Security information
Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks. 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 constitute one element of such a concept. Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to the enterprise network or the Internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place. For additional information on industrial security measures that may be implemented, please visit:
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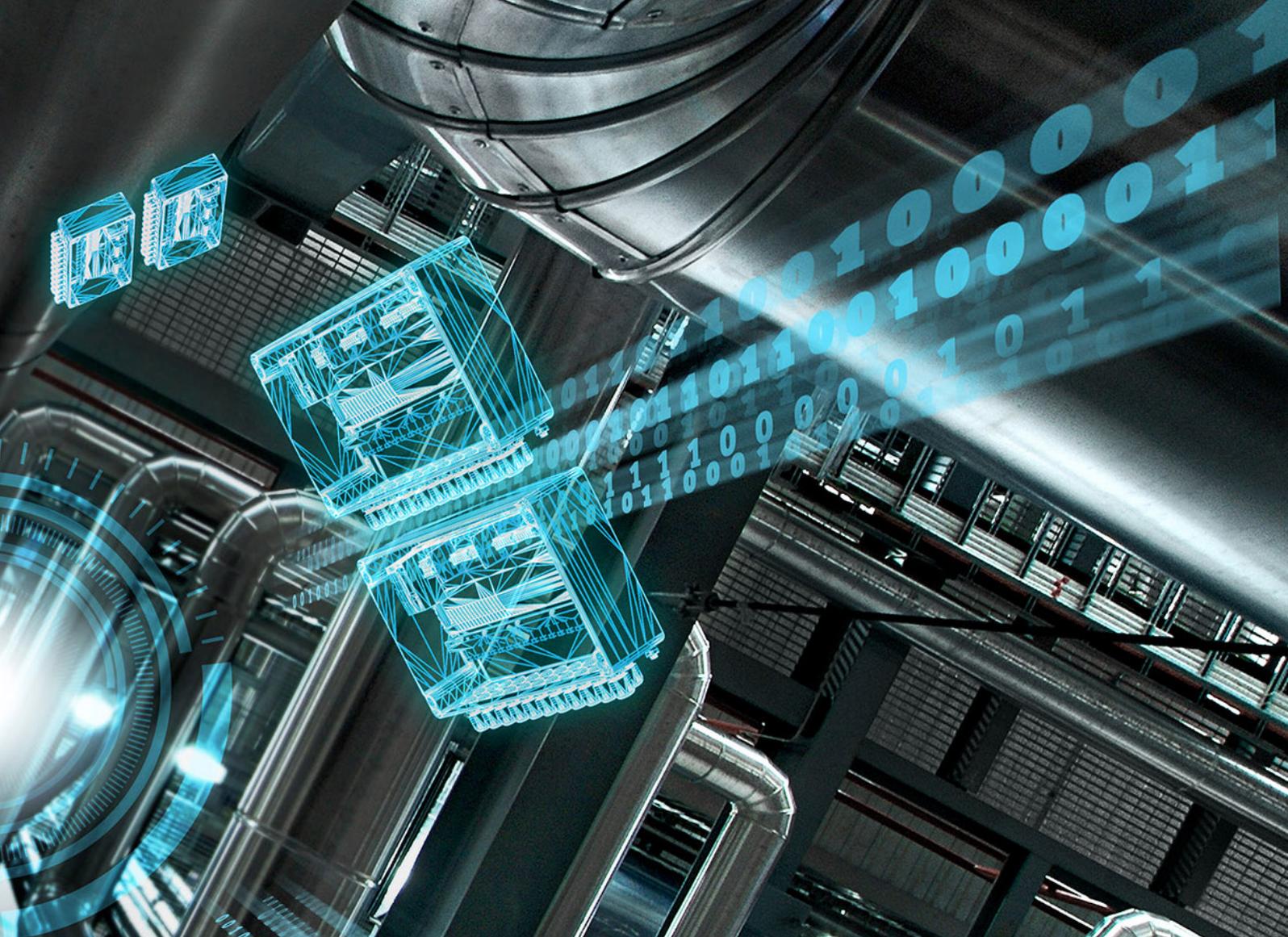
SIMATIC ET 200SP HA
Highest availability and robustness – designed for the process industry

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System features
Highlights at a glance

The high-performance I/O system SIMATIC ET 200SP HA – perfectly matched to the requirements of the process industry and with clear advantages wherever ruggedness and maximum availability are important in the process and manufacturing industry.

Interface module redundancy with redundant PROFINET connections, I/O redundancy, module replacement and configuration change in runtime (Configuration in Run, CiR) as well as online firmware updates ensure scalable and highest availability.

In addition, high-precision time stamping (Sequence of Events, SoE) enables the display of temporal relationships with a resolution of 1 ms.

In particular, the module redundancy of the SIMATIC ET 200SP HA increases the availability of a channel by a factor of 75. If a module fails, the redundantly plugged module takes over bumplessly. No additional wiring is necessary for the user. The two redundant modules are simply plugged in next to each other on the terminal block provided for this. This function is available for all signal types.

The innovative backplane bus design without active components has a low failure rate and thereby significantly contributes to the increased availability of the system.

