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

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.

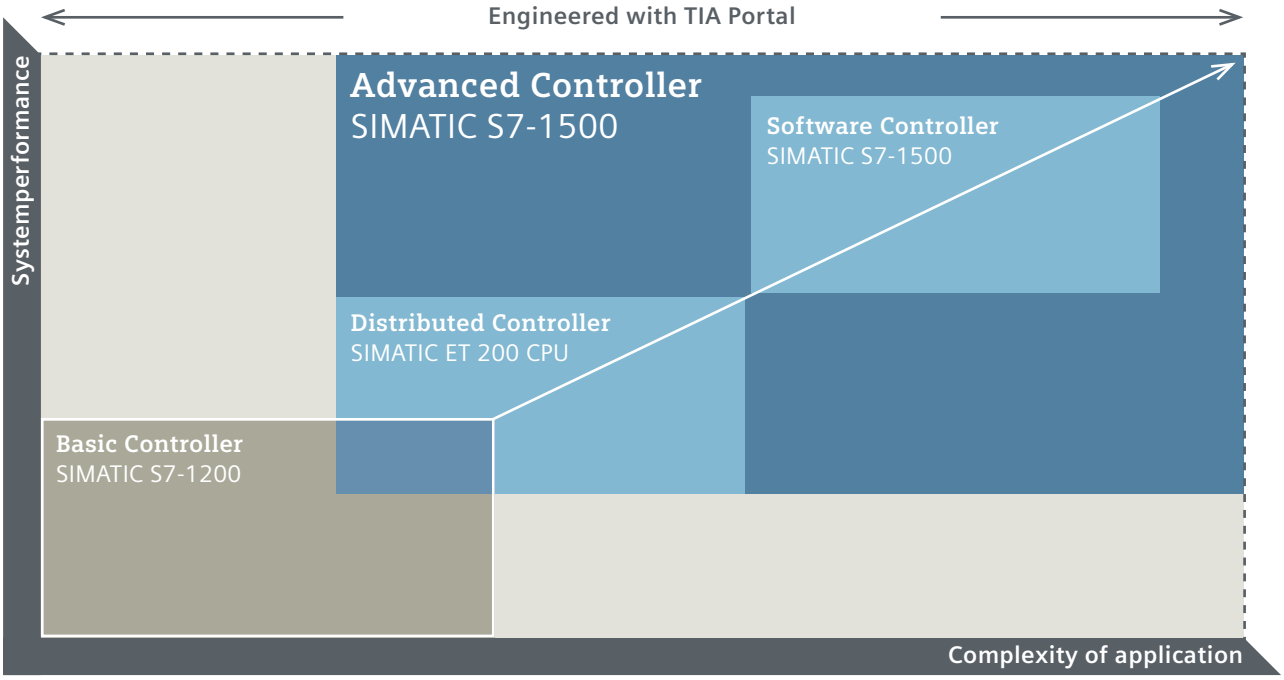
Scalable performance and functionality

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.

Engineering Software

	Article no.
PLC Programming	
SIMATIC STEP 7 V14 Professional	Download: 6ES7822-1AE04-0YA5 DVD: 6ES7822-1AA04-0YA5
SIMATIC STEP 7 V14 Safety Advanced	Download: 6ES7833-1FA14-0YH5 DVD: 6ES7833-1FA14-0YA5
TIA Portal Multiuser V14	Download: 6ES7823-1AE04-0YA5 DVD: 6ES7823-1AA04-0YA5
SIMATIC ODK 1500S V2.0	Download: 6ES7806-2CD02-0YG0 DVD: 6ES7806-2CD02-0YA0
SIMATIC S7-PLCSIM Advanced	Download: 6ES7823-1FE00-0YA0 DVD: 6ES7823-1FA00-0YA0
SIMATIC Energy Suite V14 Engineering including 10 Energy Objects*	Download: 6AV2108-0AA04-0AH5 DVD: 6AV2108-0AA04-0AA5
SIMATIC Target 1500S™ for Simulink® V1.0	Download: 6ES7823-1BE00-0YA5 DVD: -

