

SIMATIC S7-1500 Advanced Controllers

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SIMATIC S7-1500 Advanced Controllers

Introduction

S7-1500

Overview



With its extended ambient conditions, the SIMATIC S7-1500 can be used almost anywhere. Many controllers can be operated in a temperature range from -30 °C to +60 °C and at altitudes up to 5,000 m as standard. A wide range of SIPLUS Controllers is available for requirements beyond this.

The SIMATIC S7-1500 is

- a modular, scalable, and universally usable system in degree of protection IP20
- the system solution for a variety of automation applications in discrete automation
- maximum performance combined with excellent usability
- configurable in the Totally Integrated Automation Portal with STEP 7 Professional V12 or higher

Performance

- Increase in performance through
 - Faster command execution
 - Language extensions
 - New data types
 - Faster backplane bus
 - Optimized code generation
- High-performance communication:
 - PROFINET IO (2-port switch) as standard interface; from CPU 1515-2 PN, one or more additional integrated PROFINET interfaces, e.g. for network separation, for connecting further PROFINET devices or for high-speed communication as an I-Device
 - OPC UA server (data access) and client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems
 - Expandable with communications modules for bus systems and point-to-point connection

Integrated technology

- Motion Control integrated without additional modules:
 - Standardized blocks (PLCopen) for connection of analog and PROFIdrive-capable drives
 - The Motion Control functionality supports speed axes, positioning axes, relative synchronous operation (synchronizing without specification of the synchronized position), as well as external encoders, output cams and probes.
 - Extended Motion Control functions such as velocity gearing, absolute synchronous operation (synchronizing with specification of the synchronized position), camming and functions for controlling kinematics are also integrated in the technology CPUs.
- Comprehensive trace functions for all CPU tags for real-time diagnostics and sporadic error detection; for effective commissioning and quick optimization of drives and controls
- Comprehensive control functionalities:
 - e.g. easily configurable blocks for automatic optimization of the control parameters for optimum control quality
- Additional functions through available technology modules:
 - e.g. high-speed counting, position detection, or measurement functions for signals up to 1 MHz

Safety Integrated

- Protection of personnel and machinery – within the framework of an integrated complete system
- Fail-safe SIMATIC S7-1500(T)F Controllers for processing standard and safety programs on the same controller. The fail-safe and standard user programs are created in the TIA Portal with the same editors; fail-safe data, for example, can therefore be evaluated like standard data in the standard user program. Due to this integration the system benefits and the comprehensive functionality of SIMATIC are also available for fail-safe applications.

Redundant systems

- Redundant S7-1500R/H CPUs for applications where availability of the PLC is crucial.
- Both CPUs are connected with the I/O stations via a PROFINET IO ring. Synchronization for the S7-1500R is via this ring, or via separate FOC synchronization cables for the S7-1500H. In the event of a CPU failure, the back-up CPU automatically assumes control of the process. No data is lost and the process can be continued extremely quickly. The PROFINET IO ring ensures that all nodes remain accessible in the event of a fieldbus interruption.
- The engineering corresponds to that of a standard CPU. The TIA Portal and redundant CPUs handle the synchronization of the programs and data. All without any additional overhead for the user.

SIMATIC S7-1500 Advanced Controllers

Introduction

S7-1500

Overview

Security Integrated

- Password-based know-how protection against unauthorized read-out and modification of program blocks
- Copy protection for greater protection against unauthorized copying of program blocks:
With copy protection, individual blocks on the SIMATIC Memory Card can be tied to its serial number so that the block can only be run if the configured memory card is inserted into the CPU.
- Rights concept with four different authorization levels:
Different access rights can be assigned to various user groups. The new protection level 4 makes it possible to also restrict communication to HMI devices.
- Improved manipulation protection:
Changed or unauthorized transfers of engineering data are detected by the controller.
- For use of an Ethernet CP (CP 1543-1):
 - Additional access protection by means of a firewall
 - Establishment of secure VPN connections

Design and handling

- CPUs with display for plain text information (display simulator tool on the internet):
 - Information about article numbers, firmware version, and the serial number of all connected modules can be displayed
 - Setting the IP address of the CPU and additional network settings possible directly on site, without programming device on the display
 - Display of occurring error messages directly as plain text message, meaning reduction in downtime
- Uniform front connectors for all modules and integrated potential bridges for flexible potential group formation simplify stock keeping and reduce wiring effort
- Integrated DIN rail in the S7-1500 mounting rail:
quick and easy installation of additional components such as miniature circuit breakers, relays, etc.
- Central expansion with signal modules:
for flexible adaptation to any application
- System cabling for digital signal modules:
for fast and clearly arranged connecting to sensors and actuators in the field and simple wiring inside the control cabinet
- Power supply:
 - Load current supply modules (Power Modules) for supplying the module with 24 V
 - Power supply modules to supply power to the internal module electronics via the backplane bus
 - System power supply modules for retentively storing the entire work memory (max. 100 MB) on the controller
- Distributed expansion:
 - Use of up to 30 signal modules, communications modules, and technology modules via the PROFINET IM 155-5 interface module for the ET 200MP I/O system
 - No difference in terms of handling and system functions in central and distributed operation

Integrated system diagnostics

- Integrated system diagnostics for CPUs, activated by default:
 - Consistent plain text display of system diagnostic information in the display, TIA Portal, HMI, and web server, even for drive messages. Messages are updated even if the CPU is in STOP state.
 - System diagnostics integrated in the CPU firmware. Configuration by user not required. The diagnostics is automatically updated on configuration changes.

Support of SIMATIC ProDiag S7-1500

- ProDiag is a concept for the easy creation of machine and plant diagnostics. It increases availability and supports with fault analysis and elimination on site.

Data log (archives) and recipes

- SIMATIC Memory Card:
 - Plug-in load memory
 - Permits firmware updates
 - Storage option for STEP 7 projects (including comments and symbols), additional documentation, or csv/ASCII files (for recipes and archives)
 - Easy access to plant-relevant operating data and configuration data with Office tools via the SD card reader (two-way data exchange from and to the PLC)
- Integrated web server:
 - Easy access to plant-relevant operating data and configuration data, Motion Control diagnostics and display of trace recordings via a web browser

Approvals

The SIMATIC S7-1500 complies with the following national and international standards:

- cULus approval
- cULus HazLoc approval
- FM approval
- ATEX approval (only for 24 V; not for 230 V)
- UKEX approval
- CCCEX approval
- CE
- RCM (formerly C-Tick)
- KCC
- UKCA marking
- IECEx (24 V only; not for 230 V)
- EN 61000-6-4
- EN 60068-2-1/-2/-6/-14/-27/-30/-32
- EN 61131-2
- IEC 62443-4-1:2018 & IEC 62443-4-2:2019

You can find the marine approvals available for the S7-1500 on the internet (SIMATIC Customer Support) under <http://www.siemens.com/automation/support>.

The S7-1500 system is also suitable for operating at elevations up to 5000 m.

SIMATIC S7-1500 Advanced Controllers

Introduction

S7-1500

Technical specifications

General technical specifications SIMATIC S7-1500

Degree of protection	IP20 acc. to IEC 60 529
Ambient temperature	
• Horizontal installation	0...60 °C (display: at an operating temperature of typ. 50 °C, the display is switched off.)
• Vertical installation	0... 40 °C (display: at an operating temperature of typ. 40 °C, the display is switched off.)
Relative humidity	10 %...95 %, no condensation
Atmospheric pressure	From 1080 to 795 hPa (corresponds to an altitude of -1000 to +2000 m)
Insulation	
• < 50 V	707 V DC test voltage (type test)
• < 150 V	2200 V DC test voltage
• < 250 V	2500 V DC test voltage
Electromagnetic compatibility	Requirements of the EMC directive; interference immunity according to IEC 61000-6-2
• Pulse-shaped disturbance variables	Test according to: Electrostatic discharge according to IEC 61000-4-2, burst pulses according to IEC 61000-4-4, energy single pulse (surge) according to IEC 61000-4-5,
• Sinusoidal disturbance variables	Test according to: HF irradiation according to IEC 61000-4-3, HF decoupling according to IEC 61000-4-6
• Emission of radio frequency interference	Requirements of the EMC directive; interference emission according to EN 61000-6-4 Interference emission according to EN 61000-6-4 Interference emission of electromagnetic fields according to EN 61000-6-4
Mechanical stress	
• Vibrations	Testing according to EN 60068-2-6 Tested with: 5 Hz ≤ f ≤ 8.4 Hz, constant amplitude 7 mm; 9 Hz ≤ f ≤ 150 Hz, constant acceleration 2 g; duration of vibration: 10 frequency passes per axis in each direction of the 3 mutually perpendicular axes
• Shock	Testing according to EN 60068-2-27 Tested with: Half-wave: strength of shock 15 g peak value, 11 ms duration; shock direction: 3 shocks each in ± direction in each of the 3 mutually vertical axes

General technical data of SIPLUS S7-1500

Ambient temperature range	-40/-25/-20 ... +55/60/70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Extended range of ambient conditions	
• with reference to ambient temperature, air pressure and altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m) 0° C
• at cold restart, min.	
Relative humidity	
• with condensation, max.	100 %; RH incl. bedewing/frost (no commissioning in bedewed state)
Resistance	
• to biologically active substances/compliance with EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation.
• to chemically active substances/compliance with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation.
• to mechanically active substances, compliance with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on unused interfaces during operation.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1511-1 PN

Overview



- Entry-level CPU in the S7-1500 Controller product range
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call, Support
 - OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500, CPU 1511-1 PN

Central processing unit with 300 KB work memory for program and 1.5 MB for data;
1st interface: PROFINET IRT with 2-port switch, 25 ns bit performance,
SIMATIC Memory Card required

6ES7511-1AL03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1511-1 PN

Ordering data	Article No.		Article No.
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	Power supply connector	
System power supply		Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	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 pack = 10 units.	6GK1901-1BB10-2AB0
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	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 pack = 50 units.	6GK1901-1BB10-2AE0
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10
Load current supply		Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	SIMATIC S7-1500, spare part, display module For 35 mm S7-1500 CPUs with firmware >= V3.0	6ES7591-1AB10-0AA0
		SIMATIC S7-1500, spare part, cover flap 35 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit	6ES7591-4AB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1511-1 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1513-1 PN

Overview



- The CPU for applications with medium requirements for program/data storage in the S7-1500 Controller product range
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500, CPU 1513-1 PN

Central processing unit with 600 KB work memory for program and 2.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 25 ns bit performance, SIMATIC Memory Card required

6ES7513-1AM03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1513-1 PN

Ordering data	Article No.		Article No.
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	IE FC RJ45 plugs	
System power supply		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 pack = 1 unit.	6GK1901-1BB10-2AA0
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	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 pack = 10 units.	6GK1901-1BB10-2AB0
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	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 pack = 50 units.	6GK1901-1BB10-2AE0
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
Load current supply		Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	SIMATIC S7-1500, spare part, display module For 35 mm S7-1500 CPUs with firmware >= V3.0	6ES7591-1AB10-0AA0
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	SIMATIC S7-1500, spare part, cover flap 35 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit	6ES7591-4AB00-0AA0
Power supply connector			
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0		

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1513-1 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Delivery and service period: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1515-2 PN

Overview



- The CPU for applications with medium to high requirements for program/data storage in the S7-1500 Controller product range
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500, CPU 1515-2 PN
Central processing unit with
1 MB work memory for program and
4.5 MB for data,
1st interface: PROFINET IRT with
2-port switch,
2nd interface: PROFINET RT,
6 ns bit performance,
SIMATIC Memory Card required
Observe approvals and certificates
according to entry 109817466 at
<https://support.industry.siemens.com/cs/document/109817466!>

6ES7515-2AN03-0AB0

Accessories

SIMATIC Memory Card

**SIMATIC S7, memory card
for S7-1x 00 CPU/SINAMICS**
3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

**SIMATIC S7, memory card
for S7-1x00 CPU/SINAMICS**
3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

**SIMATIC S7, memory card
for S7-1x00 CPU/SINAMICS**
3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

**SIMATIC S7, memory card
for S7-1x00 CPU**
3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

**SIMATIC S7, memory card
for S7-1x 00 CPU**
3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

**SIMATIC S7, memory card
for S7-1x 00 CPU**
3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

**SIMATIC S7-1500, mounting rail
160 mm (approx. 6.3 inches)**

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AB60-0AA0

**SIMATIC S7-1500, mounting rail
245 mm (approx. 9.6 inches)**

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AC40-0AA0

**SIMATIC S7-1500, mounting rail
482.6 mm (approx. 19 inches)**

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AE80-0AA0

**SIMATIC S7-1500, mounting rail
530 mm (approx. 20.9 inches)**

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AF30-0AA0

**SIMATIC S7-1500, mounting rail
830 mm (approx. 32.7 inches)**

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1515-2 PN

Ordering data

Article No.

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

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 pack = 1 unit.

Article No.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

70 mm for S7-1500 CPUs

6ES7591-1BB00-0AA0

SIMATIC S7-1500, spare part, cover flap

70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1515-2 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Delivery and service period: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1517-3 PN

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking.
- Extremely high processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Two PROFINET IO IRT interfaces (X1 and X2), each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- PROFINET interface X3 with separate IP address for network separation and Gbit Ethernet to transmit data at a speed of 1 Gbps.
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFINET
- Integrated Motion Control functionalities for controlling speed and positioning axes, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500, CPU 1517-3 PN	6ES7517-3AQ10-0AB0
Accessories	
SIMATIC Memory Card	
SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS 3.3 V Flash, 4 MB	6ES7954-8LC04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 12 MB	6ES7954-8LE04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 24 MB	6ES7954-8LF04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU 3.3 V Flash, 256 MB	6ES7954-8LL04-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 2 GB	6ES7954-8LP04-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 32 GB	6ES7954-8LT04-0AA0
SIMATIC S7-1500 mounting rail	
SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AB60-0AA0
SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AC40-0AA0
SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AE80-0AA0
SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AF30-0AA0
SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AJ30-0AA0
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1517-3 PN

Ordering data	Article No.		Article No.
System power supply		IE FC RJ45 plugs	
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	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 pack = 10 units.	6GK1901-1BB10-2AB0
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	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 pack = 50 units.	6GK1901-1BB10-2AE0
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10
Load current supply		Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	SIMATIC S7-1500, spare part, display module 70 mm for S7-1500 CPUs	6ES7591-1BB00-0AA0
Power supply connector		SIMATIC S7-1500 spare part, cover flap 70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit	6ES7591-4BB00-0AA0
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0		

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1517-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Prof. V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Delivery and service period: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1518-3 PN

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking
Very high processing speed for binary and floating-point arithmetic
- Configurable performance boost (+25%)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Two PROFINET IO IRT interfaces (X1 and X2), each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- PROFINET interface X3 with separate IP address for network separation and Gbit Ethernet to transmit data at a speed of 1 Gbps.
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFINET
- Integrated Motion Control functionalities for controlling speed and positioning axes, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500, CPU 1518-3 PN **6ES7518-3AT10-0AB0**

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS **6ES7954-8LC04-0AA0**
3.3 V Flash, 4 MB

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS **6ES7954-8LE04-0AA0**
3.3 V Flash, 12 MB

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS **6ES7954-8LF04-0AA0**
3.3 V Flash, 24 MB

SIMATIC S7, memory card for S7-1x00 CPU **6ES7954-8LL04-0AA0**
3.3 V Flash, 256 MB

SIMATIC S7, memory card for S7-1x 00 CPU **6ES7954-8LP04-0AA0**
3.3 V Flash, 2 GB

SIMATIC S7, memory card for S7-1x 00 CPU **6ES7954-8LT04-0AA0**
3.3 V Flash, 32 GB

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches) **6ES7590-1AB60-0AA0**

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches) **6ES7590-1AC40-0AA0**

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) **6ES7590-1AE80-0AA0**

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) **6ES7590-1AF30-0AA0**

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) **6ES7590-1AJ30-0AA0**

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) **6ES7590-1BC00-0AA0**

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail **6ES7590-5AA00-0AA0**

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1518-3 PN

Ordering data

Article No.

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

70 mm for S7-1500 CPUs

6ES7591-1BB00-0AA0

SIMATIC S7-1500, spare part, cover flap,

70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1518-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20; floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Delivery and service period: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1516-3 PN/DP

Overview



- The CPU with a large program and data memory in the S7-1500 Controller product range for applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- PROFIBUS DP master interface
- UA server and client as runtime option for easy connection of the SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500, CPU 1516-3 PN/DP

Central processing unit with
2 MB work memory for program and
7.5 MB for data
1st interface: PROFINET IRT with
2-port switch,
2nd interface: PROFINET RT,
3rd interface: PROFIBUS,
6 ns bit performance,
SIMATIC Memory Card required
*** Observe approvals and
certificates according to entry
109817466 at
<https://support.industry.siemens.com/cs/document/109817466!> ***

6ES7516-3AP03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1516-3 PN/DP

Ordering data

Article No.

Article No.

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

PROFIBUS FastConnect RS485 bus connector with 90° cable outlet

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

Without PG socket

6ES7972-0BA70-0XA0

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

With PG socket

6ES7972-0BB70-0XA0

PROFIBUS FC standard cable GP

2-core bus cable, shielded, special design for fast installation, delivery unit:
max. 1000 m, minimum order quantity 20 m, sold by the meter.

6XV1830-0EH10

PROFIBUS FC robust bus cable with PUR protective jacket for use in environments subject to harsh chemicals and mechanical stress

2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0JH10

PROFIBUS FC flexible cable GP

2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.

6XV1831-2K

PROFIBUS FC trailing cable

PROFIBUS FC trailing cable
Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-3EH10

PROFIBUS FC trailing cable

PROFIBUS FC trailing cable
Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1831-2L

PROFIBUS FC FOOD bus cable with PE protective jacket for use in the food, beverages and tobacco industries, 2-wire, shielded

Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0GH10

PROFIBUS FC underground cable, underground cable 2-core, shielded

Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-3FH10

PROFIBUS FC FRNC cable GP, bus cable, flame-retardant and halogen-free bus cable with copolymer sheath

FRNC, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0LH10

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1516-3 PN/DP

Ordering data

Article No.

PROFIBUS FastConnect stripping tool

Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.

6GK1905-6AA00

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

70 mm for S7-1500 CPUs

6ES7591-1BB00-0AA0

SIMATIC S7-1500, spare part, cover flap

70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4BB00-0AA0

Article No.

STEP 7 Professional V20

Target system:

SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
 - Windows 10 Professional Version 22H2
 - Windows 10 Enterprise Version 22H2
 - Windows 10 Enterprise 2019 LTSC & 2021 LTSC

Windows 11 (64-bit)

- Windows 11 Professional Version 22H2 & 23H2
- Windows 11 Enterprise Version 22H2 & 23H2

Windows Server (64-bit)

- Windows Server 2019 Standard (full installation)
- Windows Server 2022 Standard (full installation)

Type of delivery:

9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements specification can be found at <https://www.siemens.com/compatool>

6ES7822-1AA24-0YA5

SIMATIC STEP 7 Professional V20, floating license download¹⁾

Engineering software in the TIA Portal; software, documentation and license key for downloading¹⁾; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements specification can be found at <https://www.siemens.com/compatool>

Consignee email address required for delivery

6ES7822-1AE24-0YA5

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1516-3 PN/DP

Ordering data	Article No.		Article No.
SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Delivery and service period: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1517-3 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET I/O controller.
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- PROFIBUS DP master interface
 - OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed and positioning axes, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500, CPU 1517-3 PN/DP

Central processing unit with
2 MB work memory for program
and 8 MB work memory for data
1st interface: PROFINET IRT
with 2-port switch,
2nd interface: PROFINET RT,
3rd interface: PROFIBUS,
2 ns bit performance,
SIMATIC Memory Card required

6ES7517-3AP00-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays for
cutting to length by customer,
grounding screw
(6ES7590-5AA00-0AA0, 20 units)
must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1517-3 PN/DP

Ordering data	Article No.	Article No.	
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	PROFIBUS FC robust bus cable with PUR protective jacket for use in environments subject to harsh chemicals and mechanical stress 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
System power supply			
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	PROFIBUS FC flexible cable GP 2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1831-2K
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	PROFIBUS FC trailing cable	
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3EH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1831-2L
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	PROFIBUS FC FOOD bus cable with PE protective jacket for use in the food, beverages and tobacco industries, 2-wire, shielded Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
Load current supply			
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	PROFIBUS FC underground cable, underground cable 2-core, shielded Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3FH10
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	PROFIBUS FC FRNC cable GP, bus cable, flame-retardant and halogen-free bus cable with copolymer sheath FRNC, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0LH10
Power supply connector			
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0	PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.	6GK1905-6AA00
PROFIBUS FastConnect RS485 bus connector with 90° cable outlet			
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0	IE FC RJ45 plugs	
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
PROFIBUS FC standard cable GP 2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m Sold by the meter.	6XV1830-0EH10	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 pack = 10 units.	6GK1901-1BB10-2AB0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1517-3 PN/DP

Ordering data	Article No.		Article No.
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 pack = 50 units.	6GK1901-1BB10-2AE0	SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5
Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10	SIMATIC STEP 7 Prof. V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5
Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10		
Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10		
Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0
SIMATIC S7-1500, spare part display for S7-1500 CPUs with 70 mm or 175 mm width	6ES7591-1BA02-0AA0	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2
SIMATIC S7-1500 spare part, front cover for DP interface of the CPU 1518-4 PN/DP STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download	6ES7591-8AA00-0AA0		

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1518-4 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking
- Extremely high processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- Two additional PROFINET interfaces with separate IP addresses; for network separation. The PROFINET interface X2 can be used for connecting additional PROFINET IO RT devices or for fast communication as an I-Device. The PROFINET interface X3 facilitates data transfer at a speed of 1 Gbps.
- PROFIBUS DP master interface
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed and positioning axes, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500, CPU 1518-4 PN/DP

Central processing unit with 6 MB work memory for program and 60 MB work memory for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: Ethernet, 4th interface: PROFIBUS, 1 ns bit performance, SIMATIC Memory Card required

6ES7518-4AP00-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1518-4 PN/DP

Ordering data

Article No.

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0
System power supply	
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0
Load current supply	
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00
Power supply connector	
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0
PROFIBUS FastConnect RS485 bus connector with 90° cable outlet	
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0
PROFIBUS FC standard cable GP 2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m Sold by the meter.	6XV1830-0EH10

Article No.

PROFIBUS FC robust bus cable with PUR protective jacket for use in environments subject to harsh chemicals and mechanical stress 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
PROFIBUS FC flexible cable GP 2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1831-2K
PROFIBUS FC trailing cable	
PROFIBUS FC trailing cable Max. acceleration 4 m/s ² , at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3EH10
PROFIBUS FC trailing cable Max. acceleration 4 m/s ² , at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1831-2L
PROFIBUS FC FOOD bus cable with PE protective jacket for use in the food, beverages and tobacco industries, 2-wire, shielded Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
PROFIBUS FC underground cable, underground cable 2-core, shielded Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3FH10
PROFIBUS FC FRNC cable GP, bus cable, flame-retardant and halogen-free bus cable with copolymer sheath FRNC, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0LH10
PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.	6GK1905-6AA00
IE FC RJ45 plugs	
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 pack = 1 unit.	6GK1901-1BB10-2AA0
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 pack = 10 units.	6GK1901-1BB10-2AB0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1518-4 PN/DP

Ordering data

Article No.

Article No.

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display for S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

SIMATIC S7-1500 spare part, front cover for DP interface of the CPU 1518-4 PN/DP

6ES7591-8AA00-0AA0

STEP 7 Professional V20

Target system:
SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
 - Windows 10 Professional Version 22H2
 - Windows 10 Enterprise Version 22H2
 - Windows 10 Enterprise 2019 LTSC & 2021 LTSC

- Windows 11 (64-bit)
 - Windows 11 Professional Version 22H2 & 23H2
 - Windows 11 Enterprise Version 22H2 & 23H2

- Windows Server (64-bit)
 - Windows Server 2019 Standard (full installation)
 - Windows Server 2022 Standard (full installation)

Type of delivery:

9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements specification can be found at <https://www.siemens.com/compatool>

6ES7822-1AA24-0YA5

SIMATIC STEP 7 Professional V20; floating license download¹⁾

Engineering software in the TIA Portal; software, documentation and license key for downloading¹⁾; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements specification can be found at <https://www.siemens.com/compatool>
Consignee email address required for delivery

6ES7822-1AE24-0YA5

SIMATIC Manual Collection DL in 5 languages¹⁾

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
Consignee email address required for delivery.

