

A Siemens SIMATIC S7-1500 PLC unit is shown in the foreground, with a TIA Portal software interface overlaid on the background. The software interface displays a ladder logic diagram with multiple rungs and a status window showing 'Fail-safe' information. The PLC unit has a yellow front panel and a small display screen. The background is a blurred image of the PLC unit and the software interface.

**SIEMENS**

*Ingenuity for life*

Engineered with TIA Portal

Increase productivity  
with the ultimate power

Advanced Controllers  
SIMATIC S7-1500 with ET 200MP

[siemens.com/s7-1500](https://www.siemens.com/s7-1500)

# Advanced Controllers SIMATIC S7-1500 for complex automation tasks

## SIMATIC S7-1500 plus TIA Portal

The SIMATIC® S7-1500 Advanced Controller sets new standards in system performance and usability. The seamless integration of the SIMATIC S7-1500 controller into the Totally Integrated Automation Portal (TIA Portal) offers advantages such as shared data management, a uniform operating concept and centralized services. This makes the use of universal functions particularly easy. The controller is quick and easy to install and connect, and with its quick system response times, it boosts productivity at the wave of a hand. For you, this means more flexibility in handling, shorter time-to-market, and a fast rate of return on your plant.

## Scalable performance and functionality

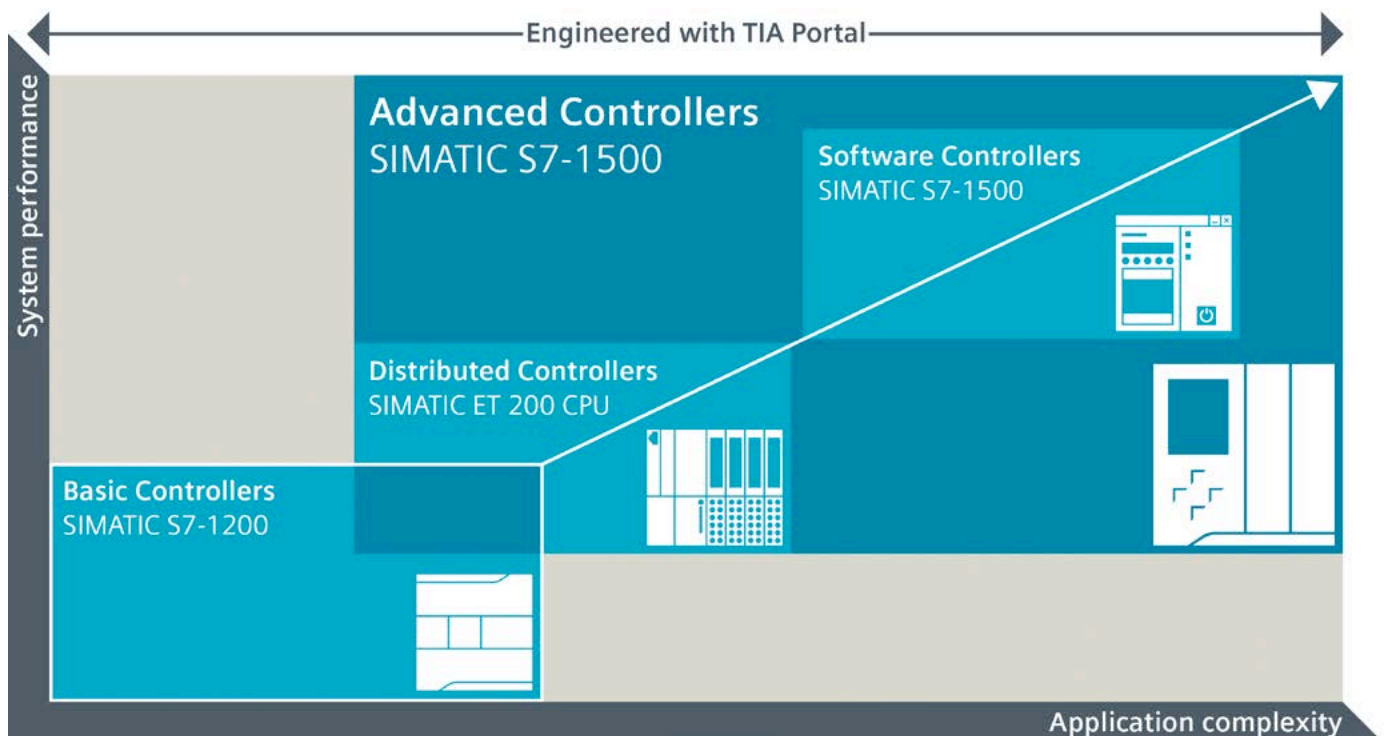
There are various CPU versions in several performance classes available for the SIMATIC S7-1500. The portfolio includes standard CPUs and standard CPUs with the option of integrating C/C++ code. With the compact CPUs, the digital and analog I/Os are integrated, counter inputs and pulse inputs can be directly recorded on the CPU. Standard and safety programs can be run on the same controller with the help of the fail-safe CPUs. The Technology CPUs extend the Motion Control functions available in all SIMATIC S7-1500 controllers for demanding solutions.

