0	BusAdapters for PROFINET/Ethernet/Modbus For connection of the Ethernet cable to the PROFINET IM 155-6PN interface module and the MultiFieldbus IM 155-6MF interface module - Connection 2 x RJ45 (supplied without RJ45 plug) - Connection 2 x FC (FastConnect) For more BusAdapters with fiber-optic cable connection, see https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10147556.	6ES7193-6AR00-0AA0 6ES7193-6AF00-0AA0
PROFINET interface module IM 155-6PN Basic Max. 12 I/O modules, max. 32 bytes of I/O data per station Including server module and 2 x RJ45 ports (supplied without RJ45 plug)	6ES7155-6AR00-0A00		
PROFINET interface modules IM 155-6PN Standard Max. 32 I/O modules, max. 1 440 bytes I/O data per station - Including server module and BusAdapter 2 x RJ45 (supplied without RJ45 plug) - Including server module (BusAdapter must be ordered separately, see right)	6ES7155-6AA02-0BN0 6ES7155-6AU02-0BN0		
PROFINET interface modules IM 155-6PN High Feature Max. 64 I/O modules, max. 1 440 bytes I/O data per station IM 155-6PN/2 High Feature 2-port IM with a BusAdapter slot, including server module (BusAdapter must be ordered separately, see right) IM 155-6PN/3 High Feature 3-port IM with two BusAdapter slots, including server module (BusAdapter must be ordered separately, see right)	6ES7155-6AU01-0CN0 6ES7155-6AU30-0CN0	AS-Interface addressing unit V3.0 - For AS-Interface modules and sensors and actuators with integrated AS-Interface according to AS-i specification V3.0 - For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves) - With input/output test function and many other commissioning functions - Battery operation with four type AA batteries (IEC LR6, NEDA 15) - Degree of protection IP40 - Dimensions (W x H x D) mm: 84 x 195 x 35 - Scope of supply: - Addressing unit with four batteries - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5 m	3RK1904-2AB02
PROFINET interface module IM 155-6PN High Speed Max. 30 I/O modules, max. 968 bytes I/O data per station Including server module (BusAdapter must be ordered separately, see right)	6ES7155-6AU00-0DN0		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CM DP for ET 200SP CPU

Overview



- PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbps
- Expands the ET 200SP CPUs 1510SP-1 PN / 1512SP-1 PN by one PROFIBUS connection
- For communication with lower-level PROFIBUS devices at bandwidths of 9.6 Kbps to 12 Mbps
- Communication services:
 - PROFIBUS DP
 - PG/OP communication
 - S7 communication:

This makes it possible to establish communication between the ET 200SP CPU and other devices, for example those from the SIMATIC S7-300/400/1500 range.
- Time synchronization
- Simple programming and configuration over PROFIBUS
- Cross-network PG communication using S7 routing
- Data set routing

Ordering data

Article No.

CM DP for ET 200SP CPU

PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbps

6ES7545-5DA00-0AB0

Accessories

Equipment labeling plate

10 sheets of 16 labels

6ES7193-6LF30-0AW0

Labeling strips

500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer

6ES7193-6LR10-0AA0

500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer

6ES7193-6LR10-0AG0

1 000 labeling strips DIN A4, light gray, card, for inscription with laser printer

6ES7193-6LA10-0AA0

1 000 labeling strips DIN A4, yellow, card, for inscription with laser printer

6ES7193-6LA10-0AG0

PROFIBUS DP RS 485 bus connector

With 90° cable outlet, max. transfer rate 12 Mbps

- without PG interface
- with PG interface

6ES7972-0BA12-0XA0
6ES7972-0BB12-0XA0

With 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps

- without PG interface, 1 unit
- without PG interface, 100 units
- with PG interface, 1 unit
- with PG interface, 100 units

6ES7972-0BA52-0XA0
6ES7972-0BA52-0XB0
6ES7972-0BB52-0XA0
6ES7972-0BB52-0XB0

FastConnect bus cable

Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1830-0EH10

Mechanical coding elements

For automatic coding of I/O modules; spare part. 20 units

Type A

6ES7193-6KA00-3AA0

Type B

6ES7193-6KB00-3AA0

Type C

6ES7193-6KC00-3AA0

Type D

6ES7193-6KD00-3AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > CM DP for ET 200SP CPU

Technical specifications

Article number	6ES7545-5DA00-0AB0 ET 200SP, CM DP for ET 200SP CPU
General information	
Product type designation	CM PROFIBUS DP
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13 Update 3
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
1. Interface	
Interface types	
• RS 485	Yes
Protocols	
• PROFIBUS DP master	Yes
• PROFIBUS DP device	Yes
• SIMATIC communication	Yes
PROFIBUS DP master	
• max. number of DP devices	125
Services	
- PG/OP communication	Yes
- Equidistance	No
- Isochronous mode	No
- activation/deactivation of DP devices	Yes
1st interface / PROFIBUS DP device	
• Transmission rate, max.	12 Mbit/s
• automatic baud rate search	Yes
• Address area, max.	120
• User data per address area, max.	128 byte
Services	
- PG/OP communication	Yes; Only with active interface
- Routing	Yes; Only with active interface
- S7 communication	Yes; Only with active interface
- Direct data exchange (slave-to- slave communication)	Yes; No subscriber possible - only passive publisher
- DPV1	Yes
Transfer memory	
- Inputs	244 byte
- Outputs	244 byte
Interface types	
RS 485	
• Transmission rate, max.	12 Mbit/s
• Cable length, max.	100 m
Protocols	
SIMATIC communication	
• S7 routing	Yes
• Data record routing	Yes

Article number	6ES7545-5DA00-0AB0 ET 200SP, CM DP for ET 200SP CPU
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Diagnostics indication LED	
• for module diagnostics	Yes; green/red DIAG LED
Potential separation	
between backplane bus and interface	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C; No condensation
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C; No condensation
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions	
Width	35 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	80 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CP 1542SP-1

Overview



ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7
	●			●		●	●

The CP 1542SP-1 communications processor connects the ET 200SP Distributed Controller with Industrial Ethernet networks.

The module can also be used for integrating the ET 200SP Distributed Controller into an IPv6-based network. All functions are configured using STEP 7 Professional V14 (TIA Portal) or higher.

The CP 1542SP-1 supports the following communication services:

- PG/OP communication
- S7 communication
- Open communication (Open User Communication)
- IT communication
 - Sending emails via SMTP for authentication on an email server (also with IPv6)
 - SNMPv1 for transfer of network analysis information
- Integration of the ET 200SP Distributed Controller into IPv6-based networks

Ordering data

Article No.

CP 1542SP-1 communications processor

For connection of SIMATIC S7 ET 200SP to Industrial Ethernet, open IE communication (TCP/IP, ISO-ON-TCP, UDP), PG/OP, S7 routing, IP broadcast/multicast, SNMPv1, DHCP, email, IPv4/IPv6, time synchronization via NTP, access to web server of CPU, BusAdapter required

6GK7542-6UX00-0XE0

Accessories

SIMATIC BA 2xRJ45 BusAdapter
For PROFINET interface modules, standard function class or above; max. cable length 50 m

6ES7193-6AR00-0AA0

SIMATIC BA 2xFC BusAdapter
For PROFINET interface modules, standard function class or above; for increased vibration and EMC load rating; max. cable length 50 m

6ES7193-6AF00-0AA0

SIMATIC BA 2xSCRJ BusAdapter
For PROFINET interface modules, High Feature function class or above; fiber-optic cable connection for POF or PCF; for increased vibration and EMC load rating; max. cable length 50 m (POF) or 100 m (PCF);

6ES7193-6AP00-0AA0

SIMATIC BA SCRJ/RJ45 BusAdapter
For PROFINET interface modules, High Feature function class or above; fiber-optic cable connection for POF or PCF; for increased vibration and EMC load rating; max. cable length 50 m (POF) or 100 m (PCF);

6ES7193-6AP20-0AA0

SIMATIC BA SCRJ/FC BusAdapter
For PROFINET interface modules, High Feature function class or above; with media converter FOC-Cu; for increased vibration and EMC load rating; max. cable length 50 m (POF, copper) or 100 m (PCF)

6ES7193-6AP40-0AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CP 1542SP-1

Ordering data	Article No.	Article No.
IE FC RJ45 plug 180 2 x 2 RJ45 plug-in connector for Industrial Ethernet with rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0	Labeling strips 500 labeling strips on roll, light gray, for labeling with thermal transfer roll printer 500 labeling strips on roll, yellow, for labeling with thermal transfer roll printer 1000 labeling strips DIN A4, light gray, card, perforated, for labeling with laser printer 1000 labeling strips DIN A4, yellow, card, perforated, for labeling with laser printer
IE FC RJ45 plug 4 x 2 RJ45 plug-in connector for Industrial Ethernet (10/100/1000/10000 Mbps, Cat6 _A) with rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units	6GK1901-1BB12-2AA0 6GK1901-1BB12-2AB0 6GK1901-1BB12-2AE0	Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter
IE FC TP standard cable GP 2 x 2 (type A) 4-core, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	Spare parts Server module Terminates an ET 200SP station; included in the scope of supply of the interface modules
IE FC TP standard cable GP 4 x 2 8-core, shielded TP installation cable for connection to IE FC RJ45 modular outlet for universal applications; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m • AWG22, for connection to IE FC RJ45 modular outlet • AWG24, for connection to IE FC RJ45 plug 4 x 2	6XV1870-2E 6XV1878-2A	PE connection element for mounting rail 2000 mm 20 units
IE FC stripping tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00	Power supply connector Spare part; for connecting the 24 V DC supply voltage with push-in terminals

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > Communication > CP 1542SP-1

Technical specifications

Article number	6GK7542-6UX00-0XE0
product type designation	CP 1542SP-1
transfer rate	
transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	1
number of electrical connections	
• at the 1st interface according to Industrial Ethernet	2
type of electrical connection	
• at the 1st interface according to Industrial Ethernet	via ET 200SP bus adapter (RJ45, FC, SCRJ), integrated switch
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage	24 V
supply voltage	19.2 ... 28.8 V
power loss [W]	6 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	-30 ... +50 °C
• for horizontally arranged busbars during operation	-30 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
width	60 mm
height	117 mm
depth	74 mm
net weight	0.18 kg
fastening method	
• 35 mm DIN-rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	2
• note	2 CPs can be plugged in per CPU, simultaneous operation with BA Send and CM DP is possible
performance data open communication	
number of possible connections for open communication	
• by means of T blocks maximum	32
data volume	
• as user data per ISO on TCP connection for open communication by means of T blocks maximum	65 536 byte
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	16
• with OP connections maximum	16

Article number	6GK7542-6UX00-0XE0
product type designation	CP 1542SP-1
performance data multi-protocol mode	
number of active connections with multi-protocol mode	32
product functions management, configuration, engineering	
product function MIB support	Yes
protocol is supported	
• SNMP v1	Yes
• SNMP v3	No
• DCP	Yes
• LLDP	Yes
configuration software	
• required	STEP 7 Professional V14 (TIA Portal) or higher
identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 - higher level designation/location designation	Yes
product functions diagnostics	
product function web-based diagnostics	Yes; via ET 200SP CPU
product functions security	
product function	
• blocking of communication via physical ports	Yes
product functions time	
product function SICLOCK support	Yes
product function pass on time synchronization	No
protocol is supported	
• NTP	Yes
• NTP (secure)	No
time synchronization	
• from NTP-server	Yes
standards, specifications, approvals	
reference code	
• according to IEC 81346-2:2019	KEC
standards, specifications, approvals Environmental Product Declaration	
Environmental Product Declaration	Yes
global warming potential [CO2 eq]	
• total	207.05 kg
• during manufacturing	19.13 kg
• during operation	187.74 kg
• after end of life	0.18 kg
further information internet links	
internet link	
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud
• to website: Industrial communication	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CP 1543SP-1

Overview



ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7
	●			●		●	●

The CP 1543SP-1 communications processor connects the ET 200SP Distributed Controller with Industrial Ethernet networks. By combining a variety of security features such as an SPI (Stateful Packet Inspection) firewall, VPN and data encryption protocols (e.g. SNMPv3), the communications processor protects individual ET 200SP distributed controllers or even entire automation cells against unauthorized access.

The module can also be used for integrating the ET 200SP Distributed Controller into an IPv6-based network. All functions can be configured with STEP 7 Professional, V14 (TIA Portal) and higher.

The CP 1543SP-1 supports the following communication services:

- PG/OP communication
- S7 communication
- Open communication (Open User Communication)
- IT communication
 - Sending emails via SMTP or ESMTP with "SMTP-Auth" for authentication on an email server (also with IPv6)
- Support of SINEMA Remote Connect with autoconfiguration
- Security Integrated
 - Stateful Packet Inspection Firewall
 - Secure communication via VPN (IPsec)
- Protocols for secure communication
 - Secure access to the web server of the CPU via the HTTPS protocol
 - Secure transfer of the time of day (NTP)
 - SNMPv3 for tap-proof transfer of network analysis information
- Integration of the ET 200SP Distributed Controller into IPv6-based networks

Ordering data

Article No.

CP 1543SP-1 communications processor

CP 1543SP-1 communications processor for connecting SIMATIC S7 ET 200SP to Industrial Ethernet, Security (firewall and VPN), open IE communication (TCP/IP, ISO-on-TCP, UDP) PG/OP, S7 routing, IP broadcast/multicast, SNMPv1/v3, DHCP, secure email, IPV4/IPV6, time synchronization via NTP, access to web server of CPU, BusAdapter required

6GK7543-6WX00-0XE0

Accessories

SIMATIC BA 2xRJ45 BusAdapter

For PROFINET interface modules, standard function class or above; max. cable length 50 m

6ES7193-6AR00-0AA0

SIMATIC BA 2xFC BusAdapter

For PROFINET interface modules, standard function class or above; for increased vibration and EMC load rating; max. cable length 50 m

6ES7193-6AF00-0AA0

SIMATIC BA 2xSCRJ BusAdapter

For PROFINET interface modules, High Feature function class or above; fiber-optic cable connection for POF or PCF; for increased vibration and EMC load rating; max. cable length 50 m (POF) or 100 m (PCF)

6ES7193-6AP00-0AA0

SIMATIC BA SCRJ/RJ45 BusAdapter

For PROFINET interface modules, High Feature function class or above; fiber-optic cable connection for POF or PCF; for increased vibration and EMC load rating; max. cable length 50 m (POF) or 100 m (PCF)

6ES7193-6AP20-0AA0

SIMATIC BA SCRJ/FC BusAdapter

For PROFINET interface modules, High Feature function class or above; with media converter FOC-Cu; for increased vibration and EMC load rating; max. cable length 50 m (POF, copper) or 100 m (PCF)

6ES7193-6AP40-0AA0

IE FC RJ45 plug 180 2 x 2

RJ45 plug-in connector for Industrial Ethernet with rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > CP 1543SP-1

Ordering data	Article No.		Article No.
IE FC RJ45 plug 4 x 2 RJ45 plug-in connector for Industrial Ethernet (10/100/1000/10000 Mbps, Cat6 _A) with rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units	6GK1901-1BB12-2AA0 6GK1901-1BB12-2AB0 6GK1901-1BB12-2AE0	IE FC stripping tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
IE FC TP standard cable GP 2 x 2 (type A) 4-core, shielded TP installation cable for connection to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	Labeling strips 500 labeling strips on roll, light gray, for labeling with thermal transfer roll printer 500 labeling strips on roll, yellow, for labeling with thermal transfer roll printer 1000 labeling strips DIN A4, light gray, card, perforated, for labeling with laser printer 1000 labeling strips DIN A4, yellow, card, perforated, for labeling with laser printer	6ES7193-6LR10-0AA0 6ES7193-6LR10-0AG0 6ES7193-6LA10-0AA0 6ES7193-6LA10-0AG0
IE FC TP standard cable GP 4 x 2 8-core, shielded TP installation cable for connection to IE FC RJ45 modular outlet for universal applications; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m • AWG22, for connection to IE FC RJ45 modular outlet • AWG24, for connection to IE FC RJ45 plug 4 x 2	6XV1870-2E 6XV1878-2A	Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0
		Spare parts	
		Server module Terminates an ET 200SP station; included in the scope of supply of the interface modules	6ES7193-6PA00-0AA0
		PE connection element for mounting rail 2000 mm 20 units	6ES7590-5AA00-0AA0
		Power supply connector Spare part; for connecting the 24 V DC supply voltage; with push-in terminals	6ES7193-4JB00-0AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > Communication > CP 1543SP-1

Technical specifications

Article number	6GK7543-6WX00-0XE0
product type designation	CP 1543SP-1
transfer rate	
transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	1
number of electrical connections	
• at the 1st interface according to Industrial Ethernet	2
type of electrical connection	
• at the 1st interface according to Industrial Ethernet	via ET 200SP bus adapter (RJ45, FC, SCRJ), integrated switch
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage	24 V
supply voltage	19.2 ... 28.8 V
power loss [W]	6 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	-30 ... +50 °C
• for horizontally arranged busbars during operation	-30 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
width	60 mm
height	117 mm
depth	74 mm
net weight	0.18 kg
fastening method	
• 35 mm DIN-rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	2
• note	2 CPUs can be plugged in per CPU, simultaneous operation with BA Send and CM DP is possible
performance data open communication	
number of possible connections for open communication	
• by means of T blocks maximum	32
data volume	
• as user data per ISO on TCP connection for open communication by means of T blocks maximum	65 536 byte
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	16
• with OP connections maximum	16
performance data multi-protocol mode	
number of active connections with multi-protocol mode	32
performance data IT functions	
number of possible connections	
• as email client maximum	1

Article number	6GK7543-6WX00-0XE0
product type designation	CP 1543SP-1
product functions management, configuration, engineering	
product function MIB support	Yes
protocol is supported	
• SNMP v1	Yes
• SNMP v3	Yes
• DCP	Yes
• LLDP	Yes
configuration software	
• required	STEP 7 Professional V14 (TIA Portal) or higher
identification & maintenance function	
• I&MO - device-specific information	Yes
• I&M1 - higher level designation/location designation	Yes
product functions diagnostics	
product function web-based diagnostics	Yes; via ET 200SP CPU
product functions security	
firewall version	stateful inspection
product function with VPN connection	IPsec, SINEMA RC
type of encryption algorithms with VPN connection	AES-256, AES-192, AES-128, 3DES-168, DES-56
type of authentication procedure with VPN connection	Preshared key (PSK), X.509v3 certificates
type of hashing algorithms with VPN connection	MD5, SHA-1
number of possible connections with VPN connection	4
product function	
• switch-off of non-required services	Yes
• blocking of communication via physical ports	Yes
• log file for unauthorized access	Yes
product functions time	
product function SICLOCK support	Yes
product function pass on time synchronization	No
protocol is supported	
• NTP	Yes
• NTP (secure)	Yes
time synchronization	
• from NTP-server	Yes
standards, specifications, approvals	
reference code	
• according to IEC 81346-2:2019	KEC
standards, specifications, approvals Environmental Product Declaration	
Environmental Product Declaration	Yes
global warming potential [CO2 eq]	
• total	207.05 kg
• during manufacturing	19.13 kg
• during operation	187.74 kg
• after end of life	0.18 kg
further information internet links	
internet link	
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud
• to website: Industrial communication	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CP 1542SP-1 IRC

Overview



ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7
	●			●		●	●

The CP 1542SP-1 IRC communications processor connects the ET 200SP Distributed Controller with Industrial Ethernet networks. In addition, control centers can be connected using various telecontrol protocols.

The CP is characterized by the following:

- Ethernet-based connection to TeleControl Server Basic, e.g. via internet
- Ethernet-based connection to the control center via SINAUT ST7, IEC 60870-5-104 or DNP3 protocol
- Data transfer of measured values, control variables or alarms optimized for telecontrol systems
- Automatic sending of alert emails
- Data buffering of up to 100,000 values ensures a secure database, even with temporary connection failures
- Clearly laid out LED signaling for fast and easy diagnostics
- Fast commissioning thanks to easy configuration using STEP 7

The module can also be used for integrating the ET 200SP Distributed Controller into an IPv6-based network. All functions are configured using STEP 7 Professional V14 (TIA Portal) or higher.

The CP 1542SP-1 IRC supports the following communications services:

- Support of multiple telecontrol protocols such as SINAUT ST7, DNP3, IEC 60870-5-104 and TeleControl Basic
- PG/OP communication
- S7 communication
- Open communication (Open User Communication)
- IT communication
 - Sending emails via SMTP or SMTPS with "SMTP-Auth" for authentication on an email server (also with IPv6)
 - Email transfer with addressing by program block
 - Email transfer via "Notifications" (alerts)
- Support of SINEMA Remote Connect with autoconfiguration

Ordering data

Article No.

CP 1542SP-1 IRC communications processor

CP 1542SP-1 IRC communications processor for connection of SIMATIC S7-ET 200SP to Industrial Ethernet, TeleControl Server Basic, IEC 60870-5-104 or DNP3 protocol to a control center; open IE communication (TCP/IP, ISO-on-TCP, UDP), IP broadcast/multicast, SNMPV1, DHCP, secure email, IPV4/IPV6, time synchronization via NTP, access to web server of CPU, BusAdapter required

6GK7542-6VX00-0XE0

Accessories

SIMATIC BA 2xRJ45 BusAdapter

For PROFINET interface modules, standard function class or above; max. cable length 50 m

6ES7193-6AR00-0AA0

SIMATIC BA 2xFC BusAdapter

For PROFINET interface modules, standard function class or above; for increased vibration and EMC load rating; max. cable length 50 m

6ES7193-6AF00-0AA0

SIMATIC BA 2xSCRJ BusAdapter

For PROFINET interface modules from High Feature function class or above; fiber-optic cable connection for POF or PCF; for increased vibration and EMC load capacity; max. cable length 50 m (POF) or 100 m (PCF)

6ES7193-6AP00-0AA0

SIMATIC BA SCRJ/RJ45 BusAdapter

For PROFINET interface modules from High Feature function class or above; fiber-optic cable connection for POF or PCF; for increased vibration and EMC load capacity; max. cable length 50 m (POF) or 100 m (PCF)

6ES7193-6AP20-0AA0

SIMATIC BA SCRJ/FC BusAdapter

For PROFINET interface modules, High Feature function class or above; with media converter FOC-Cu; for increased vibration and EMC load rating; max. cable length 50 m (POF, copper) or 100 m (PCF)

6ES7193-6AP40-0AA0

IE FC RJ45 plug 180 2 x 2

RJ45 plug-in connector for Industrial Ethernet with rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CP 1542SP-1 IRC

Ordering data	Article No.		Article No.
IE FC RJ45 plug 4 x 2 RJ45 plug-in connector for Industrial Ethernet (10/100/1000/10000 Mbps, Cat6 _A) with rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface 1 pack = 1 unit 1 pack = 10 units 1 pack = 50 units	6GK1901-1BB12-2AA0 6GK1901-1BB12-2AB0 6GK1901-1BB12-2AE0	Labeling strips 500 labeling strips on roll, light gray, for labeling with thermal transfer roll printer 500 labeling strips on roll, yellow, for labeling with thermal transfer roll printer 1000 labeling strips DIN A4, light gray, card, perforated, for labeling with laser printer 1000 labeling strips DIN A4, yellow, card, perforated, for labeling with laser printer	6ES7193-6LR10-0AA0 6ES7193-6LR10-0AG0 6ES7193-6LA10-0AA0 6ES7193-6LA10-0AG0
IE FC TP standard cable GP 2 x 2 (type A) 4-core, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0
IE FC TP standard cable GP 4 x 2 8-core, shielded TP installation cable for connection to IE FC RJ45 modular outlet for universal applications; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m - AWG22, for connection to IE FC RJ45 modular outlet - AWG24, for connection to IE FC RJ45 plug 4 x 2	6XV1870-2E 6XV1878-2A	Spare parts Server module Terminates an ET 200SP station; included in the scope of supply of the interface modules	6ES7193-6PA00-0AA0
IE FC stripping tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00	PE connection element for mounting rail 2000 mm 20 units	6ES7590-5AA00-0AA0
		Power supply connector Spare part; for connecting the 24 V DC supply voltage with push-in terminals	6ES7193-4JB00-0AA0

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Technical specifications

Article number	6GK7542-6VX00-0XE0	Article number	6GK7542-6VX00-0XE0
product type designation	CP 1542SP-1 IRC	product type designation	CP 1542SP-1 IRC
transfer rate		ambient conditions	
transfer rate		ambient temperature	
at the 1st interface	10 ... 100 Mbit/s	- for vertical installation during operation - for horizontally arranged busbars during operation - during storage - during transport	-30 ... +50 °C -30 ... +60 °C -40 ... +70 °C -40 ... +70 °C
interfaces		relative humidity	
number of interfaces according to Industrial Ethernet	1	at 25 °C without condensation during operation maximum	95 %
number of electrical connections		protection class IP	IP20
at the 1st interface according to Industrial Ethernet	2	design, dimensions and weights	
type of electrical connection		width	60 mm
at the 1st interface according to Industrial Ethernet	via ET 200SP bus adapter (RJ45, FC, SCRJ), integrated switch	height	117 mm
supply voltage, current consumption, power loss		depth	74 mm
type of voltage of the supply voltage	DC	net weight	0.18 kg
supply voltage	24 V	fastening method	
supply voltage	19.2 ... 28.8 V	35 mm DIN-rail mounting	Yes
power loss [W]	6 W		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > CP 1542SP-1 IRC

Technical specifications

Article number	6GK7542-6VX00-0XE0
product type designation	CP 1542SP-1 IRC
product features, product functions, product components general	
number of units	2
- per CPU maximum - note	2 CPs can be plugged in per CPU, simultaneous operation with BA Send and CM DP is possible
performance data open communication	
number of possible connections for open communication	32
- by means of T blocks maximum data volume - as user data per ISO on TCP connection for open communication by means of T blocks maximum	65 536 byte
performance data S7 communication	
number of possible connections for S7 communication	16
- maximum - with OP connections maximum	16
performance data multi-protocol mode	
number of active connections with multi-protocol mode	32
performance data IT functions	
number of possible connections	1
as email client maximum	
performance data telecontrol	
suitability for use	No
- node station - substation - TIM control center	Yes Yes No
control center connection	IEC 60870-5, DNP3, (Modbus TCP by block solutions of the CPU) capable control stations, connection to Telecontrol Server Basic and ST7 capable control station
- by means of a permanent connection - by means of demand-oriented connection - note	supported supported Connection to SCADA system by IEC 60870-5 104, DNP3, Telecontrol Server Basic and ST7 capable control center
protocol is supported	Yes
- DNP3 - IEC 60870-5 - SINAUT ST7 protocol	Yes Yes Yes
product function data buffering if connection is aborted	Yes; TCSB 64000 events, SINAUT ST7 32000 telegrams, DNP3 100000 events, IEC 60870-5 100000 events
number of data points per station maximum	1 500
number of stations for direct communication with Telecontrol Server Basic	
- in send direction maximum - in receive direction maximum	3 15

Article number	6GK7542-6VX00-0XE0
product type designation	CP 1542SP-1 IRC
product functions management, configuration, engineering	
product function MIB support	Yes
protocol is supported	Yes
- SNMP v1 - SNMP v3 - DCP - LLDP	Yes Yes Yes Yes
configuration software	STEP 7 Professional V14 (TIA Portal) or higher
required	
identification & maintenance function	
- I&M0 - device-specific information - I&M1 - higher level designation/location designation	Yes Yes
product functions diagnostics	
product function web-based diagnostics	Yes; via ET 200SP CPU
product functions security	
product function with VPN connection	SINEMA RC
blocking of communication via physical ports	Yes
product functions time	
product function SICLOCK support	Yes
product function pass on time synchronization	Yes
protocol is supported	Yes
- NTP - NTP (secure)	Yes No
time synchronization	Yes
- from NTP-server - from control center	Yes Yes
standards, specifications, approvals	
reference code	KEC
according to IEC 81346-2:2019	
standards, specifications, approvals Environmental Product Declaration	
Environmental Product Declaration	Yes
global warming potential [CO2 eq]	
- total - during manufacturing - during operation - after end of life	207.05 kg 19.13 kg 187.74 kg 0.18 kg
further information internet links	
internet link	
- to website: Selection guide for cables and connectors - to web page: selection aid TIA Selection Tool - to website: Industrial communication - to web page: SiePortal - to website: Image database - to website: CAX-Download-Manager - to website: Industry Online Support	https://support.industry.siemens.com/cs/ww/en/view/109766358 https://www.siemens.com/tstcloud https://www.siemens.com/simatic-net https://sieportal.siemens.com/ https://www.automation.siemens.com/bilddb https://siemens.com/cax https://support.industry.siemens.com

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W761 RJ45 for the control cabinet

Overview



- Space-saving access point, suitable for applications where the device is to be mounted in the control cabinet

Ordering data

Article No.

SCALANCE W761 access points

IWLAN access point with built-in wireless interface; wireless networks IEEE 802.11a/b/g/h/n at 2.4/5 GHz up to 150 Mbps; WPA2/AES; degree of protection IP20 (0 °C to +55 °C); scope of delivery: Mounting hardware, 3-pin screw terminal for 24 V DC; manual on CD-ROM; German/English

SCALANCE W761-1 RJ45

IWLAN access point with one built-in wireless interface

- Country approvals for operation outside the USA
- Country approvals for operation within the USA¹⁾

6GK5761-1FC00-0AA0

6GK5761-1FC00-0AB0

Accessories

IE FC RJ45 plug 180 2 x 2

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with a 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0

6GK1901-1BB10-2AB0

6GK1901-1BB10-2AE0

IE FC standard cable GP 2 x 2

4-core, shielded TP installation cable for connection to IE FC RJ45 outlet plug/ IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC stripping tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Antennas and additional IWLAN accessories

See Industrial Wireless LAN/Accessories

¹⁾ Please note country approvals under <http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W761 RJ45 for the control cabinet

Technical specifications

Article number	6GK5761-1FC00-0AA0	6GK5761-1FC00-0AB0
product type designation ¹⁾	W761-1 RJ45	W761-1 RJ45 (USA)
transfer rate		
transfer rate		
• with WLAN maximum	150 Mbit/s	150 Mbit/s
• for Industrial Ethernet	10 Mbit/s, 100 Mbit/s	10 Mbit/s, 100 Mbit/s
transfer rate for Industrial Ethernet		
• minimum	10 Mbit/s	10 Mbit/s
• maximum	100 Mbit/s	100 Mbit/s
interfaces		
number of electrical connections		
• for network components or terminal equipment	1	1
• for power supply	1	1
• for redundant voltage supply	0	0
type of electrical connection		
• for network components or terminal equipment	RJ45 socket	RJ45 socket
• for power supply	3-pole screw terminal	3-pole screw terminal
memory		
design of the removable storage		
• C-PLUG	No	No
• KEY-PLUG	No	No
interfaces wireless		
number of radio cards permanently installed	1	1
number of electrical connections for external antenna(s)	1	1
type of electrical connection for external antenna(s)	R-SMA (socket)	R-SMA (socket)
product feature external antenna can be mounted directly on device	Yes	Yes
supply voltage, current consumption, power loss		
type of voltage of the supply voltage	DC	DC
consumed current		
• at DC at 24 V typical	0.15 A	0.15 A
power loss [W]		
• at DC at 24 V typical	3.6 W	3.6 W
supply voltage 1		
• from terminal block	19.2 V	19.2 V
supply voltage 2		
• from terminal block	28.8 V	28.8 V
ambient conditions		
ambient temperature		
• during operation	0 ... 55 °C	0 ... 55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
relative humidity at 25 °C without condensation during operation maximum	95 %	95 %
ambient condition for operation	When used under hazardous conditions (Zone 2), the SCALANCE W761-1 RJ45 or W72x-1 RJ45 product must be installed in an enclosure. To comply with EN 50021, this enclosure must meet the requirements of at least IP 54 in compliance with EN 60529.	When used under hazardous conditions (Zone 2), the SCALANCE W761-1 RJ45 or W72x-1 RJ45 product must be installed in an enclosure. To comply with EN 50021, this enclosure must meet the requirements of at least IP 54 in compliance with EN 60529.
protection class IP	IP20	IP20

Please note country approvals under
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W761 RJ45 for the control cabinet

Technical specifications

Article number	6GK5761-1FC00-0AA0	6GK5761-1FC00-0AB0
product type designation ¹⁾	W761-1 RJ45	W761-1 RJ45 (USA)
design, dimensions and weights		
width	50 mm	50 mm
height	114 mm	114 mm
depth	74 mm	74 mm
width of the enclosure without antenna	50 mm	50 mm
height of the enclosure without antenna	114 mm	114 mm
depth of the enclosure without antenna	74 mm	74 mm
net weight	0.13 kg	0.13 kg
fastening method		
• S7-300 rail mounting	No	No
• S7-1500 rail mounting	No	No
• 35 mm DIN-rail mounting	Yes	Yes
• wall mounting	No	No
radio frequencies		
operating frequency		
• for WLAN in 2.4 GHz frequency band	2.41 ... 2.48 GHz; depending on the country approvals	2.41 ... 2.48 GHz; depending on the country approvals
• for WLAN in 5 GHz frequency band	4.9 ... 5.8 GHz; depending on the country approvals	4.9 ... 5.8 GHz; depending on the country approvals
product features, product functions, product components general		
product function Access Point Mode	Yes	Yes
product function client Mode	Yes	Yes
number of SSIDs	1	1
product function		
• iPCF Access Point	No	No
• iPCF client	No	No
• iPCF-MC Access Point	No	No
• iPCF-MC client	No	No
product function iREF	No	No
product function iPRP	No	No
product functions management, configuration, engineering		
number of manageable IP addresses in client	4	4
product function		
• CLI	Yes	Yes
• web-based management	Yes	Yes
• MIB support	Yes	Yes
• TRAPs via email	Yes	Yes
• configuration with STEP 7	Yes	Yes
• configuration with STEP 7 in the TIA Portal	Yes	Yes
• operation with IWLAN controller	No	No
• operation with Enterasys WLAN controller	No	No
• forced roaming on IP down with IWLAN	Yes	Yes
• forced roaming on link down with IWLAN	Yes	Yes
• WDS	Yes	Yes
protocol is supported		
• Address Resolution Protocol (ARP)	Yes	Yes
• ICMP	Yes	Yes
• Telnet	Yes	Yes
• HTTP	Yes	Yes
• HTTPS	Yes	Yes
• TFTP	Yes	Yes
• DCP	Yes	Yes
• LLDP	Yes	Yes

Please note country approvals under
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W761 RJ45 for the control cabinet

Technical specifications

Article number	6GK5761-1FC00-0AA0	6GK5761-1FC00-0AB0
product type designation ¹⁾	W761-1 RJ45	W761-1 RJ45 (USA)
identification & maintenance function		
• I&M0 - device-specific information	Yes	Yes
• I&M1 - higher level designation/location designation	Yes	Yes
product function is supported	Yes; acc. to IEC 61406-1:2022	Yes; acc. to IEC 61406-1:2022
identification link		
product functions diagnostics		
product function		
• PROFINET IO diagnosis	No	No
• link check	No	No
• connection monitoring IP-Alive	No	No
• localization via Aeroscout	No	No
• SysLog	Yes	Yes
protocol is supported		
• SNMP v1	Yes	Yes
• SNMP v2	Yes	Yes
• SNMP v3	Yes	Yes
product functions VLAN		
product function		
• function VLAN with IWLAN	Yes	Yes
product functions DHCP		
product function		
• DHCP client	Yes	Yes
• DHCP server	Yes	Yes
• DHCP Option 82	Yes	Yes
product functions redundancy		
protocol is supported		
• STP/RSTP	Yes	Yes
• MSTP	Yes	Yes
• RSTP	Yes	Yes
product functions security		
product function		
• ACL - MAC-based	Yes	Yes
• management security, ACL-IP based	Yes	Yes
• IEEE 802.1x (radius)	Yes	Yes
• NAT/NAPT	Yes	Yes
• access protection according to IEEE802.11i	Yes	Yes
• WPA/WPA2	Yes	Yes
• TKIP/AES	Yes	Yes
protocol is supported		
• SSH	Yes	Yes
• RADIUS	Yes	Yes
product functions time		
protocol is supported		
• NTP	Yes	Yes
• SNTP	Yes	Yes
• SIMATIC time synchronization (SIMATIC Time)	Yes	Yes

Please note country approvals under
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W761 RJ45 for the control cabinet**Technical specifications**

Article number	6GK5761-1FC00-0AA0	6GK5761-1FC00-0AB0
product type designation ¹⁾	W761-1 RJ45	W761-1 RJ45 (USA)
standards, specifications, approvals		
standard		
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X
• for safety from CSA and UL certificate of suitability	UL 60950-1 E115352, CSA C22.2 No. 60950-1	UL 60950-1 E115352, CSA C22.2 No. 60950-1
• EC Declaration of Conformity	Yes	Yes
• CE marking	Yes	Yes
• C-Tick	Yes	Yes
• E1 approval	No	No
• railway application in accordance with EN 50155	No	No
• railway application in accordance with EN 50121-4	No	No
• NEMA TS2	No	No
• IEC 61375	No	No
• IEC 61850-3	No	No
• NEMA4X	No	No
• Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af	No	No
• Power-over-Ethernet according to IEEE802.3at for type 2	No	No
standard for wireless communication		
• IEEE 802.11a	Yes	Yes
• IEEE 802.11b	Yes	Yes
• IEEE 802.11e	Yes	Yes
• IEEE 802.11g	Yes	Yes
• IEEE 802.11h	Yes	Yes
• IEEE 802.11i	Yes	Yes
• IEEE 802.11n	Yes	Yes
wireless approval	You will find the current list of countries at: http://www.siemens.com/wireless-approvals	You will find the current list of countries at: http://www.siemens.com/wireless-approvals
reference code		
• according to IEC 81346-2:2019	KFE	KFE
standards, specifications, approvals marine classification		
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)	No	No
• French marine classification society (BV)	No	No
• DNV GL	No	No
• Korean Register of Shipping (KRS)	No	No
• Lloyds Register of Shipping (LRS)	No	No
• Nippon Kaiji Kyokai (NK)	No	No
• Polski Rejestr Statkow (PRS)	No	No
• Royal Institution of Naval Architects (RINA)	No	No
standards, specifications, approvals hazardous environments		
standard for hazardous zone	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480
certificate of suitability CCC for hazardous zone according to GB standard	Yes; GB3836.1, GB3836.8	Yes; GB3836.1, GB3836.8
• as marking	Ex nA IIC T4 Gc	Ex nA IIC T4 Gc
Please note country approvals under http://www.siemens.com/wireless-approvals		

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W761 RJ45 for the control cabinet

Technical specifications

Article number	6GK5761-1FC00-0AA0	6GK5761-1FC00-0AB0
product type designation ¹⁾	W761-1 RJ45	W761-1 RJ45 (USA)
standards, specifications, approvals		
Environmental Product Declaration		
global warming potential [CO ₂ eq]		
• total		125.8 kg
• during manufacturing		12.97 kg
• during operation		112.66 kg
• after end of life		0.17 kg
accessories		
accessories	24 V DC screw terminal included in scope of delivery	24 V DC screw terminal included in scope of delivery
further information internet links		
internet link		
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud
• to web page: WLAN country approval	https://www.siemens.com/wireless-approvals	https://www.siemens.com/wireless-approvals
• to the website: IWLAN	https://www.siemens.com/iwlan	https://www.siemens.com/iwlan
• to website: Industrial communication	https://www.siemens.com/simatic-net	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://www.siemens.com/cax	https://www.siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com
	0.15 A	0.15 A

Please note country approvals under
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W722 RJ45 for the control cabinet

Overview



- Space-saving client module, suitable for applications where the device is to be mounted in the control cabinet
- Equipped with iFeatures



ET 200SP station with SCALANCE W722 RJ45

Ordering data

Article No.