6ES7998-8XE01-8YE0

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice

Consignee email address required for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

CPU 1518-4 PN/DP MFP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking
- Extremely high processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- C/C++ functions can be called and executed in the CPU runtime.
- In parallel to the CPU Runtime, there is an additional C/C++ runtime, in which call-independent, i.e. stand-alone, C/C++ applications can be executed.
- Used as central PLC in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- Two additional PROFINET interfaces with separate IP addresses for network separation:
The PROFINET interface X2 can be used for connecting additional PROFINET IO RT devices or for fast communication as an I-Device. The PROFINET interface X3 facilitates data transfer at a speed of 1 Gbps.
- PROFIBUS DP master interface
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Multi-functional platform

With the multi-functional platform (MFP), more functionality can be accommodated in a module. The computing power of the CPU 1518-4 PN/DP MFP allows the merging of previously separate applications on a common platform while continuing to meet the high S7-1500 demands with regard to maintenance and ruggedness.

This means that, in addition to the control function, it is also possible to process typical PC applications on the multi-functional platform, e.g. tasks that:

- require high-level language programming,
- are developed based on models, or
- have to be solved via databases.

Thus, in addition to the option of running C/C++ code in the standard STEP 7 program, the CPU 1518-4 PN/DP MFP multi-functional platform provides an additional second independent runtime environment in order to execute C/C++ applications in parallel to the STEP 7 program if required.

Control-independent applications, e.g. protocol converters, database applications and others, can be created in C/C++.

This simplifies the creation or reuse of customer-specific, high-level language applications.

The CPU 1518-4 PN/DP MFP has the quantity structure and functionality of a CPU 1518-4 PN/DP with regard to the control unit. In addition to the user program created with STEP 7 in the TIA Portal, C/C++ functions formulated via the SIMATIC ODK 1500S can be integrated into the standard user program.

By using SIMATIC ODK 1500S (ODK - Open Development Kit), higher-level programming language mechanisms, such as object orientation, can also be utilized.

Furthermore, with the SIMATIC Target 1500S™ engineering package for Simulink®, it is also possible to integrated complex Simulink models to take advantage of the model-based development using MATLAB and Simulink®.

Note

SIMATIC Memory Card required for operation of the CPU.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1518-4 PN/DP MFP

Ordering data

Article No.

SIMATIC S7-1500, CPU bundle consisting of: CPU 1518-4 PN/DP MFP (6ES7518-4AX00-1AB0)

Including C/C++ Runtime and OPC UA Runtime license, 6 MB work memory for program and 60 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFINET basic services, 4th interface: PROFIBUS, 1 ns bit performance, SIMATIC Memory Card (min. 2 GB) required

6ES7518-4AX00-1AC0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit

6ES7590-5AA00-0AA0

Article No.

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

PROFIBUS FastConnect RS485 bus connector with 90° cable outlet

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

Without PG socket

6ES7972-0BA70-0XA0

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

With PG socket

6ES7972-0BB70-0XA0

PROFIBUS FC standard cable GP

2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.

6XV1830-0EH10

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1518-4 PN/DP MFP

Ordering data

Article No.

PROFIBUS FC robust bus cable with PUR protective jacket

For use environments subject to harsh chemicals and mechanical stress, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0JH10

PROFIBUS FC flexible cable GP

2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.

6XV1831-2K

PROFIBUS FC trailing cable

PROFIBUS FC trailing cable

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-3EH10

PROFIBUS FC trailing cable

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1831-2L

PROFIBUS FC food bus cable with PE protective jacket

For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0GH10

PROFIBUS FC underground cable

Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-3FH10

PROFIBUS FC FRNC cable GP

Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0LH10

PROFIBUS FastConnect stripping tool

Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.

6GK1905-6AA00

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable

GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable

2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display for S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

SIMATIC S7-1500 spare part, front cover for DP interface of the CPU 1518-4 PN/DP

6ES7591-8AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

CPU 1518-4 PN/DP MFP

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC Target (TM) for Simulink(R) V6.0, floating license download¹⁾ Engineering software; software, documentation and license key for download; Class A; 2 languages: de, en; runs under Win10; Win11; Software for integrating Simulink models into the S7 program of the S7-1500 SW controller / CPU1518 ODK/MFP and the Industrial Edge runtime via the LiveTwin Edge app Consignee email address required for delivery
		SIMATIC Target (TM) for Simulink(R) V6.0 Upgrade V2.0 .. V5.0 -> V6.0, floating license download¹⁾ Engineering software, software, documentation and license key for download; Class A; 2 languages: de, en; runs under Win10; Win11; Software for integrating Simulink models into the S7 program of the S7-1500 SW controller / CPU1518 ODK/MFP and the Industrial Edge runtime via the LiveTwin Edge app Consignee email address required for delivery
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	Target + ODK 1500S Bundle includes: SIMATIC ODK 1500S V2.5 and SIMATIC Target (TM) for Simulink (R) V6.0, floating license download¹⁾ E-SW, software, documentation and license key for download, Class A, 2 languages: de, en; runs under Win10; Win11; Software for integrating Simulink models into the S7 program of the S7-1500 SW controller / CPU1518 ODK/MFP and the Industrial Edge runtime via the LiveTwin Edge app Consignee email address required for delivery
SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC ODK 1500S SIMATIC ODK 1500S V2.5, floating license for 1 user, E-SW, software and documentation on DVD, license key on USB flash drive Class A, 6 languages (en, de, fr, es, it, cn), runs on Windows 7, Windows 8.1 and Windows 10	6ES7806-2CD03-0YA0	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC ODK 1500S V2.5, floating license for 1 user, E-SW, software, documentation and license key download¹⁾ Class A, 6 languages (en, de, fr, es, it, cn), runs on Windows 7, Windows 8.1 and Windows 10 Consignee email address required for delivery	6ES7806-2CD03-0YG0	

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1AL03-0AB0 CPU 1511-1 PN, 300KB Prog., 1,5MB Data	6ES7513-1AM03-0AB0 CPU 1513-1 PN, 600KB Prog., 2,5MB Data	6ES7515-2AN03-0AB0 CPU 1515-2 PN, 1MB Prog., 4,5MB Data	6ES7516-3AP03-0AB0 CPU 1516-3 PN/DP, 2MB Prog., 7,5MB Data
General information				
Product type designation	CPU 1511-1 PN	CPU 1513-1 PN	CPU 1515-2 PN	CPU 1516-3 PN/DP
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7511-1AK02-0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7513-1AL02-0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7515-2AM02-0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7516-3AN02-0AB0
Display				
Screen diagonal [cm]	3.45 cm	3.45 cm	6.1 cm	6.1 cm
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Memory				
Work memory				
• integrated (for program)	300 kbyte	600 kbyte	1 Mbyte	2 Mbyte
• integrated (for data)	1.5 Mbyte	2.5 Mbyte	4.5 Mbyte	7.5 Mbyte
Load memory				
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte
CPU processing times				
for bit operations, typ.	6 ns	6 ns	6 ns	6 ns
for word operations, typ.	7 ns	7 ns	7 ns	7 ns
for fixed point arithmetic, typ.	9 ns	9 ns	9 ns	9 ns
for floating point arithmetic, typ.	37 ns	37 ns	37 ns	37 ns
Counters, timers and their retentivity				
S7 counter				
• Number	2 048	2 048	2 048	2 048
IEC counter				
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times				
• Number	2 048	2 048	2 048	2 048
IEC timer				
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity				
Flag				
• Size, max.	16 kbyte	16 kbyte	16 kbyte	16 kbyte
Address area				
I/O address area				
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day				
Clock				
• Type	Hardware clock	Hardware clock	Hardware clock	Hardware clock
1. Interface				
Interface types				
• RJ 45 (Ethernet)	Yes; X1	Yes; X1	Yes; X1	Yes; X1
• Number of ports	2	2	2	2
• integrated switch	Yes	Yes	Yes	Yes
Protocols				
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes
• Media redundancy	Yes	Yes	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1AL03-0AB0 CPU 1511-1 PN, 300KB Prog., 1,5MB Data	6ES7513-1AM03-0AB0 CPU 1513-1 PN, 600KB Prog., 2,5MB Data	6ES7515-2AN03-0AB0 CPU 1515-2 PN, 1MB Prog., 4,5MB Data	6ES7516-3AP03-0AB0 CPU 1516-3 PN/DP, 2MB Prog., 7,5MB Data
PROFINET IO Controller				
Services				
- Isochronous mode	Yes	Yes	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes	Yes	Yes
- PROFIenergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64	64	64
- Number of connectable IO Devices for RT, max.	128	128	256	256
- of which in line, max.	128	128	256	256
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1
PROFINET IO Device				
Services				
- Isochronous mode	No	No	No	No
- IRT	Yes	Yes	Yes	Yes
- PROFIenergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Shared device	Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
2. Interface				
Interface types				
• RJ 45 (Ethernet)			Yes; X2	Yes; X2
• Number of ports			1	1
• integrated switch			No	No
Protocols				
• IP protocol			Yes; IPv4	Yes; IPv4
• PROFINET IO Controller			Yes	Yes
• PROFINET IO Device			Yes	Yes
• SIMATIC communication			Yes	Yes
• Open IE communication			Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server			Yes	Yes
• Media redundancy			No	No

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1AL03-0AB0 CPU 1511-1PN, 300KB Prog., 1,5MB Data	6ES7513-1AM03-0AB0 CPU 1513-1 PN, 600KB Prog., 2,5MB Data	6ES7515-2AN03-0AB0 CPU 1515-2 PN, 1MB Prog., 4,5MB Data	6ES7516-3AP03-0AB0 CPU 1516-3 PN/DP, 2MB Prog., 7,5MB Data
PROFINET IO Controller				
Services				
- Isochronous mode			No	No
- Direct data exchange			No	No
- IRT			No	No
- PROFINergy			Yes; per user program	Yes; per user program
- Prioritized startup			No	No
- Number of connectable IO Devices, max.			32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.			32	32
- of which in line, max.			32	32
- Number of IO Devices that can be simultaneously activated/deactivated, max.			8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.			8	8
- Updating times			The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class			1	1
PROFINET IO Device				
Services				
- Isochronous mode			No	No
- IRT			No	No
- PROFINergy			Yes; per user program	Yes; per user program
- Prioritized startup			No	No
- Shared device			Yes	Yes
- Number of IO Controllers with shared device, max.			4	4
- activation/deactivation of I-devices			Yes; per user program	Yes; per user program
- Asset management record			Yes; per user program	Yes; per user program
- PROFINET Security Class			SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
3. Interface				
Interface types				
• RS 485				Yes; X3
• Number of ports				1
Protocols				
• PROFIBUS DP master				Yes
• PROFIBUS DP device				No
• SIMATIC communication				Yes
PROFIBUS DP master				
• max. number of DP devices				125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
Protocols				
Number of connections				
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs	128; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs

SIMATIC S7-1500 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1AL03-0AB0 CPU 1511-1 PN, 300KB Prog., 1,5MB Data	6ES7513-1AM03-0AB0 CPU 1513-1 PN, 600KB Prog., 2,5MB Data	6ES7515-2AN03-0AB0 CPU 1515-2 PN, 1MB Prog., 4,5MB Data	6ES7516-3AP03-0AB0 CPU 1516-3 PN/DP, 2MB Prog., 7,5MB Data
Redundancy mode				
Media redundancy				
- Media redundancy	only via 1st interface (X1)	only via 1st interface (X1)	only via 1st interface (X1)	only via 1st interface (X1)
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50	50	50
SIMATIC communication				
• S7 routing	Yes	Yes	Yes	Yes
OPC UA				
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions	Yes	Yes	Yes	Yes
Supported technology objects				
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	1 120	1 120	2 400	2 400
• Required Motion Control resources				
- per speed-controlled axis	40	40	40	40
- per positioning axis	80	80	80	80
- per synchronous axis	160	160	160	160
- per external encoder	80	80	80	80
- per output cam	20	20	20	20
- per cam track	160	160	160	160
- per probe	40	40	40	40
Controller				
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring				
• High-speed counter	Yes	Yes	Yes	Yes
Product functions / security				
PROFINET Security Class	1	1	1	1
signed firmware update	Yes	Yes	Yes	Yes
Secure Boot	Yes	Yes	Yes	Yes
safely removing data	Yes	Yes	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units
Standard CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1AL03-0AB0 CPU 1511-1 PN, 300KB Prog., 1,5MB Data	6ES7513-1AM03-0AB0 CPU 1513-1 PN, 600KB Prog., 2,5MB Data	6ES7515-2AN03-0AB0 CPU 1515-2 PN, 1MB Prog., 4,5MB Data	6ES7516-3AP03-0AB0 CPU 1516-3 PN/DP, 2MB Prog., 7,5MB Data
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
Configuration				
Configuration / programming				
Programming language				
- LAD	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes
- CFC	Yes	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes
Know-how protection				
• User program protection/ password protection	Yes	Yes	Yes	Yes
• Copy protection	Yes	Yes	Yes	Yes
• Block protection	Yes	Yes	Yes	Yes
Access protection				
• protection of confidential configuration data	Yes	Yes	Yes	Yes
• Password for display	Yes	Yes	Yes	Yes
• Protection level: Write protection	Yes	Yes	Yes	Yes
• Protection level: Read/write protection	Yes	Yes	Yes	Yes
• Protection level: Write protection for Failsafe	No	No	No	No
• Protection level: Complete protection	Yes	Yes	Yes	Yes
• User administration	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized
• Number of users	100	100	100	100
Dimensions				
Width	35 mm	35 mm	70 mm	70 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm
Weights				
Weight, approx.	336 g	336 g	456 g	469 g

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1511-1 PN

Overview



- Entry-level CPU in the S7-1500 Controller product range
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call, Support
 - OPC UA Companion Specifications
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- SIMATIC Memory Card required for operation of the CPU

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 CPU 1511-1 PN

(Extended temperature range and exposure to environmental substances)

300 KB work memory for program, 1.5 MB for data, PROFINET IRT interface with 2-port switch; SIMATIC Memory Card required

Temperature range -40 ... +60 °C

6AG1511-1AL03-2AB0

Temperature range -40 ... +70 °C

6AG1511-1AL03-7AB0

System power supply

(Extended temperature range and exposure to environmental substances)

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

For SIPLUS CPU 1511-1 PN and CPU 1513-1 PN; spare part

6AG1591-1AB00-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1511-1 PN, page 5/6

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1513-1 PN

Overview



- The CPU for applications with medium/high requirements for program/data memory in the S7-1500 Controller product range
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIPLUS S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Companion Specifications
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- SIMATIC Memory Card required for operation of the CPU

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 CPU 1513-1 PN

(Extended temperature range and exposure to environmental substances)

600 KB work memory for program, 2.5 MB for data, PROFINET IRT interface with 2-port switch; SIMATIC Memory Card required

Temperature range -40 ... +60 °C

6AG1513-1AM03-2AB0

Temperature range -40 ... +70 °C

6AG1513-1AM03-7AB0

Accessories

System power supply

(Extended temperature range and exposure to environmental substances)

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

For SIPLUS CPU 1511-1 PN and CPU 1513-1 PN; spare part

6AG1591-1AB00-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1513-1 PN, page 5/9

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1516-3 PN/DP

Overview



- The CPU with large program and data memory in the S7-1500 Controller product range for applications with high program scope requirements.
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O.
- PROFINET IO IRT interface with 2-port switch.
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device.
- PROFIBUS DP master interface
- UA server and client as runtime option for easy connection of the SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronous axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- SIMATIC Memory Card required for operation of the CPU

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 CPU 1516-3 PN/DP

(Extended temperature range and exposure to environmental substances)

2 MB work memory for program, 7.5 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, PROFIBUS interface; 10 ns bit performance, SIMATIC Memory Card required

Temperature range -40 ... +60 °C

6AG1516-3AP03-2AB0

2 MB work memory for program, 7.5 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, PROFIBUS interface; 6 ns bit performance, SIMATIC Memory Card required

Temperature range -40 ... +70 °C

6AG1516-3AP03-7AB0

Accessories

System power supply

(Extended temperature range and exposure to environmental substances)

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

for 6AG1516-3AN02-7AB0; spare part

6AG1591-1BB00-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1516-3 PN/DP, page 5/21

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1518-4 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking
- Extremely high processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- Two additional PROFINET interfaces with separate IP addresses; for network separation. The PROFINET interface X2 can be used for connecting additional PROFINET IO RT devices or for fast communication as an I-Device. The PROFINET interface X3 facilitates data transfer at a speed of 1 Gbps.
- PROFIBUS DP master interface
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion Specifications
 - OPC UA Alarms and Conditions
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU

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 CPU 1518-4 PN/DP

(Exposure to environmental substances)

3 MB work memory for program, 10 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, Ethernet interface, PROFIBUS interface; SIMATIC Memory Card required

6AG1518-4AP00-4AB0

SIPLUS CPU 1518-4PN/DP

(Exposure to environmental substances)

Work memory 12 MB for program and 150 MB for data, 2x PROFINET IRT interface with 2-port switch, Ethernet interface; 0.3 ns bit performance; SIMATIC Memory Card required

6AG1518-3AT10-4AB0

Accessories

SIPLUS S7-1500 cooling fan 175 mm

(Extended temperature range and exposure to environmental substances)

Fan module for the operation of a SIPLUS S7-1500 CPU at locations with an ambient temperature of up to +70 °C

6AG1593-0AA00-7AA0

System power supply

(Extended temperature range and exposure to environmental substances)

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

For SIPLUS CPU 1516-3 PN/DP and SIPLUS CPU 1518-4 PN/DP; spare part

6AG1591-1BA02-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1518-4 PN/DP, page 5/28

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1518-4 PN/DP MFP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking
- Extremely high processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- C/C++ functions can be called and executed in the CPU runtime.
- In parallel to the CPU runtime, there is an additional C/C++ runtime, in which call-independent, i.e. stand-alone, C/C++ applications can be executed.
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- Two additional PROFINET interfaces with separate IP addresses for network separation:
The PROFINET interface X2 can be used for connecting additional PROFINET IO RT devices or for fast communication as an I-Device. The PROFINET interface X3 facilitates data transfer at a speed of 1 Gbps.
- PROFIBUS DP master interface
- OPC UA Server (Data Access) as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion Specifications
 - OPC UA Alarms and Conditions
- Isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Multi-functional platform

With the multi-functional platform (MFP), more functionality can be accommodated in a module. The computing power of the CPU 1518-4 PN/DP MFP allows the merging of previously separate applications on a common platform, and continues to meet the high demands of the S7-1500 in respect of ease of maintenance and ruggedness.

This means that, in addition to the control function, it is also possible to process typical PC applications on the multi-functional platform, e.g. tasks that:

- require high-level language programming,
- are developed based on models, or
- have to be solved via databases.

Thus, in addition to the option of running C/C++ code in the standard STEP 7 program, the CPU 1518-4 PN/DP MFP multi-functional platform provides an additional second independent runtime environment in order to execute C/C++ applications in parallel to the STEP 7 program if required. Control-independent applications, e.g. protocol converters, database applications and others, can be created in C/C++. This simplifies the creation or reuse of customer-specific, high-level language applications. The CPU 1518-4 PN/DP MFP has the quantity structure and functionality of a CPU 1518-4 PN/DP with regard to the control unit. In addition to the user program created with STEP 7 in the TIA Portal, C/C++ functions formulated via the SIMATIC ODK 1500S can be integrated into the standard user program. By using SIMATIC ODK 1500S (ODK - Open Development Kit), higher-level programming language mechanisms, such as object orientation, can also be utilized. Furthermore, with the SIMATIC Target 1500S™ engineering package for Simulink®, it is also possible to integrate complex Simulink models to take advantage of the model-based development using MATLAB and Simulink®.

Note:

SIMATIC Memory Card required for operation of the CPU.

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.

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1518-4 PN/DP MFP

Ordering data	Article No.		Article No.
SIPLUS CPU 1518-4 PN/DP MFP (Exposure to environmental substances) 4 MB work memory for program, 20 MB for data, 50 MB for CPU function library in the CPU Runtime, 500 MB for C/C++ Runtime application, PROFINET IRT interface with 2-port switch, PROFINET RT interface, Ethernet interface, PROFIBUS interface; C/C++ runtime and OPC UA Runtime license included; SIMATIC Memory Card required	6AG1518-4AX00-4AC0	System power supply (Extended temperature range and exposure to environmental substances) 24 V DC input voltage, power 25 W 24/48/60 V DC input voltage, power 60 W 120/230 V AC input voltage, power 60 W	6AG1505-0KA00-7AB0 6AG1505-0RA00-7AB0 6AG1507-0RA00-7AB0
Accessories		Load current supply (Extended temperature range and exposure to environmental substances) 24 V DC/3 A 24 V DC/8 A	6AG1332-4BA00-7AA0 6AG1333-4BA00-7AA0
SIPLUS S7-1500 cooling fan 175 mm (Extended temperature range and exposure to environmental substances) Fan module for the operation of a SIPLUS S7-1500 CPU at locations with an ambient temperature of up to +70 °C	6AG1593-0AA00-7AA0	Display (Extended temperature range and exposure to environmental substances) For SIPLUS CPU 1516-3 PN/DP and SIPLUS CPU 1518-4 PN/DP; spare part	6AG1591-1BA02-2AA0
		Other accessories	See SIMATIC S7-1500, CPU 1518-4 PN/DP MFP, page 5/32

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

Technical specifications

Technical specifications

Article number	6AG1511-1AL03-2AB0	6AG1511-1AL03-7AB0
Based on	6ES7511-1AL03-0AB0	6ES7511-1AL03-0AB0
	SIPLUS S7-1500 CPU 1511-1 PN	SIPLUS S7-1500 CPU 1511-1 PN
Ambient conditions		
Ambient temperature during operation		
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C -40 °C; = Tmin 40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C -40 °C; = Tmin 40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
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 - to chemically active substances according to EN 60721-3-3 - to mechanically 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 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology		
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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 - Protection against fouling acc. to EN 60664-3 - Military testing according to MIL-I-46058C, Amendment 7 - Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

Technical specifications

Technical specifications

Article number	6AG1513-1AM03-2AB0	6AG1513-1AM03-7AB0
Based on	6ES7513-1AM03-0AB0 SIPLUS S7-1500 CPU 1513-1 PN	6ES7513-1AM03-0AB0 SIPLUS S7-1500 CPU 1513-1 PN
Ambient conditions		
Ambient temperature during operation		
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C -40 °C; = Tmin 40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C -40 °C; = Tmin 40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
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 - to chemically active substances according to EN 60721-3-3 - to mechanically 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 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology		
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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 - Protection against fouling acc. to EN 60664-3 - Military testing according to MIL-I-46058C, Amendment 7 - Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

Technical specifications

Technical specifications

Article number	6AG1516-3AP03-2AB0	6AG1516-3AP03-7AB0
Based on	6ES7516-3AP03-0AB0 SIPLUS S7-1500 CPU 1516-3 PN	6ES7516-3AP03-0AB0 SIPLUS S7-1500 CPU 1516-3 PN
Ambient conditions		
Ambient temperature during operation		
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C -40 °C; = Tmin 40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C -40 °C; = Tmin 40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
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 - to chemically active substances according to EN 60721-3-3 - to mechanically 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 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology		
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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 - Protection against fouling acc. to EN 60664-3 - Military testing according to MIL-I-46058C, Amendment 7 - Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

Technical specifications

Technical specifications

Article number	6AG1518-4AP00-4AB0	6AG1518-3AT10-4AB0	6AG1518-4AX00-4AC0
Based on	6ES7518-4AP00-0AB0	6ES7518-3AT10-0AB0	6ES7518-4AX00-1AC0
	SIPLUS S7-1500 CPU 1518-4 PN/DP	SIPLUS S7-1500 CPU 1518-3 PN/DP	SIPLUS S7-1500 CPU 1518-4 PN/DP MFP
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	0 °C; = Tmin (incl. condensation/frost)	0 °C; = Tmin (incl. condensation/frost)	0 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C; = Tmin	0 °C; = Tmin (incl. condensation/frost)	0 °C; = Tmin
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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 %; RH incl. condensation/frost (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, *
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 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; *

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS standard CPUs

Technical specifications

Technical specifications

Article number	6AG1518-4AP00-4AB0	6AG1518-3AT10-4AB0	6AG1518-4AX00-4AC0
Based on	6ES7518-4AP00-0AB0 SIPLUS S7-1500 CPU 1518-4 PN/DP	6ES7518-3AT10-0AB0 SIPLUS S7-1500 CPU 1518-3 PN/DP	6ES7518-4AX00-1AC0 SIPLUS S7-1500 CPU 1518-4 PN/DP MFP
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

SIMATIC S7-1500 Advanced Controllers

Central processing units

Compact CPUs

CPU 1511C-1 PN

Overview



- The compact CPU with integral digital and analog inputs and outputs in the product spectrum of the S7-1500 Controllers
- With integrated technological functions, e.g. high-speed counter (HSC), frequency measurement, period duration measurement or stepper motor control, pulse width modulation, frequency output
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Isochronous mode (distributed)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500, compact CPU CPU 1511C-1 PN

Central processing unit 300 KB work memory for program and 1.5 MB for data, 16 digital inputs, 16 digital outputs, 5 analog inputs, 2 analog outputs, 6 high-speed counters, 4 high-speed outputs for PTO/PWM/frequency output, 1st interface: PROFINET IRT with 2-port switch, 25 ns bit performance, incl. push-in front connector, SIMATIC Memory Card required

6ES7511-1CL03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

Front connector

SIMATIC S7-1500, front connector with push-in technology

40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie

6ES7592-1BM00-0XA0

Shielding set I/O

SIMATIC S7-1500, spare part, shielding set

Consisting of:
 * 4x shield terminal,
 * 4x shielding bracket,
 * 4x 24 V DC infeed element with push-in technology, suitable for analog modules, technology modules and compact CPU of the S7-1500, suitable for all front connectors for 25 mm wide modules

6ES7590-5CA10-0XA0

SIMATIC S7-1500, spare part, suitable shield terminal

Suitable for analog modules and technology modules without shielding bracket and without 24 V DC infeed element, 10 units per packing unit

6ES7590-5BA00-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Compact CPUs

CPU 1511C-1 PN

Ordering data

Article No.