The integration of the SIMATIC S7-1500 Technology-CPU (T-CPU) into the TIA Portal is an advantage that the machine manufacturer Sollas passes on to its customers. They can configure the T-CPU in the TIA Portal themselves in the event of changes, without having to commission a packaging machine specialist.



**"The main advantage of the S7-1500 T-CPU is that it offers a host of Motion Control functions which can be used without the need for specialist knowledge of motion."**

Dirk Verbeek, Technical Manager of Sollas



Siemens offers the right controller for an extremely wide range of automation requirements. The new generation of SIMATIC Controllers, comprising Basic, Advanced, Distributed and Software Controllers, leaves a lasting impression with its scalability and continuous functionality.

**PLC Programming**

SIMATIC STEP 7 V15 Professional	Download: 6ES7822-1AE05-0YA5 DVD: 6ES7822-1AA05-0YA5
SIMATIC STEP 7 V15 Safety Advanced	Download: 6ES7833-1FA15-0YH5 DVD: 6ES7833-1FA15-0YA5
TIA Portal Multiuser V15	Download: 6ES7823-1AE05-0YA5 DVD: 6ES7823-1AA05-0YA5
SIMATIC S7-PLCSIM Advanced V2.0	Download: 6ES7823-1FE00-0YA5 DVD: 6ES7823-1FA00-0YA5
SIMATIC ODK 1500S V2.5	Download: 6ES7806-2CD03-0YG0 DVD: 6ES7806-2CD03-0YA0
SIMATIC Target 1500S™ for Simulink® V2.0	Download: 6ES7823-1BE01-0YA5 DVD: -
SIMATIC Energy Suite V15 Engineering incl. 10 Energy Objects* (2 x 5 EnO)	Download: 6AV2108-0AA04-0AH5 DVD: 6AV2108-0AA04-0AA5

## Runtime Software on CPU



OPC UA S7-1500 small (≤ CPU 1513 (F))	Article no. Download: 6ES7823-0BE00-1BA0 DVD: 6ES7823-0BA00-1BA0
OPC UA S7-1500 medium (CPU 1515/1516 (F))	Download: 6ES7823-0BE00-1CA0 DVD: 6ES7823-0BA00-1CA0
OPC UA S7-1500 large (CPU 1517/1518 (F))	Download: 6ES7823-0BE00-1DA0 DVD: 6ES7823-0BA00-1DA0
SIMATIC ProDiag S7-1500 for 250 Supervisions	Download: 6ES7823-0AE00-1AA0 DVD: 6ES7823-0AA00-1AA0
SIMATIC Energy Suite S7-1500, 5 Energy Objects* (1 x 5 EnO)	Download: 6AV2108-0CF00-0BH0 DVD: 6AV2108-0CF00-0BB0
SIMATIC Energy Suite S7-1500, 10 Energy Objects* (1 x 10 EnO)	Download: 6AV2108-0CH00-0BH0 DVD: 6AV2108-0CH00-0BB0
SIMATIC Energy Suite S7-1500, 10 Energy Objects* (2 x 5 EnO)	Download: 6AV2108-0DF00-0BH0 DVD: 6AV2108-0DF00-0BB0
SIMATIC Energy Suite S7-1500, 50 Energy Objects* (5 x 10 EnO)	Download: 6AV2108-0FH00-0BH0 DVD: 6AV2108-0FH00-0BB0
SIMATIC Energy Suite S7-1500, 100 Energy Objects* (10 x 10 EnO)	Download: 6AV2108-0HH00-0BH0 DVD: 6AV2108-0HH00-0BB0