SCALANCE W722 client modules

IWLAN Ethernet client modules with iFeatures support and built-in wireless interface; wireless networks IEEE 802.11a/b/g/n at 2.4/5 GHz up to 150 Mbps; WPA2/AES; degree of protection IP20 (0 °C to +55 °C); scope of delivery: Mounting hardware, 3-pin screw terminal for 24 V DC; manual on CD-ROM; German/English

SCALANCE W722-1 RJ45

For managing the radio link with iFeatures from a connected device with Industrial Ethernet connection

- Country approvals for operation outside the USA
- Country approvals for operation within the USA¹⁾
- Country approvals for operation in Israel¹⁾

6GK5722-1FC00-0AA0

6GK5722-1FC00-0AB0

6GK5722-1FC00-0AC0

Accessories

IE FC RJ45 plug 180 2 x 2

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with a 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0

6GK1901-1BB10-2AB0

6GK1901-1BB10-2AE0

IE FC standard cable GP 2 x 2

4-core, shielded TP installation cable for connection to IE FC RJ45 outlet plug/ IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC stripping tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Antennas and additional IWLAN accessories

See Industrial Wireless LAN/Accessories

¹⁾ Please note country approvals under <http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W722 RJ45 for the control cabinet

Technical specifications

Article number product type designation ¹⁾	6GK5722-1FC00-0AA0 W722-1 RJ45	6GK5722-1FC00-0AB0 W722-1 RJ45 (USA)	6GK5722-1FC00-0AC0 W722-1 RJ45 (ISR)
transfer rate			
transfer rate			
• with WLAN maximum	150 Mbit/s	150 Mbit/s	150 Mbit/s
• for Industrial Ethernet	10 Mbit/s, 100 Mbit/s	10 Mbit/s, 100 Mbit/s	10 Mbit/s, 100 Mbit/s
transfer rate for Industrial Ethernet			
• minimum	10 Mbit/s	10 Mbit/s	10 Mbit/s
• maximum	100 Mbit/s	100 Mbit/s	100 Mbit/s
interfaces			
number of electrical connections			
• for network components or terminal equipment	1	1	1
• for power supply	1	1	1
• for redundant voltage supply	0	0	0
type of electrical connection			
• for network components or terminal equipment	RJ45 socket	RJ45 socket	RJ45 socket
• for power supply	3-pole screw terminal	3-pole screw terminal	3-pole screw terminal
memory			
design of the removable storage			
• C-PLUG	No	No	No
• KEY-PLUG	No	No	No
interfaces wireless			
number of radio cards permanently installed	1	1	1
number of electrical connections for external antenna(s)	1	1	1
type of electrical connection for external antenna(s)	R-SMA (socket)	R-SMA (socket)	R-SMA (socket)
product feature external antenna can be mounted directly on device	Yes	Yes	Yes
supply voltage, current consumption, power loss			
type of voltage of the supply voltage	DC	DC	DC
consumed current			
• at DC at 24 V typical	0.15 A	0.15 A	0.15 A
power loss [W]			
• at DC at 24 V typical	3.6 W	3.6 W	3.6 W
supply voltage 1			
• from terminal block	19.2 V	19.2 V	19.2 V
supply voltage 2			
• from terminal block	28.8 V	28.8 V	28.8 V
ambient conditions			
ambient temperature			
• during operation	0 ... 55 °C	0 ... 55 °C	0 ... 55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
relative humidity at 25 °C without condensation during operation maximum	95 %	95 %	95 %
ambient condition for operation	When used under hazardous conditions (Zone 2), the SCALANCE W761-1 RJ45 or W72x-1 RJ45 product must be installed in an enclosure. To comply with EN 50021, this enclosure must meet the requirements of at least IP 54 in compliance with EN 60529.	When used under hazardous conditions (Zone 2), the SCALANCE W761-1 RJ45 or W72x-1 RJ45 product must be installed in an enclosure. To comply with EN 50021, this enclosure must meet the requirements of at least IP 54 in compliance with EN 60529.	When used under hazardous conditions (Zone 2), the SCALANCE W761-1 RJ45 or W72x-1 RJ45 product must be installed in an enclosure. To comply with EN 50021, this enclosure must meet the requirements of at least IP 54 in compliance with EN 60529.
protection class IP	IP20	IP20	IP20

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W722 RJ45 for the control cabinet

Technical specifications

Article number	6GK5722-1FC00-0AA0	6GK5722-1FC00-0AB0	6GK5722-1FC00-0AC0
product type designation ¹⁾	W722-1 RJ45	W722-1 RJ45 (USA)	W722-1 RJ45 (ISR)
design, dimensions and weights			
width	50 mm	50 mm	50 mm
height	114 mm	114 mm	114 mm
depth	74 mm	74 mm	74 mm
width of the enclosure without antenna	50 mm	50 mm	50 mm
height of the enclosure without antenna	114 mm	114 mm	114 mm
depth of the enclosure without antenna	74 mm	74 mm	74 mm
net weight	0.13 kg	0.13 kg	0.13 kg
fastening method			
• S7-300 rail mounting	No	No	No
• S7-1500 rail mounting	No	No	No
• 35 mm DIN-rail mounting	Yes	Yes	Yes
• wall mounting	No	No	No
radio frequencies			
operating frequency			
• for WLAN in 2.4 GHz frequency band	2.41 ... 2.48 GHz; depending on the country approvals	2.41 ... 2.48 GHz; depending on the country approvals	2.41 ... 2.48 GHz; depending on the country approvals
• for WLAN in 5 GHz frequency band	4.9 ... 5.8 GHz; depending on the country approvals	4.9 ... 5.8 GHz; depending on the country approvals	4.9 ... 5.8 GHz; depending on the country approvals
product features, product functions, product components general			
product function Access Point Mode	No	No	No
product function client Mode	Yes	Yes	Yes
product function			
• iPCF client	Yes	Yes	Yes
• iPCF-MC client	Yes	Yes	Yes
number of iPCF-capable radio modules	1	1	1
product function iPRP	Yes	Yes	Yes
product functions management, configuration, engineering			
number of manageable IP addresses in client	4	4	4
product function			
• CLI	Yes	Yes	Yes
• web-based management	Yes	Yes	Yes
• MIB support	Yes	Yes	Yes
• TRAPs via email	Yes	Yes	Yes
• configuration with STEP 7	Yes	Yes	Yes
• configuration with STEP 7 in the TIA Portal	Yes	Yes	Yes
• WDS	No	No	No
protocol is supported			
• Address Resolution Protocol (ARP)	Yes	Yes	Yes
• ICMP	Yes	Yes	Yes
• Telnet	Yes	Yes	Yes
• HTTP	Yes	Yes	Yes
• HTTPS	Yes	Yes	Yes
• TFTP	Yes	Yes	Yes
• DCP	Yes	Yes	Yes
• LLDP	No	No	No
identification & maintenance function			
• I&MO - device-specific information	Yes	Yes	Yes
• I&M1 - higher level designation/location designation	Yes	Yes	Yes
product function is supported	Yes; acc. to IEC 61406-1:2022	Yes; acc. to IEC 61406-1:2022	Yes; acc. to IEC 61406-1:2022
identification link			

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W722 RJ45 for the control cabinet

Technical specifications

Article number	6GK5722-1FC00-0AA0	6GK5722-1FC00-0AB0	6GK5722-1FC00-0AC0
product type designation ¹⁾	W722-1 RJ45	W722-1 RJ45 (USA)	W722-1 RJ45 (ISR)
product functions diagnostics			
product function			
• PROFINET IO diagnosis	Yes	Yes	Yes
• link check	No	No	No
• connection monitoring IP-Alive	No	No	No
• SysLog	Yes	Yes	Yes
protocol is supported			
• SNMP v1	Yes	Yes	Yes
• SNMP v2	Yes	Yes	Yes
• SNMP v3	Yes	Yes	Yes
product functions VLAN			
product function			
• function VLAN with IWLAN	No	No	No
product functions DHCP			
product function			
• DHCP client	Yes	Yes	Yes
• DHCP server	Yes	Yes	Yes
• DHCP Option 82	Yes	Yes	Yes
product functions redundancy			
protocol is supported			
• STP/RSTP	Yes	Yes	Yes
• MSTP	Yes	Yes	Yes
• RSTP	Yes	Yes	Yes
product functions security			
product function			
• ACL - MAC-based	Yes	Yes	Yes
• management security, ACL-IP based	Yes	Yes	Yes
• IEEE 802.1x (radius)	Yes	Yes	Yes
• NAT/NAPT	Yes	Yes	Yes
• access protection according to IEEE802.11i	Yes	Yes	Yes
• WPA/WPA2	Yes	Yes	Yes
• TKIP/AES	Yes	Yes	Yes
protocol is supported			
• SSH	Yes	Yes	Yes
• RADIUS	Yes	Yes	Yes
product functions time			
protocol is supported			
• NTP	Yes	Yes	Yes
• SNTP	Yes	Yes	Yes
• SIMATIC time synchronization (SIMATIC Time)	Yes	Yes	Yes
standards, specifications, approvals			
standard			
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X
• for safety from CSA and UL	UL 60950-1 E115352, CSA C22.2 No. 60950-1	UL 60950-1 E115352, CSA C22.2 No. 60950-1	UL 60950-1 E115352, CSA C22.2 No. 60950-1

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W722 RJ45 for the control cabinet

Technical specifications

Article number	6GK5722-1FC00-0AA0	6GK5722-1FC00-0AB0	6GK5722-1FC00-0AC0
product type designation ¹⁾	W722-1 RJ45	W722-1 RJ45 (USA)	W722-1 RJ45 (ISR)
certificate of suitability			
• EC Declaration of Conformity	Yes	Yes	No
• CE marking	Yes	Yes	No
• C-Tick	Yes	Yes	Yes
• E1 approval	No	No	No
• railway application in accordance with EN 50155	No	No	No
• NEMA TS2	No	No	No
• IEC 61375	No	No	No
• IEC 61850-3	No	No	No
• NEMA4X	No	No	No
• Power-over-Ethernet according IEEE802.3at for type 1 and IEEE802.3af	No	No	No
• Power-over-Ethernet according to IEEE802.3at for type 2	No	No	No
standard for wireless communication			
• IEEE 802.11a	Yes	Yes	Yes
• IEEE 802.11b	Yes	Yes	Yes
• IEEE 802.11e	Yes	Yes	Yes
• IEEE 802.11g	Yes	Yes	Yes
• IEEE 802.11h	Yes	Yes	Yes
• IEEE 802.11i	Yes	Yes	Yes
• IEEE 802.11n	Yes	Yes	Yes
wireless approval	You will find the current list of countries at: http://www.siemens.com/wireless-approvals	You will find the current list of countries at: http://www.siemens.com/wireless-approvals	You will find the current list of countries at: http://www.siemens.com/wireless-approvals
reference code			
• according to IEC 81346-2:2019	KFE	KFE	KFE
standards, specifications, approvals			
marine classification			
Marine classification association			
• American Bureau of Shipping Europe Ltd. (ABS)	No	No	No
• French marine classification society (BV)	No	No	No
• DNV GL	No	No	No
• Korean Register of Shipping (KRS)	No	No	No
• Lloyds Register of Shipping (LRS)	No	No	No
• Nippon Kaiji Kyokai (NK)	No	No	No
• Polski Rejestr Statkow (PRS)	No	No	No
• Royal Institution of Naval Architects (RINA)	No	No	No
standards, specifications, approvals			
hazardous environments			
standard for hazardous zone	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480
certificate of suitability CCC for hazardous zone according to GB standard	Yes; GB3836.1, GB3836.8	Yes; GB3836.1, GB3836.8	
• as marking	Ex nA IIC T4 Gc	Ex nA IIC T4 Gc	
standards, specifications, approvals			
Environmental Product Declaration			
Environmental Product Declaration	Yes	Yes	Yes
global warming potential [CO2 eq]			
• total	200.91 kg	200.91 kg	200.91 kg
• during manufacturing	12.97 kg	12.97 kg	12.97 kg
• during operation	187.77 kg	187.77 kg	187.77 kg
• after end of life	0.17 kg	0.17 kg	0.17 kg

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W722 RJ45 for the control cabinet

Technical specifications

Article number	6GK5722-1FC00-0AA0	6GK5722-1FC00-0AB0	6GK5722-1FC00-0AC0
product type designation ¹⁾	W722-1 RJ45	W722-1 RJ45 (USA)	W722-1 RJ45 (ISR)
accessories			
accessories	24 V DC screw terminal included in scope of delivery	24 V DC screw terminal included in scope of delivery	24 V DC screw terminal included in scope of delivery
further information internet links			
internet link			
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358	https://support.industry.siemens.com/cs/ww/en/view/109766358	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud
• to web page: WLAN country approval	https://www.siemens.com/wireless-approvals	https://www.siemens.com/wireless-approvals	https://www.siemens.com/wireless-approvals
• to the website: IWLAN	https://www.siemens.com/iwlan	https://www.siemens.com/iwlan	https://www.siemens.com/iwlan
• to website: Industrial communication	https://www.siemens.com/simatic-net	https://www.siemens.com/simatic-net	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/	https://sieportal.siemens.com/	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb	https://www.automation.siemens.com/bilddb	https://www.automation.siemens.com/bilddb
• to website: CAx-Download-Manager	https://www.siemens.com/cax	https://www.siemens.com/cax	https://www.siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com	https://support.industry.siemens.com
	0.15 A	0.15 A	0.15 A

You will find the current list of countries at:

<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W721 RJ45 for the control cabinet

Overview



- Space-saving client module, suitable for applications where the device is to be mounted in the control cabinet

Ordering data

Article No.

SCALANCE W721 client modules

IWLAN Ethernet client modules with built-in wireless interface; wireless networks IEEE 802.11a/b/g/h/n at 2.4/5 GHz up to 150 Mbps; WPA2/AES; degree of protection IP20 (0 °C to +55 °C); scope of delivery: Mounting hardware, 3-pin screw terminal for 24 V DC; manual on CD-ROM; German/English

SCALANCE W721-1 RJ45

For managing the radio link from a connected device with Industrial Ethernet connection

- Country approvals for operation outside the USA
- Country approvals for operation within the USA¹⁾

6GK5721-1FC00-0AA0

6GK5721-1FC00-0AB0

Accessories

IE FC RJ45 plug 180 2 x 2

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with a 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0

6GK1901-1BB10-2AB0

6GK1901-1BB10-2AE0

IE FC standard cable GP 2 x 2

4-core, shielded TP installation cable for connection to IE FC RJ45 outlet plug/ IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC stripping tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Antennas and additional IWLAN accessories

See Industrial Wireless LAN/Accessories

¹⁾ Please note country approvals under <http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W721 RJ45 for the control cabinet

Technical specifications

Article number	6GK5721-1FC00-0AA0	6GK5721-1FC00-0AB0
product type designation ¹⁾	W721-1 RJ45	W721-1 RJ45 (USA)
transfer rate		
transfer rate		
• with WLAN maximum	150 Mbit/s	150 Mbit/s
• for Industrial Ethernet	10 Mbit/s, 100 Mbit/s	10 Mbit/s, 100 Mbit/s
transfer rate for Industrial Ethernet		
• minimum	10 Mbit/s	10 Mbit/s
• maximum	100 Mbit/s	100 Mbit/s
interfaces		
number of electrical connections		
• for network components or terminal equipment	1	1
• for power supply	1	1
• for redundant voltage supply	0	0
type of electrical connection		
• for network components or terminal equipment	RJ45 socket	RJ45 socket
• for power supply	3-pole screw terminal	3-pole screw terminal
memory		
design of the removable storage		
• C-PLUG	No	No
• KEY-PLUG	No	No
interfaces wireless		
number of radio cards permanently installed	1	1
number of electrical connections for external antenna(s)	1	1
type of electrical connection for external antenna(s)	R-SMA (socket)	R-SMA (socket)
product feature external antenna can be mounted directly on device	Yes	Yes
supply voltage, current consumption, power loss		
type of voltage of the supply voltage	DC	DC
consumed current		
• at DC at 24 V typical	0.15 A	0.15 A
power loss [W]		
• at DC at 24 V typical	3.6 W	3.6 W
supply voltage 1		
• from terminal block	19.2 V	19.2 V
supply voltage 2		
• from terminal block	28.8 V	28.8 V
ambient conditions		
ambient temperature		
• during operation	0 ... 55 °C	0 ... 55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
relative humidity at 25 °C without condensation during operation maximum	95 %	95 %
ambient condition for operation	When used under hazardous conditions (Zone 2), the SCALANCE W761-1 RJ45 or W72x-1 RJ45 product must be installed in an enclosure. To comply with EN 50021, this enclosure must meet the requirements of at least IP 54 in compliance with EN 60529.	When used under hazardous conditions (Zone 2), the SCALANCE W761-1 RJ45 or W72x-1 RJ45 product must be installed in an enclosure. To comply with EN 50021, this enclosure must meet the requirements of at least IP 54 in compliance with EN 60529.
protection class IP	IP20	IP20

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W721 RJ45 for the control cabinet

Technical specifications

Article number	6GK5721-1FC00-0AA0	6GK5721-1FC00-0AB0
product type designation ¹⁾	W721-1 RJ45	W721-1 RJ45 (USA)
design, dimensions and weights		
width	50 mm	50 mm
height	114 mm	114 mm
depth	74 mm	74 mm
width of the enclosure without antenna	50 mm	50 mm
height of the enclosure without antenna	114 mm	114 mm
depth of the enclosure without antenna	74 mm	74 mm
net weight	0.13 kg	0.13 kg
fastening method		
• S7-300 rail mounting	No	No
• S7-1500 rail mounting	No	No
• 35 mm DIN-rail mounting	Yes	Yes
• wall mounting	No	No
radio frequencies		
operating frequency		
• for WLAN in 2.4 GHz frequency band	2.41 ... 2.48 GHz; depending on the country approvals	2.41 ... 2.48 GHz; depending on the country approvals
• for WLAN in 5 GHz frequency band	4.9 ... 5.8 GHz; depending on the country approvals	4.9 ... 5.8 GHz; depending on the country approvals
product features, product functions, product components general		
product function Access Point Mode	No	No
product function client Mode	Yes	Yes
product function		
• iPCF client	No	No
• iPCF-MC client	No	No
product function iREF	No	No
product function iPRP	No	No
product functions management, configuration, engineering		
number of manageable IP addresses in client	4	4
product function		
• CLI	Yes	Yes
• web-based management	Yes	Yes
• MIB support	Yes	Yes
• TRAPs via email	Yes	Yes
• configuration with STEP 7	Yes	Yes
• configuration with STEP 7 in the TIA Portal	Yes	Yes
• WDS	No	No
protocol is supported		
• Address Resolution Protocol (ARP)	Yes	Yes
• ICMP	Yes	Yes
• Telnet	Yes	Yes
• HTTP	Yes	Yes
• HTTPS	Yes	Yes
• TFTP	Yes	Yes
• DCP	Yes	Yes
• LLDP	No	No
identification & maintenance function		
• I&MO - device-specific information	Yes	Yes
• I&M1 - higher level designation/location designation	Yes	Yes
product function is supported	Yes; acc. to IEC 61406-1:2022	Yes; acc. to IEC 61406-1:2022
identification link		

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W721 RJ45 for the control cabinet

Technical specifications

Article number	6GK5721-1FC00-0AA0	6GK5721-1FC00-0AB0
product type designation ¹⁾	W721-1 RJ45	W721-1 RJ45 (USA)
product functions diagnostics		
product function		
• PROFINET IO diagnosis	No	No
• link check	No	No
• connection monitoring IP-Alive	No	No
• SysLog	Yes	Yes
protocol is supported		
• SNMP v1	Yes	Yes
• SNMP v2	Yes	Yes
• SNMP v3	Yes	Yes
product functions VLAN		
product function		
• function VLAN with IWLAN	No	No
product functions DHCP		
product function		
• DHCP client	Yes	Yes
• DHCP server	Yes	Yes
• DHCP Option 82	Yes	Yes
product functions redundancy		
protocol is supported		
• STP/RSTP	Yes	Yes
• MSTP	Yes	Yes
• RSTP	Yes	Yes
product functions security		
product function		
• ACL - MAC-based	Yes	Yes
• management security, ACL-IP based	Yes	Yes
• IEEE 802.1x (radius)	Yes	Yes
• NAT/NAPT	Yes	Yes
• access protection according to IEEE802.11i	Yes	Yes
• WPA/WPA2	Yes	Yes
• TKIP/AES	Yes	Yes
protocol is supported		
• SSH	Yes	Yes
• RADIUS	Yes	Yes
product functions time		
protocol is supported		
• NTP	Yes	Yes
• SNTP	Yes	Yes
• SIMATIC time synchronization (SIMATIC Time)	Yes	Yes
standards, specifications, approvals		
standard		
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X
• for safety from CSA and UL	UL 60950-1 E115352, CSA C22.2 No. 60950-1	UL 60950-1 E115352, CSA C22.2 No. 60950-1

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W721 RJ45 for the control cabinet**Technical specifications**

Article number	6GK5721-1FC00-0AA0	6GK5721-1FC00-0AB0
product type designation ¹⁾	W721-1 RJ45	W721-1 RJ45 (USA)
certificate of suitability		
• EC Declaration of Conformity	Yes	Yes
• CE marking	Yes	Yes
• C-Tick	Yes	Yes
• E1 approval	No	No
• railway application in accordance with EN 50155	No	No
• NEMA TS2	No	No
• IEC 61375	No	No
• IEC 61850-3	No	No
• NEMA4X	No	No
• Power-over-Ethernet according IEEE802.3at for type 1 and IEEE802.3af	No	No
• Power-over-Ethernet according to IEEE802.3at for type 2	No	No
standard for wireless communication		
• IEEE 802.11a	Yes	Yes
• IEEE 802.11b	Yes	Yes
• IEEE 802.11e	Yes	Yes
• IEEE 802.11g	Yes	Yes
• IEEE 802.11h	Yes	Yes
• IEEE 802.11i	Yes	Yes
• IEEE 802.11n	Yes	Yes
wireless approval	You will find the current list of countries at: http://www.siemens.com/wireless-approvals	You will find the current list of countries at: http://www.siemens.com/wireless-approvals
reference code		
• according to IEC 81346-2:2019	KFE	KFE
standards, specifications, approvals		
marine classification		
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)	No	No
• French marine classification society (BV)	No	No
• DNV GL	No	No
• Korean Register of Shipping (KRS)	No	No
• Lloyds Register of Shipping (LRS)	No	No
• Nippon Kaiji Kyokai (NK)	No	No
• Polski Rejestr Statkow (PRS)	No	No
• Royal Institution of Naval Architects (RINA)	No	No
standards, specifications, approvals		
hazardous environments		
standard for hazardous zone	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480
certificate of suitability CCC for hazardous zone according to GB standard	Yes; GB3836.1, GB3836.8	Yes; GB3836.1, GB3836.8
• as marking	Ex nA IIC T4 Gc	Ex nA IIC T4 Gc
standards, specifications, approvals		
Environmental Product Declaration		
Environmental Product Declaration global warming potential [CO2 eq]	Yes	Yes
• total	200.91 kg	200.91 kg
• during manufacturing	12.97 kg	12.97 kg
• during operation	187.77 kg	187.77 kg
• after end of life	0.17 kg	0.17 kg
accessories		
accessories	24 V DC screw terminal included in scope of delivery	24 V DC screw terminal included in scope of delivery

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

I/O modules > Communication > SCALANCE W721 RJ45 for the control cabinet

Technical specifications

Article number	6GK5721-1FC00-0AA0	6GK5721-1FC00-0AB0
product type designation ¹⁾	W721-1 RJ45	W721-1 RJ45 (USA)
further information internet links		
internet link		
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud
• to web page: WLAN country approval	https://www.siemens.com/wireless-approvals	https://www.siemens.com/wireless-approvals
• to the website: IWLAN	https://www.siemens.com/iwlan	https://www.siemens.com/iwlan
• to website: Industrial communication	https://www.siemens.com/simatic-net	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb	https://www.automation.siemens.com/bilddb
• to website: CAx-Download-Manager	https://www.siemens.com/cax	https://www.siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com
	0.15 A	0.15 A

¹⁾ You will find the current list of countries at:
<http://www.siemens.com/wireless-approvals>

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS CM PtP serial interface

Overview



- Communications module CM PtP;
Module for serial communication connections with RS232, RS422, RS485 interfaces for the Freeport, 3964(R), Modbus RTU master and USS protocols, max. 250 kbps, 2 KB frame length, 4 KB receive buffer.
- Protocols supported
 - Freeport: User-parameterizable frame format for universal communication
 - 3964(R) for improved transmission reliability
 - Modbus RTU master (requires instructions in SIMATIC S7)
 - Modbus RTU slave (requires instructions in SIMATIC S7)
 - USS, implemented through instructions
 - DMX512, can be implemented through instructions
- Interface properties
 - RS232 with auxiliary signals
 - RS422 for full-duplex connections
 - RS485 for half-duplex and multi-point connections
 - Transfer rates from 300 to 115 200 bps for RS232 and RS422
 - Transfer rates from 300 to 250 000 bps for RS485
- Frame lengths
 - In universal operation: 2 KB each in send and receive direction
 - In performance-optimized operation: 30 bytes in send direction, 24 bytes in receive direction
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for errors, operation, and supply voltage
- Communication display for sending and receiving
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the CM module type: silver
 - Hardware and firmware version
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional system-integrated shield connection

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS ET 200SP CM PtP communications module

With conformal coating (-40 ... +70 °C)
For serial connection with RS-422, RS-485 and RS-232, Freeport, 3964 (R), USS, MODBUS RTU master, slave, max. 250 Kbps, suitable for BU type A0, pack quantity: 1 unit

6AG1137-6AA01-7BA0

Accessories

SIPLUS BaseUnits type A0

(Extended temperature range and exposure to environmental substances)

BU15-P16+A0+2D

6AG1193-6BP00-7DA0

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

BU15-P16+A0+2B

6AG1193-6BP00-7BA0

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

BU15-P16+A10+2D

6AG1193-6BP20-7DA0

BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

BU15-P16+A10+2B

6AG1193-6BP20-7BA0

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See SIMATIC CM PtP, page 10/159

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS CM PtP serial interface

Technical specifications

Article number	6AG1137-6AA01-7BA0	Article number	6AG1137-6AA01-7BA0
Based on	6ES7137-6AA01-0BA0 SIPLUS ET 200SP CM PTP	Based on	6ES7137-6AA01-0BA0 SIPLUS ET 200SP CM PTP
Ambient conditions		Usage in industrial process technology	
Ambient temperature during operation		- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	
• horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax -40 °C; = Tmin 50 °C; = Tmax	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	
Altitude during operation relating to sea level		Remark	
• Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	5 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 * The supplied plug covers must remain in place over the unused interfaces during operation!	
Relative humidity		Conformal coating	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	• Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	
Resistance		Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air		
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3 - Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		
Use on land craft, rail vehicles and special-purpose vehicles			
- Against mechanical environmental conditions acc. to EN 60721-3-5 - against mechanical environmental conditions in agriculture acc. to ISO 15003	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0) Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6 - Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS CM 4x IO-Link

Overview



- SIPLUS CM 4x IO-Link communications module
Serial communications module for connecting up to 4 IO-Link devices in accordance with IO-Link specification V1.0 and V1.1. The IO-Link parameters are configured using the Port Configuration Tool (PCT), version V3.0 and higher.
- Time-based IO
Time-based IO ensures that signals are output with a precisely defined response time. By combining inputs and outputs, for example, passing products can be accurately measured or liquids dosed in precise quantities.
- Supported data transfer rates
 - COM1 (4.8 kBd)
 - COM2 (38.4 kBd)
 - COM3 (230.4 kBd)
- Expansion limits
 - Cable length: Max. 20 m
 - Max. 32 bytes of input and output data per port
 - Max. 144 bytes of input data and 128 bytes of output data per module

- Supported ET 200SP system functions
 - Replacement without PG with automatic backup without the engineering tool of the IO-Link Device Parameter (V1.1 devices only) and the IO-Link master parameters by means of redundant saving of parameters on the e-coding element
 - Re-parameterization during operation
 - Identification data I&M
 - Firmware update
 - PROFlenergy
- Can be plugged into Type A0 BaseUnits (BU) with automatic e-coding
- LED displays
 - DIAG: Operating state display (green/red) of the module
 - C1..C4: Port status indicator (green) for Port 1, 2, 3 and 4
 - Q1..Q4: Channel status indicator (green) for Port 1, 2, 3 and 4
 - F1..F4: Port fault indicator (red) for Port 1, 2, 3 and 4
 - PWR: Supply voltage indicator (green)
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color-coding of the module class CM: silver
 - Hardware and firmware version
 - Complete Article No.
- Optional accessories
 - Labeling strips
 - Equipment labeling plate
 - Color-coded label with color code CC04
- Optional system-integrated shield connection

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme-specific information was added.

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Ordering data

Article No.

SIPLUS CM 4x IO-Link master V1.1 Standard communications module

(Extended temperature range and exposure to environmental substances)

Serial communications module for connecting up to 4 IO-Link devices, time-based IO, BU type A0, color code CC04

6AG1137-6BD00-2BA0

DALI master module SIPLUS ET 200SP CM DALI

(Extended temperature range and exposure to environmental substances)

Integrated DALI bus power supply, 160 mA, up to 64 operating devices, 63 control units, color code CC20, suitable for BU type U0

6AG1137-6CA00-7BU0

Article No.

Suitable type A0 BaseUnits

BU15-P16+A10+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged UX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

6AG1193-6BP20-7DA0

BU15-P16+A0+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A10+2B

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

6AG1193-6BP20-7BA0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS CM 4x IO-Link

Ordering data	Article No.	Article No.
BU15-P16+A0+2B (Extended temperature range and exposure to environmental substances) BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BA0	Accessories SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm 6AG1193-6AA00-0AA0 SIPLUS Mounting Kit ET 200SP with maximum width of 19" Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0. Other accessories See SIMATIC CM 4x IO-Link, page 10/163

Technical specifications

Article number	6AG1137-6BD00-2BA0	Article number	6AG1137-6BD00-2BA0
Based on	6ES7137-6BD00-0BA0 SIPLUS ET 200SP CM 4xIO-LINK	Based on	6ES7137-6BD00-0BA0 SIPLUS ET 200SP CM 4xIO-LINK
Ambient conditions		Use on ships/at sea	
Ambient temperature during operation		- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6 - Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module -40 °C; = Tmin 50 °C; = Tmax		
Altitude during operation relating to sea level		Usage in industrial process technology	
- Installation altitude above sea level, max. - Ambient air temperature-barometric pressure-altitude	5 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Relative humidity		Remark	
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Resistance		Conformal coating	
Coolants and lubricants		- Coatings for printed circuit board assemblies acc. to EN 61086 - Protection against fouling acc. to EN 60664-3 - Military testing according to MIL-I-46058C, Amendment 7 - Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3 - Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS CM 4x IO-Link

Technical specifications

Article number	6AG1137-6CA00-7BU0
Based on	6ES7137-6CA00-0BU0 SIPLUS ET 200SP CM DALI
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-40 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	3 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity degree 3)
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)

Article number	6AG1137-6CA00-7BU0
Based on	6ES7137-6CA00-0BU0 SIPLUS ET 200SP CM DALI
Use on land craft, rail vehicles and special-purpose vehicles	
- Against mechanical environmental conditions acc. to EN 60721-3-5	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)
- against mechanical environmental conditions in agriculture acc. to ISO 15003	Yes; Level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity degree 3).
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0// 6AG1193-6AB00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS ET 200SP CM CAN

Overview



- For data exchange between an ET 200SP system and CAN Bus 2.0A/B or CANopen Manager or Slave (according to CiA 301 & 302)
- CANopen features:
 - Node / lifeguarding
 - Heartbeat
 - SYNC (producer / consumer)
- Integrated in TIA via HSP, TIA Portal V15.1 or higher
- CAN connection with push-in terminals
- Integrated CAN bus terminating resistor
- Up to 60 CAN nodes
- 128 receiver and 128 transmitter PDOs
- Galvanic isolation between the two networks
- Diagnostic interrupts
- Optionally with function block SIMATIC ECC CHAdEMO: Realization of digital communication as basis for conductible DC charging of electric vehicles in line with the CHAdEMO standard

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS ET 200SP CM CAN communications module

6AG1137-6EA00-2BA0

With conformal coating, -40...+60 °C

To connect ET 200SP with CAN or CANopen networks CAN 2.0A/B, CANopen Manager according to CiA301/302, CANopen Slave according to CiA301/302

Accessories

Suitable SIPLUS extreme BaseUnits, type A0

BU15-P16+A10+2D

6AG1193-6BP20-7DA0

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

BU15-P16+A0+2D

6AG1193-6BP00-7DA0

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

BU15-P16+A10+2B

6AG1193-6BP20-7BA0

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

BU15-P16+A0+2B

6AG1193-6BP00-7BA0

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See SIMATIC ET 200SP CM CAN, page 10/167

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS ET 200SP CM CAN

Technical specifications

Article number	6AG1137-6EA00-2BA0
Based on	6ES7137-6EA00-0BA0 SIPLUS ET 200SP CM CAN
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-40 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Article number	6AG1137-6EA00-2BA0
Based on	6ES7137-6EA00-0BA0 SIPLUS ET 200SP CM CAN
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS CM DP for ET 200SP CPU

Overview



- PROFIBUS DP device with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbps
- Expands the ET 200SP CPUs 1510SP-1 PN / 1512SP-1 PN by one PROFIBUS connection
- For communication with lower-level PROFIBUS devices at bandwidths of 9.6 kbps to 12 Mbps
- Communications services:
 - PROFIBUS DP
 - PG/OP communication
 - S7 communication:

This makes it possible to establish communication between the ET 200SP CPU and other devices, for example those from the SIMATIC S7-300/400/1500 range.
- Time synchronization
- Simple programming and configuration over PROFIBUS
- Cross-network PG communication using S7 routing
- Data record routing

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS CM DP for ET 200SP CPU

6AG1545-5DA00-2AB0

(Extended temperature range and exposure to environmental substances)

PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbps

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

see SIMATIC CM DP, page 10/173

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

I/O modules > Communication > SIPLUS CM DP for ET 200SP CPU

Technical specifications

Article number	6AG1545-5DA00-2AB0
Based on	6ES7545-5DA00-0AB0 SIPLUS ET 200SP CM DP
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Article number	6AG1545-5DA00-2AB0
Based on	6ES7545-5DA00-0AB0 SIPLUS ET 200SP CM DP
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-input modules

Overview



SIMATIC ET 200SP Safety F-DI video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6151017420001



Digital fail-safe input module:
F-DI 8x24VDC High Feature for BU type A0, color code CC01

Important features:

- 8-channel digital fail-safe input module for ET 200SP
- For fail-safe reading of sensor information (1 or 2 channels)
- Provides integrated discrepancy evaluation for 2-out-of-2 signals
- 8 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into Type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: white
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFI-safe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7 CPUs.