Runtime Software on CPU

	Article no.
SIMATIC Energy Suite 5 Energy Objects*	Download: 6AV2108-0CF00-0BH0 DVD: 6AV2108-0CF00-0BB0
SIMATIC Energy Suite 10 Energy Objects*	Download: 6AV2108-0DF00-0BH0 DVD: 6AV2108-0DF00-0BB0
SIMATIC Energy Suite 50 Energy Objects*	Download: 6AV2108-0FH00-0BH0 DVD: 6AV2108-0FH00-0BB0
SIMATIC Energy Suite 100 Energy Objects*	Download: 6AV2108-0HH00-0BH0 DVD: 6AV2108-0HH00-0BB0
SIMATIC ProDiag S7-1500 for 250 Supervisions	Download: 6ES7823-0AE00-1AA0 DVD: 6ES7823-0AA00-1AA0
OPC UA S7-1500 small (≤ CPU 1513 (F))	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

CPUs

	Article no.
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 ODK	6ES7518-4AP00-3AB0
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 ODK	6ES7518-4FP00-3AB0
T-CPUs	
CPU 1511T-1 PN	6ES7511-1TK01-0AB0
CPU 1515T-2 PN	6ES7515-2TM01-0AB0
CPU 1517T-3 PN/DP	6ES7517-3TP00-0AB0
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

Distributed systems

	Article no.
ET 200MP	
PROFINET	
IM 155-5 PN ST	6ES7155-5AA00-0AB0
IM 155-5 PN HF	6ES7155-5AA00-0AC0
PROFIBUS	
IM 155-5 DP ST	6ES7155-5BA00-0AB0

I/Os

	Article no.
35-mm wide modules (without front connector)	
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/R/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
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

	Article no.
TMs	
TM Count 2 x 24 V	**6ES7550-1AA00-0AB0**
TM PosInput 2	**6ES7551-1AB00-0AB0**
TM Timer DIDQ 16 x 24 V	**6ES7552-1AA00-0AB0**
TM SIWAREX WP521 ST	**7MH4980-1AA01**
TM SIWAREX WP522 ST	**7MH4980-2AA01**

Communication

	Article no.
Serial interfaces	
CM PtP, RS232 BA	**6ES7540-1AD00-0AA0**
CM PtP, RS232 HF	**6ES7541-1AD00-0AB0**
CM PtP, RS422/485 BA	**6ES7540-1AB00-0AA0**
CM PtP, RS422/485 HF	**6ES7 541-1AB00-0AB0**
PROFIBUS	
CM 1542-5, PROFIBUS communication module	**6GK7542-5DX00-0XE0**
CP 1542-5 communications processor (PROFIBUS)	**6GK7542-5FX00-0XE0**
Ethernet	
CP 1543-1, Ethernet Security	**6GK7543-1AX00-0XE0**
CM 1542-1, PROFINET communication module	**6GK7542-1AX00-0EX0**

Accessories

	Article no.
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 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**
SIMATIC Memory Card 4 MB	**6ES7954-8LC02-0AA0**
SIMATIC Memory Card 12 MB	**6ES7954-8LE02-0AA0**
SIMATIC Memory Card 24 MB	**6ES7954-8LF02-0AA0**
SIMATIC Memory Card 256 MB	**6ES7954-8LL02-0AA0**
SIMATIC Memory Card 2 GB	**6ES7954-8LP02-0AA0**
SIMATIC Memory Card 32 GB	**6ES7954-8LT02-0AB0**
Front cover for DP interface of the CPU 1517/1518, 1 unit	**6ES7591-8AA00-0AA0**
E-coding element type F – spare part package	**6ES7592-6EF00-1AA0**
Front cover for fail-safe modules – spare part package	**6ES7528-0AA10-7AA0**