## CPUs

**Standard-CPUs**

CPU 1511-1 PN	6ES7511-1AK01-0AB0
CPU 1513-1 PN	6ES7513-1AL01-0AB0
CPU 1515-2 PN	6ES7515-2AM01-0AB0
CPU 1516-3 PN/DP	6ES7516-3AN01-0AB0
CPU 1517-3 PN/DP	6ES7517-3AP00-0AB0
CPU 1518-4 PN/DP	6ES7518-4AP00-0AB0
CPU 1518-4 PN/DP MFP (incl. C/C++ RT, OPC UA RT)	6ES7518-4AX00-1AC0

**Compact-CPUs**

CPU 1511C-1 PN	6ES7511-1CK00-0AB0
CPU 1512C-1 PN	6ES7512-1CK00-0AB0

**F-CPUs**

CPU 1511F-1 PN	6ES7511-1FK01-0AB0
CPU 1513F-1 PN	6ES7513-1FL01-0AB0
CPU 1515F-2 PN	6ES7515-2FM01-0AB0
CPU 1516F-3 PN/DP	6ES7516-3FN01-0AB0
CPU 1517F-3 PN/DP	6ES7517-3FP00-0AB0
CPU 1518F-4 PN/DP	6ES7518-4FP00-0AB0
CPU 1518F-4 PN/DP MFP (incl. C/C++ RT, OPC UA RT)	6ES7518-4FX00-1AC0

**T-CPUs**

CPU 1511T-1 PN	6ES7511-1TK01-0AB0
CPU 1515T-2 PN	6ES7515-2TM01-0AB0
CPU 1516T-3 PN/DP	6ES7516-3TN00-0AB0
CPU 1517T-3 PN/DP	6ES7517-3TP00-0AB0
CPU 1511TF-1 PN	6ES7511-1UK01-0AB0
CPU 1515TF-2 PN	6ES7515-2UM01-0AB0
CPU 1516TF-3 PN/DP	6ES7516-3UN00-0AB0
CPU 1517TF-3 PN/DP	6ES7517-3UP00-0AB0

\* An energy object corresponds to an energy measuring station

# SIMATIC S7-1500 and ET 200MP portfolio at a glance



## Interface module for distributed I/Os



### ET 200MP PROFINET

	Article no.
IM 155-5 PN BA	6ES7155-5AA00-0AA0
IM 155-5 PN ST	6ES7155-5AA00-0AB0
IM 155-5 PN HF	6ES7155-5AA00-0AC0
<b>PROFIBUS</b>	
IM 155-5 DP ST	6ES7155-5BA00-0AB0

## I/Os



### 35-mm wide modules (without front connector)

	Article no.
DI 16 x 24 VDC HF	6ES7521-1BH00-0AB0
DI 32 x 24 VDC HF	6ES7521-1BL00-0AB0
DI 16 x 24 VDC SRC BA	6ES7521-1BH50-0AA0
DI 16 x 230 VAC BA	6ES7521-1FH00-0AA0
DI 16 x 24 ... 125 VUC HF	6ES7521-7EH00-0AB0
DQ 16 x 24 VDC/0.5A HF	6ES7522-1BH01-0AB0
DQ 32 x 24 VDC/0.5A HF	6ES7522-1BL01-0AB0
DQ 8 x 24 VDC/2A HF	6ES7522-1BF00-0AB0
DQ 8 x 230 VAC/2A ST (Triac)	6ES7522-5FF00-0AB0
DQ 8 x 230 VAC/5A ST (Relay)	6ES7522-5HF00-0AB0
DQ 16 x 230 VAC/1A ST (Triac)	6ES7522-5FH00-0AB0
DQ 16 x 230 VAC/2A ST (Relay)	6ES7522-5HH00-0AB0
DQ 16 x 24 ... 48 VUC/125 VDC/0.5A ST	6ES7522-5EH00-0AB0
AI 8 x U/I/RTD/TC ST	6ES7531-7KF00-0AB0
AI 8 x U/I HS	6ES7531-7NF10-0AB0
AI 8 x U/I/RTD/TC HF	6ES7531-7PF00-0AB0
AI 8 x U/I HF	6ES7531-7NF00-0AB0
AQ 4 x U/I ST	6ES7532-5HD00-0AB0
AQ 8 x U/I HS	6ES7532-5HF00-0AB0
AQ 4 x U/I HF	6ES7532-5ND00-0AB0