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Ordering data

Article No.

Article No.

Digital F-input modules

F-DI 8x24VDC High Feature,
BU type A0, color code CC01

6ES7136-6BA01-0CA0

Spare parts

E-coding elements, type F

5 units, for ET 200SP F-DI, F-DQ,
F-PM E, F-AI 4xI

6ES7193-6EF00-1AA0

Suitable BaseUnits

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with
16 process terminals (1 ... 16)
to the module and an additional
10 internally jumpered
AUX terminals (1 A to 10 A);
for starting a new load group
(max. 10 A)

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

6ES7193-6BP20-0DA0
6ES7193-6BP20-2DA0

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with
16 process terminals to the module;
for starting a new load group
(max. 10 A)

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

6ES7193-6BP00-0DA0
6ES7193-6BP00-2DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with
16 process terminals (1 ... 16)
to the module and an additional
10 internally jumpered
AUX terminals (1 A to 10 A);
for continuing the load group

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

6ES7193-6BP20-0BA0
6ES7193-6BP20-2BA0

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-input modules

Ordering data	Article No.	Article No.
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0	Equipment labeling plate 10 sheets of 16 labels 6ES7193-6LF30-0AW0
Accessories S7 Distributed Safety V5.4 SP5 Update 2 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used Floating license for 1 user, software and documentation on DVD; license key on USB flash drive Floating license for 1 user, software, documentation and license key for download ¹⁾ ; Email address required for delivery	6ES7833-1FC02-0YA5 6ES7833-1FC02-0YH5	Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer 6ES7193-6LR10-0AA0 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer 6ES7193-6LR10-0AG0 1000 labeling strips DIN A4, light gray, card, for inscription with laser printer 6ES7193-6LA10-0AA0 1000 labeling strips DIN A4, yellow, card, for inscription with laser printer 6ES7193-6LA10-0AG0
S7 Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YE5	BU cover For covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide 6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0
STEP 7 Safety Advanced V20 Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O Requirement: STEP 7 Professional V20 <u>Note:</u> As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case. Floating license for 1 user; license key on USB flash drive Floating license for 1 user; license key for download ¹⁾ ; Email address required for delivery	6ES7833-1FA24-0YA5 6ES7833-1FA24-0YH5	Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding 6ES7193-6SC20-1AM0
		Color-coded labels • Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units 6ES7193-6CP01-2MA0 • Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 50 units 6ES7193-6CP01-4MA0 • Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units 6ES7193-6CP71-2AA0 • Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units 6ES7193-6CP72-2AA0 • Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units 6ES7193-6CP73-2AA0

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-input modules

Technical specifications

Article number	6ES7136-6BA00-0CA0 ET 200SP, EI-Mod., F-DI 8x24VDC HF	6ES7136-6BA01-0CA0 ET 200SP, F-DI 8x24V DC HF
General information		
Product type designation	F-DI 8x24VDC HF	F-DI 8x24VDC HF
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V12	SIMATIC Safety V17 with HSP 0360 or higher
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	as 6ES7136-6BA00-0CA0
• PROFINET from GSD version/ GSD revision	V2.31	GSDML V2.35
Operating mode		
• DI		Yes
• Counter		Yes
Supply voltage		
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes
Encoder supply		
Number of outputs	8	8
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 1.8 A)	
Output current		
• up to 60 °C, max.	0.3 A	
24 V encoder supply		
• 24 V	Yes; min. L+ (-1.5 V)	Yes; min. L+ (-1.5 V)
• Short-circuit protection	Yes	Yes; Electronic (response threshold 0.7 A to 1.8 A)
• Output current, max.	800 mA; Total current of all encoders	
• Output current per channel, max.		300 mA
• Output current per module, max.		800 mA; Total current of all encoders
Digital inputs		
Number of digital inputs	8	8
Digital inputs, parameterizable		Yes
Source/sink input	Yes; P-reading	Yes; P-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes
Digital input functions, parameterizable		
• Counter		Yes
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-30 to +5 V	-30 to +5 V
• for signal "1"	+15 to +30 V	+15 to +30 V
Input current		
• for signal "1", typ.	3.7 mA	3.7 mA
Input delay (for rated value of input voltage)		
for standard inputs		
- parameterizable	Yes	Yes
for technological functions		
- parameterizable	No	No

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-input modules

Technical specifications

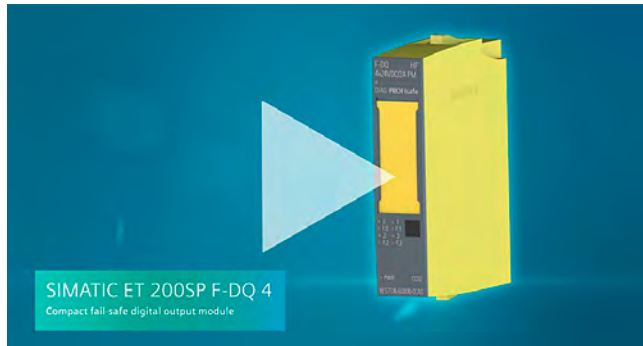
Article number	6ES7136-6BA00-0CA0 ET 200SP, EI-Mod., F-DI 8x24VDC HF	6ES7136-6BA01-0CA0 ET 200SP, F-DI 8x24V DC HF
Interrupts/diagnostics/ status information		
Diagnostics function	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
• Hardware interrupt	No	No
Diagnostics indication LED		
• RUN LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red LED	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Standards, approvals, certificates		
Suitable for safety functions	Yes	Yes
Highest safety class achievable in safety mode		
• Performance level according to ISO 13849-1	PLe	PLe
• SIL acc. to IEC 61508	SIL 3	SIL 3
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C
• vertical installation, max.	50 °C	50 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	4 000 m; Restrictions for installation altitudes > 2 000 m, see manual	4 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Dimensions		
Width	15 mm	15 mm
Height	73 mm	73 mm
Depth	58 mm	58 mm
Weights		
Weight, approx.	49 g	29 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

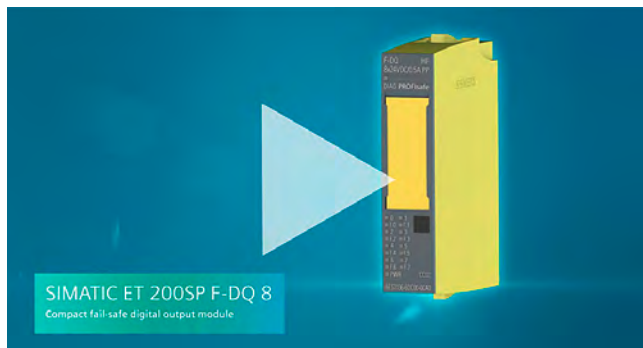
Fail-safe I/O modules > Digital F-output modules

Overview



SIMATIC ET 200SP Safety F-DQ 4 video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6154332510001



SIMATIC ET 200SP Safety F-DQ 8 video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6154329323001



Digital fail-safe output modules:

- F-DQ 4x24VDC/2A PM High Feature
- F-DQ 8x24VDC/0.5A PP High Feature

Important properties:

- 4 and 8-channel digital fail-safe output modules for the ET 200SP
- Fail-safe 2-channel activation (switching to P/M potential or switching to P/P potential) of actuators
- Actuators can be controlled up to 2 A or 0.5 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the DQ module type: black
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations
- They can be used with all fail-safe SIMATIC S7 CPUs

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-output modules

Ordering data	Article No.	Article No.
Digital F-output modules F-DQ 4X24 V DC/2A, 15 mm width, up to PL E (ISO 13849) up to SIL 3 (IEC 61508) F-DQ 4x24 V DC/2 AHF, 15 mm width, up to PL e (ISO 13849), up to SIL 3 (IEC 61508) F-DQ 8x24VDC/0.5A PP HF, 15 mm width, up to PL E (ISO 13849) up to SIL 3 (IEC 61508)	6ES7136-6DB00-0CA0 6ES7136-6DB01-0CA0 6ES7136-6DC00-0CA0	
Spare parts		
E-coding elements, type F 5 units, for ET 200SP F-DI, F-DQ, F-PM E, F-AI 4xI	6ES7193-6EF00-1AA0	
Suitable BaseUnits		
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0	
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0	
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0	
BU20-P12+A4+0B BU type B0; BaseUnit (dark) with 12 process terminals (1 ... 12) to the module and an additional 4 internally bridged AUX terminals (1 A to 4 A); for continuing the load group	6ES7193-6BP20-0BB0	
Accessories		
S7 Distributed Safety V5.4 SP5 Update 2 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used Floating license for 1 user, software and documentation on DVD; license key on USB flash drive Floating license for 1 user, software, documentation and license key for download ¹⁾ ; Email address required for delivery		6ES7833-1FC02-0YA5 6ES7833-1FC02-0YH5
S7 Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive		6ES7833-1FC02-0YE5
STEP 7 Safety Advanced V20 Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe I/O ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco Requirement: STEP 7 Professional V20 Note: As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case. Floating license for 1 user; license key on USB flash drive Floating license for 1 user, license key for download ¹⁾ ; Email address required for delivery		6ES7833-1FA24-0YA5 6ES7833-1FA24-0YH5

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-output modules

Ordering data	Article No.	Article No.
Equipment labeling plate 10 sheets of 16 labels	6ES7193-6LF30-0AW0	Color-coded labels - Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units - Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 50 units - Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units - Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units - Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units
Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0	
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0	
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	6ES7193-6LA10-0AA0	
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	6ES7193-6LA10-0AG0	
BU cover For covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0	6ES7193-6CP02-2MA0 6ES7193-6CP02-4MA0 6ES7193-6CP71-2AA0 6ES7193-6CP72-2AA0 6ES7193-6CP73-2AA0
Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0	

Technical specifications

Article number	6ES7136-6DB00-0CA0 ET 200SP, F-DQ 4x24VDC/2A PM HF	6ES7136-6DB01-0CA0 ET 200SP, F-DQ 4x24VDC/2A PM HF	6ES7136-6DC00-0CA0 ET 200SP, F-DQ 8x24VDC/0.5A PP HF
General information			
Product type designation	F-DQ 4x24VDC/2A PM HF	F-DQ 4x 24 V DC/2 A PM HF	F-DQ 8x24 V DC/0.5 A PP HF
Engineering with			
• STEP 7 TIA Portal configurable/ integrated from version	V12		V14 SP1 with HSP 202
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -		V5.5 SP4 HF5
• PROFINET from GSD version/ GSD revision	V2.31	GSDML V2.45	V2.31
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Digital outputs			
Type of digital output	Transistor	Transistor	Transistor
Number of digital outputs	4	4	8
Digital outputs, parameterizable	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes
Open-circuit detection	Yes	Yes	No
Overload protection	Yes	Yes	
Limitation of inductive shutdown voltage to	Typ. -2x 47 V	sourcing output: -39 V DC in relation to 2M, sinking output: +47 V DC in relation to 2M	Typ. -39 V
Controlling a digital input	Yes; digital output, according to IEC 61131-2, type 2	Yes; digital output, according to IEC 61131-2, type 2	Yes; digital output, according to IEC 61131-2, type 0.5
Switching capacity of the outputs			
• with resistive load, max.	2 A	2 A	0.5 A
• on lamp load, max.	10 W	10 W	2 W
Load resistance range			
• lower limit	12 Ω	12 Ω	48 Ω
• upper limit	2 000 Ω	2 000 Ω	12 000 Ω

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-output modules

Technical specifications

Article number	6ES7136-6DB00-0CA0 ET 200SP, F-DQ 4x24VDC/2A PM HF	6ES7136-6DB01-0CA0 ET 200SP, F-DQ 4x24VDC/2A PM HF	6ES7136-6DC00-0CA0 ET 200SP, F-DQ 8x24VDC/0.5A PP HF
Output voltage • for signal "1", min.	24 V; L+ (-0.5 V)	24 V; L+ (-0.5 V)	24 V; L+ (-0.5 V)
Output current • for signal "1" rated value • for signal "0" residual current, max.	2 A 0.5 mA	2 A 0.5 mA	0.5 A 0.5 mA
Switching frequency • with resistive load, max. • with inductive load, max. • with capacitive load, max. • on lamp load, max.	30 Hz; Symmetrical 0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical 10 Hz; Symmetrical	30 Hz; Symmetrical 0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical 30 Hz; observe chapter "Switching of capacitive loads" in the manual 10 Hz; Symmetrical	30 Hz; Symmetrical 0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical 2 Hz; Symmetrical 10 Hz; Symmetrical
Total current of the outputs • Current per channel, max. • Current per module, max.	2 A; note derating data in the manual 6 A; note derating data in the manual	2 A; note derating data in the manual 6 A; note derating data in the manual	0.5 A; note derating data in the manual 3 A; note derating data in the manual
Total current of the outputs (per module) horizontal installation - up to 40 °C, max. - up to 50 °C, max. - up to 60 °C, max. vertical installation - up to 50 °C, max.			3 A 2.5 A 2 A 2 A
Interrupts/diagnostics/status information			
Diagnostics function	Yes	Yes	Yes
Substitute values connectable	No	No	No
Alarms • Diagnostic alarm • Hardware interrupt	Yes No	Yes No	Yes
Diagnostics indication LED • RUN LED • ERROR LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • for module diagnostics	Yes; green LED Yes; red LED Yes; green PWR LED Yes; green LED Yes; red LED Yes; green/red DIAG LED	Yes; green LED Yes; red LED Yes; green PWR LED Yes; green LED Yes; red LED Yes; green/red DIAG LED	Yes; green LED Yes; red LED Yes; green PWR LED Yes; green LED Yes; red LED Yes; green/red DIAG LED
Potential separation Potential separation channels • between the channels and backplane bus	Yes	Yes	Yes
Standards, approvals, certificates Suitable for safety functions	Yes	Yes	Yes
Highest safety class achievable in safety mode • Performance level according to ISO 13849-1 • SIL acc. to IEC 61508	PLe SIL 3	PLe SIL 3	PLe SIL 3
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	0 °C 60 °C 0 °C 50 °C	0 °C 60 °C 0 °C 50 °C	0 °C 60 °C 0 °C 50 °C
Altitude during operation relating to sea level • Installation altitude above sea level, max.	4 000 m; Restrictions for installation altitudes > 2 000 m, see manual	4 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	4 000 m; with derating

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-output modules**Technical specifications**

Article number	6ES7136-6DB00-0CA0 ET 200SP, F-DQ 4x24VDC/2A PM HF	6ES7136-6DB01-0CA0 ET 200SP, F-DQ 4x24VDC/2A PM HF	6ES7136-6DC00-0CA0 ET 200SP, F-DQ 8x24VDC/0.5A PP HF
Dimensions			
Width	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm
Weights			
Weight, approx.	57 g	30 g	48 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-output module relay

Overview



The 1 F-RQ digital F electronic module relay DC 24VDC/24.230VAC/5 A has the following characteristics:

- 1 relay output (2 NO contacts)
- Total output current 5 A
- Rated load voltage 24 V DC and 24 ... 230 V AC
- The control circuit of the two safety relays must be routed from the outside to the respective terminals

The attainable safety integrity level is SIL 3 (IEC 61508) when the control of the F-RQ module is implemented via a fail-safe output (e.g. ET 200SP 4F-DQ 24 V DC/2 A PROFIsafe).

Ordering data

Article No.

Article No.

1 F-RQ digital F-output module relay

BU type F0, relay output (2 NO contacts), total output current 5 A, load voltages 24 V DC and 24 ... 230 V AC; can be used up to SIL3/Cat. 4/PL e if controlled via F-DQ

6ES7136-6RA00-0BF0

Suitable BaseUnits

BU20-P8+A4+0B

BU type F0; BaseUnit (dark) with 8 process terminals to the module and 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group

6ES7193-6BP20-0BF0

Accessories

S7 Distributed Safety V5.4 SP5 Update 2 programming tool

Task:
Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:
Windows 7 SP1 (64-bit),
Windows 10 Professional/Enterprise (64-bit),
Windows Server 2008 R2 SP1 (64-bit),
Windows Server 2012 R2 (64-bit),
Windows Server 2016 (64-bit);
STEP 7 from V5.5 SP1;
Please also note the operating systems that have been released for the STEP 7 version used

Floating license for 1 user, software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YA5

Floating license for 1 user, software, documentation and license key for download¹⁾; Email address required for delivery

6ES7833-1FC02-0YH5

S7 Distributed Safety upgrade

From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YE5

STEP 7 Safety Advanced V20

Task:
Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe I/O ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco

Requirement:
STEP 7 Professional V20

Note:

As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case.

Floating license for 1 user; license key on USB flash drive

6ES7833-1FA24-0YA5

Floating license for 1 user, license key for download¹⁾; Email address required for delivery

6ES7833-1FA24-0YH5

Equipment labeling plate

10 sheets of 16 labels

6ES7193-6LF30-0AW0

Labeling strips

500 labeling strips on roll, light gray

6ES7193-6LR10-0AA0

500 labeling strips on roll, yellow

6ES7193-6LR10-0AG0

1000 labeling strips DIN A4, light gray

6ES7193-6LA10-0AA0

1000 labeling strips DIN A4, yellow

6ES7193-6LA10-0AG0

Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Digital F-output module relay

Ordering data

BU cover

For covering empty slots (gaps);
5 units
• 20 mm wide

Shield connection

5 shield supports including support
foot and shield terminals each for
plugging onto BaseUnits with
automatic low-impedance
connection to functional grounding

Color-coded labels

• Color code CC42, module-specific;
for BaseUnit type F0; 10 units

Article No.

6ES7133-6CV15-1AM0

6ES7193-6SC20-1AM0

6ES7193-6CP42-2MB0

Article No.

Mechanical coding elements

For automatic coding of
I/O modules; spare part.
20 units

Type A

Type B

Type C

Type D

6ES7193-6KA00-3AA0

6ES7193-6KB00-3AA0

6ES7193-6KC00-3AA0

6ES7193-6KD00-3AA0

Technical specifications

Article number	6ES7136-6RA00-0BF0 ET 200SP, F-RQ 1x24VDC/24...230VAC/5A ST
General information	
Product type designation	F-RQ 24 ... 48VDC/24 ... 230VAC/5A ST
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13
• STEP 7 configurable/ integrated from version	V5.5 SP4 and higher
• PROFINET from GSD version/ GSD revision	V2.31
Supply voltage	
Rated value (DC)	24 V; Coil voltage
Digital outputs	
Type of digital output	Relays
Number of digital outputs	1
Limitation of inductive shutdown voltage to	No
Controlling a digital input	Yes
Switching capacity of the outputs	
• with resistive load, max.	5 A
• on lamp load, max.	25 W
Switching frequency	
• with resistive load, max.	2 Hz
• with inductive load, max.	0.1 Hz; See data in manual
• with inductive load (acc. to IEC 60947-5-1, DC13), max.	0.1 Hz
• with inductive load (acc. to IEC 60947-5-1, AC15), max.	2 Hz
Total current of the outputs (per module)	
horizontal installation	
- up to 40 °C, max.	5 A; note derating data in the manual
- up to 50 °C, max.	4 A; note derating data in the manual
- up to 60 °C, max.	3 A; note derating data in the manual
vertical installation	
- up to 50 °C, max.	3 A; note derating data in the manual
Relay outputs	
• Number of relay outputs	1; 2 NO contacts
• Rated supply voltage of relay coil L+ (DC)	24 V
• Current consumption of relays (coil current of all relays), max.	70 mA
• external protection for relay outputs	yes; 6 A, see data in manual
• Relay approved acc. to UL 508	Yes; Pilot Duty B300, R300

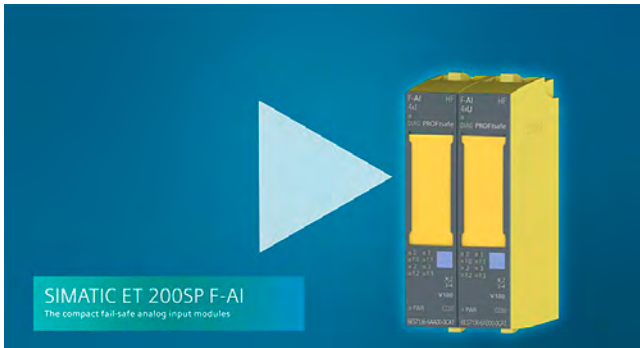
Article number	6ES7136-6RA00-0BF0 ET 200SP, F-RQ 1x24VDC/24...230VAC/5A ST
Switching capacity of contacts	
- with inductive load, max.	see additional description in the manual
- with resistive load, max.	see additional description in the manual
- Thermal continuous current, max.	5 A
- Switching current, min.	1 mA
- Switching current after exceeding 300 mA, min.	10 mA
- Switching current after exceeding 300 mA, max.	5 A
- Rated switching voltage (DC)	24 V
- Rated switching voltage (AC)	230 V
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Diagnostics indication LED	
• RUN LED	Yes; green/red DIAG LED
• Channel status display	Yes; green LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	56 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

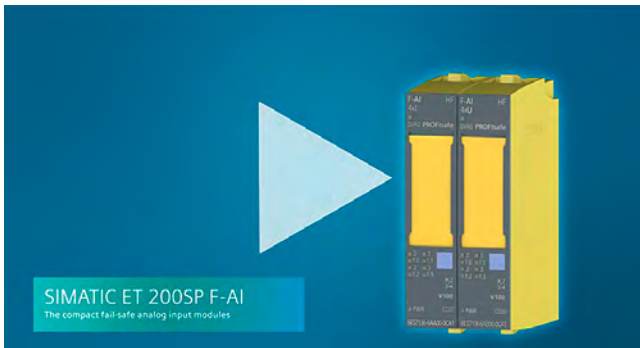
Fail-safe I/O modules > Analog F-input modules

Overview



SIMATIC ET 200SP Safety F-AI-4xU video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6204918698001



SIMATIC ET 200SP Safety F-AI-4xI video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6204919583001



Analog fail-safe input modules:

- F-AI 4xI 0(4)..20 mA 2/4-wire High Feature for BU types A0 and A1, color code CC00
- F-AI 4xU 0..10 V HF, BU type A0, A1, color code CC00

Important features:

- 4-channel analog fail-safe digital inputs for ET 200SP
- 4 analog inputs with galvanic isolation between channels and backplane bus
- Measuring ranges: (0)4...20 mA and 0..10 V
- Possibility of connecting current and voltage sensors for measuring temperature, pressure, flow, level, distance measurement, etc.
- Short-circuit-proof power supply for analog sensors
- Resolution: 16 bits including sign
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged onto type A0 and A1 BaseUnits (BU)
- LED display for error, operation, supply voltage and status
- Interference frequency suppression, smoothing
- Diagnostics: wire break, short-circuit, high/low limit violation
- Firmware update
- Identification data I&M
- Value status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: white
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7 CPUs.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Analog F-input modules

Ordering data	Article No.		Article No.
Analog F-input module		BU15-P16+A0+12B/T	6ES7193-6BP40-0BA1
F-AI 4xI 0(4) ... 20 mA 2/4-wire High Feature, BU type A0, A1, color code CC00	6ES7136-6AA00-0CA1	BU type A1; BaseUnit (dark) with 16 process terminals (1 ... 16) to the module and 2x5 internally jumped additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	
F-AI 4xU 0...10 V High Feature, BU type A0, A1, color code CC00	6ES7136-6AB00-0CA1	BU15-P16+A0+2B/T	6ES7193-6BP00-0BA1
Spare parts		BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	
E-coding elements, type F	6ES7193-6EF00-1AA0	Accessories	
5 units, for ET 200SP F-DI, F-DQ, F-PM E, F-AI 4xI		STEP 7 Safety Advanced V20	
5x e-coding elements, type H	6ES7193-6EH00-1AA0	Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe I/O ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco Requirement: STEP 7 Professional V20	
5 units, for ET 200SP F-AI 4xU, F-TM Count, F-CM AS-i		Note: As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case.	
Suitable BaseUnits		Floating license for 1 user; license key on USB flash drive	6ES7833-1FA24-0YA5
BU15-P16+A10+2D		Floating license for 1 user, license key for download ¹⁾ ; Email address required for delivery	6ES7833-1FA24-0YH5
BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	Equipment labeling plate	6ES7193-6LF30-0AW0
• Pack of 1 unit		10 sheets of 16 labels	
• Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		Labeling strips	
BU15-P16+A0+2D		500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0	500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0
• Pack of 1 unit		1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	6ES7193-6LA10-0AA0
• Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	6ES7193-6LA10-0AG0
BU15-P16+A10+2B		BU cover	
BU type A0; BaseUnit (dark) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0	For covering empty slots (gaps); 5 units	6ES7133-6CV15-1AM0
• Pack of 1 unit		• 15 mm wide	
• Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.		Shield connection	6ES7193-6SC20-1AM0
BU15-P16+A0+2B		5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	
BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0		
• Pack of 1 unit			
• Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.			
BU15-P16+A0+12D/T	6ES7193-6BP40-0DA1		
BU type A1; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)			
BU15-P16+A0+2D/T	6ES7193-6BP00-0DA1		
BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)			

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > Analog F-input modules

Ordering data

Article No.

Article No.

Color-coded labels

- Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); A1; 10 units

6ES7193-6CP00-2MA0

- Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); A1; 50 units

6ES7193-6CP00-4MA0

Technical specifications

Article number	6ES7136-6AA00-0CA1 ET 200SP, F-AI 4XI 0(4)..20mA HF	6ES7136-6AB00-0CA1 ET 200SP, F-AI 4xU 0..10V HF
General information		
Product type designation	F-AI 4xI 0(4)..20mA 2-/4-wire HF	F-AI 4xU 0..10V HF
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V15 with HSP 203	V16 with HSP 308
Operating mode		
• cyclic measurement		Yes
• Oversampling		No
• MSI		No
Supply voltage		
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes
Analog inputs		
Number of analog inputs	4	4
• For current measurement	4	
• For voltage measurement		4
permissible input voltage for voltage input (destruction limit), max.		36 V
permissible input current for current input (destruction limit), max.	35 mA	
Input ranges (rated values), voltages		
• 0 to +10 V		Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
Cable length		
• shielded, max.	1 000 m	200 m
Analog value generation for the inputs		
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes
• Integration time (ms)	20 / 16,667	20 / 16,667
• Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz	50 / 60 Hz
Smoothing of measured values		
• Number of smoothing levels	7	7
• parameterizable	Yes	Yes
• Average value filter		Yes
Encoder		
Connection of signal encoders		
• for voltage measurement		Yes
• for current measurement as 2-wire transducer	Yes	
- Burden of 2-wire transmitter, max.	650 Ω	
• for current measurement as 4-wire transducer	Yes	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > Analog F-input modules

Technical specifications

Article number	6ES7136-6AA00-0CA1 ET 200SP, F-AI 4XI 0(4)..20mA HF	6ES7136-6AB00-0CA1 ET 200SP, F-AI 4xU 0..10V HF
Errors/accuracies		
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)		0.1 %
• Current, relative to input range, (+/-)	0.1 %	
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 = \text{interference frequency}$		
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB
• Common mode voltage, max.		10 V
• Common mode interference, min.	70 dB	70 dB
Interrupts/diagnostics/ status information		
Diagnostics function	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
• Limit value alarm	No	No
Diagnoses		
• Monitoring the supply voltage	Yes	Yes
• Wire-break	Yes	Yes
• Short-circuit	Yes	
Diagnostics indication LED		
• RUN LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red LED	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• Performance level according to ISO 13849-1	PLe	PLe
• SIL acc. to IEC 61508	SIL 3	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)		
- Low demand mode: PFDavg in accordance with SIL3	< 5.00E-05	< 5.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h	< 1.00E-09 1/h
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C
• vertical installation, max.	50 °C	50 °C
Dimensions		
Width	15 mm	15 mm
Height	73 mm	73 mm
Depth	58 mm	58 mm
Weights		
Weight, approx.	48 g	48 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Special fail-safe modules

Overview



SIMATIC ET 200SP Safety F-PM-E video
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6154262749001



Digital fail-safe power module:
F-PM-E PPM 24 VDC/8A for BU type C0,
color code CC52

Important properties:

- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Safety-related shutdown of output modules within the potential group of the F-PM-E
- Two fail-safe digital inputs, for reading of sensor information (1 or 2 channels)
- One fail-safe digital output onboard (switching to PPM potential, up to 2 A, up to SIL 3/PL e)
- Fail-safe digital output and potential supply switching to PP or PM potential can be parameterized
- Parameterizable onboard evaluation of the fail-safe inputs for control of the fail-safe digital outputs and of the potential group
- Digital standard output modules can be shut down up to PL d (ISO 13849) and SIL 2 (IEC61508) (up to 8 A).
- Can be plugged into type C0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: white
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional module-specific color coding of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7 CPUs.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Special fail-safe modules

Ordering data	Article No.		Article No.
F-PM-E 24 VDC/8A PPM Standard digital F power module BU type C0, color code CC52. 2 inputs, 1 output, SIL 3/Cat. 4/PL e	6ES7136-6PA00-0BC0	BU cover For covering empty slots (gaps); 5 units • 20 mm wide	6ES7133-6CV20-1AM0
Spare parts		Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0
E-coding elements, type F 5 units, for ET 200SP F-DI, F-DQ, F-PM E, F-AI 4xI	6ES7193-6EF00-1AA0	Color-coded labels • Color code CC52, module-specific, for 8 push-in terminals; 10 units	6ES7193-6CP52-2MC0
Suitable BaseUnits		Mechanical coding elements For automatic coding of I/O modules; spare part. 20 units	
Type C0 BaseUnits		Type A	6ES7193-6KA00-3AA0
BU20-P6+A2+4D BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and 2 AUX terminals; new load group	6ES7193-6BP20-0DC0	Type B	6ES7193-6KB00-3AA0
Accessories		Type C	6ES7193-6KC00-3AA0
Equipment labeling plate 10 sheets of 16 labels	6ES7193-6LF30-0AW0	Type D	6ES7193-6KD00-3AA0
Labeling strips 1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	6ES7193-6LA10-0AG0		

Technical specifications

Article number	6ES7136-6PA00-0BC0 ET 200SP, F-PM-E PPM, 24V DC
General information	
Product type designation	F-PM-E 24 V DC/8 A PPM ST
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V12
• STEP 7 configurable/integrated from version	V5.5 SP3 / -
• PROFINET from GSD version/GSD revision	V2.31
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	2
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 2.1 A)
Output current	
• up to 60 °C, max.	0.3 A
24 V encoder supply	
• 24 V	Yes; min. L+ (-1.5 V)
• Short-circuit protection	Yes
• Output current, max.	600 mA; Total current of all encoders
Digital inputs	
Number of digital inputs	2
Source/sink input	Yes; P-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes

Article number	6ES7136-6PA00-0BC0 ET 200SP, F-PM-E PPM, 24V DC
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+15 to +30 V
Input current	
• for signal "1", typ.	3.7 mA
Input delay (for rated value of input voltage) for standard inputs	
- parameterizable	Yes
for technological functions	
- parameterizable	No
Digital outputs	
Number of digital outputs	1
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes
Open-circuit detection	Yes
Overload protection	Yes
Limitation of inductive shutdown voltage to	Max. -1.5 V
Switching capacity of the outputs	
• with resistive load, max.	8 A
• on lamp load, max.	100 W
Load resistance range	
• lower limit	3 Ω
• upper limit	2 000 Ω

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Special fail-safe modules

Technical specifications

Article number	6ES7136-6PA00-0BC0 ET 200SP, F-PM-E PPM, 24V DC
Output voltage • for signal "1", min.	24 V; L+ (-0.5 V)
Output current • for signal "1" rated value • for signal "0" residual current, max.	8 A 1.5 mA; PP-switching: max. 1.5 mA; PM-switching: max. 1 mA
Switching frequency • with resistive load, max. • with inductive load, max. • on lamp load, max.	10 Hz; Symmetrical 0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical 4 Hz; Symmetrical
Total current of the outputs • Current per channel, max. • Current per module, max.	8 A; note derating data in the manual 8 A; note derating data in the manual
Cable length • shielded, max. • unshielded, max.	1 000 m 500 m
Interrupts/diagnostics/ status information	
Diagnostics function	Yes; See Chapter "Alarms/diagnostic messages" in the manual
Substitute values connectable	No
Alarms • Diagnostic alarm • Hardware interrupt	Yes No
Diagnostics indication LED • RUN LED • ERROR LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • for module diagnostics	Yes; green LED Yes; red LED Yes; green PWR LED Yes; green LED Yes; red LED Yes; green/red DIAG LED

Article number	6ES7136-6PA00-0BC0 ET 200SP, F-PM-E PPM, 24V DC
Potential separation	
Potential separation channels • between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)	
- Low demand mode: PFDavg in accordance with SIL2	< 2.00E-04
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL2	< 1.00E-08 1/h
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	70 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Fail-safe technology modules

Overview



Fail-safe technology module:
F-TM Count, 1x1Vpp sin/cos High Feature for BU type A0,
color code CC00

Important properties:

- Technological, fail-safe counter module for ET 200SP
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- 1x sin/cos interface for recording sin/cos differential encoder signals A, A/, B, B/, N and N/
- Option to connect sin/cos differential encoders
- Short-circuit-proof 5 V DC encoder supply
- High-speed count input up to 200 kHz
- Counting range: 32-bit (-2.147.483.648 to +2.147.483.647)
- SW gate for counter control

- Measured values:
 - Speed
 - Frequency
 - Period duration
- Integrated safety functions:
 - SOS (Safe Operation Stop)
 - SLS (Safely Limited Speed)
 - SDI (Safe Direction)
- Can be plugged onto type A0 BaseUnits (BU)
- LED display for error, operation, supply voltage and status
- Monitoring of encoder signals for wire break, short-circuit and signal strength
- Firmware update
- Identification data I&M
- Value status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories:
 - Labeling strips
 - Equipment labeling plate
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFINET in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7 CPUs.

Ordering data

Article No.

