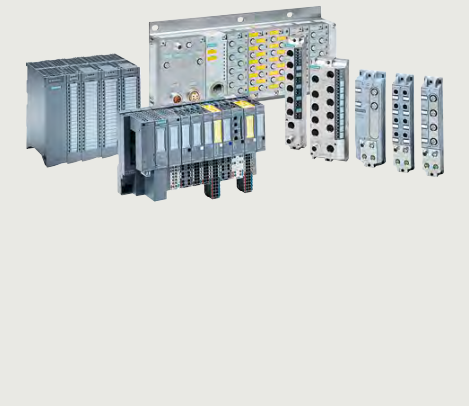


Overview

SIMATIC ET 200 offers the right solution for every application

With SIMATIC ET 200 a wide range of distributed I/O systems is available - for solutions in the control cabinet or without a control cabinet directly at the machine, as well as for applications in hazardous areas. The modular design makes it possible to scale and expand the ET 200 systems simply and in small stages. Already integrated add-on modules reduce costs and at the same time offer a widely diverse range of possible applications. You can choose from many different combination options: digital and analog inputs/outputs, intelligent modules with CPU functionality, safety technology, motor starters, pneumatic devices, frequency converters, as well as various different technology modules (e.g. for counting, positioning).

Communication over PROFINET and PROFIBUS, uniform engineering, transparent diagnostic possibilities as well as optimal interfacing to SIMATIC Controllers and HMI units prove the unique integration of Totally Integrated Automation.

PROFINET

PROFINET is the open, cross-vendor Industrial Ethernet standard (IEC 61158/61784) for automation.

Based on Industrial Ethernet, PROFINET enables direct communication between field devices (IO devices) and controllers (IO controllers), up to and including the solution of isochronous drive controls for Motion Control applications.

As PROFINET is based on Standard Ethernet according to IEEE 802.3, any devices from the field level to the management level can be connected.

In this way, PROFINET enables system-wide communication, supports plant-wide engineering and applies IT standards, such as web server or FTP, right down to field level. Tried and tested fieldbus systems, such as PROFIBUS or AS-Interface, can be easily integrated without any modification to the existing devices.

PROFIBUS

PROFIBUS is the international standard (IEC 61158/61784) for the field level. It is the only fieldbus to allow communication both in manufacturing applications and in process-oriented applications.

PROFIBUS is used to connect field devices, e.g. distributed I/O devices or drives, to automation systems such as SIMATIC S7, SIMOTION, SINUMERIK, or PCs.

PROFIBUS is standardized in accordance with IEC 61158 and is a high-performance, open and rugged fieldbus system with short response times. PROFIBUS is available in different forms for various applications.

PROFIBUS DP (distributed I/O)

PROFIBUS DP is used for connecting distributed field devices, e.g. SIMATIC ET 200, or drives with extremely fast response times. PROFIBUS DP is used when sensors/actuators are distributed at the machine or in the plant (e.g. field level).

AS-Interface

AS-Interface is the international standard (IEC 62026/EN 50295) which, as an alternative to the cable harness, links especially cost-effective sensors and actuators for the field level by means of a two-wire line. This two-wire line is also used to supply the individual stations with power. This makes the AS-Interface the ideal partner for PROFINET and PROFIBUS DP.
AS-i communications modules in ET 200SP enable the flexible combination of AS-Interface and distributed I/O. AS-Interface transmits standard data and safety data up to PL e / SIL 3 in the same AS-i network. AS-Interface is not only suitable for efficient transmission of digital and analog standard I/O signals but also ideal for the user-friendly connection of EMERGENCY STOP pushbuttons and protective doors.

IO-Link

The communication standard IO-Link permits the intelligent connection of sensors and switching devices to the control level. IO-Link facilitates the integration of all components in the control cabinet and on the field level - for maximum integration and seamless communication on the final meters to the process.

IO-Link solutions from Siemens ensure maximum precision and cost-effectiveness in any production system. IO-Link is completely integrated in Totally Integrated Automation (TIA) and offers many advantages.

- The open standard permits the networking of devices from different manufacturers
- Simple wiring facilitates the installation process
- Reduced wiring effort saves time and money during installation
- Efficient engineering facilitates configuration and commissioning
- High-speed diagnostics ensures short plant standstill times and high plant availability
- High process transparency permits, for example, efficient power management

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 IP20 degree of protection.
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: IM155-6MF with the Ethernet-based protocols PROFINET, EtherNet/IP and Modbus TCP
- PROFINET: IM155-6PN
- PROFIBUS: IM155-6DP

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-version 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, FastConnect, plastic or glass fiber-optic cables), also as integrated media converter
- Push-in terminals for cross-sections up to 1.5 mm^2 with wire end ferrule, and up 2.5 mm^2 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

SIMATIC ET 200SP shielding video
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6196729280001

Overview

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 (**M**odule-**t**o-**M**odule 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 version 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
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 155-6MF)	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.

Overview

Basic components	Function
Interface modules for PROFINET IO (IM 155-6PN)	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.
Interface module for PROFIBUS DP (IM 155-6DP)	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.
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 versions are available for the connection of copper cables or plastic and glass fiber-optic cables. Hybrid copper/fiber-optic versions are also available as integrated media converters. Cable length between 2 stations: max. 100 m (Cu), max. 50 m (POF), max. 100m (PCF), max. 3 km (multimode glass FOC). For expanding the station with the I/O system ET 200AL via ET connection, the BA-Send BusAdapter is available
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.
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 mm^2). 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.
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)
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

Overview

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.
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 ground (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, external diameter 70 mm, width 62 mm. • 10 DIN A4 sheets with 100 strips each, card 180 g/mm^2, 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

Overview

SIMATIC ET 200SP MultiFieldbus video
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6144272396001

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. 256 bytes in each case for input and output data per module and max. 512 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)

Overview

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

- Max. 64 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)
- 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 BusAdapter

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 PROFIsafe 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

Ordering data	Article No.
IM 155-6 MF High Feature MultiFieldbus interface module 2-port IM with server module, without SIMATIC BusAdapter; PROFINET, EtherNet/IP and Modbus TCP	**6ES7155-6MU00-0CN0**
PROFINET interface module IM 155-6 PN Basic With server module; two integrated RJ45 sockets	**6ES7155-6AR00-0AN0**
PROFINET interface module IM 155-6 PN Standard With server module	
• With attached SIMATIC BA 2xRJ45 BusAdapter	**6ES7155-6AA01-0BN0**
• Without SIMATIC BusAdapter	**6ES7155-6AU01-0BN0**
PROFINET interface module IM 155-6 PN/2 High Feature 2-port IM, with server module, without SIMATIC BusAdapter	**6ES7155-6AU01-0CN0**
PROFINET interface module IM 155-6 PN/3 High Feature 3-port IM, with server module, without SIMATIC BusAdapter	**6ES7155-6AU30-0CN0**
PROFINET interface module IM 155-6 PN High Speed With server module, without SIMATIC BusAdapter	**6ES7155-6AU00-0DN0**
PROFIBUS interface module IM 155-6 DP High Feature With server module, with PROFIBUS plug with PG socket	**6ES7155-6BA01-0CN0**
Redundant PROFINET interface module IM 155-6 PN R1 2-port IM, with server module, without SIMATIC BusAdapter, R1 redundancy	**6ES7155-6AU00-0HM0**
Accessories	
Strain relief for the PROFINET cable System-integrated strain relief for High Feature PN interface modules (5 units)	**6ES7193-6RA00-1AN0**
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 loads; max. cable length 50 m	**6ES7193-6AF00-0AA0**
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**
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**
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**
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**
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**
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**
SIMATIC BA 2xLC-LD BusAdapter For IM 155-6 PN HF, IM 155-6 PN R1; 2 x LC-LD connections	**6ES7193-6AG50-0AA0**
SIMATIC BA LC-LD/RJ45 BusAdapter For IM 155-6 PN HF, IM 155-6 PN R1; with media converter glass FO - copper; 1 x LC-LD connection, 1 x RJ45 connection	**6ES7193-6AG60-0AA0**
SIMATIC BA LC-LD/M12 BusAdapter For IM 155-6 PN HF, IM 155-6 PN R1; with media converter glass FO - copper; 1 x LC-LD connection, 1 x M12 connection	**6ES7193-6AG70-0AA0**
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**

Ordering data	Article No.
Other accessories	
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, perforated, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1 000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	**6ES7193-6LA10-0AG0**
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	
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	**6ES7193-6MR00-0AA0**
• Length: 530 mm for 600 mm cabinets	**6ES7193-6MR00-0BA0**
• Length: 830 mm for 900 mm cabinets	**6ES7193-6MR00-0CA0**
• Length 2 m	**6ES7193-6MR00-0DA0**
DIN rail, 35 mm	
• Length: 483 mm for 19" cabinets	**6ES5710-8MA11**
• Length: 530 mm for 600 mm cabinets	**6ES5710-8MA21**
• Length: 830 mm for 900 mm cabinets	**6ES5710-8MA31**
• Length 2 m	**6ES5710-8MA41**
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.	

	Article No.
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multi-language: 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	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current Manual Collection DVD and the three subsequent updates	
Spare parts	
Server module	**6ES7193-6PA00-0AA0**
Terminates an ET 200SP station; included in the scope of supply of the interface modules, CPUs and Open Controllers	
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 version; included in scope of supply of the head-end station	
with push-in terminals (10 units)	**6ES7193-4JB00-0AA0**

Technical specifications

Article number	**6ES7155-6MU00-0CN0**
	ET 200SP, IM155-6MF HF
General information	
Product type designation	IM 155-6 MF 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
• Tool changer	Yes; Docking station and docking unit
• Local coupling, IO data	Yes
- Number of coupling modules	6; 1x output + max. 5x input
• Local coupling, data records	No
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	via IM155-6PN/2 HF in compatibility mode
• STEP 7 configurable/ integrated from version	via IM155-6PN/2 HF in compatibility mode
• PROFINET from GSD version/ GSD revision	GSDML V2.3
• Multi Fieldbus Configuration Tool (MFCT)	from V1.3
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Address area	
Address space per station	
• Address space per station, max.	1 440 byte; Dependent on configuration
Hardware configuration	
Rack	
• Quantity of operable ET 200SP modules, max.	64
• Quantity of operable ET 200AL modules, max.	16
Submodules	
• Number of submodules per station, max.	256
Time stamping	
Accuracy	10 ms
Interfaces	
Number of PROFINET interfaces	1; 2 ports (switch)
1. Interface	
Interface types	
• Number of ports	2; via BusAdapter
• integrated switch	Yes
• BusAdapter (PROFINET)	Yes
Protocols	
• PROFINET IO Device	Yes
• Open IE communication	Yes
• Media redundancy	Yes
Interface types	
RJ 45 (Ethernet)	
• Transmission procedure	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• 10 Mbps	No
• 100 Mbps	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• Autonegotiation	Yes
• Autocrossing	Yes

Article number	**6ES7155-6MU00-0CN0**
	ET 200SP, IM155-6MF HF
Protocols	
Modbus TCP	Yes
Number of connections	
• Number of MtM communication relationships/connections, max.	16
PROFINET IO Device	
Services	
- IRT	No
- PROFIenergy	Yes
- Prioritized startup	No
- Shared device	Yes
- Number of IO Controllers with shared device, max.	14; 2x PN controller + 2x EtherNet/IP scanner + 10x Modbus TCP master
Redundancy mode	
• PROFINET system redundancy (S2)	Yes; NAP S2
- on S7-1500R/H	Yes
- on S7-400H	Yes
• PROFINET system redundancy (R1)	No
• H-Sync forwarding	Yes
Media redundancy	
- MRP	Yes
- MRPD	No
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
- write single coil (code=5)	Yes
- write multiple coils (code=15)	Yes
- Write Multiple Registers (Code=16)	Yes
- Parameter change by master	Yes
- Modbus TCP Security Protocol	No
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)

Technical specifications

Article number	**6ES7155-6MU00-0CN0** ET 200SP, IM155-6MF HF
Updating time	
- I/O request interval	2 ms
Connections	
- Number of connections per slave	9; (1x inputs / 2x outputs / 4x volatile registers / 2x Device Info)
Open IE communication	
• TCP/IP	Yes
• UDP	Yes
• SNMP	Yes
• LLDP	Yes
• ARP	Yes
• IGMP	Yes
• Multicast	Yes
• Broadcast	Yes
• IPv4	Yes
• IPv6	No
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
• 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 link LEDs on BusAdapter

Article number	**6ES7155-6MU00-0CN0** ET 200SP, IM155-6MF HF
Standards, approvals, certificates	
Network loading class	3
Security level	According to Security Level 1 Test Cases V1.1.1
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; No condensation
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °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
Mechanics/material	
Strain relief	Yes; Optional
Dimensions	
Width	50 mm
Height	117 mm
Depth	74 mm
Weights	
Weight, approx.	120 g; without BusAdapter

Article number	**6ES7155-6AR00-0AN0** ET 200SP, IM155-6PN Basic	**6ES7155-6AA01-0BN0** ET 200SP, IM155-6PN ST incl. BA 2xRJ45	**6ES7155-6AU01-0BN0** ET 200SP, IM155-6PN ST
General information			
Product type designation	IM 155-6 PN BA	IM155-6PN ST, including BusAdapter BA 2x RJ45	IM 155-6 PN ST
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Module swapping during operation (hot swapping)	Yes; Single hot swapping	Yes; Single hot swapping	Yes; Single hot swapping
• Isochronous mode	No	No	No
Engineering with			
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1	V14	V14
• STEP 7 configurable/ integrated from version	V5.5 SP4 and higher	V5.5 SP4 and higher	V5.5 SP4 and higher
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Short-circuit protection		Yes	Yes
Input current			
Current consumption (rated value)		450 mA	450 mA
Address area			
Address space per station			
• Address space per station, max.	32 byte; per input / output	512 byte; Dependent on configuration	512 byte; Dependent on configuration

Technical specifications

Article number	**6ES7155-6AR00-0AN0** ET 200SP, IM155-6PN Basic	**6ES7155-6AA01-0BN0** ET 200SP, IM155-6PN ST incl. BA 2xRJ45	**6ES7155-6AU01-0BN0** ET 200SP, IM155-6PN ST
Hardware configuration			
Rack			
• Modules per rack, max.		32; + 16 ET 200AL modules	
• Quantity of operable ET 200SP modules, max.	12		32
• Quantity of operable ET 200AL modules, max.	0		16
Submodules			
• Number of submodules per station, max.		256	256
Interfaces			
Number of PROFINET interfaces	1; 2 ports (switch)	1; 2 ports (switch)	1; 2 ports (switch)
1. Interface			
Interface types			
• RJ 45 (Ethernet)	Yes; 2 integrated RJ45 ports		
• Number of ports	2	2	2
• integrated switch	Yes	Yes	Yes
• BusAdapter (PROFINET)	No	Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12	Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12
Protocols			
• PROFINET IO Device	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes
• Media redundancy	Yes; PROFINET MRP	Yes; PROFINET MRP	Yes; PROFINET MRP
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)
• 10 Mbps	No	Yes; for Ethernet services	
• 100 Mbps	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• Autonegotiation	Yes	Yes	Yes
• Autocrossing	Yes	Yes	Yes
Protocols			
PROFINET IO Device			
Services			
- IRT	No	Yes; with send cycles of between 250 µs and 4 ms in increments of 125 µs	Yes; with send cycles of between 250 µs and 4 ms in increments of 125 µs
- PROFIenergy	No	Yes	Yes
- Prioritized startup	No	Yes	Yes
- Shared device	No	Yes	Yes
- Number of IO Controllers with shared device, max.		2	2
Redundancy mode			
• PROFINET system redundancy (S2)	No	No	No
Media redundancy			
- MRP	Yes	Yes	Yes
- MRPD	No	No	No
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• SNMP	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes
Isochronous mode			
Equidistance	No		

Technical specifications

Article number	**6ES7155-6AR00-0AN0** ET 200SP, IM155-6PN Basic	**6ES7155-6AA01-0BN0** ET 200SP, IM155-6PN ST incl. BA 2xRJ45	**6ES7155-6AU01-0BN0** ET 200SP, IM155-6PN ST
Interrupts/diagnostics/ status information			
Status indicator	Yes	Yes	Yes
Alarms	Yes	Yes	Yes
Diagnostics function	Yes	Yes	Yes
Diagnostics indication LED			
• RUN LED	Yes; green LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED	Yes; red LED
• MAINT 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
• Connection display LINK TX/RX	Yes; 2x green link LEDs on BusAdapter		Yes; 2x green link LEDs on BusAdapter
Standards, approvals, certificates			
Network loading class	2	2	2
Security level		According to Security Level 1 Test Cases V1.1.1	According to Security Level 1 Test Cases V1.1.1
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C	-30 °C
• vertical installation, max.	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
connection method			
ET-Connection			
• via BU/BA Send	No	Yes; + 16 ET 200AL modules	Yes; + 16 ET 200AL modules
Dimensions			
Width	35 mm	50 mm	50 mm
Height	117 mm	117 mm	117 mm
Depth	74 mm	74 mm	74 mm
Weights			
Weight, approx.	125 g	147 g; without BusAdapter	147 g; without BusAdapter

Article number	**6ES7155-6AU01-0CN0** ET 200SP, IM155-6PN/2 HF	**6ES7155-6AU30-0CN0** ET 200SP, IM155-6PN/3 HF	**6ES7155-6AU00-0DN0** ET 200SP, IM155-6PN HS	**6ES7155-6BA01-0CN0** ET 200SP, IM155-6DP HF incl. DP-Connect.
General information				
Product type designation	IM 155-6 PN/2 HF	IM 155-6 PN/3 HF	IM 155-6 PN HS	IM 155-6 DP HF
Product function				
• 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
• Module swapping during operation (hot swapping)	Yes; Multi-hot swapping	Yes; Multi-hot swapping	Yes; Multi-hot swapping	Yes; Multi-hot swapping
• Isochronous mode	Yes	Yes	Yes	No
• Tool changer	Yes; Docking station and docking unit	Yes; Docking station and docking unit		
• Local coupling, IO data	No	Yes		
- Number of coupling modules		16		
- Number of coupling submodules per module		4		
• Local coupling, data records	No	No		
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V15.1 or higher	V15.1	STEP 7 V14 or higher	V15 SP1
• STEP 7 configurable/ integrated from version	Configurable via GSD file	Configurable via GSD file	V5.5 SP4 and higher	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
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	- / V2.3	

Technical specifications

Article number	**6ES7155-6AU01-0CN0** ET 200SP, IM155-6PN/2 HF	**6ES7155-6AU30-0CN0** ET 200SP, IM155-6PN/3 HF	**6ES7155-6AU00-0DN0** ET 200SP, IM155-6PN HS	**6ES7155-6BA01-0CN0** ET 200SP, IM155-6DP HF incl. DP-Connect.
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity 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; Dependent on configuration	1 440 byte; Dependent on configuration	968 byte; For input and output data respectively	244 byte; per input / output
Hardware configuration				
Rack				
• Quantity of operable ET 200SP modules, max.	64	64	30	32
• Quantity of operable ET 200AL modules, max.	16	16	0	16
Submodules				
• Number of submodules per station, max.	256	256	125	
Time stamping				
Accuracy	10 ms			
Interfaces				
Number of PROFINET interfaces	1; 2 ports (switch)	1; 3 ports (switch)	1; 2 ports (switch)	
Number of PROFIBUS interfaces				1
1. Interface				
Interface types				
• RS 485				Yes
• Number of ports	2; via BusAdapter	3; Via 2 BusAdapter slots	2	
• integrated switch	Yes	Yes	Yes	
• BusAdapter (PROFINET)	Yes; compatible BusAdapters: BA 2x RJ45, BA 2x M12, BA 2x FC, BA 2x LC, BA LC/RJ45, BA LC/FC, BA 2x SCRJ, BA SCRJ/RJ45, BA SCRJ/FC,	Yes; Compatible BusAdapter: 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; Compatible BusAdapter: BA 2x RJ45, BA 2x FC, BA 2x SCRJ, BA SCRJ / RJ45, BA SCRJ / FC, BA 2x LC, BA LC / RJ45, BA LC / FC	
• Output current of the interface, max.				90 mA
Protocols				
• PROFINET IO Device	Yes	Yes	Yes	
• PROFIBUS DP slave				Yes
• Open IE communication	Yes	Yes	Yes	
• Media redundancy	Yes; PROFINET MRP	Yes; PROFINET MRP	Yes; As MRP or MRPD client; max. 50 or 30 devices in the ring	
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)	
• 10 Mbps	No	No	No	
• 100 Mbps	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	
• Autonegotiation	Yes	Yes	Yes	
• Autocrossing	Yes	Yes	Yes	
RS 485				
• Transmission rate, max.				12 Mbit/s

Technical specifications

Article number	**6ES7155-6AU01-0CN0**	**6ES7155-6AU30-0CN0**	**6ES7155-6AU00-0DN0**	**6ES7155-6BA01-0CN0**
	ET 200SP, IM155-6PN/2 HF	ET 200SP, IM155-6PN/3 HF	ET 200SP, IM155-6PN HS	ET 200SP, IM155-6DP HF incl. DP-Connect.
Protocols				
Number of connections				
• Number of MtM communication relationships/connections, max.	16	16		
PROFINET IO Device				
Services				
- IRT	Yes; 250 µs, 500 µs, 1 ms, 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms	Yes; 250 µs, 500 µs, 1 ms, 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms	Yes; 125 µs, 250 µs, 500 µs, 1 ms, 2 ms, 4 ms additionally with IRT with high performance: 250 µs to 4 ms in 125 µs frame	
- PROFIenergy	Yes	Yes	Yes	
- Prioritized startup	Yes	Yes	Yes	
- Shared device	Yes	Yes	Yes	
- Number of IO Controllers with shared device, max.	4	4	4	
Redundancy mode				
• PROFINET system redundancy (S2)	Yes; NAP S2	Yes; NAP S2	No	
• PROFINET system redundancy (R1)		No		
• H-Sync forwarding	Yes	Yes		
Media redundancy				
- MRP	Yes	Yes	Yes	
- MRPD	No	No	Yes	
Open IE communication				
• TCP/IP	Yes	Yes	Yes	No
• SNMP	Yes	Yes	Yes	
• LLDP	Yes	Yes	Yes	
PROFIBUS DP				
Services				
- SYNC capability				Yes
- FREEZE capability				Yes
- DPV0				Yes
- DPV1				Yes
Isochronous mode				
Equidistance	Yes	Yes	Yes	
shortest clock pulse	250 µs	250 µs	125 µs	
max. cycle	4 ms	4 ms	4 ms	
Bus cycle time (TDP), min.	250 µs	250 µs	125 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
• 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	
• Connection display DP				Yes; green DP LED
Standards, approvals, certificates				
Network loading class	3	3	3	
Security level	According to Security Level 1 Test Cases V1.1.1	According to Security Level 1 Test Cases V1.1.1	According to Security Level 1 Test Cases V1.1.1	

Technical specifications

Article number	**6ES7155-6AU01-0CN0** ET 200SP, IM155-6PN/2 HF	**6ES7155-6AU30-0CN0** ET 200SP, IM155-6PN/3 HF	**6ES7155-6AU00-0DN0** ET 200SP, IM155-6PN HS	**6ES7155-6BA01-0CN0** ET 200SP, IM155-6DP HF incl. DP-Connect.
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C; No condensation	-30 °C	-25 °C; No condensation	-25 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; No condensation	-30 °C	-25 °C; No condensation	-25 °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				
ET-Connection				
• via BU/BA Send	Yes; + 16 ET 200AL modules	Yes; + 16 ET 200AL modules	No	Yes; + 16 ET 200AL modules
Mechanics/material				
Strain relief	Yes; Optional	Yes; Optional		
Dimensions				
Width	50 mm	100 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.	120 g; without BusAdapter	220 g; without BusAdapter	147 g; without BusAdapter	150 g

Article number	**6ES7155-6AU00-0HM0** ET 200SP, IM 155-6 PN R1
General information	
Product type designation	IM 155-6 PN R1
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	V18
• PROFINET from GSD version/ GSD revision	GSDML V2.4.x
• Multi Fieldbus Configuration Tool (MFCT)	V1.4.1 or higher
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.	1 440 byte
Hardware configuration	
Integrated power supply	Yes; 24 V DC
Rack	
• Modules per rack, max.	64
Submodules	
• Number of submodules per station, max.	256
Interfaces	
Number of PROFINET interfaces	1; 2 ports (switch)