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

Article No.

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F, PN-PN coupler

Grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

35 mm for S7-1500 CPUs

6ES7591-1AB00-0AA0

SIMATIC S7-1500, spare part, display module

For 35 mm S7-1500 CPUs with firmware >= V3.0

6ES7591-1AB10-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Compact CPUs

CPU 1511C-1 PN

Ordering data	Article No.	Article No.
SIMATIC S7-1500, spare part, cover flap 35 mm with cutout, for displays and display buttons, for S7-1500 CPUs, 5 units per packing unit	6ES7591-4AB00-0AA0	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	
SIMATIC STEP 7 Professional V20; floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Compact CPUs

CPU 1512C-1 PN

Overview



- The compact CPU with integral digital and analog inputs and outputs in the product spectrum of the S7-1500 Controllers
- With integrated technological functions, e.g. high-speed counter (HSC), frequency measurement, period duration measurement or stepper motor control, pulse width modulation, frequency output
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Isochronous mode (distributed)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500, compact CPU CPU 1512C-1 PN

Central processing unit with work memory:
400 KB work memory for program and 2 MB for data, 32 digital inputs, 32 digital outputs, 5 analog inputs, 2 analog outputs, 6 high-speed counters, 4 high-speed outputs for PTO/PWM/frequency output
1st interface:
PROFINET IRT with 2-port switch, 25 ns bit performance, incl. push-in front connector, SIMATIC Memory Card required

6ES7512-1CM03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

Front connector

SIMATIC S7-1500, front connector with push-in technology

40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie

6ES7592-1BM00-0XA0

Shielding set I/O

SIMATIC S7-1500, spare part, shielding set

Consisting of:
* 4x shield terminal,
* 4x shielding bracket,
* 4x 24 V DC infeed element with push-in technology, suitable for analog modules, technology modules and compact CPU of the S7-1500, suitable for all front connectors for 25 mm wide modules

6ES7590-5CA10-0XA0

SIMATIC S7-1500, spare part, suitable shield terminal

Suitable for analog modules and technology modules without shielding bracket and without 24 V DC infeed element, 10 units per packing unit

6ES7590-5BA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Compact CPUs

CPU 1512C-1 PN

Ordering data

Article No.

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Article No.

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F, PN-PN coupler

Grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

4-wire, 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

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

SIMATIC S7-1500 Advanced Controllers

Central processing units

Compact CPUs

CPU 1512C-1 PN

Ordering data	Article No.		Article No.
Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10	SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5
Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00	SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5
SIMATIC S7-1500, spare part, display module 35 mm for S7-1500 CPUs	6ES7591-1AB00-0AA0	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0
SIMATIC S7-1500, spare part, display module For 35 mm S7-1500 CPUs with firmware >= V3.0	6ES7591-1AB10-0AA0	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2
SIMATIC S7-1500, spare part, cover flap 35 mm with cutout, for displays and display buttons, for S7-1500 CPUs, 5 units per packing unit	6ES7591-4AB00-0AA0		
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download			

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1CL03-0AB0 CPU 1511C-1 PN, 300KB Prog., 1,5MB Data	6ES7512-1CM03-0AB0 CPU 1512C-1 PN, 400 KB Prog., 2 MB Data
General information		
Product type designation	CPU 1511C-1 PN	CPU 1512C-1 PN
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V20 (FW V4.0) / V19 (FW V3.1) or higher; configurable with older TIA Portal versions as 6ES7511-1CK01-0AB0	V20 (FW V4.0) / V19 (FW V3.1) or higher; configurable with older TIA Portal versions as 6ES7512-1CK01-0AB0
Display		
Screen diagonal [cm]	3.45 cm	3.45 cm
Supply voltage		
Rated value (DC)	24 V	24 V
Memory		
Work memory		
• integrated (for program)	300 kbyte	400 kbyte
• integrated (for data)	1.5 Mbyte	2 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
CPU processing times		
for bit operations, typ.	6 ns	6 ns
for word operations, typ.	7 ns	7 ns
for fixed point arithmetic, typ.	9 ns	9 ns
for floating point arithmetic, typ.	37 ns	37 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type	Hardware clock	Hardware clock
Digital inputs		
integrated channels (DI)	16	32
Digital outputs		
integrated channels (DO)	16	32
Short-circuit protection	Yes; electronic/thermal	Yes; electronic/thermal
Analog inputs		
integrated channels (AI)	5	5
Analog outputs		
integrated channels (AO)	2	2
1. Interface		
Interface types		
• RJ 45 (Ethernet)	Yes; X1	Yes; X1
• Number of ports	2	2
• integrated switch	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1CL03-0AB0 CPU 1511C-1 PN, 300KB Prog., 1,5MB Data	6ES7512-1CM03-0AB0 CPU 1512C-1 PN, 400 KB Prog., 2 MB Data
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	Yes	Yes
PROFINET IO Controller		
Services		
- Isochronous mode	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	128	128
- of which in line, max.	128	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1
PROFINET IO Device		
Services		
- Isochronous mode	No	No
- IRT	Yes	Yes
- PROFINergy	Yes; per user program	Yes; per user program
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
Protocols		
Number of connections		
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs	128; via integrated interfaces of the CPU and connected CPs / CMs
Redundancy mode		
Media redundancy		
- Media redundancy	only via 1st interface (X1)	only via 1st interface (X1)
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1CL03-0AB0 CPU 1511C-1 PN, 300KB Prog., 1,5MB Data	6ES7512-1CM03-0AB0 CPU 1512C-1 PN, 400 KB Prog., 2 MB Data
OPC UA		
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions	Yes	Yes
Supported technology objects		
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	1 120	1 120
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Product functions / security		
PROFINET Security Class	1	1
signed firmware update	Yes	Yes
Secure Boot	Yes	Yes
safely removing data	Yes	Yes
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation
• horizontal installation, max.	60 °C; note derating data for onboard I/O in the manual. Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; note derating data for onboard I/O in the manual. Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-30 °C; No condensation	-30 °C; No condensation
• vertical installation, max.	40 °C; note derating data for onboard I/O in the manual. Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; note derating data for onboard I/O in the manual. Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
Configuration		
Configuration / programming		
Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units
Compact CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1CL03-0AB0 CPU 1511C-1 PN, 300KB Prog., 1,5MB Data	6ES7512-1CM03-0AB0 CPU 1512C-1 PN, 400 KB Prog., 2 MB Data
Access protection		
• protection of confidential configuration data	Yes	Yes
• Password for display	Yes	Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Write protection for Failsafe	No	No
• Protection level: Complete protection	Yes	Yes
• User administration	Yes; device-wide and centralized	Yes; device-wide and centralized
• Number of users	100	100
Dimensions		
Width	85 mm	110 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	935 g; with front connector	1 235 g; with front connector

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1511F-1 PN

Overview



- Entry-level CPU in the S7-1500F Controller product range
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- Suitable for standard and fail-safe applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configuration
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500F, CPU 1511F-1 PN

Central processing unit with 450 KB work memory for program and 1.5 MB for data,
1st interface: PROFINET IRT with 2-port switch,
25 ns bit performance,
SIMATIC Memory Card required
Observe the approvals and certificate according to entry 109815653 at <https://support.industry.siemens.com/>

6ES7511-1FL03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1511F-1 PN

Ordering data	Article No.		Article No.
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0	IE FC RJ45 plugs	
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
System power supply		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 pack = 10 units.	6GK1901-1BB10-2AB0
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	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 pack = 50 units.	6GK1901-1BB10-2AE0
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
Load current supply		SIMATIC S7-1500, spare part, display module For 35 mm S7-1500 CPUs with firmware >= V3.0	6ES7591-1AB10-0AA0
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	SIMATIC S7-1500, spare part, cover flap 35 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit	6ES7591-4AB00-0AA0
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00		
Power supply connector			
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0		

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1511F-1 PN

Ordering data

Article No.

Article No.

STEP 7 Professional V20

Target system:

SIMATIC S7-1200, S7-1200 G2,
S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
- Windows 10 Professional
Version 22H2
- Windows 10 Enterprise
Version 22H2
- Windows 10 Enterprise 2019 LTSC
& 2021 LTSC

Windows 11 (64-bit)

- Windows 11 Professional
Version 22H2 & 23H2
- Windows 11 Enterprise
Version 22H2 & 23H2

Windows Server (64-bit)

- Windows Server 2019 Standard
(full installation)
- Windows Server 2022 Standard
(full installation)

Type of delivery:

9 languages: en, de, zh included,
fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the
TIA Portal; software and
documentation on DVD;
license key on USB flash drive;
Class A; for configuration of
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

SIMATIC STEP 7 Professional V20; floating license download¹⁾

Engineering software in the
TIA Portal; software, documentation
and license key for downloading¹⁾;
Class A; for configuring
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

Consignee email address required
for delivery

STEP 7 Safety Advanced V20

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 V20

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.

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F
Content: 1x USB

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F
Consignee email address required
for delivery

SIMATIC Manual Collection DL in 5 languages¹⁾

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

Consignee email address required
for delivery.

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS);
within the framework of this
contract, you will receive all current
software versions as a download for
one year. The contract is
automatically extended by
1 year unless it is canceled
3 months before expiration.
Period of delivery and service:
1 year from date of invoice

Consignee email address required
for delivery.

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1513F-1 PN

Overview



- The CPU for standard and fail-safe applications with medium/high requirements for program/data storage in the S7-1500 Controller product range
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configuration
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500F, CPU 1513F-1 PN

Central processor unit with 900 KB work memory for program and 2.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 25 ns bit performance, SIMATIC Memory Card required. Observe the approvals and certificate according to entry 109815653 at <https://support.industry.siemens.com/>

6ES7513-1FM03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1513F-1 PN

Ordering data

Article No.

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

For 35 mm S7-1500 CPUs with firmware >= V3.0

6ES7591-1AB10-0AA0

SIMATIC S7-1500, spare part, cover flap

35 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4AB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1513F-1 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB
		SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Consignee email address required for delivery
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC STEP 7 Professional V20; floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
STEP 7 Safety Advanced V20 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 V20 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.		

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1515F-2 PN

Overview



- The CPU for applications with medium to high requirements for program/data storage in the S7-1500 Controller product range
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849.
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configuration
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500F, CPU 1515F-2 PN

Central processing unit with 1.5 MB work memory for program and 4.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 6 ns bit performance, SIMATIC Memory Card required *** Observe approvals and certificates according to entry 109817466! ***

6ES7515-2FN03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1515F-2 PN

Ordering data

Article No.

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

70 mm for S7-1500 CPUs

6ES7591-1BB00-0AA0

SIMATIC S7-1500, spare part, cover flap

70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1515F-2 PN

Ordering data

Article No.

Article No.

STEP 7 Professional V20

Target system:

SIMATIC S7-1200, S7-1200 G2,
S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
- Windows 10 Professional
Version 22H2
- Windows 10 Enterprise
Version 22H2
- Windows 10 Enterprise 2019 LTSC
& 2021 LTSC

Windows 11 (64-bit)

- Windows 11 Professional
Version 22H2 & 23H2
- Windows 11 Enterprise
Version 22H2 & 23H2

Windows Server (64-bit)

- Windows Server 2019 Standard
(full installation)
- Windows Server 2022 Standard
(full installation)

Type of delivery:

9 languages: en, de, zh included,
fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the
TIA Portal; software and
documentation on DVD;
license key on USB flash drive;
Class A; for configuration of
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

SIMATIC STEP 7 Professional V20, floating license download¹⁾

Engineering software in the
TIA Portal; software, documentation
and license key for downloading¹⁾;
Class A; for configuring
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

Consignee email address required
for delivery

6ES7822-1AA24-0YA5

6ES7822-1AE24-0YA5

STEP 7 Safety Advanced V20

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 V20

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.

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F
Content: 1x USB

6ES7833-1FA24-0YA5

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F;
Consignee email address required
for delivery

6ES7833-1FA24-0YH5

SIMATIC Manual Collection DL in 5 languages¹⁾

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

Consignee email address required
for delivery.

6ES7998-8XE01-8YE0

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS);
within the framework of this
contract, you will receive all current
software versions as a download for
one year. The contract is
automatically extended by
1 year unless it is canceled
3 months before expiration.
Period of delivery and service:
1 year from date of invoice
Consignee email address required
for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1517F-3 PN

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking
- Extremely high processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configurations
- Two PROFINET IO IRT interfaces (X1 and X2), each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- PROFINET interface X3 with separate IP address for network separation and Gbit Ethernet to transmit data at a speed of 1 Gbps.
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFINET
- Integrated Motion Control functionalities for controlling speed and positioning axes, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500F, CPU 1517F-3 PN	6ES7517-3FQ10-0AB0
Accessories	
SIMATIC Memory Card	
SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS 3.3 V Flash, 4 MB	6ES7954-8LC04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 12 MB	6ES7954-8LE04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 24 MB	6ES7954-8LF04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU 3.3 V Flash, 256 MB	6ES7954-8LL04-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 2 GB	6ES7954-8LP04-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 32 GB	6ES7954-8LT04-0AA0
SIMATIC S7-1500 mounting rail	
SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AB60-0AA0
SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AC40-0AA0
SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AE80-0AA0
SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AF30-0AA0
SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AJ30-0AA0
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1517F-3 PN

Ordering data

Article No.

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Article No.

Industrial Ethernet FC TP standard cable

GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable

2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

70 mm for S7-1500 CPUs

6ES7591-1BB00-0AA0

SIMATIC S7-1500, spare part, cover flap

70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1517F-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) - Windows 10 Professional Version 22H2 - Windows 10 Enterprise Version 22H2 - Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) - Windows 11 Professional Version 22H2 & 23H2 - Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) - Windows Server 2019 Standard (full installation) - Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-3 PN

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking
- Extremely high processing speed for binary and floating-point arithmetic
- Configurable performance boost (+25%)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Supports PROFINET in centralized and distributed configurations
- Two PROFINET IO IRT interfaces (X1 and X2), each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- PROFINET interface X3 with separate IP address for network separation and Gbit Ethernet to transmit data at a speed of 1 Gbps.
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFINET
- Integrated Motion Control functionalities for controlling speed and positioning axes, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages
- Integrated SIMATIC Controller Profiling for analysis and evaluation of user program runtime behavior

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500F, CPU 1518F- PN	6ES7518-3FT10-0AB0
Accessories	
SIMATIC Memory Card	
SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS 3.3 V Flash, 4 MB	6ES7954-8LC04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 12 MB	6ES7954-8LE04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 24 MB	6ES7954-8LF04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU 3.3 V Flash, 256 MB	6ES7954-8LL04-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 2 GB	6ES7954-8LP04-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 32 GB	6ES7954-8LT04-0AA0
SIMATIC S7-1500 mounting rail	
SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AB60-0AA0
SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AC40-0AA0
SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AE80-0AA0
SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AF30-0AA0
SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AJ30-0AA0
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-3 PN

Ordering data	Article No.	Article No.
System power supply		
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	Industrial Ethernet FC TP standard cable GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	Industrial Ethernet FC TP trailing cable 2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.
Load current supply		
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	
Power supply connector		SIMATIC S7-1500, spare part display module 70 mm for S7-1500 CPUs
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0	
IE FC RJ45 plugs		SIMATIC S7-1500, spare part, cover flap 70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit
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 pack = 1 unit.	6GK1901-1BB10-2AA0	
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 pack = 10 units.	6GK1901-1BB10-2AB0	
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 pack = 50 units.	6GK1901-1BB10-2AE0	

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1516F-3 PN/DP

Overview



- The CPU with a large program and data memory in the S7-1500 Controller product range for fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849.
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configuration.
- PROFINET IO IRT interface with 2-port switch.
- Additional PROFINET interface with separate IP address.
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- PROFIBUS DP master interface.
- Isochronous mode on PROFIBUS and PROFINET.
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages.

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500F, CPU 1516F-3 PN/DP

Central processing unit with 3 MB work memory for program and 7.5 MB for data
1st interface: PROFINET IRT with 2-port switch,
2nd interface: PROFINET RT,
3rd interface: PROFIBUS, 6 ns bit performance,
SIMATIC Memory Card required
Observe approvals and certificates according to entry 109817466 at [https://support.industry.siemens.com/!](https://support.industry.siemens.com/)

6ES7516-3FP03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1516F-3 PN/DP

Ordering data

Article No.

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail;

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

PROFIBUS FastConnect RS485 bus connector with 90° cable outlet

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

Without PG socket

6ES7972-0BA70-0XA0

Article No.

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

With PG socket

6ES7972-0BB70-0XA0

PROFIBUS FC standard cable GP

2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.

6XV1830-0EH10

PROFIBUS FC robust bus cable with PUR protective jacket

For use environments subject to harsh chemicals and mechanical stress, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0JH10

PROFIBUS FC flexible cable GP

2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.

6XV1831-2K

PROFIBUS FC trailing cable

PROFIBUS FC trailing cable
Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-3EH10

PROFIBUS FC trailing cable

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1831-2L

PROFIBUS FC food bus cable with PE protective jacket

For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0GH10

PROFIBUS FC underground cable

Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-3FH10

PROFIBUS FC FRNC cable GP

Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0LH10

PROFIBUS FastConnect stripping tool

Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.

6GK1905-6AA00

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1516F-3 PN/DP

Ordering data	Article No.	Article No.
IE FC RJ45 plugs		STEP 7 Professional V20
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 pack = 1 unit.	6GK1901-1BB10-2AA0	Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download
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 pack = 10 units.	6GK1901-1BB10-2AB0	
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 pack = 50 units.	6GK1901-1BB10-2AE0	
Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10	SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool
Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10	6ES7822-1AA24-0YA5
Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10	SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00	
SIMATIC S7-1500, spare part, display module 70 mm for S7-1500 CPUs	6ES7591-1BB00-0AA0	
SIMATIC S7-1500, spare part, cover flap 70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit	6ES7591-4BB00-0AA0	

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1516F-3 PN/DP

Ordering data	Article No.	Article No.
STEP 7 Safety Advanced V20 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 V20 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.		SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery
		6ES7833-1FA24-0YH5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB	6ES7833-1FA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1517F-3 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500F, CPU 1517F-3 PN

Central processing unit with 3 MB work memory for program and 8 MB work memory for data,
1st interface: PROFINET IRT with 2-port switch,
2nd interface: PROFINET RT,
3rd interface: PROFIBUS,
2 ns bit performance,
SIMATIC Memory Card required

6ES7517-3FP00-0AB0

SIMATIC S7-1500F, CPU 1517F-3 PN/DP

Central processing unit with 3 MB work memory for program and 8 MB work memory for data,
1st interface: PROFINET IRT with 2-port switch,
2nd interface: PROFINET RT,
3rd interface: PROFIBUS,
2 ns bit performance,
SIMATIC Memory Card required

6ES7517-3FP01-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1517F-3 PN/DP

Ordering data	Article No.		Article No.
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0	SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	PROFIBUS FC standard cable GP 2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m Sold by the meter.	6XV1830-0EH10
System power supply		PROFIBUS FC robust bus cable with PUR protective jacket for use in environments subject to harsh chemicals and mechanical stress 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	PROFIBUS FC flexible cable GP 2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1831-2K
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	PROFIBUS FC trailing cable	
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3EH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1831-2L
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	PROFIBUS FC FOOD bus cable with PE protective jacket for use in the food, beverages and tobacco industries, 2-wire, shielded Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
Load current supply		PROFIBUS FC underground cable, underground cable 2-core, shielded Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3FH10
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	PROFIBUS FC FRNC cable GP, bus cable, flame-retardant and halogen-free bus cable with copolymer sheath FRNC, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0LH10
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.	6GK1905-6AA00
Power supply connector			
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0		
PROFIBUS FastConnect RS485 bus connector with 90° cable outlet			
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0		

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1517F-3 PN/DP

Ordering data

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable

GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable

2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

Article No.

STEP 7 Professional V20

Target system:
SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC

Requirement:

Windows 10 (64-bit)

- Windows 10 Professional Version 22H2

- Windows 10 Enterprise Version 22H2

- Windows 10 Enterprise 2019 LTSC & 2021 LTSC

Windows 11 (64-bit)

- Windows 11 Professional Version 22H2 & 23H2

- Windows 11 Enterprise Version 22H2 & 23H2

Windows Server (64-bit)

- Windows Server 2019 Standard (full installation)

- Windows Server 2022 Standard (full installation)

Type of delivery:

9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements

specification can be found at

<https://www.siemens.com/compatool>

6ES7822-1AA24-0YA5

SIMATIC STEP 7 Professional V20, floating license download¹⁾

Engineering software in the TIA Portal; software, documentation and license key for downloading¹⁾; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements

specification can be found at

<https://www.siemens.com/compatool>

Consignee email address required for delivery

6ES7822-1AE24-0YA5

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1517F-3 PN/DP

Ordering data	Article No.	Article No.
STEP 7 Safety Advanced V20 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 V20 <u>Note:</u> 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.		SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery
		6ES7833-1FA24-0YH5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB	6ES7833-1FA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for fail-safe applications with highest requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849.
- Extremely high processing speed for binary and floating-point arithmetic.
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO IRT interface with 2-port switch.
- Two additional PROFINET interfaces with separate IP addresses.
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- PROFIBUS DP master interface.
- Isochronous mode on PROFIBUS and PROFINET.
- Integrated Motion Control functionalities for controlling speed, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages.

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500F, CPU 1518F- PN

Central processing unit with 9 MB work memory for program and 60 MB work memory for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFINET basic services, 4th interface: PROFIBUS, 1 ns bit performance, SIMATIC Memory Card required

6ES7518-4FP00-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP

Ordering data	Article No.		Article No.
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0	SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	PROFIBUS FC standard cable GP 2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m Sold by the meter.	6XV1830-0EH10
System power supply		PROFIBUS FC robust bus cable with PUR protective jacket for use in environments subject to harsh chemicals and mechanical stress 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	PROFIBUS FC flexible cable GP 2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1831-2K
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	PROFIBUS FC trailing cable	
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3EH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1831-2L
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	PROFIBUS FC FOOD bus cable with PE protective jacket for use in the food, beverages and tobacco industries, 2-wire, shielded Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
Load current supply		PROFIBUS FC underground cable, underground cable 2-core, shielded Sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3FH10
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	PROFIBUS FC FRNC cable GP, bus cable, flame-retardant and halogen-free bus cable with copolymer sheath FRNC, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0LH10
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.	6GK1905-6AA00
Power supply connector			
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0		
PROFIBUS FastConnect RS485 bus connector with 90° cable outlet			
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0		

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP

Ordering data

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable

GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable

2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

Article No.