**F-TM Count
fail-safe technology module**
1 x 1Vpp sin/cos High Feature,
BU type A0, color code CC00

6ES7136-6CB00-0CA0

Spare parts

E-coding elements, type H

5 units, for ET 200SP F-AI 4xU,
F-TM Count, F-CM AS-i

6ES7193-6EH00-1AA0

Suitable BaseUnits

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with
16 process terminals (1 ... 16)
to the module and an additional
10 internally jumpered
AUX terminals (1 A to 10 A);
for starting a new load group
(max. 10 A)

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

**6ES7193-6BP20-0DA0
6ES7193-6BP20-2DA0**

Article No.

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with
16 process terminals to the module;
for starting a new load group
(max. 10 A)

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

**6ES7193-6BP00-0DA0
6ES7193-6BP00-2DA0**

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with
16 process terminals (1 ... 16)
to the module and an additional
10 internally jumpered
AUX terminals (1 A to 10 A);
for continuing the load group

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

**6ES7193-6BP20-0BA0
6ES7193-6BP20-2BA0**

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with
16 process terminals to the module;
for continuing the load group

- Pack of 1 unit
- Pack of 10 units;
to order a pack, please order this
Article No. with an order
quantity of 10.

**6ES7193-6BP00-0BA0
6ES7193-6BP00-2BA0**

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Fail-safe technology modules

Technical specifications

Article number	6ES7136-6CB00-0CA0 ET 200SP, F-TM Count 1x1Vpp sin/cos HF
General information	
Product type designation	F-TM Count 1x1Vpp sin/cos HF
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	Step 7 V17 or higher: use GSDML for prior versions
Supply voltage	
Rated value (DC)	24 V
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Encoder supply	
5 V encoder supply	
• 5 V	Yes; 5.1 V $\pm 3.5\%$
• Short-circuit protection	Yes; Electronic overload protection; no protection on applying a normal or counter voltage.
• Output current, max.	300 mA
Digital inputs	
Number of digital inputs	1; (counter input)
Digital inputs, parameterizable	Yes
Digital input functions, parameterizable	
• Gate start/stop	Yes
• Counter for incremental encoder	Yes
- Number, max.	1
Input voltage	
• Type of input voltage	sin/cos 1 Vpp
Input delay (for rated value of input voltage)	
• Minimum pulse width for program reactions	2.5 μ s for parameterization "none"
for technological functions	
- parameterizable	Yes
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes; up to 200 kHz depending on cable type and length
Encoder signals, incremental encoder (symmetrical)	
• Input voltage	1 Vpp, centered at 2.5 V offset
• Input frequency, max.	200 kHz
• Counting frequency, max.	800 kHz; with quadruple evaluation
• Cable length, shielded, max.	150 m
• Incremental encoder with A/B tracks, 90° phase offset	Yes; sin/cos
• Incremental encoder with A/B tracks, 90° phase offset and zero track	Yes; sin/cos/zero

Article number	6ES7136-6CB00-0CA0 ET 200SP, F-TM Count 1x1Vpp sin/cos HF
Interrupts/diagnostics/ status information	
Diagnostics function	Yes; see chapter "Diagnostic Messages" in the manual
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED
Integrated Functions	
Counter	Yes
• Number of counters	1
• Counting frequency, max.	800 kHz; with quadruple evaluation
Safety monitoring functions	
• Safe Operating Stop (SOS)	Yes
• Safely-Limited Speed (SLS)	Yes
• Safe Direction (SDI)	Yes
• Safe Speed Monitor (SSM)	Yes
Counting functions	
• Continuous counting	Yes
• Counter response parameterizable	Yes
• Software gate	Yes
• Counting range, parameterizable	Yes
Measuring functions	
Measuring range	
- Frequency measurement, min.	0.04 Hz
- Frequency measurement, max.	800 kHz; with quadruple evaluation
- Cycle duration measurement, min.	1 μ s
- Cycle duration measurement, max.	25 s
- Velocity measurement, min.	0 (speed in configured units per selected time basis - speed*1 000)
- Velocity measurement, max.	2 147 483 (speed in configured units per selected time basis - speed*1 000)

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > Fail-safe technology modules

Technical specifications

Article number	6ES7136-6CB00-0CA0 ET 200SP, F-TM Count 1x1Vpp sin/cos HF
Accuracy	
- Frequency measurement	up to 100 ppm; depending on measuring interval and signal evaluation; at low frequency external noise may have an effect on accuracy (reference the graph in 2.2.3)
- Cycle duration measurement	up to 100 ppm; depending on measuring interval and signal evaluation; at low frequency external noise may have an effect on accuracy (reference the graph in 2.2.3)
- Velocity measurement	up to 100 ppm; depending on measuring interval and signal evaluation; at low frequency external noise may have an effect on accuracy (reference the graph in 2.2.3)
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	Cat. 4, PLe
• SIL acc. to IEC 61508	SIL 3

Article number	6ES7136-6CB00-0CA0 ET 200SP, F-TM Count 1x1Vpp sin/cos HF
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	55 °C
Altitude during operation relating to sea level	
• Ambient air temperature-barometric pressure-altitude	On request: Installation altitudes greater than 2 000 m
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	42 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS digital F-input modules

Overview



Digital fail-safe input module:
F-DI 8x24 V DC High Feature for BU type A0, color code CC01

Important properties:

- 8-channel digital fail-safe input module for the ET 200SP
- For fail-safe reading of sensor information (1 or 2 channels)
- Provides integral discrepancy evaluation for 2-out-of-2 signals
- 8 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: white
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional module-specific color coding of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7 CPUs.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS digital F-input modules

(Extended temperature range and exposure to environmental substances)

F-DI 8x24VDC High Feature,
BU type A0, color code CC01

-40...+60 °C

6AG1136-6BA01-2CA0

Suitable BaseUnits

BU15-P16+A0+2D

6AG1193-6BP00-7DA0

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

BU15-P16+A0+2B

6AG1193-6BP00-7BA0

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

BU15-P16+A10+2D

6AG1193-6BP20-7DA0

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

BU15-P16+A10+2B

6AG1193-6BP20-7BA0

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See SIMATIC ET 200SP, Digital F-input modules, page 10/212

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS digital F-input modules

Technical specifications

Article number	6AG1136-6BA01-2CA0
Based on	6ES7136-6BA01-0CA0 SIPLUS ET 200SP F-DI 4/8x24VDC HF
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-40 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	4 000 m
• Ambient air temperature-barometric pressure-altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109771992
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on land craft, rail vehicles and special-purpose vehicles	
- Against mechanical environmental conditions acc. to EN 60721-3-5	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
- against mechanical environmental conditions in agriculture acc. to ISO 15003	Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Article number	6AG1136-6BA01-2CA0
Based on	6ES7136-6BA01-0CA0 SIPLUS ET 200SP F-DI 4/8x24VDC HF
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS digital F-output modules

Overview



Digital fail-safe output module:
F-DQ 4x24VDC High Feature, BU type A0, color code CC01

Important properties:

- 4-channel digital fail-safe output module for the ET 200SP
- Fail-safe 2-channel activation (switching to P/M potential) of actuators
- Actuators can be controlled up to 2 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: white
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFI-safe in both PROFIBUS and PROFINET configurations
- They can be used with all fail-safe SIMATIC S7 CPUs

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the corresponding standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS digital F-output modules

(Extended temperature range and exposure to environmental substances)

F-DQ 4x24VDC High Feature, BU type A0, color code CC01

6AG1136-6DB00-2CA0

F-DQ 8x24VDC High Feature, switching to PP potential, BU type A0, color code CC01

6AG1136-6DC00-2CA0

Suitable BaseUnits

BU15-P16+A0+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A0+2B

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

6AG1193-6BP00-7BA0

BU15-P16+A10+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

6AG1193-6BP20-7DA0

BU15-P16+A10+2B

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

6AG1193-6BP20-7BA0

BU20-P12+A4+0B

(Extended temperature range and exposure to environmental substances)

BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally bridged AUX terminals (1 A to 4 A); for continuing the load group; 1 unit

6AG1193-6BP20-7BB0

Accessories

SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm

6AG1193-6AA00-0AA0

SIPLUS Mounting Kit ET 200SP with maximum width of 19"

6AG1193-6AB00-0AA0

Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.

Other accessories

See SIMATIC ET 200SP, Digital F-output modules, page 10/216

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS digital F-output modules

Technical specifications

Article number	6AG1136-6DB00-2CA0	6AG1136-6DC00-2CA0
Based on	6ES7136-6DB00-0CA0 SIPLUS ET 200SP F-DQ 4x24VDC/2A PM HF	6ES7136-6DC00-0CA0 SIPLUS ET 200SP F-DQ 8x24VDC/0.5A PP HF
Ambient conditions		
Ambient temperature during operation		
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-30 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module -30 °C; = Tmin 50 °C; = Tmax	-30 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module -30 °C; = Tmin 50 °C; = Tmax
Altitude during operation relating to sea level		
- Installation altitude above sea level, max. - Ambient air temperature-barometric pressure-altitude	4 000 m Restrictions for installation altitudes > 2 000 m, see entry ID: 109771992	4 000 m Restrictions for installation altitudes > 2 000 m, see entry ID: 109771992
Relative humidity		
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance		
Coolants and lubricants		
Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3 - Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on land craft, rail vehicles and special-purpose vehicles		
- Against mechanical environmental conditions acc. to EN 60721-3-5 - against mechanical environmental conditions in agriculture acc. to ISO 15003	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0) Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0) Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6 - Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS digital F-output modules

Technical specifications

Article number	6AG1136-6DB00-2CA0	6AG1136-6DC00-2CA0
Based on	6ES7136-6DB00-0CA0 SIPLUS ET 200SP F-DQ 4x24VDC/2A PM HF	6ES7136-6DC00-0CA0 SIPLUS ET 200SP F-DQ 8x24VDC/0.5A PP HF
Usage in industrial process technology		
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS digital F-output module relay

Overview



The 1 F-RQ digital F electronic module relay DC 24VDC/24.230VAC/5 A has the following characteristics:

- 1 relay output (2 NO contacts)
- Total output current 5 A
- Rated load voltage 24 V DC and 24 ... 230 V AC
- The control circuit of the two safety relays must be routed from the outside to the respective terminals

The attainable safety integrity level is SIL 3 (IEC 61508) when the control of the F-RQ module is implemented via a fail-safe output (e.g. ET 200SP 4F-DQ 24 V DC/2 A PROFIsafe).

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

SIPLUS 1 F-RQ digital F-output module relay

(Extended temperature range and exposure to environmental substances)

BU type F0,
relay output (2 NO contacts),
total output current 5 A,
load voltages 24 V DC and
24 ... 230 V AC; can be used up to
SIL3/Category 4/PL e if controlled
via F-DD

Suitable BaseUnits

BU20-P8+A4+0B

(Extended temperature range and exposure to environmental substances)

BU type F0; BaseUnit (dark) with 8 process terminals to the module and an additional 4 internally bridged AUX terminals (1 A to 4 A); for continuing the load group

Accessories

Article No.

6AG1136-6RA00-2BF0

6AG1193-6BP20-2BF0

See SIMATIC ET 200SP,
Digital F-output module
relay, page 10/220

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS digital F-output module relay

Technical specifications

Article number	6AG1136-6RA00-2BF0
Based on	6ES7136-6RA00-0BF0 SIPLUS ET 200SP F-RQ 24VDC/24-230VAC/5A
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-30 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *

Article number	6AG1136-6RA00-2BF0
Based on	6ES7136-6RA00-0BF0 SIPLUS ET 200SP F-RQ 24VDC/24-230VAC/5A
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS analog F-input modules

Overview



Analog fail-safe input module:
SIPLUS F-AI 4xI 0(4) ... 20 mA 2/4-wire High Feature
for BU type A0 and A1, color code CC00

F-AI 4xU 0..10 V High Feature, BU type A0, A1, color code CC00

Important properties:

- 4 analog inputs with galvanic isolation between channels and backplane bus (up to SIL 3/Cat. 4/PL d)
- Short-circuit proof power supply of 2 or 4-wire transducers
- Measuring ranges: 0 ... 20 mA and 4 ... 20 mA
- Resolution: 16 bits including sign
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged onto type A0 and A1 BaseUnits (BU)

- LED display for error, operation, supply voltage and status
- Interference frequency suppression, smoothing
- Diagnostics: wire break, short-circuit, high/low limit violation
- Firmware update
- Identification data I&M
- Value status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: white
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional module-specific color coding of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7 CPUs.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

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Ordering data

Article No.

Article No.

SIPLUS analog F-input module

(Extended temperature range and exposure to environmental substances)

F-AI 4xI 0(4) ... 20 mA 2/4-wire High Feature, BU type A0, A1, color code CC00

6AG1136-6AA00-2CA1

F-AI 4xU 0..10 V High Feature, BU type A0, A1, color code CC00

6AG1136-6AB00-2CA1

Suitable BaseUnits

BU15-P16+A10+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

6AG1193-6BP20-7DA0

BU15-P16+A0+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A10+2B

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

6AG1193-6BP20-7BA0

BU15-P16+A0+2B

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

6AG1193-6BP00-7BA0

BU15-P16+A0+12D/T

(Extended temperature range and exposure to environmental substances)

BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)

6AG1193-6BP40-7DA1

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS analog F-input modules

Ordering data	Article No.		Article No.
BU15-P16+A0+2D/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	6AG1193-6BP00-7DA1	BU15-P16+A0+2B/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BA1
BU15-P16+A0+12B/T (Extended temperature range and exposure to environmental substances) BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	6AG1193-6BP40-7BA1	Accessories SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads. Other accessories	6AG1193-6AA00-0AA0 See SIMATIC ET 200SP, Analog F-input modules, page 10/223

Technical specifications

Article number	6AG1136-6AA00-2CA1	6AG1136-6AB00-2CA1
Based on	6ES7136-6AA00-0CA1 SIPLUS ET 200SP F-AI 4xI 2-/4-wire HF	6ES7136-6AB00-0CA1 SIPLUS ET 200SP F-AI 4xU 0...10V HF
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-30 °C; = Tmin (incl. condensation/frost)	-30 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-30 °C; = Tmin	-30 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax	50 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	4 000 m	4 000 m
• Ambient air temperature-barometric pressure-altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109771992	Restrictions for installation altitudes > 2 000 m, see entry ID: 109771992
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on land craft, rail vehicles and special-purpose vehicles		
- Against mechanical environmental conditions acc. to EN 60721-3-5	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
- against mechanical environmental conditions in agriculture acc. to ISO 15003	Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS analog F-input modules**Technical specifications**

Article number	6AG1136-6AA00-2CA1	6AG1136-6AB00-2CA1
Based on	6ES7136-6AA00-0CA1 SIPLUS ET 200SP F-AI 4xI 2-/4-wire HF	6ES7136-6AB00-0CA1 SIPLUS ET 200SP F-AI 4xU 0..10V HF
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology		
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS special fail-safe modules

Overview



Digital fail-safe power module:
F-PM-E PPM 24 V DC/8 A for BU type C0,
color code CC52

Important properties:

- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Safety-related shutdown of output modules within the potential group of the F-PM-E
- Two fail-safe digital inputs, for reading of sensor information (1 or 2 channels)
- One fail-safe digital output onboard (switching to PPM potential, up to 2 A, up to SIL 3/PL e)
- Fail-safe digital output and potential supply switching to PP or PM potential can be parameterized

- Parameterizable onboard evaluation of the fail-safe inputs for control of the fail-safe digital outputs and of the potential group
- Digital standard output modules can be shut down up to PL d (ISO 13849) and SIL 2 (IEC61508) (up to 8 A).
- Can be plugged into type C0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: white
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Equipment labeling plate
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations.
- Can be used with all fail-safe SIMATIC S7 CPUs.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the corresponding standard products. SIPLUS extreme-specific information was added.

10

Ordering data	Article No.		Article No.
SIPLUS F-PM-E 24VDC/8A PPM Standard digital F-power module (Extended temperature range and exposure to environmental substances) BU type C0, color code CC52. 2 inputs, 1 output, SIL 3/Cat. 4/PL e	6AG1136-6PA00-2BC0	Accessories SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm	6AG1193-6AA00-0AA0
Type C0 BaseUnits BU20-P6+A2+4D (Extended temperature range and exposure to environmental substances) BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and 2 AUX terminals; new load group	6AG1193-6BP20-7DC0	SIPLUS Mounting Kit ET 200SP with maximum width of 19" Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1, without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0.	6AG1193-6AB00-0AA0
		Other accessories	See SIMATIC ET 200SP, Special fail-safe modules, page 10/227

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

Fail-safe I/O modules > SIPLUS special fail-safe modules

Technical specifications

Article number	6AG1136-6PA00-2BC0
Based on	6ES7136-6PA00-0BC0 SIPLUS ET 200SP F-PM-E 24VDC/8A PPM
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-30 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	4 000 m
• Ambient air temperature-barometric pressure-altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109771992
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on land craft, rail vehicles and special-purpose vehicles	
- Against mechanical environmental conditions acc. to EN 60721-3-5	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
- against mechanical environmental conditions in agriculture acc. to ISO 15003	Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Article number	6AG1136-6PA00-2BC0
Based on	6ES7136-6PA00-0BC0 SIPLUS ET 200SP F-PM-E 24VDC/8A PPM
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A
Dimensions	
Width	20 mm
Height	72 mm
Depth	55 mm
Weights	
Weight, approx.	70 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Fail-safe I/O modules > Fail-safe communication > F-CM AS-i Safety ST for SIMATIC ET 200SP

Overview



F-CM AS-i Safety ST for SIMATIC ET 200SP

More information

Equipment Manual, see <https://support.industry.siemens.com/cs/ww/en/view/90265988>

SIMATIC ET200SP Manual Collection, see <https://support.industry.siemens.com/cs/ww/en/view/84133942>

Diagnostics blocks with visualization, see <https://support.industry.siemens.com/cs/ww/en/view/109479103>

Released combinations of the AS-i modules for ET 200SP, see <https://support.industry.siemens.com/cs/ww/en/view/103624653>

AS-Interface I/O modules and other AS-Interface system components see Catalog IC 10, <https://www.siemens.com/ic10>

More information see <https://www.siemens.com/as-interface>

The F-CM AS-i Safety ST fail-safe communications module supplements an AS-Interface network without additional wiring to produce a safety-related AS-i network.

Important features:

- Fail-safe communications module for the ET 200SP
 - 31 fail-safe input channels in the process image
 - 16 fail-safe output channels in the process image
 - Certified up to SIL 3 (IEC 62061)/PL e (ISO 13849-1)
 - Parameterization conforms with other Failsafe I/O modules of the ET 200SP
- The communications module supports PROFINET and PROFIBUS configurations. Can be used with fail-safe SIMATIC S7-400F CPUs and S7-1500F CPUs and also the Failsafe versions of the ET 200SP station with ET 200SP F-CPU 1510SP F, 1512SP F, 1514SP F or 1515SP PC F.
- For reading up to 31 fail-safe AS-i input slaves
 - Two sensor inputs/signals for each fail-safe AS-i input slave
 - Adjustable evaluation of sensor signals: 2-channel or 2 x 1-channel
 - Integrated discrepancy evaluation in the case of 2-channel signals
 - Integrated AND operation in the case of 2 x 1-channel signals
 - Input delay configurable
 - Start-up test can be set
 - Sequence monitoring can be activated

- For control of up to 16 fail-safe AS-i output circuit groups
 - The output circuit groups are controlled independently of one another.
 - One output circuit group can act on one or more actuators (e.g. to switch drives simultaneously).
 - The F-CM AS-i Safety ST module transmits the switching command of the output circuit group to the AS-i cable. A safe AS-i output module that is installed at any point on the AS-i cable receives the switching command and switches the actuator (e.g. contactor).
 - Simple fault acknowledgment via the process image
- Simple module replacement thanks to automatic importing of the safety parameters from the coding element
- Comprehensive diagnostic options
- Can be plugged onto type C1 or type C0 BaseUnits (BU)
- Informative automatic alarm indications
- Supply via AS-Interface voltage
- Eight LED displays for diagnostics, operating state, fault indication and supply voltage
- Informative module inscription on the front
 - Plain-text marking of the module type and function class
 - 2D matrix code (article number and serial number)
 - Circuit diagram
 - Color coding module type communications module: light gray
 - Hardware and firmware version
 - Supported BaseUnit type BU: C1, C0

Design

The fail-safe F-CM AS-i Safety ST module has an ET 200SP module enclosure with a width of 20 mm.

One AS-i master according to the AS-i specification V3.0 and safe AS-i input slaves and/or safe AS-i output modules are needed for operation. The CM AS-i Master ST communications module (article number 3RKT137-6SA00-0BC1) is recommended as the AS-i master for the ET 200SP, see [page 10/169 onwards](#).

Simple combination of the CM AS-i Master ST and F-CM AS-i Safety ST modules in one ET 200SP station results in a powerful, safety-related gateway between PROFINET (or PROFIBUS) and AS-Interface, which can be expanded further in a modular fashion.



Combination of an ET 200SP interface module, CM AS-i Master ST and F-CM AS-i Safety ST

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

Fail-safe I/O modules > Fail-safe communication > F-CM AS-i Safety ST for SIMATIC ET 200SP

With the digital and analog I/O modules of the ET 200SP, additional local inputs and outputs can be realized so as to ensure that the modular AS-i gateway complies precisely with customer requirements. Expansion variants for almost every application are possible thanks to the selection of standard and Failsafe I/O modules.

Besides the single AS-i master, double, triple or generally multiple masters can be realized with or without fail-safe functionality.

Supported BaseUnits

With the combination of the CM AS-i Master ST and F-CM AS-i Safety ST modules, the CM module is plugged onto a light type C0 BaseUnit and, immediately to the right of it, the F-CM module is plugged onto a dark type C1 BaseUnit. The AS-i cable is connected only on the light BaseUnit of the CM module.

Notes on security

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 cybersecurity concept. Siemens products and solutions represent one component of such a concept.

For more information on industrial cybersecurity, see <https://www.siemens.com/cybersecurity-industry>.

Configuration

The following software is required for configuration of the F-CM AS-i Safety ST module:

- STEP 7 (TIA Portal) and Safety Advanced or
- STEP 7 (Classic) and Distributed Safety or F-Configuration Pack SP11 or SIMATIC S7 F/FH systems

In other PROFIsafe-enable systems, configuration via GSD is possible. Configuration and programming are done entirely in the STEP 7 user interface. No additional configuration software is needed for commissioning.

Data management – together with all other configuration data of the SIMATIC – is realized completely in the S7 project.

The input and output channels are assigned to the process image automatically and manual linking via configuration blocks is not necessary.

If the F-CM AS-i Safety ST module is replaced, all necessary settings are automatically imported into the new module.

The F-CM AS-i Safety ST module occupies 16 input bytes and 8 output bytes in the I/O data of the ET 200SP station.

For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see <https://support.industry.siemens.com/cs/ww/en/view/109479103>.



Diagnostics block for F-CM AS-i Safety ST

Application

Thanks to use of the fail-safe module in the ET 200SP, it is possible to fulfill the safety-related application requirements in a manner that is integrated in the overall automation solution.

The safety functions required for fail-safe operation are integrated in the modules. Communication with the fail-safe SIMATIC S7 CPUs is realized via PROFIsafe.

The safety application is programmed in the SIMATIC S7 F-CPU with Distributed Safety, S7 F/FH Systems or Safety Advanced. The fail-safe input signals of the ASIsafe input modules are read via the AS-i bus line and are combined with any chosen further signals in the fail-safe program.

The fail-safe F-CM AS-i Safety ST module can be configured independently of the AS-i master. In this way, the F-CM AS-i Safety ST module can be connected to any AS-i network as required to evaluate the Safety data of the safe AS-i input modules and forward them to the F-CPU. In this case, the fail-safe module is plugged into a light BaseUnit of type C0.

The fail-safe output signals can be output via safe SIMATIC output modules or also directly via fail-safe AS-i output modules. No special functions are required for this in the program.

Together with an ET 200SP station with ET 200SP F-CPU 1510SP F, 1512SP F, 1514SP F or 1515SP PC F, pre-processing of safe AS-i signals directly in the ET 200SP station is possible, as well as the configuration of an autonomous AS-i Safety station without a higher-level CPU.

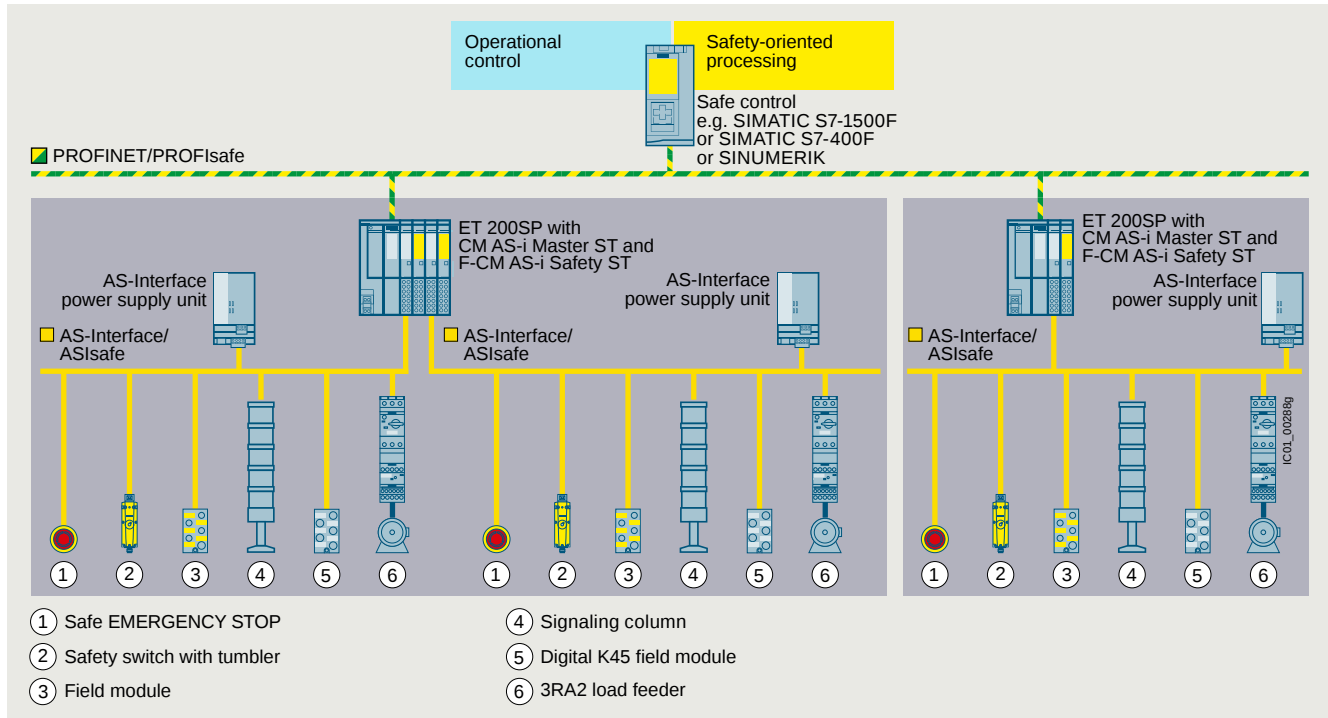
I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Fail-safe I/O modules > Fail-safe communication > F-CM AS-i Safety ST for SIMATIC ET 200SP

Configuration examples of AS-Interface networks with CM AS-i Master ST and F-CM AS-i Safety ST for SIMATIC ET 200SP



AS-Interface configuration comprising an ET 200SP station with CM AS-i Master ST and F-CM AS-i Safety ST modules

Ordering data

Article No.

F-CM AS-i Safety ST communications module

- Fail-safe module for SIMATIC ET 200SP, can be plugged onto BaseUnit type C1 (alternatively type C0)
- Operation requires an AS-i master, e.g. CM AS-i Master ST (see page 10/169 onwards)
- Can be used up to SIL 3 (IEC 62061)/PL e (ISO 13849-1)
- Coding element type H (included in scope of supply)
- Dimensions (W x H x D) mm: 20 x 73 x 58

3RK7136-6SC00-0BC1

Article No.

Accessories

BaseUnit BU20-P6+A2+4B

- BaseUnit (dark), BU type C1
- Suitable for the F-CM AS-i Safety ST fail-safe communications module
- Continuation of an AS-i network, connection with the AS-i voltage of the left-hand module
- With spring-loaded terminals

6ES7193-6BP20-0BC1

Coding elements type H (spare part)

- For the ET 200SP modules F-CM AS-i Safety ST and CM 4xIO-Link
- With spring-loaded terminals
- Packing unit 5 items

6ES7193-6EH00-1AA0

More accessories

see CM AS-i Master ST communications module, page 10/172

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Ex I/O modules

Overview



ET200SP_Ex_IO_withPM

The intrinsically safe ET 200SP HA Ex I/O modules extend the SIMATIC ET 200SP HA and SIMATIC ET 200SP distributed I/O systems with the option of integrating devices located in hazardous areas (intrinsically safe sensors, actuators and HART field devices) into the system.

The ET 200SP HA Ex I/O modules with device protection according to intrinsic safety "i" offer channel outputs in Zone 0 or 1. 2-channel HART analog input and output modules and 2/4-channel digital input and output modules with different characteristic curves as well as a power module for intrinsically safe power supply of the modules.

Separate Ex isolators with correspondingly complex wiring and high space requirements are no longer required. The I/O modules can be installed up to ATEX Zone 2 and offer intrinsically safe circuits in Ex ia design for field devices up to Zone 0.

The Ex modules offer channel diagnostics and Configuration in Run and are approved for ambient temperatures from -40 to +70 °C.

Ordering data

Article No.

SIMATIC ET 200SP HA Ex digital modules

Digital Ex-i input module, Ex-DI 4xNAMUR

Suitable for BaseUnit type X1,
channel diagnostics

6DL1131-6TD00-0HX1

Digital Ex-i output module, Ex-DQ 2x23,1VDC/20 mA

Suitable for BaseUnit type X1,
channel diagnostics

6DL1132-6EB00-0HX1

Digital Ex-i output module, Ex-DQ 2x17,4VDC/27 mA

Suitable for BaseUnit type X1,
channel diagnostics

6DL1132-6CB00-0HX1

SIMATIC ET 200SP HA Ex analog modules

Analog Ex-i HART input module, Ex-AI 2xI 2-wire HART

Suitable for BaseUnit type X1,
channel diagnostics, 16 bits,
+/-0.3%

6DL1134-6TB00-0HX1

Analog Ex-i input module, Ex-AI 4xTC/2xRTD 2-/3-/4-wire

Suitable for BaseUnit type X1,
channel diagnostics, 16 bits,
+/-0.05%

6DL1134-6JD00-0HX1

Analog Ex-i HART output module, Ex-AQ 2xI HART HF

Suitable for BaseUnit type X1,
channel diagnostics, 16 bits,
+/-0.3%

6DL1135-6TB00-0HX1

Power module and BaseUnits

Power module Ex-PM E

24 V 0.8 A, W x H: 50 mm x 117 mm,
suitable for BaseUnit type W0

6DL1133-6PX00-0HW0

BU type X1 for I/O modules

Push-in terminals, W x H:
20 mm x 117 mm

6DL1193-6BP00-0BX1

BU type W0 for Ex power module PM-E

W x H: 50 mm x 117 mm

6DL1193-6BP00-0DW0

Technical specifications

Technical specifications see ET 200SP HA, Ex I/O modules,
page 10/335.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RA8 intelligent load feeders

Overview



SIRIUS 3RA8 intelligent load feeder

More information

Homepage, see <https://www.siemens.com/sirius-ilm>

SiePortal, see https://www.siemens.com/product_catalog_siep?3RA8

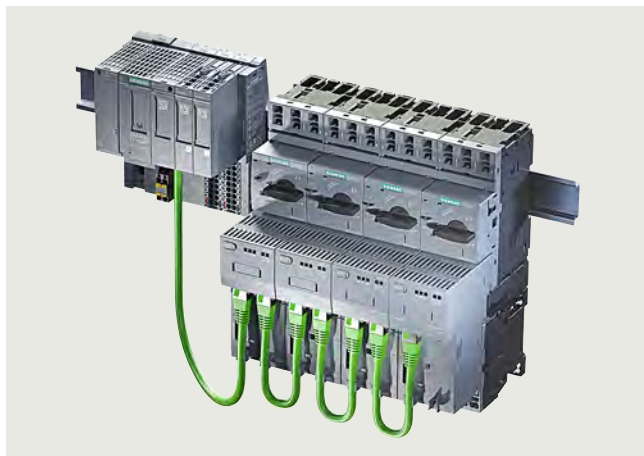
Further components in the ET 200SP I/O system see page 10/5 onwards or <https://www.siemens.com/et200sp>

Catalog IC 10 see <https://www.siemens.com/ic10>

The 3RA8 intelligent load feeders consist of 3RV23 motor starter protectors and 3RT2 electromechanical contactors. These are electrically and mechanically connected to each other with the 3RC7 intelligent link module.

The 3RA8 intelligent load feeders are connected to the SIMATIC ET 200SP via the flexible station extension (ET connection) using the BA-Send BusAdapter.

Configuration, parameterization, and diagnostics of the feeder can be performed directly in STEP 7 (TIA Portal). The BA-Send BusAdapter supports up to 16 intelligent load feeders.



Part of the SIMATIC ET 200SP automation system

12 preassembled 3RA8 combinations can be ordered for direct-on-line and reversing starting of standard three-phase motors up to 32 A.

The feeders are equipped with either the Standard or the High Feature version of the 3RC7 intelligent link module, see also the overview of functions of the 3RC7 intelligent link modules on page 10/256.

In the 3RA8 intelligent load feeder, the 3RV23 motor starter protector provides short-circuit protection. Overload protection is provided by the 3RC7 intelligent link module. The intelligent load feeders are available with setting ranges from 0.4 to 32 A in sizes S00 and S0.

The table below lists the maximum power of the three-phase motor for pre-assembled 3RA8 intelligent load feeders based on the type of coordination at a voltage of 400 V AC:

Size	Type of coordination	Type	Adjustable current response value of the inverse-time delayed overload release A	Power of three-phase motor kW
S00	"2"	3RA8.12-1EE.0	0.4 ... 4	0.12 ... 1.5
	"1"	3RA8.11-1KE.0	1.2 ... 12	0.55 ... 5.5
S0	"2"	3RA8.22-4EE.0	3.5 ... 32	1.5 ... 15

Operating conditions

The 3RA8 intelligent load feeders are climate-proof. They are intended for use in enclosed rooms in which no harsh operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

Behavior in the event of short circuit

EN 60947-4-1 (VDE 0660 Part 102) and IEC 60947-4-1 make a distinction between two different types of coordination, which are referred to as type of coordination "1" and type of coordination "2". Any short circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the device by a short circuit.

Type of coordination "1"

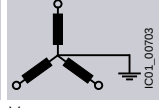
The load feeder may be non-operational after a short-circuit trip. Damage to the contactor or to the overload release is permissible.

Type of coordination "2"

There must be no damage to the overload release or to any other components after a short-circuit trip. The load feeder can resume operation without needing to be renewed. At most, welding of the contactor contacts is permissible if they can be disconnected easily without any significant deformation.

Voltage data

The data for 3-phase power systems according to IEC 60947-4-1 are valid for the following line system configurations:

Voltage U_e	Line system configuration
	Three-phase four-wire systems
	
V	V
230	--
400	230/400
440	260/440
500	--
690	400/690
-- Not specified	

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RA8 intelligent load feeders

Tripping times

In the 3RA8 intelligent load feeder, thermal motor protection is ensured by the 3RC7 intelligent link module. The trip class (CLASS 10E or 20E) can be configured via STEP 7 (TIA Portal).