Article number	**6ES7155-6AU00-0HM0** ET 200SP, IM 155-6 PN R1
1. Interface	
Interface types	
• Number of ports	2; via BusAdapter
• integrated switch	Yes
• BusAdapter (PROFINET)	Yes; compatible BusAdapters: 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
Protocols	
• PROFINET IO Device	Yes
• Open IE communication	Yes
• Media redundancy	Yes; as MRP client
Interface types	
RJ 45 (Ethernet)	
• Transmission procedure	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• 100 Mbps	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• Autonegotiation	Yes
• Autocrossing	Yes
Protocols	
PROFINET IO Device	
Services	
- IRT	No
- PROFIenergy	No
- Prioritized startup	No
- Shared device	No
Redundancy mode	
• PROFINET system redundancy (S2)	No
- on S7-1500R/H	No
- on S7-400H	No
• PROFINET system redundancy (R1)	Yes

Technical specifications

Article number	**6ES7155-6AU00-0HM0**
	ET 200SP, IM 155-6 PN R1
Media redundancy	
- MRP	Yes
- MRPD	No
Open IE communication	
• TCP/IP	Yes
• SNMP	Yes
• LLDP	Yes
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
• ACT LED	Yes; green LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Connection display LINK TX/RX	Yes; 2x green link LEDs on BusAdapter

Article number	**6ES7155-6AU00-0HM0**
	ET 200SP, IM 155-6 PN R1
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	50 mm
Height	138 mm
Depth	89 mm
Weights	
Weight, approx.	192 g; without BusAdapter

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

Ordering data	Article No.
SIPLUS PROFINET interface module IM 155-6 PN Standard	
(Extended temperature range and exposure to environmental substances)	
IM 155-6 PN ST, with server module and installed BusAdapter BA 2xRJ45, plus extended mains buffering time	**6AG1155-6AA01-7BN0**
IM 155-6PN ST, including server module, without BusAdapter, plus extended mains buffering time	**6AG1155-6AU01-7BN0**
SIPLUS interface module High Feature	
(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	
• Temperature range -40...+60 °C	**6AG1155-6AU01-2CN0**
• Temperature range -40...+70 °C	**6AG1155-6AU01-7CN0**
Redundant SIPLUS PROFINET interface module IM 155-6 PN R1	
2-port interface module, with server module, without SIMATIC BusAdapter, R1 redundancy	**6AG1155-6AU00-7HM0**
Accessories	
SIPLUS Mounting Kit ET 200SP	**6AG1193-6AA00-0AA0**
Mounting accessories for use with increased mechanical vibration and shock loads. Not approved for SIPLUS BusAdapter BA 2xRJ45	
Other accessories	See SIMATIC ET 200SP, IM 155-6 interface module, page 10/11

Technical specifications

Article number	6AG1155-6AA01-7BN0	6AG1155-6AU01-2CN0	6AG1155-6AU01-7CN0	6AG1155-6AU01-7BN0	6AG1155-6BA01-7CN0
Based on	6ES7155-6AA01-0BN0	6ES7155-6AU01-0CN0	6ES7155-6AU01-0CN0	6ES7155-6AU01-0BN0	6ES7155-6BA01-0CN0
	SIPLUS ET 200SP IM155-6PN ST / BA	SIPLUS ET 200SP IM155-6PN HF	SIPLUS ET 200SP IM155-6PN HF	SIPLUS ET 200SP IM155-6PN ST	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)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	50 °C; = Tmax	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	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 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)

Technical specifications

Article number	**6AG1155-6AA01-7BN0**	**6AG1155-6AU01-2CN0**	**6AG1155-6AU01-7CN0**	**6AG1155-6AU01-7BN0**	**6AG1155-6BA01-7CN0**
Based on	**6ES7155-6AA01-0BN0**	**6ES7155-6AU01-0CN0**	**6ES7155-6AU01-0CN0**	**6ES7155-6AU01-0BN0**	**6ES7155-6BA01-0CN0**
	SIPLUS ET 200SP IM155-6PN ST / BA	SIPLUS ET 200SP IM155-6PN HF	SIPLUS ET 200SP IM155-6PN HF	SIPLUS ET 200SP IM155-6PN ST	SIPLUS ET 200SP IM155-6DP 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, fungal and dry rot spores (excluding fauna)	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, 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); *	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)
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

Overview

- 4, 8 and 16-channel digital input (DI) modules
- Apart from the standard type of delivery in an individual 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.

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 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 PLCs)
  - 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 PROFIenergy 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.

Overview of digital input modules

Digital input	PU	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

Overview

Overview of BaseUnits

BaseUnit	PU	Article No.	CC codes for push-in terminals	CC codes for AUX terminals
BU type A0 • New potential group (light) • 16 push-in terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC00 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 push-in terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC00 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 push-in terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC00 to CC05	--
BU type A0 • New potential group (light) • 16 push-in terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC00 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 push-in 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 push-in 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 push-in terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC00 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 push-in terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC00 to CC05	--
BU type B1 • Forwarding of the potential group (dark) • 12 push-in 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 push-in 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 push-in terminals • Without AUX terminals	1	6ES7193-6BP00-0DU0	CC00	--
BU type U0 • New potential group (light) • 16 push-in terminals • Without AUX terminals	10	6ES7193-6BP00-2DU0	CC00	--
BU type U0 • Forwarding of the potential group (dark) • 16 push-in terminals • Without AUX terminals	1	6ES7193-6BP00-0BU0	CC00	--
BU type U0 • Forwarding of the potential group (dark) • 16 push-in terminals • Without AUX terminals	10	6ES7193-6BP00-2BU0	CC00	--

Overview of potential distributor modules

Potential distributor module	PU	Article No.	CC codes for push-in 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 jumpered 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

	Article No.
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 number. 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	**6ES7131-6BF01-0AA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7131-6BF01-2AA0**
Digital input module DI 8x24VDC Source Input, Basic, BU type A0, color code CC02; PU: 1 unit	**6ES7131-6BF61-0AA0**
Digital input module DI 8x24VDC Standard, BU type A0, color code CC01	
• Pack of 1 unit	**6ES7131-6BF01-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7131-6BF01-2BA0**
Digital input module DI 16 x 24 V DC Standard, BU type A0, color code CC00	
• Pack of 1 unit	**6ES7131-6BH01-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7131-6BH01-2BA0**
Digital input module DI 8x24VDC High Feature, BU type A0, color code CC01, channel-specific diagnostics, isochronous mode, shared input (MSI); PU: 1 unit	
• Pack of 1 unit	**6ES7131-6BF00-0CA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7131-6BF00-2CA0**

Ordering data	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); PU: 1 unit	**6ES7131-6BF00-0DA0**
Digital input module DI 8xNAMUR High Feature, BU type A0, color code CC01; PU: 1 unit	**6ES7131-6TF00-0CA0**
Digital input module DI 4x120VAC-230VAC Standard, BU type B1, color code CC41; PU: 1 unit	**6ES7131-6FD01-0BB1**
Digital input module DI 8x24VAC-48VUC Basic, BU type U0, color code CC20, module diagnostics, PU: 1 unit	**6ES7131-6CF00-0AU0**
Suitable 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 potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7193-6BP20-2DA0**
BU15-P16+A0+2D	
BU type A0; BaseUnit (light) with 16 push-in terminals to the module; for starting a new potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**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 potential group	
• Pack of 1 unit	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7193-6BP20-2BA0**
BU15-P16+A0+2B	
BU type A0; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the potential group	
• Pack of 1 unit	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7193-6BP00-2BA0**

	Article No.
BU20-P12+A0+4B	
BU type B1; BaseUnit (dark) with 12 push-in terminals to the module; for continuing the potential group; 1 unit	
• Pack of 1 unit	**6ES7193-6BP20-0BB1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7193-6BP20-2BB1**
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	**6ES7193-6BP00-0DU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7193-6BP00-2DU0**
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	**6ES7193-6BP00-0BU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**6ES7193-6BP00-2BU0**
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**
PotDis TB	
PotDis TB, type BR-W, 18x internally jumpered 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**

Ordering data	Article No.
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**
1 000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1 000 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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	
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 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 CC01, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units	**6ES7193-6CP01-2MA0**
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 CC02, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units	**6ES7193-6CP02-2MA0**
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 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 CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 50 units	**6ES7193-6CP73-4AA0**

	Article No.
Color-coded labels for 20 mm-wide BaseUnits	
Color code CC41, for 16 push-in 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	**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 push-in terminals, PotDis TB, gray (terminals 1 to 18); 10 units	**6ES7193-6CP10-2MT0**
Color code CC11, for 18 push-in terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units	**6ES7193-6CP11-2MT0**
Color code CC12, for 18 push-in 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**

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
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
• 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)

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

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..230VvAC ST	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
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 / -	V13 SP1	V13 / V13	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				
• 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 V2.3	GSDML V2.3	GSDML V2.3
Operating mode					
• DI	Yes	Yes	Yes	Yes	Yes
• Counter	No	Yes	No	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				
Digital inputs					
Number of digital inputs	8	8	8; NAMUR	4	8
Digital inputs, parameterizable	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
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		

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..230VvAC ST	**6ES7131-6CF00-0AU0** ET 200SP, DI 8x 24VAC..48VUC BA, PU 1
Digital input functions, parameterizable					
• Gate start/stop		Yes			
• Freely usable digital input		Yes			
• Counter		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"			0.35 to 1.2 mA		
- for signal "1"			2.1 to 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.			12 ms		
- at "1" to "0", max.			12 ms		
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			

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..230VvAC ST	ET 200SP, DI 8x 24VAC..48VUC BA, PU 1
Interrupts/diagnostics/ status information					
Diagnostics function	Yes	Yes	Yes		Yes
Alarms					
• Diagnostic alarm	Yes; channel by channel	Yes	Yes; channel by channel	No	Yes
• 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
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

Overview

- 4, 8 and 16-channel digital output (DQ) modules
- Apart from the standard type of delivery in an individual 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.

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
- LEDs for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable rating plate (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 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 interruptions to communication (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)
  - Diagnosis 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
  - Shielding terminal

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

Overview

Overview of digital output modules

Digital output	PU	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 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 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 HF	1	6ES7132-6BD20-0CA0	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	PU	Article No.	CC codes for push-in terminals	CC codes for AUX terminals
BU type A0 • New potential group (light) • 16 push-in terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 push-in terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New potential group (light) • 16 push-in terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC01 to CC05	--
BU type A0 • New potential group (light) • 16 push-in terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC01 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 push-in terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73

Overview

BaseUnit	PU	Article No.	CC codes for push-in terminals	CC codes for AUX terminals
BU type A0 • Forwarding of the potential group (dark) • 16 push-in 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 push-in terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC01 to CC05	--
BU type A0 • Forwarding of the potential group (dark) • 16 push-in terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC01 to CC05	--
BU type B0 • Forwarding of the potential group (dark) • 12 push-in terminals • With 4 AUX terminals	1	6ES7193-6BP20-0BB0	CC41	CC81 to CC83
BU type B0 • Forwarding of the potential group (dark) • 12 push-in terminals • With 4 AUX terminals	10	6ES7193-6BP20-0BB0	CC41	CC81 to CC83
BU type B1 • Forwarding of the potential group (dark) • 12 push-in 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 push-in 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 push-in terminals • Without AUX terminals	1	6ES7193-6BP00-0BU0	CC20	--
BU type U0 • Forwarding of the potential group (dark) • 16 push-in terminals • Without AUX terminals	10	6ES7193-6BP00-2BU0	CC20	--
BU type U0 • New potential group (light) • 16 push-in terminals • Without AUX terminals	1	6ES7193-6BP00-0DU0	CC20	--
BU type U0 • New potential group (light) • 16 push-in terminals • Without AUX terminals	10	6ES7193-6BP00-2DU0	CC20	--

Overview

Overview of potential distributor modules

Potential distributor module	PU	Article No.	CC codes for push-in 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 jumpered 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

	Article No.
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 number. 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	**6ES7132-6BH00-0AA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7132-6BH00-2AA0**
Digital output module DQ 16x24VDC/0.5A Standard, sourcing output, BU type A0, color code CC00	
• Pack of 1 unit	**6ES7132-6BH01-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7132-6BH01-2BA0**
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	**6ES7132-6BF01-0AA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7132-6BF01-2AA0**

Ordering data	Article No.
Digital output module DQ 8x24VDC/0.5A Standard, BU type A0, color code CC02	
• Pack of 1 unit	**6ES7132-6BF01-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7132-6BF01-2BA0**
Digital output module DQ 8x24VDC/0,5A High Feature, BU type A0, color code CC02	
• Pack of 1 unit	**6ES7132-6BF00-0CA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7132-6BF00-2CA0**
Digital output module DQ 4x24VDC/2A Standard, BU type A0, color code CC02	
• Pack of 1 unit	**6ES7132-6BD20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7132-6BD20-2BA0**
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 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	**6ES7132-6FD00-0BB1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7132-6HD01-0BB1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7132-6HD01-2BB1**
Relay module RQ NO 4x120VDC-230VAC/5A Standard, NO contact, with manual operation, BU type B0, B1	**6ES7132-6MD00-0BB1**
Relay module RQ CO 3x120V DC..230VAC/5A Standard, changeover contact, isolated, BU type U0, color code CC20	**6ES7132-6HC50-0BU0**
Relay module RQ COni 3x120V DC..230VAC/5A Standard, changeover contact, non-isolated, BU type U0, color code CC20	**6ES7132-6HC70-0BU0**
Suitable 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 potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2DA0**
BU15-P16+A0+2D	
BU type A0; BaseUnit (light) with 16 push-in terminals to the module; for starting a new potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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 potential group	
• Pack of 1 unit	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BA0**
BU15-P16+A0+2B	
BU type A0; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the potential group	
• Pack of 1 unit	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**

Ordering data	Article No.
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	
• Pack of 1 unit	**6ES7193-6BP20-0BB0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BB0**
BU20-P12+A0+4B	
BU type B1; BaseUnit (dark) with 12 push-in terminals to the module; for continuing the potential group	
• Pack of 1 unit	**6ES7193-6BP20-0BB1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BB1**
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	**6ES7193-6BP00-0DU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2DU0**
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	**6ES7193-6BP00-0BU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BU0**
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**
PotDis TB	
PotDis TB, type BR-W, 18x internally jumpered 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**
1 000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1 000 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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	
Color-coded labels for 15 mm-wide BaseUnits	
Color code CC00, for 16 push-in 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 CC01, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units	**6ES7193-6CP01-2MA0**
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 CC02, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units	**6ES7193-6CP02-2MA0**
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**

Ordering data

	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 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 CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 50 units	**6ES7193-6CP73-4AA0**
Color-coded labels for 20 mm-wide BaseUnits	
Color code CC41, for 16 push-in 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 code CC81, for 4 AUX terminals, BU type B0, yellow/green (terminals 1 A to 4 A); 10 units	**6ES7193-6CP81-2AB0**
Color code CC82, for 4 AUX terminals, BU type B0, red (terminals 1 A to 4 A); 10 units	**6ES7193-6CP82-2AB0**
Color code CC83, for 4 AUX terminals, BU type B0, blue (terminals 1 A to 4 A); 10 units	**6ES7193-6CP83-2AB0**
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**

	Article No.
Color-coded labels for PotDis TB	
Color code CC10, for 18 push-in terminals, PotDis TB, gray (terminals 1 to 18); 10 units	**6ES7193-6CP10-2MT0**
Color code CC11, for 18 push-in terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units	**6ES7193-6CP11-2MT0**
Color code CC12, for 18 push-in 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**

Technical specifications

Article number	**6ES7132-6BF61-0AA0** ET 200SP, DQ 8x 24VDC/0,5A SINK BA, PU 1	**6ES7132-6BH00-0AA0** ET 200SP, DQ 16X24VDC/0,5A BA, PU 1	**6ES7132-6BF01-0AA0** ET 200SP, DQ 8x 24V DC/0,5A Basic, PU 1	**6ES7132-6BH01-0BA0** ET 200SP, DQ 16x 24V DC/0,5A ST, PU 1	**6ES7132-6BF01-0BA0** ET 200SP, DQ 8x 24V DC/0,5A ST, PU 1
General information					
Product type designation	DQ 8x24VDC/0,5A SNK BA	DQ 16x24VDC/0.5A BA	DQ 8x24VDC/0.5A BA	DQ 16x24VDC/0.5A ST	DQ 8x24VDC/0.5A ST
Product function					
• Isochronous mode	No	No	No	No	No
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V14	V14	V14	V14	V14
• STEP 7 configurable/ integrated from version	V5.5 SP3	STEP 7 V5.5 or higher	V5.5 SP3	V5.5 SP3	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
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3

Technical specifications

Article number	**6ES7132-6BF61-0AA0**	**6ES7132-6BH00-0AA0**	**6ES7132-6BF01-0AA0**	**6ES7132-6BH01-0BA0**	**6ES7132-6BF01-0BA0**
	ET 200SP, DQ 8x 24VDC/0,5A SINK BA, PU 1	ET 200SP, DQ 16X24VDC/0,5A BA, PU 1	ET 200SP, DQ 8x 24V DC/0,5A Basic, PU 1	ET 200SP, DQ 16x 24V DC/0,5A ST, PU 1	ET 200SP, DQ 8x 24V DC/0,5A ST, PU 1
Operating mode					
• DQ	Yes	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	No	No	No
• PWM	No	No	No	No	No
• Oversampling	No	No	No	No	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
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)
Number of digital outputs	8	16	8	16	8
Current-sinking	Yes	No		No	
Current-sourcing		Yes	Yes	Yes	Yes
Digital outputs, parameterizable	Yes	Yes	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes; per channel, electronic	Yes	Yes
Open-circuit detection		No		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)
Controlling a digital input	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
• on lamp load, max.	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
• upper limit	3 400 Ω	100 kΩ	100 kΩ	12 kΩ	12 kΩ
Output voltage					
• for signal "1", min.					L+ (-0.8 V)
Output current					
• for signal "1" rated value	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	10 µA	0.1 mA	0.1 mA
Output delay with resistive load					
• "0" to "1", typ.		80 µs; at rated load		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	
• "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
• for redundant control of a load	Yes	Yes	Yes	Yes	Yes
Switching frequency					
• with resistive load, max.	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	2 Hz	2 Hz	2 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz
Total current of the outputs					
• Current per channel, max.	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A
• Current per module, max.	4 A	8 A	4 A	8 A	4 A
Total current of the outputs (per module)					
horizontal installation					
- up to 40 °C, max.				8 A	
- up to 50 °C, max.				6 A	
- up to 60 °C, max.	4 A	8 A	4 A	4 A	4 A
vertical installation					
- up to 30 °C, max.				8 A	
- up to 40 °C, max.				6 A	
- up to 50 °C, max.	4 A	8 A	4 A	4 A	4 A

Technical specifications

Article number	**6ES7132-6BF61-0AA0** ET 200SP, DQ 8x 24VDC/0,5A SINK BA, PU 1	**6ES7132-6BH00-0AA0** ET 200SP, DQ 16X24VDC/0,5A BA, PU 1	**6ES7132-6BF01-0AA0** ET 200SP, DQ 8x 24V DC/0,5A Basic, PU 1	**6ES7132-6BH01-0BA0** ET 200SP, DQ 16x 24V DC/0,5A ST, PU 1	**6ES7132-6BF01-0BA0** ET 200SP, DQ 8x 24V DC/0,5A ST, PU 1
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	No	No	No	Yes; Module-wise	Yes; Module-wise
• Short-circuit	No	No	No		
• Short-circuit to M				Yes; Module-wise	Yes; Module-wise
• Short-circuit to L+				Yes; Module-wise	Yes; Module-wise
• Group error	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
• 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 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
Suitable for safety-related tripping of standard modules		No	Yes; see FAQ Entry ID: 39198632	Yes; see FAQ Entry ID: 39198632	Yes; see FAQ Entry ID: 39198632
Highest safety class achievable in safety mode					
• Performance level according to ISO 13849-1			PL d	PL d	PL d
• SIL acc. to IEC 61508			SIL 2	SIL 2	SIL 2
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-25 °C	-30 °C	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS02
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-25 °C	-30 °C	-30 °C; < 0 °C as of FS02	-30 °C; < 0 °C as of FS03	-30 °C; < 0 °C as of FS02
• 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 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	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.	30 g	30 g	30 g	30 g	30 g

Technical specifications

Article number	**6ES7132-6BF00-0CA0**	**6ES7132-6BD20-0BA0**	**6ES7132-6BD20-0CA0**	**6ES7132-6BD20-0DA0**	**6ES7132-6FD00-0BB1**
	ET 200SP, DQ 8x24VDC/0,5A HF, PU 1	ET 200SP, DQ 4x24VDC/2A ST	ET 200SP, DQ 4x24VDC/2A HF	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 4x24 V DC/2 A ST	DQ 4x DC 24 V/2 A HF	DQ 4x24 V DC/2 A HS	DQ 4x24 ... 230 V AC/ 2 A ST
Product function					
• Isochronous mode	Yes	No	Yes	Yes; Operating modes DQ and OVS only	No
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 / -	V11 SP2 / V13	V13 SP1 / -	STEP 7 V15.1 or higher	V13 / V13
• STEP 7 configurable/ integrated from version	V5.5 / -	V5.5 SP3 / -	V5.5 / -	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	GSD Revision 5	GSD Revision 5	One GSD file each, Revision 3 and 5 and higher	GSD Revision 5
• PROFINET from GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.33	GSDML V2.3
Operating mode					
• DQ	Yes	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	No	Yes; Valve control	No
• PWM	No	No	No	Yes	No
• Cam control (switching at comparison values)				Yes; Via MtM (module-to-module communication)	
• Oversampling	No	No	No	Yes	No
• MSO	Yes	No	Yes	No	No
Supply voltage					
Rated value (DC)	24 V	24 V	24 V	24 V	
Rated value (AC)					230 V
Reverse polarity protection	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)	Triac with zero point detection
Number of digital outputs	8	4	4	4	4
Current-sinking	No	No	No	No	No
Current-sourcing	Yes	Yes	Yes	Yes; Push-pull output	Yes
Digital outputs, parameterizable	Yes	Yes	Yes	Yes	No
Short-circuit protection	Yes	Yes	Yes	Yes	No; When using BU type B1, a miniature, quick-response fuse with 10 A tripping current must be provided
Limitation of inductive shutdown voltage to	Typ. L+ (-50 V)	Typ. L+ (-50 V)	L+ -(37 to 41V)	M (-1 V)	
Controlling a digital input	Yes	Yes	Yes; Minimum current consumption 7 mA	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	2 A	2 A	2 A	2 A
• on lamp load, max.	5 W	10 W	10 W	10 W	100 W

Technical specifications

Article number	**6ES7132-6BF00-0CA0** ET 200SP, DQ 8x24VDC/0,5A HF, PU 1	**6ES7132-6BD20-0BA0** ET 200SP, DQ 4x24VDC/2A ST	**6ES7132-6BD20-0CA0** ET 200SP, DQ 4x24VDC/2A HF	**6ES7132-6BD20-0DA0** ET 200SP, DQ 4x24VDC/2A High Speed, PU 1	**6ES7132-6FD00-0BB1** ET 200SP, DQ 4x24..230VAC/2A ST
Load resistance range					
• lower limit	48 Ω	12 Ω	12 Ω	12 Ω	
• upper limit	12 kΩ	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	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	460 µA
Output delay with resistive load					
• "0" to "1", typ.	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		
• "1" to "0", max.		100 µs		1 µs	10 ms
Parallel switching of two outputs					
• for logic links					No
• for uprating	No	No	No	No	No
• for redundant control of a load	Yes	Yes			Yes
Switching frequency					
• with resistive load, max.	100 Hz	100 Hz	100 Hz	5 kHz	10 Hz
• with inductive load, max.	2 Hz	2 Hz	2 Hz	5 kHz	0.5 Hz; Higher frequencies are possible, see Equipment Manual / Product Information
• on lamp load, max.	10 Hz	10 Hz	10 Hz	5 kHz	1 Hz
Total current of the outputs					
• Current per channel, max.	0.5 A	2 A	2 A	2 A	2 A
• Current per module, max.	4 A	8 A	8 A	8 A	8 A
Total current of the outputs (per module)					
horizontal installation					
- up to 30 °C, max.				8 A; DQ mode	
- up to 40 °C, max.		8 A	8 A	6.9 A; DQ mode	8 A
- up to 50 °C, max.		6 A	6 A	4.7 A; DQ mode	6 A
- up to 60 °C, max.	4 A	4 A	4 A	2.5 A; DQ mode	4 A
vertical installation					
- up to 30 °C, max.		8 A	8 A	7.2 A; DQ mode	8 A
- up to 40 °C, max.		6 A	6 A	5.6 A; DQ mode	6 A
- up to 50 °C, max.	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			40 µs	
Bus cycle time (TDP), min.	500 µs		500 µs	125 µs	
Interrupts/diagnostics/ status information					
Diagnostics function	Yes	Yes	Yes	Yes	No
Substitute values connectable	Yes	Yes	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	No
Diagnoses					
• Diagnostic information readable				Yes	
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	No
• Wire-break	Yes; channel by channel	Yes; Module-wise	Yes; channel by channel	No	No
• Short-circuit	Yes; channel by channel	Yes; Module-wise	Yes; channel by channel	Yes; Module-wise	No
• Group error	Yes	Yes	Yes	Yes	Yes