STEP 7 Professional V20

Target system:

SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC

Requirement:

Windows 10 (64-bit)

- Windows 10 Professional Version 22H2

- Windows 10 Enterprise Version 22H2

- Windows 10 Enterprise 2019 LTSC & 2021 LTSC

Windows 11 (64-bit)

- Windows 11 Professional Version 22H2 & 23H2

- Windows 11 Enterprise Version 22H2 & 23H2

Windows Server (64-bit)

- Windows Server 2019 Standard (full installation)

- Windows Server 2022 Standard (full installation)

Type of delivery:

9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements

specification can be found at

<https://www.siemens.com/compatool>

6ES7822-1AA24-0YA5

SIMATIC STEP 7 Professional V20, floating license download¹⁾

Engineering software in the TIA Portal; software, documentation and license key for downloading¹⁾; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements

specification can be found at

<https://www.siemens.com/compatool>

Consignee email address required for delivery

6ES7822-1AE24-0YA5

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP

Ordering data	Article No.	Article No.
STEP 7 Safety Advanced V20 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 V20 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.		SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery
		6ES7833-1FA24-0YH5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive	6ES7833-1FA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP MFP

Overview



- CPU with an extremely large program and data memory in the S7-1500 Controller product range for demanding standard and fail-safe applications with demanding requirements regarding program scope, performance and networking
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- Extremely high processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- C/C++ functions can be called and executed in the CPU runtime.
- In parallel to the CPU runtime, there is an additional C/C++ runtime, in which call-independent, i.e. stand-alone, C/C++ applications can be executed.
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- Two additional PROFINET interfaces with separate IP addresses for network separation:
The PROFINET interface X2 can be used for connecting additional PROFINET IO RT devices or for fast communication as an I-Device. The PROFINET interface X3 facilitates data transfer at a speed of 1 Gbps.
- PROFIBUS DP master interface
- OPC UA server (data access) as runtime option for easy connection of the SIMATIC S7-1500 to non-Siemens devices/systems
- Isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Multi-functional platform

With the multi-functional platform (MFP), more functionality can be accommodated in a module. The computing power of the CPU 1518F-4 PN/DP MFP allows the merging of previously separate applications on a common platform while continuing to meet the high S7-1500 demands with regard to maintenance and ruggedness.

This means that, in addition to the control function, it is also possible to process typical PC applications on the multi-functional platform, e.g. tasks that:

- require high-level language programming,
- are developed based on models, or
- have to be solved via databases.

Besides the option of running C/C++ code in the standard STEP 7 program, the multi-functional platform CPU 1518F-4 PN/DP MFP thus provides an additional second independent runtime environment which facilitates execution of C/C++ applications in parallel to the STEP 7 program if required. Control-independent applications, e.g. protocol converters, database applications and others, can be created in C/C++.

This simplifies the creation or reuse of customer-specific, high-level language applications. The CPU 1518F-4 PN/DP MFP has the quantity structure and functionality of a CPU 1518F-4 PN/DP with regard to the control part. In addition to the user program created with STEP 7 in the TIA Portal, C/C++ functions formulated via the SIMATIC ODK 1500S can be integrated into the standard user program. By using SIMATIC ODK 1500S (ODK - Open Development Kit), higher-level programming language mechanisms, such as object orientation, can also be utilized. Furthermore, with the SIMATIC Target 1500S™ engineering package for Simulink®, it is also possible to integrate complex Simulink models to take advantage of the model-based development using MATLAB and Simulink®.

Note

SIMATIC Memory Card required for operation of the CPU.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP MFP

Ordering data

Article No.

SIMATIC S7-1500F, CPU bundle consisting of: CPU 1518F-4 PN/DP MFP (6ES7518-4FX00-1AB0)

Including C/C++ Runtime and OPC UA Runtime license, 9 MB work memory for program and 60 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFINET basic services, 4th interface: PROFIBUS, 1 ns bit performance, SIMATIC Memory Card (min. 2 GB) required

6ES7518-4FX00-1AC0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit

6ES7590-5AA00-0AA0

Article No.

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector

For system power supply modules (PS) and load current supply modules (PM), 10 pieces per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

Without PG socket

6ES7972-0BA70-0XA0

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

With PG socket

6ES7972-0BB70-0XA0

PROFIBUS FC standard cable GP

2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.

6XV1830-0EH10

PROFIBUS FC robust bus cable with PUR protective jacket

For use environments subject to harsh chemicals and mechanical stress, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0JH10

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP MFP

Ordering data

Article No.

PROFIBUS FC flexible cable GP

2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.

6XV1831-2K

PROFIBUS FC trailing cable

PROFIBUS FC trailing cable

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-3EH10

PROFIBUS FC trailing cable

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1831-2L

PROFIBUS FC food bus cable with PE protective jacket

For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0GH10

PROFIBUS FC underground cable

Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-3FH10

PROFIBUS FC FRNC cable GP

Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0LH10

PROFIBUS FastConnect stripping tool

Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.

6GK1905-6AA00

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

SIMATIC S7-1500 spare part, front cover

For DP interface of the CPU 1518-4 PN/DP

6ES7591-8AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP MFP

Ordering data

Article No.

Article No.

STEP 7 Professional V20

Target system:
SIMATIC S7-1200, S7-1200 G2,
S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
- Windows 10 Professional
Version 22H2
- Windows 10 Enterprise
Version 22H2
- Windows 10 Enterprise 2019 LTSC
& 2021 LTSC

- Windows 11 (64-bit)
- Windows 11 Professional
Version 22H2 & 23H2
- Windows 11 Enterprise
Version 22H2 & 23H2

- Windows Server (64-bit)
- Windows Server 2019 Standard
(full installation)
- Windows Server 2022 Standard
(full installation)

Type of delivery:

9 languages: en, de, zh included,
fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the
TIA Portal; software and
documentation on DVD;
license key on USB flash drive;
Class A; for configuration of
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

SIMATIC STEP 7 Professional V20, floating license download¹⁾

Engineering software in the
TIA Portal; software, documentation
and license key for downloading¹⁾;
Class A; for configuring
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

Consignee email address required
for delivery

6ES7822-1AA24-0YA5

6ES7822-1AE24-0YA5

STEP 7 Safety Advanced V20

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 V20

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.

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F
Content: 1x USB

6ES7833-1FA24-0YA5

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F
Consignee email address required
for delivery

6ES7833-1FA24-0YH5

SIMATIC ODK 1500S

SIMATIC ODK 1500S V2.5, floating license for 1 user, Engineering software, software and documentation on DVD

License key on USB flash drive,
Class A, 6 languages (en, de, fr, es,
it, cn), runs on Windows 7,
Windows 8.1 and Windows 10

6ES7806-2CD03-0YA0

SIMATIC ODK 1500S V2.5, floating license for 1 user, E-SW, software, documentation and license key download¹⁾

Class A, 6 languages (en, de, fr, es,
it, cn), runs on Windows 7,
Windows 8.1 and Windows 10
Consignee email address required
for delivery

6ES7806-2CD03-0YG0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

CPU 1518F-4 PN/DP MFP

Ordering data	Article No.	Article No.
SIMATIC Target for Simulink V6.0 SIMATIC Target (TM) for Simulink(R) V6.0 SP1, floating license download¹⁾ Engineering software; software, documentation and license key for download; Class A; 2 languages: en, de; software for integrating Simulink models into the S7 program of the S7-1500 SW controller / CPU1518 ODK/MFP and the Industrial Edge Runtime via the LiveTwin Edge app For system requirements specification, see under https://www.siemens.com/compatool Consignee email address required for delivery	6ES7823-1BE05-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC Target (TM) for Simulink(R) V6.0 SP1 upgrade V2.0..V5.0 -> V6.0 SP1 floating license download Engineering software, software, documentation and license key for download; Class A; 2 languages: en, de; software for integrating Simulink models into the S7 program of the S7-1500 SW controller / CPU1518 ODK/MFP and the Industrial Edge Runtime via the LiveTwin Edge app For system requirements specification, see under https://www.siemens.com/compatool Consignee email address required for delivery	6ES7823-1BE05-0YE5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
Target + ODK 1500S Bundle includes: SIMATIC ODK 1500S V2.5 and SIMATIC Target (TM) for Simulink (R) V6.0 SP1, floating license download E-SW, software, documentation and license key for download, Class A, 2 languages: en, de; software for integrating Simulink models into the S7 program of the S7-1500 SW controller / CPU1518 ODK/MFP and the Industrial Edge Runtime via the LiveTwin Edge app For system requirements specification, see under https://www.siemens.com/compatool Consignee email address required for delivery	6ES7823-1BE15-0YA0	

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1FL03-0AB0 CPU 1511F-1PN, 450KB prog., 1,5MB Data	6ES7513-1FM03-0AB0 CPU 1513F-1 PN, 900KB Prog., 2,5MB data	6ES7515-2FN03-0AB0 CPU 1515F-2 PN, 1,5MB Prog., 4,5MB Data	6ES7516-3FP03-0AB0 CPU 1516F-3 PN/DP, 3MB Prog., 7,5MB Data
General information				
Product type designation	CPU 1511F-1 PN	CPU 1513F-1 PN	CPU 1515F-2 PN	CPU 1516F-3 PN/DP
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 511-1FK02-0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 513-1FL02-0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 515-2FM02-0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 516-3FN02-0AB0
Display				
Screen diagonal [cm]	3.45 cm	3.45 cm	6.1 cm	6.1 cm
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Memory				
Work memory				
• integrated (for program)	450 kbyte	900 kbyte	1.5 Mbyte	3 Mbyte
• integrated (for data)	1.5 Mbyte	2.5 Mbyte	4.5 Mbyte	7.5 Mbyte
Load memory				
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte
CPU processing times				
for bit operations, typ.	6 ns	6 ns	6 ns	6 ns
for word operations, typ.	7 ns	7 ns	7 ns	7 ns
for fixed point arithmetic, typ.	9 ns	9 ns	9 ns	9 ns
for floating point arithmetic, typ.	37 ns	37 ns	37 ns	37 ns
Counters, timers and their retentivity				
S7 counter				
• Number	2 048	2 048	2 048	2 048
IEC counter				
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times				
• Number	2 048	2 048	2 048	2 048
IEC timer				
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity				
Flag				
• Size, max.	16 kbyte	16 kbyte	16 kbyte	16 kbyte
Address area				
I/O address area				
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day				
Clock				
• Type	Hardware clock	Hardware clock	Hardware clock	Hardware clock
1. Interface				
Interface types				
• RJ 45 (Ethernet)	Yes; X1	Yes; X1	Yes; X1	Yes; X1
• Number of ports	2	2	2	2
• integrated switch	Yes	Yes	Yes	Yes
Protocols				
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes
• Media redundancy	Yes	Yes	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1FL03-0AB0 CPU 1511F-1PN, 450KB prog., 1,5MB Data	6ES7513-1FM03-0AB0 CPU 1513F-1 PN, 900KB Prog., 2,5MB data	6ES7515-2FN03-0AB0 CPU 1515F-2 PN, 1,5MB Prog., 4,5MB Data	6ES7516-3FP03-0AB0 CPU 1516F-3 PN/DP, 3MB Prog., 7,5MB Data
PROFINET IO Controller				
Services				
- Isochronous mode	Yes	Yes	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes	Yes	Yes
- PROFIenergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64	64	64
- Number of connectable IO Devices for RT, max.	128	128	256	256
- of which in line, max.	128	128	256	256
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1
PROFINET IO Device				
Services				
- Isochronous mode	No	No	No	No
- IRT	Yes	Yes	Yes	Yes
- PROFIenergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Shared device	Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
2. Interface				
Interface types				
• RJ 45 (Ethernet)			Yes; X2	Yes; X2
• Number of ports			1	1
• integrated switch			No	No
Protocols				
• IP protocol			Yes; IPv4	Yes; IPv4
• PROFINET IO Controller			Yes	Yes
• PROFINET IO Device			Yes	Yes
• SIMATIC communication			Yes	Yes
• Open IE communication			Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server			Yes	Yes
• Media redundancy			No	No

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1FL03-0AB0 CPU 1511F-1PN, 450KB prog, 1,5MB Data	6ES7513-1FM03-0AB0 CPU 1513F-1 PN, 900KB Prog., 2,5MB data	6ES7515-2FN03-0AB0 CPU 1515F-2 PN, 1,5MB Prog., 4,5MB Data	6ES7516-3FP03-0AB0 CPU 1516F-3 PN/DP, 3MB Prog, 7,5MB Data
PROFINET IO Controller				
Services				
- Isochronous mode			No	No
- Direct data exchange			No	No
- IRT			No	No
- PROFINergy			Yes; per user program	Yes; per user program
- Prioritized startup			No	No
- Number of connectable IO Devices, max.			32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.			32	32
- of which in line, max.			32	32
- Number of IO Devices that can be simultaneously activated/deactivated, max.			8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.			8	8
- Updating times			The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class			1	1
PROFINET IO Device				
Services				
- Isochronous mode			No	No
- IRT			No	No
- PROFINergy			Yes; per user program	Yes; per user program
- Prioritized startup			No	No
- Shared device			Yes	Yes
- Number of IO Controllers with shared device, max.			4	4
- activation/deactivation of I-devices			Yes; per user program	Yes; per user program
- Asset management record			Yes; per user program	Yes; per user program
- PROFINET Security Class			SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
3. Interface				
Interface types				
• RS 485				Yes; X3
• Number of ports				1
Protocols				
• PROFIBUS DP master				Yes
• PROFIBUS DP device				No
• SIMATIC communication				Yes
PROFIBUS DP master				
• max. number of DP devices				125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
Protocols				
Number of connections				
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs	128; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1FL03-0AB0 CPU 1511F-1PN, 450KB prog., 1,5MB Data	6ES7513-1FM03-0AB0 CPU 1513F-1 PN, 900KB Prog., 2,5MB data	6ES7515-2FN03-0AB0 CPU 1515F-2 PN, 1,5MB Prog., 4,5MB Data	6ES7516-3FP03-0AB0 CPU 1516F-3 PN/DP, 3MB Prog., 7,5MB Data
Redundancy mode				
Media redundancy				
- Media redundancy	only via 1st interface (X1)	only via 1st interface (X1)	only via 1st interface (X1)	only via 1st interface (X1)
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50	50	50
SIMATIC communication				
• S7 routing	Yes	Yes	Yes	Yes
OPC UA				
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions	Yes	Yes	Yes	Yes
Supported technology objects				
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	1 120	1 120	2 400	2 400
• Required Motion Control resources				
- per speed-controlled axis	40	40	40	40
- per positioning axis	80	80	80	80
- per synchronous axis	160	160	160	160
- per external encoder	80	80	80	80
- per output cam	20	20	20	20
- per cam track	160	160	160	160
- per probe	40	40	40	40
Controller				
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring				
• High-speed counter	Yes	Yes	Yes	Yes
Standards, approvals, certificates				
Highest safety class achievable in safety mode				
Probability of failure (for service life of 20 years and repair time of 100 hours)				
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05	< 2.00E-05	< 2.00E-05	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09	< 1.00E-09	< 1.00E-09	< 1.00E-09

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1FL03-0AB0 CPU 1511F-1PN, 450KB prog., 1,5MB Data	6ES7513-1FM03-0AB0 CPU 1513F-1 PN, 900KB Prog., 2,5MB data	6ES7515-2FN03-0AB0 CPU 1515F-2 PN, 1,5MB Prog., 4,5MB Data	6ES7516-3FP03-0AB0 CPU 1516F-3 PN/DP, 3MB Prog., 7,5MB Data
Product functions / security				
PROFINET Security Class	1	1	1	1
signed firmware update	Yes	Yes	Yes	Yes
Secure Boot	Yes	Yes	Yes	Yes
safely removing data	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation	-30 °C; No condensation
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
Configuration				
Configuration / programming				
Programming language				
- LAD	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes
- CFC	No	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality
- GRAPH	Yes	Yes	Yes	Yes
Know-how protection				
• User program protection/password protection	Yes	Yes	Yes	Yes
• Copy protection	Yes	Yes	Yes	Yes
• Block protection	Yes	Yes	Yes	Yes
Access protection				
• protection of confidential configuration data	Yes	Yes	Yes	Yes
• Password for display	Yes	Yes	Yes	Yes
• Protection level: Write protection	Yes	Yes	Yes	Yes
• Protection level: Read/write protection	Yes	Yes	Yes	Yes
• Protection level: Write protection for Failsafe	Yes	Yes	Yes	Yes
• Protection level: Complete protection	Yes	Yes	Yes	Yes
• User administration	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized
• Number of users	100	100	100	100
Dimensions				
Width	35 mm	35 mm	70 mm	70 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm
Weights				
Weight, approx.	336 g	336 g	456 g	469 g

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7517-3FQ10-0AB0	6ES7517-3FP00-0AB0	6ES7517-3FP01-0AB0	6ES7518-3FT10-0AB0	6ES7518-4FP00-0AB0	6ES7518-4FX00-1AC0
	CPU 1517F-3 PN, 6MB prog., 50MB data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1518F-3 PN, 18MB prog., 150MB data	CPU 1518F-4 PN/DP, 9 MB Prog, 60MB Data	CPU 1518F-4 PN/DP MFP + C/C++ RT +OPC UA
General information						
Product type designation	CPU 1517F-3 PN	CPU 1517F-3 PN/DP	CPU 1517F-3 PN/DP	CPU 1518F-3 PN	CPU 1518F-4PN/DP	CPU 1518F-4 PN/DP MFP
Engineering with						
STEP 7 TIA Portal configurable/ integrated from version	V20 (FW V4.0)	V19 (FW V3.1); V13 Update 3 (FW V1.6) or higher	V19 (FW V3.1); with older TIA Portal versions configurable as 6ES7517-3FP00-0AB0	V20 (FW V4.0)	V19 (FW V3.1); V13 (FW V1.5) or higher	V18 (FW V3.0) / V15 (FW V2.5) or higher
Display						
Screen diagonal [cm]	6.1 cm	6.1 cm	6.1 cm	6.1 cm	6.1 cm	6.1 cm
Supply voltage						
Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V
Memory						
Work memory						
- integrated (for program) - integrated (for data) - integrated (for CPU function library of CPU Runtime)	6 Mbyte 50 Mbyte	3 Mbyte 8 Mbyte	3 Mbyte 8 Mbyte	18 Mbyte 150 Mbyte	9 Mbyte 60 Mbyte	9 Mbyte 60 Mbyte 50 Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.
Working memory for additional functions						
- Integrated (for C/C++ Runtime application) - available (for Linux runtime application)						1 024 Mbyte 1 Gbyte
Load memory						
Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte; the memory card must have at least 2 GB of space on it
CPU processing times						
for bit operations, typ.	0.6 ns	2 ns	2 ns	0.3 ns	1 ns	1 ns
for word operations, typ.	1.3 ns	3 ns	3 ns	0.8 ns	2 ns	2 ns
for fixed point arithmetic, typ.	1.3 ns	3 ns	3 ns	0.8 ns	2 ns	2 ns
for floating point arithmetic, typ.	3.8 ns	12 ns	12 ns	2.5 ns	6 ns	6 ns
Counters, timers and their retentivity						
S7 counter						
Number	2 048	2 048	2 048	2 048	2 048	2 048
IEC counter						
Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times						
Number	2 048	2 048	2 048	2 048	2 048	2 048
IEC timer						
Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity						
Flag						
Size, max.	16 kbyte	16 kbyte	16 kbyte	16 kbyte	16 kbyte	16 kbyte

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Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7517-3FQ10-0AB0	6ES7517-3FP00-0AB0	6ES7517-3FP01-0AB0	6ES7518-3FT10-0AB0	6ES7518-4FP00-0AB0	6ES7518-4FX00-1AC0
	CPU 1517F-3 PN, 6MB prog., 50MB data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1518F-3 PN, 18MB prog., 150MB data	CPU 1518F-4 PN/DP, 9 MB Prog, 60MB Data	CPU 1518F-4 PN/DP MFP + C/C++ RT +OPC UA
Address area						
I/O address area						
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day						
Clock						
• Type	Hardware clock	Hardware clock	Hardware clock	Hardware clock	Hardware clock	Hardware clock
1. Interface						
Interface types						
• RJ 45 (Ethernet)	Yes; X1	Yes; X1	Yes; X1	Yes; X1	Yes; X1	Yes; X1
• Number of ports	2	2	2	2	2	2
• integrated switch	Yes	Yes	Yes	Yes	Yes	Yes
Protocols						
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes	Yes	Yes
• Media redundancy	Yes	Yes	Yes	Yes	Yes	Yes
PROFINET IO Controller						
Services						
- PG/OP communication						Yes
- Isochronous mode	Yes	Yes	Yes	Yes	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes	Yes	Yes	Yes	Yes
- PROFIenergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64; with DFP: 256 IO devices in 8 DFP groups	64	64	64; with DFP: 256 IO devices in 8 DFP groups	64	64
- Number of connectable IO Devices for RT, max.	512	512	512	512	512	512
- of which in line, max.	512	512	512	512	512	512
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8	8	8	8	8

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7517-3FQ10-0AB0 CPU 1517F-3 PN, 6MB prog., 50MB data	6ES7517-3FP00-0AB0 CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	6ES7517-3FP01-0AB0 CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	6ES7518-3FT10-0AB0 CPU 1518F-3 PN, 18MB prog., 150MB data	6ES7518-4FP00-0AB0 CPU 1518F-4 PN/DP, 9 MB Prog, 60MB Data	6ES7518-4FX00-1AC0 CPU 1518F-4 PN/DP MFP + C/C++ RT +OPC UA
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1	1	
PROFINET IO Device Services						
- PG/OP communication						Yes
- Isochronous mode	No	No	No	No	No	No
- IRT	Yes	Yes	Yes	Yes; Minimum send cycle of 250 µs	Yes; Minimum send cycle of 250 µs	Yes; Minimum send cycle of 250 µs
- PROFINergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Shared device	Yes	Yes	Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4	4	4	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	
2. Interface						
Interface types						
• RJ 45 (Ethernet)	Yes; X2	Yes; X2	Yes; X2	Yes; X2	Yes; X2	Yes; X2
• Number of ports	2	1	1	2	1	1
• integrated switch	Yes	No	No	Yes	No	No
Protocols						
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes	Yes	Yes
• Media redundancy	Yes	No	No	Yes	No	No
PROFINET IO Controller Services						
- PG/OP communication						Yes
- Isochronous mode	Yes	No	No	Yes	No	No
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	No	No	Yes; Requirement: IRT and isochronous mode (MRPD optional)	No	No
- IRT	Yes	No	No	Yes	No	No
- PROFINergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	No	No	No	No	No	No
- Number of connectable IO Devices, max.	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7517-3FQ10-0AB0	6ES7517-3FP00-0AB0	6ES7517-3FP01-0AB0	6ES7518-3FT10-0AB0	6ES7518-4FP00-0AB0	6ES7518-4FX00-1AC0
	CPU 1517F-3 PN, 6MB prog., 50MB data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1518F-3 PN, 18MB prog., 150MB data	CPU 1518F-4 PN/DP, 9 MB Prog, 60MB Data	CPU 1518F-4 PN/DP MFP + C/C++ RT +OPC UA
- Of which IO devices with IRT, max.	64; with DFP: 256 IO devices in 8 DFP groups			64; with DFP: 256 IO devices in 8 DFP groups		
- Number of connectable IO Devices for RT, max.	512	128	128	512	128	128
- of which in line, max.	512	128	128	512	128	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8	8	8	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1	1	
PROFINET IO Device Services						
- PG/OP communication						Yes
- Isochronous mode	No	No	No	No	No	No
- IRT	Yes	No	No	Yes	No	No
- PROFinergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup		No	No		No	No
- Shared device	Yes	Yes	Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4	4	4	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	
3. Interface						
Interface types						
• RJ 45 (Ethernet)	Yes; X3			Yes; X3	Yes; X3	Yes; X3
• RS 485		Yes; X3	Yes; X3			
• Number of ports	1	1	1	1	1	1; C/C++ Runtime can also be reached via this port
• integrated switch	No			No	No	No
Protocols						
• IP protocol	Yes; IPv4			Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	No			No	No	No
• PROFINET IO Device	No			No	No	No
• PROFIBUS DP master		Yes	Yes			
• PROFIBUS DP device		No	No			
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted			Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes			Yes	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7517-3FQ10-0AB0	6ES7517-3FP00-0AB0	6ES7517-3FP01-0AB0	6ES7518-3FT10-0AB0	6ES7518-4FP00-0AB0	6ES7518-4FX00-1AC0
	CPU 1517F-3 PN, 6MB prog., 50MB data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1518F-3 PN, 18MB prog., 150MB data	CPU 1518F-4 PN/DP, 9 MB Prog, 60MB Data	CPU 1518F-4 PN/DP MFP + C/C++ RT +OPC UA
PROFIBUS DP master						
• max. number of DP devices		125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET			
4. Interface						
Interface types						
• RS 485					Yes; X4	Yes; X4
• Number of ports					1	1
Protocols						
• PROFIBUS DP master					Yes	Yes
• PROFIBUS DP device					No	No
• SIMATIC communication					Yes	Yes
PROFIBUS DP master						
• max. number of DP devices					125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
Protocols						
Number of connections						
• Number of connections, max.	320; via integrated interfaces of the CPU and connected CPs / CMs	320; via integrated interfaces of the CPU and connected CPs / CMs	320; via integrated interfaces of the CPU and connected CPs / CMs	384; via integrated interfaces of the CPU and connected CPs / CMs	384; via integrated interfaces of the CPU and connected CPs / CMs	384; via integrated interfaces of the CPU and connected CPs / CMs
Redundancy mode						
Media redundancy						
- Media redundancy	via the X1 or X2 interface	only via 1st interface (X1)	only via 1st interface (X1)	via the X1 or X2 interface	only via 1st interface (X1)	only via 1st interface (X1)
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50	50	50	50	50
SIMATIC communication						
• S7 routing	Yes	Yes	Yes	Yes	Yes	Yes
OPC UA						
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space
• Alarms and Conditions	Yes	Yes	Yes	Yes	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7517-3FQ10-0AB0	6ES7517-3FP00-0AB0	6ES7517-3FP01-0AB0	6ES7518-3FT10-0AB0	6ES7518-4FP00-0AB0	6ES7518-4FX00-1AC0
	CPU 1517F-3 PN, 6MB prog., 50MB data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1518F-3 PN, 18MB prog., 150MB data	CPU 1518F-4 PN/DP, 9 MB Prog, 60MB Data	CPU 1518F-4 PN/DP MFP + C/C++ RT +OPC UA
Supported technology objects						
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	20 480	10 240	10 240	30 720	15 360	15 360
• Required Motion Control resources						
- per speed-controlled axis	40	40	40	40	40	40
- per positioning axis	80	80	80	80	80	80
- per synchronous axis	160	160	160	160	160	160
- per external encoder	80	80	80	80	80	80
- per output cam	20	20	20	20	20	20
- per cam track	160	160	160	160	160	160
- per probe	40	40	40	40	40	40
Controller						
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring						
• High-speed counter	Yes	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates						
Highest safety class achievable in safety mode						
Probability of failure (for service life of 20 years and repair time of 100 hours)						
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05	< 2.00E-05	< 2.00E-05	< 2.00E-05	< 2.00E-05	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09	< 1.00E-09	< 1.00E-09	< 1.00E-09	< 1.00E-09	< 1.00E-09
Product functions / security						
PROFINET Security Class	1			1		
signed firmware update	Yes			Yes		
Secure Boot	Yes			Yes		
safely removing data	Yes			Yes		
Ambient conditions						
Ambient temperature during operation						
• horizontal installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C	0 °C