### 35-mm wide modules, failsafe (without front connector)

F-DI 16 x 24 VDC	6ES7526-1BH00-0AB0
F-DQ 8 x 24 VDC / 2A	6ES7526-2BF00-0AB0

### 25-mm wide modules (including front connector)



DI 16 x 24 VDC BA	6ES7521-1BH10-0AA0
DI 32 x 24 VDC BA	6ES7521-1BL10-0AA0
DQ 16 x 24 VDC/0.5A BA	6ES7522-1BH10-0AA0
DQ 32 x 24 VDC/0.5A BA	6ES7522-1BL10-0AA0
DI 16 x 24 VDC/DQ 16 x 24 VDC/0.5A BA	6ES7523-1BL00-0AA0
AI 4 x U/I/RTD/TC ST	6ES7531-7QD00-0AB0
AQ 2 x U/I ST	6ES7532-5NB00-0AB0
AI/AQ 4 x U/I/RTD/TC / 2 x U/I ST	6ES7534-7QE00-0AB0



## Technology modules



### Technology modules

	Article no.
TM Count 2 x 24 V, counter module 200 kHz	6ES7550-1AA00-0AB0
TM PosInput 2, position detection module	6ES7551-1AB00-0AB0
TM Timer DIDQ 16 x 24 V, Time-based I/O	6ES7552-1AA00-0AB0
TM PTO 4, interface for stepper drives	6ES7553-1AA00-0AB0
TM SIWAREX WP521 ST	7MH4980-1AA01
TM SIWAREX WP522 ST	7MH4980-2AA01

## Communication



### Serial interfaces

	Article no.
CM PtP RS232 BA, Freeport, 3964(R), USS	6ES7540-1AD00-0AA0
CM PtP RS232 HF, Freeport, 3964(R), USS, Modbus RTU	6ES7541-1AD00-0AB0
CM PtP RS422/485 BA, Freeport, 3964(R), USS	6ES7540-1AB00-0AA0
CM PtP RS422/485 HF, Freeport, 3964(R), USS, Modbus RTU	6ES7541-1AB00-0AB0

### PROFIBUS

CM 1542-5, PROFIBUS communication module	6GK7542-5DX00-0XE0
CP 1542-5, communications processor (PROFIBUS)	6GK7542-5FX00-0XE0

### Ethernet

CP 1543-1, Industrial Ethernet with Security, FTP and email	6GK7543-1AX00-0XE0
CM 1542-1, PROFINET communication module	6GK7542-1AX00-0XE0

## Accessories



### Mounting rails

Mounting rail, 160 mm (with drill hole)	6ES7590-1AB60-0AA0
Mounting rail, 245 mm (with drill hole)	6ES7590-1AC40-0AA0
Mounting rail, 482 mm (with drill hole)	6ES7590-1AE80-0AA0
Mounting rail, 530 mm (with drill hole)	6ES7590-1AF30-0AA0
Mounting rail, 830 mm (with drill hole)	6ES7590-1AJ30-0AA0
Mounting rail, 2,000 mm (without drill hole) for customization	6ES7590-1BC00-0AA0

### Front connectors

Front connector for 35-mm wide modules; screw terminal, 40-pin	6ES7592-1AM00-0XB0
Front connector for 35-mm wide modules; Push-in terminal, 40-pin	6ES7592-1BM00-0XB0