Technical specifications

Article number	6ES7132-6BF00-0CA0	6ES7132-6BD20-0BA0	6ES7132-6BD20-0CA0	6ES7132-6BD20-0DA0	6ES7132-6FD00-0BB1
	ET 200SP, DQ 8x24VDC/0,5A HF, PU 1	ET 200SP, DQ 4x24VDC/2A ST	ET 200SP, DQ 4x24VDC/2A HF	ET 200SP, DQ 4x24VDC/2A High Speed, PU 1	ET 200SP, DQ 4x24..230VAC/2A ST
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
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	No	
Highest safety class achievable in safety mode					
• Performance level according to ISO 13849-1	PL d	PL d	PL d		
• SIL acc. to IEC 61508	SIL 2	SIL 2	SIL 2		
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C; < 0 °C as of FS07	-30 °C; < 0 °C as of FS08	-30 °C; < 0 °C as of FS06	-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 FS08	-30 °C; < 0 °C as of FS06	-30 °C	-30 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C	60 °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	2 000 m; On request: Installation altitudes greater than 2 000 m
Dimensions					
Width	15 mm	15 mm	15 mm	15 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.	30 g	30 g	30 g	31 g	50 g

Article number	6ES7132-6FD00-0CU0	6ES7132-6GD51-0BA0	6ES7132-6HD01-0BB1	6ES7132-6MD00-0BB1
	ET 200SP, DQ 4x24..230VAC/2A HF, PU 1	ET 200SP, RQ CO 4x 24V DC/2A ST, PU 1	ET 200SP, RQ NO 4x 120VDC..230VAC/5A, PU1	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	V14	V14	V14	V13 SP1
• STEP 7 configurable/ integrated from version	STEP 7 V5.5 or higher	V5.5 SP3	V5.5 SP3	V5.5 SP3 / -
• PCS 7 configurable/ integrated from version			V8.1 SP1	
• PROFIBUS from GSD version/ GSD revision	GSD as of Revision 5	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

Technical specifications

Article number	**6ES7132-6FD00-0CU0**	**6ES7132-6GD51-0BA0**	**6ES7132-6HD01-0BB1**	**6ES7132-6MD00-0BB1**
	ET 200SP, DQ 4x24..230VAC/2A HF, PU 1	ET 200SP, RQ CO 4x 24V DC/2A ST, PU 1	ET 200SP, RQ NO 4x 120VDC..230VAC/5A, PU1	ET 200SP,RQ NO-mA 4x120VDC..230VAC/5A ST
Operating mode				
• DQ	Yes	Yes	Yes	Yes
• DQ with energy-saving function	Yes	No	No	No
• PWM	No	No	No	No
• Oversampling	No	No	No	No
• MSO	No	No	No	No
• Phase control	Yes; Control area: 8.5 ... 100% of the phase angle			
• Trailing-edge phase	No			
• Half-wave	Yes			
• Full-wave	Yes			
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
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	

Technical specifications

Article number	**6ES7132-6FD00-0CU0**	**6ES7132-6GD51-0BA0**	**6ES7132-6HD01-0BB1**	**6ES7132-6MD00-0BB1**
	ET 200SP, DQ 4x24..230VAC/2A HF, PU 1	ET 200SP, RQ CO 4x 24V DC/2A ST, PU 1	ET 200SP, RQ NO 4x 120VDC..230VAC/5A, PU1	ET 200SP,RQ NO-mA 4x120VDC..230VAC/5A ST
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, max.			0.5 Hz	0.5 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			
• 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
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

Technical specifications

Article number	**6ES7132-6FD00-0CU0**	**6ES7132-6GD51-0BA0**	**6ES7132-6HD01-0BB1**	**6ES7132-6MD00-0BB1**
	ET 200SP, DQ 4x24..230VAC/2A HF, PU 1	ET 200SP, RQ CO 4x 24V DC/2A ST, PU 1	ET 200SP, RQ NO 4x 120VDC..230VAC/5A, PU1	ET 200SP,RQ NO-mA 4x120VDC..230VAC/5A ST
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
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**	**6ES7132-6HC70-0BU0**
	ET 200SP, RQ CO 3x120VDC.230VAC/5A ST	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	
• 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	
• PROFINET from GSD version/ GSD revision	GSDML V2.34	
Supply voltage		
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes

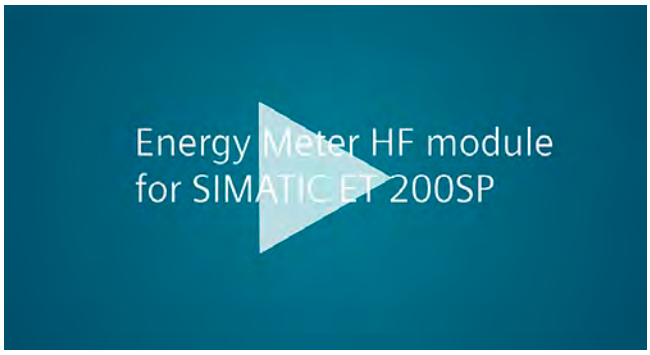
Technical specifications

Article number	**6ES7132-6HC50-0BU0** ET 200SP, RQ CO 3x120VDC.230VAC/5A ST	**6ES7132-6HC70-0BU0** ET 200SP, RQ COni 3x120VDC.230VAC/5A ST
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; see additional description in the manual	5 A; see additional description in the manual
• with inductive load, max.	2 A; see additional description in the manual	2 A; see additional description in the 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
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

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
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

Overview



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 an individual 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.

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
- LEDs for diagnostics, status, supply voltage and faults
- 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)
  - 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-conductor 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 status 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 AI modules is offered by the TIA Selection Tool.

Overview

Overview of analog input modules

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

Overview

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

Overview of potential distributor modules

Potential distributor module	PU	Article No.	CC codes for push-in 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

Overview

Potential distributor module	PU	Article No.	CC codes for push-in 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 jumpered 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

	Article No.
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 number. 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, ±0.3%	
• Pack of 1 unit	**6ES7134-6HD01-0BA1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7134-6HD01-2BA1**
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 2/4-wire Standard, BU type A0 or A1, color code CC03, 16-bit, ±0.3%	
• Pack of 1 unit	**6ES7134-6GD01-0BA1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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, ±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, ±0.3%, isochronous mode above 250 µs, oversampling above 50 µs	**6ES7134-6HB00-0DA1**
Analog input module AI 8xRTD/TC 2-wire High Feature, BU type A0 or A1, color code CC00, 16-bit, ±0.1%, scalable measuring range	
• Pack of 1 unit	**6ES7134-6JF00-0CA1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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, ±0.1%, scalable measuring range	
• Pack of 1 unit	**6ES7134-6JD00-0CA1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7134-6JD00-2CA1**

Ordering data	Article No.
Analog input module AI 4xTC High Speed, BU type A0 or A1, color code CC00, 16-bit, channel diagnostics	**6ES7134-6JD00-0DA1**
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**
Analog input module AI Energy Meter CT ST, BU type U0	**6ES7134-6PA01-0BU0**
Analog input module AI Energy Meter RC ST, BU type U0	**6ES7134-6PA21-0BU0**
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**
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**
Usable 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 potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2DA0**
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 push-in terminals to the module; for starting a new potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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 potential group	
• Pack of 1 unit	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BA0**
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the potential group	
• Pack of 1 unit	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
Usable type A1 BaseUnits (temperature detection)	
BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 push-in 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**
BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 push-in terminals to the module; for starting a new potential group (max. 10 A)	**6ES7193-6BP00-0DA1**
BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 push-in terminals (1 ... 16) to the module and 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the potential group	**6ES7193-6BP40-0BA1**
BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the potential group	**6ES7193-6BP00-0BA1**
Suitable type U0 BaseUnits	
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	**6ES7193-6BP00-0DU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2DU0**

Ordering data	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	**6ES7193-6BP00-0BU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BU0**
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**
PotDis TB	
PotDis TB, type BR-W, 18x internally jumpered 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**
1 000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1 000 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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	

	Article No.
Color-coded labels	
Color code CC00, for 16 push-in 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 CC01, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units	**6ES7193-6CP01-2MA0**
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 CC02, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units	**6ES7193-6CP02-2MA0**
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 CC03, for 16 push-in terminals, BU type A0, A1 gray (terminals 1 to 8), red (terminals 9 to 12), gray (terminals 13 to 16); 10 units	**6ES7193-6CP03-2MA0**
Color code CC05, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 12), red (terminals 13 to 14), blue (terminals 15 to 16); 10 units	**6ES7193-6CP05-2MA0**
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 push-in terminals, PotDis TB, gray (terminals 1 to 18); 10 units	**6ES7193-6CP10-2MT0**
Color code CC11, for 18 push-in terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units	**6ES7193-6CP11-2MT0**

Ordering data

	Article No.
Color code CC12, for 18 push-in 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**

	Article No.
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

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	

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; None; 4/8/16 times	4	4; None; 4/8/16 times	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

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
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	Yes	Yes	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 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	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

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.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)			125 µs
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

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	
Smoothing of measured values				
• Number of smoothing 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

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	
• 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
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
• 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
• 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 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

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
• MSI	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	

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 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; 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
Alarms			
• Diagnostic alarm	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

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
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 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

Technical specifications

Article number	**7MH4134-6LB00-0DA0** ET 200SP AI 2 X SG 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; ±0.5 ... 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 µs
Analog input with oversampling	Yes
• Values per cycle, max.	14
• Resolution, min.	100 µs
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 µs
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** ET 200SP AI 2 X SG 4-/6-WIRE HS
Errors/accuracies	
Temperature coefficient, zero point	≤ ±0.25 µV/K
Temperature coefficient, span, 4-wire connection (in relation to end value)	≤ ±5 ppm/K
Temperature coefficient, span, 6-wire connection (in relation to end value)	≤ ±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 µs
Bus cycle time (TDP), min.	125 µs
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• 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.	45 g

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

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

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
Measuring inputs for voltage (continued)				
- 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

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	

Overview

- 2 and 4-channel analog output (AQ) modules
- Apart from the standard type of delivery in an individual 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.

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 rating plate (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 interruptions to communication (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 PROFIenergy 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 AQ modules is offered by the TIA Selection Tool.

Overview of analog output modules

Analog output	PU	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 With two operating modes: • High-speed isochronous AQ • Oversampling	1	6ES7135-6HB00-0DA1	CC00	A0, A1
AQ 4xI HART HF	1	6ES7135-6TD00-0CA1	CC00	A0, A1

Overview

Overview of BaseUnits

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

Overview

Overview of potential distributor modules

Potential distributor module	PU	Article No.	CC codes for push-in 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 jumpered 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	Article No.
Analog output modules	
Analog output module AQ 2xU Standard, BU type A0 or A1, color code CC00, 16-bit	**6ES7135-6FB00-0BA1**
Analog output module AQ 2xI Standard, BU type A0 or A1, color code CC00, 16-bit	**6ES7135-6GB00-0BA1**
Analog output module AQ 4xU/I Standard, BU type A0 or A1, color code CC00, 16-bit, ± 0.3%	**6ES7135-6HD00-0BA1**
Analog output module AQ 2xU/I High Feature, BU type A0 or A1, color code CC00, 16-bit, ±0.1%	**6ES7135-6HB00-0CA1**
Analog output module AQ 2xU/I High Speed, BU type A0 or A1, color code CC00, 16-bit, ± 0.3%	**6ES7135-6HB00-0DA1**
Analog output module AQ 4xI HART High Feature, BU type A0 or A1, color code CC00, 16-bit, ±0.3%	**6ES7135-6TD00-0CA1**
Usable type A0 BaseUnits	
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 number. Packs of 10 can therefore only be ordered in integer multiples of 10.	
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 potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2DA0**
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 push-in terminals to the module; for starting a new potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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 potential group	
• Pack of 1 unit	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BA0**
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the potential group	
• Pack of 1 unit	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
Usable type A1 BaseUnits (temperature detection)	
BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 push-in 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**
BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 push-in terminals to the module; for starting a new potential group (max. 10 A)	**6ES7193-6BP00-0DA1**
BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 push-in terminals (1 ... 16) to the module and 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the potential group	**6ES7193-6BP40-0BA1**
BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the potential group	**6ES7193-6BP00-0BA1**

Ordering data

	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**
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 jumpered 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**
1 000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1 000 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	**6ES7133-6CV15-1AM0**
• 20 mm	**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 ground	
Color-coded labels	
Color code CC00, for 16 push-in 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 push-in terminals, PotDis TB, gray (terminals 1 to 18); 10 units	**6ES7193-6CP10-2MT0**
Color code CC11, for 18 push-in terminals, PotDis TB, yellow-green (terminals 1 to 18); 10 units	**6ES7193-6CP11-2MT0**
Color code CC12, for 18 push-in 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**

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

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		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	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
• 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

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 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	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	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 %

Article number	**6ES7135-6TD00-0CA1** ET 200SP, AQ 4xI HART HF
Protocols	
HART protocol	Yes
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

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 PROFIenergy 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.

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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.
Usable SIPLUS 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 jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	

Ordering data

	Article No.
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 jumpered AUX terminals (1 A to 10 A); for continuing the load group	**6AG1193-6BP20-7BA0**
BU20-P12+A0+4B (Extended temperature range and exposure to environmental substances) BU type B1; BaseUnit (dark) with 12 push-in terminals to the module; for continuing the load group	**6AG1193-6BP20-7BB1**
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**
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**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See SIMATIC ET 200SP, digital input modules, page 10/28

Technical specifications

Article number	**6AG1131-6BF61-7AA0**	**6AG1131-6BF01-7BA0**	**6AG1131-6BH01-7BA0**
Based on	**6ES7131-6BF61-0AA0**	**6ES7131-6BF01-0BA0**	**6ES7131-6BH01-0BA0**
	SIPLUS ET 200SP DI 8x24VDC SOURCE BA	SIPLUS ET 200SP DI 8x24VDC ST	SIPLUS ET 200SP DI 16x24VDC 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	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 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; incl. condensation / frost permitted (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
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)

Technical specifications

Article number	**6AG1131-6BF61-7AA0**	**6AG1131-6BF01-7BA0**	**6AG1131-6BH01-7BA0**
Based on	**6ES7131-6BF61-0AA0**	**6ES7131-6BF01-0BA0**	**6ES7131-6BH01-0BA0**
	SIPLUS ET 200SP DI 8x24VDC SOURCE BA	SIPLUS ET 200SP DI 8x24VDC ST	SIPLUS ET 200SP DI 16x24VDC ST
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

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
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); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax; > +60 °C encoder supply output current max. 350 mA per channel	70 °C; = Tmax	70 °C; = Tmax; > +60 °C number of simultaneously controllable inputs max. 4 (no adjacent points)	70 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	2 000 m	5 000 m	2 000 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 - 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)
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

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

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 rating plate (I&M data)
- Additional operating modes in some cases
- Optional accessories:
  - Labeling strips
  - Equipment marking label
  - Color-coded label with module-specific CC code
  - Shielding terminal

Overview of digital output modules

Digital output	PU	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	6AG1132-6BF00-7CA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	1	6AG1132-6BD20-7BA0	CC02	A0
DQ 4 x 24 V DC/2 A HF	1	6AG1132-6BD20-7CA0	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 corresponding standard products. SIPLUS extreme-specific information was added.

Ordering data	Article No.
SIPLUS digital output modules	
(Extended temperature range and exposure to environmental substances)	
Digital output module DQ 8x24VDC/0.5A Sink output, Basic, BU type A0, color code CC01	**6AG1132-6BF61-7AA0**
Digital output module DQ 4x24VDC/2A Standard, BU type A0, color code CC02	**6AG1132-6BD20-7BA0**
Digital output module DQ 8x24VDC/0.5A Standard, BU type A0, color code CC02	**6AG1132-6BF01-7BA0**
Digital output module DQ 8x24VDC/0.5A High Feature, BU type A0, color code CC02	**6AG1132-6BF00-7CA0**
Digital output module DQ 16x24VDC/0.5A Standard, BU type A0, color code CC00	**6AG1132-6BH01-7BA0**
Digital output module DQ 4x24VDC/2A High Feature, BU type A0, color code CC02, channel-precise diagnostics, isochronous mode, shared output (MSO); PU: 1 unit	**6AG1132-6BD20-7CA0**
Signal relay module RQ CO 4x24VUC/2A Standard, changeover contact, BU type A0, color code CC00	**6AG1132-6GD51-7BA0**
Relay module RQ NO 4x120VDC-230VAC/5A Standard, NO contact, BU type B0, B1	**6AG1132-6HD01-7BB1**
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)	**6AG1132-6FD00-7CU0**
Usable SIPLUS BaseUnits	
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 jumpered 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)	

	Article No.
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 jumpered 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	
BU20-P12+A4+0B	**6AG1193-6BP20-7BB0**
(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 jumpered AUX terminals (1 A to 4 A); for continuing the load group; 1 unit	
BU20-P12+A0+4B	**6AG1193-6BP20-7BB1**
(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	
BU20-P16+A0+2D	**6AG1193-6BP00-7DU0**
(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)	
BU20-P16+A0+2B	**6AG1193-6BP00-7BU0**
(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	
Accessories	
SIPLUS Mounting Kit ET 200SP	**6AG1193-6AA00-0AA0**
Mounting accessories for use with increased mechanical vibration and shock loads.	
Other accessories	See SIMATIC ET 200SP, digital output modules, page 10/39

Technical specifications

Article number	**6AG1132-6BF61-7AA0**	**6AG1132-6BD20-7BA0**	**6AG1132-6BF01-7BA0**
Based on	**6ES7132-6BF61-0AA0**	**6ES7132-6BD20-0BA0**	**6ES7132-6BF01-0BA0**
	SIPLUS ET 200SP DQ 8x24VDC/0,5A SNK BA	SIPLUS ET200SP DQ 4x24VDC/2A ST	SIPLUS ET 200SP DQ 8x24VDC/0,5A 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 number of simultaneously controllable outputs max. 2x 0.25 A or max. 4x 0.125 A, max. total current 0.5 A	70 °C; = Tmax; > +60 °C max. total current 1.0 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
• 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 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; incl. condensation / frost permitted (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
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!

Technical specifications

Article number	**6AG1132-6BF61-7AA0**	**6AG1132-6BD20-7BA0**	**6AG1132-6BF01-7BA0**
Based on	**6ES7132-6BF61-0AA0**	**6ES7132-6BD20-0BA0**	**6ES7132-6BF01-0BA0**
	SIPLUS ET 200SP DQ 8x24VDC/0,5A SNK BA	SIPLUS ET200SP DQ 4x24VDC/2A ST	SIPLUS ET 200SP DQ 8x24VDC/0,5A 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**	**6AG1132-6BF00-7CA0**	**6AG1132-6GD51-7BA0**
Based on	**6ES7132-6BH01-0BA0**	**6ES7132-6BF00-0CA0**	**6ES7132-6GD51-0BA0**
	SIPLUS ET 200SP DQ 16x24VDC/0,5A ST	SIPLUS ET 200SP DQ 8X24VDC/0,5A HF	SIPLUS ET 200SP RQ 4x24VDC/2A CO 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; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. total current 1 A	70 °C; = Tmax; > +60 °C max. total current 1.0 A	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. aggregate current 2 A per group
• 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
• 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 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; incl. condensation / frost permitted (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
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)
- 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)

Technical specifications

Article number	**6AG1132-6BH01-7BA0**	**6AG1132-6BF00-7CA0**	**6AG1132-6GD51-7BA0**
Based on	**6ES7132-6BH01-0BA0**	**6ES7132-6BF00-0CA0**	**6ES7132-6GD51-0BA0**
	SIPLUS ET 200SP DQ 16x24VDC/0,5A ST	SIPLUS ET 200SP DQ 8X24VDC/0,5A HF	SIPLUS ET 200SP RQ 4x24VDC/2A CO ST
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

Article number	**6AG1132-6HD01-7BB1**	**6AG1132-6BD20-7CA0**	**6AG1132-6FD00-7CU0**
Based on	**6ES7132-6HD01-0BB1**	**6ES7132-6BD20-0CA0**	**6ES7132-6FD00-0CU0**
	SIPLUS ET 200SP RQ 4x120VDC/230VAC/5A	SIPLUS ET 200SP DQ 4X24VDC/2A HF	SIPLUS ET 200SP DQ 4X24..230VAC/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; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. total current 1 A	70 °C; = Tmax
• vertical installation, min.	-40 °C; in all other mounting positions		
• vertical installation, max.	50 °C; in all other mounting positions		
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	3 000 m	5 000 m	2 000 m
• 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) // 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)
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
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

Technical specifications

Article number	**6AG1132-6HD01-7BB1**	**6AG1132-6BD20-7CA0**	**6AG1132-6FD00-7CU0**
Based on	**6ES7132-6HD01-0BB1**	**6ES7132-6BD20-0CA0**	**6ES7132-6FD00-0CU0**
	SIPLUS ET 200SP RQ 4x120VDC/230VAC/5A	SIPLUS ET 200SP DQ 4X24VDC/2A HF	SIPLUS ET 200SP DQ 4X24..230VAC/2A HF
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, 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)
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

Overview

- 2, 4 and 8-channel AI modules
- Measuring ranges for current, voltage, thermocouples, resistance thermometer, resistor and PTC
- BaseUnits for 2, 3 and 4-wire connection
- Function classes Basic, Standard, High Feature and High Speed
- Clear labeling on front of module
- LED displays 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 rating plate (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 SIPLUS analog input modules

Analog input	PU	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 2xU/I 2/4-wire HS With two operating modes: • High-speed isochronous AI • Oversampling	1	6AG1134-6HB00-2DA1	CC00	A0, A1
AI 8 x RTD/TC 2-wire HF	10	6AG1134-6JF00-2CA1	CC00	A0, A1
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 480 V AC ST	1	6AG1134-6PA20-7BD0	--	D0

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 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	**6AG1134-6GF00-7AA1**
Analog input module AI 8xU BA, BU type A0 or A1, color code CC02	**6AG1134-6FF00-2AA1**
Analog input module AI 4xU/I 2-wire Standard, BU type A0 or A1, color code CC03, 16-bit, ±0.3%	**6AG1134-6HD01-7BA1**
Analog input module AI 4xI 2-/4-wire Standard, BU type A0 or A1, color code CC03, 16-bit, ±0.3%	**6AG1134-6GD01-7BA1**
Analog input module AI 4xRTD/TC 2-, 3-, 4-wire High Feature, BU type A0 or A1, color code CC00, 16-bit, ±0.1%, scalable measuring range	**6AG1134-6JD00-2CA1**
Analog input module AI 4xTC High Speed, BU type A0 or A1, color code CC00, channel diagnostics, 16-bit, +/-0.1%	**6AG1134-6JD00-2DA1**
Analog input module AI 4xI 2-wire 4 ... 20 mA HART, BU type A0 or A1, color code CC03	**6AG1134-6TD00-2CA1**
Analog input module AI 2xU/I 2/4-wire High Feature, BU type A0 or A1, color code CC05, 16-bit, ±0.1%, independent channel galvanic isolation, isochronous mode above 1 ms	**6AG1134-6HB00-2CA1**
Analog input module AI 2xU/I 2-/4-wire High Speed, BU type A0 or A1, color code CC00, 16-bit, ±0.3%, isochronous mode above 250 µs, oversampling above 50 µs	**6AG1134-6HB00-2DA1**
Analog input module AI 8xRTD/TC 2-wire High Feature, BU type A0 or A1, color code CC00, 16-bit, ±0.1%, scalable measuring range	**6AG1134-6JF00-2CA1**
Analog input module AI Energy Meter Standard, 480 V AC, BU type D0	**6AG1134-6PA20-7BD0**
Usable SIPLUS BaseUnits type A0	
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 jumpered 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 jumpered AUX terminals (1 A to 10 A); for continuing the load group	
Usable SIPLUS BaseUnits type A1 (temperature detection)	
BU15-P16+A0+2D/T	**6AG1193-6BP00-7DA1**
(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	**6AG1193-6BP00-7BA1**
(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	**6AG1193-6BP40-7DA1**
(Extended temperature range and exposure to environmental substances)	
BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and also 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+12B/T	**6AG1193-6BP40-7BA1**
(Extended temperature range and exposure to environmental substances)	
BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and also 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	
Usable SIPLUS BaseUnits type D0	
BU20-P12+A0+0B	**6AG1193-6BP00-7BD0**
(Extended temperature range and exposure to environmental substances)	
BU type D0; BaseUnit with 12 push-in terminals, without AUX terminals, bridged to the left	
Accessories	
SIPLUS Mounting Kit ET 200SP	**6AG1193-6AA00-0AA0**
Mounting accessories for use with increased mechanical vibration and shock loads.	
Other accessories	See SIMATIC ET 200SP, analog input modules, page 10/56

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 configured empty 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 configured empty 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)

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

Article number	6AG1134-6HB00-2CA1	6AG1134-6HB00-2DA1	6AG1134-6JF00-2CA1	6AG1134-6JD00-2CA1	6AG1134-6JD00-2DA1
Based on	6ES7134-6HB00-0CA1	6ES7134-6HB00-0DA1	6ES7134-6JF00-0CA1	6ES7134-6JD00-0CA1	6AG1134-6JD00-0DA1
	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 4xRTD/TC HF	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)
• horizontal installation, max.	60 °C; = Tmax	60 °C; = Tmax; +70 °C with configured empty 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	60 °C; = Tmax; +70 °C with configured empty 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 (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.			50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax

Technical specifications

Article number	6AG1134-6HB00-2CA1	6AG1134-6HB00-2DA1	6AG1134-6JF00-2CA1	6AG1134-6JD00-2CA1	6AG1134-6JD00-2DA1
Based on	6ES7134-6HB00-0CA1	6ES7134-6HB00-0DA1	6ES7134-6JF00-0CA1	6ES7134-6JD00-0CA1	6AG1134-6JD00-0DA1
	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 4xRTD/TC HF	SIPLUS ET 200SP AI 4x TC HS
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 1 080 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 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
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)
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)
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)

Technical specifications

Article number	6AG1134-6HB00-2CA1	6AG1134-6HB00-2DA1	6AG1134-6JF00-2CA1	6AG1134-6JD00-2CA1	6AG1134-6JD00-2DA1
Based on	6ES7134-6HB00-0CA1	6ES7134-6HB00-0DA1	6ES7134-6JF00-0CA1	6ES7134-6JD00-0CA1	6AG1134-6JD00-0DA1
	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 4xRTD/TC HF	SIPLUS ET 200SP AI 4x TC HS
- 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

Technical specifications

Article number	**6AG1134-6PA20-7BD0**
Based on	**6ES7134-6PA20-0BD0** SIPLUS ET 200SP AI EMETER 480VAC ST
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin; < -25 °C min. permissible supply voltage 110 V AC
• horizontal installation, max.	70 °C; = Tmax; > +60 °C max. permissible current 1 A per phase
• 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.	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 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)

Article number	**6AG1134-6PA20-7BD0**
Based on	**6ES7134-6PA20-0BD0** SIPLUS ET 200SP AI EMETER 480VAC ST
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

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 distribution 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 rating plate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
  - Oversampling operating mode (n-fold isochronous 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
  - Diagnosis of wire break, short-circuit, overflow, underflow
  - Value status (optional binary validity information of the analog value 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 AQ modules is offered by the TIA Selection Tool.