Firmware updates in runtime can be performed for all modules via a central Engineering Station (with I/O redundancy and IM redundancy free of interruption down to module level).

Separating modules and connection systems allows a defective module to be replaced during ongoing operation without any intervention in the field wiring. This design supports fault prevention and enables fast maintenance.

In addition, the toolless connection system with push-in terminals and the possibilities of the D-SUB interface ensure minimum work for assembly and wiring.

Compact design in modular construction and installation up to ATEX Ex Zone 2 allow an exact adaptation to actual requirements and reduce the footprint of the overall system to a minimum.

Maximum availability
- PROFINET redundancy (R1)
- I/O redundancy
- Station expansion and hot swapping during operation
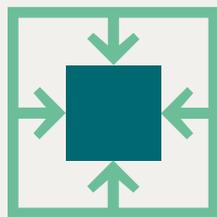
Compact design
- Up to 32 channels per I/O module
- Up to 56 I/O modules per station
- Modular design for maximum scalability

Easy handling
- Push-in technology
- D-SUB interface
- Channel-specific diagnostic functions

Rugged
- Rugged design
- Extended temperature range −40 ... +70 °C
- Conformal coating

Another highlight
Maximum flexibility in control cabinet installation

Installed centrally in the control cabinet, the advantages of the high channel density of the SIMATIC ET 200SP HA become apparent. Over 800 channels can be wired easily and conveniently for each cabinet. Distributed installation directly in the field up to Ex Zone 2 can also be implemented with a compact I/O box made of stainless steel. Similar to the centralized setup, you also benefit from the high channel density as well as the compact design and extended temperature range with a distributed solution. To facilitate the planning and creation of control cabinet designs, we provide free control cabinet templates for the SIMATIC ET 200SP HA, consisting of 2D and 3D models, circuit diagrams, calculations for heat generation and more for EPLAN, AutoCad and Plant Automation Accelerator (PAA) in COMOS. Contact your regional representative for more information.
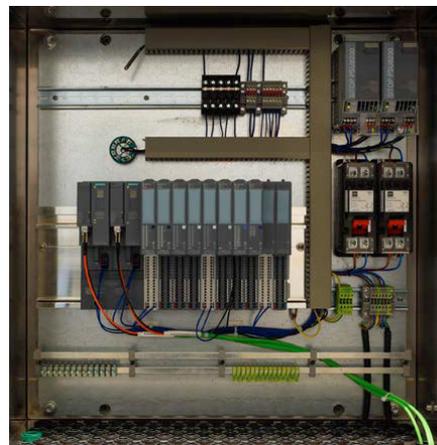
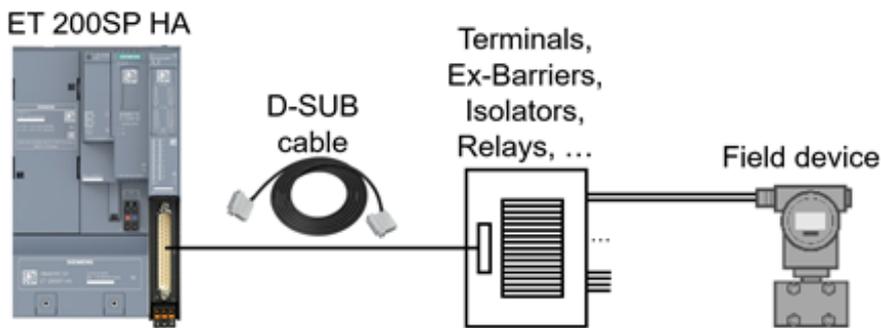Configuration example SIMATIC ET 200SP HA for distributed configuration: 8 x I/O modules, up to 128 x I/O signals, stainless steel enclosure, dimensions 600 x 600 x 300 mm (width x height x depth)

Configuration example SIMATIC ET 200SP HA in the central control cabinet: 56 x I/O modules in vertical assembly, up to 896 x I/O signals, dimensions of control cabinet 800 x 2000 x 400 mm (width x height x depth)

Now also with **standardized field connection via D-SUB**

The new D-SUB terminal blocks allow for complete SIMATIC ET 200SP HA modules to be connected to the field quickly and without errors. The interface simplifies the use of intermediate jumpers, lightning protection components, relays and Ex barriers.

The manufacturer-independent D-SUB interface enables a wide range of migration and standardization concepts. The pin assignment of the interface is publicly available and well-known manufacturers of field connection components offer solutions for SIMATIC ET 200SP HA.