Connection methods

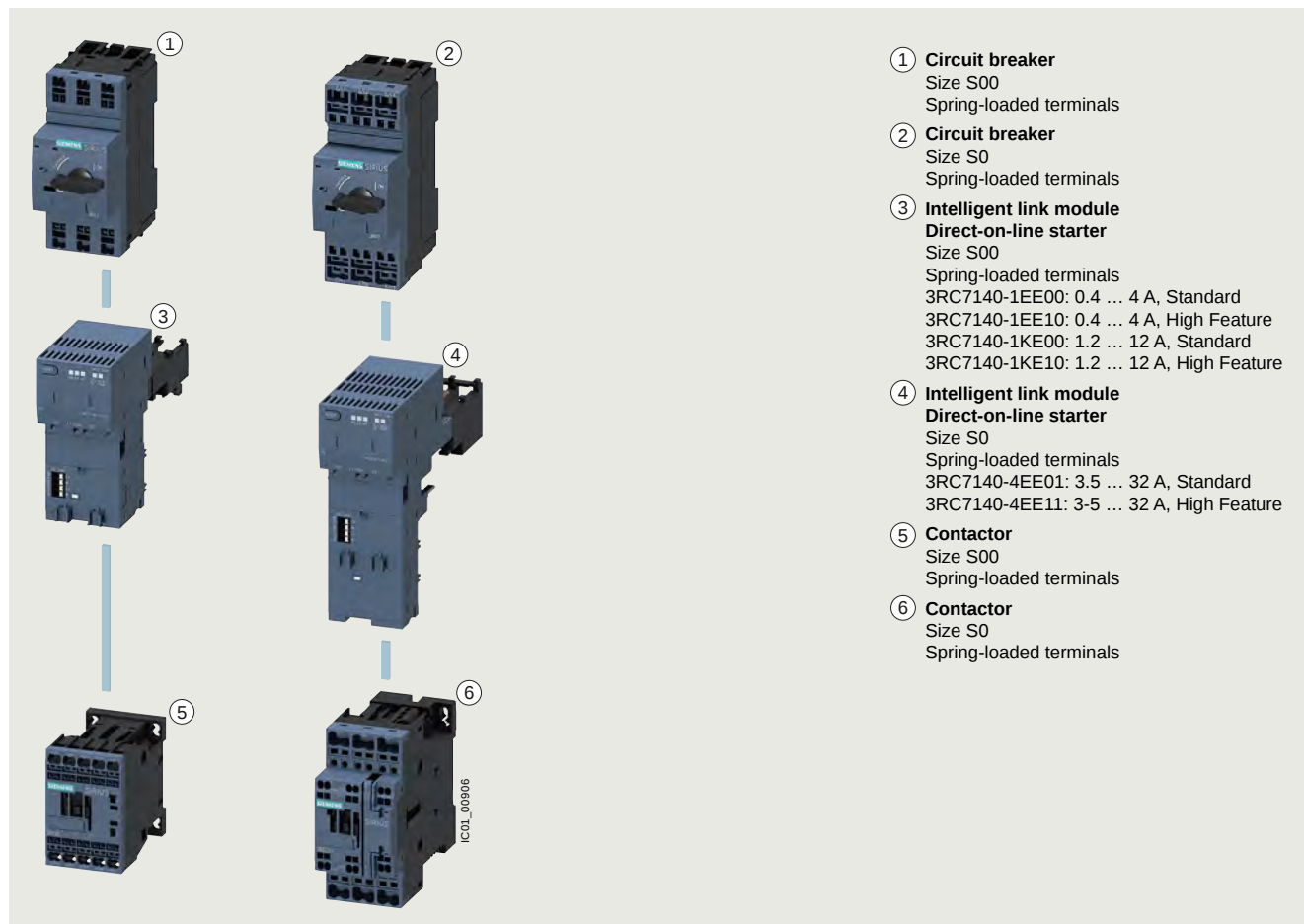
The 3RA8 intelligent load feeders are all provided with spring-loaded terminals.

Mounting

The 3RA8 intelligent load feeders are suitable for the following types of mounting:

- For mounting on TH 35-15 DIN rail according to IEC 60715
- For mounting on busbar adapters (busbar center-to-center clearance 60 mm, busbar thickness 5 to 10 mm with beveled edges), [see Catalog IC 10, chapter 8](#)
- For screw fixing with 3RV2928-0B push-in lug, [see Catalog IC 10, chapter 8](#)
- For installation with the 3RV29 infeed system, [see 3RA2 load feeders, Catalog IC 10, chapter 8](#). For the 3RV29 infeed system, [see Catalog IC 10, chapter 7](#).

Direct-on-line starter • Sizes S00 and S0



Left: 3RA8 intelligent load feeder for direct-on-line starting with spring-loaded terminals, size S00
Right: 3RA8 intelligent load feeder for direct-on-line starting with spring-loaded terminals, size S0

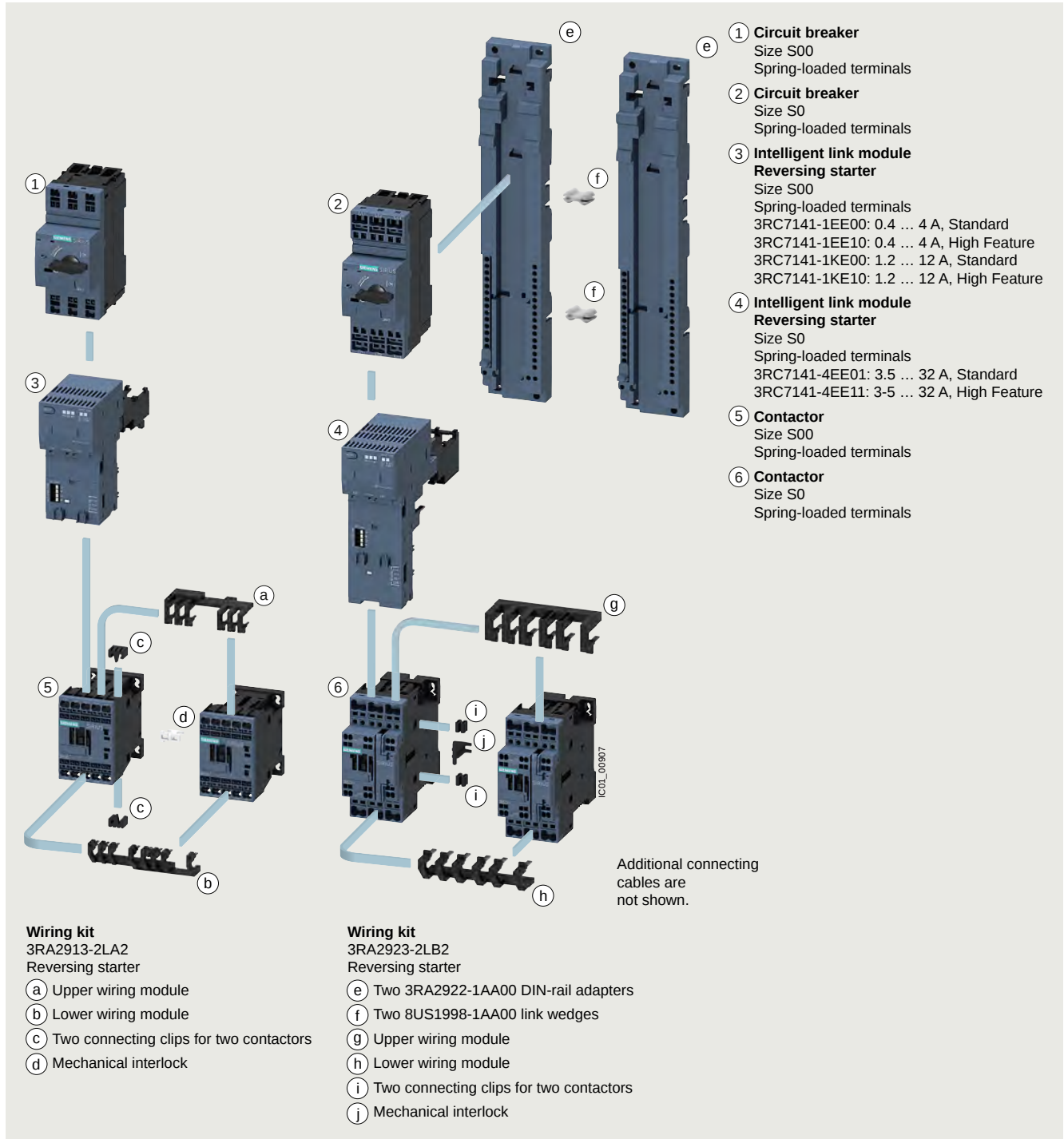
I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIRIUS 3RA8 intelligent load feeders

Reversing starter • Sizes S00 and S0



Left: 3RA8 intelligent load feeder for reversing starting in size S00

Right: 3RA8 intelligent load feeder for reversing starting and DIN-rail mounting in size S0

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RA8 intelligent load feeders

Article number scheme

Product versions		Article number									
SIRIUS intelligent load feeders		3RA8	□	□	□	–	□	□	□	□	0
Product function	Direct-on-line starters	4									
	Reversing starters	5									
Size	S00	1									
	S0	2									
Type of coordination	"1"	1									
	"2"	2									
Current range	0.4 ... 4 A					1	E				
	1.2 ... 12 A					1	K				
	3.5 ... 32 A					4	E				
Connection methods	Spring-loaded terminals						E				
Version	Standard								0		
	High Feature								1		
Example		3RA8	4	1	2	–	1	E	E	0	0

Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

Benefits

Part of the SIMATIC automation system

- One engineering tool for the entire automation system
- Configuration and parameterization in STEP 7 (TIA Portal)
- Easy reading of status and current values
- Error and maintenance demands with stored plain text messages through integrated system diagnostics in the SIMATIC environment

Transparency down to the field level

- Measurement of current, voltage, and power (including power factor)
- Load diagnostics (1 or 3-phase)

Proactive protection

- Extended wide setting range of the overload protection function
- Preventive maintenance by detecting faults and discrepancies

Minimal effort

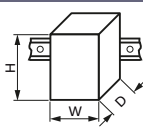
- Reduced wiring costs
- Standardized design due to fewer versions
- Extensive accessories

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RA8 intelligent load feeders

Technical specifications

More information							
SiePortal, see https://www.siemens.com/product_catalog_siep?3RA8			Equipment Manual, see https://support.industry.siemens.com/cs/ww/en/view/109823514				
Article number		3RA8412-1EE.0	3RA8512-1EE.0	3RA8411-1KE.0	3RA8511-1KE.0	3RA8422-4EE.0	3RA8522-4EE.0
General technical specifications							
Width × height × depth	 mm	45 x 198 x 131	90 x 204 x 131	45 x 198 x 131	90 x 204 x 131	45 x 243 x 150	90 x 269 x 174
Installation altitude at height above sea level, maximum	m	2 000					
Ambient temperature	°C	-20 ... +60					
• During operation	°C	-40 ... +80					
• During storage	°C	-40 ... +80					
• During transport	°C	-40 ... +80					
Vibration resistance		5 ... 8.4 Hz, 3.5 mm; 8.4 ... 150 Hz, 1 g; 10 cycles/10 ... 60 Hz, 0.35 mm; 60 ... 500 Hz, 5 g; 10 cycles					
Shock resistance	According to IEC 60068-2-27	6 g/11.0 ms (3 shocks); 10 g/6.0 ms (1 000 shocks)					
Degree of protection IP on the front		IP20					
Touch protection on the front	According to IEC 60529	Finger-safe					
Electrical specifications							
Adjustable current response value of the inverse-time delayed overload release	A	0.4 ... 4		1.2 ... 12		3.5 ... 32	
Operational voltage at AC-3, rated value, maximum	V	690					
Operating frequency	Hz	50 ... 60					
Impulse withstand voltage	kV	6					
Conditional short-circuit current (I _q) at 400 V	According to IEC 60947-4-1 A	150 000					
Power loss (W) at rated current at AC in the warm operating state per pole	W	2.6		3.6		6.7	
Trip class		CLASS 10E/CLASS 20E					
Type of coordination		"2"		"1"		"2"	
Conductor cross-sections							
Connection of the electrical connection for the main circuit, spring-loaded terminals							
Type of connectable conductor cross-sections							
• For main contacts							
- Solid		2 x (0.5 ... 4 mm ²)				2 x (1 ... 10 mm ²)	
- Stranded		2 x (0.5 ... 4 mm ²)				2 x (1 ... 10 mm ²)	
- Finely stranded with end sleeve		2 x (0.5 ... 2.5 mm ²)				2 x (1 ... 6 mm ²)	
- For AWG cables		2 x 20 ... 12				2 x 18 ... 8	
Type of electrical connection for infeed of the supply voltage, spring-loaded terminals (push-in)							
Type of connectable conductor cross-sections							
• At the inputs for supply voltage							
- Solid		0.2 ... 1.5 mm ²					
- Finely stranded without end sleeve		0.2 ... 1.5 mm ²					
- Finely stranded with end sleeve		0.2 ... 1.0 mm ²					
- Solid for AWG cables		24 ... 16					

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIRIUS 3RA8 intelligent load feeders**Selection and ordering data**

Size of the load feeder	Adjustable current response value of the inverse-time delayed overload release	Type of coordination	Article No.
A			

Intelligent load feeders with spring-loaded terminals**Direct-on-line starters****Standard**

S00	0.4 ... 4	"2"	3RA8412-1EE00
	1.2 ... 12	"1"	3RA8411-1KE00
S0	3.5 ... 32	"2"	3RA8422-4EE00



3RA8412-1EE00

High Feature

S00	0.4 ... 4	"2"	3RA8412-1EE10
	1.2 ... 12	"1"	3RA8411-1KE10
S0	3.5 ... 32	"2"	3RA8422-4EE10



3RA8412-4EE10

Reversing starters**Standard**

S00	0.4 ... 4	"2"	3RA8512-1EE00
	1.2 ... 12	"1"	3RA8511-1KE00
S0	3.5 ... 32	"2"	3RA8522-4EE00



3RA8512-1EE00

High Feature

S00	0.4 ... 4	"2"	3RA8512-1EE10
	1.2 ... 12	"1"	3RA8511-1KE10
S0	3.5 ... 32	"2"	3RA8522-4EE10



3RA8522-4EE10

Notes:

Individual components of the 3RA8 intelligent load feeders, [see table on page 10/257](#).

Accessories, [see page 10/261 onwards](#).

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RC7 intelligent link modules

Overview



SIRIUS 3RC7 intelligent link module

More information

Homepage, see <https://www.siemens.com/sirius-ilm>

SiePortal, see https://www.siemens.com/product_catalog_siep?3RC7

Further components in the ET 200SP I/O system see [page 10/5 onwards](#) or <https://www.siemens.com/et200sp>

Catalog IC 10 see <https://www.siemens.com/ic10>

The SIRIUS 3RC7 intelligent link module is the perfect connection between the Siemens SIRIUS and SIMATIC product families. The 3RC7 intelligent link module turns conventional load feeders into digital load feeders. The SIRIUS modular system becomes a communication-capable and configurable system with SIMATIC.

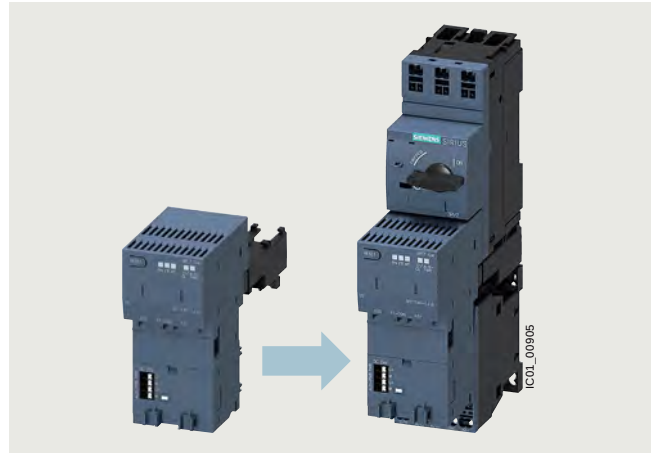


Video: SIRIUS Modular System goes digital
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6360028361112

Part of the SIRIUS modular system

The 3RC7 intelligent link module connects the 3RV2 motor starter protectors/circuit breakers and the 3RT2 contactors to form an intelligent load feeder. Intelligent load feeders can also be ordered as a 3RA8 complete unit, see [page 10/254](#).

Control, protection, and monitoring of all AC load types are possible up to a rated current of 32 A. 1- or 3-phase loads can be operated.



SIRIUS 3RC7 intelligent link module combined with the 3RV2 motor starter protector/circuit breaker and 3RT2 contactor

The 3RC7 intelligent link module is available for direct-on-line and reversing starters (Standard or High Feature):

- Size S00: Current ranges 0.4 to 4 A and 1.2 to 12 A
- Size S0: Current range 3.5 to 32 A

The intelligent link modules are offered with spring-loaded terminals and permit very fast mounting of the load feeders and a vibration-resistant design.

Mounting

Load feeders with 3RC7 intelligent link modules are suitable for the following types of mounting:

- For 1- or 2-row mounting on TH 35-15 DIN rail according to IEC 60715 (adapter for stand-alone installation, see [page 10/261](#))
- For mounting on busbar adapters (busbar center-to-center clearance 60 mm, busbar thickness 5 to 10 mm with beveled edges), see [Catalog IC 10, chapter 8](#)
- For screw fixing with 3RV2928-0B push-in lug, see [Catalog IC 10, chapter 8](#)
- For installation with the 3RV29 infeed system, see [3RA2 load feeders, Catalog IC 10, chapter 8](#). 3RV29 infeed system, see [Catalog IC 10, chapter 7](#).

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

SIRIUS 3RC7 intelligent link modules

Overview of functions

The 3RC7 intelligent link module controls the 3RT2 contactor, following the commands of the controller. In the event of a fault, e.g. overload, undervoltage, or phase asymmetry, the intelligent link module switches off the 3RT2 contactor.

With the help of current and voltage measurement, detailed diagnostics of the load can be performed.

Function	3RC7 ILM Standard	3RC7 ILM High Feature
Control (contact block)	✓	✓
Electronic motor overload protection	CLASS 10E/ CLASS 20E ¹⁾	CLASS 10E/ CLASS 20E ¹⁾
RESET	✓	✓
Current measurement and monitoring	✓	✓
Current phase asymmetry	✓	✓
Line voltage detection	✓	✓
Line voltage measurement and monitoring	--	✓
Supply voltage monitoring for electronics (PWR)	✓	✓
Supply voltage monitoring for contact block (AUX-PWR)	✓	✓
Starting time monitoring	✓	✓
Power measurement	--	✓
EMERGENCY START	✓	✓
Operating temperature measurement and monitoring	✓	✓
Group diagnostics	✓	✓
Cold start	✓	✓

✓ Available

-- Not available

¹⁾ CLASS 20E to 20 A.

The intelligent link module in the standard version detects the voltage at its input side.

The High Feature version can also be used to measure the phase voltage and the power (including power factor) of the connected load.

With the help of the 3RC7 intelligent link module, the operating hours of the load feeder as well as of the load can be recorded. Moreover, fault-induced shutdowns can be documented.

Part of the SIMATIC ET 200SP automation system

The 3RC7 intelligent link modules are connected to the SIMATIC ET 200SP via the flexible station extension (ET connection) using the BA-Send BusAdapter.

Configuration, parameterization, and diagnostics of the intelligent load feeder can be performed directly in STEP 7 (TIA Portal).



Video: Configuration and parameterization in STEP 7 (TIA Portal)
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6357110552112

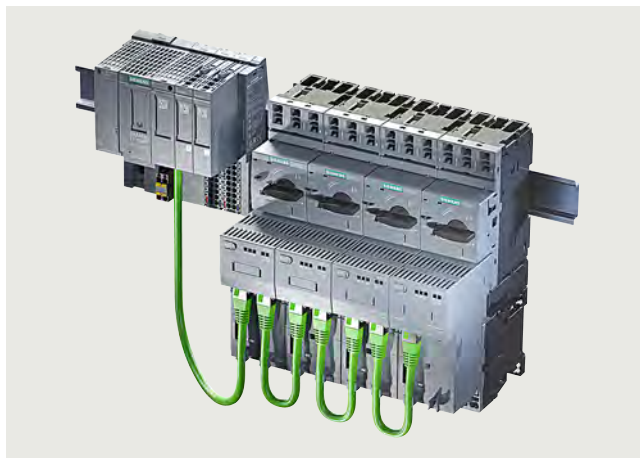
The ET 200SP BA-Send BusAdapter supports up to 16 intelligent load feeders. The distance between the BA-Send BusAdapter and the first 3RC7 intelligent link module can be up to 10 m.

Distances of up to two meters are possible between the individual intelligent load feeders.

The following devices are required for integration of the 3RC7 intelligent link module into the SIMATIC ET 200SP automation system:

- SIMATIC ET 200SP interface modules and CPUs
- BA-Send BusAdapter (6ES7193-6AS00-0AA0)
- BU-Send BaseUnit (6ES7193-6BN00-0NE0)

For more information on SIMATIC ET 200SP, see page 10/5 onwards or <https://www.siemens.com/et200sp>.



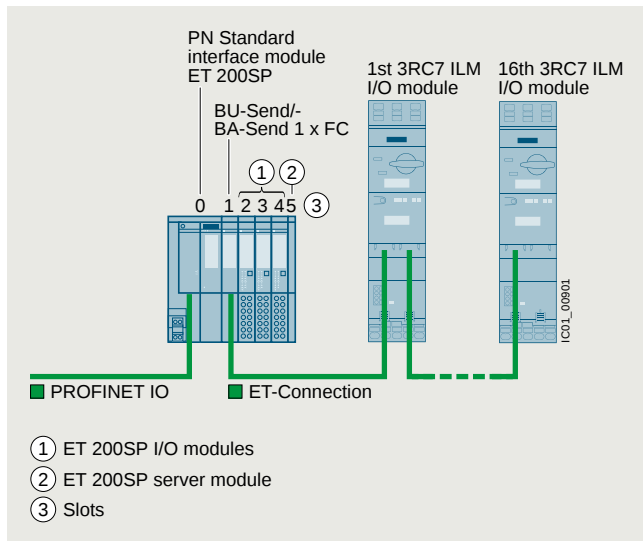
Part of the SIMATIC ET 200SP automation system

The 3RC7 intelligent link modules enable a high level of data transparency down to the field level and connect the operational technology (OT) with the overarching information technology (IT). By exchanging and using real-time data, operating processes can be optimized (condition monitoring, preventive maintenance) and the operational efficiency of the plant can be increased in a targeted manner.

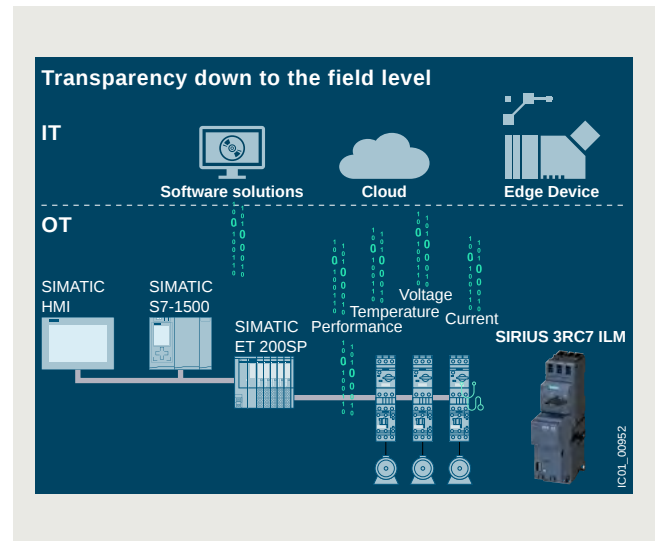
I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RC7 intelligent link modules



System overview using the example of PROFINET IO



Connectivity and transparency in the manufacturing environment

Building intelligent load feeders from individual components

Recommended combinations

Size	Type of coordination	Consisting of the following individual components, which are to be ordered separately					Corresponds to the following 3RA8 load feeder see page 10/254
		Motor starter protector (without overload) see Catalog IC 10, chapter 7	Contactors see Catalog IC 10, chapter 3	3RC7 intelligent link module I_b in A see page 10/260		Mounting kit see page 10/262	
Intelligent load feeder for direct-on-line starting							
S00	"2"	3RV2311-1EC20	3RT2017-2BB42	0.4 ... 4	3RC714.-1EE.0 ¹⁾	--	3RA8412-1EE.0
	"1"	3RV2311-1KC20		1.2 ... 12	3RC714.-1KE.0 ¹⁾	--	3RA8411-1KE.0
S0	"2"	3RV2321-4EC20	3RT2027-2BB40	3.5 ... 32	3RC714.-4EE.1 ¹⁾	--	3RA8422-4EE.0
Intelligent load feeder for reversing starting							
S00	"2"	3RV2311-1EC20	3RT2017-2BB42 (2 x)	0.4 ... 4	3RC714.-1EE.0 ¹⁾	3RA2913-2LA2	3RA8512-1EE.0
	"1"	3RV2311-1KC20		1.2 ... 12	3RC714.-1KE.0 ¹⁾		3RA8511-1KE.0
S0	"2"	3RV2321-4EC20	3RT2027-2BB40 (2 x)	3.5 ... 32	3RC714.-4EE.1 ¹⁾	3RA2923-2LB2 ²⁾ / 3RA2923-2MB2 ³⁾	3RA8522-4EE.0

¹⁾ 3RC7 ILM can be used as a Standard or High Feature version.

²⁾ To build an intelligent load feeder for reversing starting of size S0, the 3RA2923-2LB2 assembly kit must be used. The DIN-rail adapters included in the assembly kit are essential for DIN-rail mounting.

³⁾ To build an intelligent load feeder for reversing starting of size S0 in the 3RV29 infeed system or on the 8US busbar adapter, the 3RA2923-2MB2 assembly kit must be used.

Note:

For graphic overviews of the recommended 3RA8 load feeders, see pages 10/250 and 10/251.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIRIUS 3RC7 intelligent link modules

Possible combinations for 400 V AC, CLASS 10E

Size	Type of coordination	Conditional short-circuit current	Rated current	Consisting of the following individual components, which are to be ordered separately			
		I_q in kA	I_n in A	Motor starter protector (without overload) see Catalog IC 10, chapter 7	Contactor see Catalog IC 10, chapter 3	3RC7 intelligent link module see page 10/260	I_e in A
S00	"2"	150	0.5 0.63 0.8 1 1.25 1.6 2 2.5 3.2 4	3RV2311-0FC20 3RV2311-0GC20 3RV2311-0HC20 3RV2311-0JC20 3RV2311-0KC20 3RV2311-1AC20 3RV2311-1BC20 3RV2311-1CC20 3RV2311-1DC20 3RV2311-1EC20	3RT2015-2BB42	0.4 ... 4	3RC714.-1EE.0
	"1"	150	1.6 2 2.5 3.2 4 5 6.3 8 10 12.5	3RV2311-1AC20 3RV2311-1BC20 3RV2311-1CC20 3RV2311-1DC20 3RV2311-1EC20 3RV2311-1FC20 3RV2311-1GC20 3RV2311-1HC20 3RV2311-1JC20 3RV2311-1KC20	3RT2015-2BB42 3RT2016-2BB42 3RT2017-2BB42	1.2 ... 12	3RC714.-1KE.0
S0	"2"	150	4 5 6.3 8 10 12.5 16 20 22 25 28 32	3RV2321-1EC20 3RV2321-1FC20 3RV2321-1GC20 3RV2321-1HC20 3RV2321-1JC20 3RV2321-1KC20 3RV2321-4AC20 3RV2321-4BC20 3RV2321-4CC20 3RV2321-4DC20 3RV2321-4NC20 3RV2321-4EC20	3RT2024-2BB40 3RT2026-2BB40 3RT2027-2BB40	3.5 ... 32	3RC714.-4EE.1

Note:

For possible combinations with ATEX approval, see Equipment Manual, <https://support.industry.siemens.com/cs/ww/en/view/109823514>.

Article number scheme

Product versions		Article number									
SIRIUS intelligent link modules		3RC7	1	4	☐	-	☐	☐	☐	☐	☐
Communication	ET 200SP ET connection	1	4								
Product function	Direct-on-line starters	0									
	Reversing starters	1									
Current range	0.4 ... 4 A				1	E					
	1.2 ... 12 A				1	K					
	3.5 ... 32 A				4	E					
Connection methods	Spring-loaded terminals					E					
Version	Standard					0					
	High Feature					1					
Size	S00						0				
	S0						1				
Example		3RC7	1	4	1	-	4	E	E	1	1

Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RC7 intelligent link modules

Benefits

Part of the SIMATIC automation system

- One engineering tool for the entire automation system
- Configuration and parameterization in STEP 7 (TIA Portal)
- Easy reading of status and current values
- Error and maintenance demands with stored plain text messages through integrated system diagnostics in the SIMATIC environment

Transparency down to the field level

- Measurement of current, voltage, and power (including power factor)
- Load diagnostics (1- or 3-phase)

Proactive protection

- Extended wide setting range of the overload protection function
- Preventive maintenance by detecting faults and discrepancies

Minimal effort

- Reduced wiring costs
- Standardized design due to fewer versions
- Extensive accessories

Technical specifications

More information

SiePortal, see https://www.siemens.com/product_catalog_siep?3RC7

Equipment Manual, see <https://support.industry.siemens.com/cs/ww/en/view/109823514>

Article number		3RC7140-1EE.0, 3RC7141-1EE.0	3RC7140-1KE.0, 3RC7141-1KE.0	3RC7140-4EE.1, 3RC7141-4EE.1
General data				
Installation altitude at height above sea level, maximum	m	2 000		
Ambient temperature				
• During operation	°C	-20 ... +60		
• During storage	°C	-40 ... +80		
• During transport	°C	-40 ... +80		
Vibration resistance		5 ... 8.4 Hz, 3.5 mm; 8.4 ... 150 Hz, 1 g; 10 cycles/10 ... 60 Hz, 0.35 mm; 60 ... 500 Hz, 5 g; 10 cycles		
Shock resistance	According to IEC 60068-2-27	6 g/11.0 ms (3 shocks); 10 g/6.0 ms (1 000 shocks)		
Degree of protection IP		IP20		
Touch protection on the front	According to IEC 60529	Finger-safe		
EMC interference immunity		Environment A		
Conducted interference due to burst	According to IEC 61000-4-4	kV	2	
Frequency of operation, maximum	1/h	3 600		
Main circuit				
Adjustable current response value of the inverse-time delayed overload release	A	0.4 ... 4	1.2 ... 12	3.5 ... 32
Operational voltage at AC-3e, rated value, maximum	V	690		
Type of current for monitoring		AC		
Operating frequency, rated value	Hz	50 ... 60		
Impulse withstand voltage	kV	6		
Trip class		CLASS 10E/CLASS 20E		
Auxiliary circuit				
Supply voltage at DC	V	24		
Auxiliary voltage at DC	V	24		
Connections				
Type of electrical connection for infeed of the supply voltage, spring-loaded terminals (push-in)				
Type of connectable conductor cross-sections on the inputs for supply voltage				
• Solid		0.2 ... 1.5 mm ²		
• Finely stranded with end sleeve		0.2 ... 1.0 mm ²		
• Solid for AWG cables		24 ... 16		

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RC7 intelligent link modules

Selection and ordering data

Size	Adjustable current response value of the inverse-time delayed overload release	Article No.
A		

3RC7 intelligent link modules with spring-loaded terminals (push-in)

Direct-on-line starters

Standard

S00	0.4 ... 4	3RC7140-1EE00
	1.2 ... 12	3RC7140-1KE00
S0	3.5 ... 32	3RC7140-4EE01



3RC7140-1EE00



3RC7140-4EE11

High Feature

S00	0.4 ... 4	3RC7140-1EE10
	1.2 ... 12	3RC7140-1KE10
S0	3.5 ... 32	3RC7140-4EE11

Reversing starters

Standard

S00	0.4 ... 4	3RC7141-1EE00
	1.2 ... 12	3RC7141-1KE00
S0	3.5 ... 32	3RC7141-4EE01



3RC7141-1EE00



3RC7141-4EE11

High Feature

S00	0.4 ... 4	3RC7141-1EE10
	1.2 ... 12	3RC7141-1KE10
S0	3.5 ... 32	3RC7141-4EE11

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RC7 intelligent link modules

Product version		Article No.
Accessories		
 3RC7940-2TE00	Adapters for stand-alone installation with spring-loaded terminals • For 3RC7 with contactor size S00 • For 3RC7 with contactor size S0	3RC7940-2TE00 3RC7940-2TE01
	Communication cables between ET 200SP BusAdapter and 3RC7 ILM • Length 0.5 m • Length 2 m • Length 5 m • Length 10 m	3RC7940-0TE10 3RC7940-0TE20 3RC7940-0TE30 3RC7940-0TE40
 3RC7940-0TE01	From 3RC7 ILM to 3RC7 ILM • For direct-on-line starters (side-by-side mounting) • For reversing starters (side-by-side mounting) • Length 0.75 m • Length 1.5 m • Length 2 m	3RC7940-0TE01 3RC7940-0TE02 3RC7940-0TE03 3RC7940-0TE04 3RC7940-0TE05
 3RC7940-1TE01	Power Cables • For direct-on-line starters • For reversing starters	3RC7940-1TE01 3RC7940-1TE02

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIRIUS 3RC7 intelligent link modules

For contactor		Product version	Article No.
Size			
Wiring kits for reversing starters with spring-loaded terminals			
 3RA2913-2LA2	S00	RH mounting kit for spring-loaded terminals Mounting on a DIN rail, 60 mm 8US busbar system or 3RV29 infeed system	3RA2913-2LA2
	S0	Mounting on DIN rail	3RA2923-2LB2
		Mounting on 60 mm 8US busbar system or 3RV29 infeed system	3RA2923-2MB2

Further accessories [see Catalog IC 10, chapter 8:](#)

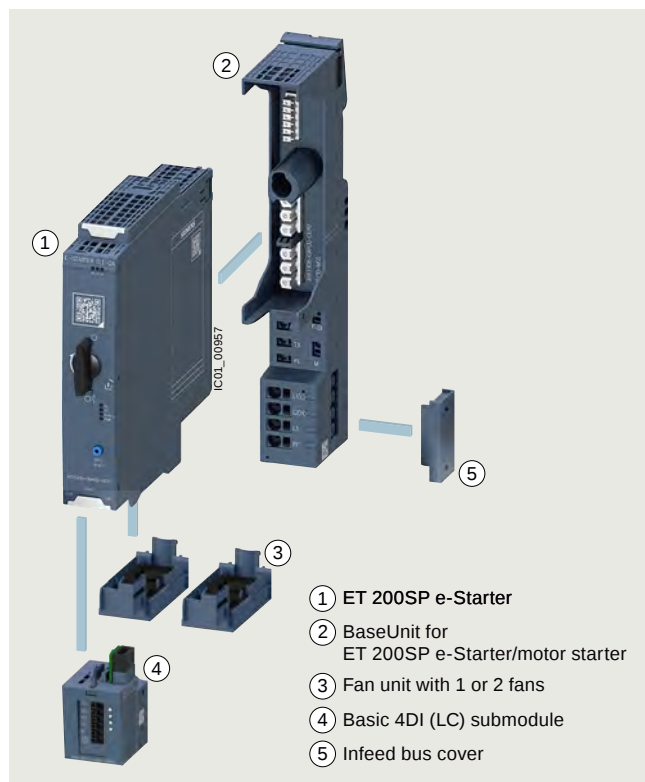
- DIN-rail adapters
- Push-in lugs for screw fixing
- Busbar adapters
- Miscellaneous accessories

I/O systems

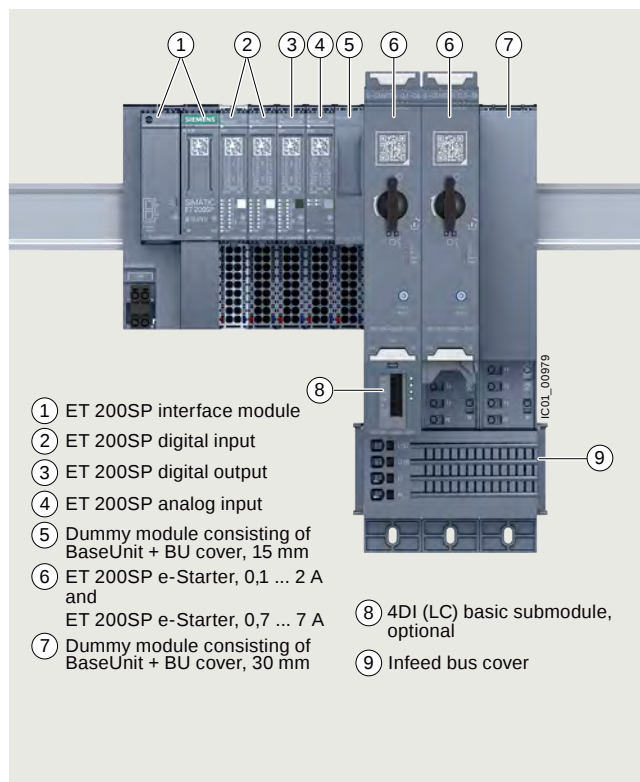
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

ET 200SP e-Starter

Overview



ET 200SP e-Starter, BaseUnit, fan and Basic 4DI (LC) submodule



ET 200SP e-Starter 3RD1000 in the ET 200SP I/O system

More information

Homepage, see <https://www.siemens.com/e-Starter>

SiePortal see https://www.siemens.com/product_catalog_siep?3RD1000

TIA Selection Tool, see <https://www.siemens.com/TST>

Decision support for motor start – Starting and operating three-phase asynchronous motors efficiently, see <https://www.siemens.com/motorstart-guide>

SiePortal topic page, see

<https://support.industry.siemens.com/cs/ww/en/view/109977551>

Equipment Manual, see

<https://support.industry.siemens.com/cs/ww/en/view/109972909>

Further components in the ET 200SP I/O system see page 10/5 onwards or <https://www.siemens.com/et200sp>

Catalog IC 10 see <https://www.siemens.com/ic10>

ET 200SP e-Starter

ET 200SP is a scalable and extremely flexible modular I/O system with degree of protection IP20.