Overview of analog output modules

Analog output	PU	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 With two operating modes: • High-speed isochronous AQ • Oversampling	1	6AG1135-6HB00-2DA1	CC00	A0, A1
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.

Ordering data

	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	**6AG1135-6GB00-7BA1**
Analog output module AQ 4xU/I Standard, BU type A0 or A1, color code CC03	**6AG1135-6HD00-7BA1**
Analog output module AQ 2xU/I High Feature, BU type A0 or A1, color code CC00, 16-bit, ±0.1%	**6AG1135-6HB00-7CA1**
Analog output module AQ 2xU/I High Speed, BU type A0 or A1, color code CC00, 16-bit, ± 0.3%	**6AG1135-6HB00-2DA1**
Analog output module AQ 4xI HART High Feature, BU type A0 or A1, color code CC00, 16-bit, ±0.3%	**6AG1135-6TD00-2CA1**
Usable SIPLUS BaseUnits type A0	
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 jumpered 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 jumpered AUX terminals (1 A to 10 A); for continuing the load group	

	Article No.
Usable SIPLUS BaseUnits type A1 (temperature detection)	
BU15-P16+A0+2D/T	**6AG1193-6BP00-7DA1**
(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	**6AG1193-6BP00-7BA1**
(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	**6AG1193-6BP40-7DA1**
(Extended temperature range and exposure to environmental substances)	
BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and also 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+12B/T	**6AG1193-6BP40-7BA1**
(Extended temperature range and exposure to environmental substances)	
BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and also 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	
Accessories	
SIPLUS Mounting Kit ET 200SP	**6AG1193-6AA00-0AA0**
Mounting accessories for use with increased mechanical vibration and shock loads.	
Other accessories	See SIMATIC ET 200SP, analog output modules, page 10/75

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
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 configured empty slots to the left and right of the module	70 °C; = Tmax	60 °C; = Tmax; +70 °C with configured empty 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)

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)
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

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-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

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Ordering data

	Article No.
TM Count 1x24V counter module	
With one channel, max. 200 kHz; for 24 V encoder	
• Pack of 1 unit	**6ES7138-6AA01-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7138-6AA01-2BA0**
Usable 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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**

Ordering data

	Article No.
Accessories	
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	

	Article No.
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	**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**
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

Article number	**6ES7138-6AA01-0BA0** ET 200SP, TM Count 1x24V
General information	
Product type designation	TM Count 1x24V
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V15 SP1 or higher
• STEP 7 configurable/ integrated from version	V5.6 and higher
• PROFIBUS from GSD version/ GSD revision	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/ GSD revision	GSDML V2.34
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Encoder supply	
Number of outputs	1
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes; electronic/thermal
• Output current, max.	300 mA
Digital inputs	
Number of digital inputs	3
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes

Article number	**6ES7138-6AA01-0BA0** ET 200SP, TM Count 1x24V
Digital input functions, parameterizable	
• Gate start/stop	Yes
• Capture	Yes
• Synchronization	Yes
• Freely usable digital input	Yes
Input voltage	
• 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
- at "0" to "1", min.	6 µs; for parameterization "none"
- at "1" to "0", min.	6 µs; for parameterization "none"
for technological functions	
- parameterizable	Yes
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

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

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

Overview

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
- 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

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Ordering data

	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	**6ES7138-6BA01-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7138-6BA01-2BA0**
Usable 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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**

Ordering data

	Article No.
Accessories	
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	

	Article No.
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	**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**
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

Article number	**6ES7138-6BA01-0BA0** ET 200SP, TM Posinput 1
General information	
Product type designation	TM PosInput 1
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V16 or higher
• STEP 7 configurable/ integrated from version	V5.6 (use previous version *6BA00*)
• PROFIBUS from GSD version/ GSD revision	GSD Revision 5
• PROFINET from GSD version/ GSD revision	GSDML V2.34
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Encoder supply	
Number of outputs	2
5 V encoder supply	
• 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
Input characteristic curve in accordance with IEC 61131, type 3	Yes

Article number	**6ES7138-6BA01-0BA0** ET 200SP, TM Posinput 1
Digital input functions, parameterizable	
• Gate start/stop	Yes; only for pulse and incremental encoders
• Capture	Yes
• Synchronization	Yes; only for pulse and incremental encoders
• Freely usable digital input	Yes
Input voltage	
• 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
- at "0" to "1", min.	6 µs; for parameterization "none"
- at "1" to "0", min.	6 µs; for parameterization "none"
for technological functions	
- parameterizable	Yes

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

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

Overview

- 4 digital inputs, 6 digital outputs
- Inputs for detecting the input edges with µs accuracy
- Outputs for outputting the switching signals with µs 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

	Article No.
TM Timer DIDQ 10x24V time-based IO module	
4 time-controlled inputs, 6 time-controlled outputs	**6ES7138-6CG00-0BA0**
Usable 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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BA0**

	Article No.
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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
Accessories	
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	

Ordering data

	Article No.
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	**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**

	Article No.
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

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	
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	Yes
- Number, max.	4
• Counter	Yes
- Number, max.	3
• Counter for incremental encoder	Yes
- Number, max.	1
• Digital input with oversampling	Yes
- Number, max.	4
• HW enable for digital input	Yes
- Number, max.	1
• HW enable for digital output	Yes
- Number, max.	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
- at "0" to "1", min.	4 µs
- at "1" to "0", min.	4 µs
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	Yes
- Number, max.	6
• PWM output	Yes
- Number, max.	6
• Digital output with oversampling	Yes
- Number, max.	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

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

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 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. 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	**6ES7193-6BP20-0BB1**
BU type B1; BaseUnit (dark); without AUX terminals; for continuing the load group	
Accessories	
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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**

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	
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
- at "0" to "1", min.	4 µs; for parameterization "none"
- at "1" to "0", min.	4 µs; for parameterization "none"

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

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.	2 000 m; On request: Installation altitudes greater than 2 000 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 PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	50 g

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)
  - Probe (S7-1500, S7-1500T)

Ordering data

	Article No.
TM PTO 2x24V interface module for PTO (Pulse Train Output) With two channels for Pulse Train Output PTO, 24 V; 2 DQ PTO, 3 DI 24 V and 1 DQ 24 V per channel	**6ES7138-6EB00-0BA0**
Usable 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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**

Ordering data

	Article No.
Accessories	
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	
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	**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**

	Article No.
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**
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multi-language: 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	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current Manual Collection DVD and the three subsequent updates	

Technical specifications

Article number	**6ES7138-6EB00-0BA0** ET 200SP, TM PTO 2x24V
General information	
Product type designation	TM PTO 2x24V
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	STEP 7 V17 with HSP 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 V2.35
Supply voltage	
Rated value (DC)	24 V
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
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

Article number	**6ES7138-6EB00-0BA0** ET 200SP, TM PTO 2x24V
Digital input functions, parameterizable	
• Synchronization	Yes
Input voltage	
• 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
- at "0" to "1", min.	6 µs; for parameterization "none"
- at "1" to "0", min.	6 µs; for parameterization "none"

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

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

Ordering data	Article No.
TM StepDrive stepper motor control High-precision stepper motor control for ET 200SP	More information and ordering options via Phytron under http://www.phytron.com/tm-stepdrive.
Usable BaseUnits	
BU20-P12+A0+4B BU type B1; BaseUnit (dark); without AUX terminals; for continuing the load group	**6ES7193-6BP20-0BB1**
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 microstep (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
- Overdrive: Current adaptation for higher clock frequencies
- 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 http://www.phytron.com/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.

You can find Service and Support under http://www.phytron.com/support.

Overview

SIMATIC MICRO-DRIVE F-TM ServoDrive HF with Base Unit

In combination with EC Motors and stepper motors up to 280 W the new 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 family.

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

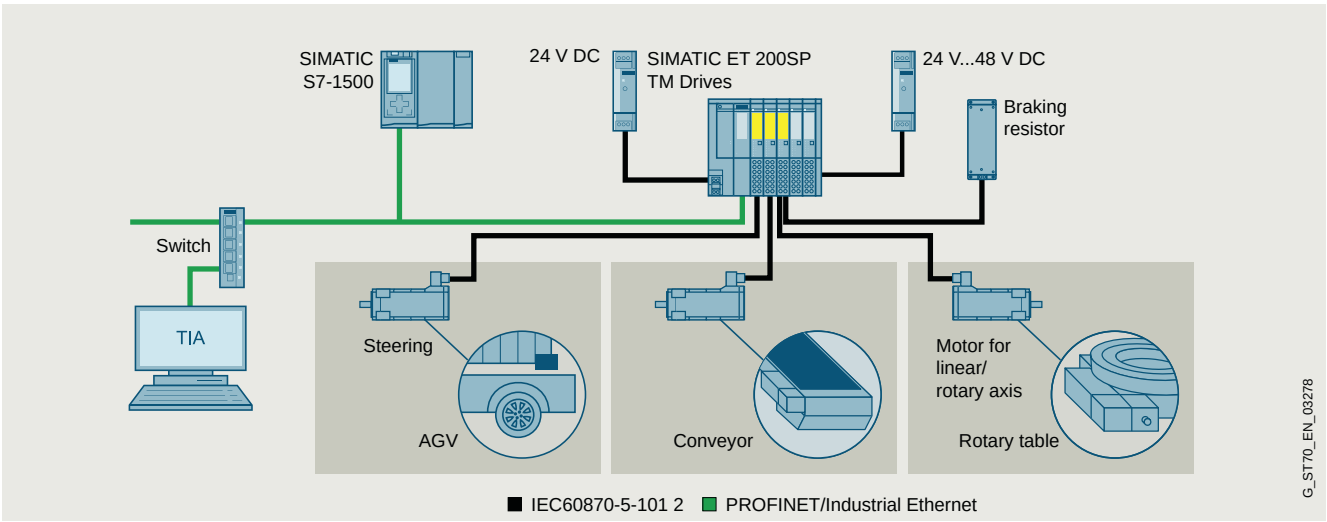
The new drive system consists of:

- The F-TM ServoDrive HF as a new member of the SIMATIC MICRO-DRIVE family,
- 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

- PROFIdrive profile via PROFINET
- Hardware-STO (SIL3)
- Triple overload
- Digital input
- Integrated braking chopper
- Encoder connection for
  - IQ encoders
  - Incremental encoders
  - BiSS-C encoders



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.
F-TM ServoDrive HF for SIMATIC MICRO-DRIVE • High Feature V1; 24 ... 48 V, 5 A with hardware STO and integrated braking chopper	**6BK1136-6AB00-0CU0**

	Article No.
Accessories	
ET 200SP BaseUnit type U0	
• For constructing a new potential group (white)	**6ES7193-6BP00-0DU0**
• For continuing an existing potential group (gray)	**6ES7193-6BP00-0BU0**
Shield connection for ET 200SP Includes 5 shield connections	**6ES7193-6SC20-1AM0**

Technical specifications

Article number	**6BK1136-6AB00-0CU0** 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	No
• Four-quadrant operation	Yes
• Speed control with encoder	Yes
• Speed control without encoder	Yes; for stepper motors
• 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
Encoder supply	
Number of outputs	1
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
• 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

Article number	**6BK1136-6AB00-0CU0** 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
cULus	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	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	3
Ambient conditions	
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

Overview

SIMATIC MICRO-DRIVE F-TM ServoDrive ST video
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6136813197001

In combination with EC motors, the new 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.

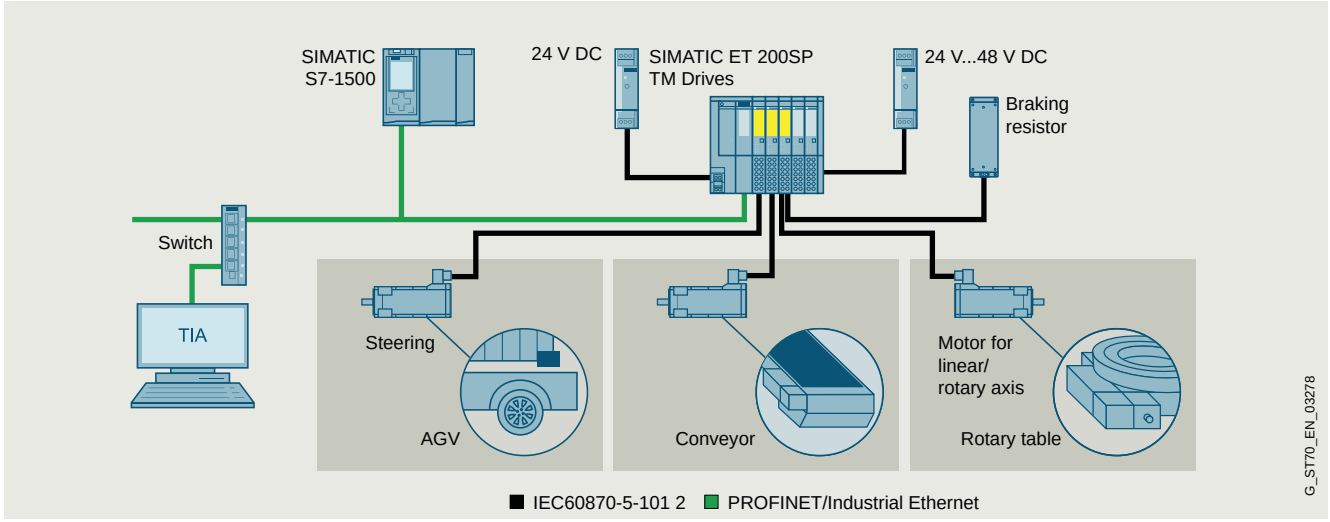
The new drive system consists of

- The F-TM ServoDrive ST as a new member of the SIMATIC MICRO-DRIVE family
- 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

- PROFIdrive profile via PROFINET
- Hardware STO
- Digital input
- Integrated braking chopper
- Encoder connection for
  - IQ encoders
  - Incremental 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 ServoDrive ST for SIMATIC MICRO-DRIVE • Standard V1; 24 ... 48 V, 5 A with hardware STO and integrated braking chopper	**6BK1136-6AB00-0BU0**

	Article No.
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_LAiO2, length 1.5 m • ebm-papst motor ECI42.20 24 V	**6BK1637-6AB00-0BU0**
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 Includes 5 shield connections	**6ES7193-6SC20-1AM0**

Technical specifications

Article number	**6BK1136-6AB00-0BU0** F-TM ServoDrive ST
General information	
Product type designation	F-TM ServoDrive ST
Product description	Control of EC motors
Product function	
• I&M data	Yes
• Isochronous mode	No
• 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	599 Hz
Encoder supply	
Number of outputs	1
Digital inputs	
Number of digital inputs	1; input for message signal
Number of safety inputs	1; For STO, antivalent (2-pin) - 24 V DC

Article number	**6BK1136-6AB00-0BU0** F-TM ServoDrive ST
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
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
cULus	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
China RoHS compliance	Yes
Standard for EMC according to EN 61800-3	Yes, according to second environment Category C2 acc. EN 61800-3
Standard for drive acc. to EN 61800-5-1	Yes
Standard for drive acc. to EN 61800-5-2	Yes

Technical specifications

Article number	**6BK1136-6AB00-0BU0** F-TM ServoDrive ST
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	2
Ambient conditions	
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

Article number	**6BK1136-6AB00-0BU0** F-TM ServoDrive ST
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

Overview

The new 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.

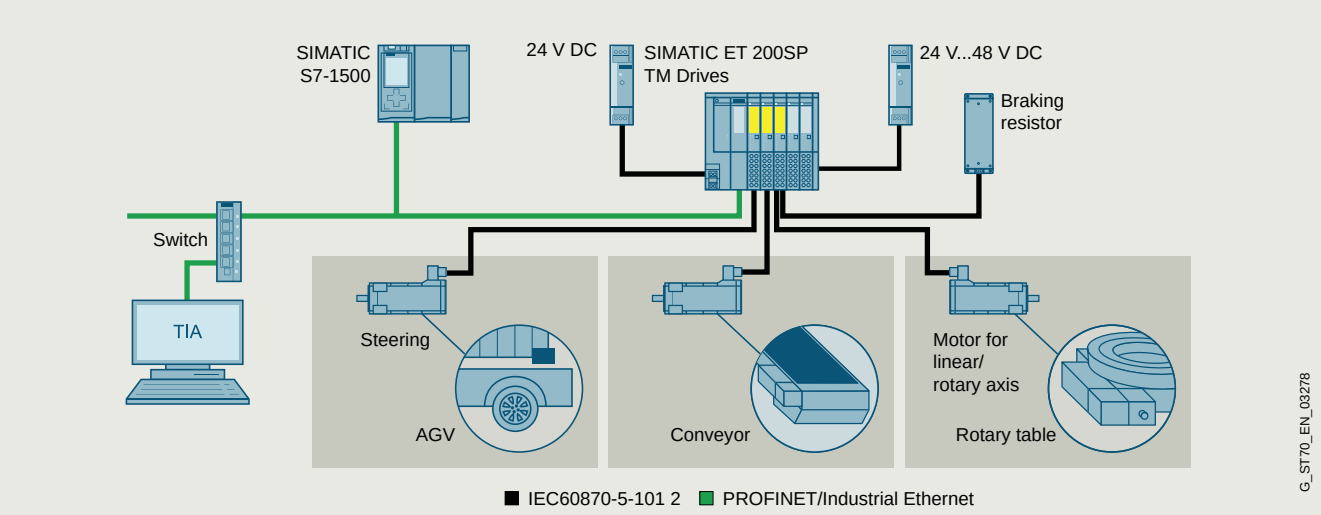
The new drive system consists of

- The F-TM StepDrive ST as a new member of the SIMATIC MICRO-DRIVE family
- 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
- PROFIdrive profile via PROFINET
- Hardware STO (SIL3)
- Digital input
- Encoderless operation
- Encoder connection for
  - Incremental 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	**6BK1136-6SB00-0BU0**
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 Includes 5 shield connections	**6ES7193-6SC20-1AM0**

Technical specifications

Article number	**6BK1136-6SB00-0BU0** 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	No
• Four-quadrant operation	Yes
• Speed control with encoder	No
• 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	1 000 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

Article number	**6BK1136-6SB00-0BU0** 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
cULus	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
China RoHS compliance	Yes
Standard for EMC according to EN 61800-3	Yes, according to second environment Category C2 acc. EN 61800-3
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 according to EN 61800-5-2:2017
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.	-40 °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

Overview

SIPLUS and SIMATIC Electrical Charging Controller 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

Ordering data

	Article No.
Electrical Charging Controller **SIMATIC ET 200 SP TM ECC 2xPWM ST** 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; 2x ACT for connector lock suitable for BU type BU20-P12+A0+4B and BU20-P12+A4+0B	**6FE1242-6TM10-0BB1**
With conformal coating, based on 6FE1242-6TM10-0BB1.	**6AG1242-6TM10-2BB1**
Technology module **SIMATIC ET 200SP TM ECC PL ST** Charging controller for the conductive charging of electric vehicles according to DIN SPEC 70121, charging mode 4, ambient temperature -30 °C ... 60 °C 1x control pilot including Powerline Green Phy, 1x plug present/ proximity pilot, 1x digital out TRIP function as open collector, 1x digital out (DQ P) as open collector, suitable for BU type BU20-P12+A0+4B or BU type BU20-P12+A4+0B	**6FE1242-6TM20-0BB1**
Expansion kit **SIMATIC 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. Suitable for 6FE1242-6TM20-0BB1 SIMATIC ET 200SP TM ECC PL ST	**6FE1244-0AD10-0AA0**

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
General information			
Product type designation	ECC 2x PWM ST		ECC PL ST
Product description	Technology modules for the conductive AC charging of electric vehicles according to IEC 61851	Communication controller for controlling conductive AC charging according to IEC 61851	Technology module for the conductive charging of electric vehicles according to DIN 70121
usable BaseUnits	BU type B0, B1		
Color code for module-specific color identification plate		CC40	
Number of channels	2; Acc. to IEC 61851-1 Mode 3 and/or SAE J1772	2; According to IEC 61851/SAE J1772	1; Acc. to IEC 61851-1 Mode 4 and DIN SPEC 70121
Product function			
• I&M data	Yes; I&M0 to I&M3		
• Isochronous mode	No		
Engineering with			
• STEP 7 TIA Portal configurable/ integrated from version	V14 SP1		STEP 7 V16 or higher
Installation type/mounting			
Mounting type	standard rail		
Mounting position	Horizontal		Horizontal, vertical
Supply voltage			
Type of supply voltage	DC		
Rated value (DC)	24 V		
Reverse polarity protection	Yes; against destruction		
Load voltage L+			
• Rated value (DC)	24 V		24 V
• Reverse polarity protection			Yes
Input current			
Current consumption, typ.	40 mA		
Current consumption, max.	90 mA		100 mA

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
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
- 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 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

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
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		

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
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

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

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 PCS7.

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

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	
SIWAREX WP321 "Ready-for-use" TIA Portal and SIMATIC Manager sample configuration Free download on the Internet at: http://www.siemens.com/weighing	
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	**6ES7193-6BP00-0DA0**
• BU15P-16+A10+2D	**6ES7193-6BP20-0DA0**
For continuing the potential group	
• BU15P-16+A0+2B	**6ES7193-6BP00-0BA0**
• BU15P-16+A10+2B	**6ES7193-6BP20-0BA0**
Shield connection for BaseUnit (5 units / for 5 scales) For laying the load cell cable	**6ES7193-6SC20-1AM0**

Ordering data

	Article No.
Accessories (optional)	
SIWAREX EB extension box For extending sensor cables	**7MH4710-2AA**
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**
SIWAREX DB digital junction box For enhanced diagnostic and monitoring options in conjunction with SIWAREX WP electronics	
Enclosure made of:	
• Aluminum	**7MH5001-0AD20**
• Stainless steel	**7MH5001-0AD01**
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	**7MH4710-5BA**
• Short-circuit current < 137 mA DC	**7MH4710-5CA**

	Article No.
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	**7MH4702-8AG**
• Sheath color (for hazardous atmospheres): blue	**7MH4702-8AF**
RS 485/USB interface converter Commercially available interface converter with FTDI chip, e.g. USB-Nano from CTI http://www.cti-shop.com/RS485-Konverter/USB-Nano-485	
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 http://www.siebert-group.com/en Detailed information is available from the manufacturer.	