Application example: SIMATIC ET 200SP HA with D-SUB interface for connecting a variety of field connection boards using pre-fabricated D-SUB cables

The following modules are already supported with D-SUB:

SIMATIC ET 200SP HA, DI 16x24VDC HA	**6DL1131-6BH00-0PH1**
SIMATIC ET 200SP HA, DI 32x24VDC HA	**6DL1131-6BL00-0PH1**
SIMATIC ET 200SP HA, DI 16xNAMUR HA	**6DL1131-6TH00-0PH1**
SIMATIC ET 200SP HA, DQ 16x24VDC/0,5A HA	**6DL1132-6BH00-0PH1**
SIMATIC ET 200SP HA, DQ 32x24VDC/0,5A	**6DL1132-6BL00-0PH1**
SIMATIC ET 200SP HA, AI-DI16/DQ16x24VDC HART HA	**6DL1133-6EW00-0PH1**
SIMATIC ET 200SP HA, AI 16xI 2-WIRE HART HA	**6DL1134-6TH00-0PH1**
SIMATIC ET 200SP HA, AI 16xTC/8XRTD 2-/3-/4-WIRE HA	**6DL1134-6JH00-0PH1**
SIMATIC ET 200SP HA, AQ 8xI HART HA	**6DL1135-6TF00-0PH1**

SIMATIC ET 200SP HA D-SUB terminal block

Extensive range of modules for all automation solutions

Standard modules

The system can be scaled and extended in small steps using a variety of available modules, for example with digital or analog I/Os with NAMUR or HART. All 24 V standard signals are connected via an identical terminal block, which allows a high degree of standardization for the control cabinets.

The I/O modules can be built up redundantly. This is realized using a terminal block with integrated I/O redundancy, which saves much space and is cost effective. The novel design with standardized terminal blocks makes redundant wiring as simple as single operation.

The integrated sensor supply ensures operation of all other channels even if one channel is short-circuited. Error-free and safe disconnection of the modules from the load voltage is achieved using push-buttons on the module that are easy for the user to operate. Diagnostic functions such as short circuit and wire break diagnostics provide channel-specific diagnostic information for reduced maintenance and repair times.

Fail-safe I/O modules

Fail-safe I/O modules permit safety-related monitoring and thus, when required, bringing the plant to the defined safe state. Communication and integration into the control system are performed using proven SIMATIC Safety Integrated technology.

For fail-safe acquisition and processing of process signals, a fail-safe analog input module is available in addition to the fail-safe digital input/output modules. The modules are certified by the German technical inspectorate (TÜV) for use up to SIL 3 per channel.

Within a SIMATIC ET 200SP HA station, fail-safe and standard modules can be combined as required.

In addition, the fail-safe modules can also be configured redundantly to guarantee maximum availability in addition to fail-safety. This makes SIMATIC ET 200SP HA suitable for demanding safety and standard applications in the process and manufacturing industries, where high availability and R1 redundancy are essential.

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Ex I/O modules

The SIMATIC ET 200SP HA Ex I/O modules with device protection according to intrinsic safety "i" offer channel outlets up to the especially critical Ex Zone 0. 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 are available.

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, Configuration in Run (CiR), are approved for ambient temperatures from –40 to +70 °C and can be used together with standard and fail-safe modules in one station.

Galvanically-isolated analog modules

The SIMATIC ET 200SP HA I/O modules are designed for isolation voltages of up to 125 V AC/ 150 V DC between the channels and to the back-plane bus. This means the modules offer very high immunity to EMC radiation and allow high potential differences, such as those that frequently occur with external sensor supplies. Parallel signal processing is possible with one A/D or D/A converter per channel. This makes the I/O modules suitable even for demanding control applications, where very fast cycle times are required.

Similar to all modules in the SIMATIC ET 200SP HA family, the galvanically-isolated analog modules offer channel-granular diagnostics, Configuration in Run (CiR) and are approved for ambient temperatures from –40 to +70 °C.

In addition, I/O redundancy is possible when using the terminal block type L0.

Extensive range of modules for all automation solutions

Technology Module

The Technology Module is a powerful I/O module that focuses on fast digital and analog value processing on the SIMATIC ET 200SP HA. Originally developed for the power plant sector, the module can now also be used in SIMATIC PCS 7 and SIMATIC STEP 7 in two different versions:

- **Fast multi I/O and counter modules:**
  The "Fast Multi I/O and Counter Module" is perfectly suited for all types of digital and/or analog signal processing. The main features here are: 4 x analog input (voltage and current) with 10 ms sampling, 4 x analog output with up to 800 Hz and a counter up to a frequency of 70 kHz.

- **TM vibration protection:**
  The "TM Vibration Protection Module" is a cost-effective solution for protecting rotating machines of all kinds as an integral part of the SIMATIC ET 200SP HA. The four sensor channels here support sampling of up to 102.4 kHz.

The typical system features of the SIMATIC ET 200SP HA, such as the extended temperature range from –40 to +70 °C or side-by-side redundancy, are of course also supported by the Technology Module.

Additional I/O modules

In addition to the available modules of the SIMATIC ET 200SP HA, there are also various additional I/O modules from other system families, which can be connected thanks to the open architecture of SIMATIC ET 200SP HA:

- **SIWAREX WP321 and SIWAREX WP351:**
  The modules cover typical tasks of non-automatic scales: level measurements in silos and bunkers as well as platform scales can be conveniently and seamlessly integrated directly into the automation environment. Due to the adjustable update rates of 100, 120 or 600 Hz, fast and accurate force measurement is also possible with the SIWAREX WP321. For higher requirements, the SIWAREX WP351 supports a sampling rate and processing time of up to 1000 Hz. The intelligent firmware of the WP351 controls filling, checking and dosing processes completely autonomously – and can also be calibrated if required. Complete commissioning and operation of SIWAREX modules can be performed conveniently from the OS using premade faceplates.