As I/O modules, the ET 200SP e-Starters are an integral part of this I/O system. They are fully electronic switching and protection devices for 1-phase and 3-phase loads with fully electronic short-circuit protection, reversing functionality and optimized start properties.



Video: SIMATIC ET 200SP e-Starter - Fully electronic switching and protection, https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6364283740112

Basic functionality

All versions of the ET 200SP e-Starter feature the following functionality:

- Fully pre-wired e-Starter for switching and protecting any AC loads up to 3 kW from 48 to 480 V AC
- Fully electronic, resettable short-circuit protection in less than 5 µs to 100 kA

- Self-assembling 32 A power bus, i.e. the load voltage is only fed in once for a group of ET 200SP e-Starters
- All supply voltages connected only once, i.e. when modules are added, they are automatically connected to the next module
- Hot swapping permissible
- Digital inputs can be used optionally via a 4DI (LC) submodule.
- Control of the SIMATIC ET 200SP e-Starter from the control system and of the diagnostics status via the cyclic process image
- Diagnostics-capable for active monitoring of the switching and protection functions
- The signal states in the process image of the e-Starter provide information about protective devices (short circuit or overload), the switching states of the ET 200SP e-Starter and system faults.
- Smart Start function to avoid high starting current peaks and torque surges
- Phase-optimized connection to avoid inrush currents
- Upgradeable to include future functions

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

ET 200SP e-Starter

Use of fan

All ET 200SP e-Starters are supplied as standard with a single-fan unit. For applications subject to harsh ambient or load conditions, a fan unit with two fans can also be ordered as an optional accessory (see [Accessories](#)). For information on these boundary conditions, see [Equipment Manual](#), <https://support.industry.siemens.com/cs/ww/en/view/109972909>.

Interference-proof setup of ET 200SP e-Starter

For interference-proof operation of the ET 200SP station in accordance with the IEC 60947-4-2 standard, use a dummy module upstream of the first ET 200SP e-Starter. The dummy module consists of the 6ES7193-6BP00-0BA0 or 6ES7193-6BP00-0DA0 BaseUnit and the 6ES7133-6CV15-1AM0 15 mm BU cover.

The 15 mm BU cover protects the plug contacts of the BaseUnit against dirt.

Electromechanical switchgear in series with ET 200SP e-Starters

Switching an inductive load - in particular of motors <1 kW with high inductance - with an electromechanical switching device (e.g. contactor) can cause high and steep voltage edges.

The resulting faults/damage can be prevented by first disconnecting with the ET 200SP e-Starter or by using EMC suppression modules:

- 3RT2916-1P.. EMC suppression modules for direct mounting on the contactor (see [Catalog IC 10, chapter 3, Accessories for SIRIUS 3RT2 contactors and SIRIUS 3RH2 contactor relays - Miscellaneous](#))
- For motor suppression modules that are fitted in the main circuit, (see [Motor suppression module, page 10/270](#))

Note:

For more information, see <https://support.industry.siemens.com/cs/ww/en/view/109758696>.

Basic 4DI (LC) submodule, optional

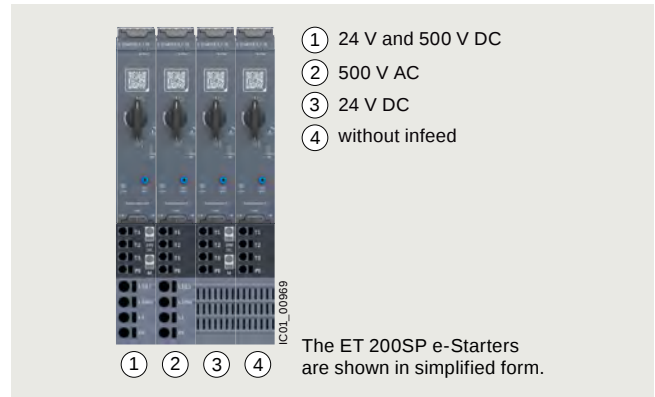


Basic 4DI (LC) submodule

This is an optional, digital input module with four inputs for local motor starter functions such as "manual local operation", "implementation of fast inputs" or "end position disconnection". For a list of all the functions provided by the Basic 4DI (LC) submodule, see [chapter Functions in the Equipment Manual](#), <https://support.industry.siemens.com/cs/ww/en/view/109972909>.

The module is plugged into the front of the ET 200SP e-Starter, which supplies it with a 24 V DC operational voltage.

BaseUnits for ET 200SP e-Starter



View of the BaseUnit infeeds for the ET 200SP e-Starters

BaseUnits are components used for mounting the ET 200SP I/O modules.

The self-assembling voltage buses integrated into the BaseUnits reduce wiring outlay to the single infeed (both of auxiliary and load voltage).

All modules following on the right are automatically supplied upon plugging the BaseUnits together, if BaseUnits are inserted with a loop-through.

The rugged design and positively driven connection technology enables use in harsh industrial conditions.

The BaseUnits are available with various infeeds for the SIMATIC ET 200SP e-Starters.

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

ET 200SP e- Starter

Article number schemes

Product versions		Article number	
ET 200SP e-starters		3RD1000 – 0 B □ 0 0 – 0 E P 0	
Current range	0.1 ... 2 A	A	Rated operational current 2 A
	0.7 ... 7 A	B	Rated operational current 7 A
Example		3RD1000 – 0 B A 0 0 – 0 E P 0	
Product versions		Article number	
BaseUnits		3RK1304 – 0 A P 0 0 – 0 □ P 0	
BU infeed	24 V DC and 500 V AC	A	
	24 V DC	B	
	500 V AC	C	
	Without infeed	D	
Example		3RK1304 – 0 A P 0 0 – 0 A P 0	

Note:

The article number schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

Benefits

The ET 200SP e-Starters offer a number of advantages:

- Fully integrated into the ET 200SP I/O system (including TIA Selection Tool and TIA Portal)
- Extremely fast, fully electronic and resettable short-circuit protection
- Phase-optimized switching on to reduce inrush currents
- Integrated reversing functionality
- Simple integrated transmission of measured values (current, voltage, power, etc.)
- Extensive parameterization by means of TIA Portal
- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Long service life and low wear thanks to fully electronic switching
- Less space required in the control cabinet (20 to 80%) as a result of greater functional density

- Comprehensive diagnostics, information and limit value monitoring for preventive maintenance
- Optional, configurable inputs via 4DI (LC) submodule
- Less wiring and testing required as a result of integrating several functions into a single device
- Reduced stock-keeping and configuration costs due to reduced variance due to high functional density and wide setting range of the rated operational current
- Compatibility mode for direct replacement of the hybrid ET 200SP e-Starter without having to stop the CPU
- Smart Start function to prevent torque surges during the starting process of asynchronous motors

Standards and approvals

- IEC/EN 60947-4-2
- cULus 60947-4-2
- CCC approval for China

Application

The ET 200SP e-Starters are suitable for the following applications:

- Switching, protecting and monitoring of
 - 3-phase motors with overload and fully electronic short-circuit protection
 - 1-phase motors with overload and fully electronic short-circuit protection (e.g. 230 V motors for pump applications)
 - Ohmic loads with overload and short-circuit protection (e.g. for heaters)
- Plant monitoring and energy management in conveyor systems:

Drive belt monitoring and blocking monitoring are possible by means of the phase asymmetry and residual current detection during current measurement, for example.

- Track switching and lifting table control in conveyor systems:

Track switches can be implemented by means of the quick stop function and lifting table controls by means of the "immediate end position disconnection" function without any laborious programming.
- Safe isolation of the drive from main power supply:

The isolating functions according to IEC 60947-1 offer protection against inadvertent activation during plant maintenance.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP e-Starter

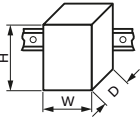
Technical specifications

More information

SiePortal, see https://www.siemens.com/product_catalog_siep?3RD1000

Equipment Manual, see <https://support.industry.siemens.com/cs/ww/en/view/109972909>

ET 200SP e-Starter

Article number		3RD1000-0BA00-0EP0	3RD1000-0BB00-0EP0
General technical data			
Width x height x depth	mm	30 × 151 × 167	
			
Design of the switching contact		Solid-state	
Type of the motor protection		Solid-state	
Design of short-circuit protection	m	Fully electronic	
Installation altitude at height above sea level maximum		4 000; For derating see Manual, https://support.industry.siemens.com/cs/ww/en/view/109972909	
Mounting position		Vertical, horizontal (observe derating)	
Fastening method		Pluggable into BaseUnit	
Ambient temperature			
• During operation	°C	-25 ... +60	
• During transport	°C	-40 ... +70	
• During storage	°C	-40 ... +70	
Relative humidity during operation	%	10 ... 95	
Vibration resistance		$f = 5 \dots 8.5 \text{ Hz}$, $d_{\text{max}} = 3.5 \text{ mm}/f = 8.5 \dots 26.9 \text{ Hz}$, $A_{\text{max}} = 10 \text{ m/s}^2$; $f = 26.9 \dots 60.1 \text{ Hz}$, $d_{\text{max}} = 0.35 \text{ mm}/f = 60.1 \dots 500 \text{ Hz}$, $A_{\text{max}} = 50 \text{ m/s}^2$ / 10 cycles	
Shock resistance		6 g, 11 ms (3 shocks)/9 g, 6 ms (1 000 shocks)	
Protection class IP on the front according to IEC 60529		IP20	
Type of coordination		2	
Electrical data			
Supply voltage at DC rated value	V	24	
Operating power at AC-53a at 400 V rated value	kW	0.75	3
Operating frequency rated value		50 ... 60	
Maximum short-circuit current breaking capacity (I_{cu})			
• At 400 V rated value	kA	100	
• At 500 V rated value	kA	100	
Adjustable current response value current of the current-dependent overload release		0.1 ... 2	0.7 ... 7
Ampacity when starting maximum	A	14.4	50.4
Maximum permissible voltage for protective separation between main and auxiliary circuit		V 500	
Insulation voltage rated value	V	500	
Trip class		CLASS 10A/10E/20E	

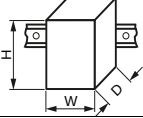
I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP e-Starter

BaseUnits for ET 200SP e-Starter

Article number		3RK1908-0AP00-0AP0	3RK1908-0AP00-0BP0	3RK1908-0AP00-0CP0	3RK1908-0AP00-0DP0
Product designation		BaseUnit			
General technical data					
Width x height x depth	mm	30 × 215 × 75			
					
Ambient temperature					
• During operation	°C	-25 ... +60			
• During transport	°C	-40 ... +70			
• During storage	°C	-40 ... +70			
Protection class IP on the front according to IEC 60529		IP20			
Touch protection on the front according to IEC 60529		Finger-safe			
Connections/Terminals					
Type of connectable conductor cross-sections					
• At the inputs for supply voltage					
- Solid		1 x 0.5 ... 2.5 mm ²		--	
- Finely stranded with core end processing		1 x 0.5 ... 2.5 mm ²		--	
- Finely stranded without core end processing		1 x 0.5 ... 2.5 mm ²		--	
- For AWG cables solid		1 x 20 ... 12		--	
• For supply					
- Solid		1 x 1 ... 6 mm ²	--	1 x 1 ... 6 mm ²	--
- Finely stranded with core end processing		1 x 1 ... 6 mm ²	--	1 x 1 ... 6 mm ²	--
- Finely stranded without core end processing		1 x 1 ... 6 mm ²	--	1 x 1 ... 6 mm ²	--
- For AWG cables		1 x 18 ... 10	--	1 x 18 ... 10	--
• For load-side outgoing feeder					
- Solid		1 x 0.5 ... 2.5 mm ²			
- Finely stranded with core end processing		1 x 0.5 ... 2.5 mm ²			
- Finely stranded without core end processing		1 x 0.5 ... 2.5 mm ²			
- For AWG cables		1 x 20 ... 12			
Type of electrical connection for auxiliary and control circuit		Spring-loaded terminals (push-in)			
Miscellaneous					
Shape of the screwdriver tip		Slot			
Size of screwdriver tip		Standard screwdriver 0.6 mm x 3.5 mm			

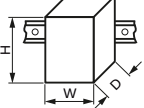
I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP e-Starter

4DI (LC) submodul

Article number		3RD1000-1MB00-0BP0
Product designation		4DI (LC) submodule
General technical data		
Width x height x depth	mm	30 × 54.5 × 42.3
		
Number of digital inputs		4
Installation altitude at height above sea level, maximum	m	4 000
Mounting position		Vertical, horizontal
Fastening method		Can be plugged onto e-starters
Ambient temperature		
• During operation	°C	-25 ... +40
• During transport	°C	-40 ... +70
• During storage	°C	-40 ... +70
Connections/Terminals		
Connectable conductor cross-section for auxiliary contacts		
• Solid or stranded	mm ²	0.2 ... 1.5
• Finely stranded with end sleeve	mm ²	0.25 ... 1.5
• Finely stranded without end sleeve	mm ²	0.2 ... 1.5
AWG number as coded connectable conductor cross section for auxiliary contacts		24 ... 16
Type of electrical connection for auxiliary and control circuit		Spring-loaded terminals (push-in)
Electrical data		
Control supply voltage at DC rated value	V	20.4 ... 28.8
Miscellaneous		
Shape of the screwdriver tip		Slot
Size of the screwdriver tip		Standard screwdriver 0.6 mm x 3.5 mm

Selection and ordering data

Adjustable rated operational current I_e	Article No.
A	

ET 200SP e-Starters

Reserving starters

- 0.1 ... 2



3RD1000-0BA00-0EP0

- 0.7 ... 7



3RD1000-0BB00-0EP0

3RD1000-0BA00-0EP0

3RD1000-0BB00-0EP0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP e-Starter

Product version	Operational voltage of the AC infeed	Supply voltage of the DC infeed	Article No.
	V	V	

BaseUnits with push-in terminals¹⁾



3RK1908-0AP00-0AP0

For ET 200SP e-Starters

• With AC/DC infeed	500	24
• With DC infeed	--	24
• With AC infeed	500	--
• Without infeed	--	--

3RK1908-0AP00-0AP0
3RK1908-0AP00-0BP0
3RK1908-0AP00-0CP0
3RK1908-0AP00-0DP0

¹⁾ The voltage is looped-through from BaseUnits with infeed to subsequent BaseUnits without infeed.

Product version	Supply voltage at DC rated value	Loop through the potential group from the left	Article No.
	V		

BaseUnits with push-in terminals



6ES7193-6BP00-0BA0

For dummy modules

• Dark, looping through the potential group	24	Yes
• Light, opening a new potential group	24	No

6ES7193-6BP00-0BA0
6ES7193-6BP00-0DA0

Product version	Product function	Article No.
	local control digital inputs configurable	
V		

4DI (LC) Submodules with push-in terminals



3RD1000-1MB00-0BP0

Basic	Yes	Yes
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3RD1000-1MB00-0BP0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP e-Starter

Accessories

	Product designation	Product version	Article No.
Accessories			
	BU covers 15 mm (Packing unit 5 items)	For BaseUnits Type A0 or A1	6ES7133-6CV15-1AM0
	BU cover 30 mm	For protection of empty slots, 30 mm	3RK1908-1CA00-0BP0
	Infeed bus covers (1 bag containing 10 covers)	For ET 200SP	3RK1908-1DA00-2BP0
	Additional mounting base unit	Mechanical, for ET 200SP	3RK1908-1EA00-1BP0
	Fan units • With 1 fan	Suitable for 3RD1000	3RD1000-1FS00-0BP0
	• With 2 fans		3RD1000-1FD00-0BP0
	Motor suppression modules • Square		3RK1911-6EA00
	• Round		3RK1911-6EB00

I/O systems

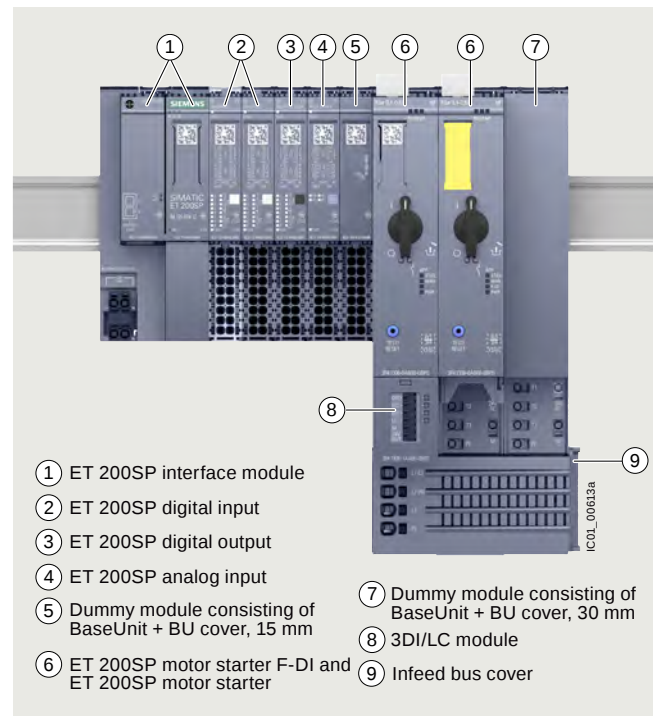
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

ET 200SP motor starters

Overview



Motor starter, BaseUnit, fan and 3DI/LC control module



3RK1308 motor starter in the ET 200SP I/O system

More information

Homepage [see https://www.siemens.com/sirius-motor-starter-et200sp](https://www.siemens.com/sirius-motor-starter-et200sp)
SiePortal [see https://www.siemens.com/product_catalog_siep?3RK1308](https://www.siemens.com/product_catalog_siep?3RK1308)
TIA Selection Tool [see https://www.siemens.com/TST](https://www.siemens.com/TST)
Decision support for motor start – Starting and operating three-phase asynchronous motors efficiently, [see https://www.siemens.com/motorstart-guide](https://www.siemens.com/motorstart-guide)

SiePortal topic page with information on the planning and operating phase, [see https://support.industry.siemens.com/cs/ww/en/view/109792664](https://support.industry.siemens.com/cs/ww/en/view/109792664)
Further components in the ET 200SP I/O system [see page 10/5 onwards](#) or <https://www.siemens.com/et200sp>
Catalog IC 10 [see https://www.siemens.com/ic10](https://www.siemens.com/ic10)

ET 200SP motor starters

ET 200SP is a scalable and extremely flexible modular I/O system with degree of protection IP20.

As I/O modules, the ET 200SP motor starters are an integral part of this I/O system. They are switching and protection devices for 1- and 3-phase loads and are available as direct-on-line or reversing starters.



Video: SIMATIC ET 200SP motor starter - Flexible, powerful, space-saving, https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=5857705611001

Basic functionality

All versions of the ET 200SP motor starter feature the following functionality:

- Fully pre-wired motor starters for switching and protecting any three-phase loads up to 5.5 kW from 48 V AC to 500 V AC
- Disconnection possible via fail-safe motor starters up to SIL 3 and PL e Cat. 4
- With self-assembling 32 A power bus, i.e. the load voltage is only fed in once for a group of motor starters

- All control supply voltages connected only once, i.e. when modules are added, they are automatically connected to the next module
- Hot swapping is permissible
- Digital inputs can optionally be used via a 3DI/LC module.
- Control of the motor starter from the control system and diagnostics status via the cyclic process image
- Diagnostics-capable for active monitoring of the switching and protection functions
- The signal states in the process image of the motor starter provide information about protective devices (short circuit or overload), the switching states of the motor starter, and system faults.

Starter Kit

The 3RK1908-1SK00 starter kit is a favorably priced complete package for switching and monitoring motors in the ET 200SP system, [see page 10/279](#).

It contains:

- A 3RK1308-0BC00-0CP0 reversing starter (0.9 to 3 A)
- A 3RK1908-0AP00-0AP0 BaseUnit with 500 V and 24 V AC/DC infeed
- An EMC distance module (comprising 6ES7193-6BP00-0BA0 BaseUnit plus 6ES7133-6CV15-1AM0 BU cover 15 mm)

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

ET 200SP motor starters

Use of fan

For motor starters with a 12 A rated current, the 3RW4928-8VB00 fan is included in the scope of supply.

This fan can also be ordered as an option for motor starters with lower rated currents, if the boundary conditions demand this. For information on the ambient conditions for the use of motor starters, see [chapter Product features in the Equipment Manual](https://support.industry.siemens.com/cs/ww/en/view/109479973/149504448395), <https://support.industry.siemens.com/cs/ww/en/view/109479973/149504448395>.

Designing interference-free motor starters

For interference-free operation of the ET 200SP station in accordance with IEC 60947-4-2 standard, use a dummy module before the first motor starter. The dummy module consists of the 6ES7193-6BP00-0BA0 or 6ES7193-6BP00-0DA0 BaseUnit and the 6ES7133-6CV15-1AM0 15 mm BU cover.

The 15 mm BU cover protects the plug contacts of the BaseUnit against dirt.

Electromechanical switching devices in series with hybrid motor starters

Switching an inductive load – in particular of motors <1 kW with high inductance – with an electromechanical switching device (e.g. contactor) can cause high and steep voltage edges.

The resulting faults/damage can be prevented by first disconnecting with the hybrid motor starter or by using EMC suppression modules:

- For 3RT2916-1P.. EMC suppression modules for direct mounting on the contactor, see <https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10049450>
- For motor suppression modules that are fitted in the main circuit, see [page 10/279](https://support.industry.siemens.com/cs/ww/en/view/109758696)

Note:

For more information, see <https://support.industry.siemens.com/cs/ww/en/view/109758696>.

3DI/LC control module

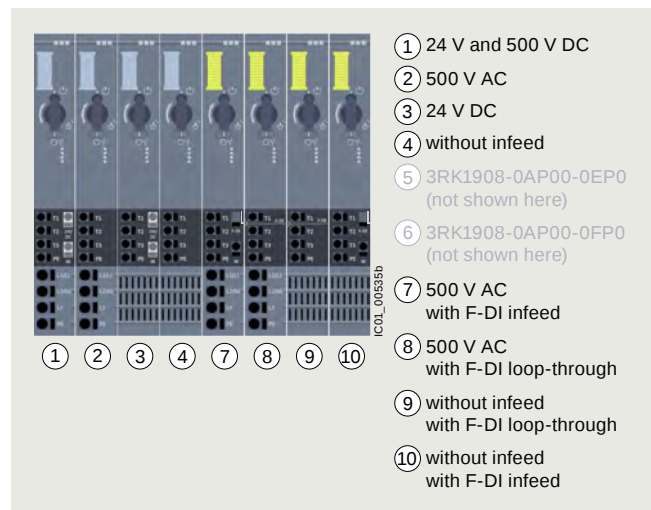


3DI/LC control module

This is a digital input module with three inputs for local motor starter functions such as "manual local operation", "implementation of fast inputs" or "end position disconnection". For a list of all the functions permitted by the 3DI/LC module, see [chapter Functions in the Equipment Manual](https://support.industry.siemens.com/cs/ww/en/view/109479973/95153659275), <https://support.industry.siemens.com/cs/ww/en/view/109479973/95153659275>.

The module is plugged into the front of the motor starter from which it is supplied with an operational voltage of 24 V DC.

BaseUnits for motor starters



View of the BaseUnit infeeds for the motor starters

BaseUnits are components used for mounting the ET 200SP I/O modules.

The self-assembling voltage buses integrated into the BaseUnits reduce wiring outlay to the single infeed (both of auxiliary and load voltage).

All modules following on the right are automatically supplied upon plugging the BaseUnits together, if BaseUnits are inserted with a loop-through.

The rugged design and positively driven connection technology enables use in harsh industrial conditions.

The BaseUnits are available with various infeeds for the motor starters.

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

ET 200SP motor starters

Article number scheme

Product versions		Article number	
Motor starters		3RK1308 – 0 □ □ 0 0 – 0 C P 0	
Product function	Direct-on-line starters	A	For motor standard output 0.09 ... 5.5 kW ¹⁾
	Reversing starters	B	For motor standard output 0.09 ... 5.5 kW ¹⁾
	Fail-safe direct-on-line starters	C	For motor standard output 0.09 ... 5.5 kW ¹⁾
	Fail-safe reversing starters	D	For motor standard output 0.09 ... 5.5 kW ¹⁾
Current range	0.1 ... 0.4 A	A	Maximum current-carrying capacity when starting 4 A
	0.3 ... 1 A	B	Maximum current-carrying capacity when starting 10 A
	0.9 ... 3 A	C	Maximum current-carrying capacity when starting 30 A
	2.8 ... 9 A	D	Maximum current-carrying capacity when starting 90 A
	4 ... 12 A	E	Including fan (3RW4928-8VB00), maximum current-carrying capacity when starting 100 A

Example **3RK1308 – 0 A D 0 0 – 0 C P 0**

¹⁾ For standard motors: Three-phase asynchronous motors, 1-phase or 3-phase; 1-phase AC motors; 1-phase asynchronous motors, at 400 V AC and 500 V AC; the actual starting and rated data of the motor to be protected must be considered when selecting the units.

Product versions		Article number	
BaseUnits		3RK1908 – 0 A P 0 0 – 0 □ P 0	
BU infeed	24 V DC and 500 V AC	A	
	24 V DC	B	
	500 V AC	C	
	Without infeed	D	
	500 V AC	G	With F-DI infeed
	500 V AC	H	With F-DI loop-through
	Without infeed	J	With F-DI loop-through
	Without infeed	K	With F-DI infeed

Example **3RK1908 – 0 A P 0 0 – 0 A P 0**

Note:

The Article number schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

Benefits

The ET 200SP motor starters offer a number of advantages:

- Fully integrated into the ET 200SP I/O system (including TIA Selection Tool and TIA Portal)
- High degree of flexibility when it comes to safety applications via SIMATIC F-CPU or 3SK safety relays up to SIL 3 and PL e Cat.4
- Simple, integrated current value transmission
- Extensive parameterization by means of TIA Portal
- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Greater endurance and reduced heat losses thanks to hybrid technology
- Less space required in the control cabinet (20 to 80%) thanks to high functional density (direct-on-line and reversing starters in same width)
- Extensive diagnostics and information for preventive maintenance
- Configurable inputs via 3DI/LC control module
- Less wiring and testing required as a result of integrating several functions into a single device
- Lower overheads for stock keeping and configuration as a result of the wide setting range of the electronic overload release (up to 1:3)
- Technology has lower inherent power losses than speed-controlled drive systems, so that less cooling (and smaller footprint) are possible

Standards and approvals

- IEC/EN 60947-4-2
- UL 60947-4-2
- CSA
- ATEX
- IEC 62061: SIL 3
- ISO 13849-1: PL e
- CCC approval for China

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

ET 200SP motor starters

Application

The ET 200SP motor starters are suitable for the following applications:

- Switching and monitoring of
 - 3-phase motors with overload and short-circuit protection (e.g. 400 V asynchronous motors for secondary drives in conveyor systems)
 - 1-phase motors with overload and short-circuit protection (e.g. 230 V motors for pump applications)
 - Resistive loads by means of current value and diagnostics via the maintenance function (e.g. for heaters)
- Plant monitoring and energy management in conveyor systems:
Drive belt monitoring and blocking monitoring are possible by means of the phase asymmetry and residual current detection during current measurement, for example.

- Track switching and lifting table control in conveyor systems: Track switches can be implemented by means of the quick stop function and lifting table controls by means of the "immediate end position disconnection" function without any laborious programming.
- Safe isolation of drive from main power supply: The isolating functions in accordance with IEC 60947-1 offer protection against inadvertent activation during plant maintenance.

Motor starters in the process industry

For the ET 200SP motor starters, special 3RK1908-0AP00-0.H0 BaseUnits are available that enable the device to be also used in the ET 200SP HA I/O system. This is typically used in process engineering applications.

For more information, see <https://mall.industry.siemens.com/mall/ww/en/Catalog/Products/10398144?tree=CatalogTree>.

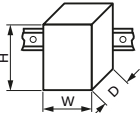
Technical specifications

More information

SiePortal see https://www.siemens.com/product_catalog_siep?3RK1308
Equipment Manual see <https://support.industry.siemens.com/cs/ww/en/view/109479973>

FAQs see <https://support.industry.siemens.com/cs/ww/en/ps/21800/faq>

ET 200SP Motor starters

Article number	3RK1308-0.A00-0CP0 3RK1308-0.B00-0CP0		3RK1308-0.C00-0CP0 3RK1308-0.D00-0CP0
Product category	Motor starter		
General technical specifications			
Width x height x depth	mm	30 × 142 × 150	
			
Design of the switching contact	Hybrid		
Design of the motor protection	Electronic		
Installation altitude at height above sea level, maximum	m	4 000; For derating see Equipment Manual, https://support.industry.siemens.com/cs/ww/en/view/109479973	
Mounting position	Vertical, horizontal (observe derating)		
Type of mounting	Can be plugged into BaseUnit		
Ambient temperature	°C	-25 ... +60	
• During operation	°C	-40 ... +70	
• During transport	°C	-40 ... +70	
• During storage	°C	-40 ... +70	
Relative humidity during operation	%	10 ... 95	
Vibration resistance	15 mm to 6 Hz; 2 g up to 500 Hz		
Shock resistance	6 g / 11 ms		
Degree of protection IP on the front according to IEC 60529	IP20		
Touch protection on the front according to IEC 60529	Finger-safe		
Performance Level (PL) according to ISO 13849-1	--	e	
Safety Integrity Level (SIL) according to IEC 62061	--	3	
Type of coordination	1		

I/O systems

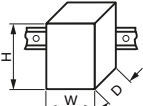
SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP motor starters

Article number		3RK1308-0.A00-0CP0	3RK1308-0.B00-0CP0	3RK1308-0.C00-0CP0	3RK1308-0.D00-0CP0	3RK1308-0.E00-0CP0
Product category		Motor starter				
Electrical specifications						
Supply voltage at DC rated value	V	24				
Operating power at AC-53a at 400 V rated value	kW	0.12	0.25	1.1	4	5.5
Operating frequency rated value	Hz	50 ... 60				
Ultimate short-circuit current breaking capacity (I_{cu})						
• at 400 V rated value	kA	55				
• at 500 V rated value	kA	55				
Adjustable current response value of the inverse-time delayed overload release	A	0.1 ... 0.4	0.3 ... 1	0.9 ... 3	2.8 ... 9	4 ... 12
Max. current-carrying capacity on starting	A	4	10	30	90	100
Max. permissible voltage for protective separation between main and auxiliary circuit	V	500				
Insulation voltage, rated value	V	500				
Trip class		CLASS OFF/5/10 adjustable				

BaseUnits for motor starter

Article number		3RK1908-0AP00-0AP0	3RK1908-0AP00-0BP0	3RK1908-0AP00-0CP0 3RK1908-0AP00-0GP0 3RK1908-0AP00-0HP0	3RK1908-0AP00-0DP0 3RK1908-0AP00-0JP0 3RK1908-0AP00-0KP0
Product category		BaseUnit			
General technical specifications					
Width x height x depth		mm	30 × 215 × 75		
					
Ambient temperature					
• During operation	°C	-25 ... +60			
• During transport	°C	-40 ... +70			
• During storage	°C	-40 ... +70			
Degree of protection class IP on the front according to IEC 60529		IP20			
Touch protection on the front according to IEC 60529		Finger-safe			
Connections/Terminals					
Type of connectable conductor cross-sections					
• At the inputs for supply voltage					
- Solid		1 x 0.5 ... 2.5 mm ²	--		
- Finely stranded with end sleeve		1 x 0.5 ... 2.5 mm ²	--		
- Finely stranded without end sleeve		1 x 0.5 ... 2.5 mm ²	--		
- Solid for AWG cables		1 x 20 ... 12	--		
• For infeed					
- Solid		1 x 1 ... 6 mm ²	--	1 x 1 ... 6 mm ²	--
- Finely stranded with end sleeve		1 x 1 ... 6 mm ²	--	1 x 1 ... 6 mm ²	--
- Finely stranded without end sleeve		1 x 1 ... 6 mm ²	--	1 x 1 ... 6 mm ²	--
- For AWG cables		1 x 18 ... 10	--	1 x 18 ... 10	--
• For load-side outgoing feeder					
- Solid		1 x 0.5 ... 2.5 mm ²			
- Finely stranded with end sleeve		1 x 0.5 ... 2.5 mm ²			
- Finely stranded without end sleeve		1 x 0.5 ... 2.5 mm ²			
- For AWG cables		1 x 20 ... 12			
Type of electrical connection for auxiliary and control circuit		Spring-loaded terminals (push-in)			
Miscellaneous					
Type of screwdriver tip		Slotted			
Size of screwdriver tip		Standard screwdriver 0.6 mm x 3.5 mm			

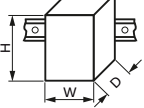
I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP motor starters

3DI/LC control module

Article number		3RK1908-1AA00-0BP0
Product designation		3DI/LC control module
General technical specifications		
Width x height x depth	mm	30 x 54.5 x 42.3
		
Product version		Accessories
Number of digital inputs		4
Installation altitude at height above sea level, maximum	m	2 000
Mounting position		Vertical, horizontal, flat
Type of mounting		Can be plugged onto motor starters
Ambient temperature		
• During operation	°C	-25 ... +60
• During transport	°C	-40 ... +70
• During storage	°C	-40 ... +70
Connections/Terminals		
Connectable conductor cross-section for auxiliary contacts		
• solid or stranded	mm ²	0.2 ... 1.5
• finely stranded with end sleeve	mm ²	0.25 ... 1.5
• finely stranded without end sleeve	mm ²	0.2 ... 1.5
AWG number as coded connectable conductor cross-section for auxiliary contacts		24 ... 16
Type of electrical connection for auxiliary and control circuit		Spring-loaded terminals (push-in)
Electrical specifications		
Type of voltage of the control supply voltage		DC
Control supply voltage at DC rated value	V	20.4 ... 28.8
Miscellaneous		
Type of screwdriver tip		Slotted
Size of screwdriver tip		Standard screwdriver 0.6 mm x 3.5 mm

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

ET 200SP motor starters **IE3/IE4 ready**

Selection and ordering data

Adjustable current response value of the inverse-time delayed overload release		Max. current-carrying capacity on starting	Article No.
A		A	
Motor starters			
Direct-on-line starters			
	0.1 ... 0.4	4	3RK1308-0AA00-0CP0
	0.3 ... 1	10	3RK1308-0AB00-0CP0
	0.9 ... 3	30	3RK1308-0AC00-0CP0
	2.8 ... 9	90	3RK1308-0AD00-0CP0
	4 ... 12	120	3RK1308-0AE00-0CP0
Reversing starters			
	0.1 ... 0.4	4	3RK1308-0BA00-0CP0
	0.3 ... 1	10	3RK1308-0BB00-0CP0
	0.9 ... 3	30	3RK1308-0BC00-0CP0
	2.8 ... 9	90	3RK1308-0BD00-0CP0
	4 ... 12	120	3RK1308-0BE00-0CP0
Fail-safe direct-on-line starters			
	0.1 ... 0.4	4	3RK1308-0CA00-0CP0
	0.3 ... 1	10	3RK1308-0CB00-0CP0
	0.9 ... 3	30	3RK1308-0CC00-0CP0
	2.8 ... 9	90	3RK1308-0CD00-0CP0
	4 ... 12	120	3RK1308-0CE00-0CP0
Fail-safe reversing starters			
	0.1 ... 0.4	4	3RK1308-0DA00-0CP0
	0.3 ... 1	10	3RK1308-0DB00-0CP0
	0.9 ... 3	30	3RK1308-0DC00-0CP0
	2.8 ... 9	90	3RK1308-0DD00-0CP0
	4 ... 12	120	3RK1308-0DE00-0CP0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP motor starters

Product version	Operational voltage of the AC infeed	Supply voltage of the DC infeed	Article No.
	V	V	

BaseUnits with push-in terminals¹⁾

3RK1908-0AP00-0AP0

For motor starters

• With AC/DC infeed	500	24	3RK1908-0AP00-0AP0
• With DC infeed	--	24	3RK1908-0AP00-0BP0
• With AC infeed	500	--	3RK1908-0AP00-0CP0
• Without infeed	--	--	3RK1908-0AP00-0DP0

For fail-safe motor starters

• With AC infeed, with F-DI infeed	500	--	3RK1908-0AP00-0GP0
• With AC infeed, with F-DI loop-through	500	--	3RK1908-0AP00-0HP0
• Without AC/DC infeed, with F-DI loop-through	--	--	3RK1908-0AP00-0JP0
• Without AC/DC infeed, with F-DI infeed	--	--	3RK1908-0AP00-0KP0

¹⁾ The voltage is looped-through from BaseUnits with infeed to subsequent BaseUnits without infeed.