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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	
$T_{min(IND)}$ ... $T_{max(IND)}$ (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.

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 SIMATIC ET 200SP, TM SIWAREX WP341 HF, weighing electronics for continuous belt weighing applications	**7MH4138-6CA00-0CU0**
SIWAREX WP341 Equipment Manual Available in a range of languages Free download on the Internet at: 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: http://www.siemens.com/weighing/documentation	
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 ET 200SP incl. 5 shield connections	**6ES7193-6SC00-1AM0**
Accessories	
SIWAREX EB extension box For extending sensor cables	**7MH4710-2AA**
SIWAREX JB junction box, aluminum enclosure For connecting up to 4 load cells in parallel, and for connecting multiple terminal 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 prototype test certificate).	**7MH5001-0AA01**

Ordering data

	Article No.
SIWAREX DB digital junction box	
For enhanced diagnostic and monitoring options in conjunction with SIWAREX WP electronics.	
Enclosure made of:	
• Aluminum	**7MH5001-0AD20**
• 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	**7MH5001-0AD01**
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	**7MH4710-5BA**
• With short-circuit current < 137 mA DC	**7MH4710-5CA**

	Article No.
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	**7MH4702-8AG**
• Sheath color (for hazardous atmospheres): blue	**7MH4702-8AF**

Technical specifications

Article number	**7MH4138-6CA00-0CU0**
General information	
Product type designation	TM SIWAREX WP341 HF
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	No
• Adjustment of measuring range	Yes; ±0 ... 4 mV/V
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V16
• STEP 7 configurable/ integrated from version	- / -
• PROFIBUS from GSD version/ GSD revision	GSD as of Revision 5
• PROFINET from GSD version/ GSD revision	GSDML V2.34
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Short-circuit protection	Yes
• Reverse polarity protection	Yes
Digital inputs	
Number of digital inputs	3
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Input voltage	
• Type of input voltage	24 V DC
• Rated value (DC)	24 V
• for signal "0"	< 5 V DC
• for signal "1"	+11 to +30V
• permissible voltage at input, min.	-30 V
• 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

Article number	**7MH4138-6CA00-0CU0**
Digital outputs	
Number of digital outputs	3
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes
Digital output functions, parameterizable	
• Freely usable digital output	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A
Output voltage	
• Type of output voltage	DC
Output delay with resistive load	
• "0" to "1", typ.	20 µs
• "1" to "0", typ.	30 µs
Parallel switching of two outputs	
• for uprating	No
Switching frequency	
• with resistive load, max.	500 Hz
Total current of the outputs	
• 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
• Current per module, max.	1.5 A; Observe derating
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.	56 Ω; when using SIWAREX IS 87 ohm for 7MH4710-5BA; 180 ohm when using 7MH4710-5CA
• Resistance of full bridge, max.	4 100 Ω

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

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

Ordering data	Article No.
TM SIWAREX WP351 HF weighing electronics SIMATIC ET 200SP, TM SIWAREX WP351 HF, legal-for-trade weighing module for automatic dosing, filling and checking scales and totalizing weighing instruments	**7MH4138-6BA00-0CU0**
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 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.	**7MH4138-6BA00-0AY0**
ET 200SP BaseUnit type U0	
• For constructing a new potential group (white)	**6ES7193-6BP00-0DU0**
• For continuing an existing potential group (gray)	**6ES7193-6BP00-0BU0**

Ordering data

Ordering data	Article No.
Shield connection for ET 200SP Includes 5 shield connections	**6ES7193-6SC20-1AM0**
SIWAREX EB extension box For extending sensor cables.	**7MH4710-2AA**
SIWAREX JB junction box, aluminum enclosure For connecting up to 4 load cells in parallel, and for connecting multiple terminal 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 prototype test certificate).	**7MH5001-0AA01**
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	**7MH4710-5BA**
• With short-circuit current < 137 mA DC	**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	**7MH4702-8AG**
• Sheath color (for hazardous atmospheres): blue	**7MH4702-8AF**

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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 The accuracy is relevant for module exchange or theoretical adjustment	Typ. 0.1% of end value
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 Lower impedance by means of external supply possible
• With SIWAREX IS Ex-i interface	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 [1]	Min. -30 °C Max. +60 °C
• Vertical mounting position [1]	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.

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	**6AG1193-6BP00-7DA0**
BU type A0; BaseUnit (light) with 16 push-in 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 push-in terminals to the module; for continuing the load group	
BU15-P16+A10+2D	**6AG1193-6BP20-7DA0**
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)	
BU15-P16+A10+2B	**6AG1193-6BP20-7BA0**
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	
SIPLUS Mounting Kit ET 200SP	**6AG1193-6AA00-0AA0**
Mounting accessories for use with increased mechanical vibration and shock loads.	
Other accessories	See SIMATIC TM Count 1x24V counter module, page 10/101

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 configured empty 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

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 four-fold 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

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

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 push-in 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 push-in terminals to the module; for continuing the load group	**6AG1193-6BP00-7BA0**
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)	**6AG1193-6BP20-7DA0**
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	**6AG1193-6BP20-7BA0**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See TM PosInput 1 counter and position detection module, page 10/105

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 configured empty 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

Overview

- 4 digital inputs, 6 digital outputs
- Inputs for detecting the input edges with µs accuracy
- Outputs for outputting the switching signals with µs 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 push-in 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 push-in terminals to the module; for continuing the load group	**6AG1193-6BP00-7BA0**
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)	**6AG1193-6BP20-7DA0**
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	**6AG1193-6BP20-7BA0**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See SIMATIC TM Timer DIDQ 10x24V time-based IO module, page 10/108

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 configured empty 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

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

Ordering data	Article No.
SIPLUS TM Pulse 2x24V pulse output module (extended temperature range and exposure to environmental substances) PWM and pulse output, 2 channels of 2 A for proportional valves and DC motors	**6AG1138-6DB00-2BB1**
Suitable BaseUnits	
(extended temperature range and exposure to environmental substances)	
BU20-P12+A0+4B BU type B1; BaseUnit (dark); without AUX terminals; for continuing the load group	**6AG1193-6BP20-7BB1**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See SIMATIC TM Pulse 2x24V pulse output module, page 10/111

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 configured empty 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

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

	Article No.
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;	**6AG1242-6TM10-2BB1**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**

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

Overview

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

The electronic weighing 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.
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**
Accessories	
Mandatory	
BaseUnit Type A0 – one BaseUnit required for each WP321	
• For opening a new potential group	
- BU15P-16+A0+2D or	**6ES7193-6BP00-0DA0**
- BU15P-16+A10+2D	**6ES7193-6BP20-0DA0**
• For continuing the potential group	
- BU15P-16+A0+2B	**6ES7193-6BP00-0BA0**
- BU15P-16+A10+2B	**6ES7193-6BP20-0BA0**
Consumables	
Shield connection for BaseUnit Set for 5 shield connections, with 5 shield connection clamps, 5 supports, 5 support elements	**6ES7193-6SC20-1AM0**
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**
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 prototype test certificate).	**7MH5001-0AA01**
Ex interface, type SIWAREX IS For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing systems. Compatibility of the load cells must be checked separately.	
• With short-circuit current < 199 mA DC	**7MH4710-5BA**
• With short-circuit current < 137 mA DC	**7MH4710-5CA**
Cables (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath For connecting SIWAREX electronic weighing systems 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	**7MH4702-8AG**
• For hazardous areas. Sheath color: blue	**7MH4702-8AF**

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Ordering data

	Article No.
Configuration software	
SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	**7MH4900-1AK01**
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**
Documentation	
SIWAREX WP321 Equipment Manual Available in a range of languages Free download from the Internet at: http://www.siemens.com/weighing/documentation	

	Article No.
SIWAREX WP321 "Ready for use" TIA Portal and SIMATIC Manager sample configuration Free download on the Internet at: http://www.siemens.com/weighing/documentation	
SIMATIC Manual Collection Electronic manuals on DVD, multi-language: 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	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

Technical specifications

SIPLUS WP321	
Environmental conditions	
Climatic requirements	
$T_{min(IND)}$ ... $T_{max(IND)}$ (operating temperature)	
• Vertical installation	-40 ... +50 °C
• Horizontal installation	-40 ... +60 °C
Operating height in relation to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient temperature, air pressure and 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 according to IEC 60068-2-38, max.	100%; RH including condensation/frost (no commissioning when condensation is present), horizontal installation

SIPLUS WP321	
Resistance	
• Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; incl. airborne diesel and oil droplets
• For use in stationary industrial equipment	
- Resistant to biologically active substances, acc. to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna); Class 3B3 on request
- Resistant to chemically active substances acc. to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity 3) *
- Resistant to mechanically active substances acc. to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust*
• For use on ships/at sea	
- Resistant to biologically active substances acc. to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- Resistant to chemically active substances acc. to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity 3)*
- Resistant to mechanically active substances acc. to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust*
• Note	
- Note on classification of environmental conditions acc. to EN 60721	*. The supplied plug covers must remain in place on the unused interfaces during operation.
Conformal coating	
• Coating for PCBs acc. to EN 61086	Yes; Class 2 for high availability
• Military testing acc. to MIL-I-46058C, Amendment 7	Yes; coating discoloration possible
• Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies acc. to IPC-CC-830A	Yes; conformal coating, class A
EMC requirements	Acc. to IEC 61000-6-2, IEC 61000-6-4, OIML-R76-1
Dimensions (width)	15 mm (0.6 in)

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 and RS422 interfaces. RS485 for the Freeport, 3964(R), Modbus RTU, USS and DMX512 protocols, max. 115.2250 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 25000 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 (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

Ordering data	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	**6ES7137-6AA01-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10	**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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling strips	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	
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 ground	
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

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
- Number of slaves, max.	32
MODBUS RTU slave	
- 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

Overview

- CM 4x IO-Link communications module
  Serial communication 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
- LEDs
  - 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 plates
  - Color-coding plate with color code CC04
- Optional system-integrated shield connection

Overview of CM 4 x IO-Link

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

Overview

Overview of BaseUnits

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

Ordering data	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**
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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	**6ES7193-6LF30-0AW0**

	Article No.
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, perforated, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1 000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	**6ES7193-6LA10-0AG0**
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	**6ES7193-6CP04-2MA0**
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**
Spare parts	
Electronic coding element type H Pack of 5 units; included in scope of supply of CM 4x IO-Link module	**6ES7193-6EH00-1AA0**
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

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
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
Operating modes	
• IO-Link	Yes
• DI	Yes
• DQ	Yes; max. 100 mA per channel

Article number	**6ES7137-6BD00-0BA0**
	ET 200SP, CM 4 X IO-Link ST
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
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

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.
DALI V2 multimaster module CM 1xDALI 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 push-in terminals to the module; for starting a new load group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP00-0DU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2DU0**
BU20-P16+A0+2B BU type U0; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the load group	
• Pack of 1 unit	**6ES7193-6BP00-0BU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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**

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

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	
Function block SIMATIC ECC CHAdeMO 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**
Usable type A0 BaseUnits	
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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2DA0**
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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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**

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
• Number of slaves, max.	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

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 or PROFIBUS.

With the CM AS-i Master ST module, flexible and powerful PROFINET/AS-i links or PROFIBUS/AS-i link solutions 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 8 AS-i masters with PROFINET IM 155-6PN Standard, 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.

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 pushbuttons and protective door monitoring systems to a fail-safe 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 from page 10/232) 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-ae33dfacf7a2/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 front-side module inscription for

- Plain-text marking of the module type and function class
- 2D matrix code (Article No. and serial number)
- Circuit diagram
- Color coding module type communications module: light gray
- Hardware and firmware version
- Supported BaseUnit type BU: C0

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 control panel of the CM AS-i Master ST in STEP 7.

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 S7-300 up to S7-1500 and with a SINUMERIK 840D sl 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 (for S7-1500 CPUs with firmware version V 2.0 or higher).

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

For more information about the subject of Industrial Security, see https://www.siemens.com/industrialsecurity.

Configuration

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

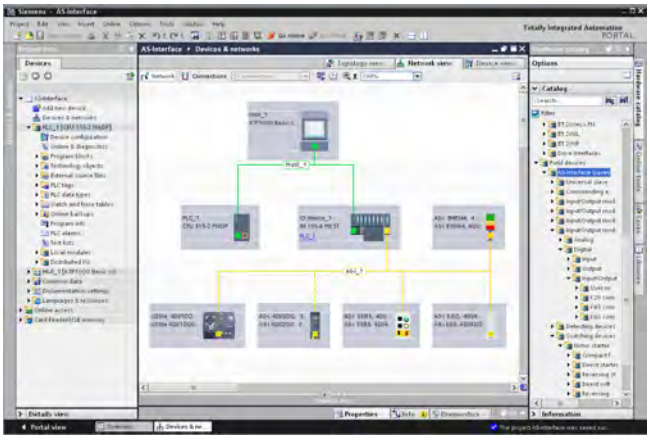
- STEP 7 (TIA Portal) or
- STEP 7 (Classic) or
- the GSD file of the ET 200SP with STEP 7 or another engineering tool

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 control panel 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 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

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 eight 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.

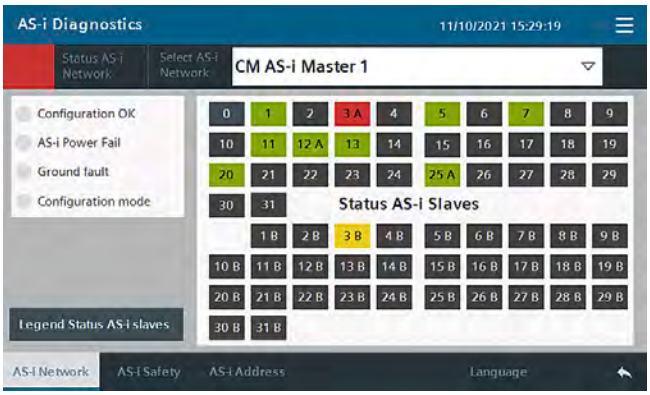
Using STEP 7, the AS-i network is consistently configured and programmed with only one configuration tool.

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.

For the connection of an AS-i network to systems with Ethernet/IP and Modbus TCP, the ET 200SP MultiFieldbus interface module IM155-6MF in combination with the CM AS-i Master ST module is available.

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 (from firmware version V1.1.11 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.

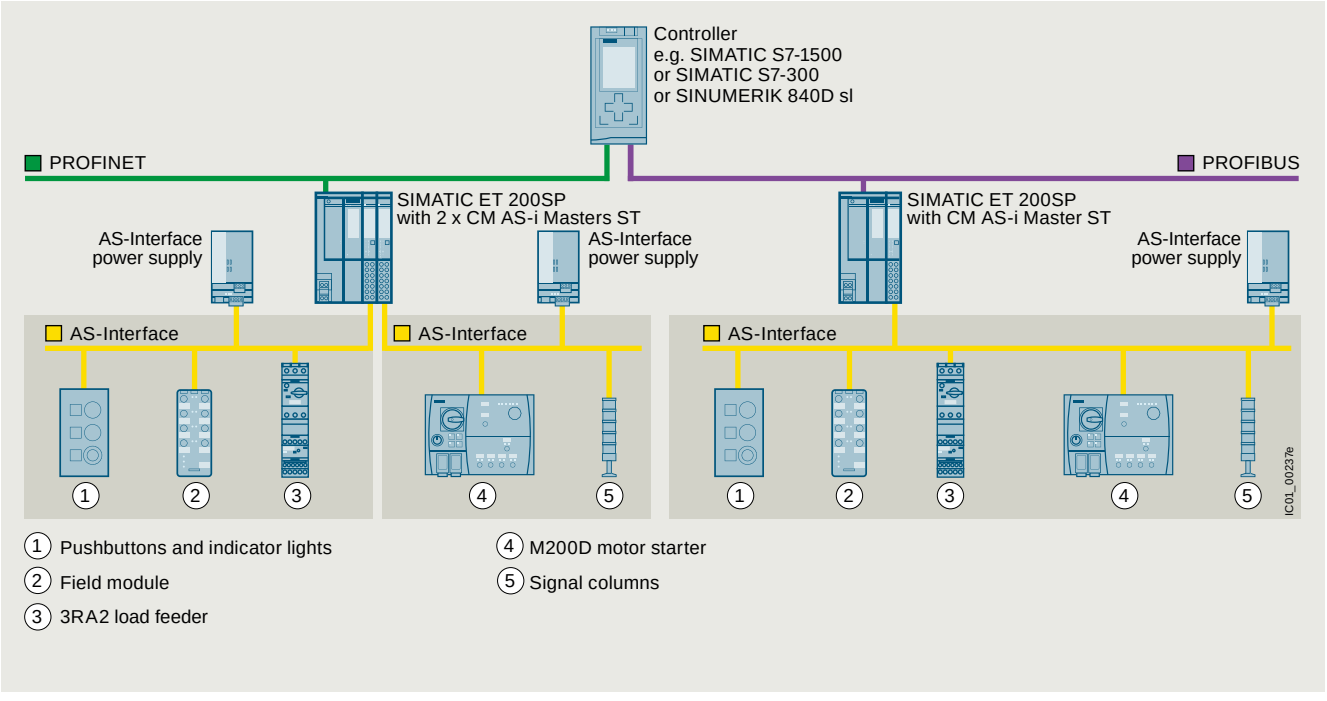


Diagnostic block for CM AS-i Master ST

10

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

Ordering data

	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**
Accessories	
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**
PROFINET IM 155-6PN Basic interface modules 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)	**6ES7155-6AR00-0AN0**
PROFINET IM 155-6PN Standard interface modules Max. 32 I/O modules, max. 512 bytes I/O data per station	
• Including server module and BusAdapter 2 x RJ45 (supplied without RJ45 plug)	**6ES7155-6AA01-0BN0**
• Including server module (BusAdapter must be ordered separately, see right)	**6ES7155-6AU01-0BN0**
PROFINET IM 155-6PN High Feature interface modules 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)	**6ES7155-6AU01-0CN0**
• **IM 155-6PN/3 High Feature** 3-port IM with two BusAdapter slots, including server module (BusAdapter must be ordered separately, see right)	**6ES7155-6AU30-0CN0**
PROFINET IM 155-6PN High Speed interface modules 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**

	Article No.
PROFIBUS IM 155-6DP High Feature interface modules Max. 32 I/O modules, max. 244 bytes I/O data per station	
• Including server module and PROFIBUS plug	**6ES7155-6BA01-0CN0**
MultiFieldbus IM 155-6MF High Feature interface modules For operation on PROFINET, EtherNet/IP or Modbus TCP controllers, 1 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)	**6ES7155-6MU00-0CN0**
For more information, see https://support.industry.siemens.com/cs/ww/en/view/109779189.	
Bus adapters for PROFINET/Ethernet 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)	**6ES7193-6AR00-0AA0**
• Connection 2 x FC (FastConnect)	**6ES7193-6AF00-0AA0**
For more BusAdapters with fiber optic cable connection, see http://www.siemens.com/industrymall	
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 batteries type AA (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**

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	**6ES7972-0BA12-0XA0**
• with PG interface	**6ES7972-0BB12-0XA0**
With 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps	
• without PG interface, 1 unit	**6ES7972-0BA52-0XA0**
• without PG interface, 100 units	**6ES7972-0BA52-0XB0**
• with PG interface, 1 unit	**6ES7972-0BB52-0XA0**
• with PG interface, 100 units	**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**

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 slave	Yes
• SIMATIC communication	Yes
PROFIBUS DP master	
• Number of DP slaves, max.	125
Services	
- PG/OP communication	Yes
- Equidistance	No
- Isochronous mode	No
- Activation/deactivation of DP slaves	Yes
PROFIBUS DP slave	
• 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

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7
	●			●		●	●

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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 BusAdapter BA 2xRJ45 For PROFINET interface modules, standard function class or above; max. cable length 50 m	**6ES7193-6AR00-0AA0**
SIMATIC BusAdapter BA 2xFC 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 BusAdapter BA 2xSCRJ 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 BusAdapter BA SCRJ/RJ45 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 BusAdapter BA SCRJ/FC 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**

Ordering data	Article No.
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 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC RJ45 plug 4 x 2	
RJ45 plug-in connector for Industrial Ethernet (10/100/1000/10000 Mbps, Cat6$_A$) with a 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	**6GK1901-1BB12-2AA0**
• 1 pack = 10 units	**6GK1901-1BB12-2AB0**
• 1 pack = 50 units	**6GK1901-1BB12-2AE0**
IE FC TP standard cable GP 2 x 2 (type A)	**6XV1840-2AH10**
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	
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	**6XV1870-2E**
• AWG24, for connection to IE FC RJ45 plug 4 x 2	**6XV1878-2A**
IE FC stripping tool	**6GK1901-1GA00**
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	

	Article No.
Labeling strips	
500 labeling strips on roll, light gray, for labeling with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for labeling with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, perforated, for labeling with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, perforated, for labeling with laser printer	**6ES7193-6LA10-0AG0**
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	
Spare parts	
Server module	**6ES7193-6PA00-0AA0**
Terminates an ET 200SP station; included in the scope of delivery of the interface modules	
PE connection element for mounting rail 2000 mm	**6ES7590-5AA00-0AA0**
20 units	
Power supply connector	**6ES7193-4JB00-0AA0**
Spare part; for connecting the 24 V DC supply voltage with push-in terminals	

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 top hat DIN rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	2
• note	2 CPs can be pluged in per CPU, simultaneous operation with BA Send and CM DP is possible

Article number	**6GK7542-6UX00-0XE0**
product type designation	CP 1542SP-1
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
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 hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7
	●			●		●	●

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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 BusAdapter BA 2xRJ45 For PROFINET interface modules, standard function class or above; max. cable length 50 m	**6ES7193-6AR00-0AA0**
SIMATIC BusAdapter BA 2xFC 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 BusAdapter BA 2xSCRJ 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 BusAdapter BA SCRJ/RJ45 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 BusAdapter BA SCRJ/FC 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 a 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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**

Ordering data	Article No.
IE FC RJ45 plug 4 x 2	
RJ45 plug-in connector for Industrial Ethernet (10/100/1000/10000 Mbps, Cat6$_A$) with a 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	**6GK1901-1BB12-2AA0**
• 1 pack = 10 units	**6GK1901-1BB12-2AB0**
• 1 pack = 50 units	**6GK1901-1BB12-2AE0**
IE FC TP standard cable GP 2 x 2 (type A)	**6XV1840-2AH10**
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	
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	**6XV1870-2E**
• AWG24, for connection to IE FC RJ45 plug 4 x 2	**6XV1878-2A**

Ordering data	Article No.
IE FC stripping tool	**6GK1901-1GA00**
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	
Labeling strips	
500 labeling strips on roll, light gray, for labeling with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for labeling with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, perforated, for labeling with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, perforated, for labeling with laser printer	**6ES7193-6LA10-0AG0**
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	
Spare parts	
Server module	**6ES7193-6PA00-0AA0**
Terminates an ET 200SP station; included in the scope of delivery of the interface modules	
PE connection element for mounting rail 2000 mm	**6ES7590-5AA00-0AA0**
20 units	
Power supply connector	**6ES7193-4JB00-0AA0**
Spare part; for connecting the 24 V DC supply voltage; with push-in terminals	

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 top hat DIN rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	2
• note	2 CPs can be pluged 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	**6GK7543-6WX00-0XE0**
product type designation	CP 1543SP-1
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
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&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	
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 hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7
	●			●		●	●

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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 BusAdapter BA 2xRJ45 For PROFINET interface modules, standard function class or above; max. cable length 50 m	**6ES7193-6AR00-0AA0**
SIMATIC BusAdapter BA 2xFC 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 BusAdapter BA 2xSCRJ 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 BusAdapter BA SCRJ/RJ45 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 BusAdapter BA SCRJ/FC 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 a 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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**

Ordering data

	Article No.
IE FC RJ45 plug 4 x 2	
RJ45 plug-in connector for Industrial Ethernet (10/100/1000/10000 Mbps, Cat6$_A$) with a 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	**6GK1901-1BB12-2AA0**
• 1 pack = 10 units	**6GK1901-1BB12-2AB0**
• 1 pack = 50 units	**6GK1901-1BB12-2AE0**
IE FC TP standard cable GP 2 x 2 (type A)	**6XV1840-2AH10**
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	
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	**6XV1870-2E**
• AWG24, for connection to IE FC RJ45 plug 4 x 2	**6XV1878-2A**
IE FC stripping tool	**6GK1901-1GA00**
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	

