

SIEMENS

SIMATIC ET 200MP



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The decentralized I/O system for the Advanced Controller SIMATIC S7-1500

The simple use of SIMATIC ET 200MP is exemplified by a modular and scalable station with the SIMATIC S7-1500 I/O modules in a distributed configuration. The modules have high channel density and low parts variance. As a result, ordering, logistics and spare-parts inventory are considerably simplified.

The perfect supplement for your Advanced Controller

The ET 200MP I/O system in IP20 degree of protection is scalable and is used both as centralized I/O with S7-1500 and in distributed configurations with PROFINET or PROFIBUS. Each station can accommodate up to 30 I/O modules. The modules have low parts variance and the front connector for all 35-mm wide modules. As a result, ordering, logistics and spare-parts inventory are considerably simplified.

SIMATIC ET 200MP is a modular, distributed I/O system that can be used in a wide variety of applications. SIMATIC ET 200MP complies with IP 20 degree of protection and is intended for installation in a control cabinet.

- Station configuration with the I/O modules of the SIMATIC S7-1500 in a distributed configuration
- Low parts variance and uniform front connector for all 35mm-wide modules
- The prelatch position of front connector enables convenient prewiring
- Channel-specific diagnostics allows fast and clear identification of process errors and reduces plant standstills



Easy station configuration : SIMATIC ET 200MP has a distributed architecture: with a modular, scalable station architecture based on the I/O modules of SIMATIC S7-1500. The modules feature little parts variation. The front connector is also uniform for all 35 mm-wide components. The 15 mm top-hat rail integrated in the rail enables standard components to be mounted. The bottom line: installation, ordering, logistics, and spare parts management become considerably easier, which helps save time and costs



The distributed I/O system SIMATIC ET 200MP is flexibly scalable. A mechanical slot encoding ensures the unambiguous assignment of module and front connector. This prevents errors during installation and module exchange.

Enormous performance in a small space

SIMATIC ET 200MP is strikingly compact thanks to its high channel density. The small footprint enhances utilization of control cabinet space. The uniform 40-pin front connector simplifies ordering and spare-parts inventory. The I/O system can be organized in a scalable and versatile manner using the self-assembling backplane bus.

- Station can be expanded with up to 30 I/O modules
- Each module includes up to 64 channels
- Clear arrangement using one-to-one assignment of module and diagnostic LEDs to terminal and label
- "Expandable cable storage space" ensures uniform station appearance in the control cabinet.

At the forefront in terms of performance

The IO system for a S7-1500 Advanced controller has to be a benchmark in performance to make it an outstanding control system:

- PROFINET IRT for isochronous mode with clock rates up to 250 μ s
- High-performance backplane bus of the SIMATIC ET 200MP enables fast response times
- Integrated shielding design enhances station resistance against external EMC interference
- Digital input modules with very short input delay of 50 μ s
- Analog modules with conversion time of 62,5 μ s resp. 125 μ s for 8 channels



PROFINET is the Ethernet standard of automation: flexible, efficient, and powerful. Hence, PROFINET is the basis for the strong performance of SIMATIC ET 200MP. The optimally equipped rear panel bus of SIMATIC ET 200MP is perfectly matched to communicative interaction with PROFINET and makes possible outstandingly fast reaction times

SIMATIC ET 200MP Central Processing Units

SIMATIC S7-1500 and SIMATIC ET 200MP share the same system design. Because of this the SIMATIC S7-1500 CPUs are the intelligent Interface Modules of a SIMATIC ET 200MP IO station.



SIMATIC ET 200MP - Interface Modules

Header module of the I/O-station and connection to PLC

The interface module (IM) connects SIMATIC ET 200MP to PROFINET or PROFIBUS and exchanges data between the higher-level controller and the I/O modules.

ET 200MP is especially suitable for use in plants with large and very large configuration limits. The connection to PROFINET and PROFIBUS allows ET 200MP to be installed either centrally in the control cabinet or distributed in plants covering large areas.

As many as 30 modules may be operated behind the PROFINET modules (max. 12 with PROFIBUS).