- **SIMATIC ET 200SP CM PtP:**
  The "CM PtP" communications module provides the physical interfaces RS232, RS422 and RS485 on the SIMATIC ET 200SP HA and supports the Modbus RTU protocol. Thus, up to 32 Modbus RTU slaves per master can be connected to the SIMATIC ET 200SP HA over up to 1200 m (RS485/422) or 15 m (RS232).

- **Energy Meter Modules:**
  With the "AI Energy Meter CT HF" and "AI Energy Meter RC HF", various energy meters are available on the SIMATIC ET 200SP HA. Thereby, the data for more than 200 different electrical measurements and values can be configured depending on the application. This leads to transparency with regard to the energy demand of individual components at machine level.

- **Motor starters:**
  The fine modular motor starters of the SIMATIC ET 200SP can also be used in the SIMATIC ET 200SP HA I/O system and are the solution for starting and protecting motors with up to 5.5 kW in five setting ranges. The advantages of the system are cost reduction during configuration and installation through pre-wired load feeders. The modular concept of SIMATIC ET 200SP HA with pre-wiring and hot swapping is also used for the motor starters.

- **Bürkert valve island (type 8647):**
  Valve islands serve as pilot valves for controlling actuators in industrial automation. The SIMATIC ET 200SP HA in combination with the pneumatic valve island Type 8647 AirLINE SP from Bürkert represents a universal interface between process and plant control as well as safe and full integration into the SIMATIC ET 200SP HA I/O system.

Additional I/O modules will follow.

Note:
When using I/O modules that deviate from the native design of the SIMATIC ET 200SP HA, the module properties, such as the permissible temperature range, should be checked.

Optimal tools for **efficient engineering and commissioning**

Plant Engineering with COMOS

The SIMATIC ET 200SP HA is integrated into COMOS using SIMATIC PCS 7 Plant Automation Accelerator (PAA). SIMATIC PAA enables users to efficiently perform multidisciplinary hardware engineering and back-document existing SIMATIC ET 200SP HA stations in existing SIMATIC PCS 7 projects.

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Design in the bidding phase using the TIA Selection Tool

You always need the optimal configuration of the SIMATIC ET 200SP HA for planning your project. Regardless of whether you are a newcomer or a professional, the TIA Selection Tool offers optimal support to all project engineers for your application.

In addition to selecting the right modules, including the appropriate accessories, you can also plan an initial network and power supply. After verifying that your configuration operates correctly, you can derive an order list or order directly in the Siemens Industry Mall.

No detailed portfolio knowledge is required for this. The TIA Selection Tool is available for free download as desktop or cloud version.

siemens.com/tia-selection-tool

Engineering

For plants in the process industry as well as for machines in the manufacturing industry, you benefit from the seamless integration of the SIMATIC ET 200SP HA into the Siemens tools. Engineering of the SIMATIC ET 200SP HA is possible with SIMATIC PCS 7, SIMATIC STEP 7 and SIMATIC PCS neo process control systems as well as with the TIA Portal.

A GSDML file is available for integration in third-party systems.

If you have any questions about the compatibility of the various I/O modules in the respective engineering tools, contact your local Siemens representative.

siemens.com/simatic-pcs7

siemens.com/simatic-pcs-neo

siemens.com/tia-portal

Commissioning standalone with PRONETA

PRONETA offers convenient support for commissioning, configuration and diagnostics of your PROFINET network – now also including the SIMATIC ET 200SP HA. In addition to online functions, such as displaying the topology and I/O test for checking and documenting the wiring, the free software can be used to compare the imported configuration quickly and easily with a reference project. The test results and deviations are clearly logged. Network parameters of entire PROFINET systems created as a reference can also be easily transferred to systems of the same design (Package Units). The tasks require neither a CPU integrated in the network nor other hardware or engineering tools. With the PRONETA software installed on a standard laptop, nothing stands in the way of a quick and successful testing and commissioning of the system.

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Technical specifications of the **SIMATIC ET 200SP HA at a glance**