	Article No.
Labeling strips	
500 labeling strips on roll, light gray, for labeling with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for labeling with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, perforated, for labeling with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, perforated, for labeling with laser printer	**6ES7193-6LA10-0AG0**
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	
Spare parts	
Server module	**6ES7193-6PA00-0AA0**
Terminates an ET 200SP station; included in the scope of delivery of the interface modules	
PE connection element for mounting rail 2000 mm	**6ES7590-5AA00-0AA0**
20 units	
Power supply connector	**6ES7193-4JB00-0AA0**
Spare part; for connecting the 24 V DC supply voltage with push-in terminals	

Technical specifications

Article number	**6GK7542-6VX00-0XE0**
product type designation	CP 1542SP-1 IRC
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

Article number	**6GK7542-6VX00-0XE0**
product type designation	CP 1542SP-1 IRC
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 top hat DIN rail mounting	Yes

Technical specifications

Article number	**6GK7542-6VX00-0XE0**
product type designation	CP 1542SP-1 IRC
product features, product functions, product components general	
number of units	
• per CPU maximum	2
• note	2 CPs can be pluged 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
performance data telecontrol	
suitability for use	
• node station	No
• substation	Yes
• TIM control center	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	supported
• by means of demand-oriented connection	supported
• note	Connection to SCADA system by IEC 60870-5 104, DNP3, Telecontrol Server Basic and ST7 capable control center
protocol is supported	
• DNP3	Yes
• IEC 60870-5	Yes
• SINAUT ST7 protocol	Yes

Article number	**6GK7542-6VX00-0XE0**
product type designation	CP 1542SP-1 IRC
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	3
• in receive direction maximum	15
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&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 with VPN connection	SINEMA RC
product function	
• 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	
• NTP	Yes
• NTP (secure)	No
time synchronization	
• from NTP-server	Yes
• from control center	Yes
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

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	**6GK5761-1FC00-0AA0**
• Country approvals for operation within the USA[1)]	**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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC standard cable GP 2 x 2	**6XV1840-2AH10**
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	
IE FC stripping tool	**6GK1901-1GA00**
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	
Antennas and additional IWLAN accessories	See SiePortal, Industrial Wireless LAN/Accessories

[1)] Please note country approvals under http://www.siemens.com/wireless-approvals

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
design of the removable storage		
• C-PLUG	No	No
• KEY-PLUG	No	No
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

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 top hat 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

[1] You will find the current list of countries at:
http://www.siemens.com/wireless-approvals

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 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

[1] You will find the current list of countries at:
http://www.siemens.com/wireless-approvals

Technical specifications

Article number	**6GK5761-1FC00-0AA0**	**6GK5761-1FC00-0AB0**
product type designation [1]	W761-1 RJ45	W761-1 RJ45 (USA)
standards, specifications, approvals		
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
• 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 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
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
certificate of suitability CCC for hazardous zone according to GB standard	Yes	Yes
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

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/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 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	**6GK5722-1FC00-0AA0**
• Country approvals for operation within the USA[1)]	**6GK5722-1FC00-0AB0**
• Country approvals for operation in Israel[1)]	**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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC standard cable GP 2 x 2	**6XV1840-2AH10**
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	
IE FC stripping tool	**6GK1901-1GA00**
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	
Antennas and additional IWLAN accessories	See SiePortal, Industrial Wireless LAN/Accessories

[1)] Please note country approvals under http://www.siemens.com/wireless-approvals

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
design of the removable storage			
• C-PLUG	No	No	No
• KEY-PLUG	No	No	No
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

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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 top hat 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&M0 - device-specific information	Yes	Yes	Yes
• I&M1 - higher level designation/location designation	Yes	Yes	Yes

[1] You will find the current list of countries at: http://www.siemens.com/wireless-approvals

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

[1] You will find the current list of countries at:
http://www.siemens.com/wireless-approvals

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)
standards, specifications, approvals			
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
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
certificate of suitability CCC for hazardous zone according to GB standard	Yes	Yes	
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

[1] You will find the current list of countries at:
http://www.siemens.com/wireless-approvals

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	**6GK5721-1FC00-0AA0**
• Country approvals for operation within the USA[1]	**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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC standard cable GP 2 x 2	**6XV1840-2AH10**
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	
IE FC stripping tool	**6GK1901-1GA00**
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	
Antennas and additional IWLAN accessories	See SiePortal, Industrial Wireless LAN/Accessories

[1] Please note country approvals under http://www.siemens.com/wireless-approvals

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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
design of the removable storage		
• C-PLUG	No	No
• KEY-PLUG	No	No
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

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 top hat 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&M0 - device-specific information	Yes	Yes
• I&M1 - higher level designation/location designation	Yes	Yes

[1] You will find the current list of countries at:
http://www.siemens.com/wireless-approvals

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

[1] You will find the current list of countries at:
http://www.siemens.com/wireless-approvals

Technical specifications

Article number	**6GK5721-1FC00-0AA0**	**6GK5721-1FC00-0AB0**
product type designation [1]	W721-1 RJ45	W721-1 RJ45 (USA)
standards, specifications, approvals		
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
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
certificate of suitability CCC for hazardous zone according to GB standard	Yes	Yes
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

Overview

- Communications module CM PtP;
  Module for serial communication connections with RS232, RS422, RS485 interfaces for the Freeport, 3964(R), Modbus RTU and USS protocols, max. 115.2 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 25 000 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

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 BU type A0; BaseUnit (light) with 16 push-in 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 push-in terminals to the module; for continuing the load group	**6AG1193-6BP00-7BA0**
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)	**6AG1193-6BP20-7DA0**
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	**6AG1193-6BP20-7BA0**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See SIMATIC CM PtP, page 10/152

Technical specifications

Article number	**6AG1137-6AA01-7BA0**
Based on	**6ES7137-6AA01-0BA0**
	SIPLUS ET 200SP CM PTP
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.	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)
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)
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	**6AG1137-6AA01-7BA0**
Based on	**6ES7137-6AA01-0BA0**
	SIPLUS ET 200SP CM PTP
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

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
  - PROFIenergy
- 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.

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**
Usable 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 jumpered 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 push-in 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 jumpered 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 push-in terminals to the module; for continuing the load group	**6AG1193-6BP00-7BA0**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See SIMATC CM 4x IO-Link, page 10/156

Technical specifications

Article number	**6AG1137-6BD00-2BA0**
Based on	**6ES7137-6BD00-0BA0**
	SIPLUS ET 200SP CM 4xIO-LINK
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °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.	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)
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	**6AG1137-6BD00-2BA0**
Based on	**6ES7137-6BD00-0BA0**
	SIPLUS ET 200SP CM 4xIO-LINK
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

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 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	**6AG1137-6EA00-2BA0**
Accessories	
Usable SIPLUS extreme 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**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See SIMATIC ET 200SP CM CAN, page 10/160

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 configured empty 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

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

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

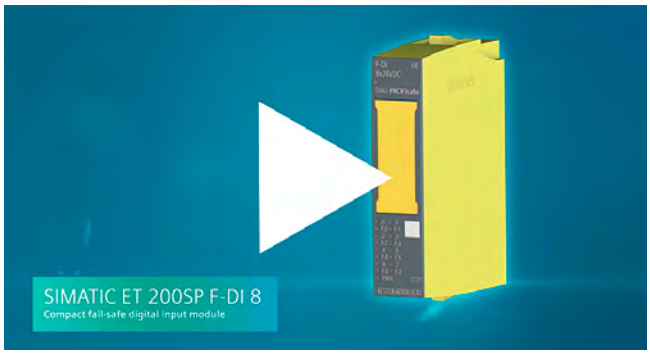
	Article No.
SIPLUS CM DP for ET 200SP CPU (Extended temperature range and exposure to environmental substances) PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbps	**6AG1545-5DA00-2AB0**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	see SIMATIC CM DP, page 10/166

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

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 PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7 CPUs.

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Ordering data

	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 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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BA0**

Ordering data	Article No.
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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
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 download[1]; 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 V18	
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 V18 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	**6ES7833-1FA18-0YA5**
Floating license for 1 user, license key for download[1]; Email address required for delivery	**6ES7833-1FA18-0YH5**

	Article No.
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	
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**

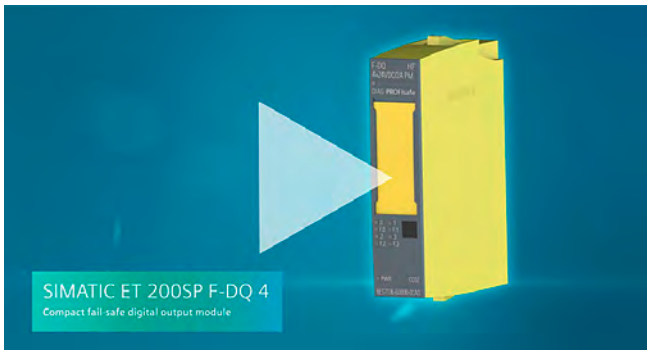
[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Technical specifications

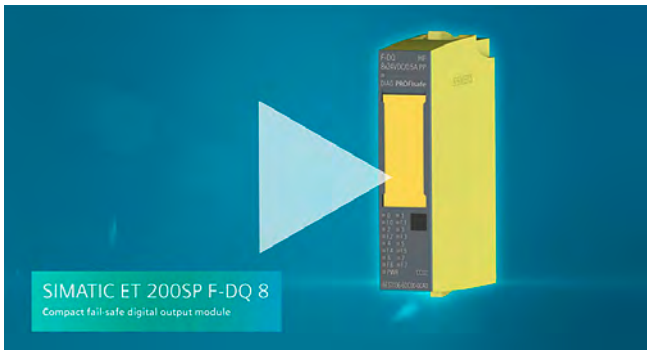
Article number	**6ES7136-6BA01-0CA0** ET 200SP, EI-Mod., F-DI 8x24VDC HF
General information	
Product type designation	F-DI 8x24VDC HF
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	SIMATIC Safety V17 with HSP 0360 or higher
• STEP 7 configurable/ integrated from version	as 6ES7136-6BA00-0CA0
• PROFINET from GSD version/ GSD revision	GSDML V2.35
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	8
Short-circuit protection	
Output current	
• up to 60 °C, max.	
24 V encoder supply	
• 24 V	Yes; min. L+ (-1.5 V)
• Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 1.8 A)
• Output current, max.	
• 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
Source/sink input	Yes; P-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input voltage	
• 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

Article number	**6ES7136-6BA01-0CA0** ET 200SP, EI-Mod., F-DI 8x24VDC HF
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red 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
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
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	4 000 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.	29 g

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

Ordering data	Article No.
Digital F-output modules	
F-DQ 4x24VDC High Feature, BU type A0, color code CC01	**6ES7136-6DB00-0CA0**
F-DQ 8x24VDC High Feature, switching to PP potential, BU type A0, color code CC01	**6ES7136-6DC00-0CA0**
Spare parts	
E-coding elements, type F	**6ES7193-6EF00-1AA0**
5 units, for ET 200SP F-DI, F-DQ, F-PM E, F-AI 4xI	
Suitable 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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
BU20-P12+A4+0B	**6ES7193-6BP20-0BB0**
BU type B0; BaseUnit (dark) with 12 push-in terminals (1 ... 12) to the module and an additional 4 internally bridged AUX terminals (1 A to 4 A); for continuing the load group	

Accessories	Article No.
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 download[1]; 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 V18 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 V18 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	**6ES7833-1FA18-0YA5**
Floating license for 1 user, license key for download[1]; Email address required for delivery	**6ES7833-1FA18-0YH5**

[1] Up-to-date information and download availability can be found under http://www.siemens.com/tia-online-software-delivery.

Ordering data

	Article No.
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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	**6ES7193-6SC20-1AM0**

	Article No.
Color-coded labels	
• Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP02-2MA0**
• Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 50 units	**6ES7193-6CP02-4MA0**
• 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**

Technical specifications

Article number	**6ES7136-6DB00-0CA0** ET 200SP, El-Mod., F-DQ 4xDC 24V/2A	**6ES7136-6DC00-0CA0** ET 200SP, F-DQ 8x 24VDC/0.5A PP
General information		
Product type designation	F-DQ 4x24 V DC/2A 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	V2.31
Supply voltage		
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes
Digital outputs		
Type of digital output	Transistor	Transistor
Number of digital outputs	4	8
Digital outputs, parameterizable	Yes	Yes
Short-circuit protection	Yes	Yes
Open-circuit detection	Yes	No
Overload protection	Yes	
Limitation of inductive shutdown voltage to	Typ. -2x 47 V	Typ. -39 V
Controlling a digital input		Yes
Switching capacity of the outputs		
• with resistive load, max.	2 A	0.5 A
• on lamp load, max.	10 W	2 W
Load resistance range		
• lower limit	12 Ω	48 Ω
• upper limit	2 000 Ω	12 000 Ω
Output voltage		
• for signal "1", min.	24 V; L+ (-0.5 V)	24 V; L+ (-0.5 V)
Output current		
• for signal "1" rated value	2 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA

Technical specifications

Article number	**6ES7136-6DB00-0CA0** ET 200SP, El-Mod., F-DQ 4xDC 24V/2A	**6ES7136-6DC00-0CA0** ET 200SP, F-DQ 8x 24VDC/0.5A PP
Switching frequency		
• with resistive load, max.	30 Hz; Symmetrical	30 Hz; Symmetrical
• with inductive load, max.	0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical	0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical
• with capacitive load, max.		2 Hz; Symmetrical
• on lamp load, max.	10 Hz; Symmetrical	10 Hz; Symmetrical
Total current of the outputs		
• Current per channel, max.	2 A; note derating data in the manual	0.5 A; note derating data in the manual
• Current per module, max.	6 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.		3 A
- up to 50 °C, max.		2.5 A
- up to 60 °C, max.		2 A
vertical installation		
- up to 50 °C, max.		2 A
Interrupts/diagnostics/ status information		
Diagnostics function	Yes	Yes
Substitute values connectable	No	No
Alarms		
• Diagnostic alarm	Yes	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		
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; with derating
Dimensions		
Width	15 mm	15 mm
Height	73 mm	73 mm
Depth	58 mm	58 mm
Weights		
Weight, approx.	57 g	48 g

Overview

The digital F electronic module relay 1 F-RQ 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.
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 SIL 3/Cat. 4/PLe if controlled via F-DQ	**6ES7136-6RA00-0BF0**
Suitable BaseUnits	
BU20-P8+A4+0B	**6ES7193-6BP20-0BF0**
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	
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 download[1]; 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 V18 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 V18 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	**6ES7833-1FA18-0YA5**
Floating license for 1 user, license key for download[1]; Email address required for delivery	**6ES7833-1FA18-0YH5**
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
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**

[1] Up-to-date information and download availability can be found under http://www.siemens.com/tia-online-software-delivery.

Ordering data

	Article No.
BU cover For covering empty slots (gaps); 5 units • 20 mm wide	**6ES7133-6CV15-1AM0**
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**
Color-coded labels • Color code CC42, module-specific; for BaseUnit type F0; 10 units	**6ES7193-6CP42-2MB0**

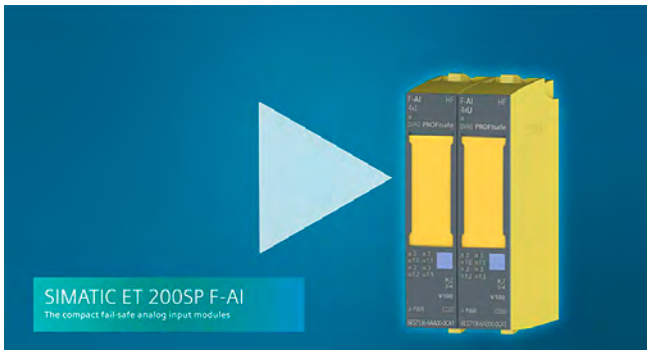
	Article No.
Mechanical coding elements For automatic coding of I/O modules; spare part. 20 units	
Type A	**6ES7193-6KA00-3AA0**
Type B	**6ES7193-6KB00-3AA0**
Type C	**6ES7193-6KC00-3AA0**
Type D	**6ES7193-6KD00-3AA0**

Technical specifications

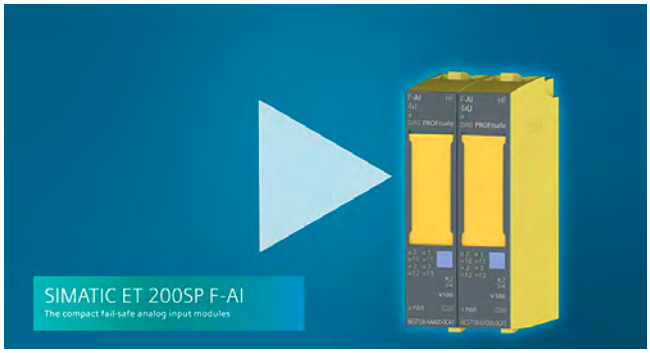
Article number	**6ES7136-6RA00-0BF0** ET 200SP, F-RQ 1x24VDC/24..230VAC/5A ST
General information	
Product type designation	F-RQ 24 ... 48VDC/24 ... 230VAC/5A ST
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13
• STEP 7 configurable/ integrated from version	V5.5 SP4 and 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

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.

Ordering data	Article No.
Analog F-input module	
F-AI 4xI 0(4) ... 20 mA 2/4-wire High Feature, BU type A0, A1, color code CC00	**6ES7136-6AA00-0CA1**
F-AI 4xU 0..10 V High Feature, BU type A0, A1, color code CC00	**6ES7136-6AB00-0CA1**
Spare parts	
E-coding elements, type F	**6ES7193-6EF00-1AA0**
5 units, for ET 200SP F-DI, F-DQ, F-PM E, F-AI 4xI	
5x E-coding elements, type H	**6ES7193-6EH00-1AA0**
5 units, for ET 200SP F-AI 4xU, F-TM Count, F-CM AS-i	
Suitable 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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
BU15-P16+A0+12D/T	**6ES7193-6BP40-0DA1**
BU type A1; BaseUnit (light) with 16 push-in 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 push-in terminals to the module; for starting a new load group (max. 10 A)	
BU15-P16+A0+12B/T	**6ES7193-6BP40-0BA1**
BU type A1; BaseUnit (dark) with 16 push-in terminals (1 ... 16) to the module and 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	
BU15-P16+A0+2B/T	**6ES7193-6BP00-0BA1**
BU type A1; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the load group	
Accessories	
STEP 7 Safety Advanced V18	
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 V18 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	**6ES7833-1FA18-0YA5**
Floating license for 1 user, license key for download[1]; Email address required for delivery	**6ES7833-1FA18-0YH5**
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
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	**6ES7133-6CV15-1AM0**
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 ground	

[1] Up-to-date information and download availability can be found under http://www.siemens.com/tia-online-software-delivery.

Ordering data

	Article No.
Color-coded labels	
• Color code CC00, for 16 push-in 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 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16), A1; 50 units	**6ES7193-6CP00-4MA0**

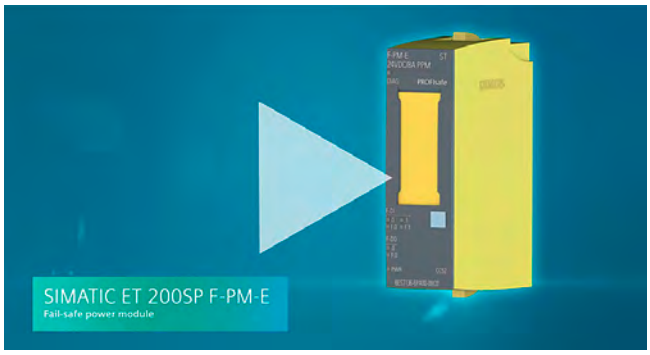
Technical specifications

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	

Technical specifications

Article number	**6ES7136-6AA00-0CA1**	**6ES7136-6AB00-0CA1**
	ET 200SP, F-AI 4XI (0)4..20mA HF	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 x (f1 +/- 1 %), f1 = 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

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 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.

Ordering data

	Article No.
F-PM-E 24 V DC/8 A 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**
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	
Type C0 BaseUnits	
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**
Accessories	
Equipment labeling plate 10 sheets of 16 labels	**6ES7193-6LF30-0AW0**
Labeling strips 1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**

	Article No.
BU cover For covering empty slots (gaps); 5 units	
• 20 mm wide	**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 ground	**6ES7193-6SC20-1AM0**
Color-coded labels	
• Color code CC52, module-specific, for 8 push-in terminals; 10 units	**6ES7193-6CP52-2MC0**
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

Article number	**6ES7136-6PA00-0BC0** ET 200SP, Power mod. 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, Power mod. 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

Technical specifications

Article number	**6ES7136-6PA00-0BC0** ET 200SP, Power mod. 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	8 A
• for signal "0" residual current, max.	1.5 mA; PP-switching: max. 1.5 mA; PM-switching: max. 1 mA
Switching frequency	
• with resistive load, max.	10 Hz; Symmetrical
• with inductive load, max.	0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical
• on lamp load, max.	4 Hz; Symmetrical
Total current of the outputs	
• Current per channel, max.	8 A; note derating data in the manual
• Current per module, max.	8 A; note derating data in the manual
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	500 m
Interrupts/diagnostics/ status information	
Diagnostics function	Yes; See Chapter "Alarms/diagnostic messages" in the manual
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red 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

Article number	**6ES7136-6PA00-0BC0** ET 200SP, Power mod. 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

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 PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7 CPUs.

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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	**6ES7193-6EH00-1AA0**
5 units, for ET 200SP F-AI 4xU, F-TM Count, F-CM AS-i	
Suitable 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	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**

Ordering data

	Article No.
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 download[1]; 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 V18 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 V18 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	**6ES7833-1FA18-0YA5**
Floating license for 1 user, license key for download[1]; Email address required for delivery	**6ES7833-1FA18-0YH5**

	Article No.
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	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	**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 under http://www.siemens.com/tia-online-software-delivery.

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Technical specifications

Article number	**6ES7136-6CB00-0CA0** 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	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Encoder supply	
5 V encoder supply	
• 5 V	Yes; 5.1 V ±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 µs 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** 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 µs
- 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)

Technical specifications

Article number	**6ES7136-6CB00-0CA0** 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** 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

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

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 push-in 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 push-in 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 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)	
BU15-P16+A10+2B	**6AG1193-6BP20-7BA0**
(Extended temperature range and exposure to environmental substances)	
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	
Accessories	
SIPLUS Mounting Kit ET 200SP	**6AG1193-6AA00-0AA0**
Mounting accessories for use with increased mechanical vibration and shock loads.	
Other accessories	See SIMATIC ET 200SP, digital F-input modules, page 10/201

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 configured empty 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

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 PROFIsafe 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

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	**6AG1193-6BP00-7DA0**
(Extended temperature range and exposure to environmental substances)	
BU type A0; BaseUnit (light) with 16 push-in 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 push-in 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 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)	
BU15-P16+A10+2B	**6AG1193-6BP20-7BA0**
(Extended temperature range and exposure to environmental substances)	
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	
BU20-P12+A4+0B	**6AG1193-6BP20-7BB0**
(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 jumpered AUX terminals (1 A to 4 A); for continuing the load group; 1 unit	
Accessories	
SIPLUS Mounting Kit ET 200SP	**6AG1193-6AA00-0AA0**
Mounting accessories for use with increased mechanical vibration and shock loads.	
Other accessories	See SIMATIC ET 200SP, digital F-output modules, page 10/204

Technical specifications

Article number	**6AG1136-6DB00-2CA0**	**6AG1136-6DC00-2CA0**
Based on	**6ES7136-6DB00-0CA0**	**6ES7136-6DC00-0CA0**
	SIPLUS ET 200SP F-DQ 4x24VDC/2A PM HF	SIPLUS ET 200SP F-DQ 8x24VDC/0.5A PP 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 configured empty 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.	-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)
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)

Technical specifications

Article number	**6AG1136-6DB00-2CA0**	**6AG1136-6DC00-2CA0**
Based on	**6ES7136-6DB00-0CA0**	**6ES7136-6DC00-0CA0**
	SIPLUS ET 200SP F-DQ 4x24VDC/2A PM HF	SIPLUS ET 200SP F-DQ 8x24VDC/0.5A PP HF
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

Overview

The digital F-electronic module relay 1 F-RQ 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 taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Ordering data	Article No.
SIPLUS digital F-output module relay 1 F-RQ (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-DQ	**6AG1136-6RA00-2BF0**
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 jumpered AUX terminals (1 A to 4 A); for continuing the load group	**6AG1193-6BP20-2BF0**
Accessories	See SIMATIC ET 200SP, digital F-output module relay, page 10/207

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 configured empty 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

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.
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**
Usable BaseUnits	
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 jumpered 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 jumpered 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	
BU15-P16+A0+12D/T	**6AG1193-6BP40-7DA1**
(Extended temperature range and exposure to environmental substances)	
BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and also 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)	

Ordering data

	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+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 also 2x5 internally jumpered 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**
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See SIMATIC ET 200SP, analog F-input modules, page 10/210

Technical specifications

Article number	**6AG1136-6AA00-2CA1**	**6AG1136-6AB00-2CA1**
Based on	**6ES7136-6AA00-0CA1**	**6ES7136-6AB00-0CA1**
	SIPLUS ET 200SP F-AI 4xI 2-/4-wire HF	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 configured empty 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.	-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)

Technical specifications

Article number	**6AG1136-6AA00-2CA1**	**6AG1136-6AB00-2CA1**
Based on	**6ES7136-6AA00-0CA1**	**6ES7136-6AB00-0CA1**
	SIPLUS ET 200SP F-AI 4xI 2-/4-wire HF	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

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.