Feature	IM 155-5 PN BA	IM 155-5 PN ST	IM 155-5 PN HF
Type	Basic	Standard	High Feature
Bus system	PROFINET	PROFINET	PROFINET
Number IO Modules	12	30	30
Address space (Bytes) input/output	64/64	512/512	512/512

Feature	IM 155-5 DP ST
Type	Standard
Bus system	PROFIBUS
Number IO Modules	12
Address space per (Bytes) input/output	244/244

Scalability, performance and usability

The digital and analog modules provide exactly the inputs/outputs that are required for the respective task. They can be used both centrally, i.e. directly on the CPU, as well as locally in the ET 200MP I/O system. 25 mm and 35 mm modules are available.

The analog modules possess expanded functions like oversampling, measuring range adjustments or scaling of measured values.



Digital Input Modules at a glance

SM 521	DI 16x24V DC HF	DI 32x24V DC HF	DI 16x24...125 VUC HF	DI 16x 24V DC SRC BA	DI 16x230V AC BA	DI 16x24V DC BA	DI 32x24V DC BA	DI 64 x24V DC BA
Type	High Feature	High Feature	High Feature	Basic	Basic	Basic	Basic	Basic
Number of inputs	16	32	16	16	16	16	32	64
Voltage	24V DC	24V DC	24...125 VUC	24V DC	230V AC	24V DC	24V DC	24V DC
Article No. in Industry Mall	6ES7521-1BH00-0A00	6ES7521-1BL00-0A00	6ES7521-7EH00-0A00	6ES7521-1BH50-0AA0	6ES7521-1FH00-0AA0	6ES7521-1BH10-0AA0	6ES7521-1BL10-0AA0	6ES7521-1BP00-0AA0

Digital output modules with a width of 35 mm

SM 522	DQ 16x24VDC 0.5A HF	DQ 32x24V DC/0.5A HF	DQ 8x24V DC/2A HF	DQ 16x 24...48 V UC/ 125 V DC 0.5A ST	DQ 8x230V AC/2A ST	DQ 8x230V AC/5A ST	DQ 16x230V AC/1A ST	DQ 16x230V AC/2A ST	DQ 64x24V DC/0.3A BA	DQ 64x24V DC/0.3A SNK BA
Type	High Feature	High Feature	High Feature	Standard	Standard	Standard	Standard	Standard	Basic	Basic
Number of outputs	16	32	8	16	8	8	16	16	64	64
Type of output	DC 24 V / 0.5 A transistor	DC 24 V / 0.5 A transistor	DC 24 V / 2 A transistor	Universal Current 0.5 A	AC 230 V / 2 A triac	AC 230 V / 5 A relay	AC 230 V / 1 A triac	AC 230 V / 2 A relay	DC 24V/0.3 A transistor	DC 24V/0.3 A transistor
Article No. in Industry Mall	6ES7522-1BH01-0A00	6ES7522-1BL01-0A00	6ES7522-1BF00-0A00	6ES7522-5EH00-0A00	6ES7522-5FF00-0A00	6ES7522-5HF00-0A00	6ES7522-5FH00-0A00	6ES7522-5HH00-0A00	6ES7522-1BP00-0AA0	6ES7522-1BP50-0AA0

Digital output modules with a width of 25 mm

SM 522	DQ 16x24V DC 0.5A BA	DQ 32x24V DC/0.5A BA
Type	Basic	Basic
Number of outputs	16	32
Type of output	DC 24 V / 0.5 A transistor	DC 24 V / 0.5 A transistor
Article No. in Industry Mall	6ES7522-1BH10-0AA0	6ES7522-1BL10-0AA0

Digital Input/Output Module SM 523

SM 523	DI 16x24V DC /DQ 16x24V DC 0.5A BA	DI 32x24V DC /DQ 32x24V DC 0.3A BA
Type	Basic	Basic
Number of inputs/outputs	16/16	32/32
Inputs		
Voltage	24 V DC	24 V DC

Analog input modules (AI)