Labels (clockwise from top left):
- DIN rail
- Interface modules with BusAdapter
- I/O modules
- Carrier module
- Server module
- Power bus cover
- Terminal blocks
- Connector plug for power supply
- Carrier module for interface modules
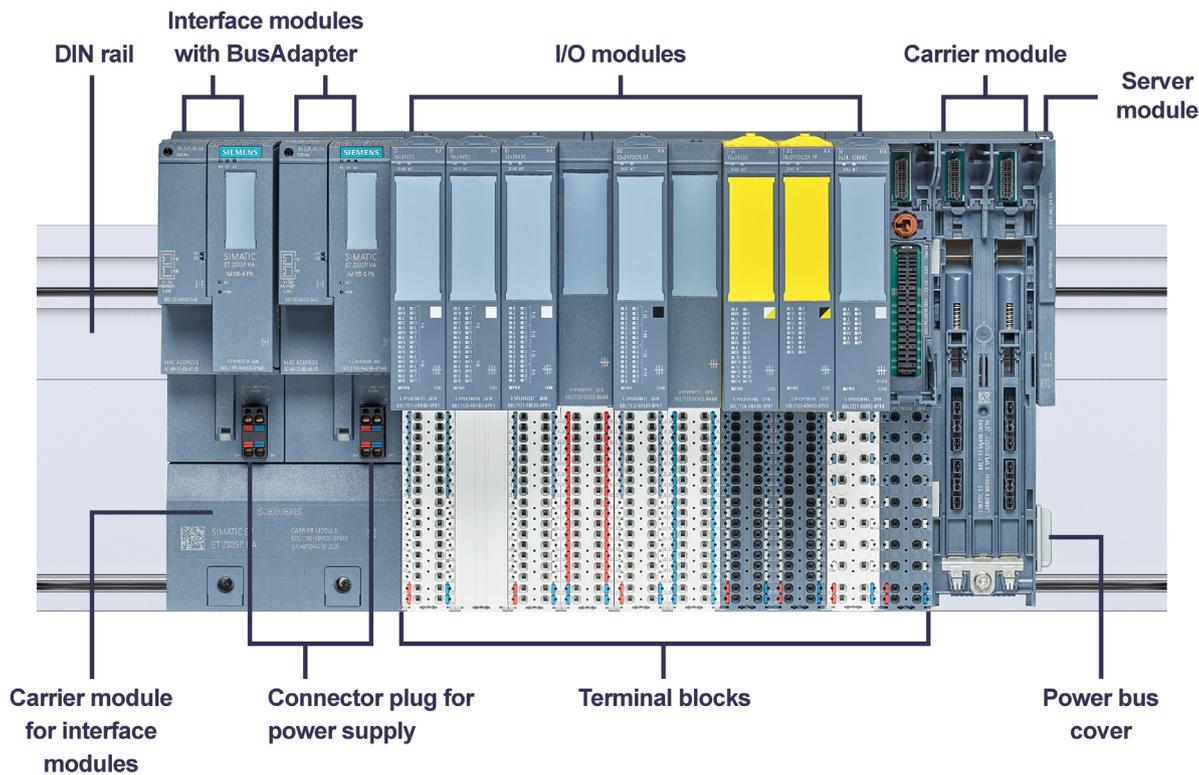
Technical data

Temperature range	–40 … +70 °C horizontal setup/–40 … +60 °C vertical setup
Air humidity	5 … 95%, no condensation
Operating altitude	Operation up to 4000 meters above sea level (RQ module up to 3000 ASL)
Sinusoidal oscillation acc. to IEC 60068-2-6	5 … 8.4 Hz: 3.5 mm/8.4 … 500 Hz: 9.8 m/s²
Dimensions	203 x 163 mm (height x depth), width of the IM 100 mm, width I/O module 22.5 mm
Degree of protection	IP20
Resistance to chemicals	G3 to ISA 71.04, protective coating on the printed circuit board
Approvals	CE, cULus, EAC, KC, RCM, ATEX, IEC EX, cULus HAZ. LOC., FM Canada, FM US, UK CA
Marine	DNV-GL, ABS, LR, RINA

Digital input modules

	DI 16x24VDC HA 6DL1131-6BH00-0PH1	DI 32X24VDC 6DL1131-6BL00-0PH1	DI 16XNAMUR 6DL1131-6TH00-0PH1	DI 8X24 … 125VDC 6DL1131-6DF00-0PK0	DI 8X230VAC 6DL1131-6GF00-0PK0
Number of channels	16	32	16	8	8
Signal range	24 V DC	24 V DC	8.2 V DC	24 …125 V DC	120 … 230 V AC
I/O redundancy	Yes	-	Yes	-	-
Sensor supply per channel	Yes	Yes *	Yes	-	-
Electrical isolation from backplane bus	1500 V DC 1 min	1500 V DC 1 min	1500 V DC 1 min	3500 V DC 1 min	4200 V DC 1 min
Electrical isolation between channels	-	-	-	-	Yes
Short-circuit protection	Yes	Yes *	Yes	-	-
Enable button	Yes	-	Yes	-	-
Short-circuit diagnostics (per channel)	Yes	-	Yes	-	-
Wire break diagnostics (per channel)	Yes	Yes	Yes	Yes	-
Sensor supply monitoring	Yes	-	Yes	-	-
Time stamp	Yes, up to 1 ms accuracy	-	Yes, 10 to 30 ms accuracy	Yes, up to 1 ms accuracy	-