SIMATIC S7-1500 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Technical specifications

Article number	6ES7517-3FQ10-0AB0	6ES7517-3FP00-0AB0	6ES7517-3FP01-0AB0	6ES7518-3FT10-0AB0	6ES7518-4FP00-0AB0	6ES7518-4FX00-1AC0
	CPU 1517F-3 PN, 6MB prog., 50MB data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	CPU 1518F-3 PN, 18MB prog., 150MB data	CPU 1518F-4 PN/DP, 9 MB Prog, 60MB Data	CPU 1518F-4 PN/DP MFP + C/C++ RT +OPC UA
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Configuration						
Configuration / programming						
Programming language						
- LAD	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes	Yes	Yes
- CFC	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality	either CFC or failsafe functionality
- GRAPH	Yes	Yes	Yes	Yes	Yes	Yes
Know-how protection						
• User program protection/ password protection	Yes	Yes	Yes	Yes	Yes	Yes
• Copy protection	Yes	Yes	Yes	Yes	Yes	Yes
• Block protection	Yes	Yes	Yes	Yes	Yes	Yes
Access protection						
• protection of confidential configuration data	Yes	Yes	Yes	Yes	Yes	Yes
• Password for display	Yes	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection	Yes; Specific write protection both for Standard and for Failsafe	Yes	Yes	Yes	Yes	Yes
• Protection level: Read/write protection	Yes	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection for Failsafe	Yes	Yes	Yes	Yes	Yes	
• Protection level: Complete protection	Yes	Yes	Yes	Yes	Yes	Yes
• User administration	Yes; device-wide and centralized	Yes; device-wide	Yes; device-wide	Yes; device-wide and centralized	Yes; device-wide	
• Number of users	100			100		
Open Development interfaces						
• Size of ODK SO file, max.						9.8 Mbyte
Dimensions						
Width	175 mm	175 mm	175 mm	175 mm	175 mm	175 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm	129 mm
Weights						
Weight, approx.	1 499 g	1 929 g	2 090 g	1 637 g	2 079 g	2 093 g

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS fail-safe CPUs

SIPLUS CPU 1511F-1 PN

Overview



SIMATIC S7-1500F CPU 1511F-1 PN

- Entry-level CPU in the SIPLUS S7-1500F Controller product range
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- Suitable for standard and fail-safe applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronous axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages
- SIMATIC Memory Card required for operation of the CPU

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 CPU 1511F-1 PN

(Extended temperature range and exposure to environmental substances)

Fail-safe central processing unit with work memory 450 KB for program, 1.5 MB for data, 1st interface: PROFINET IRT with 2-port switch; SIMATIC Memory Card required

Temperature range -40 ... +60 °C

6AG1511-1FL03-2AB0

Accessories

System power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

For SIPLUS CPU 1511F-1 PN and CPU 1513F-1 PN; spare part

6AG1591-1AA01-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1511F-1 PN, page 5/61

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS fail-safe CPUs

SIPLUS CPU 1513F-1 PN

Overview



- The CPU for standard and fail-safe applications with medium/high requirements for program/data storage in the SIPLUS S7-1500 Controller product range
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronous axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages
- SIMATIC Memory Card required for operation of the CPU.

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 CPU 1513F-1 PN

(Extended temperature range and exposure to environmental substances)

Fail-safe CPU, 900 KB work memory for program, 2.5 MB for data, PROFINET IRT interface with 2-port switch; SIMATIC Memory Card required

Temperature range -40 ... +60 °C

6AG1513-1FM03-2AB0

Accessories

System power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

For SIPLUS CPU 1511F-1 PN and CPU 1513F-1 PN; spare part

6AG1591-1AB00-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1513F-1 PN, page 5/64

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS fail-safe CPUs

SIPLUS CPU 1515F-2 PN

Overview



- The CPU for applications with medium to high requirements for program/data memory in the S7-1500 Controller product range
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined web pages
- SIMATIC Memory Card required for operation of the CPU.

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 CPU 1515F-2 PN

(Extended temperature range and exposure to environmental substances)

Fail-safe CPU, 1.5 MB work memory for program, 4.5 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface; SIMATIC Memory Card required

Temperature range -40 ... +60 °C

6AG1515-2FN03-2AB0

Accessories

System power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

For SIPLUS CPU 1515F-2 PN; spare part

6AG1591-1BB00-2AA0

Other accessories

see SIMATIC S7-1500, CPU 1515F-2 PN/DP, page 5/67

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS fail-safe CPUs

SIPLUS CPU 1516F-3 PN/DP

Overview



- The CPU with a large program and data memory in the SIPLUS S7-1500 Controller product range for fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849.
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O.
- Supports PROFIsafe in centralized and distributed configuration.
- PROFINET IO IRT interface with 2-port switch.
- Additional PROFINET interface with separate IP address.
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET.
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders.
- Integrated web server with the option of creating user-defined web pages.
- SIMATIC Memory Card required for operation of the CPU.

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 CPU 1516F-3 PN/DP

(Extended temperature range and exposure to environmental substances)

Fail-safe CPU, 3 MB work memory for program, 7.5 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, PROFIBUS interface; SIMATIC Memory Card required

Temperature range -40 ... +60 °C

6AG1516-3FP03-2AB0

Accessories

System power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

For SIPLUS CPU 1516F-3 PN/DP; spare part

6AG1591-1BB00-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1516F-3 PN/DP, page 5/76

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS fail-safe CPUs

SIPLUS CPU 1518F-4 PN/DP

Overview



- The CPU with a very large program and data memory in the SIPLUS S7-1500 Controller product range for fail-safe applications with highest requirements regarding program scope, performance and networking.
- Can be used for failsafe functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849.
- Extremely high processing speed for binary and floating-point arithmetic.
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configuration.
- PROFINET IO IRT interface with 2-port switch.
- Two additional PROFINET interfaces with separate IP addresses.
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface.
- Isochronous mode on PROFIBUS and PROFINET.
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing), support for external encoders, output cams/cam tracks and probes
- Integrated web server with the option of creating user-defined web pages.

Note:

SIMATIC Memory Card required for operation of the CPU.

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 CPU 1518F-4 PN/DP

(Exposure to environmental substances)

Fail-safe CPU, 6 MB work memory for program, 20 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, Ethernet interface, PROFIBUS interface; SIMATIC Memory Card required

6AG1518-4FP00-4AB0

SIPLUS CPU 1518F-4PN/DP

(Exposure to environmental substances)

Work memory 18 MB for program and 150 MB for data, 2x PROFINET IRT interface with 2-port switch, Ethernet interface; 0.3 ns bit performance; SIMATIC Memory Card required

6AG1518-3FT10-4AB0

Accessories

SIPLUS S7-1500 cooling fan 175 mm

(Extended temperature range and exposure to environmental substances)

Fan module for the operation of a SIPLUS S7-1500 CPU at locations with an ambient temperature of up to +70 °C

6AG1593-0AA00-7AA0

System power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Display

(Extended temperature range and exposure to environmental substances)

6AG1591-1BA02-2AA0

for CPU 1518-4F PN/DP; spare part

Other accessories

See SIMATIC S7-1500, CPU 1518F-4 PN/DP, page 5/84

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS fail-safe CPUs

Technical specifications

Technical specifications

Article number	6AG1511-1FL03-2AB0
Based on	6ES7511-1FL03-0AB0 SIPLUS S7-1500 CPU 1511F-1 PN
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C
• vertical installation, min.	-30 °C; No condensation
• vertical installation, max.	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
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, *
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

Article number	6AG1513-1FM03-2AB0
Based on	6ES7513-1FM03-0AB0 SIPLUS S7-1500 CPU 1513F-1 PN
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C
• vertical installation, min.	-40 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
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, *
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

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS fail-safe CPUs

Technical specifications

Technical specifications

Article number	6AG1515-2FN03-2AB0
Based on	6ES7515-2FN03-0AB0 SIPLUS S7-1500 CPU 1515F-2 PN
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C
• vertical installation, min.	-40 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
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, *
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

Article number	6AG1516-3FP03-2AB0
Based on	6ES7516-3FP03-0AB0 SIPLUS S7-1500 CPU 1516F-3 PN
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C
• vertical installation, min.	-40 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
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, *
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

SIMATIC S7-1500 Advanced Controllers

Central processing units

SIPLUS fail-safe CPUs

Technical specifications

Technical specifications

Article number	6AG1518-4FP00-4AB0
Based on	6ES7518-4FP00-0AB0 SIPLUS S7-1500 CPU 1518F-4 PN/DP
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260
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, *
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; *

Article number	6AG1518-4FP00-4AB0
Based on	6ES7518-4FP00-0AB0 SIPLUS S7-1500 CPU 1518F-4 PN/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

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1513R-1 PN

Overview



- The CPU for applications with medium requirements for program scope and processing speed, and increased requirements for availability.
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with distributed I/O
- PROFINET IO RT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500R, CPU 1513R-1PN Central processor unit with 600 KB work memory for program and 2.5 MB for data, 1st interface: PROFINET RT with 2-port switch, SIMATIC Memory Card required	6ES7513-1RM03-0AB0
Accessories	
SIMATIC Memory Card	
SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS 3.3 V Flash, 4 MB	6ES7954-8LC04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 12 MB	6ES7954-8LE04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 24 MB	6ES7954-8LF04-0AA0
SIMATIC S7, memory card for S7-1x00 CPU 3.3 V Flash, 256 MB	6ES7954-8LL04-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 2 GB	6ES7954-8LP04-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 32 GB	6ES7954-8LT04-0AA0
SIMATIC S7-1500 mounting rail	
SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AB60-0AA0
SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AC40-0AA0
SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AE80-0AA0
SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AF30-0AA0
SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AJ30-0AA0
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1513R-1 PN

Ordering data	Article No.		Article No.
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0		
Load current supply			
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
Power supply connector		Display module 35 mm	
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0	SIMATIC S7-1500, spare part Display module, 35 mm for S7-1500 CPUs	6ES7591-1AB00-0AA0
IE FC RJ45 plugs		STEP 7 Professional V20 (required for S7-1500R/H) Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download	
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 pack = 1 unit.	6GK1901-1BB10-2AA0		
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 pack = 10 units.	6GK1901-1BB10-2AB0		
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 pack=50 units.	6GK1901-1BB10-2AE0	SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5
Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10	SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5
Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10		

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1513R-1 PN

Ordering data	Article No.		Article No.	
SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1515R-2 PN

Overview



- The CPU for applications with medium/high requirements for program scope, networking and processing speed, and with increased requirements for availability.
- High processing speed for binary and floating-point arithmetic
- Used as central controller with distributed I/O
- PROFINET IO RT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500R, CPU 1515R-2 PN

Central processing unit with
1 MB work memory for program
and 4.5 MB for data,
1st interface: PROFINET RT
with 2-port switch,
2nd interface: PROFINET,
SIMATIC Memory Card required

6ES7515-2RN03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw,
integrated DIN rail for mounting
small items such as terminals,
circuit breakers and relays,
for cutting to length by customer,
grounding screw
(6ES7590-5AA00-0AA0, 20 units)
must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1515R-2 PN

Ordering data	Article No.		Article No.
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
Load current supply		Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	SIMATIC S7-1500, spare part, display module 70 mm for S7-1500 CPUs	6ES7591-1BB00-0AA0
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	STEP 7 Professional V20 (required for S7-1500R/H) Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download	
Power supply connector		SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0	SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5
IE FC RJ45 plugs			
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 pack = 1 unit.	6GK1901-1BB10-2AA0		
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 pack = 10 units.	6GK1901-1BB10-2AB0		
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 pack = 50 units.	6GK1901-1BB10-2AE0		
Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10		
Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10		

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1515R-2 PN

Ordering data	Article No.		Article No.	
SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1517H-3 PN

Overview



- The CPU for applications with high requirements for availability, very high requirements for program scope and networking, and very high requirements for processing speed.
- High processing speed for binary and floating-point arithmetic
- Used as central controller with distributed I/O
- PROFINET IO RT interface with 2-port switch
- Additional PROFINET interface with separate IP addresses
- PROFINET IO controller for operating distributed I/O on PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500H, CPU 1517H-3 PN

Central processing unit with
2 MB work memory for program and
8 MB for data,
1st interface: PROFINET RT
with 2-port switch,
2nd interface: PROFINET,
3rd/4th interface: H-SYNC,
SIMATIC Memory Card required

6ES7517-3HP00-0AB0

SIMATIC S7-1500H, CPU 1517H system bundle

Consisting of: 2 x CPU 1517H-3 PN
(6ES7517-3HP00-0AB0),
4 sync modules up to 200 m
(6ES7960-1CB00-0AA5),
2 x sync cables 1 m
(6ES7960-1BB00-5AA5),
without memory card

6ES7500-0HP00-0AB0

Accessories

Synchronization modules

SIMATIC S7-1500H synchronization module for patch cables

Up to 200 m

6ES7960-1CB00-0AA5

SIMATIC S7-1500H synchronization module for fiber-optic cables

Up to 10 km, fiber category OS1 or
OS2, LC connector type

6ES7960-1FB00-0AA5

SIMATIC S7-1500H synchronization module for fiber-optic cables

From 8 km to 40 km, fiber category
OS2, connector type LC

6ES7960-1FE00-0AA5

FOC synchronization connecting cables FOC for S7-1500H

SIMATIC S7-1500H sync fiber-optic connecting cable

1 m

6ES7960-1BB00-5AA5

SIMATIC S7-1500H sync fiber-optic connecting cable

2 m

6ES7960-1BC00-5AA5

SIMATIC S7-1500H sync fiber-optic connecting cable

10 m

6ES7960-1CB00-5AA5

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1517H-3 PN

Ordering data

Article No.

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit

6ES7590-5AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

Display

SIMATIC S7-1500, spare part display

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Redundant CPUs

CPU 1517H-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 (required for S7-1500R/H) Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) - Windows 10 Professional Version 22H2 - Windows 10 Enterprise Version 22H2 - Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) - Windows 11 Professional Version 22H2 & 23H2 - Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) - Windows Server 2019 Standard (full installation) - Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1517H-4 PN

Overview



Similar to figure

- The CPU for applications with high requirements for availability, very high requirements for program scope and networking, and very high requirements for processing speed.
- High processing speed for binary and floating-point arithmetic
- Used as central controller with distributed I/O
- PROFINET IO RT interface with 2-port switch
- Additional PROFINET interface with separate IP addresses
- PROFINET IO controller for operating distributed I/O on PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500H, CPU 1517H-4 PN

Central processing unit with 4 MB work memory for program and 50 MB for data,
1st interface: PROFINET RT with 2-port switch,
2nd interface: PROFINET with 2-port switch,
3rd interface: PROFINET
4th/5th interface: H-SYNC,
SIMATIC Memory Card required

6ES7517-4HQ10-0AB0

SIMATIC S7-1500H, CPU 1517H system bundle

Consisting of: 2 x CPU 1517H-4 PN (6ES7517-4HQ10-0AB0),
4 sync modules up to 200 m (6ES7960-1CB00-0AA5),
2 x sync cables 1 m (6ES7960-1BB00-5AA5),
without memory card

6ES7500-0HQ00-0AB0

Accessories

Synchronization modules

SIMATIC S7-1500H synchronization module for patch cables

Up to 200 m

6ES7960-1CB00-0AA5

SIMATIC S7-1500H synchronization module for fiber-optic cables

Up to 10 km, fiber category OS1 or OS2, LC connector type

6ES7960-1FB00-0AA5

SIMATIC S7-1500H synchronization module for fiber-optic cables

From 8 km to 40 km, fiber category OS2, connector type LC

6ES7960-1FE00-0AA5

FOC synchronization connecting cables FOC for S7-1500H

SIMATIC S7-1500H sync fiber-optic connecting cable

1 m

6ES7960-1BB00-5AA5

SIMATIC S7-1500H sync fiber-optic connecting cable

2 m

6ES7960-1BC00-5AA5

SIMATIC S7-1500H sync fiber-optic connecting cable

10 m

6ES7960-1CB00-5AA5

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1517H-4 PN

Ordering data

Article No.

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC, output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

Display

SIMATIC S7-1500, spare part display

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Redundant CPUs

CPU 1517H-4 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 (required for S7-1500R/H) Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) - Windows 10 Professional Version 22H2 - Windows 10 Enterprise Version 22H2 - Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) - Windows 11 Professional Version 22H2 & 23H2 - Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) - Windows Server 2019 Standard (full installation) - Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1518HF-4 PN

Overview



- The CPU for applications with high availability requirements, also in connection with functional safety requirements
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849
- A very large program data memory enables the realization of extensive applications.
- High processing speed for binary and floating-point arithmetic
- Used as central controller with distributed I/O
- Supports PROFIsafe in distributed configurations
- PROFINET IO RT interface with 2-port switch
- Two additional PROFINET interfaces with separate IP addresses
- PROFINET IO controller for operating distributed I/O on PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500H, CPU 1518HF-4 PN

Central processing unit with 9 MB work memory for program and 60 MB for data,
1st interface: PROFINET RT with 2-port switch,
2nd interface: PROFINET with 2-port switch,
3rd interface: PROFINET,
4th/5th interface: H-SYNC,
SIMATIC Memory Card required

6ES7518-4JP00-0AB0

SIMATIC S7-1500H, CPU 1518HF-4 PN

Central processing unit with 18 MB work memory for program and 150 MB for data,
1st interface: PROFINET RT with 2-port switch,
2nd interface: PROFINET with 2-port switch,
3rd interface: PROFINET,
4th/5th interface: H-SYNC,
SIMATIC Memory Card required

6ES7518-4JT10-0AB0

SIMATIC S7-1500HF, CPU 1518HF system bundle

Consisting of: 2 x CPU 1518HF-4 PN (6ES7518-4JT10-0AB0),
4 sync modules up to 200 m (6ES7960-1CB00-0AA5),
2 x sync cables 1 m (6ES7960-1BB00-5AA5),
without memory card

6ES7500-0JP00-0AB0

SIMATIC S7-1500HF, CPU 1518HF system bundle

Consisting of: 2 x CPU 1518HF-4 PN (6ES7518-4JP00-0AB0),
4 sync modules up to 200 m (6ES7960-1CB00-0AA5),
2 x sync cables 1 m (6ES7960-1BB00-5AA5),
without memory card

6ES7500-0JT00-0AB0

Accessories

Synchronization modules

SIMATIC S7-1500H synchronization module for patch cables up to 200 m

6ES7960-1CB00-0AA5

SIMATIC S7-1500H synchronization module for fiber-optic cables up to 10 km

Fiber category OS1 or OS2,
connector type LC

6ES7960-1FB00-0AA5

SIMATIC S7-1500H synchronization module for fiber-optic cables from 8 km to 40 km

Fiber category OS2,
connector type LC

6ES7960-1FE00-0AA5

FOC synchronization connecting cables FOC for S7-1500H

SIMATIC S7-1500H sync fiber-optic connecting cable 1 m

6ES7960-1BB00-5AA5

SIMATIC S7-1500H sync fiber-optic connecting cable 2 m

6ES7960-1BC00-5AA5

SIMATIC S7-1500H sync fiber-optic connecting cable 10 m

6ES7960-1CB00-5AA5

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Redundant CPUs

CPU 1518HF-4 PN

Ordering data	Article No.		Article No.
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 24 MB	6ES7954-8LF04-0AA0	Power supply connector	
SIMATIC S7, memory card for S7-1x00 CPU 3.3 V Flash, 256 MB	6ES7954-8LL04-0AA0	Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 2 GB	6ES7954-8LP04-0AA0	IE FC RJ45 plugs	
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 32 GB	6ES7954-8LT04-0AA0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
SIMATIC S7-1500 mounting rail		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 pack = 10 units.	6GK1901-1BB10-2AB0
SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AB60-0AA0	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 pack = 50 units.	6GK1901-1BB10-2AE0
SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AC40-0AA0	Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10
SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AE80-0AA0	Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10
SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AF30-0AA0	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AJ30-0AA0	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0	SIMATIC S7-1500, spare part display For S7-1500 CPUs with 70 mm or 175 mm width	6ES7591-1BA02-0AA0
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0		
Load current supply			
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00		
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00		

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

CPU 1518HF-4 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

Technical specifications

Technical specifications

Article number	6ES7513-1RM03-0AB0	6ES7515-2RN03-0AB0	6ES7517-3HP00-0AB0	6ES7517-4HQ10-0AB0	6ES7518-4JP00-0AB0	6ES7518-4JT10-0AB0
	CPU 1513R-1 PN, 600KB program/ 2,5MB data	CPU 1515R-2 PN, 1MB program/ 4,5MB data	CPU 1517H-3 PN, 2MB program/ 8MB data	CPU 1517H-4 PN, 4MB prog., 50MB data	CPU 1518HF-4 PN, 9MB program/ 60MB data	CPU 1518HF-4 PN, 18MB prog., 150MB data
General information						
Product type designation	CPU 1513R-1 PN	CPU 1515R-2 PN	CPU 1517H-3 PN	CPU 1517H-4 PN	CPU 1518HF-4PN	CPU 1518HF-4 PN
Engineering with						
• STEP 7 TIA Portal configurable/ integrated from version	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 513-1RL00- 0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 515-2RM00- 0AB0	V19 (FW V3.1) / V15.1 (FW V2.6) or higher	V20 (FW V4.0)	V19 (FW V3.1) / V17 (FW V2.9) or higher	V20 (FW V4.0)
Redundancy						
• stand-alone operation	Yes	Yes		No		No
Display						
Screen diagonal [cm]	3.45 cm	6.1 cm	6.1 cm	6.1 cm	6.1 cm	6.1 cm
Supply voltage						
Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V
Memory						
Work memory						
• integrated (for program)	600 kbyte	1 Mbyte	2 Mbyte	4 Mbyte	9 Mbyte	18 Mbyte
• integrated (for data)	2.5 Mbyte	4.5 Mbyte	8 Mbyte	50 Mbyte	60 Mbyte	150 Mbyte
Load memory						
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte
CPU processing times						
for bit operations, typ.	20 ns	20 ns	4 ns	1 ns	4 ns	1 ns
for word operations, typ.	24 ns	24 ns	6 ns	2 ns	6 ns	2 ns
for fixed point arithmetic, typ.	32 ns	32 ns	6 ns	2 ns	6 ns	2 ns
for floating point arithmetic, typ.	128 ns	128 ns	24 ns	8 ns	24 ns	8 ns
Counters, timers and their retentivity						
S7 counter						
• Number	2 048	2 048	2 048	2 048	2 048	2 048
IEC counter						
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times						
• Number	2 048	2 048	2 048	2 048	2 048	2 048
IEC timer						
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity						
Flag						
• Size, max.	16 kbyte	16 kbyte	16 kbyte	16 kbyte	16 kbyte	16 kbyte
Address area						
I/O address area						
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day						
Clock						
• Type	Hardware clock	Hardware clock	Hardware clock	Hardware clock	Hardware clock	Hardware clock
1. Interface						
Interface types						
• RJ 45 (Ethernet)	Yes; X1	Yes; X1	Yes; X1	Yes; X1	Yes; X1	Yes; X1
• Number of ports	2	2	2	2	2	2
• integrated switch	Yes	Yes	Yes	Yes	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