SM 531	AI 8xU//RTD/TC BA	AI 8xU//R/RTD/TC ST	AI 16xU BA	AI 16xI BA	AI 8xU/I HF	AI 8xU/I HS	AI 8xU/R/RTD/TC HF	AI 4xU//I/RTD/TC ST
Type	Basic	Standard	Basic	Basic	High Feature	High Speed	High Feature	Standard
Number of inputs	8 (4 for R/RTD)	8 (4 for R/RTD)	16	16	8	8	8+1	4 (2 for RTD)
Measurement types	Voltage, current, resistance, resistance thermometer, thermocouple	Voltage, current, resistance, resistance thermometer, thermocouple	Voltage	Current	Voltage, current	Voltage, current,	Voltage, resistance, resistance thermometer, thermocouple	Voltage, current, resistance, resistance thermometer, thermocouple
Resolution	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit

Analog output modules SM 532

SM 532	AQ 4xU/I ST	AQ 4xU/I HF	AQ 8xU/I HS	AQ 2xU/I ST
Type	Standard	High Feature	High Speed	Standard
Number of outputs	4	4	8	2
Type of outputs	current, voltage	current, voltage	current, voltage	current, voltage
Resolution	16 Bit	16 Bit	16 Bit	16 Bit

Analog input/output module SM 534

SM 534 AI/AQ 4xU/I/RTD/TC / 2xU/I ST

Standard analog input/output module with 4 inputs and 2 outputs (resistance and resistance thermometer measuring limited to 2 channels)

- 4 inputs, measurement types: current, voltage, resistance, resistance thermometers, thermocouples
- resolution 16 bits

Failsafe I/O Module SM 526

Module	Description	Technical data	Industry Mall	TIA Selection Tool
F-DI 16x24V DC	16 fail-safe inputs	Technical data	6ES7526-1BH00-0AB0	configure and order
F-DQ 8x24V DC/2A PPM	8 fail-safe outputs PM - or PP switching	Technical data	6ES7526-2BF00-0AB0	configure and order

SIMATIC ET 200MP /S7-1500 Communication Modules

Interfaces for communication via PROFINET and in part PROFIBUS DP as well are already integrated in the S7-1500 CPUs.

Communication modules increase the communication capabilities of the S7-1500/ET 200MP providing additional communication functions or more interfaces.

Communication modules enhance flexibility and performance of automation solutions using the SIMATIC S7-1500/ ET 200MP. Additional interfaces enable realization of complex automation structures or process optimization through connection to the enterprise management level.



Serial communication via point-to-point connection

Communication module	CM PtP RS232 BA	CM PtP RS232 HF	CM PtP RS422/485 BA	CM PtP RS422/485 HF
Interface	RS232	RS232	RS422/485	RS422/485
Data transmission rate	300 to 19 200 bit/s	300 to 115 200 bit/s	300 to 19 200 bit/s	300 to 115 200 bit/s
Message length max.	1 Kbyte	4 Kbyte	1 Kbyte	4 Kbyte
Diagnostic interrupt	yes	yes	yes	yes
Protocols supported	Freeport, 3964(R), USS	Freeport, 3964(R), USS, Modbus RTU (Master/Slave)	Freeport, 3964(R), USS	Freeport, 3964(R), USS, Modbus RTU (Master/Slave)
Article No. Industry Mall	6ES7540-1AD00-0AA0	6ES7541-1AD00-0AB0	6ES7540-1AB00-0AA0	6ES7541-1AB00-0AB0

ET 200MP 8 Port IO-Link Master

The SIMATIC ET 200MP 8 Port IO-Link Master is based on the current IO-Link specification V1.1, which enables the consistent storage of the IO-Link device parameters in the master. This means that when a device is being replaced, the current parameters are automatically transferred to the new IO-Link device – without additional effort by the user.

The special feature of the SIMATIC ET 200MP IO-Link Master module: not only the device parameters are saved automatically, but also the master parameters. This makes replacing a module, whether master or device, possible without a programming device and without backing up the data.