* with Terminal Block Type P0

Digital output modules

	DQ 16X24VDC/0,5A 6DL1132-6BH00-0PH1	DQ 32X24VDC/0,5A 6DL1132-6BL00-0PH1	RQ 4X120VDC-230VAC/5A CO 6DL1132-6HD50-0PK0
Number of channels	16	32	4
Signal range	24 V DC	24 V DC	24 V DC, 120 … 230 V AC
I/O redundancy	Yes	-	-
Electrical isolation from backplane bus	1500 V DC 1 min	1500 V DC 1 min	4200 V DC 1 min
Electrical isolation between channels	-	-	Yes
Short-circuit protection	Yes	Yes	-
Overload protection	Yes	Yes	-
Enable button	Yes	Yes	Yes
Short-circuit diagnostics (per channel)	Yes	Yes	-
Wire break diagnostics (per channel)	Yes	-	-
Parameterizable substitute values	Yes	Yes	Yes
Current per channel / total current	0.5 A/to 8 A	0.5 A/10 A	5 A/20 A

Technical specifications of the **SIMATIC ET 200SP HA** at a glance

Analog input modules

	AI 16XI 2-WIRE HART 6DL1134-6TH00-0PH1	AI-DI16/DQ16X24VDC HART 6DL1133-6EW00-0PH1	AI 16XTC/8XRTD 2-/3-/4-WIRE 6DL1134-6JH00-0PH1	AI 4XI 2-/4-Wire HART ISOL 6DL1134-6UD00-0PK0
Number of channels	16	16	16 TC/8 RTD	4
Signal range	0 … 20 mA 4 … 20 mA	Adjustable per channel AI: 0 … 20 mA; 4 … 20 mA DI: 24 V DC DQ: 24 V DC	2-/3-/4-wire RTD, thermo-couples B, C, E, J, K, L, N, R, S, T, U	0 … 20 mA 4 … 20 mA
HART	4 tags per channel	4 tags per channel	-	4 tags per channel
I/O redundancy	Yes	Yes	Yes	Yes
Sensor supply per channel	Yes	Yes	-	Yes
Electrical isolation from backplane bus	1500 V DC 1 min	1500 V DC 1 min	1500 V DC 1 min	Yes; 125 V AC/150 V DC
Electrical isolation between channels	-	-	-	Yes; 125 V AC/150 V DC
Short-circuit protection	Yes	Yes	-	Yes
Enable button	Yes	Yes	-	-
Short-circuit diagnostics (per channel)	Yes	Yes	-	Yes
Wire break diagnostics (per channel)	Yes	Yes	Yes	Yes
Sensor supply monitoring	Yes	Yes	-	Yes
Time stamp	-	DI/DQ operation: Yes, up to 1 ms accuracy	-	-
Accuracy in % (at 25 °C)	±0.1%	±0.1%	±0.1%	±0.1 %

Analog output modules

	AQ 8XI HART 6DL1135-6TF00-0PH1	AQ 4xI HART ISOL HA 6DL1135-6UD00-0PK0
Number of channels	8	4
Signal range	0 ... 20 mA 4 ... 20 mA	0 ... 20 mA 4 ... 20 mA
HART	4 tags per channel	4 tags per channel
I/O redundancy	Yes	Yes
Electrical isolation from backplane bus	1500 V DC 1 min	Yes; 125 V AC/150 V DC
Electrical isolation between channels	-	Yes; 125 V AC/150 V DC
Short-circuit protection	Yes	Yes
Enable button	-	-
Short-circuit diagnostics (per channel)	Yes	Yes
Wire break diagnostics (per channel)	Yes	Yes
Time stamp	-	-
Accuracy in % (at 25 °C)	± 0.1%	± 0.1%

Fail-safe I/O modules

	F-DI 16x24VDC HA 6DL1 136-6BA00-0PH1	F-DQ 10X24VDC/2A HA 6DL1 136-6DA00-0PH1	F-AI 8xI 2-/4-wire HART HA 6DL1 136-6AA00-0PH1
Number of channels	16	10	8
Signal range	24 V DC	24 V DC	24 V DC
I/O redundancy	Yes	Yes	Yes
Sensor supply per channel	Yes	-	Yes
Electrical isolation from backplane bus	1500 V DC 1 min	1500 V DC 1 min	1500 V DC 1 min
Electrical isolation between channels	-	-	-
Short-circuit protection	Yes	Yes	Yes
Enable button	Yes	Yes	-
Short-circuit diagnostics (per channel)	Yes	Yes	Yes
Wire break diagnostics (per channel)	Yes	Yes	Yes
Sensor supply monitoring	Yes	-	Yes
Time stamp	-	-	-
Maximum achievable safety integrity level	SIL 3/Cat. 4/Ple	SIL 3/Cat. 4/Ple	SIL 3/Cat. 4/Ple
Probability of failure (PFD and PFH)	< 3,00E-05 < 2,00E-09 1/h	< 7,00E-05 < 2,00E-09 1/h	< 2,00E-04< 4,00E-09
Current per channel/total current	0.5 A/to 8 A	2 A/to 10 A	