Product version	Supply voltage at DC rated value	Loop through the potential group from the left	Article No.
	V		

BaseUnits with push-in terminals

6ES7193-6BP00-0BA0

For dummy modules

• Dark, looping through the potential group	24	Yes	6ES7193-6BP00-0BA0
• Light, opening a new potential group	24	No	6ES7193-6BP00-0DA0

10

Control supply voltage at DC rated value	Product function	Article No.
	local control digital inputs configurable	
V		

3DI/LC control modules with push-in terminals

3RK1908-1AA00-0BP0

20.4 ... 28.8	Yes	Yes	3RK1908-1AA00-0BP0
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I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

ET 200SP motor starters

	Product designation	Product version	Article No.
Accessories			
	BU covers 15 mm (Packing unit 5 items)	For BaseUnits Type A0 or A1	6ES7133-6CV15-1AM0
	BU cover 30 mm	For protection of empty slots, 30 mm	3RK1908-1CA00-0BP0
	Infeed bus covers (1 bag containing 10 covers)	For ET 200SP	3RK1908-1DA00-2BP0
	Additional mounting base unit	Mechanical, for ET 200SP	3RK1908-1EA00-1BP0
	Fan	Can be used for 3RK1308	3RW4928-8VB00
	Motor suppression modules • Square		3RK1911-6EA00
	• Round		3RK1911-6EB00
	Starter kit	Consists of 3RK1308-0BC00-0CP0 reversing starter (0.9 ... 3 A), 3RK1908-0AP00-0AP0 BaseUnit with 500 V and 24 V AC/DC infeed, and EMC distance module (consisting of 6ES7193-6BP00-0BA0 BaseUnit plus 6ES7133-6CV15-1AM0 BU cover 15 mm)	3RK1908-1SK00

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Pneumatics > AirLINE SP valve terminal type 8647 (Bürkert Co.)

Overview



- For pneumatic control of actuators with ET 200SP
- Can be used together with system and IO components of the ET 200SP distributed I/O system.
- Product of the product partner Bürkert Fluid Control Systems, and can only be obtained from Bürkert Fluid Control Systems.

Note

Product partners are external companies outside Siemens AG and its associated companies. Information and descriptions of products made by product partners are non-binding, and are the responsibility of the product partners. These products are manufactured independently and under the responsibility of the particular product partner, and are sold and supplied by it under its terms of business and delivery.

Unless compulsory by law, Siemens assumes no liability and makes no guarantee for these products or for the connection with these products of the product partners. Also refer to the note on disclaimer/use of hyperlinks under "More information".

Benefits

- High process safety by using non-return valves and pneumatic infeed modules with pressure monitoring.
- System-wide detailed diagnostics in plain text, and also locally on an LC display
- Quick and easy valve change during operation (hot swapping)
- Reduced number of components in the control cabinet (compact control cabinet is possible)
- Quick and easy installation due to full hardware integration: Physical interfaces of pneumatic and I/O components are fully compatible
- Fast and error-free configuration and diagnostics due to full software integration into the Siemens ecosystem (Step 7 Classic, PCS 7, PCS neo, TIA Portal): Bürkert pneumatic modules are treated like Siemens I/O modules in configuration and programming

Application

Valve terminals are widely used in industrial automation, and serve as pilot valves for controlling actuators in the food, pharmaceutical and water treatment industries. In combination with the AirLINE SP, type 8647 from the Bürkert Co., the ET 200SP forms a universal interface between process and plant control, and enables the flexible, modular structure of pilot valves and I/O modules. The valve terminal can also be attached to a control cabinet floor with an AirLINE Quick Adapter, which further reduces the space required in the control cabinet, and significantly simplifies the pneumatic installation.

More information

For more detailed information about the AirLINE SP, type 8647 (e.g. data sheet, operating manual) please contact Bürkert directly, see under <http://www.buerkert.com/en/type/8647>.

Disclaimer of liability

This information and the descriptions have been compiled with great care. However, it is not possible for Siemens to verify that the data supplied by product partners is complete, correct and up-to-date. The possibility that individual items of information might be incorrect, incomplete, or not up-to-date cannot therefore be ruled out. Unless compulsory by law, Siemens accepts no liability for the usability of the data or of the products for the user per se.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Power supplies > 1-phase, 24 V DC (for SIMATIC ET 200SP)

Overview



In terms of design and functionality, the SIMATIC ET 200SP PS single-phase load power supply with automatic range switching of the input voltage is perfectly matched to the SIMATIC ET 200SP. The SIMATIC component and the power supply are wired by means of uniform push-in terminal technology. The 24 V supply provides power to the ET 200SP system components such as the interface module, technology module and communication module, as well as the digital or analog inputs/outputs. Comprehensive certifications, such as UL or GL, facilitate universal use. Its extremely flat design also makes this power supply ideally suited for installation in compact on-site control boxes.

Ordering data

Article No.

SIMATIC ET 200SP PS

Stabilized power supply for
SIMATIC ET 200SP
Input: 120/230 V AC
Output: 24 V DC/5 A

6EP7133-6AB00-0BN0

SIMATIC ET 200SP PS

Stabilized power supply for
SIMATIC ET 200SP
Input: 120/230 V AC
Output: 24 V DC/10 A

6EP7133-6AE00-0BN0

Technical specifications

Article number	6EP7133-6AB00-0BN0	6EP7133-6AE00-0BN0
product brand name	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
type of current supply	24 V/5 A	24 V/10 A
input		
type of the power supply network	1-phase AC	1-phase AC
supply voltage at AC	Automatic range selection	Automatic range selection
supply voltage	120 V/230 V	120 V/230 V
input voltage 1 at AC	85 ... 132 V	85 ... 132 V
input voltage 2 at AC	170 ... 264 V	170 ... 264 V
wide range input	No	No
overvoltage overload capability	2.3 × Vin rated, 1.3 ms	2.3 × Vin rated, 1.3 ms
buffering time for rated value of the output current in the event of power failure minimum	20 ms	20 ms
operating condition of the mains buffering	at Vin = 93/187 V	at Vin = 93/187 V
line frequency	50 Hz/60 Hz	50 Hz/60 Hz
line frequency	47 ... 63 Hz	47 ... 63 Hz
input current		
• at rated input voltage 120 V	2.16 A	4.34 A
• at rated input voltage 230 V	1.22 A	1.92 A
current limitation of inrush current at 25 °C maximum	45 A	60 A
I2t value maximum	3.15 A²·s	6.3 A²·s
fuse protection type	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
fuse protection type in the feeder	recommended LS switch: B/C 6 A/3 A	recommended LS switch: B/C 10 A/6 A

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Power supplies > 1-phase, 24 V DC (for SIMATIC ET 200SP)**Technical specifications**

Article number	6EP7133-6AB00-0BN0	6EP7133-6AE00-0BN0
product brand name	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
type of current supply	24 V/5 A	24 V/10 A
output		
voltage curve at output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
output voltage at DC rated value	24 V	24 V
output voltage		
• at output 1 at DC rated value	24 V	24 V
	24 V	24 V
output voltage adjustable	Yes; via potentiometer	Yes; via potentiometer
adjustable output voltage	22.8 ... 28 V	22.8 ... 28 V
relative overall tolerance of the voltage	3 %	3 %
relative control precision of the output voltage		
• on slow fluctuation of input voltage	0.1 %	0.1 %
• on slow fluctuation of ohm loading	1 %	1 %
residual ripple		
• maximum	150 mV	150 mV
• typical	50 mV	50 mV
voltage peak		
• maximum	240 mV	240 mV
• typical	150 mV	150 mV
display version for normal operation	Green LED for 24 V OK	Green LED for 24 V OK
type of signal at output	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"
behavior of the output voltage when switching on	Overshoot of Vout < 3 %	Overshoot of Vout < 3 %
response delay maximum	0.3 s	0.3 s
voltage increase time of the output voltage		
• typical	30 ms	30 ms
output current		
• rated value	5 A	10 A
• rated range	0 ... 6 A; 5 A up to +60°C; +60 ... +70 °C: Derating 3%/K 5 A	0 ... 12 A; 10 A up to +60°C; +60 ... +70 °C: Derating 3%/K 10 A
supplied active power typical	120 W	240 W
short-term overload current		
• on short-circuiting during the start-up typical	15 A	30 A
• at short-circuit during operation typical	15 A	30 A
duration of overloading capability for excess current		
• on short-circuiting during the start-up	800 ms	750 ms
• at short-circuit during operation	800 ms	800 ms
bridging of equipment	Yes	Yes
number of parallel-switched equipment resources	2	2
efficiency		
efficiency in percent	88 %	90 %
power loss [W]		
• at rated output voltage for rated value of the output current typical	17 W	26 W
• during no-load operation maximum	2.7 W	2.8 W

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Power supplies > 1-phase, 24 V DC (for SIMATIC ET 200SP)**Technical specifications**

Article number	6EP7133-6AB00-0BN0	6EP7133-6AE00-0BN0
product brand name	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
type of current supply	24 V/5 A	24 V/10 A
closed-loop control		
relative control precision of the output voltage with rapid fluctuation of the input voltage by +/- 15% typical	0.3 %	0.3 %
relative control precision of the output voltage at load step of resistive load 10/90/10 % typical	3 %	3 %
setting time		
• load step 10 to 90% typical	1 ms	1 ms
• load step 90 to 10% typical	1 ms	1 ms
protection and monitoring		
design of the overvoltage protection	protection against overvoltage in case of internal fault $V_{out} < 31.8 \text{ V}$	protection against overvoltage in case of internal fault $V_{out} < 31.8 \text{ V}$
property of the output short-circuit proof	Yes	Yes
design of short-circuit protection	Constant current characteristic	Constant current characteristic
response value current limitation	7 ... 7.5 A	14 ... 15 A
overcurrent overload capability		
• in normal operation	overload capability 150 % I_{out} rated up to 5 s/min	overload capability 150 % I_{out} rated up to 5 s/min
enduring short circuit current RMS value		
• typical	7 A	14.1 A
safety		
galvanic isolation between input and output	Yes	Yes
galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
operating resource protection class	Class I	Class I
leakage current		
• maximum	3.5 mA	3.5 mA
• typical	1 mA	1 mA
protection class IP	IP20	IP20
EMC		
standard		
• for emitted interference	EN 61000-6-3 Class B	EN 61000-6-3 Class B
• for mains harmonics limitation	EN 61000-3-2	EN 61000-3-2
• for interference immunity	EN 61000-6-2	EN 61000-6-2
standards, specifications, approvals		
certificate of suitability		
• CE marking	Yes	Yes
• UL approval	Yes; cULus-Listed (UL61010-2-201, CSA C22.2 No.142); cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	Yes; cULus-Listed (UL61010-2-201, CSA C22.2 No.142); cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
• CSA approval	Yes; cULus-Listed (UL61010-2-201, CSA C22.2 No.142), cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	Yes; cULus-Listed (UL61010-2-201, CSA C22.2 No.142), cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
• EAC approval	Yes	Yes
• NEC Class 2	No	No
type of certification		
• CB-certificate	Yes	Yes
MTBF at 40 °C	1 598 441 h	1 114 510 h
standards, specifications, approvals hazardous environments		
certificate of suitability		
• IECEx	Yes; IECEx Ex ec nC IIC T3 Gc	Yes; IECEx Ex ec nC IIC T3 Gc
• ATEX	Yes; ATEX (EX) II 3G Ex ec nC IIC T3 Gc	Yes; ATEX (EX) II 3G Ex ec nC IIC T3 Gc
• ULhazloc approval	Yes	Yes
• cCSAus, Class 1, Division 2	No	No
• UKEX	Yes	Yes

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Power supplies > 1-phase, 24 V DC (for SIMATIC ET 200SP)

Technical specifications

Article number	6EP7133-6AB00-0BN0	6EP7133-6AE00-0BN0
product brand name	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
type of current supply	24 V/5 A	24 V/10 A
standards, specifications, approvals		
marine classification		
shipbuilding approval	Yes	Yes
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)	No	No
• French marine classification society (BV)	Yes	Yes
• Det Norske Veritas (DNV)	Yes	Yes
• Lloyds Register of Shipping (LRS)	No	No
standards, specifications, approvals		
Environmental Product Declaration		
Environmental Product Declaration	Yes	Yes
global warming potential [CO ₂ eq]		
• total	474.9 kg	725 kg
• during manufacturing	9.4 kg	13.2 kg
• during operation	465 kg	711.1 kg
• after end of life	0.35 kg	0.48 kg
ambient conditions		
ambient temperature		
• during operation	-30 ... +70; with natural convection	-30 ... +70; with natural convection
• during transport	-40 ... +85	-40 ... +85
• during storage	-40 ... +85	-40 ... +85
environmental category according to IEC 60721	Climate class 3K3, 5 ... 95% no condensation	Climate class 3K3, 5 ... 95% no condensation
connection method		
type of electrical connection	push-in terminals	push-in terminals
• at input	L, N, PE: 1 push-in terminal each for 0.2 ... 2.5 mm ² single-core/finely stranded	L, N, PE: 1 push-in terminal each for 0.2 ... 2.5 mm ² single-core/finely stranded
• at output	+, -: 2 push-in terminals each for 0.2 ... 2.5 mm ²	+, -: 2 push-in terminals each for 0.2 ... 2.5 mm ²
• for auxiliary contacts	Signaling contact: 2 push-in terminals for 0.2 ... 2.5 mm ²	Signaling contact: 2 push-in terminals for 0.2 ... 2.5 mm ²
• for signaling contact	2 push-in terminals for 0.2 ... 2.5 mm ²	2 push-in terminals for 0.2 ... 2.5 mm ²
removable terminal at input	Yes	Yes
removable terminal at output	Yes	Yes
mechanical data		
width × height × depth of the enclosure	160 mm × 117 mm × 74 mm	160 mm × 117 mm × 74 mm
installation width × mounting height	160 mm × 174 mm	160 mm × 174 mm
required spacing		
• top	50 mm	50 mm
• bottom	50 mm	50 mm
• left	0 mm	0 mm
• right	0 mm	0 mm
fastening method	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
• DIN-rail mounting	Yes	Yes
• S7 rail mounting	No	No
• wall mounting	No	No
housing can be lined up	Yes	Yes
net weight	0.5 kg	0.7 kg
accessories		
electrical accessories	Redundancy module, buffer module, selectivity module, DC UPS	Redundancy module, buffer module, selectivity module, DC UPS

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

Power supplies > 1-phase, 24 V DC (for SIMATIC ET 200SP)**Technical specifications**

Article number	6EP7133-6AB00-0BN0	6EP7133-6AE00-0BN0
product brand name	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
type of current supply	24 V/5 A	24 V/10 A
further information internet links		
internet link		
• to website: Industry Mall	https://mall.industry.siemens.com	https://mall.industry.siemens.com
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud
• to web page: power supplies	https://siemens.com/sitop	https://siemens.com/sitop
• to website: CAX-Download-Manager	https://siemens.com/cax	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com
additional information		
other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)
	24 V	24 V
	24 V	24 V
	-30 °C	-30 °C
	70 °C	70 °C

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

BaseUnits

Overview



With the BaseUnits (BUs), the ET 200SP offers a rugged and service-friendly design with permanent wiring:

- No tools needed for one-handed wiring using push-in terminals
- Actuation of the spring NC contacts with a standard screwdriver, with a blade width up to 3.5 mm
- Outstanding access due to arrangement of measuring tap, spring NC contacts and cable entry in columns, while at the same time reducing the space required by 64%
- Fault-proof color coding of the spring NC contacts for better orientation in the terminal panel

- Replacement of I/O modules during operation without affecting the wiring
- Operation with module gaps (gaps without I/O module)
- Automatic coding of the I/O modules prevents destruction of the electronics if a module is accidentally inserted in the wrong slot during replacement
- High EMC interference immunity:
 - self-assembling shielded backplane bus
 - multi-layer conductor plate with shield levels for interference-free signal transmission from the terminal to the I/O module
 - system-integrated, space-saving shield connection for quick installation
- Self-assembling potential groups without external wiring or jumpers
- Replaceable terminal box
- Side-by-side latching of the BUs for high mechanical and EMC loads
- Optional module-specific color identification of the terminals according to the color code CC
- Optional equipment marking using slide-in equipment labeling plates

An ET 200SP station can be expanded via one 'BU-Send' BaseUnit with a "BA-Send" BusAdapter plugged onto it with up to 16 modules from the ET 200AL series of I/O devices with IP67 protection.

Ordering data

Article No.

Article No.

Type A0 BaseUnits

BU15-P16+A10+2D

BU type A0; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new potential group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0DA0
6ES7193-6BP20-2DA0

BU15-P16+A0+2D

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A)

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP00-0DA0
6ES7193-6BP00-2DA0

BU15-P16+A10+2B

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the potential group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0BA0
6ES7193-6BP20-2BA0

BU15-P16+A0+2B

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP00-0BA0
6ES7193-6BP00-2BA0

Type B0 BaseUnits

BU20-P12+A4+0B

BU type B0; BaseUnit (dark) with 12 process terminals (1 ... 12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the potential group; 1 unit

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0BB0
6ES7193-6BP20-2BB0

Type B1 BaseUnits

BU20-P12+A0+4B

BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the potential group; 1 unit

- Pack of 1 unit
- Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.

6ES7193-6BP20-0BB1
6ES7193-6BP20-2BB1

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

BaseUnits

Ordering data	Article No.		Article No.
Type C0 BaseUnits		BaseUnits type U0	
BU20-P6+A2+4D BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and an additional 2 AUX terminals; new potential group	6ES7193-6BP20-0DC0	BU20-P16+A0+2D BU type U0; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A) • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0DU0 6ES7193-6BP00-2DU0
Type C1 BaseUnits		BU20-P16+A0+2B BU type U0; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group • Pack of 1 unit • Pack of 10 units; to order a pack, please order this Article No. with an order quantity of 10.	6ES7193-6BP00-0BU0 6ES7193-6BP00-2BU0
Type A1 BaseUnits (with temperature detection)		BaseUnit for redundant setup	
BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 process terminals (1 ... 16) to the module and 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new potential group (max. 10 A)	6ES7193-6BP40-0DA1	BaseUnit type M0 With 2 slots to accommodate R1-capable interface modules IM 155-6 PN R1; incl. server module	6ES7193-6BR00-0HM0
BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new potential group (max. 10 A)	6ES7193-6BP00-0DA1	Station expansion with IP67 I/O system ET 200AL	
BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 process terminals (1 ... 16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the potential group	6ES7193-6BP40-0BA1	BaseUnit BU-Send	6ES7193-6BN00-0NE0
BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the potential group	6ES7193-6BP00-0BA1	ET 200SP BA-Send 1 x FC BusAdapter	6ES7193-6AS00-0AA0
Type F0 BaseUnits		Accessories	
BU20-P8+A4+0B BU type F0; BaseUnit (dark) with 8 process terminals to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the potential group	6ES7193-6BP20-0BF0	Equipment labeling plate 10 sheets of 16 labels	6ES7193-6LF30-0AW0
		BU cover For covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0
		Shield connection 5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding	6ES7193-6SC20-1AM0

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

BaseUnits

Ordering data

Color-coded labels

- Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units
- Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 50 units
- Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units
- Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 50 units
- Color code CC03, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units
- Color code CC04, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units
- Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units
- Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units
- Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units

Article No.

6ES7193-6CP01-2MA0

6ES7193-6CP01-4MA0

6ES7193-6CP02-2MA0

6ES7193-6CP02-4MA0

6ES7193-6CP03-2MA0

6ES7193-6CP04-2MA0

6ES7193-6CP71-2AA0

6ES7193-6CP72-2AA0

6ES7193-6CP73-2AA0

- Color code CC74, for 2x5 additional terminals, 5 x red, 5 x blue, BU type A1 with push-in terminals; 10 units
- Color code CC81, for 4 AUX terminals 1 A to 4 A, yellow/green, for BaseUnit type B0; 10 units
- Color code CC82, for 4 AUX terminals 1 A to 4 A, red, for BaseUnit type B0; 10 units
- Color code CC83, for 4 AUX terminals 1 A to 4 A, blue, for BaseUnit type B0; 10 units
- Color code CC41, module-specific, for 12 push-in terminals; for BaseUnit type B1; 10 units
- Color code CC84, for 2 AUX terminals 1 A to 2 A, yellow/green, for BaseUnit type C0; 10 units
- Color code CC85, for 2 AUX terminals 1 A to 2 A, red, for BaseUnit type C0; 10 units
- Color code CC86, for 2 AUX terminals 1 A to 2 A, blue, for BaseUnit type C0; 10 units

Article No.

6ES7193-6CP74-2AA0

6ES7193-6CP81-2AB0

6ES7193-6CP82-2AB0

6ES7193-6CP83-2AB0

6ES7193-6CP41-2MB0

6ES7193-6CP84-2AC0

6ES7193-6CP85-2AC0

6ES7193-6CP86-2AC0

Technical specifications

Article number	6ES7193-6BP20-0DA0 BaseUnit Type A0, BU15-P16+A10+2D	6ES7193-6BP00-0DA0 BaseUnit Type A0, BU15-P16+A0+2D	6ES7193-6BP20-0BA0 BaseUnit Type A0, BU15-P16+A10+2B	6ES7193-6BP00-0BA0 BaseUnit Type A0, BU15-P16+A0+2B
General information				
Product type designation	BU type A0	BU type A0	BU type A0	BU type A0
Hardware configuration				
Slots				
• Number of slots	1; Type A0	1; Type A0	1; Type A0	1; Type A0
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
connection method				
Terminals				
• Terminal type	Push-in terminal	Push-in terminal	Push-in terminal	Push-in terminal
• system-integrated shield connection	Yes; Optional	Yes; Optional	Yes; Optional	Yes; Optional
• Conductor cross-section, min.	0.14 mm²; AWG 26	0.14 mm²; AWG 26	0.14 mm²; AWG 26	0.14 mm²; AWG 26
• Conductor cross-section, max.	2.5 mm²; AWG 14	2.5 mm²; AWG 14	2.5 mm²; AWG 14	2.5 mm²; AWG 14
• Number of process terminals to I/O module	16	16	16	16; Pro slot
• Number of terminals to AUX bus	10	0	10	0
• Number of add-on terminals	0	0	0	0
• Number of terminals with connection to P1 and P2 bus	2	2	2	2; Pro slot

I/O systems

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SIMATIC ET 200SP

BaseUnits

Technical specifications

Article number	6ES7193-6BP20-0DA0 BaseUnit Type A0, BU15-P16+A10+2D	6ES7193-6BP00-0DA0 BaseUnit Type A0, BU15-P16+A0+2D	6ES7193-6BP20-0BA0 BaseUnit Type A0, BU15-P16+A10+2B	6ES7193-6BP00-0BA0 BaseUnit Type A0, BU15-P16+A0+2B
Dimensions				
Width	15 mm	15 mm	15 mm	15 mm
Height	141 mm	117 mm	141 mm	117 mm
Depth	35 mm	35 mm	35 mm	35 mm
Weights				
Weight, approx.	50 g	40 g	50 g	40 g

Article number	6ES7193-6BP20-0BB0 BaseUnit Type B0, BU20-P12+A4+0B	6ES7193-6BP20-0BB1 BaseUnit Type B1, BU20-P12+A0+4B, PU 1	6ES7193-6BP20-0DC0 BaseUnit Type C0, BU20-P6+A2+4D	6ES7193-6BP20-0BC1 BaseUnit Type C1, BU20-P6+A2+4B	6ES7193-6BP20-0BF0 BaseUnit Type F0, BU20-P8+A4+0B
General information					
Product type designation	BU type B0	BU type B1	BU type C0	BU type C1	BU type F0
Hardware configuration					
Slots					
• Number of slots	1	1	1	1; Type C1	1; Type F0
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C	-30 °C	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C	-30 °C	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	2 000 m; On request: Installation altitudes greater than 2 000 m	2 000 m; On request: Installation altitudes greater than 2 000 m	2 000 m; On request: Installation altitudes greater than 2 000 m	2 000 m; On request: Installation altitudes greater than 2 000 m	2 000 m; On request: Installation altitudes greater than 2 000 m
connection method					
Terminals					
• Terminal type	Push-in terminal	Push-in terminal	Push-in terminal	Push-in terminal	Yes; Optional
• system-integrated shield connection	Yes; Optional	No	Yes; Optional	Yes; Optional	
• Conductor cross-section, min.	0.14 mm²; AWG 26	0.14 mm²; AWG 26	0.14 mm²; AWG 26	0.14 mm²; AWG 26	
• Conductor cross-section, max.	2.5 mm²; AWG 14	2.5 mm²; AWG 14	2.5 mm²; AWG 14	2.5 mm²; AWG 14	
• Number of process terminals to I/O module	12; Pro slot	12; Pro slot	12; Pro slot	16; Pro slot	
• Number of terminals to AUX bus	0	0	0	0	
• Number of add-on terminals	0	0	0	0	
• Number of terminals with connection to P1 and P2 bus	0; Pro slot	0; Pro slot	0; Pro slot	2; Pro slot	
Dimensions					
Width	20 mm	20 mm	20 mm	20 mm	20 mm
Height	117 mm	117 mm	117 mm	117 mm	117 mm
Depth	35 mm	35 mm	35 mm	35 mm	35 mm
Weights					
Weight, approx.	48 g	48 g	47 g	47 g	48 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

BaseUnits

Technical specifications

Article number	6ES7193-6BP40-0DA1 BaseUnit Type A1, BU15-P16+A0+12D/T	6ES7193-6BP00-0DA1 BaseUnit Type A1, BU15-P16+A0+2D/T	6ES7193-6BP40-0BA1 BaseUnit Type A1, BU15-P16+A0+12B/T	6ES7193-6BP00-0BA1 BaseUnit Type A1, BU15-P16+A0+2B/T
General information				
Product type designation	BU type A1	BU type A1	BU type A1	BU type A1
Hardware configuration				
Slots				
• Number of slots	1; Type A1	1; Type A1	1; Type A1	1; Type A1
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
connection method				
Terminals				
• Terminal type	Push-in terminal	Push-in terminal	Push-in terminal	Push-in terminal
• system-integrated shield connection	Yes; Optional	Yes; Optional	Yes; Optional	Yes; Optional
• Conductor cross-section, min.	0.14 mm²; AWG 26	0.14 mm²; AWG 26	0.14 mm²; AWG 26	0.14 mm²; AWG 26
• Conductor cross-section, max.	2.5 mm²; AWG 14	2.5 mm²; AWG 14	2.5 mm²; AWG 14	2.5 mm²; AWG 14
• Number of process terminals to I/O module	16	16	16	16
• Number of terminals to AUX bus	0	0	0	0
• Number of add-on terminals	2x5	0	2x5	0
• Number of terminals with connection to P1 and P2 bus	2	2	2	2
Dimensions				
Width	15 mm	15 mm	15 mm	15 mm
Height	141 mm	117 mm	141 mm	117 mm
Depth	35 mm	35 mm	35 mm	35 mm
Weights				
Weight, approx.	50 g	40 g	50 g	40 g

Article number	6ES7193-6BP00-0DU0 BaseUnit Type U0, BU20-P16+A0+2D, PU 1		6ES7193-6BP00-0BU0 BaseUnit Type U0, BU20-P16+A0+2B, PU 1	
General information				
Product type designation	BU type U0		BU type U0	
Hardware configuration				
Slots				
• Number of slots	1		1	
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C		-30 °C	
• horizontal installation, max.	60 °C		60 °C	
• vertical installation, min.	-30 °C		-30 °C	
• vertical installation, max.	50 °C		50 °C	
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	3 000 m		3 000 m	

I/O systems

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BaseUnits

Technical specifications

Article number	6ES7193-6BP00-0DU0 BaseUnit Type U0, BU20-P16+A0+2D, PU 1	6ES7193-6BP00-0BU0 BaseUnit Type U0, BU20-P16+A0+2B, PU 1
connection method		
Terminals		
• Terminal type	Push-in terminal	Push-in terminal
• system-integrated shield connection	Yes; Optional	Yes; Optional
• Conductor cross-section, min.	0.14 mm ² ; 0.2 mm ² without wire end ferrule	0.14 mm ² ; 0.2 mm ² without wire end ferrule
• Conductor cross-section, max.	2.5 mm ² ; 1.5 mm ² with wire end ferrule	2.5 mm ² ; 1.5 mm ² with wire end ferrule
• Number of process terminals to I/O module	16	16
• Number of terminals to AUX bus	0	0
• Number of add-on terminals	0	0
• Number of terminals with connection to P1 and P2 bus	2	2
Dimensions		
Width	20 mm	20 mm
Height	117 mm	117 mm
Depth	35 mm	35 mm
Weights		
Weight, approx.	50 g	50 g

Article number	6ES7193-6BR00-0HM0 BaseUnit Type M0	Article number	6ES7193-6BN00-0NE0 ET 200SP, BaseUnit BU-Send
General information		Hardware configuration	
Product type designation	BU type M0	Slots	
Hardware configuration		• Number of slots	1
Slots		Ambient conditions	
• Number of slots	2	Ambient temperature during operation	
Ambient conditions		• horizontal installation, min.	-30 °C
Ambient temperature during operation		• horizontal installation, max.	60 °C
• horizontal installation, min.	-30 °C	• vertical installation, min.	-30 °C
• horizontal installation, max.	60 °C	• vertical installation, max.	50 °C
• vertical installation, min.	-30 °C	Altitude during operation relating to sea level	
• vertical installation, max.	50 °C	• Installation altitude above sea level, max.	2 000 m; On request: Installation altitudes greater than 2 000 m
Altitude during operation relating to sea level		Dimensions	
• Installation altitude above sea level, max.	2 000 m; On request: Installation altitudes greater than 2 000 m	Width	20 mm
Dimensions		Height	117 mm
Width	100 mm	Depth	35 mm
Height	141 mm	Weights	
Depth	29 mm	Weight, approx.	30 g
Weights			
Weight, approx.	142 g		

I/O systems

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SIPLUS BaseUnits

Overview



With the BaseUnits (BUs), the ET 200SP offers a rugged and service-friendly design with permanent wiring:

- No tools needed for one-handed wiring using push-in terminals
- Actuation of the spring NC contacts with a standard screwdriver, with a blade width up to 3.5 mm
- Outstanding access due to arrangement of measuring tap, spring NC contacts and cable entry in columns, while at the same time reducing the space required by 64%
- Fault-proof color coding of the spring NC contacts for better orientation in the terminal panel
- Replacement of I/O modules during operation without affecting the wiring

- Operation with module gaps (missing I/O module)
- Automatic coding of the I/O modules prevents destruction of the electronics if a module is accidentally inserted in the wrong slot during replacement
- High immunity to electromagnetic interference due to
 - self-assembling shielded backplane bus
 - multi-layer conductor plate with shield levels for interference-free signal transmission from the terminal to the I/O module
 - system-integrated, space-saving shield connection for quick installation
- Self-assembling potential groups without external wiring or jumpers
- Replaceable terminal box
- Side-by-side latching of the BUs for high mechanical load capacity
- Optional module-specific color identification of the terminals according to the color code CC
- Optional equipment marking using slide-in equipment labeling plates

An ET 200SP station can be expanded via one BU-Send BaseUnit with a BA-Send BusAdapter plugged onto it with up to 16 modules from the ET 200AL series of I/O devices with IP67 protection.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS BaseUnits type A0

BU15-P16+A10+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)

6AG1193-6BP20-7DA0

BU15-P16+A0+2D

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A10+2B

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group

6AG1193-6BP20-7BA0

BU15-P16+A0+2B

(Extended temperature range and exposure to environmental substances)

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

6AG1193-6BP00-7BA0

Article No.