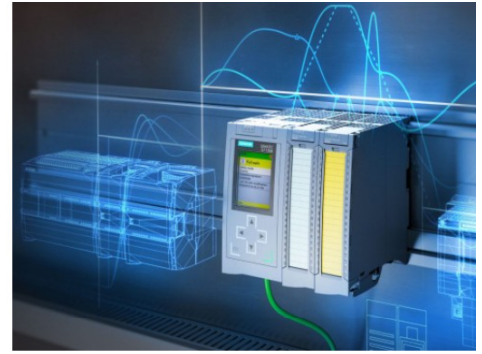


SIMATIC ET 200MP Technology Modules

Technology modules offer hardware-level signal processing for rapid counting, measurement and position registration for a variety of transducers as well as for the precise output of pulses. Technological functions such as motion control and high speed counter are already integrated in the SIMATIC S7-1500 CPUs and plannable via STEP 7 (TIA Portal)

Benefits

- Rapid signal preprocessing for counting and measuring tasks in the high-speed range
- Position detection for incremental and SSI absolute value encoders
- Easy to use parameter assignment interface already integrated in SIMATIC STEP 7 (TIA Portal)
- Efficient programming using technology objects
- Fast reactions due to different hardware interrupts for internal/external events and count values
- Reaction of modules to "CPU stop" can be configured
- Can be operated centrally in the S7-1500 and distributed in the ET 200MP I/O system



TM Count 2x24V

The technology module TM Count 2x24V for 24 Volt input signals is a universal counter module for counting and measuring tasks as well as position input with incremental encoders. The module offers measuring functions for velocity and frequency as well as signal acquisition up to 200 kilohertz and is suitable for sophisticated tasks, for example, in the packaging, food or paper industry.

- Supported encoder/signal types:
 - 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 forward & backward pulses



TM Posinput 2

The ET 200MP TM PosInput 2 counting and position detection module offers two counting channel for differential input signals according to RS422 up to 1 MHz, as well as position detection with the aid of SSI absolute value encoders.

The connection of 5V TTL signals is also possible for the counting function.

TM Timer DIDQ 16x24V

The time-based IO module ET 200MP TM Timer DIDQ 16x24V fulfills the highest demands for precision and speed, independent of the controller performance and the fieldbus.

Time-based IO assures that the signals are read-in and output precisely - to within 1 microsecond!

The modules are particularly suitable for the use with the technology objects cam, cam track and measuring probe.



TM PTO 4

With the TM PTO 4 module it is possible to control stepper motor drives or servo drives with PTI interface. Supported are 24V asymmetrical, RS422 symmetrical and 5V asymmetrical as signal interface. It is particularly suitable for control with an axis technology object of the SIMATIC S7-1500.

The module offers 4 identical channels with the following characteristics:
PTO interface for output of position and velocity information on various interfaces



SIWAREX WP521 ST and WP522 ST

The two technology modules are the perfect solution for the seamless integration of standard weighing applications like platform or hopper scales in SIMATIC S7-1500.

The technology module is available in single and dualchannel variants. SIWAREX WP521 ST is the single-channel option for one scale while the dual-channel SIWAREX WP522 ST enables two separate scales to be integrated into the automation system - with same space requirements. Integrated in SIMATIC S7-1500 all advantages of the automation system can be used. The free "ready-for-use" application helps to create fast and easily customer and application specific solutions



SIMATIC S7-1500 TM NPU



Neural Processing Unit (NPU) enables Artificial Intelligence for automation tasks

With the new SIMATIC S7-1500 TM NPU (neural processing unit) module for the SIMATIC S7-1500 controller and the ET 200MP I/O system, AI is finding its way into automation with Totally Integration Automation. The module can be seamlessly integrated into the SIMATIC automation system, without the need for an additional PC-based hardware. This way permitting a simple and profitable combination of AI algorithms and PLC logic. This is how inexpensive and rescalable applications using SIMATIC can be implemented at the machine based on artificial intelligence. The SIMATIC S7-1500 TM NPU module is equipped with the AI-capable MyriadTMX Vision processing unit chip from Intel MovidiusTM which enables the efficient processing of neural networks.

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