Technical specifications of the **SIMATIC ET 200SP HA at a glance**

Digital Ex I/O modules

	ET 200SP HA, EX-DI 4xNAMUR	ET 200SP HA, EX-DQ 2x23,1VDC/20MA	ET 200SP HA, EX-DQ 2x17,4VDC/27MA
	6DL1131-6TD00-0HX1	6DL1132-6EB00-0HX1	6DL1132-6CB00-0HX1
Number of channels	4	2	2
Rated value for output voltage (DC)	-	23.1 V	17.4 V
Type of protection	[Ex ia]	[Ex ia]	[Ex ia]
Max. permissible cable length shielded/unshielded	500 m/300 m	500 m/500 m	500 m/500 m
Diagnostics	Monitoring of supply voltage, monitoring of the sensor supply, wire break, short circuit	Monitoring of supply voltage, wire break, short circuit	Monitoring of supply voltage, wire break, short circuit, group fault
Isolation of the field circuits to local ground acc. to IEC/EN 60079-11 tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Permissible temperature range	−40 °C ... +70 °C	−40 °C ... +70 °C	−40 °C ... +70 °C

Analog Ex I/O modules

	ET 200SP HA, EX-AI 2xI 2-WIRE HART	ET 200SP HA, EX-AI 4xTC/2xRTD 2-/3-/4-W	ET 200SP HA, EX-AQ 2xI HART
	6DL1134-6TB00-0HX1	6DL1134-6JD00-0HX1	6DL1135-6TB00-0HX1
Number of channels	2	4, 2 (TC, RTD)	2
Signal range/type	0 ... 20 mA 4 ... 20 mA incl. HART	TC: B, C, E, J, K, L, N, R, S, T, U, TXK/TXK(L) RTD: Cu10, NI100, NI120, NI200, NI500, NI1000, LG-NI1000, PT100, PT200, PT500, PT1000	0 ... 20 mA 4 ... 20 mA incl. HART
Type of protection	[Ex ia]	[Ex ia]	[Ex ia]
Max. permissible cable length shielded/unshielded	500 m/300 m	200 m/-	500 m/300 m
Diagnostics	Monitoring supply voltage, wire break, short circuit, group fault, overflow/underflow	Monitoring of supply voltage, wire break, overflow/underflow	Monitoring supply voltage, wire break, short circuit, group fault, overflow/underflow
Isolation of the field circuits to local ground acc. to IEC/EN 60079-11 tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Permissible temperature range	−40 °C ... +70 °C	−40 °C ... +70 °C	−40 °C ... +70 °C

Technology Modules

	Fast multi I/O and counter module 6DL1138-6EA00-0EH1	SIMATIC ET200SP HA TM VibProt 6DL1135-6UD00-0PK0
Number of channels	4 x AI (U/I) 4 x AQ (U/I) 4 x DI 6 x DI/O (freely configurable)	4 x AI (U/I) 4 x AQ (U/I) 4 x DI 6 x DI/O (freely configurable) 4 x AQ (U)
Signal range	AI: 0 ... 20 mA, 4 ... 20 mA, –20 ... +20 mA, –30 ... +30 mA, 0 ... +30 mA, –30 ... 0 mA, 0 ... +10 V, –10 ... +10 V, –12 ... +12 V, –2 ... +22 V, –22 ... +2 V AQ: 0 ... 20 mA, 4 ... 20 mA, –20 ... +20 mA, –30 ... +30 mA, –50 ... +50 mA ± 24 V (for sensor supply) DI: 0/24 V DI/O (configurable): 0/24 V (up to 500 mA output current as DQ)	AI: 0 ... 20 mA, 4 ... 20 mA, –20 ... +20 mA, –30 ... +30 mA, 0 ... +30 mA, –30 ... 0 mA, 0 ... +10 V, –10 ... +10 V, 0 ... +20 V, –20 ... 0 V AQ: 0 ... 20 mA, 4 ... 20 mA, –20 ... +20 mA, –30 ... +30 mA, –50 ... +50 mA ± 24 V (for sensor supply) DI: 0/24 V DI/O (configurable): 0/24 V (up to 500 mA output current as DQ) AQ: –10 ... +10 V
Frequency band	AI: 0.1 ... 50 kHz AQ: 0.1 ... 1.6 kHz DI: 0.1 ... 200 kHz DI/O: 10 kHz	AI: 0.1 ... 50 kHz
I/O redundancy	Yes	Yes
Between the channels and backplane bus	Yes	Yes
Maximum potential difference between circuits	75 V AC/60 V DC between L+ and backplane bus	75 V AC/60 V DC between L+ and backplane bus
Isolation tested with	DC 1500 V/1 min, type test	DC 1500 V/1 min, type test
Short-circuit protection	Yes	Yes
Enable button	Yes	Yes
Short-circuit diagnostics (per channel)	Yes	Yes
Wire break diagnostics (per channel)	Yes	Yes