Technical specifications

Technical specifications

Article number	6ES7513-1RM03-0AB0	6ES7515-2RN03-0AB0	6ES7517-3HP00-0AB0	6ES7517-4HQ10-0AB0	6ES7518-4JP00-0AB0	6ES7518-4JT10-0AB0
	CPU 1513R-1 PN, 600KB program/ 2,5MB data	CPU 1515R-2 PN, 1MB program/ 4,5MB data	CPU 1517H-3 PN, 2MB program/ 8MB data	CPU 1517H-4 PN, 4MB prog., 50MB data	CPU 1518HF-4 PN, 9MB program/ 60MB data	CPU 1518HF-4 PN, 18MB prog., 150MB data
Protocols						
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes	Yes	Yes
• PROFINET IO Device	No	No	No	No	No	No
• SIMATIC communication	Yes; Only Server	Yes; Only Server	Yes; Only Server	Yes; Only Server	Yes; Only Server	Yes; Only Server
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes	Yes	Yes
• Media redundancy	Yes	Yes	Yes	Yes	Yes	Yes
PROFINET IO Controller						
Services						
- Isochronous mode	No	No	No	No	No	No
- IRT	No	No	No	No	No	No
- PROFinergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Number of connectable IO Devices, max.	64	64	256	256	256	256
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1	1	1
2. Interface						
Interface types						
• RJ 45 (Ethernet)		Yes; X2	Yes; X2	Yes; X2	Yes; X2	Yes; X2
• Number of ports		1	1	2	1	2
• integrated switch		No	No	Yes	No	Yes
Protocols						
• IP protocol		Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller		No	No	No	No	No
• PROFINET IO Device		No	No	No	No	No
• SIMATIC communication		Yes; Only Server	Yes; Only Server	Yes; Only Server	Yes; Only Server	Yes; Only Server
• Open IE communication		Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server		Yes	Yes	Yes	Yes	Yes
• Media redundancy		No	No	No	No	No
3. Interface						
Interface type			Pluggable synchronization submodule (FO)			
Plug-in interface modules			Synchronization module 6ES7960-1CB00-0AA5, 6ES7960-1FB00-0AA5 or 6ES7960-1FE00-0AA5			
Interface types						
• RJ 45 (Ethernet)				Yes; X3	Yes; X3	Yes; X3
• Number of ports				1	1	1
• integrated switch				No	No	No
Protocols						
• IP protocol				Yes; IPv4	Yes; IPv4	Yes; IPv4
• SIMATIC communication				Yes; Only Server	Yes; Only Server	Yes; Only Server
• Open IE communication				Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server				Yes	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

Technical specifications

Technical specifications

Article number	6ES7513-1RM03-0AB0 CPU 1513R-1 PN, 600KB program/ 2,5MB data	6ES7515-2RN03-0AB0 CPU 1515R-2 PN, 1MB program/ 4,5MB data	6ES7517-3HP00-0AB0 CPU 1517H-3 PN, 2MB program/ 8MB data	6ES7517-4HQ10-0AB0 CPU 1517H-4 PN, 4MB prog., 50MB data	6ES7518-4JP00-0AB0 CPU 1518HF-4 PN, 9MB program/ 60MB data	6ES7518-4JT10-0AB0 CPU 1518HF-4 PN, 18MB prog., 150MB data
4. Interface						
Interface type			Pluggable synchronization submodule (FO)	Pluggable synchronization submodule (FO)	Pluggable synchronization submodule (FO)	Pluggable synchronization submodule (FO)
Plug-in interface modules			Synchronization module 6ES7960- 1CB00-0AA5, 6ES7960-1FB00- 0AA5 or 6ES7960- 1FE00-0AA5	Synchronization module 6ES7960- 1CB00-0AA5, 6ES7960-1FB00- 0AA5 or 6ES7960- 1FE00-0AA5	Synchronization module 6ES7960- 1CB00-0AA5, 6ES7960-1FB00- 0AA5 or 6ES7960- 1FE00-0AA5	Synchronization module 6ES7960- 1CB00-0AA5, 6ES7960-1FB00- 0AA5 or 6ES7960- 1FE00-0AA5
5. Interface						
Interface type				Pluggable synchronization submodule (FO)	Pluggable synchronization submodule (FO)	Pluggable synchronization submodule (FO)
Plug-in interface modules				Synchronization module 6ES7960- 1CB00-0AA5, 6ES7960-1FB00- 0AA5 or 6ES7960- 1FE00-0AA5	Synchronization module 6ES7960- 1CB00-0AA5, 6ES7960-1FB00- 0AA5 or 6ES7960- 1FE00-0AA5	Synchronization module 6ES7960- 1CB00-0AA5, 6ES7960-1FB00- 0AA5 or 6ES7960- 1FE00-0AA5
Protocols						
Number of connections						
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs	256; via integrated interfaces of the CPU and connected CPs	320; via integrated interfaces of the CPU and connected CPs	320; via integrated interfaces of the CPU and connected CPs	384; via integrated interfaces of the CPU and connected CPs	384; via integrated interfaces of the CPU and connected CPs
Redundancy mode						
Media redundancy						
- Media redundancy	Yes; only via 1st interface (X1)	Yes; only via 1st interface (X1)		Yes; only via 1st interface (X1)	only via 1st interface (X1)	Yes; only via 1st interface (X1)
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	No	No	No	No	No	No
- Switchover time on line break, typ.	200 ms; PROFINET MRP	200 ms; PROFINET MRP	200 ms; PROFINET MRP	200 ms; PROFINET MRP	200 ms; PROFINET MRP	200 ms; PROFINET MRP
- Number of stations in the ring, max.	50; Only 16 are recommended, however	50; Only 16 are recommended, however	50	50	50	50
SIMATIC communication						
• S7 routing	Yes	Yes	Yes	Yes	Yes	Yes
OPC UA						
• OPC UA Client	No	No	No	No	No	No
• OPC UA Server	Yes; data access (read, write, subscribe), method call, custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, custom address space, role-based access control	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; data access (read, write, subscribe), method call, custom address space, role-based access control	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; data access (read, write, subscribe), method call, custom address space, role-based access control
• Alarms and Conditions	No	No	No	No	No	No

SIMATIC S7-1500 Advanced Controllers

Central processing units
Redundant CPUs

Technical specifications

Technical specifications

Article number	6ES7513-1RM03-0AB0	6ES7515-2RN03-0AB0	6ES7517-3HP00-0AB0	6ES7517-4HQ10-0AB0	6ES7518-4JP00-0AB0	6ES7518-4JT10-0AB0
	CPU 1513R-1 PN, 600KB program/ 2,5MB data	CPU 1515R-2 PN, 1MB program/ 4,5MB data	CPU 1517H-3 PN, 2MB program/ 8MB data	CPU 1517H-4 PN, 4MB prog., 50MB data	CPU 1518HF-4 PN, 9MB program/ 60MB data	CPU 1518HF-4 PN, 18MB prog., 150MB data
Supported technology objects						
Motion Control	No	No	No	No	No	No
Controller						
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring	Yes	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates						
Highest safety class achievable in safety mode						
Probability of failure (for service life of 20 years and repair time of 100 hours)						
- Low demand mode: PFDavg in accordance with SIL3					< 2.00E-05	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3					< 1.00E-09	< 1.00E-09
Product functions / security						
PROFINET Security Class	1	1		1		1
signed firmware update	Yes	Yes		Yes		Yes
Secure Boot	Yes	Yes		Yes		Yes
safely removing data	Yes	Yes		Yes		Yes
Ambient conditions						
Ambient temperature during operation						
• horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-30 °C; No condensation	-30 °C; No condensation	0 °C	0 °C	0 °C	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual

SIMATIC S7-1500 Advanced Controllers

Central processing units

Redundant CPUs

Technical specifications

Technical specifications

Article number	6ES7513-1RM03-0AB0	6ES7515-2RN03-0AB0	6ES7517-3HP00-0AB0	6ES7517-4HQ10-0AB0	6ES7518-4JP00-0AB0	6ES7518-4JT10-0AB0
	CPU 1513R-1 PN, 600KB program/ 2,5MB data	CPU 1515R-2 PN, 1MB program/ 4,5MB data	CPU 1517H-3 PN, 2MB program/ 8MB data	CPU 1517H-4 PN, 4MB prog., 50MB data	CPU 1518HF-4 PN, 9MB program/ 60MB data	CPU 1518HF-4 PN, 18MB prog., 150MB data
Configuration						
Configuration / programming						
Programming language						
- LAD	Yes	Yes	Yes	Yes	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes	Yes	Yes	Yes	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes	Yes	Yes
- CFC	Yes	Yes	Yes	Yes	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality
- GRAPH	Yes	Yes	Yes	Yes	Yes	Yes
Know-how protection						
• User program protection/ password protection	Yes	Yes	Yes	Yes	Yes	Yes
• Copy protection	No	No	No	No	No	No
• Block protection	Yes	Yes	Yes	Yes	Yes	Yes
Access protection						
• protection of confidential configuration data	Yes	Yes	Yes	Yes	Yes	Yes
• Password for display	Yes	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection	Yes	Yes	Yes	Yes	Yes	Yes
• Protection level: Read/write protection	Yes	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection for Failsafe	No	No	No	No	Yes	Yes
• Protection level: Complete protection	Yes	Yes	Yes	Yes	Yes	Yes
• User administration	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes	Yes; device-wide and centralized	Yes	Yes; device-wide and centralized
• Number of users	100	100		100		100
Dimensions						
Width	35 mm	70 mm	210 mm	210 mm	210 mm	210 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm	129 mm
Weights						
Weight, approx.	336 g	456 g	2 094 g; Interface modules: 2x 18 g	1 806 g; Interface modules: 2x 18 g	2 116 g	1 806 g

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS redundant CPUs

SIPLUS CPU 1515R-2 PN

Overview



- The CPU for applications with medium/high requirements for program scope, networking and processing speed, and with increased requirements for availability.
- High processing speed for binary and floating-point arithmetic
- Used as central PLC with distributed I/O
- PROFINET IO RT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU.

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 s7-1500 CPU 1515R-2 PN

6AG1515-2RN03-7AB0

(Extended temperature range and exposure to environmental substances)

Central processing unit with
1 MB work memory for program and
4.5 MB work memory for data,
1st interface: PROFINET RT
with 2-port switch,
2nd interface: PROFINET;
SIMATIC Memory Card required,
with conformal coating
-40...+70 °C

Accessories

System power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage,
power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage,
power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage,
power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8A

6AG1333-4BA00-7AA0

Replacement display for CPU, front flap

6AG1591-1BA02-2AA0

Other accessories

See SIMATIC S7-1500,
CPU 1515R-2 PN,
page 5/116

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS redundant CPUs

SIPLUS CPU 1517H-3 PN

Overview



- The CPU for applications with high requirements for availability, very high requirements for program scope and networking, and very high requirements for processing speed.
- High processing speed for binary and floating-point arithmetic
- Used as central controller with distributed I/O
- PROFINET IO RT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU.

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

SIPLUS CPU 1517H-3 PN

(Extended temperature range and exposure to environmental substances)

SIPLUS S7-1500H CPU, 2 MB work memory for program, 8 MB for data, 1st interface PROFINET RT with 2-port switch, 2nd interface PROFINET RT, 3rd interface synchronization, command times for bit operations 4 ns; SIMATIC Memory Card required

Article No.

6AG1517-3HP00-4AB0

SIPLUS CPU 1517H-3 PN

(Extended temperature range and exposure to environmental substances)

Work memory 4 MB for program and 50 MB for data, 1st interface: PROFINET RT with 2-port switch, 2nd interface: PROFINET, 3rd interface: PROFINET, 4th/5th interface: H-SYNC, SIMATIC Memory Card required

6AG1517-4HQ10-4AB0

SIPLUS S7-1500 CPU 1517H System Bundle

(Extended temperature range and exposure to environmental substances)

Comprising 2 SIPLUS CPU 1517H-3 PN, 4 SIPLUS synchronization modules up to 10 m, 2 FOC synchronization cables (1 m); without memory card

6AG1500-0HP00-4AB0

Accessories

SIPLUS S7-1500 cooling fan 210 mm

(Extended temperature range and exposure to environmental substances)

Fan module for the operation of a SIPLUS S7-1500 CPU at locations with an ambient temperature of up to +70 °C

6AG1593-0AB00-7AA0

Article No.

Synchronization modules

(Extended temperature range and exposure to environmental substances)

- for patch cable FOC up to 10 m
- for routing cable FOC up to 10 km

6AG1960-1CB00-4AA5
6AG1960-1FB00-4AA5

System power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

24/48/60 V DC input voltage, power 60 W

120/230 V AC input voltage, power 60 W

6AG1505-0KA00-7AB0

6AG1505-0RA00-7AB0

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

24 V DC/8 A

6AG1332-4BA00-7AA0

6AG1333-4BA00-7AA0

Replacement display for CPU, front flap

6AG1591-1BA02-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1517H-3 PN, page 5/119

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS redundant CPUs

SIPLUS CPU 1518HF-4 PN

Overview



- The CPU for applications with high availability requirements, also in connection with functional safety requirements.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- A very large program data memory enables the realization of extensive applications
- High processing speed for binary and floating-point arithmetic
- Used as central controller with distributed I/O
- Supports PROFI-safe in distributed configurations
- PROFINET IO RT interface with 2-port switch
- Two additional PROFINET interfaces with separate IP addresses
- PROFINET IO controller for operating distributed I/O on PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU.

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 CPU 1518HF-4 PN

6AG1518-4JP00-4AB0

With conformal coating

CPU with 9 MB work memory for program and 60 MB work memory for data,
1st interface: PROFINET RT with 2-port switch, 2nd interface: PROFINET, 3rd interface: PROFINET, 4th/5th interface: H-SYNC;
SIMATIC Memory Card required

SIPLUS CPU 1518HF-4PN

6AG1518-4JT10-4AB0

With conformal coating

Central processing unit with work memory 18 MB for program and 150 MB for data,
1st interface: PROFINET IR with 2-port switch, 2nd interface: PROFINET with 2-port switch, 3rd interface: 4th/5th interface: H-SYNC;
SIMATIC Memory Card required

Accessories

SIPLUS S7-1500 cooling fan 210 mm

6AG1593-0AB00-7AA0

(Extended temperature range)

Fan module for the operation of a SIPLUS S7-1500 CPU at locations with an ambient temperature of up to +70 °C

Synchronization modules

(Extended temperature range and exposure to environmental substances)

- for patch cable FOC up to 10 m
- for routing cable FOC up to 10 km

6AG1960-1CB00-4AA5
6AG1960-1FB00-4AA5

System power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load current supply

(Extended temperature range and exposure to environmental substances)

24 V DC/3 A

6AG1332-4BA00-7AA0

24 V DC/8 A

6AG1333-4BA00-7AA0

Replacement display for CPU, front flap

6AG1591-1BA02-2AA0

Other accessories

See SIMATIC S7-1500, CPU 1518HF-4 PN, page 5/125

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS redundant CPUs

Technical specifications

Technical specifications

Article number	6AG1515-2RN03-7AB0	Article number	6AG1515-2RN03-7AB0
Based on	6ES7515-2RN03-0AB0 SIPLUS S7-1500 CPU 1515R-2 PN	Based on	6ES7515-2RN03-0AB0 SIPLUS S7-1500 CPU 1515R-2 PN
Ambient conditions		Use on ships/at sea	
Ambient temperature during operation		- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	
• horizontal installation, max.	70 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
• vertical installation, min.	-40 °C; = Tmin	Yes; Class 6S3 incl. sand, dust; *	
• vertical installation, max.	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	Usage in industrial process technology	
Altitude during operation relating to sea level		- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	Yes; Class 3 (excluding trichlorethylene)	
Relative humidity		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)	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	Remark	
Resistance		- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	
Coolants and lubricants		Conformal coating	
• Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	• Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	
Use in stationary industrial systems		Yes; Class 2 for high reliability	
• 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; Type 1 protection	
• 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; Discoloration of coating possible during service life	
• to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Conformal coating, Class A	

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS redundant CPUs

Technical specifications

Technical specifications

Article number	6AG1517-3HP00-4AB0	6AG1517-4HQ10-4AB0
Based on	6ES7517-3HP00-0AB0 SIPLUS S7-1500 CPU 1517H-3 PN	6ES7517-4HQ10-0AB0 SIPLUS S7-1500 CPU 1518HF-4 PN
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	0 °C; = Tmin	0 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C
• vertical installation, min.	0 °C; = Tmin	0 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during storage/transportation		
• min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	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)
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, *
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; *
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!	* 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

SIMATIC S7-1500 Advanced Controllers

Central processing units
SIPLUS redundant CPUs

Technical specifications

Technical specifications

Article number	6AG1518-4JP00-4AB0
Based on	6ES7518-4JP00-0AB0 SIPLUS S7-1500 CPU 1518HF-4 PN
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °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
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, *
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; *

Article number	6AG1518-4JP00-4AB0
Based on	6ES7518-4JP00-0AB0 SIPLUS S7-1500 CPU 1518HF-4 PN
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

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1511T-1 PN

Overview



- Entry-level CPU in the S7-1500T Controller product range
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO Controller
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes. Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1511T-1 PN

Central processing unit with 450 KB work memory for program and 1.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 6 ns bit performance, SIMATIC Memory Card required

6ES7511-1TL03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1511T-1 PN

Ordering data

Article No.

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

35 mm for S7-1500 CPUs

6ES7591-1AB10-0AA0

SIMATIC S7-1500, spare part, cover flap

35 mm with cutout for display and display control keys

6ES7591-4AB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1511T-1 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included , fr, sp, it, ru, ja, ko as download SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery. SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
		6ES7822-1AE24-0YA5
		6ES7998-8XE01-8YE0
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1511TF-1 PN

Overview



- Entry-level CPU in the S7-1500T Controller product range
- Suitable for standard and fail-safe applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO Controller
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes. Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1511TF-1 PN

Central processing unit with 450 KB work memory for program and 1.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 6 ns bit performance, SIMATIC Memory Card required

6ES7511-1UL03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1511TF-1 PN

Ordering data

Article No.

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

35 mm for S7-1500 CPUs

6ES7591-1AB00-0AA0

SIMATIC S7-1500, spare part, cover flap

35 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4AB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1511TF-1 PN

Ordering data

Article No.

Article No.

STEP 7 Professional V20

Target system:

SIMATIC S7-1200, S7-1200 G2,
S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
- Windows 10 Professional
Version 22H2
- Windows 10 Enterprise
Version 22H2
- Windows 10 Enterprise 2019 LTSC
& 2021 LTSC

Windows 11 (64-bit)

- Windows 11 Professional
Version 22H2 & 23H2
- Windows 11 Enterprise
Version 22H2 & 23H2

Windows Server (64-bit)

- Windows Server 2019 Standard
(full installation)
- Windows Server 2022 Standard
(full installation)

Type of delivery:

9 languages: en, de, zh included,
fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the
TIA Portal; software and
documentation on DVD;
license key on USB flash drive;
Class A; for configuration of
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

SIMATIC STEP 7 Professional V20, floating license download¹⁾

Engineering software in the
TIA Portal; software, documentation
and license key for downloading¹⁾;
Class A; for configuring
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

Consignee email address required
for delivery

6ES7822-1AA24-0YA5

6ES7822-1AE24-0YA5

STEP 7 Safety Advanced V20

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 V20

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.

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F
Content: 1x USB

6ES7833-1FA24-0YA5

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F;
Consignee email address required
for delivery

6ES7833-1FA24-0YH5

SIMATIC Manual Collection DL in 5 languages¹⁾

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

Consignee email address required
for delivery.

6ES7998-8XE01-8YE0

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS);
within the framework of this
contract, you will receive all current
software versions as a download for
one year. The contract is
automatically extended by
1 year unless it is canceled
3 months before expiration.
Period of delivery and service:
1 year from date of invoice
Consignee email address required
for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1515T-2 PN

Overview



- The CPU for applications with medium to high requirements regarding program/data storage in the S7-1500T Controller product range
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO Controller
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes. Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1515T-2 PN

Central processing unit with 1.5 MB work memory for program and 4.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 6 ns bit performance, SIMATIC Memory Card required

6ES7515-2TN03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1515T-2 PN

Ordering data

Article No.

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool,

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

70 mm for S7-1500 CPUs

6ES7591-1BB00-0AA0

SIMATIC S7-1500, spare part, cover flap

70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1515T-2 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1515TF-2 PN

Overview



- The CPU for standard and fail-safe applications with medium to high requirements regarding program/data storage in the S7-1500T Controller product range
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO Controller
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Isochronous mode centrally and distributed
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1515TF-2 PN

Central processing unit with 1.5 MB work memory for program and 4.5 MB for data,
1st interface: PROFINET IRT with 2-port switch,
2nd interface: PROFINET RT,
6 ns bit performance,
SIMATIC Memory Card required

6ES7515-2UN03-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1515TF-2 PN

Ordering data

Article No.

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part, display module

70 mm for S7-1500 CPUs

6ES7591-1BB00-0AA0

SIMATIC S7-1500, spare part, cover flap

70 mm with cutout for displays and display control keys, for S7-1500 CPUs, 5 units per packing unit

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1515TF-2 PN

Ordering data

Article No.

Article No.

STEP 7 Professional V20

Target system:

SIMATIC S7-1200, S7-1200 G2,
S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
- Windows 10 Professional
Version 22H2
- Windows 10 Enterprise
Version 22H2
- Windows 10 Enterprise 2019 LTSC
& 2021 LTSC

Windows 11 (64-bit)

- Windows 11 Professional
Version 22H2 & 23H2
- Windows 11 Enterprise
Version 22H2 & 23H2

Windows Server (64-bit)

- Windows Server 2019 Standard
(full installation)
- Windows Server 2022 Standard
(full installation)

Type of delivery:

9 languages: en, de, zh included,
fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the
TIA Portal; software and
documentation on DVD;
license key on USB flash drive;
Class A; for configuration of
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

SIMATIC STEP 7 Professional V20, floating license download¹⁾

Engineering software in the
TIA Portal; software, documentation
and license key for downloading¹⁾;
Class A; for configuring
SIMATIC S7-1200/1500,
S7-300/400/WinAC,
SIMATIC Basic Panels,
SIMATIC Unified Basic Panels.

The system requirements
specification can be found at
<https://www.siemens.com/compatool>

Consignee email address required
for delivery

6ES7822-1AA24-0YA5

6ES7822-1AE24-0YA5

STEP 7 Safety Advanced V20

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 V20

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.

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F
Content: 1x USB

6ES7833-1FA24-0YA5

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾

Class A, 2 languages (en, de);
runs with TIA Portal V20 STEP 7
Professional V20; for configuring
SIMATIC S7-1200F/1500F,
SIMATIC S7-1500F SW Controller,
SIMATIC S7-300F/400F/WinAC F;
Consignee email address required
for delivery

6ES7833-1FA24-0YH5

SIMATIC Manual Collection DL in 5 languages¹⁾

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

Consignee email address required
for delivery.

6ES7998-8XE01-8YE0

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS);
within the framework of this
contract, you will receive all current
software versions as a download for
one year. The contract is
automatically extended by
1 year unless it is canceled
3 months before expiration.
Period of delivery and service:
1 year from date of invoice
Consignee email address required
for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1516T-3 PN

Overview



- The CPU with a large program and data memory in the S7-1500 Controller product range for applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Two PROFINET IO IRT interfaces, each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes. Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA. User-defined kinematics are also supported.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1516T-3 PN

Central processing unit with 3 MB work memory for program and 25 MB for data,
1st interface: PROFINET IRT with 2-port switch,
2nd interface: PROFINET IRT with 2-port switch,
3rd interface, PROFINET basic services 1.2 ns bit performance, SIMATIC Memory Card required

6ES7516-3TP10-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1516T-3 PN

Ordering data

Article No.