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Ordering data

	Article No.
SIPLUS digital F-power module F-PM-E 24VDC/8A PPM Standard (Extended temperature range and exposure to environmental substances) BU type C0, color code CC52. 2 inputs, 1 output, SIL3/Cat.4/PL e	**6AG1136-6PA00-2BC0**
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**

	Article No.
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads.	**6AG1193-6AA00-0AA0**
Other accessories	See SIMATIC ET 200SP, special fail-safe modules, page 10/214

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 configured empty 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

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 fail-safe I/O modules of the ET 200SP
- The communications module supports PROFIsafe in PROFINET and PROFIBUS configurations. Can be used with fail-safe SIMATIC S7-300F, S7-400F CPUs and S7-1500F CPUs and also the fail-safe 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 can be parameterized
  - 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 sends the switching command of the output circuit group to the AS-i cable. A fail-safe AS-i output module installed anywhere on the AS-i cable receives the switching command and switches the actuator (e.g. contactor) connected to it.
  - 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 front-side module inscription
  - Plain-text marking of the module type and function class
  - 2D matrix code (Article No. 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 No. 3RK7137-6SA00-0BC1) is recommended as the AS-i master for the ET 200SP, see from page 10/162.

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 router 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

Overview

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 fail-safe 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 security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see https://www.siemens.com/industrialsecurity.

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

Configuration and programming are done entirely in the STEP 7 user interface. No additional configuration software is needed for commissioning.

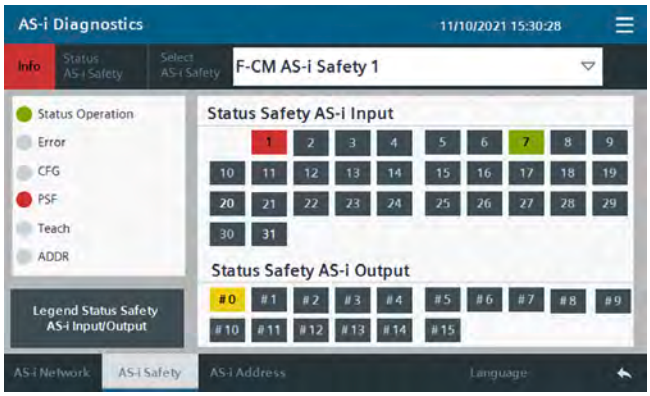
Data management – together with all other configuration data of the SIMATIC – is realized completely in the S7 project.

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

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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.

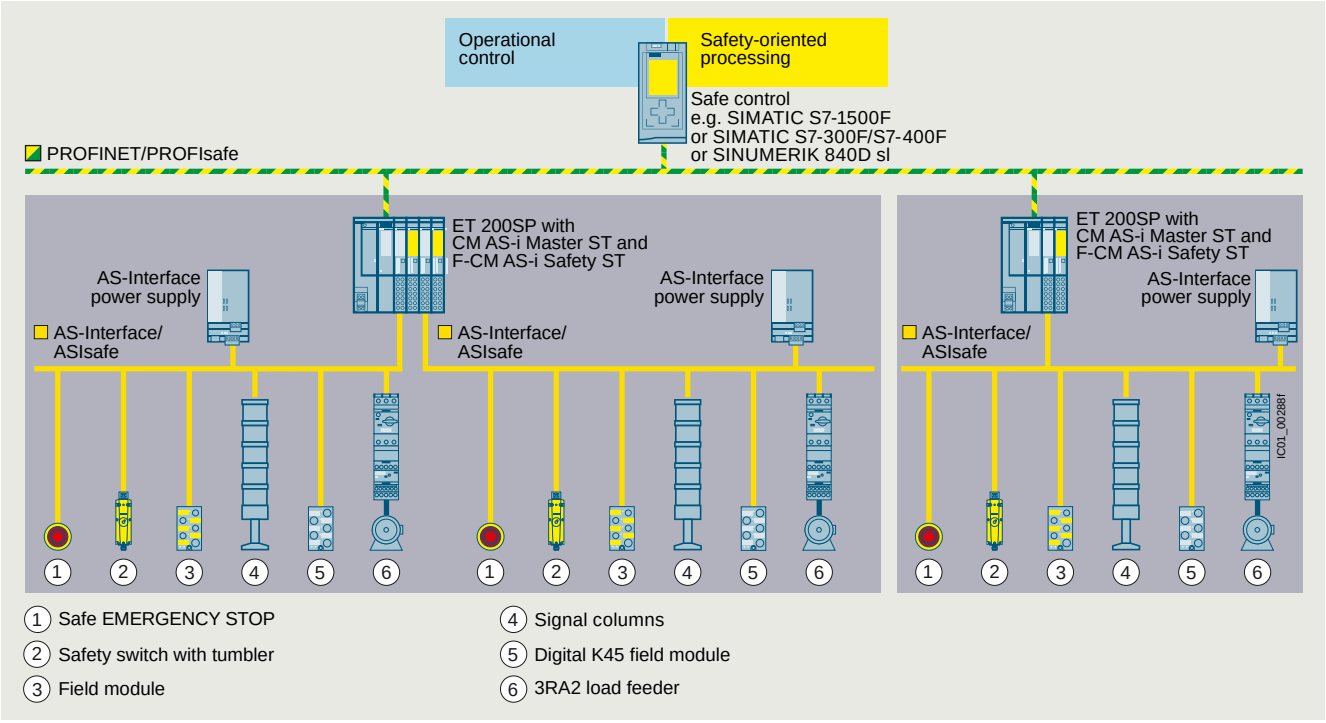
The safety application is programmed in the SIMATIC S7 F-CPU with Distributed Safety, S7 F/FH Systems or Safety Advanced. The fail-safe input signals of the ASIsafe slave modules are read via the AS-i bus line and are combined with any chosen further signals in the fail-safe program.

The fail-safe output signals can be output via safe SIMATIC output modules or also directly via safe AS-i output modules. No special functions are required for this in the program.

Operation with SINUMERIK 840D sl is possible with SINUMERIK software version V4.7 SP2 HF1 or higher.

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.

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



1 Safe EMERGENCY STOP
2 Safety switch with tumbler
3 Field module
4 Signal columns
5 Digital K45 field module
6 3RA2 load feeder

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 from page 10/162 • 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**

Accessories	
BaseUnit BU20-P6+A2+4B • BaseUnit (dark), BU type C1 • Suitable for the F-CM AS-i Safety ST failsafe 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 element 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 10/165

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

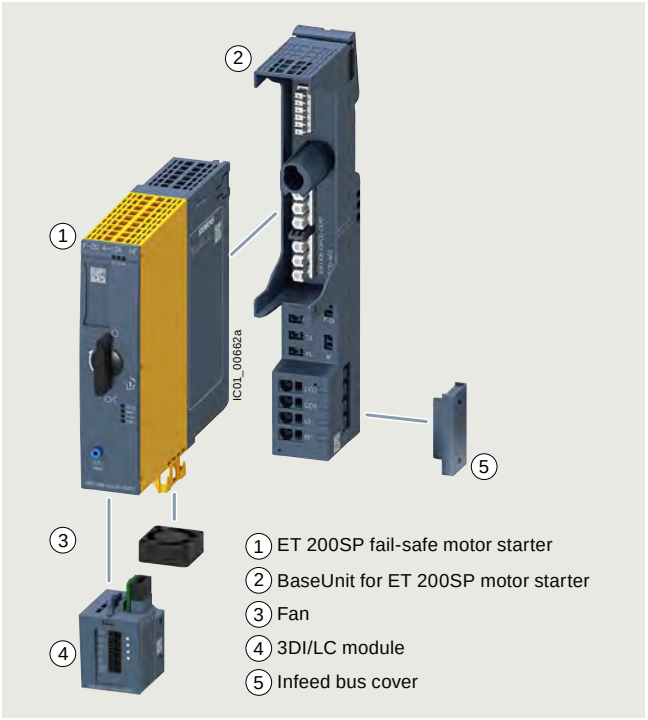
	Article No.
Ex digital modules SIMATIC ET 200SP HA	
Digital Ex-i input module, Ex-DI 4xNAMUR Suitable for BaseUnit Type X1, channel diagnostics	**6DL1131-6TD00-0HX1**
Digital Ex-i output module, Ex-DQ 2x23,1VDC/20 mA Suitable for BaseUnit Type X1, channel diagnostics	**6DL1132-6EB00-0HX1**
Digital Ex-i output module, Ex-DQ 2x17,4VDC/27 mA Suitable for BaseUnit Type X1, channel diagnostics	**6DL1132-6CB00-0HX1**
Ex analog modules SIMATIC ET 200SP HA	
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 m	**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

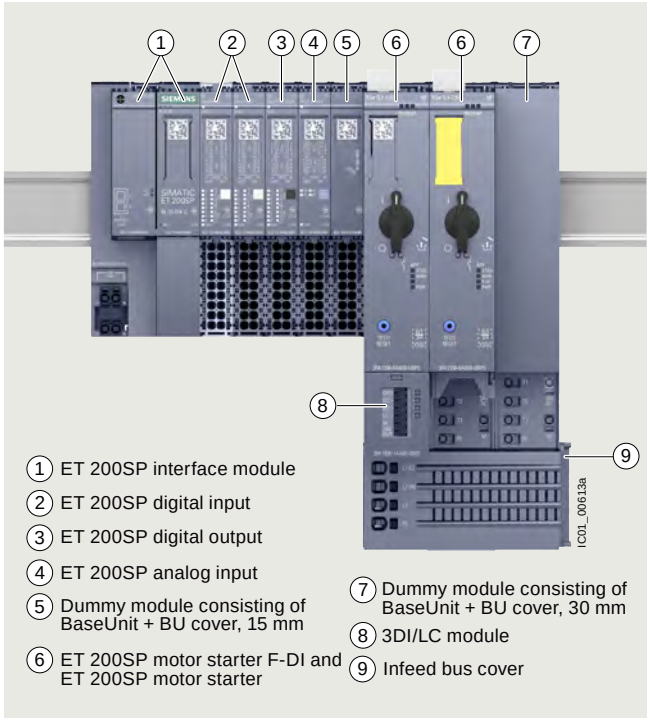
Technical specifications see ET 200SP HA, Ex I/O modules, page 10/296

ET 200SP motor starters

Overview



Motor starter, BaseUnit, fan and 3DI/LC control module



3RK1308 motor starter in the ET 200SP I/O system

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More information

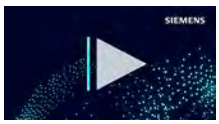
Homepage see https://www.siemens.com/sirius-motor-starter-et200sp
Industry Mall see https://www.siemens.com/product?3RK1308
TIA Selection Tool see https://www.siemens.com/TST

Further components in the ET 200SP I/O system see from page 10/5
or https://www.siemens.com/et200sp
Catalog IC 10 see https://www.siemens.com/ic10

ET 200SP motor starters

ET 200SP is a scalable and extremely flexible modular I/O system with IP20 degree of protection.

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 single- and three-phase loads and are available as direct-on-line or reversing starters.



Video: SIMATIC ET 200SP motor starter - Flexible, powerful, compact

Basic functionality

All versions of the ET 200SP motor starter feature the following functionality:

- Fully pre-wired motor starters for switching and protecting any AC 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 capability 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 10/244.

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 (consisting of 6ES7193-6BP00-0BA0 BaseUnit plus 6ES7133-6CV15-1AM0 BU cover 15 mm)

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 overview" in the Equipment Manual, 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 BU cover 15 mm.

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/10047575
- For motor suppression modules that are fitted in the main circuit, see page 10/244

Note:

For more information, see https://support.industry.siemens.com/cs/ww/en/view/109758696.

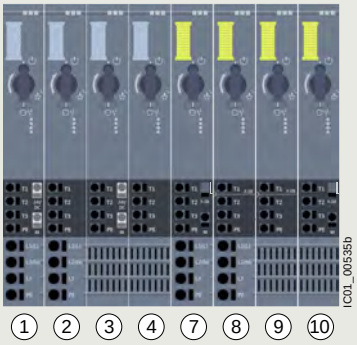
3DI/LC control module

3DI/LC control module

This is a digital input module with three inputs for local motor starter functions such as "manual local control", "implementation of fast inputs" or "end position disconnection". For a list of all the functions permitted by the 3DI/LC module, see chapter "Overview of functions" in the Equipment Manual, 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 a 24 V DC operating voltage.

BaseUnits for motor starters



1 24 V and 500 V DC
2 500 V AC
3 24 V DC
4 without infeed
5 3RK1908-0AP00-0EP0 (not shown here)
6 3RK1908-0AP00-0FP0 (not shown here)
7 500 V AC with F-DI infeed
8 500 V AC with F-DI loop-through
9 without infeed with F-DI loop-through
10 without infeed with F-DI infeed

View of the BaseUnit infeeds for the motor starters

BaseUnits are components for accommodating 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 routing.

The rugged design and keyed connection technology enables use in harsh industrial conditions.

The BaseUnits are available with various infeeds for the motor starters.

ET 200SP motor starters

Article No. 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: Single- or three-phase asynchronous motors, single-phase asynchronous motors, single-phase asynchronous motors, at 400 V AC and 500 V AC; the actual startup characteristics of the motor as well as its rated data are important factors here.

Product versions		Article number																
BaseUnit		**3RK1908**	**–**	**0**	**A**	**P**	**0**	**0**	**–**	**0**	**□**	**P**	**0**					
BU infeed	24 V 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 No. 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%) as a result of greater functional density (direct-on-line and reversing starters in same width)
- Extensive diagnostics and information for preventive maintenance
- Parameterizable 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
- The ET 200SP motor starters can be used with highly efficient IE3 and IE4 motors, see Application manual, https://support.industry.siemens.com/cs/ww/en/view/94770820.
  Take the current characteristics of the connected motor and motor starter into account when dimensioning. In addition to the rated current, the maximum permissible current range of the motor starter and the ratio of the rated current to the starting current of the motor are relevant.
  For more information on IE3/IE4, see Catalog IC 10, https://www.siemens.com/ic10.

Standards and approvals

- IEC/EN 60947-4-2
- UL 60947-4-2
- CSA
- ATEX
- IEC62061: SIL 3
- ISO 13849-1: PL e
- CCC approval for China

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:
  By means of phase asymmetry and zero current detection, for example, it is possible to monitor drive belts and blocking.
- 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

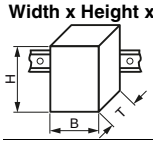
For the ET 200SP motor starters, special 3RK1908-0AP00-0.H0 BaseUnits are available that enable the device to be used in the ET 200SP HA I/O system, too. This is typically used in process engineering applications.

For more information, see https://mall.industry.siemens.com/mall/ww/en/Catalog/Products/10398144?tree=CatalogTree.

Technical specifications

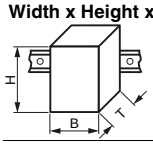
More information	
Industry Mall see https://www.siemens.com/product?3RK1308	FAQs see https://support.industry.siemens.com/cs/ww/en/ps/21800/faq
Equipment manual see https://support.industry.siemens.com/cs/ww/en/view/109479973	

Motor starter ET 200SP

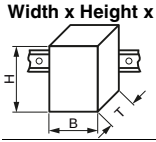
Article number		3RK1308-0.A00-0CP0	3RK1308-0.B00-0CP0	3RK1308-0.C00-0CP0	3RK1308-0.D00-0CP0	3RK1308-0.E00-0CP0
product category		**Motorstarter**				
General technical data						
Width x Height x Depth 	mm	30 × 142 × 150				
design of the switching contact		Hybrid				
type of the motor protection		solid-state				
installation altitude at height above sea level	m	4 000, For derating see manual				
mounting position		Vertical, horizontal (observe derating)				
fastening method		pluggable in 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		15 mm to 6 Hz; 2g to 500 Hz				
shock resistance		6 *g* /11 ms				
protection class IP on the front acc. to IEC 60529		IP20				
touch protection on the front acc. to IEC 60529		finger-safe				
type of assignment		1				
Electrical data						
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				
breaking capacity maximum short-circuit current (Icu)						
• at 400 V rated value	kA	55				
• at 500 V rated value	kA	55				
adjustable current response value current of the current-dependent overload release	A	0.1 ... 0.4	0.3 ... 1	0.9 ... 3	2.8 ... 9	4 ... 12
ampacity when starting maximum	A	4	10	30	90	100
maximum permissible voltage for safe isolation between main and auxiliary circuit	V	500				
insulation voltage rated value	V	500				
trip class		CLASS OFF / 5 / 10 adjustable				

ET 200SP motor starters

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 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 acc. to IEC 60529		IP20			
touch protection on the front acc. 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		--	
- at 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	--
- at AWG cables solid		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			
- at AWG cables solid		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 the screwdriver tip		Standard screwdriver 0.6 mm x 3.5 mm			

3DI/LC control module

Article number		**3RK1908-1AA00-0BP0**
product designation		**3DI/LC control module**
General technical data		
Width x Height x Depth	mm	30 × 54.5 × 42.3
		
design of the product		Accessories
number of digital inputs		4
installation altitude at height above sea level maximum	m	2 000
mounting position		vertical, horizontal, flat
fastening method		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 core end processing	mm^2	0.25 ... 1.5
• finely stranded without core end processing	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		
type of voltage of the control supply voltage		DC
control supply voltage at DC rated value	V	20.4 ... 28.8
Sonstiges		
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 current response value current of the current-dependent overload release	ampacity when starting maximum	Article number
	A	A	
Motor starter			
	Direct-on-line starter		
 3RK1308-0AB00-0CP0	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	100	**3RK1308-0AE00-0CP0**
	Reversing starter		
 3RK1308-0BB00-0CP0	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	100	**3RK1308-0BE00-0CP0**
	Fail-safe direct-on-line starter		
 3RK1308-0CE00-0CP0	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	100	**3RK1308-0CE00-0CP0**
	Fail-safe reversing starter		
 3RK1308-0DE00-0CP0	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	100	**3RK1308-0DE00-0CP0**

design of the product	operating voltage of AC supply	supply voltage of DC supply	Article number
	V	V	
BaseUnits with Push-In terminal[1]			
for motor starter			
• For AC/DC feed in	500	24	**3RK1908-0AP00-0AP0**
• For DC feed in	--	24	**3RK1908-0AP00-0BP0**
• For AC feed in	500	--	**3RK1908-0AP00-0CP0**
• Without feed in	--	--	**3RK1908-0AP00-0DP0**
for failsafe 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**

3RK1908-0AP00-0AP0

[1] The voltage is looped-through from BaseUnits with infeed to subsequent BaseUnits without infeed.

Type of product	Supply voltage at DC rated value	Loop through the potential group from the left	Article number
	V		
BaseUnits with Push-In terminal			
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**

6ES7193-6BP00-0BA0

Control supply voltage at DC rated value	Product function		Article number
	Local control	Digital inputs parameterizable	
V			
3DI/LC control module with Push-In terminal			
20.4 ... 28.8	Yes	Yes	**3RK1908-1AA00-0BP0**

3RK1908-1AA00-0BP0

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ET 200SP motor starters

	Product designation	Type of product	Article number
Accessories			
 6ES7133-6CV15-1AM0	**BU cover 15 mm**	for BaseUnits Type A0 or A1	**6ES7133-6CV15-1AM0**
 3RK1908-1CA00-0BP0	**BU cover 30 mm**	For protection of empty slots, 30 mm	**3RK1908-1CA00-0BP0**
 3RK1908-1DA00-2BP0	**Infeed bus cover** (1 bag containing 10 covers)	for ET 200SP	**3RK1908-1DA00-2BP0**
 3RK1908-1EA00-1BP0	**Mechanical bracket** (1 bag containing 5 mechanical brackets)	Mechanical, for ET 200SP	**3RK1908-1EA00-1BP0**
 3RW4928-8VB00	**Fan**	Can be used for 3RK1308	**3RW4928-8VB00**
	Motor suppression module		
 3RK1911-6EA00	• Square		**3RK1911-6EA00**
 3RK1911-6EB00	• Round		**3RK1911-6EB00**
 3RK1908-1SK00	**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**

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 partners 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 for these products or for the connection with these products of the product partners. Please refer also to the note on exemption from liability/use of hyperlinks.

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 installation & configuration of the pneumatic connections

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.burkert.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.

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**

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Technical specifications

Article number	**6EP7133-6AB00-0BN0**	**6EP7133-6AE00-0BN0**
Product	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
Power supply, type	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		
• initial value	Automatic range selection	Automatic range selection
supply voltage		
• 1 at AC rated value	120 V	120 V
• 2 at AC rated value	230 V	230 V
input voltage		
• 1 at AC	85 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V	170 ... 264 V
design of input wide range input	No	No
overvoltage overload capability	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
operating condition of the mains buffering	at V_{in} = 93/187 V	at V_{in} = 93/187 V
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 V_{in} = 93/187 V	at V_{in} = 93/187 V
line frequency		
• 1 rated value	50 Hz	50 Hz
• 2 rated value	60 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

Technical specifications

Article number	**6EP7133-6AB00-0BN0**	**6EP7133-6AE00-0BN0**
Product	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
Power supply, type	24 V/5 A	24 V/10 A
I^2t value maximum	3.15 $A^2 \cdot s$	6.3 $A^2 \cdot s$
fuse protection type	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
• in the feeder	recommended LS switch: B/C 6 A/3 A	recommended LS switch: B/C 10 A/6 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
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
adjustable output voltage	22.8 ... 28 V	22.8 ... 28 V
product function output voltage adjustable	Yes	Yes
type of output voltage setting	via potentiometer	via potentiometer
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 V_{out} < 3 %	Overshoot of V_{out} < 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	0 ... 12 A; 10 A up to +60°C; +60 ... +70 °C: Derating 3%/K
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
product feature		
• bridging of equipment	Yes	Yes
number of parallel-switched equipment resources for increasing the power	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

Technical specifications

Article number	**6EP7133-6AB00-0BN0**	**6EP7133-6AE00-0BN0**
Product	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
Power supply, type	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 V	protection against overvoltage in case of internal fault V_{out} < 31.8 V
response value current limitation	7 ... 7.5 A	14 ... 15 A
property of the output short-circuit proof	Yes	Yes
design of short-circuit protection	Constant current characteristic	Constant current characteristic
enduring short circuit current RMS value		
• typical	7 A	14.1 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
display version for overload and short circuit	-	-
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
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)
• cCSAus, Class 1, Division 2	No	No
• ATEX	Yes; ATEX (EX) II 3G Ex ec nC IIC T3 Gc	Yes; ATEX (EX) II 3G Ex ec nC IIC T3 Gc
certificate of suitability		
• relating to ATEX	IECEx Ex ec nC IIC T3 Gc; ATEX (EX) II 3G Ex ec nC IIC T3 Gc	IECEx Ex ec nC IIC T3 Gc; ATEX (EX) II 3G Ex ec nC IIC T3 Gc
• IECEx	Yes; IECEx Ex ec nC IIC T3 Gc	Yes; IECEx Ex ec nC IIC T3 Gc
• NEC Class 2	No	No
• ULhazloc approval	No	No
type of certification CB-certificate	Yes	Yes
certificate of suitability		
• EAC approval	Yes	Yes
• C-Tick	Yes	Yes
certificate of suitability shipbuilding approval	Yes	Yes
shipbuilding approval	BV, DNV GL	BV, DNV GL

Technical specifications

Article number	**6EP7133-6AB00-0BN0**	**6EP7133-6AE00-0BN0**
Product	SIMATIC ET 200SP PS	SIMATIC ET 200SP PS
Power supply, type	24 V/5 A	24 V/10 A
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)	No	No
• French marine classification society (BV)	Yes	Yes
• DNV GL	Yes	Yes
• Lloyds Register of Shipping (LRS)	No	No
• Nippon Kaiji Kyokai (NK)	No	No
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
environmental conditions		
ambient temperature		
• during operation	-30 ... +70 °C; with natural convection	-30 ... +70 °C; with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
environmental category according to IEC 60721	Climate class 3K3, 5 … 95% no condensation	Climate class 3K3, 5 … 95% no condensation
Mechanics		
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
product function		
• removable terminal at input	Yes	Yes
• removable terminal at output	Yes	Yes
width of the enclosure	160 mm	160 mm
height of the enclosure	117 mm	117 mm
depth of the enclosure	74 mm	74 mm
required spacing		
• top	50 mm	50 mm
• bottom	50 mm	50 mm
• left	0 mm	0 mm
• right	0 mm	0 mm
net weight	0.5 kg	0.7 kg
product feature of the enclosure housing can be lined up	Yes	Yes
fastening method	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
electrical accessories	Redundancy module, buffer module, selectivity module, DC UPS	Redundancy module, buffer module, selectivity module, DC UPS
MTBF at 40 °C	1 598 441 h	1 114 510 h
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)

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.