Technical specifications of the **SIMATIC ET 200SP HA at a glance**

Busadapter

	BUSADAPTER BA 2XRJ45 6DL1193-6AR00-0AA0	BUSADAPTER BA 2XFC 6DL1193-6AF00-0AA0	BUSADAPTER BA 2XLC 6DL1193-6AG00-0AA0	BUSADAPTER BA LC/RJ45 6DL1193-6AG20-0AA0	BUSADAPTER BA LC/FC 6DL1193-6AG40-0AA0	BUSADAPTER BA 2xVD 6GK5991-2VA00-8AA2
Medium	Copper	Copper	Glass fiber	Glass fiber & copper	Glass fiber & copper	Copper
Connector type	RJ45	No plug required	LC	Glass fiber: LC Copper: RJ45	Glass fiber: LC Copper: no plug required	RJ45
Max. cable length	100 m	100 m	3000 m	Copper: 100 m Glass fiber: 3000 m	Copper: 100 m Glass fiber: 3000 m	100 to 1000 m *
Temperature range for single interface module	Horizontal: 70 °C Vertical: 60 °C	Horizontal: 70 °C Vertical: 60 °C	Horizontal: 65 °C Vertical: 50 °C	Horizontal: 70 °C Vertical: 60 °C	Horizontal: 65 °C Vertical: 60 °C	Horizontal: 70 °C Vertical: 60 °C
Temperature range for redundant interface module	Horizontal: 70 °C Vertical: 60 °C	Horizontal: 70 °C Vertical: 60 °C	Horizontal: 60 °C Vertical: 50 °C	Horizontal: 65 °C Vertical: 55 °C	Horizontal: 60 °C Vertical: 55 °C	Horizontal: 70 °C Vertical: 60 °C

*depending on bandwidth (10 or 100 Mbit), cable type used and number of conductors

Interface module

Interface module IM155-6 PN	6DL1155-6AU00-0PM0	Interface module, processed I/O data and PROFINET communication

Carrier modules

Carrier module im single	6DL1193-6BH00-0SM0	Singular station head including server module and power bus cover
Carrier module im redundant	6DL1193-6BH00-0RM0	Redundant station head including server module and power bus cover
2-Fold carrier module	6DL1193-6GA00-0NN0	Mounting rack for 2 module slots
8-Fold carrier module	6DL1193-6GC00-0NN0	Mounting rack for 8 module slots
8-Fold carrier module without power bus	6DL1193-6GC00-8NN0	Mounting rack for 8 module slots without power bus

Terminal blocks

	H1 light 6DL1193-6TP00-0DH1	H1 dark 6DL1193-6TP00-0BH1	H0, D-SUB, black 6DL1193-6TC00-0DH0	M1 light 6DL1193-6TP00-0DM1	F1 black 6DL1193-6TP00-0DF1	M1 dark 6DL1193-6TP00-0BM1	P0 light 6DL1193-6TP00-0DP0	P0 dark 6DL1193-6TP00-0BP0	N0 light 6DL1193-6TP00-0DN0	N0 dark 6DL1193-6TP00-0BN0
Voltage range	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
Supply to load group*	●	–	–	●	–	–	●	–	●	–
Temperature compensation	●	●	–	●	–	●	–	–	–	–
I/O redundancy	–	–	–	●	●	●	–	–	–	–
Additional sensor supplies	–	–	–	–	–	–	32	32	–	–
Additional ground terminals	–	–	–	–	–	–	–	–	32	32

*light terminal blocks form a new load group

	K0 light 6DL1193-6TP00-0DK0	K0 dark 6DL1193-6TP00-0BK0	L0 light 6DL1193-6TP00-0DL0
Voltage range	230 V	230 V	230 V
Supply to load group*	–	–	●
Temperature compensation	–	–	–
I/O redundancy	–	–	●
Additional sensor supplies	–	–	–
Additional ground terminals	–	–	–

*light terminal blocks form a new load group

Technical specifications of the
SIMATIC ET 200SP HA
at a glance

Accessories

10 x Color-coded labels CC00	6DL1193-6CP00-2HH1	Color-coded covers (gray) for 24 V terminal blocks
10 x Color-coded labels CC01	6DL1193-6CP01-2HH1	Color-coded covers (gray/red) for 24 V terminal blocks
10 x Color-coded labels CC02	6DL1193-6CP02-2HH1	Color-coded covers (gray/blue) for 24 V terminal blocks
10 x Color-coded labels CC40	6DL1193-6CP40-2HK0	Color-coded covers (gray) for insulated terminal blocks
10 x Color-coded labels CC42	6DL1193-6CP42-2HK0	Color-coded covers (gray/red) for insulated terminal blocks
160 x Equipment labeling plates	6ES7193-6LF30-0AW0	Labels for I/O modules, BusAdapters and interface modules, 10 sheets
450 x Labeling strips DIN A4, light gray	6DL1193-6LA00-0AA0	Labeling strips on DIN A4 sheets for laser printers
500 x Labeling strips, light gray	6DL1193-6LR00-0AA0	Labeling strips on roll for thermal transfer printers
5 x Im cover, 50 mm	6DL1133-6CV50-0AM0	Covers for unused interface module slots
5 x Tb cover, 22.5 mm	6DL1133-6CV22-0AM0	Covers for unused I/O module slots
5 x Shielding connections	6ES7193-6SC00-1AM0	Shield terminals, size SK5
Server module	6DL1193-6PA00-0AA0	Spare part, dust and EMC protection for the station bus

Note

The valve island AirLINE SP Type 8647 is a product of our Product Partner Bürkert Fluid Control Systems and can only be purchased from Bürkert Fluid Control Systems.

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