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display module

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BB00-0AA0

SIMATIC S7-1500 spare part, cover flap,

70 mm with cutout for displays and display control keys, for S7-1500 CPUs

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1516T-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1516TF-3 PN

Overview



- The CPU with a large program and data memory in the S7-1500 Controller product range for standard and fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Two PROFINET IO IRT interfaces, each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes. Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA. User-defined kinematics are also supported.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500TF, CPU 1516TF-3 PN

Central processing unit with 3 MB work memory for program and 25 MB for data,
1st interface: PROFINET IRT with 2-port switch,
2nd interface: PROFINET IRT with 2-port switch,
3rd Interface, PROFINET basic services, 1.2 ns bit performance, SIMATIC Memory Card required

6ES7516-3UP10-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1516TF-3 PN

Ordering data

Article No.

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display module

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BB00-0AA0

SIMATIC S7-1500 spare part, cover flap,

70 mm with cutout for displays and display control keys, for S7-1500 CPUs

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1516TF-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		STEP 7 Safety Advanced V20 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 V20 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.
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB
SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1517T-3 PN

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Two PROFINET IO IRT interfaces, each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications.
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
User-defined kinematics are also supported.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1517T-3 PN

Central processing unit with 6 MB work memory for program and 50 MB for data,
1st interface: PROFINET IRT with 2-port switch,
2nd interface: PROFINET IRT with 2-port switch,
3rd interface: PROFINET basic services, 0.6 ns bit performance, SIMATIC Memory Card required

6ES7517-3TQ10-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1517T-3 PN

Ordering data	Article No.		Article No.
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0	IE FC RJ45 plugs	
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
System power supply		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 pack = 10 units.	6GK1901-1BB10-2AB0
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	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 pack = 50 units.	6GK1901-1BB10-2AE0
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	Industrial Ethernet FC TP standard cable GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
Load current supply		SIMATIC S7-1500, spare part display module For S7-1500 CPUs with 70 mm or 175 mm width	6ES7591-1BB00-0AA0
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	SIMATIC S7-1500 spare part, cover flap, 70 mm with cutout for displays and display control keys, for S7-1500 CPUs	6ES7591-4BB00-0AA0
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00		
Power supply connector			
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0		

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1517T-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1517TF-3 PN

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Two PROFINET IO IRT interfaces, each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications.
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
User-defined kinematics are also supported.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500TF, CPU 1517TF-3 PN

Central processing unit with 6 MB work memory for program and 50 MB for data
1st interface: PROFINET IRT with 2-port switch,
2nd interface: PROFINET IRT with 2-port switch,
3rd interface: PROFINET basic services 0.6 ns bit performance, SIMATIC Memory Card required

6ES7517-3UQ10-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1517TF-3 PN

Ordering data

Article No.

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

Article No.

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable

GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable

2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display module

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BB00-0AA0

SIMATIC S7-1500 spare part, cover flap

70 mm with cutout for displays and display control keys, for S7-1500 CPUs

6ES7591-4BB00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1517TF-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		STEP 7 Safety Advanced V20 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 V20 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.
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB
SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1518T-3 PN

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Two PROFINET IO IRT interfaces, each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes. Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA. User-defined kinematics are also supported.
- S7-1500T Motion Control KinPlus
With "S7-1500T Motion Control KinPlus", kinematics with up to 6 interpolating axes can be controlled.
 - Predefined kinematics:
 - Cartesian portal 3D with 2 orientations,
 - Delta-Picker 3D with 2 orientations,
 - 6-axis articulated arm with central hand.
 - User-defined kinematics 3D with 3 orientations
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1518T-3 PN

Central processing unit with 18 MB work memory for program and 150 MB for data
1st interface: PROFINET IRT with 2-port switch
2nd interface: PROFINET IRT with 2-port switch
3rd interface: PROFINET basic services 0.3 ns bit performance, SIMATIC Memory Card required

6ES7518-3TT10-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

S7-1500T Motion Control KinPlus

S7-1500T Motion Control KinPlus Runtime software

Without documentation class A executable under T-CPU 1518 T/TF
Download product, available only in the EU
Consignee email address required for delivery
The SD card 6ES7 954-8LP80-0AA0 or 6ES7 954-8LT80-0AA0 is required for execution, suitable for firmware 4.0

6ES7823-0KE02-1AA0

S7-1500T Motion Control KinPlus Runtime software

Without documentation class A, executable under T-CPU 1518 T/TF
Supplied on USB flash drive.
The SD card 6ES7 954-8LP80-0AA0 or 6ES7 954-8LT80-0AA0 is required for execution; suitable for firmware V4.0

6ES7823-0KU02-1AA0

SIMATIC S7, memory card for S7-1500T Motion Control KinPlus

3.3 V flash, 2 GB

6ES7954-8LP80-0AA0

SIMATIC S7, memory card for S7-1500T Motion Control KinPlus

3.3 V flash, 32 GB

6ES7954-8LT80-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1518T-3 PN

Ordering data	Article No.		Article No.
SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AE80-0AA0	Power supply connector	
SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AF30-0AA0	Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0
SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AJ30-0AA0	IE FC RJ45 plugs	
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	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 pack = 10 units.	6GK1901-1BB10-2AB0
System power supply		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 pack = 50 units.	6GK1901-1BB10-2AE0
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	Industrial Ethernet FC TP standard cable GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	Industrial Ethernet FC TP trailing cable 2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	SIMATIC S7-1500, spare part display module For S7-1500 CPUs with 70 mm or 175 mm width	6ES7591-1BB00-0AA0
Load current supply		SIMATIC S7-1500 spare part, cover flap 70 mm with cutout for displays and display control keys, for S7-1500 CPUs	6ES7591-4BB00-0AA0
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00		
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00		

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1518T-3 PN

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1518TF-3 PN

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- Two PROFINET IO IRT interfaces, each with a 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO controller
- OPC UA server and client as runtime option for the easy connection of SIMATIC S7-1500 to non-Siemens devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA. User-defined kinematics are also supported.
- S7-1500T Motion Control KinPlus
With "S7-1500T Motion Control KinPlus", kinematics with up to 6 interpolating axes can be controlled.
 - Predefined kinematics:
 - Cartesian portal 3D with 2 orientations, Delta-Picker 3D with 2 orientations, 6-axis articulated arm with central hand.
 - User-defined kinematics 3D with 3 orientations
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500TF, CPU 1518TF-3 PN

Central processing unit with 9 MB work memory for program and 60 MB for data
1st interface: PROFINET IRT with 2-port switch
2nd interface: PROFINET IRT with 2-port switch
3rd interface: PROFINET basic services 0.3 ns bit performance, SIMATIC Memory Card required

6ES7518-3UT10-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

S7-1500T Motion Control KinPlus

S7-1500T Motion Control KinPlus Runtime software

Without documentation, class A, executable under T-CPU 1518 T/TF, download product, available only in the EU, consignee email address required for delivery
The SD card 6ES7 954-8LP80-0AA0 or 6ES7 954-8LT80-0AA0 is required for execution, suitable for firmware 4.0

6ES7823-0KE02-1AA0

S7-1500T Motion Control KinPlus Runtime software

Without documentation class A, executable under T-CPU 1518 T/TF Supplied on USB flash drive.
The SD card 6ES7 954-8LP80-0AA0 or 6ES7 954-8LT80-0AA0 is required for execution; suitable for firmware V4.0

6ES7823-0KU02-1AA0

SIMATIC S7, memory card for S7-1500T Motion Control KinPlus

3.3 V flash, 2 GB

6ES7954-8LP80-0AA0

SIMATIC S7, memory card for S7-1500T Motion Control KinPlus

3.3 V flash, 32 GB

6ES7954-8LT80-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1518TF-3 PN

Ordering data

Article No.

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM)

10 units per packing unit

6ES7590-8AA00-0AA0

Load current supply

SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500

Input: 120/230 V AC,
output: 24 V DC/8 A

6EP1333-4BA00

Article No.

Power supply connector

Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F

PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 plug 180

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1518TF-3 PN

Ordering data	Article No.	Article No.
SIMATIC S7-1500, spare part display module For S7-1500 CPUs with 70 mm or 175 mm width	6ES7591-1BB00-0AA0	STEP 7 Safety Advanced V20 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 V20 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.
SIMATIC S7-1500 spare part, cover flap 70 mm with cutout for displays and display control keys, for S7-1500 CPUs	6ES7591-4BB00-0AA0	
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Consignee email address required for delivery
SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1516T-3 PN/DP

Overview



- The CPU with a large program and data memory in the S7-1500 Controller product range for applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO Controller.
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- PROFIBUS DP master interface
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
User-defined kinematics are also supported.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1516T-3 PN/DP

Central processing unit with 3 MB work memory for program and 7.5 MB for data,
1st interface: PROFINET IRT with 2-port switch,
2nd interface, Ethernet,
3rd interface, PROFIBUS,
6 ns bit performance,
SIMATIC Memory Card required

6ES7516-3TN00-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1516T-3 PN/DP

Ordering data	Article No.		Article No.
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	PROFIBUS FC robust bus cable with PUR protective jacket For use environments subject to harsh chemicals and mechanical stress, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
System power supply			
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	PROFIBUS FC flexible cable GP 2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1831-2K
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	PROFIBUS FC trailing cable	
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3EH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1831-2L
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	PROFIBUS FC food bus cable with PE protective jacket For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
Load current supply			
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	PROFIBUS FC underground cable Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3FH10
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	PROFIBUS FC FRNC cable GP Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0LH10
Power supply connector			
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0	PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.	6GK1905-6AA00
PROFIBUS FastConnect RS485 bus connector with 90° cable outlet		IE FC RJ45 plugs	
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0	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 pack = 10 units.	6GK1901-1BB10-2AB0
PROFIBUS FC standard cable GP 2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1830-0EH10		

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1516T-3 PN/DP

Ordering data

Article No.

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

SIMATIC S7-1500 spare part, front cover

For DP interface of the CPU 1518-4 PN/DP

6ES7591-8AA00-0AA0

STEP 7 Professional V20

Target system:
SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
 - Windows 10 Professional Version 22H2
 - Windows 10 Enterprise Version 22H2
 - Windows 10 Enterprise 2019 LTSC & 2021 LTSC

- Windows 11 (64-bit)
 - Windows 11 Professional Version 22H2 & 23H2
 - Windows 11 Enterprise Version 22H2 & 23H2

- Windows Server (64-bit)
 - Windows Server 2019 Standard (full installation)
 - Windows Server 2022 Standard (full installation)

Type of delivery:

9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download

Article No.

SIMATIC STEP 7 Professional V20; floating license

Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements specification can be found at <https://www.siemens.com/compatool>

6ES7822-1AA24-0YA5

SIMATIC STEP 7 Professional V20, floating license download¹⁾

Engineering software in the TIA Portal; software, documentation and license key for downloading¹⁾; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements specification can be found at <https://www.siemens.com/compatool>

Consignee email address required for delivery

6ES7822-1AE24-0YA5

SIMATIC Manual Collection DL in 5 languages¹⁾

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

Consignee email address required for delivery.

6ES7998-8XE01-8YE0

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice

Consignee email address required for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1516TF-3 PN/DP

Overview



- The CPU with a large program and data memory in the S7-1500 Controller product range for standard and fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO Controller
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- PROFIBUS DP master interface
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA. User-defined kinematics are also supported.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500TF, CPU 1516TF-3 PN/DP

Central processing unit with 3 MB work memory for program and 7.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface, Ethernet, 3rd interface, PROFIBUS, 6 ns bit performance, SIMATIC Memory Card required

6ES7516-3UN00-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Including grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays, for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1516TF-3 PN/DP

Ordering data	Article No.		Article No.
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	PROFIBUS FC robust bus cable with PUR protective jacket For use environments subject to harsh chemicals and mechanical stress, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
System power supply			
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	PROFIBUS FC flexible cable GP 2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1831-2K
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	PROFIBUS FC trailing cable	
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3EH10
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s2, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1831-2L
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	PROFIBUS FC food bus cable with PE protective jacket For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
Load current supply		PROFIBUS FC underground cable Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3FH10
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	PROFIBUS FC FRNC cable GP Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0LH10
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.	6GK1905-6AA00
Power supply connector		IE FC RJ45 plugs	
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0	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 pack = 1 unit.	6GK1901-1BB10-2AA0
PROFIBUS FastConnect RS485 bus connector with 90° cable outlet		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 pack = 10 units.	6GK1901-1BB10-2AB0
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0		
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0		
PROFIBUS FC standard cable GP 2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1830-0EH10		

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1516TF-3 PN/DP

Ordering data	Article No.	Article No.
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 pack = 50 units.	6GK1901-1BB10-2AE0	STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) - Windows 10 Professional Version 22H2 - Windows 10 Enterprise Version 22H2 - Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) - Windows 11 Professional Version 22H2 & 23H2 - Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) - Windows Server 2019 Standard (full installation) - Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download
Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10	
Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10	
Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10	
Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00	
SIMATIC S7-1500, spare part display For S7-1500 CPUs with 70 mm or 175 mm width	6ES7591-1BA02-0AA0	
SIMATIC S7-1500 spare part, front cover For DP interface of the CPU 1518-4 PN/DP	6ES7591-8AA00-0AA0	SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool
		SIMATIC STEP 7 Professional V20; floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1516TF-3 PN/DP

Ordering data	Article No.	Article No.
STEP 7 Safety Advanced V20 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 V20 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.		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB	6ES7833-1FA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery	6ES7833-1FA24-0YH5	

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1517T-3 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO Controller.
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- PROFIBUS DP master interface
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications.
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes. Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA. User-defined kinematics are also supported.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500T, CPU 1517T-3 PN/DP

Central processing unit with 3 MB work memory for program and 8 MB for data,
1st interface: PROFINET IRT with 2-port switch,
2nd interface, Ethernet,
3rd interface, PROFIBUS,
2 ns bit performance,
SIMATIC Memory Card required

6ES7517-3TP00-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1517T-3 PN/DP

Ordering data	Article No.		Article No.
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	PROFIBUS FC robust bus cable with PUR protective jacket for use in environments subject to harsh chemicals and mechanical stress 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
System power supply		PROFIBUS FC flexible cable GP 2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1831-2K
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	PROFIBUS FC trailing cable	
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	PROFIBUS FC trailing cable PROFIBUS trailing cable, max. acceleration 4 m/s ² , at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3EH10
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	PROFIBUS FC trailing cable PROFIBUS trailing cable, max. acceleration 4 m/s ² , at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1831-2L
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	PROFIBUS FC food bus cable with PE protective jacket For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	PROFIBUS FC underground cable Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3FH10
Load current supply		PROFIBUS FC FRNC cable GP Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0LH10
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.	6GK1905-6AA00
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	IE FC RJ45 plugs	
Power supply connector		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 pack = 1 unit.	6GK1901-1BB10-2AA0
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0	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 pack = 10 units.	6GK1901-1BB10-2AB0
PROFIBUS FastConnect RS485 bus connector with 90° cable outlet			
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0		
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0		
PROFIBUS FC standard cable GP 2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1830-0EH10		

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1517T-3 PN/DP

Ordering data

Article No.

Article No.

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

6GK1901-1BB10-2AE0

1 pack = 50 units.

Industrial Ethernet FC TP standard cable

6XV1840-2AH10

GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

6XV1840-3AH10

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

Industrial Ethernet FC TP marine cable

6XV1840-4AH10

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

Industrial Ethernet FastConnect stripping tool

6GK1901-1GA00

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

SIMATIC S7-1500, spare part display

6ES7591-1BA02-0AA0

For S7-1500 CPUs with 70 mm or 175 mm width

SIMATIC S7-1500 spare part, front cover

6ES7591-8AA00-0AA0

For DP interface of the CPU 1518-4 PN/DP

STEP 7 Professional V20

Target system:
SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC

Requirement:

- Windows 10 (64-bit)
 - Windows 10 Professional Version 22H2
 - Windows 10 Enterprise Version 22H2
 - Windows 10 Enterprise 2019 LTSC & 2021 LTSC

- Windows 11 (64-bit)
 - Windows 11 Professional Version 22H2 & 23H2
 - Windows 11 Enterprise Version 22H2 & 23H2

- Windows Server (64-bit)
 - Windows Server 2019 Standard (full installation)
 - Windows Server 2022 Standard (full installation)

Type of delivery:

9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download

SIMATIC STEP 7 Professional V20; floating license

6ES7822-1AA24-0YA5

Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements specification can be found at <https://www.siemens.com/compatool>

SIMATIC STEP 7 Professional V20, floating license download¹⁾

6ES7822-1AE24-0YA5

Engineering software in the TIA Portal; software, documentation and license key for downloading¹⁾; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels.

The system requirements specification can be found at <https://www.siemens.com/compatool>

Consignee email address required for delivery

SIMATIC Manual Collection DL in 5 languages¹⁾

6ES7998-8XE01-8YE0

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

Consignee email address required for delivery.

SIMATIC Manual Collection DL in 5 languages¹⁾

6ES7998-8XE01-8YE2

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice

Consignee email address required for delivery.

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1517TF-3 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO Controller.
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- PROFIBUS DP master interface
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications.
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
User-defined kinematics are also supported.
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

SIMATIC S7-1500TF, CPU 1517TF-3 PN/DP

Central processing unit with 3 MB work memory for program and 8 MB for data
1st interface: PROFINET IRT with 2-port switch
2nd interface, Ethernet
3rd interface, PROFIBUS
2 ns bit performance, SIMATIC Memory Card required

6ES7517-3UP00-0AB0

Accessories

SIMATIC Memory Card

SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS

3.3 V Flash, 4 MB

6ES7954-8LC04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 12 MB

6ES7954-8LE04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS

3.3 V Flash, 24 MB

6ES7954-8LF04-0AA0

SIMATIC S7, memory card for S7-1x00 CPU

3.3 V Flash, 256 MB

6ES7954-8LL04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 32 GB

6ES7954-8LT04-0AA0

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1517TF-3 PN/DP

Ordering data	Article No.		Article No.
SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0	PROFIBUS FC robust bus cable with PUR protective jacket For use environments subject to harsh chemicals and mechanical stress, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
System power supply		PROFIBUS FC flexible cable GP 2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1831-2K
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	PROFIBUS FC trailing cable	
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s ² , at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3EH10
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	PROFIBUS FC trailing cable Max. acceleration 4 m/s ² , at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1831-2L
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	PROFIBUS FC food bus cable with PE protective jacket For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	PROFIBUS FC underground cable Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-3FH10
Load current supply		PROFIBUS FC FRNC cable GP Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0LH10
SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00	PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.	6GK1905-6AA00
SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00	IE FC RJ45 plugs	
Power supply connector		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 pack = 1 unit.	6GK1901-1BB10-2AA0
Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0	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 pack = 10 units.	6GK1901-1BB10-2AB0
PROFIBUS FastConnect RS485 bus connector with 90° cable outlet			
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0		
SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0		
PROFIBUS FC standard cable GP 2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.	6XV1830-0EH10		

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1517TF-3 PN/DP

Ordering data	Article No.	Article No.
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 pack = 50 units.	6GK1901-1BB10-2AE0	STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
Industrial Ethernet FC TP standard cable GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.	6XV1840-2AH10	
Industrial Ethernet FC TP trailing cable 2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10	
Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10	
Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00	
SIMATIC S7-1500, spare part display For S7-1500 CPUs with 70 mm or 175 mm width	6ES7591-1BA02-0AA0	
SIMATIC S7-1500 spare part, front cover For DP interface of the CPU 1518-4 PN/DP	6ES7591-8AA00-0AA0	6ES7822-1AA24-0YA5
		6ES7822-1AE24-0YA5

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1517TF-3 PN/DP

Ordering data	Article No.	Article No.
STEP 7 Safety Advanced V20 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 V20 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.		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB	6ES7833-1FA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery	6ES7833-1FA24-0YH5	

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1518T-4 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO Controller
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- PROFIBUS DP master interface
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions

- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
User-defined kinematics are also supported.
- S7-1500T Motion Control KinPlus
With "S7-1500T Motion Control KinPlus", kinematics with up to 6 interpolating axes can be controlled.
 - Predefined kinematics:
 - Cartesian portal 3D with 2 orientations,
 - Delta-Picker 3D with 2 orientations,
 - 6-axis articulated arm with central hand.
 - User-defined kinematics 3D with 3 orientations
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1518T-4 PN/DP

Ordering data	Article No.		Article No.
SIMATIC S7-1500T, CPU 1518T-4 PN/DP Central processing unit with 9 MB work memory for program and 60 MB for data 1st interface: PROFINET IRT with 2-port switch 2nd interface: PROFINET RT 3rd interface: PROFINET basic services 4th interface: PROFIBUS 1 ns bit performance, SIMATIC Memory Card required	6ES7518-4TP00-0AB0	SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AF30-0AA0
Accessories		SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AJ30-0AA0
SIMATIC Memory Card		SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS 3.3 V Flash, 4 MB	6ES7954-8LC04-0AA0	SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 12 MB	6ES7954-8LE04-0AA0	System power supply	
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 24 MB	6ES7954-8LF04-0AA0	SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0
SIMATIC S7, memory card for S7-1x00 CPU 3.3 V Flash, 256 MB	6ES7954-8LL04-0AA0	SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 2 GB	6ES7954-8LP04-0AA0	SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 32 GB	6ES7954-8LT04-0AA0	SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0
S7-1500T Motion Control KinPlus		SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0
S7-1500T Motion Control KinPlus Runtime software Without documentation class A executable under T-CPU 1518 T//TF DriveController 1507D TF Download product Consignee email address required for delivery The SD card 6ES7 954-8LP80-0AA0 or 6ES7 954-8LT80-0AA0 is required for execution	6ES7823-0KE00-1AA0	Load current supply	
SIMATIC S7, memory card for S7-1500T Motion Control KinPlus 3.3 V flash, 2 GB	6ES7954-8LP80-0AA0	SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00
SIMATIC S7, memory card for S7-1500T Motion Control KinPlus 3.3 V flash, 32 GB	6ES7954-8LT80-0AA0	SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00
SIMATIC S7-1500 mounting rail		Power supply connector	
SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AB60-0AA0	Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0
SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AC40-0AA0		
SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AE80-0AA0		

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1518T-4 PN/DP

Ordering data

Article No.

PROFIBUS FastConnect RS485 bus connector with 90° cable outlet

6ES7972-0BA70-0XA0

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

Without PG socket

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method

With PG socket

PROFIBUS FC standard cable GP

6XV1830-0EH10

2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.

PROFIBUS FC robust bus cable with PUR protective jacket

For use environments subject to harsh chemicals and mechanical stress, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

6XV1830-0JH10

PROFIBUS FC flexible cable GP

6XV1831-2K

2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.

PROFIBUS FC trailing cable

PROFIBUS FC trailing cable

6XV1830-3EH10

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC trailing cable

6XV1831-2L

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC food bus cable with PE protective jacket

6XV1830-0GH10

For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC underground cable

6XV1830-3FH10

Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC FRNC cable GP

6XV1830-0LH10

Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

Article No.

PROFIBUS FastConnect stripping tool

Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.