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Ordering data

	Article No.
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 potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP20-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2DA0**
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 push-in terminals to the module; for starting a new potential group (max. 10 A)	
• Pack of 1 unit	**6ES7193-6BP00-0DA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**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 potential group	
• Pack of 1 unit	**6ES7193-6BP20-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BA0**
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the potential group	
• Pack of 1 unit	**6ES7193-6BP00-0BA0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BA0**
Type B0 BaseUnits	
BU20-P12+A4+0B BU type B0; BaseUnit (dark) with 12 push-in 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	**6ES7193-6BP20-0BB0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BB0**
Type B1 BaseUnits	
BU20-P12+A0+4B BU type B1; BaseUnit (dark) with 12 push-in terminals to the module; for continuing the potential group; 1 unit	
• Pack of 1 unit	**6ES7193-6BP20-0BB1**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP20-2BB1**

Ordering data

	Article No.
Type C0 BaseUnits	
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**
Type C1 BaseUnits	
BU20-P6+A2+4B BU type C1; BaseUnit (dark) with 6 push-in terminals (1 ... 6) to the module and 2 AUX terminals; bridged to the left	**6ES7193-6BP20-0BC1**
Type A1 BaseUnits (with temperature detection)	
BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 push-in 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**
BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 push-in terminals to the module; for starting a new potential group (max. 10 A)	**6ES7193-6BP00-0DA1**
BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 push-in terminals (1 ... 16) to the module and 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the potential group	**6ES7193-6BP40-0BA1**
BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 push-in terminals to the module; for continuing the potential group	**6ES7193-6BP00-0BA1**
Type F0 BaseUnits	
BU20-P8+A4+0B BU type F0; BaseUnit (dark) with 8 push-in 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**

	Article No.
BaseUnits type U0	
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	**6ES7193-6BP00-0DU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2DU0**
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	**6ES7193-6BP00-0BU0**
• Pack of 10 units; to order a pack, please order this article number with an order quantity of 10.	**6ES7193-6BP00-2BU0**
BaseUnit for redundant setup	
BaseUnit type M0 With 2 slots to accommodate R1-capable interface modules IM 155-6 PN R1; incl. server module	**6ES7193-6BR00-0HM0**
Station expansion with IP67 I/O system ET 200AL	
BaseUnit BU-Send	**6ES7193-6BN00-0NE0**
ET 200SP BA-Send 1 x FC BusAdapter	**6ES7193-6AS00-0AA0**
Accessories	
Equipment labeling plate 10 sheets of 16 labels	**6ES7193-6LF30-0AW0**
BU cover For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	**6ES7193-6SC20-1AM0**

BaseUnits

Ordering data

	Article No.
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 CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP02-2MA0**
• Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 50 units	**6ES7193-6CP02-4MA0**
• Color code CC03, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP03-2MA0**
• Color code CC04, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP04-2MA0**
• 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**
• Color code CC74, for 2x5 additional terminals, 5 x red, 5 x blue, BU type A1 with push-in terminals; 10 units	**6ES7193-6CP74-2AA0**
• Color code CC81, for 4 AUX terminals 1 A to 4 A, yellow/green, for BaseUnit type B0; 10 units	**6ES7193-6CP81-2AB0**
• Color code CC82, for 4 AUX terminals 1 A to 4 A, red, for BaseUnit type B0; 10 units	**6ES7193-6CP82-2AB0**
• Color code CC83, for 4 AUX terminals 1 A to 4 A, blue, for BaseUnit type B0; 10 units	**6ES7193-6CP83-2AB0**
• Color code CC41, module-specific, for 12 push-in terminals; for BaseUnit type B1; 10 units	**6ES7193-6CP41-2MB0**
• Color code CC84, for 2 AUX terminals 1 A to 2 A, yellow/green, for BaseUnit type C0; 10 units	**6ES7193-6CP84-2AC0**
• Color code CC85, for 2 AUX terminals 1 A to 2 A, red, for BaseUnit type C0; 10 units	**6ES7193-6CP85-2AC0**
• Color code CC86, for 2 AUX terminals 1 A to 2 A, blue, for BaseUnit type C0; 10 units	**6ES7193-6CP86-2AC0**

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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 mm^2; AWG 26	0.14 mm^2; AWG 26	0.14 mm^2; AWG 26	0.14 mm^2; AWG 26
• Conductor cross-section, max.	2.5 mm^2; AWG 14	2.5 mm^2; AWG 14	2.5 mm^2; AWG 14	2.5 mm^2; AWG 14

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
• 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
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	
• system-integrated shield connection	Yes; Optional	No	Yes; Optional	Yes; Optional	Yes; Optional
• Conductor cross-section, min.	0.14 mm^2; AWG 26	0.14 mm^2; AWG 26	0.14 mm^2; AWG 26	0.14 mm^2; AWG 26	
• Conductor cross-section, max.	2.5 mm^2; AWG 14	2.5 mm^2; AWG 14	2.5 mm^2; AWG 14	2.5 mm^2; 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

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 mm^2; AWG 26	0.14 mm^2; AWG 26	0.14 mm^2; AWG 26	0.14 mm^2; AWG 26
• Conductor cross-section, max.	2.5 mm^2; AWG 14	2.5 mm^2; AWG 14	2.5 mm^2; AWG 14	2.5 mm^2; 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

Technical specifications

Article number	**6ES7193-6BP00-0DU0**	**6ES7193-6BP00-0BU0**
	BaseUnit Type U0, BU20-P16+A0+2D, PU 1	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
General information	
Product type designation	BU type M0
Hardware configuration	
Slots	
• Number of slots	2
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	100 mm
Height	141 mm
Depth	29 mm
Weights	
Weight, approx.	142 g

Article number	**6ES7193-6BN00-0NE0**
	ET 200SP, BaseUnit BU-Send
Hardware configuration	
Slots	
• Number of slots	1
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	20 mm
Height	117 mm
Depth	35 mm
Weights	
Weight, approx.	30 g

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.

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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 jumpered 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 jumpered 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 also 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)	**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 also 2x5 internally jumpered 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**

Ordering data

	Article No.
SIPLUS BaseUnits type B0	
BU20-P12+A4+0B	**6AG1193-6BP20-7BB0**
(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 jumpered AUX terminals (1 A to 4 A); for continuing the load group; 1 unit	
SIPLUS BaseUnits type B1	
BU20-P12+A0+4B	**6AG1193-6BP20-7BB1**
(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	
SIPLUS BaseUnits type C0	
BU20-P6+A2+4D	**6AG1193-6BP20-7DC0**
(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	
SIPLUS BaseUnits type D0	
BU20-P12+A0+0B	**6AG1193-6BP00-7BD0**
(Extended temperature range and exposure to environmental substances)	
BU type D0; BaseUnit (dark) with 12 push-in terminals, without AUX terminals, bridged to the left	

	Article No.
SIPLUS BaseUnits type F0	
BU20-P8+A4+0B	**6AG1193-6BP20-2BF0**
(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 jumpered AUX terminals (1 A to 4 A); for continuing the load group	
SIPLUS BaseUnits type U0	
BU20-P16+A0+2D	**6AG1193-6BP00-7DU0**
(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)	
BU20-P16+A0+2B	**6AG1193-6BP00-7BU0**
(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	
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**
Accessories	
SIPLUS Mounting Kit ET 200SP	**6AG1193-6AA00-0AA0**
Mounting accessories for use with increased mechanical vibration and shock loads. Can be used with SIPLUS BaseUnits with heights 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 BaseUnits, page 10/251

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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**	**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
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)

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	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)		
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

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)		

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
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

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Article number	6AG1193-6BP20-7BB0	6AG1193-6BP20-7BB1	6AG1193-6BP20-7DC0	6AG1193-6BP00-7BD0
Based on	6ES7193-6BP20-0BB0	6ES7193-6BP20-0BB1	6ES7193-6BP20-0DC0	6ES7193-6BP00-0BD0
	SIPLUS ET 200SP BU20-P12+A4+0B	SIPLUS ET 200SP BU20-P12+A0+4B	SIPLUS ET 200SP BU20-P6+A2+4D	SIPLUS ET 200SP BU20-P12+A0+0B
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C		-40 °C; = Tmin	-40 °C
• vertical installation, max.	50 °C		50 °C; = Tmax	50 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	3 000 m	3 000 m	3 000 m	3 000 m
• Ambient air temperature-barometric pressure-altitude	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)	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)	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)	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	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

Technical specifications

Article number	**6AG1193-6BP20-7BB0**	**6AG1193-6BP20-7BB1**	**6AG1193-6BP20-7DC0**	**6AG1193-6BP00-7BD0**
Based on	**6ES7193-6BP20-0BB0**	**6ES7193-6BP20-0BB1**	**6ES7193-6BP20-0DC0**	**6ES7193-6BP00-0BD0**
	SIPLUS ET 200SP BU20-P12+A4+0B	SIPLUS ET 200SP BU20-P12+A0+4B	SIPLUS ET 200SP BU20-P6+A2+4D	SIPLUS ET 200SP BU20-P12+A0+0B
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 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)	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

SIPLUS BaseUnits

Technical specifications

Article number	6AG1193-6BP20-2BF0	6AG1193-6BP00-7BU0	6AG1193-6BP00-7DU0
Based on	6ES7193-6BP20-0BF0	6ES7193-6BP00-0BU0	6ES7193-6BP00-0DU0
	SIPLUS ET 200SP BU20-P8+A4+0B	SIPLUS ET 200SP BU20-P16+A0+2B	SIPLUS ET 200SP BU20-P16+A0+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)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax	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.	5 000 m	2 000 m	2 000 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)
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)
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)
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)

Technical specifications

Article number	**6AG1193-6BP20-2BF0**	**6AG1193-6BP00-7BU0**	**6AG1193-6BP00-7DU0**
Based on	**6ES7193-6BP20-0BF0**	**6ES7193-6BP00-0BU0**	**6ES7193-6BP00-0DU0**
	SIPLUS ET 200SP BU20-P8+A4+0B	SIPLUS ET 200SP BU20-P16+A0+2B	SIPLUS ET 200SP BU20-P16+A0+2D
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

Overview

SIMATIC BusAdapter BA 2xFC for direct laying of the PROFINET cable via FastConnect connection

SIMATIC BusAdapter BA LC-LD/M12 for use as a system-integrated media converter from copper (M12) to single-mode glass fiber (LC-LD).

SIMATIC BusAdapter BA 2xLC-LD with 2 LC-LD sockets, for use in redundant systems, max. cable length 20 km

ET 200SP BusAdapter BA-Send for expansion of an ET 200SP station with ET 200AL modules

SIMATIC BusAdapter BA LC/RJ45 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 BusAdapter "BA-Send"
  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.

Ordering data	Article No.
BusAdapter BA 2xRJ45 For IM 155-6 PN ST, HF, R1	**6ES7193-6AR00-0AA0**
BusAdapter BA 2xFC For IM 155-6 PN ST, HF; R1; for increased resistance to vibration and EMC loads	**6ES7193-6AF00-0AA0**
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**
BusAdapter BA 2xSCRJ For IM 155-6 PN HF; R1; fiber-optic connection for POF or PCF cables up to 250 m, with monitoring of attenuation	**6ES7193-6AP00-0AA0**
BusAdapter BA SCRJ/RJ45 For IM 155-6 PN HF, R1; with media converter FO - copper; 1 x SCRJ FO connection, 1 x RJ45 connection	**6ES7193-6AP20-0AA0**
BusAdapter BA SCRJ/FC For IM 155-6 PN HF, R1; with media converter FO - copper; 1 x SCRJ FO connection, 1 x FastConnect connection	**6ES7193-6AP40-0AA0**
BusAdapter BA 2xLC For IM 155-6 PN HF, R1; two glass FO connections	**6ES7193-6AG00-0AA0**
BusAdapter BA LC/RJ45 For IM 155-6 PN HF, R1; with media converter glass FO - copper; 1 x LC connection, 1 x RJ45 connection	**6ES7193-6AG20-0AA0**
BusAdapter BA LC/FC For IM 155-6 PN HF, R1; with media converter glass FO - copper; 1 x LC connection, 1 x FastConnect connection	**6ES7193-6AG40-0AA0**
BusAdapter BA 2xLC-LD For IM 155-6 PN HF, R1; two glass FO connections	**6ES7193-6AG50-0AA0**
BusAdapter BA LC-LD/RJ45 For IM 155-6 PN HF, R1; with media converter glass FO - copper; 1 x LC-LD connection, 1 x RJ45 connection	**6ES7193-6AG60-0AA0**
BusAdapter BA LC-LD/M12 For IM 155-6 PN HF, R1; with media converter glass FO - copper; 1 x LC-LD connection, 1 x M12 connection	**6ES7193-6AG70-0AA0**

	Article No.
IE connecting cable M12-180/M12-180 Pre-assembled with IE FC trailing cable GP, M12 plugs (D-coded, push-pull)	
0.5 m	**6XV1871-8AE50**
1.0 m	**6XV1871-8AH10**
1.5 m	**6XV1871-8AH15**
2.0 m	**6XV1871-8AH20**
3.0 m	**6XV1871-8AH30**
5.0 m	**6XV1871-8AH50**
10 m	**6XV1871-8AN10**
15 m	**6XV1871-8AN15**
Unlatching straps for M12 BA	**6ES7196-6DL00-2AA0**
MM FO CORD LC/LC Pre-assembled patch cable with 2x LC duplex connectors; 1.0 m	**6XV1843-5EH10-0AA0**
SM FO CORD LC/LC Pre-assembled patch cable with 2x LC duplex connectors; 1.0 m	**6XV1843-5FH10-0AA0**
FO standard cable 50/125 MM FO standard cable pre-assembled with 2x LC duplex connectors, 5.0 m	**6XV1873-5AH50**
FO ROBUST CABLE 50/125 Robust MM FO cable pre-assembled 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 BusAdapter BA 2xM12	**6ES7193-6DL00-2AA0**

Note:

You will find information on further passive components at the https://assets.new.siemens.com/siemens/assets/api/uuid:e8245336-ca1a-45c7-a93f-2b243570fa0f/6zb5530-0dn01-0ba3verkabelungstechnikenus-144_original.pdf or at the https://www.siemens.com/fastconnect.

Technical specifications

Article number	**6ES7193-6AR00-0AA0**	**6ES7193-6AF00-0AA0**	**6ES7193-6AM00-0AA0**	**6ES7193-6AP00-0AA0**	**6ES7193-6AP20-0AA0**
	ET 200SP, Busadapter BA 2xRJ45	ET 200SP, Busadapter BA 2XFC	SIMATIC Busadapter BA 2xM12	ET 200SP, Busadapter BA 2xSCRJ	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	1	1	1; 2 ports (switch) SCRJ FO	1; 2 ports (SCRJ + RJ45)
Supports protocol for PROFINET IO					
• Number of RJ45 ports	2				1
• Number of FC (FastConnect) connections		2			
• Number of SCRJ ports				2	1
• Number of M12 ports			2		
Cable length					
- PCF				100 m	100 m
- Plastic FOC (POF)				50 m	50 m
- PCF-GI					250 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

Technical specifications

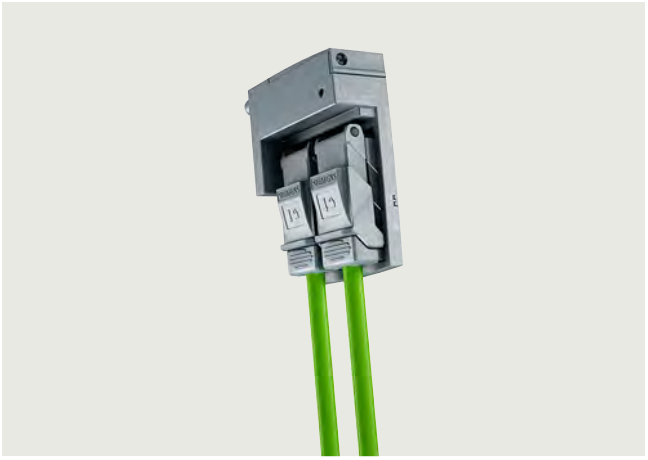
Article number	**6ES7193-6AP40-0AA0** ET 200SP, Bus adapter BA SCRJ/FC	**6ES7193-6AG00-0AA0** SIMATIC Busadapter BA 2XLC	**6ES7193-6AG20-0AA0** SIMATIC Busadapter BA LC/RJ45	**6ES7193-6AG40-0AA0** SIMATIC Bus adapter BA LC/FC
General information				
Product type designation	BA SCRJ/FC	BA 2xLC	BA LC/RJ45	BA LC/FC
Interfaces				
Number of PROFINET interfaces	1; 2 ports (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			
- Plastic FOC (POF)	50 m			
- PCF-GI	250 m			
- Cu conductors	100 m		100 m	100 m
- Multimode graded-index fiber 50/125 µm		3 km	3 km	3 km
- Multimode graded-index fiber 62.5/125 µm		3 km	3 km	3 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	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

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 LC-LD / RJ45	BA LC-LD / M12
Interfaces			
Number of PROFINET interfaces	1	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	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

Overview



SIMATIC BusAdapter BA 2xFC for direct laying of the PROFINET cable via FastConnect connection.

ET 200SP BusAdapter BA-Send for expansion of an ET 200SP station with ET 200AL modules.

SIMATIC BusAdapter BA LC/RJ45 for use as a system-integrated media converter from copper (RJ45) to glass fiber (LC).

- ET 200SP BusAdapter "BA-Send"
  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.

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Ordering data

	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 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**
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**

	Article No.
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**
SIPLUS BA 2xLC BusAdapter (extended temperature range and exposure to environmental substances) For IM 155-6PN HF; 2 glass FO connections	**6AG1193-6AG00-2AA0**

Ordering data

	Article No.
SIPLUS BA LC/RJ45 BusAdapter with conformal coating, media converter glass FO/CU, 1x LC FO connection and 1x RJ45 connection	**6AG1193-6AG20-2AA0**
Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	**6ES7193-6LF30-0AW0**

	Article No.
Accessories	
SIPLUS Mounting Kit ET 200SP Mounting accessories for use with increased mechanical vibration and shock loads. Not approved for SIPLUS 2xRJ45 BusAdapter	**6AG1193-6AA00-0AA0**

Technical specifications

Article number	**6AG1193-6AR00-7AA0**	**6AG1193-6AF00-7AA0**	**6AG1193-6AM00-7AA0**	**6AG1193-6AP00-2AA0**	**6AG1193-6AG00-2AA0**	**6AG1193-6AG20-2AA0**
Based on	**6ES7193-6AR00-0AA0** SIPLUS ET 200SP BA 2xRJ45	**6ES7193-6AF00-0AA0** SIPLUS ET 200SP BA 2XFC PN	**6ES7193-6AM00-0AA0** SIPLUS ET 200SP BA 2xM12	**6ES7193-6AP00-0AA0** SIPLUS ET 200SP BA 2XSCRJ PN	**6ES7193-6AG00-0AA0** SIPLUS ET 200SP BA 2XLC	**6ES7193-6AG20-0AA0** SIPLUS ET 200SP BA LC/RJ45
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); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/ frost)	-40 °C; = Tmin (incl. condensation/ frost)
• max.	70 °C; = Tmax	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	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)	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 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	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	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); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *

Technical specifications

Article number	**6AG1193-6AR00-7AA0**	**6AG1193-6AF00-7AA0**	**6AG1193-6AM00-7AA0**	**6AG1193-6AP00-2AA0**	**6AG1193-6AG00-2AA0**	**6AG1193-6AG20-2AA0**
Based on	**6ES7193-6AR00-0AA0**	**6ES7193-6AF00-0AA0**	**6ES7193-6AM00-0AA0**	**6ES7193-6AP00-0AA0**	**6ES7193-6AG00-0AA0**	**6ES7193-6AG20-0AA0**
	SIPLUS ET 200SP BA 2xRJ45	SIPLUS ET 200SP BA 2XFC PN	SIPLUS ET 200SP BA 2xM12	SIPLUS ET 200SP BA 2XSCRJ PN	SIPLUS ET 200SP BA 2XLC	SIPLUS ET 200SP BA LC/RJ45
- 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, *	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)
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)	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); *	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; *	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)	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!	* 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	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

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 plates

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)

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 ground (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 BusAdapter BA 2xM12
- 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 concludes 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 concludes the setup of a SIPLUS ET 200SP station.

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	**6ES7193-6MR00-0AA0**
• Length: 530 mm for 600 mm cabinets	**6ES7193-6MR00-0BA0**
• Length: 830 mm for 900 mm cabinets	**6ES7193-6MR00-0CA0**
• Length 2 m	**6ES7193-6MR00-0DA0**
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**
Equipment labeling plate	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
BU cover	
For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**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 ground	
Unlatching strap	**6ES7193-6DL00-2AA0**
10 units, for push-pull PROFINET plug, e. g. when using the BusAdapter BA 2xM12	

Ordering data	Article No.
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	**6ES7193-6CP00-2MA0**
• Pack containing 50 labels	**6ES7193-6CP00-4MA0**
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	**6ES7193-6CP01-2MA0**
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	**6ES7193-6CP02-2MA0**
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	**6ES7193-6CP03-2MA0**
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	**6ES7193-6CP04-2MA0**
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	**6ES7193-6CP05-2MA0**
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	**6ES7193-6CP41-2MB0**
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	**6ES7193-6CP42-2MB0**
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	**6ES7193-6CP51-2MC0**
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	**6ES7193-6CP52-2MC0**
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	**6ES7193-6CP01-4MA0**
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	**6ES7193-6CP02-4MA0**

Ordering data	Article No.
Color-coded labels for additional terminals	
(pack containing 10 labels)	
Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A), pack containing 10 labels	**6ES7193-6CP71-2AA0**
Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A), pack containing 10 labels	**6ES7193-6CP72-2AA0**
Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A), pack containing 10 labels	**6ES7193-6CP73-2AA0**
Color code CC74, for 2x5 additional terminals, BU type A1, red (terminals 1B to 5B), blue (terminals 1C to 5C), pack containing 10 labels	**6ES7193-6CP74-2AA0**
Color code CC81, for 4 AUX terminals, BU type B0, yellow/green (terminals 1 A to 4 A), pack containing 10 labels	**6ES7193-6CP81-2AB0**
Color code CC82, for 4 AUX terminals, BU type B0, red (terminals 1 A to 4 A), pack containing 10 labels	**6ES7193-6CP82-2AB0**
Color code CC83, for 4 AUX terminals, BU type B0, blue (terminals 1 A to 4 A), pack containing 10 labels	**6ES7193-6CP83-2AB0**
Color code CC84, for 2 AUX terminals 1 A to 2 A, yellow-green, for BaseUnit type C0, C1, pack containing 10 labels	**6ES7193-6CP84-2AC0**
Color code CC85, for 2 AUX terminals 1 A to 2 A, red, for BaseUnit type C0, C1, pack containing 10 labels	**6ES7193-6CP85-2AC0**
Color code CC86, for 2 AUX terminals 1 A to 2 A, blue, for BaseUnit type C0, C1, pack containing 10 labels	**6ES7193-6CP86-2AC0**
Server module	**6ES7193-6PA00-0AA0**
Spare part	
SIPLUS server module	**6AG1193-6PA00-7AA0**
(Extended temperature range and exposure to environmental substances)	
Spare part	
Coding elements	
Type H; pack containing 5 electronic coding elements	**6ES7193-6EH00-1AA0**
Type F; pack containing 5 electronic coding elements	**6ES7193-6EF00-1AA0**
Type A; pack with 20 mechanical coding elements, for automatic coding, for I/O modules	**6ES7193-6KA00-3AA0**
Type B; pack with 20 mechanical coding elements, for automatic coding, for I/O modules	**6ES7193-6KB00-3AA0**
Type C; pack with 20 mechanical coding elements, for automatic coding, for I/O modules	**6ES7193-6KC00-3AA0**
Type D; pack with 20 mechanical coding elements, for automatic coding, for I/O modules	**6ES7193-6KD00-3AA0**