### Memory cards



SIMATIC Memory Card 4 MB	6ES7954-8LC02-0AA0
SIMATIC Memory Card 12 MB	6ES7954-8LE03-0AA0
SIMATIC Memory Card 24 MB	6ES7954-8LF03-0AA0
SIMATIC Memory Card 256 MB	6ES7954-8LL03-0AA0
SIMATIC Memory Card 2 GB	6ES7954-8LP02-0AA0
SIMATIC Memory Card 32 GB	6ES7954-8LT03-0AB0

## Power supply and system wiring



### Article no.

#### PM load current supply

PM 70 W, 120/230 VAC

**6EP1332-4BA00**

PM 190 W, 120/230 VAC

**6EP1333-4BA00**

#### PS system power supply

System power supply 25 W 24 VDC

**6ES7505-0KA00-0AB0**

System power supply 60 W 24/48/60 VDC

**6ES7505-0RA00-0AB0**

System power supply 60 W 120/230 VAC/DC

**6ES7507-0RA00-0AB0**

System power supply 60 W 24/48/60 VDC HF

**6ES7505-0RB00-0AB0**

## Related topics



#### SIPLUS extreme

Specially coated automation and drive components for use under particularly demanding ambient conditions. You can find information on SIPLUS extreme in the Siemens Industry Mall or at [siemens.com/siplus-extreme](http://siemens.com/siplus-extreme)

#### SIMATIC HMI

The SIMATIC HMI Comfort Panels are perfectly suited for efficient implementation of demanding operator control and process monitoring solutions in conjunction with the Advanced Controllers SIMATIC S7-1500. [siemens.com/comfort-panels](http://siemens.com/comfort-panels)

#### SINAMICS Converters

SINAMICS S210 – The simple, high-performance and safe servodrive system. With the converter that is specially designed for use with the newly developed SIMOTICS S-1FK2 motors and the single-cable solution OCC, Siemens offers a new servodrive system for highly dynamic motion control applications. [siemens.com/sinamics-s210](http://siemens.com/sinamics-s210)

#### SIMATIC TOP connect

Complete connection system for the input and output modules of the SIMATIC S7-1500 in two versions: The fully modular connection with front plug-in module, connecting cables and I/O modules for sensors/actuators in the field, and the flexible connection with bundled individual wires for connecting sensors/actuators in the control cabinet. [siemens.com/simatic-tc](http://siemens.com/simatic-tc)

## Promotional packages

### Article no.

#### SIMATIC S7-1500 Starter Kit

SIMATIC S7-1500 Starter Kit with compact CPU 1511C-1 PN,  
SIMATIC memory card 4 MB,  
Mounting rail 160 mm,  
Power supply PM 70 W 120/230 V AC  
STEP 7 Professional V15, 365-day license

**6ES7511-1CK01-4YB5**



#### PowerPack STEP 7 Professional V15

Conversion of the Starter Kit to a full license:  
Floating license for STEP 7 Professional V15  
Only valid if ordered together with a  
software update (SUS)  
Prerequisite is a STEP 7 Professional V15,  
365-day license, license key download

**6ES7822-1BE05-0YC5**

**6ES7822-1AE00-0YY0**

## Configurator

#### TIA Selection Tool

You can use the TIA Selection Tool to select, configure and order devices for Totally Integrated Automation (TIA). It not only combines the familiar configurators for automation technology in a single tool, but can do much more. [siemens.com/tia-selection-tool](http://siemens.com/tia-selection-tool)

# Highlights

## SIMATIC S7-1500 and ET 200MP

### 1 Efficient engineering

The support of all IEC 61131-3 programming languages (LAD/FBD, STL, SCL and Graph) and of high-level languages such as C++ enable efficient programming of the Advanced Controllers in the shared engineering framework TIA Portal.

### 2 Innovative design

The onboard display of the CPU supports diagnostics and initial commissioning with functions such as check tag status and IP address assignment. Cabling is convenient thanks to pre-wiring positions of the I/O modules and jumper links.