Spare parts

	Article no.
Display	
Display for CPU 1511(T/F), CPU 1511C, CPU 1512C and CPU 1513(F)	**6ES7591-1AA00-0AA0**
Display for CPU 1515(T/F), 1516(F), 1517(T/F/TF) and 1518(F)	**6ES7591-1BA00-0AA0**

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**

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

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

SINAMICS servo drive system

SINAMICS V90
The performance-optimized and easy-to-use servo drive system comprises a SINAMICS V90 servo drive with PROFINET and a SIMOTICS S-1FL6 servomotor.
siemens.com/sinamics-v90

Promotional packages

	Article no.
SIMATIC S7-1500 Starter Kit	
STEP 7 Professional V14, 365-day license SIMATIC S7-1500 CPU 1511-1 PN, SIMATIC Memory Card, 4 MB, I/O module DI 16 x 24 VDC, DQ 16 x 24 VDC/0.5 A ST, mounting rail 160 mm, front connector, power module PM 70 W 120/230 VAC SIMATIC TOP connect: Front connector module, push-in, connector cable, 3-conductor connection	**6ES7511-1AK04-4YB5**
PowerPack STEP 7 Professional V14	
Conversion of the Starter Kit to a full license: Floating license for STEP 7 Professional V14 Only valid if ordered together with a software update Prerequisite is a STEP 7 V14 Trial 365 license. License key download	**6ES7822-1BE03-0YC5**

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 µs 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	ODK-CPU	Compact-CPUs
	CPU-types		CPU 1511, 1513, 1515, 1516, 1517, 1518	CPU 1511T, 1515T, 1517T	CPU 1518 ODK	CPU 1511C, 1512C
1	Efficient engineering	IEC languages	x	x	x	x
		C/C++	–	–	x	–
2	Innovative design	Onboard-IOs	–	–	–	x
		PROFINET interfaces/ ports (max.)	1/2 to 3/4	1/2 to 2/3	3/4	1/2
3	High performance	Bit performance	60 ns to 1 ns	60 ns to 2 ns	1 ns	60 ns to 48 ns
		Communication options	OPC UA, PROFINET (including PROFIsafe**, PROFIenergy and PROFIdrive), PROFIBUS ***, TCP/IP, PtP, Modbus RTU and Modbus TCP			
		Program memory Data memory	150 KB to 6 MB 1 MB to 20 MB	150 KB to 3 MB 1 MB to 8 MB	4 to 6 MB 20 MB additional 20 MB for executing ODK applications	175 to 250 KB 1 MB
4	Reliable diagnostics	Integrated system diagnostics	x	x	x	x
5	Safety Integrated	Fail-safe	x	x	x	–
6	Technology Integrated	Motion Control functions	• External encoder, output cam, measuring input • Speed and positioning axis • Relative synchronism • PID controllers (integrated) • Counters, pulse width modulation, pulse train outputs (with technology modules)	• External encoder, output cam, measuring input • Speed and positioning axis • Relative synchronism • PID controllers (integrated) • Counters, pulse width modulation, pulse train outputs (with technology modules) • Absolute synchronism, camming	• External encoder, output cam, measuring input • Speed and positioning axis • Relative synchronism • PID controllers (integrated) • Counters, pulse width modulation, pulse train outputs (with technology modules)	• External encoder, output cam, measuring input • Speed and positioning axis • Relative synchronism • PID controllers (integrated) • Counters, pulse width modulation, pulse train outputs (integrated)
7	Security Integrated	Functions	Know-how, copy, access protection and firewall			

** Only for the modular design *** For Compact-CPUs via CM

Publisher
Siemens AG 2016

Digital Factory
P.O. Box 48 48
90026 Nuremberg, Deutschland

Article-Nr.: DFFA-B10140-00-7600
Printed in Germany
Dispo 06337
fb7025 BR 04165.0

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 a ccount here.
For more information, go to
www.siemens.com/industrialsecurity

Follow us at
twitter.com/siemensindustry
youtube.com/siemens