SIPLUS BaseUnits type A1 (with temperature detection)

BU15-P16+A0+12D/T

(Extended temperature range and exposure to environmental substances)

BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)

6AG1193-6BP40-7DA1

BU15-P16+A0+2D/T

(Extended temperature range and exposure to environmental substances)

BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG1193-6BP00-7DA1

BU15-P16+A0+12B/T

(Extended temperature range and exposure to environmental substances)

BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally bridged additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group

6AG1193-6BP40-7BA1

BU15-P16+A0+2B/T

(Extended temperature range and exposure to environmental substances)

BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group

6AG1193-6BP00-7BA1

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SIPLUS BaseUnits

Ordering data	Article No.		Article No.
SIPLUS BaseUnits type B0		SIPLUS BaseUnits type U0	
BU20-P12+A4+0B (Extended temperature range and exposure to environmental substances) BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally bridged AUX terminals (1 A to 4 A); for continuing the load group; 1 unit	6AG1193-6BP20-7BB0	BU20-P16+A0+2D (Extended temperature range and exposure to environmental substances) BU type U0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	6AG1193-6BP00-7DU0
SIPLUS BaseUnits type B1		BU20-P16+A0+2B (Extended temperature range and exposure to environmental substances) BU type U0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BU0
BU20-P12+A0+4B (Extended temperature range and exposure to environmental substances) BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group; 1 unit	6AG1193-6BP20-7BB1	SIPLUS BaseUnits type M0 (Extended temperature range and exposure to environmental substances) For redundant configuration, with 2 slots to accommodate R1-capable interface modules IM 155-6 PN R1; incl. server module	6AG1193-6BR00-7HM0
SIPLUS BaseUnits type C0		Accessories	
BU20-P6+A2+4D (Extended temperature range and exposure to environmental substances) BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and 2 AUX terminals; new load group	6AG1193-6BP20-7DC0	SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm	6AG1193-6AA00-0AA0
SIPLUS BaseUnits type F0		SIPLUS Mounting Kit ET 200SP with maximum width of 19" Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with a height of up to 117 mm, types A0/A1 without AUX or add-on terminals, as well as types B0, B1, C0, C1, D0, U0	6AG1193-6AB00-0AA0
BU20-P8+A4+0B (Extended temperature range and exposure to environmental substances) BU type F0; BaseUnit (dark) with 8 process terminals to the module and an additional 4 internally bridged AUX terminals (1 A to 4 A); for continuing the load group	6AG1193-6BP20-2BF0	Other accessories	See SIMATIC ET 200SP BaseUnits, page 10/287

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Technical specifications

Article number	6AG1193-6BP00-7BA0	6AG1193-6BP00-7DA0	6AG1193-6BP20-7BA0	6AG1193-6BP20-7DA0
Based on	6ES7193-6BP00-0BA0 SIPLUS ET 200SP BU15-P16+A0+2B	6ES7193-6BP00-0DA0 SIPLUS ET 200SP BU15-P16+A0+2D	6ES7193-6BP20-0BA0 SIPLUS ET 200SP BU15-P16+A10+2B	6ES7193-6BP20-0DA0 SIPLUS ET 200SP BU15-P16+A10+2D
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)

I/O systems

SIMATIC ET 200 systems for the control cabinet

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SIPLUS BaseUnits

Technical specifications

Article number	6AG1193-6BP00-7BA0	6AG1193-6BP00-7DA0	6AG1193-6BP20-7BA0	6AG1193-6BP20-7DA0
Based on	6ES7193-6BP00-0BA0	6ES7193-6BP00-0DA0	6ES7193-6BP20-0BA0	6ES7193-6BP20-0DA0
	SIPLUS ET 200SP BU15-P16+A0+2B	SIPLUS ET 200SP BU15-P16+A0+2D	SIPLUS ET 200SP BU15-P16+A10+2B	SIPLUS ET 200SP BU15-P16+A10+2D
Relative humidity				
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance				
Coolants and lubricants				
Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3 - Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust; * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust; * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust; * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust; * Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6 - Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; * Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
- Coatings for printed circuit board assemblies acc. to EN 61086 - Protection against fouling acc. to EN 60664-3 - Military testing according to MIL-I-46058C, Amendment 7 - Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIPLUS BaseUnits

Technical specifications

Article number	6AG1193-6BP00-7BA1	6AG1193-6BP00-7DA1	6AG1193-6BP40-7BA1	6AG1193-6BP40-7DA1
Based on	6ES7193-6BP00-0BA1	6ES7193-6BP00-0DA1	6ES7193-6BP40-0BA1	6ES7193-6BP40-0DA1
	SIPLUS ET 200SP BU15-P16+A0+2B/T	SIPLUS ET 200SP BU15-P16+A0+2D/T	SIPLUS ET 200SP BU15-P16+A0+12B/T	SIPLUS ET 200SP BU15-P16+A0+12D/T
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

SIPLUS BaseUnits

Technical specifications

Article number	6AG1193-6BP00-7BA1	6AG1193-6BP00-7DA1	6AG1193-6BP40-7BA1	6AG1193-6BP40-7DA1
Based on	6ES7193-6BP00-0BA1 SIPLUS ET 200SP BU15-P16+A0+2B/T	6ES7193-6BP00-0DA1 SIPLUS ET 200SP BU15-P16+A0+2D/T	6ES7193-6BP40-0BA1 SIPLUS ET 200SP BU15-P16+A0+12B/T	6ES7193-6BP40-0DA1 SIPLUS ET 200SP BU15-P16+A0+12D/T
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A
Article number	6AG1193-6BP20-7BB0	6AG1193-6BP20-7BB1	6AG1193-6BP20-7DC0	
Based on	6ES7193-6BP20-0BB0 SIPLUS ET 200SP BU20-P12+A4+0B	6ES7193-6BP20-0BB1 SIPLUS ET 200SP BU20-P12+A0+4B	6ES7193-6BP20-0DC0 SIPLUS ET 200SP BU20-P6+A2+4D	
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax -40 °C 50 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C 70 °C; = Tmax	-40 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax -40 °C; = Tmin 50 °C; = Tmax	
Altitude during operation relating to sea level				
• Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	3 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... Tmax -5K at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)	3 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... Tmax -5K at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)	3 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... Tmax -5K at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)	
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200SP

SIPLUS BaseUnits

Technical specifications

Article number	6AG1193-6BP20-7BB0	6AG1193-6BP20-7BB1	6AG1193-6BP20-7DC0
Based on	6ES7193-6BP20-0BB0	6ES7193-6BP20-0BB1	6ES7193-6BP20-0DC0
	SIPLUS ET 200SP BU20-P12+A4+0B	SIPLUS ET 200SP BU20-P12+A0+4B	SIPLUS ET 200SP BU20-P6+A2+4D
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIPLUS BaseUnits

Technical specifications

Article number	6AG1193-6BP20-2BF0	6AG1193-6BP00-7BU0	6AG1193-6BP00-7DU0	6AG1193-6BR00-7HM0
Based on	6ES7193-6BP20-0BF0 SIPLUS ET 200SP BU20-P8+A4+0B	6ES7193-6BP00-0BU0 SIPLUS ET 200SP BU20-P16+A0+2B	6ES7193-6BP00-0DU0 SIPLUS ET 200SP BU20-P16+A0+2D	6ES7193-6BR00-0HM0 SIPLUS ET 200SP BU-Typ M0
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin			-40 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax			50 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	2 000 m	2 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIPLUS BaseUnits

Technical specifications

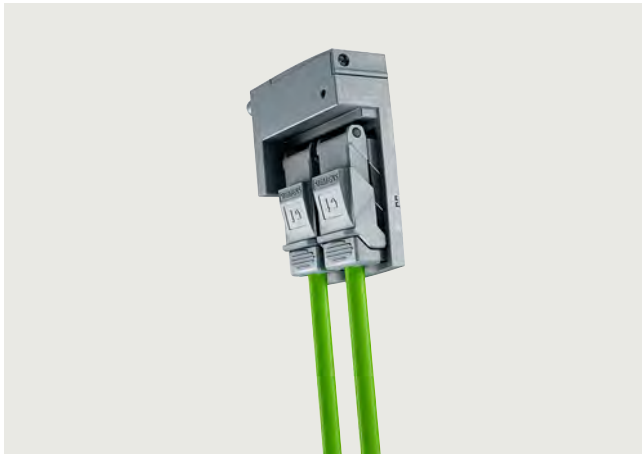
Article number	6AG1193-6BP20-2BF0	6AG1193-6BP00-7BU0	6AG1193-6BP00-7DU0	6AG1193-6BR00-7HM0
Based on	6ES7193-6BP20-0BF0	6ES7193-6BP00-0BU0	6ES7193-6BP00-0DU0	6ES7193-6BR00-0HM0
	SIPLUS ET 200SP BU20-P8+A4+0B	SIPLUS ET 200SP BU20-P16+A0+2B	SIPLUS ET 200SP BU20-P16+A0+2D	SIPLUS ET 200SP BU-Typ M0
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

BusAdapters

Overview



SIMATIC BA 2xFC BusAdapter for direct laying of the PROFINET cable via FastConnect connection



SIMATIC BA LC-LD/M12 BusAdapter for use as a system-integrated media converter from copper (M12) to single-mode glass fiber (LC-LD).



SIMATIC BA 2xLC-LD BusAdapter with 2 LC-LD sockets, for use in redundant systems, max. cable length 20 km



ET 200SP BA-Send BusAdapter for expansion of an ET 200SP station with ET 200AL modules



SIMATIC BA LC/RJ45 BusAdapter for use as a system-integrated media converter from copper (RJ45) to multimode glass fiber (LC).

For SIMATIC ET 200SP, two types of BusAdapter (BA) are available for selection:

- ET 200SP "BA-Send" BusAdapter for expansion of an ET 200SP station with up to 16 modules from the ET 200AL I/O series with IP67 protection via an ET connection
- SIMATIC BusAdapter for the free selection of the connection system (pluggable or direct connection) and physical PROFINET connection (copper, POF, HCS or glass fiber) to devices with a SIMATIC BusAdapter interface. One further advantage of the SIMATIC BusAdapter: only the adapter needs to be replaced for subsequent conversion to the rugged FastConnect technology or a fiber-optic connection, or to repair defective RJ45 sockets.

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

BusAdapters

Ordering data	Article No.		Article No.
BA 2xRJ45 BusAdapter For IM 155-6 PN ST, HF, R1	6ES7193-6AR00-0AA0	M12-180/M12-180 IE connecting cable Preassembled with IE FC trailing cable GP, M12 plugs (D-coded, push-pull)	
BA 2xFC BusAdapter For IM 155-6 PN ST, HF, R1; for increased resistance to vibration and EMC loads	6ES7193-6AF00-0AA0	0.5 m	6XV1871-8AE50
BA 2xM12 BusAdapter For IM 155-6 PN ST, HF, R1; 2 x M12 push-pull sockets, D-coding, also suitable for standard M12. For PROFINET	6ES7193-6AM00-0AA0	1.0 m	6XV1871-8AH10
BA 2xSCRJ BusAdapter For IM 155-6 PN HF, R1; fiber-optic cable connection for POF or PCF cables up to 250 m, with monitoring of attenuation	6ES7193-6AP00-0AA0	1.5 m	6XV1871-8AH15
BA SCRJ/RJ45 BusAdapter For IM 155-6 PN HF, R1; with media converter glass fiber-optic cable - copper; 1 x SCRJ glass fiber-optic cable connection, 1 x RJ45 connection	6ES7193-6AP20-0AA0	2.0 m	6XV1871-8AH20
BA SCRJ/FC BusAdapter For IM 155-6 PN HF, R1; with media converter glass fiber-optic cable - copper; 1 x SCRJ glass fiber-optic cable connection, 1 x FastConnect connection	6ES7193-6AP40-0AA0	3.0 m	6XV1871-8AH30
BA 2xLC BusAdapter For IM 155-6 PN HF, R1; two glass fiber-optic cable connections	6ES7193-6AG00-0AA0	5.0 m	6XV1871-8AH50
BA LC/RJ45 BusAdapter For IM 155-6 PN HF, R1; with media converter glass fiber-optic cable - copper; 1 x LC connection, 1 x RJ45 connection	6ES7193-6AG20-0AA0	10 m	6XV1871-8AN10
BA LC/FC BusAdapter For IM 155-6 PN HF, R1; with media converter glass fiber-optic cable - copper; 1 x LC connection, 1 x FastConnect connection	6ES7193-6AG40-0AA0	15 m	6XV1871-8AN15
BA 2xLC-LD BusAdapter For IM 155-6 PN HF, R1; two glass fiber-optic cable connections	6ES7193-6AG50-0AA0	MM FO CORD LC/LC Preassembled patch cable with 2x LC duplex connectors; 1.0 m	6XV1843-5EH10-0AA0
BA LC-LD/RJ45 BusAdapter For IM 155-6 PN HF, R1; with media converter glass fiber-optic cable - copper; 1 x LC-LD connection, 1 x RJ45 connection	6ES7193-6AG60-0AA0	SM FO CORD LC/LC Preassembled patch cable with 2x LC duplex connectors; 1.0 m	6XV1843-5FH10-0AA0
BA LC-LD/M12 BusAdapter For IM 155-6 PN HF, R1; with media converter glass fiber-optic cable - copper; 1 x LC-LD connection, 1 x M12 connection	6ES7193-6AG70-0AA0	FO standard cable 50/125 MM FO standard cable preassembled with 2x LC duplex connectors, 5.0 m	6XV1873-5AH50
		FO ROBUST CABLE 50/125 Robust MM FO cable preassembled with 2x LC duplex connectors, 10 m	6XV1873-5RN10
		FC IE stripping tool	6GK1901-1GA00
		IE FC RJ45 plug 2x2 Industrial Ethernet FastConnect RJ45 plug 180 2x 2, RJ45 plug-in connector (10/100 Mbps), with rugged metal enclosure and FC connection technology, for IE FC cable 2x 2; 180° cable outlet; 1 unit	6GK1901-1BB10-2AA0
		Station expansion with IP67 I/O system ET 200AL	
		ET 200SP BA-Send 1 x FC BusAdapter	6ES7193-6AS00-0AA0
		BaseUnit BU-Send	6ES7193-6BN00-0NE0
		Accessories	
		Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0
		Unlatching strap for M12 BA 10 units, for push-pull PROFINET plug, e. g. when using the BA 2xM12 BusAdapter	6ES7193-6DL00-2AA0

Note:

- ¹⁾ You will find information on further passive components at <https://www.siemens.com/fastconnect>.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

BusAdapters

Technical specifications

Article number	6ES7193-6AR00-0AA0 ET 200SP, Busadapter BA 2xRJ45	6ES7193-6AF00-0AA0 ET 200SP, Busadapter BA 2XFC	6ES7193-6AM00-0AA0 SIMATIC Busadapter BA 2xM12	6ES7193-6AP00-0AA0 ET 200SP, Busadapter BA 2xSCRJ	6ES7193-6AP20-0AA0 ET 200SP, Busadapter BA SCRJ/RJ45
General information					
Product type designation	BA 2x RJ45	BA 2xFC	BA 2x M12	BA 2xSCRJ	BA SCRJ/RJ45
Interfaces					
Number of PROFINET interfaces	1; 2 ports (switch) 2x RJ45	1	1	1; 2 ports (switch) SCRJ FO	1; 2 ports (switch) SCRJ/RJ45
Supports protocol for PROFINET IO					
• Number of RJ45 ports	2				1
• Number of FC (FastConnect) connections		2			
• Number of SCRJ ports			2	2	1
• Number of M12 ports					
Cable length					
- PCF				100 m	100 m
- Plastic FOC (POF)				50 m	50 m
- Cu conductors	100 m	100 m	100 m		100 m
Ambient conditions					
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Dimensions					
Width	20 mm	20 mm	20 mm	20 mm	20 mm
Height	69.5 mm	69.5 mm	73.5 mm	69.5 mm	69.5 mm
Depth	59 mm	59 mm	59 mm	59 mm	59 mm
Weights					
Weight, approx.	46 g	53 g	59 g	50 g	50 g

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

BusAdapters

Technical specifications

Article number	6ES7193-6AP40-0AA0 ET 200SP, Bus adapter BA SCRJ/FC		6ES7193-6AG00-0AA0 SIMATIC Busadapter BA 2XLC		6ES7193-6AG20-0AA0 SIMATIC Busadapter BA LC/RJ45		6ES7193-6AG40-0AA0 SIMATIC Bus adapter BA LC/FC		
General information									
Product type designation		BA SCRJ/FC		BA 2x LC		BA LC/RJ45		BA LC/FC	
Interfaces									
Number of PROFINET interfaces		1; 2 ports (switch) SCRJ/FC		1; 2 ports (switch) LC Multimode Glass Fibre		1; 2 ports (switch) LC / RJ45		1; 2 ports (switch) LC / FC	
Supports protocol for PROFINET IO									
• Number of RJ45 ports						1			
• Number of FC (FastConnect) connections		1						1	
• Number of SCRJ ports		1							
• Number of LC ports				2; Wavelength of 1 270 ... 1 380 nm, corresponds to 100BASE-FX		1; Wavelength of 1 270 ... 1 380 nm, corresponds to 100BASE-FX		1; Wavelength of 1 270 ... 1 380 nm, corresponds to 100BASE-FX	
Cable length									
- PCF		100 m				100 m		100 m	
- Plastic FOC (POF)		50 m							
- Cu conductors		100 m							
- Multimode graded-index fiber 50/125 µm				3 km; min. transmit power - 23.5 dB, min. receiver sensitivity -31 dB		3 km; min. transmit power - 23.5 dB, min. receiver sensitivity -31 dB		3 km; min. transmit power - 23.5 dB, min. receiver sensitivity -31 dB	
- Multimode graded-index fiber 62.5/125 µm				3 km; min. transmit power - 20 dB, min. receiver sensitivity -31 dB		3 km; min. transmit power - 20 dB, min. receiver sensitivity -31 dB		3 km; min. transmit power - 20 dB, min. receiver sensitivity -31 dB	
Ambient conditions									
Altitude during operation relating to sea level									
• Installation altitude above sea level, max.		5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual		5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual		5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual		5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	
Dimensions									
Width		20 mm		20 mm		20 mm		20 mm	
Height		69.5 mm		69.5 mm		69.5 mm		69.5 mm	
Depth		59 mm		59 mm		59 mm		59 mm	
Weights									
Weight, approx.		50 g		40 g		32 g		50 g	

Article number	6ES7193-6AS00-0AA0 ET 200SP, Busadapter BA-Send BA1XFC	
General information		
Product type designation	BA-Send 1xFC	
Interfaces		
Supports protocol for PROFINET IO		
Cable length		
- Cu conductors		
15 m; from IM firmware V3.3: between BA-send and the first ET-CONNECTION bus node and between all other bus nodes		
ET-Connection		
• Number of interfaces ET connection		
1		
• FC (FastConnect)		
Yes		
Ambient conditions		
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.		
5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual		
Dimensions		
Width		
20 mm		
Height		
69.5 mm		
Depth		
59 mm		
Weights		
Weight, approx.		
44 g		

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

BusAdapters

Technical specifications

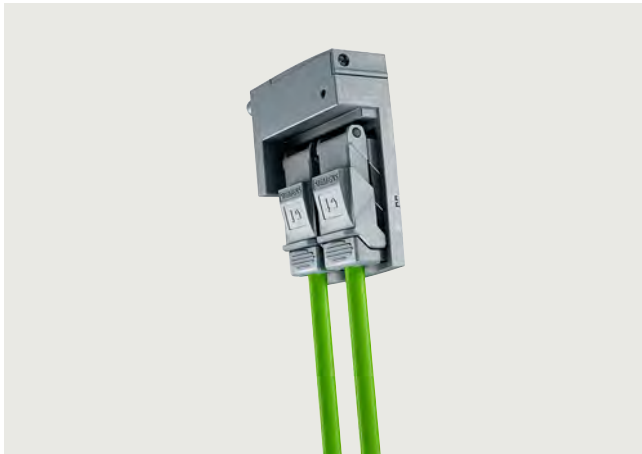
Article number	6ES7193-6AG50-0AA0 SIMATIC Busadapter BA 2xLC-LD	6ES7193-6AG60-0AA0 SIMATIC Busadapter BA LC-LD/RJ45	6ES7193-6AG70-0AA0 SIMATIC Busadapter BA LC-LD/M12
General information			
Product type designation	BA 2x LC-LD		
Interfaces			
Number of PROFINET interfaces	1; 2 ports (switch) 2x LC-LD single-mode fiber-optic cable	1	1
Supports protocol for PROFINET IO			
• Number of RJ45 ports		1	
• Number of LC ports	2; wavelength of 1 270 ... 1 380 nm, corresponds to 100BASE-LX	1; wavelength of 1 270 ... 1 380 nm, corresponds to 100BASE-LX	1; wavelength of 1 270 ... 1 380 nm, corresponds to 100BASE-LX
• Number of M12 ports			1
Cable length			
- Cu conductors		100 m	100 m
- single-mode fiber-optic cable 9/125 µm	20 km; 10 km for topology or IRT configuration; min. transmit power -15 dB, min. receiver sensitivity -28 dB	20 km	20 km
Ambient conditions			
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Dimensions			
Width	20 mm	20 mm	20 mm
Height	69.5 mm	69.5 mm	69.5 mm
Depth	59 mm	59 mm	59 mm
Weights			
Weight, approx.	40 g	32 g	45 g

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

SIPLUS BusAdapters

Overview



SIMATIC BA 2xFC BusAdapter for direct laying of the PROFINET cable via FastConnect connection.



SIMATIC BA LC-LD/M12 BusAdapter for use as a system-integrated media converter from copper (M12) to single-mode glass fiber (LC-LD).



SIMATIC BA 2xLC-LD BusAdapter with 2 LC-LD sockets, for use in redundant systems, max. cable length 20 km



ET 200SP BA-Send BusAdapter for expansion of an ET 200SP station with ET 200AL modules.

- ET 200SP "BA-Send" BusAdapter for expansion of an ET 200SP station with up to 16 modules from the ET 200AL I/O series with IP67 protection via an ET connection.
- SIMATIC BusAdapter for the free selection of the connection system (pluggable or direct connection) and physical PROFINET connection (copper, POF, HCS or glass fiber) to devices with a SIMATIC BusAdapter interface. Another advantage of the SIMATIC BusAdapters: only the adapter needs to be replaced for subsequent conversion to the rugged FastConnect technology or a fiber-optic connection, or to repair defective RJ45 sockets.

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.



SIMATIC BA LC/RJ45 BusAdapter for use as a system-integrated media converter from copper (RJ45) to multimode glass fiber (LC).

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIPLUS BusAdapters

Ordering data	Article No.		Article No.
SIPLUS BA 2xRJ45 BusAdapter (extended temperature range and exposure to environmental substances) For IM 155-6PN ST, HF	6AG1193-6AR00-7AA0	SIPLUS BA 2xLC BusAdapter (extended temperature range and exposure to environmental substances) For IM 155-6PN HF; 2 glass FO connections	6AG1193-6AG00-2AA0
SIPLUS BA 2xFC BusAdapter (extended temperature range and exposure to environmental substances) For IM 155-6PN ST, HF; for increased resistance to vibration and EMC loads	6AG1193-6AF00-7AA0	SIPLUS BA LC/RJ45 BusAdapter with conformal coating, media converter glass FO/CU, 1x LC FO connection and 1x RJ45 connection	6AG1193-6AG20-2AA0
BA 2xM12 BusAdapter (extended temperature range and exposure to environmental substances) For IM 155-6PN ST, HF; 2 x M12 push-pull sockets, D-coding, also suitable for standard M12. For PROFINET	6AG1193-6AM00-7AA0	SIPLUS BA 2xLC-LD BusAdapter With conformal coating, for single-mode optical fiber, up to 20 km	6AG1193-6AG50-2AA0
SIPLUS BA 2xSCRJ BusAdapter (extended temperature range and exposure to environmental substances) For IM 155-6PN HF; fiber-optic connection for POF or PCF cables up to 250 m, with monitoring of attenuation	6AG1193-6AP00-2AA0	Accessories Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0
		SIPLUS Mounting Kit ET 200SP with maximum width of 172 mm	6AG1193-6AA00-0AA0
		SIPLUS Mounting Kit ET 200SP with maximum width of 19" Mounting accessories for use with increased mechanical vibration and shock loads. Not approved for SIPLUS 2xRJ45 BusAdapter	6AG1193-6AB00-0AA0

Technical specifications

Article number	6AG1193-6AF00-7AA0	6AG1193-6AG00-2AA0	6AG1193-6AG20-2AA0	6AG1193-6AG50-2AA0
Based on	6ES7193-6AF00-0AA0 SIPLUS ET 200SP BA 2XFC PN	6ES7193-6AG00-0AA0 SIPLUS ET 200SP BA 2XLC	6ES7193-6AG20-0AA0 SIPLUS ET 200SP BA LC/RJ45	6ES7193-6AG50-0AA0 SIPLUS ET 200SP BA 2xLC-LD
Ambient conditions				
Ambient temperature during operation				
• min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• max.	70 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIPLUS BusAdapters

Technical specifications

Article number	6AG1193-6AF00-7AA0	6AG1193-6AG00-2AA0	6AG1193-6AG20-2AA0	6AG1193-6AG50-2AA0
Based on	6ES7193-6AF00-0AA0	6ES7193-6AG00-0AA0	6ES7193-6AG20-0AA0	6ES7193-6AG50-0AA0
	SIPLUS ET 200SP BA 2XFC PN	SIPLUS ET 200SP BA 2XLC	SIPLUS ET 200SP BA LC/RJ45	SIPLUS ET 200SP BA 2xLC-LD
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/6AG1193-6AB00-0AA0)
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/6AG1193-6AB00-0AA0)
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIPLUS BusAdapters

Technical specifications

Article number	6AG1193-6AM00-7AA0	6AG1193-6AP00-2AA0	6AG1193-6AR00-7AA0
Based on	6ES7193-6AM00-0AA0	6ES7193-6AP00-0AA0	6ES7193-6AR00-0AA0
	SIPLUS ET 200SP BA 2xM12	SIPLUS ET 200SP BA 2XSCRJ PN	SIPLUS ET 200SP BA 2xRJ45
Ambient conditions			
Ambient temperature during operation			
• min.		-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost)
• max.		60 °C; = Tmax	70 °C; = Tmax
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
- Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
- Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)	

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200SP

SIPLUS BusAdapters**Technical specifications**

Article number	6AG1193-6AM00-7AA0	6AG1193-6AP00-2AA0	6AG1193-6AR00-7AA0
Based on	6ES7193-6AM00-0AA0 SIPLUS ET 200SP BA 2xM12	6ES7193-6AP00-0AA0 SIPLUS ET 200SP BA 2XSCRJ PN	6ES7193-6AR00-0AA0 SIPLUS ET 200SP BA 2xRJ45
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Accessories

Overview SIMATIC system rail



Redundant R1 applications place high demands on

- the mechanical fixation and
- the low-impedance functional grounding connection of the functional grounding

of the individual ET 200SP components. These requirements cannot be ensured with DIN rails according to EN 60715.

For this reason, the use of the specially developed SIMATIC system rail is mandatory for an R1 design of the ET 200SP.

The system rail has

- tight dimensional tolerances for operating conditions under high mechanical load
- long-term stable surface coating for optimum interference suppression
- sturdy design for cantilever construction
- integrated Bosch profile grooves for easy and flexible mounting of modules and accessories (mounting brackets and hinges, damping elements, shield connections, cable ducts, etc.)

This ensures the high availability of an ET 200SP in R1 operation.

Overview Labeling strips



The head-end stations and I/O modules can optionally be equipped with labeling strips (13 x 31 mm) for system-specific marking. The labeling strips can be inscribed mechanically. Labeling strips are available in two versions in the colors light gray and yellow:

- 500 strips on the roll, for printing on thermal transfer printers. Core diameter 40 mm, external diameter 70 mm, width 62 mm
- 10 DIN A4 sheets with 100 strips each, 180 g/sm card, perforated, for printing using a laser printer direct from TIA Portal or via print templates

Overview Equipment labeling plate



Optionally, one equipment labeling plate each can be plugged onto head-end stations, BusAdapters, BaseUnits, and I/O modules. Equipment labeling plates are supplied in packs of 10 sheets with 16 labels each. The labels can be printed with thermal-transfer card printers or plotters, or stickers can be attached to them. Advantages compared to labels that are attached directly:

- The inscription on the front is not covered
- Simple label replacement when replacing a module
- No parallax errors when marking the BaseUnits on the mounting plate

The size of the labels is 14.8 x 10.5 mm (W x H)

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Accessories

Overview BU cover



The ET 200SP system can be operated with any number of slot gaps (BU slot without inserted I/O module). Applications for this include:

- Partial commissioning
- Prewired but unequipped options

To protect against damage, such slot gaps must be covered by a BU cover.

Within the BU cover, an equipment labeling plate for identification of the I/O module planned for this slot can be stored.

Versions:

- For BaseUnits with a width of 15 mm (pack containing 5 BU covers)
- For BaseUnits with a width of 20 mm (pack containing 5 BU covers)

Overview Shield connection



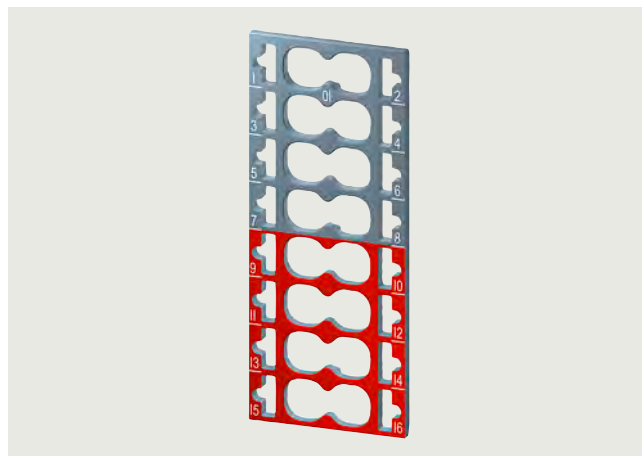
The shield connection permits the low-cost connection of cable shields. Compared to external shield supports, the system offers the following advantages:

- Quick installation without tools by plugging the shield connection element onto the BaseUnit
- Automatic low-impedance connection to the functional grounding (DIN rail)
- Optimized EMC properties by separating the signal lines from the supply voltage lines
- Short unshielded cable lengths
- Requires little space

Overview Unlatching strap

- For PROFINET push-pull plug, e.g. at BA 2xM12 BusAdapter
- Enables unlatching of the plug without disassembly of the BusAdapter

Overview Color-coded labels



The I/O modules that are plugged onto the BaseUnits determine the potentials connected at the process terminals.

The +/- potentials can optionally be identified using module-specific color-coded labels. The potentials of the AUX and add-on terminals can also be marked using color-coded labels. Advantages of the color-coded labels:

- Quick installation (one label for marking 16 terminals)
- Printed terminal numbers
- Avoidance of wiring errors
- Simple detection of potentials during servicing

Overview Server module



The server module is included in the scope of delivery of all head-end stations (interface module, CPU, Open Controller). It includes the setup of an ET 200SP station.

Overview SIPLUS server module

The SIPLUS server module is included in the scope of supply of all head-end stations (interface module, CPU, Open Controller). It includes the setup of a SIPLUS ET 200SP station.

I/O systems

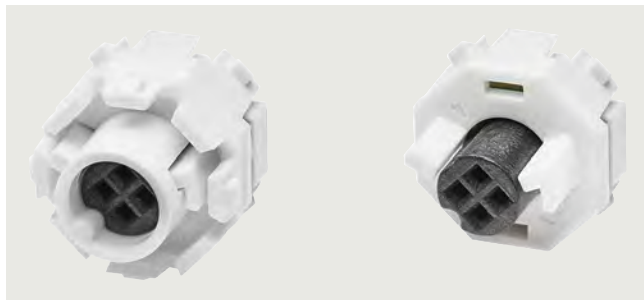
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200SP

Accessories

Overview SIPLUS spacing module

The Spacing Modules can be used instead of a SIPLUS BaseUnit with BU cover if a blank space is required. For example, empty spaces are required for some modules for operation at 70 °C.

Overview Coding elements



The operation of selected modules requires an electronic coding element that is always included in the scope of delivery of the I/O module. Apart from the mechanical coding function, this contains a re-writable memory for the redundant storage of module-specific configuration data (e.g. F target address for fail-safe modules or parameter data in the case of the IO-Link master). In this way, this data is automatically backed up during a module replacement. This saves the user from having to set addresses manually or back up data when replacing modules.

At present, there are two types of electronic coding element:

- e-coding element (Type H), which can be used in the I/O modules:
 - CM IO-Link master
 - F-CM AS-i Safety
- e-coding element (Type F), which can be used in the I/O modules:
 - F-DI 8x24VDC HF
 - F-DQ 4x24VDC/2A PM HF
 - F-PM-E 24VDC/8A PPM ST

Ordering data

Article No.

SIMATIC system rail

- with DIN rail according to EN 60715 (35 × 7.5), with 6 mm profile grooves, B-type
- Length: 482.6 mm for 19" cabinets
 - Length: 530 mm for 600 mm cabinets
 - Length: 830 mm for 900 mm cabinets
 - Length 2 m

6ES7193-6MR00-0AA0
6ES7193-6MR00-0BA0

6ES7193-6MR00-0CA0

6ES7193-6MR00-0DA0

Labeling strips

- 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer
- 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer
- 1000 labeling strips DIN A4, light gray, card, for inscription with laser printer
- 1000 labeling strips DIN A4, yellow, card, for inscription with laser printer

6ES7193-6LR10-0AA0

6ES7193-6LR10-0AG0

6ES7193-6LA10-0AA0

6ES7193-6LA10-0AG0

Equipment labeling plate

10 sheets of 16 labels

6ES7193-6LF30-0AW0

BU cover

- for covering empty slots (gaps); 5 units
- 15 mm wide
 - 20 mm wide

6ES7133-6CV15-1AM0
6ES7133-6CV20-1AM0

Shield connection

5 shield supports including support foot and shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional grounding

6ES7193-6SC20-1AM0

Unlatching strap

10 units, for push-pull PROFINET plug, e. g. when using the BA 2xM12 BusAdapter

6ES7193-6DL00-2AA0

Module-specific color-coded labels

- Color code CC00, for 16 process terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16)
- Pack containing 10 labels
 - Pack containing 50 labels
- Color code CC01, for 16 push-in terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16), pack containing 10 labels
- Color code CC02, for 16 push-in terminals, for BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16), pack containing 10 labels
- Color code CC03, for 16 push-in terminals, for BU type A0, A1 gray (terminals 1 to 8), red (terminals 9 to 12), gray (terminals 13 to 16), pack containing 10 labels
- Color code CC04, for 16 push-in terminals, for BU type A0, A1 gray (terminals 1 to 8), red (terminals 9 to 12), blue (terminals 13 to 16), pack containing 10 labels

6ES7193-6CP00-2MA0
6ES7193-6CP00-4MA0
6ES7193-6CP01-2MA0

6ES7193-6CP02-2MA0

6ES7193-6CP03-2MA0

6ES7193-6CP04-2MA0

I/O systems

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Accessories

Ordering data	Article No.		Article No.
Module-specific color-coded labels Color code CC05, for 16 push-in terminals, for BU type A0, A1 gray (terminals 1 to 12), red (terminals 13 to 14), blue (terminals 15 to 16), pack containing 10 labels Color code CC41, for 16 push-in terminals; for BU type B1, gray (terminals 1 to 4), red (terminals 5 to 8), blue (terminals 9 to 12), pack containing 10 labels Color code CC42, for 12 push-in terminals, BU type F0, gray (terminals 1 to 8), red (terminals 9 to 10), blue (terminals 11 to 12), pack containing 10 labels Color code CC51, for 6 push-in terminals, for BU type C0, C1, gray (terminals 1 to 4), red (terminal 5), blue (terminal 6), pack containing 10 labels Color code CC51, for 6 push-in terminals, for BU type C0, gray (terminals 1, 2 and 5), red (terminals 3 and 4), blue (terminal 6), pack containing 10 labels Color code CC01, for 16 push-in terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16), pack containing 50 labels Color code CC02, for 16 push-in terminals, for BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16), pack containing 50 labels	6ES7193-6CP05-2MA0 6ES7193-6CP41-2MB0 6ES7193-6CP42-2MB0 6ES7193-6CP51-2MC0 6ES7193-6CP52-2MC0 6ES7193-6CP01-4MA0 6ES7193-6CP02-4MA0	Color-coded labels for add-on terminals Color code CC82, for 4 AUX terminals, BU type B0, red (terminals 1 A to 4 A), pack containing 10 labels Color code CC83, for 4 AUX terminals, BU type B0, blue (terminals 1 A to 4 A), pack containing 10 labels Color code CC84, for 2 AUX terminals 1 A to 2 A, yellow-green, for BaseUnit type C0, C1, pack containing 10 labels Color code CC85, for 2 AUX terminals 1 A to 2 A, red, for BaseUnit type C0, C1, pack containing 10 labels Color code CC86, for 2 AUX terminals 1 A to 2 A, blue, for BaseUnit type C0, C1, pack containing 10 labels Server module Spare part SIPLUS server module (Extended temperature range and exposure to environmental substances) Spare part SIPLUS Spacing Module (Extended temperature range and exposure to environmental substances) With conformal coating, no terminals, bridged to the left, WxH: 15 mm x 117 mm	6ES7193-6CP82-2AB0 6ES7193-6CP83-2AB0 6ES7193-6CP84-2AC0 6ES7193-6CP85-2AC0 6ES7193-6CP86-2AC0 6ES7193-6PA00-0AA0 6AG1193-6PA00-7AA0 6AG1193-6BN00-7BA0
Color-coded labels for add-on terminals Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A), pack containing 10 labels Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A), pack containing 10 labels Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A), pack containing 10 labels Color code CC74, for 2x5 additional terminals, BU type A1, red (terminals 1B to 5B), blue (terminals 1C to 5C), pack containing 10 labels Color code CC81, for 4 AUX terminals, BU type B0, yellow/green (terminals 1 A to 4 A), pack containing 10 labels	6ES7193-6CP71-2AA0 6ES7193-6CP72-2AA0 6ES7193-6CP73-2AA0 6ES7193-6CP74-2AA0 6ES7193-6CP81-2AB0	Coding elements Type H; pack containing 5 electronic coding elements Type F; pack containing 5 electronic coding elements Type A; pack with 20 mechanical coding elements, for automatic coding, for I/O modules Type B; pack with 20 mechanical coding elements, for automatic coding, for I/O modules Type C; pack with 20 mechanical coding elements, for automatic coding, for I/O modules Type D; pack with 20 mechanical coding elements, for automatic coding, for I/O modules	6ES7193-6EH00-1AA0 6ES7193-6EF00-1AA0 6ES7193-6KA00-3AA0 6ES7193-6KB00-3AA0 6ES7193-6KC00-3AA0 6ES7193-6KD00-3AA0