### 3 High performance

You can achieve productivity and product quality in your manufacturing process with the advanced controller thanks to the backplane bus and shortest reaction times. The PROFINET connection with deterministic dynamic time response ensures reproducibility and precision in the  $\mu$ s range.

### 4 Reliable diagnostics

The automatic generation of system and user diagnostics enables quick error detection. Any errors can be quickly localized on-site thanks to 1:1 LED channel assignment in the I/O modules.

### 5 Safety Integrated

The Advanced Controllers combine functions for standard and fail-safe tasks. The high-density channel, fail-safe I/O modules can be directly addressed while doing the engineering.

### 6 Technology Integrated

Motion Control tasks can be programmed directly in the controller – starting with speed-controlled axes through to camming. A variety of technology functions such as pulse width modulation (PWM) can be implemented.

### 7 Security Integrated

Integrated copy and know-how protection functions protect intellectual property and protect the controller against cyber attacks.

#### Advanced Controllers

		Modular design			Compact design
		Standard-CPUs	Technology-CPUs	Multifunctional platform	Compact-CPUs
	CPU-types	CPU 1511, 1513, 1515, 1516, 1517, 1518	CPU 1511T, 1515T, 1517T, 1516T	CPU 1518 MFP	CPU 1511C, 1512C
1	Efficient engineering	IEC languages C/C++	x –	x x	x –
2	Innovative design	Onboard-I/Os PROFINET interfaces/ ports (max.)	– 1/2 to 3/4	– 3/4	x 1/2
3	High performance	Bit performance Communication options Program memory Data memory	60 ns to 1 ns OPC UA, PROFINET (including PROFI-safe**, PROFInergy and PROFIdrive), PtP, Modbus RTU and Modbus TCP 150 KB to 6 MB 1 MB to 20 MB	60 ns to 2 ns 1 ns 4 to 6 MB 20 MB additional 20 MB for executing ODK applications	60 ns to 48 ns PROFIBUS ***, TCP/IP, 175 to 250 KB 1 MB
4	Reliable diagnostics	Integrated system diagnostics	x	x	x
5	Safety Integrated	Fail-safe	x	x	–
6	Technology Integrated	Motion Control functions	<ul style="list-style-type: none"> <li>External encoder, output cam, measuring input</li> <li>Speed and positioning axis</li> <li>Relative synchronism</li> <li>PID controllers (integrated)</li> <li>Counters, pulse width modulation, pulse train outputs (with technology modules)</li> </ul>	<ul style="list-style-type: none"> <li>External encoder, output cam, measuring input</li> <li>Speed and positioning axis</li> <li>Relative synchronism</li> <li>PID controllers (integrated)</li> <li>Counters, pulse width modulation, pulse train outputs (with technology modules)</li> <li>Absolute synchronism, camming</li> </ul>	<ul style="list-style-type: none"> <li>External encoder, output cam, measuring input</li> <li>Speed and positioning axis</li> <li>Relative synchronism</li> <li>PID controllers (integrated)</li> <li>Counters, pulse width modulation, pulse train outputs (integrated)</li> </ul>
7	Security Integrated	Functions	Know-how, copy, access protection and firewall		

\*\* Only for the modular design

\*\*\* For Compact-CPUs via CM

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Siemens offers automation and drives products with industrial security functions that support safe operation of the plant or machine. They are an important component in a holistic industrial security concept. With this in mind, our products undergo continuous development. We therefore recommend that you keep yourself informed with respect to our product updates, and that you only use the latest versions in each case. You can find information on this at: <http://support.automation.siemens.com>. There you can also register for a newsletter specifically about these products.

To ensure the secure operation of a plant or machine, it is also necessary to take suitable preventive action (e.g. cell protection concept) and to integrate the automation and drive components into a state-of-the-art, holistic industrial security policy for the entire plant or machine. Products used from other manufacturers should also be taken into account here.

For more information, go to  
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## Advanced Controllers SIMATIC S7-1500 with ET 200MP

- New in portfolio: TF-CPU's, IM 155 BA and PS 60 W DC HF for retentivity
- Efficient engineering thanks to TIA Portal
- Latest references

Discover more:  
[siemens.com/s7-1500](http://siemens.com/s7-1500)