6GK1905-6AA00

IE FC RJ45 plugs

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable

GP 2x2 (PROFINET type A), TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable

2x2 (PROFINET type C), TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

SIMATIC S7-1500 spare part, front cover

For DP interface of the CPU 1518-4 PN/DP

6ES7591-8AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1518T-4 PN/DP

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery
		6ES7822-1AE24-0YA5
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		6ES7998-8XE01-8YE0
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
		6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1518TF-4 PN/DP

Overview



- The CPU with a very large program and data memory in the S7-1500 Controller product range for fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or third-party PROFINET IO Controller.
- Additional PROFINET interface with separate IP address for network separation, for connecting further PROFINET IO RT devices, or for high-speed communication as an I-Device
- PROFIBUS DP master interface
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
 - OPC UA Data Access
 - OPC UA Security
 - OPC UA Methods Call
 - Support of OPC UA Companion specifications
 - OPC UA Alarms & Conditions
- Central and distributed isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled, positioning and synchronized axes (gearing and camming), support for external encoders, output cams/cam tracks and probes.
Technology object for controlling kinematics with up to 4 interpolating axes, e.g. Cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA.
User-defined kinematics are also supported.
- S7-1500T Motion Control KinPlus
With "S7-1500T Motion Control KinPlus", kinematics with up to 6 interpolating axes can be controlled.
 - Predefined kinematics:
 - Cartesian portal 3D with 2 orientations,
 - Delta-Picker 3D with 2 orientations,
 - 6-axis articulated arm with central hand.
 - User-defined kinematics 3D with 3 orientations
- SIMATIC Motion Interpreter – Technology objects for programming and controlling axes and kinematics
- Cross-PLC synchronous operation for synchronization of multiple SIMATIC S7-1500T Controllers
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1518TF-4 PN/DP

Ordering data	Article No.		Article No.
SIMATIC S7-1500TF, CPU 1518TF-4 PN/DP Central processing unit with 9 MB work memory for program and 60 MB for data 1st interface: PROFINET IRT with 2-port switch 2nd interface: PROFINET RT 3rd interface: PROFINET basic services 4th interface: PROFIBUS 1 ns bit performance, SIMATIC Memory Card required	6ES7518-4UP00-0AB0	SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AF30-0AA0
Accessories		SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AJ30-0AA0
SIMATIC Memory Card		SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0
SIMATIC S7, memory card for S7-1x 00 CPU/SINAMICS 3.3 V Flash, 4 MB	6ES7954-8LC04-0AA0	SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit	6ES7590-5AA00-0AA0
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 12 MB	6ES7954-8LE04-0AA0	System power supply	
SIMATIC S7, memory card for S7-1x00 CPU/SINAMICS 3.3 V Flash, 24 MB	6ES7954-8LF04-0AA0	SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0
SIMATIC S7, memory card for S7-1x00 CPU 3.3 V Flash, 256 MB	6ES7954-8LL04-0AA0	SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 2 GB	6ES7954-8LP04-0AA0	SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0
SIMATIC S7, memory card for S7-1x 00 CPU 3.3 V Flash, 32 GB	6ES7954-8LT04-0AA0	SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0
S7-1500T Motion Control KinPlus		SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0
S7-1500T Motion Control KinPlus Runtime software Without documentation class A executable under T-CPU 1518 T//TF DriveController 1507D TF download product ¹⁾ Consignee email address required for delivery The SD card 6ES7 954-8LP80-0AA0 or 6ES7 954-8LT80-0AA0 is required for execution	6ES7823-0KE00-1AA0	Load current supply	
SIMATIC S7, memory card for S7-1500T Motion Control KinPlus 3.3 V flash, 2 GB	6ES7954-8LP80-0AA0	SIMATIC PM 1507 24 V/3 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/3 A	6EP1332-4BA00
SIMATIC S7, memory card for S7-1500T Motion Control KinPlus 3.3 V flash, 32 GB	6ES7954-8LT80-0AA0	SIMATIC PM 1507 24 V/8 A, stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC, output: 24 V DC/8 A	6EP1333-4BA00
SIMATIC S7-1500 mounting rail		Power supply connector	
SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AB60-0AA0	Connector, socket, 2x2-pole, ET 200SP, interface module, KP32F PN-PN coupler, grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0
SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AC40-0AA0		
SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays	6ES7590-1AE80-0AA0		

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

CPU 1518TF-4 PN/DP

Ordering data

Article No.

PROFIBUS FastConnect RS485 bus connector with 90° cable outlet

6ES7972-0BA70-0XA0

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method
Without PG socket

6ES7972-0BB70-0XA0

SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method
With PG socket

PROFIBUS FC standard cable GP

6XV1830-0EH10

2-core bus cable, shielded, special design for fast installation, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter.

PROFIBUS FC robust bus cable with PUR protective jacket

6XV1830-0JH10

For use environments subject to harsh chemicals and mechanical stress, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC flexible cable GP

6XV1831-2K

2-wire, shielded, special design for fast installation, delivery unit max. 1000 m, minimum order quantity 20 m, sold by the meter.

PROFIBUS FC trailing cable

PROFIBUS FC trailing cable

6XV1830-3EH10

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC trailing cable

6XV1831-2L

Max. acceleration 4 m/s², at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, delivery unit, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC food bus cable with PE protective jacket

6XV1830-0GH10

For use in the food, beverages and tobacco industries, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC underground cable

6XV1830-3FH10

Underground cable, 2-wire shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

PROFIBUS FC FRNC cable GP

6XV1830-0LH10

Bus cable flame-retardant and halogen-free bus cable with copolymer sheath, FRNC sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m.

Article No.

PROFIBUS FastConnect stripping tool

Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable.

6GK1905-6AA00

IE FC RJ45 plugs

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 plug 180

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 pack = 1 unit.

6GK1901-1BB10-2AA0

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 pack = 10 units.

6GK1901-1BB10-2AB0

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 pack = 50 units.

6GK1901-1BB10-2AE0

Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A)

TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m, minimum order quantity 20 m.

6XV1840-2AH10

Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C)

TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.

6XV1840-3AH10

Industrial Ethernet FC TP marine cable

TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.

6XV1840-4AH10

Industrial Ethernet FastConnect stripping tool

Stripping tool for fast stripping of insulation from the IE FastConnect cables.

6GK1901-1GA00

SIMATIC S7-1500, spare part display

For S7-1500 CPUs with 70 mm or 175 mm width

6ES7591-1BA02-0AA0

SIMATIC S7-1500 spare part, front cover

For DP interface of the CPU 1518-4 PN/DP

6ES7591-8AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

CPU 1518TF-4 PN/DP

Ordering data	Article No.	Article No.
STEP 7 Professional V20 Target system: SIMATIC S7-1200, S7-1200 G2, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 22H2 • Windows 10 Enterprise Version 22H2 • Windows 10 Enterprise 2019 LTSC & 2021 LTSC Windows 11 (64-bit) • Windows 11 Professional Version 22H2 & 23H2 • Windows 11 Enterprise Version 22H2 & 23H2 Windows Server (64-bit) • Windows Server 2019 Standard (full installation) • Windows Server 2022 Standard (full installation) Type of delivery: 9 languages: en, de, zh included, fr, sp, it, ru, ja, ko as download		STEP 7 Safety Advanced V20 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 V20 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.
SIMATIC STEP 7 Professional V20; floating license Engineering software in the TIA Portal; software and documentation on DVD; license key on USB flash drive; Class A; for configuration of SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool	6ES7822-1AA24-0YA5	SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB
SIMATIC STEP 7 Professional V20, floating license download¹⁾ Engineering software in the TIA Portal; software, documentation and license key for downloading ¹⁾ ; Class A; for configuring SIMATIC S7-1200/1500, S7-300/400/WinAC, SIMATIC Basic Panels, SIMATIC Unified Basic Panels. The system requirements specification can be found at https://www.siemens.com/compatool Consignee email address required for delivery	6ES7822-1AE24-0YA5	SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Consignee email address required for delivery
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.

¹⁾ Up-to-date information and download availability can be found at
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1TL03-0AB0	6ES7515-2TN03-0AB0	6ES7516-3TP10-0AB0	6ES7517-3TQ10-0AB0	6ES7518-3TT10-0AB0
	CPU 1511T-1PN, 450KB Prog., 1.5MB Data	CPU 1515T-2 PN, 1.5MB Progr, 4.5MB Data	CPU 1516T-3 PN, 3MB prog., 25MB data	CPU 1517T-3 PN, 6MB prog., 50MB data	CPU 1518T-3 PN, 18MB prog., 150MB data
General information					
Product type designation	CPU 1511T-1 PN	CPU 1515T-2 PN	CPU 1516T-3 PN	CPU 1517T-3 PN	CPU 1518T-3 PN
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7511-1TK01-0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7515-2TM01-0AB0	V20 (FW V4.0)	V20 (FW V4.0)	V20 (FW V4.0)
Display					
Screen diagonal [cm]	3.45 cm	6.1 cm	6.1 cm	6.1 cm	6.1 cm
Supply voltage					
Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Memory					
Work memory					
• integrated (for program)	450 kbyte	1.5 Mbyte	3 Mbyte	6 Mbyte	18 Mbyte
• integrated (for data)	1.5 Mbyte	4.5 Mbyte	25 Mbyte	50 Mbyte	150 Mbyte
Load memory					
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte
CPU processing times					
for bit operations, typ.	6 ns	6 ns	1.2 ns	0.6 ns	0.3 ns
for word operations, typ.	7 ns	7 ns	2.6 ns	1.3 ns	0.8 ns
for fixed point arithmetic, typ.	9 ns	9 ns	2.6 ns	1.3 ns	0.8 ns
for floating point arithmetic, typ.	37 ns	37 ns	7.6 ns	3.8 ns	2.5 ns
Counters, timers and their retentivity					
S7 counter					
• Number	2 048	2 048	2 048	2 048	2 048
IEC counter					
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times					
• Number	2 048	2 048	2 048	2 048	2 048
IEC timer					
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity					
Flag					
• Size, max.	16 kbyte	16 kbyte	16 kbyte	16 kbyte	16 kbyte
Address area					
I/O address area					
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day					
Clock					
• Type	Hardware clock	Hardware clock	Hardware clock	Hardware clock	Hardware clock
1. Interface					
Interface types					
• RJ 45 (Ethernet)	Yes; X1	Yes; X1	Yes; X1	Yes; X1	Yes; X1
• Number of ports	2	2	2	2	2
• integrated switch	Yes	Yes	Yes	Yes	Yes

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Article number	6ES7511-1TL03-0AB0	6ES7515-2TN03-0AB0	6ES7516-3TP10-0AB0	6ES7517-3TQ10-0AB0	6ES7518-3TT10-0AB0
	CPU 1511T-1PN, 450KB Prog., 1.5MB Data	CPU 1515T-2 PN, 1.5MB Progr, 4.5MB Data	CPU 1516T-3 PN, 3MB prog., 25MB data	CPU 1517T-3 PN, 6MB prog., 50MB data	CPU 1518T-3 PN, 18MB prog., 150MB data
Protocols					
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes	Yes
• Media redundancy	Yes	Yes	Yes	Yes	Yes
PROFINET IO Controller					
Services					
- Isochronous mode	Yes	Yes	Yes	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes	Yes	Yes	Yes
- PROFINergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64	64; with DFP: 256 IO devices in 8 DFP groups	64; with DFP: 256 IO devices in 8 DFP groups	64; with DFP: 256 IO devices in 8 DFP groups
- Number of connectable IO Devices for RT, max.	128	256	512	512	512
- of which in line, max.	128	256	512	512	512
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8	8	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1	1
PROFINET IO Device					
Services					
- Isochronous mode	No	No	No	No	No
- IRT	Yes	Yes	Yes	Yes	Yes; Minimum send cycle of 250 µs
- PROFINergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Shared device	Yes	Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4	4	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only

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Article number	6ES7511-1TL03-0AB0	6ES7515-2TN03-0AB0	6ES7516-3TP10-0AB0	6ES7517-3TQ10-0AB0	6ES7518-3TT10-0AB0
	CPU 1511T-1PN, 450KB Prog., 1.5MB Data	CPU 1515T-2 PN, 1.5MB Progr, 4.5MB Data	CPU 1516T-3 PN, 3MB prog., 25MB data	CPU 1517T-3 PN, 6MB prog., 50MB data	CPU 1518T-3 PN, 18MB prog., 150MB data
2. Interface					
Interface types					
• RJ 45 (Ethernet)		Yes; X2	Yes; X2	Yes; X2	Yes; X2
• Number of ports		1	2	2	2
• integrated switch		No	Yes	Yes	Yes
Protocols					
• IP protocol		Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller		Yes	Yes	Yes	Yes
• PROFINET IO Device		Yes	Yes	Yes	Yes
• SIMATIC communication		Yes	Yes	Yes	Yes
• Open IE communication		Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server		Yes	Yes	Yes	Yes
• Media redundancy		No	Yes	Yes	Yes
PROFINET IO Controller Services					
- Isochronous mode		No	Yes	Yes	Yes
- Direct data exchange		No	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT		No	Yes	Yes	Yes
- PROFIenergy		Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup		No	No	No	No
- Number of connectable IO Devices, max.		32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.			64; with DFP: 256 IO devices in 8 DFP groups	64; with DFP: 256 IO devices in 8 DFP groups	64; with DFP: 256 IO devices in 8 DFP groups
- Number of connectable IO Devices for RT, max.		32	512	512	512
- of which in line, max.		32	512	512	512
- Number of IO Devices that can be simultaneously activated/deactivated, max.		8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.		8	8	8	8
- Updating times		The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1	1	1	1
PROFINET IO Device Services					
- Isochronous mode		No	No	No	No
- IRT		No	Yes	Yes	Yes
- PROFIenergy		Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup		No			
- Shared device		Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.		4	4	4	4
- activation/deactivation of I-devices		Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record		Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class		SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only

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Article number	6ES7511-1TL03-0AB0	6ES7515-2TN03-0AB0	6ES7516-3TP10-0AB0	6ES7517-3TQ10-0AB0	6ES7518-3TT10-0AB0
	CPU 1511T-1PN, 450KB Prog., 1.5MB Data	CPU 1515T-2 PN, 1.5MB Progr, 4.5MB Data	CPU 1516T-3 PN, 3MB prog., 25MB data	CPU 1517T-3 PN, 6MB prog., 50MB data	CPU 1518T-3 PN, 18MB prog., 150MB data
3. Interface					
Interface types					
• RJ 45 (Ethernet)			Yes; X3	Yes; X3	Yes; X3
• Number of ports			1	1	1
• integrated switch			No	No	No
Protocols					
• IP protocol			Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller			No	No	No
• PROFINET IO Device			No	No	No
• SIMATIC communication			Yes	Yes	Yes
• Open IE communication			Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server			Yes	Yes	Yes
Protocols					
Number of connections					
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs	320; via integrated interfaces of the CPU and connected CPs / CMs	384; via integrated interfaces of the CPU and connected CPs / CMs
Redundancy mode					
Media redundancy					
- Media redundancy	only via 1st interface (X1)	only via 1st interface (X1)	via the X1 or X2 interface	via the X1 or X2 interface	via the X1 or X2 interface
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50	50	50	50
SIMATIC communication					
• S7 routing	Yes	Yes	Yes	Yes	Yes
OPC UA					
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions	Yes	Yes	Yes	Yes	Yes

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	CPU 1511T-1PN, 450KB Prog., 1.5MB Data	CPU 1515T-2 PN, 1.5MB Progr, 4.5MB Data	CPU 1516T-3 PN, 3MB prog., 25MB data	CPU 1517T-3 PN, 6MB prog., 50MB data	CPU 1518T-3 PN, 18MB prog., 150MB data
Supported technology objects					
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	1 120	2 400	12 800	20 480	30 720
• Required Motion Control resources					
- per speed-controlled axis	40	40	40	40	40
- per positioning axis	80	80	80	80	80
- per synchronous axis	160	160	160	160	160
- per external encoder	80	80	80	80	80
- per output cam	20	20	20	20	20
- per cam track	160	160	160	160	160
- per probe	40	40	40	40	40
• Number of available Extended Motion Control resources for technology objects	90	120	540	720	1 560
• Required Extended Motion Control resources					
- per cam (1 000 points and 50 segments)	2	2	2	2	2
- per cam (10 000 points and 50 segments)	20	20	20	20	20
- per cam (50 points and 600 segments)	2	2	2	2	2
- per cam (50 points and 6 000 segments)	20	20	20	20	20
- for each set of kinematics	30	30	30	30	30
- per Interpreter	60	60	60	60	60
- Per leading axis proxy	3	3	3	3	3
• kinematics functions					
- kinematics with up to 4 interpolating axes	Yes; max. 3D + orientation	Yes; max. 3D + orientation	Yes; max. 3D + orientation	Yes; max. 3D + orientation	Yes; max. 3D + orientation
- kinematics with 5 or more interpolating axes	No	No	No	No	Yes
- user-defined kinematics	No	No	Yes	Yes	Yes
- SIMATIC Safe Kinematics	No	No	No	No	No
Controller					
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring					
• High-speed counter	Yes	Yes	Yes	Yes	Yes
Product functions / security					
PROFINET Security Class	1			1	1
signed firmware update	Yes			Yes	Yes
Secure Boot	Yes			Yes	Yes
safely removing data	Yes			Yes	Yes

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Article number	6ES7511-1TL03-0AB0	6ES7515-2TN03-0AB0	6ES7516-3TP10-0AB0	6ES7517-3TQ10-0AB0	6ES7518-3TT10-0AB0
	CPU 1511T-1PN, 450KB Prog., 1.5MB Data	CPU 1515T-2 PN, 1.5MB Progr, 4.5MB Data	CPU 1516T-3 PN, 3MB prog., 25MB data	CPU 1517T-3 PN, 6MB prog., 50MB data	CPU 1518T-3 PN, 18MB prog., 150MB data
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-30 °C; No condensation	-30 °C; No condensation	0 °C	0 °C	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
Configuration					
Configuration / programming					
Programming language					
- LAD	Yes	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes	Yes
- CFC	Yes	Yes	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes	Yes
Know-how protection					
• User program protection/ password protection	Yes	Yes	Yes	Yes	Yes
• Copy protection	Yes	Yes	Yes	Yes	Yes
• Block protection	Yes	Yes	Yes	Yes	Yes
Access protection					
• protection of confidential configuration data	Yes	Yes	Yes	Yes	Yes
• Password for display	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection	Yes	Yes	Yes	Yes	Yes
• Protection level: Read/write protection	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection for Failsafe	No	No	No	No	No
• Protection level: Complete protection	Yes	Yes	Yes	Yes	Yes
• User administration	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized
• Number of users	100	100	100	100	100
Dimensions					
Width	35 mm	70 mm	175 mm	175 mm	175 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
Weights					
Weight, approx.	336 g	456 g	1 499 g	1 499 g	1 637 g

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Technology CPUs

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Article number	6ES7511-1UL03-0AB0 CPU 1511TF-1PN, 450KB Prog., 1.5MB Data	6ES7515-2UN03-0AB0 CPU 1515TF-2 PN, 1.5MB Progr, 4.5MB Data	6ES7516-3UP10-0AB0 CPU 1516TF-3 PN, 3MB prog., 25MB Data	6ES7517-3UQ10-0AB0 CPU 1517TF-3 PN, 6MB prog., 50MB Data	6ES7518-3UT10-0AB0 CPU 1518TF-3 PN, 18MB prog., 150MB Data
General information					
Product type designation	CPU 1511TF-1 PN	CPU 1515TF-2 PN	CPU 1516TF-3 PN	CPU 1517TF-3 PN	CPU 1518TF-3 PN
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7511-1UK01-0AB0	V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7515-2UM01-0AB0	V20 (FW V4.0)	V20 (FW V4.0)	V20 (FW V4.0)
Display					
Screen diagonal [cm]	3.45 cm	6.1 cm	6.1 cm	6.1 cm	6.1 cm
Supply voltage					
Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Memory					
Work memory					
• integrated (for program)	450 kbyte	1.5 Mbyte	3 Mbyte	6 Mbyte	18 Mbyte
• integrated (for data)	1.5 Mbyte	4.5 Mbyte	25 Mbyte	50 Mbyte	150 Mbyte
Load memory					
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte
CPU processing times					
for bit operations, typ.	6 ns	6 ns	1.2 ns	0.6 ns	0.3 ns
for word operations, typ.	7 ns	7 ns	2.6 ns	1.3 ns	0.8 ns
for fixed point arithmetic, typ.	9 ns	9 ns	2.6 ns	1.3 ns	0.8 ns
for floating point arithmetic, typ.	37 ns	37 ns	7.6 ns	3.8 ns	2.5 ns
Counters, timers and their retentivity					
S7 counter					
• Number	2 048	2 048	2 048	2 048	2 048
IEC counter					
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times					
• Number	2 048	2 048	2 048	2 048	2 048
IEC timer					
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity					
Flag					
• Size, max.	16 kbyte	16 kbyte	16 kbyte	16 kbyte	16 kbyte
Address area					
I/O address area					
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day					
Clock					
• Type	Hardware clock	Hardware clock	Hardware clock	Hardware clock	Hardware clock
1. Interface					
Interface types					
• RJ 45 (Ethernet)	Yes; X1	Yes; X1	Yes; X1	Yes; X1	Yes; X1
• Number of ports	2	2	2	2	2
• integrated switch	Yes	Yes	Yes	Yes	Yes

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Article number	6ES7511-1UL03-0AB0 CPU 1511TF-1PN, 450KB Prog., 1.5MB Data	6ES7515-2UN03-0AB0 CPU 1515TF-2 PN, 1.5MB Progr, 4.5MB Data	6ES7516-3UP10-0AB0 CPU 1516TF-3 PN, 3MB prog., 25MB Data	6ES7517-3UQ10-0AB0 CPU 1517TF-3 PN, 6MB prog., 50MB Data	6ES7518-3UT10-0AB0 CPU 1518TF-3 PN, 18MB prog., 150MB Data
Protocols					
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes	Yes
• Media redundancy	Yes	Yes	Yes	Yes	Yes
PROFINET IO Controller					
Services					
- Isochronous mode	Yes	Yes	Yes	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes	Yes	Yes	Yes
- PROFIenergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64	64; with DFP: 256 IO devices in 8 DFP groups	64; with DFP: 256 IO devices in 8 DFP groups	64; with DFP: 256 IO devices in 8 DFP groups
- Number of connectable IO Devices for RT, max.	128	256	512	512	512
- of which in line, max.	128	256	512	512	512
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8	8	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1	1
PROFINET IO Device					
Services					
- Isochronous mode	No	No	No	No	No
- IRT	Yes	Yes	Yes	Yes	Yes; Minimum send cycle of 250 µs
- PROFIenergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Shared device	Yes	Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4	4	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
2. Interface					
Interface types					
• RJ 45 (Ethernet)		Yes; X2	Yes; X2	Yes; X2	Yes; X2
• Number of ports		1	2	2	2
• integrated switch		No	Yes	Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1UL03-0AB0 CPU 1511TF-1PN, 450KB Prg., 1.5MB Data	6ES7515-2UN03-0AB0 CPU 1515TF-2 PN, 1.5MB Progr, 4.5MB Data	6ES7516-3UP10-0AB0 CPU 1516TF-3 PN, 3MB prog., 25MB Data	6ES7517-3UQ10-0AB0 CPU 1517TF-3 PN, 6MB prog., 50MB Data	6ES7518-3UT10-0AB0 CPU 1518TF-3 PN, 18MB prog., 150MB Data
Protocols					
• IP protocol		Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller		Yes	Yes	Yes	Yes
• PROFINET IO Device		Yes	Yes	Yes	Yes
• SIMATIC communication		Yes	Yes	Yes	Yes
• Open IE communication		Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server		Yes	Yes	Yes	Yes
• Media redundancy		No	Yes	Yes	Yes
PROFINET IO Controller					
Services					
- Isochronous mode		No	Yes	Yes	Yes
- Direct data exchange		No	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT		No	Yes	Yes	Yes
- PROFIenergy		Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup		No	No	No	No
- Number of connectable IO Devices, max.		32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.			64; with DFP: 256 IO devices in 8 DFP groups	64; with DFP: 256 IO devices in 8 DFP groups	64; with DFP: 256 IO devices in 8 DFP groups
- Number of connectable IO Devices for RT, max.		32	512	512	512
- of which in line, max.		32	512	512	512
- Number of IO Devices that can be simultaneously activated/deactivated, max.		8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.		8	8	8	8
- Updating times		The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1	1	1	1
PROFINET IO Device					
Services					
- Isochronous mode		No	No	No	No
- IRT		No	Yes	Yes	Yes
- PROFIenergy		Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup		No			
- Shared device		Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.		4	4	4	4
- activation/deactivation of I-devices		Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record		Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class		SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
3. Interface					
Interface types					
• RJ 45 (Ethernet)			Yes; X3	Yes; X3	Yes; X3
• Number of ports			1	1	1
• integrated switch			No	No	No

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1UL03-0AB0 CPU 1511TF-1PN, 450KB Prog., 1.5MB Data	6ES7515-2UN03-0AB0 CPU 1515TF-2 PN, 1.5MB Progr, 4.5MB Data	6ES7516-3UP10-0AB0 CPU 1516TF-3 PN, 3MB prog., 25MB Data	6ES7517-3UQ10-0AB0 CPU 1517TF-3 PN, 6MB prog., 50MB Data	6ES7518-3UT10-0AB0 CPU 1518TF-3 PN, 18MB prog., 150MB Data
Protocols					
• IP protocol			Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller			No	No	No
• PROFINET IO Device			No	No	No
• SIMATIC communication			Yes	Yes	Yes
• Open IE communication			Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server			Yes	Yes	Yes
Protocols					
Number of connections					
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs	320; via integrated interfaces of the CPU and connected CPs / CMs	384; via integrated interfaces of the CPU and connected CPs / CMs
Redundancy mode					
Media redundancy					
- Media redundancy	only via 1st interface (X1)	only via 1st interface (X1)	via the X1 or X2 interface	via the X1 or X2 interface	via the X1 or X2 interface
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50	50	50	50
SIMATIC communication					
• S7 routing	Yes	Yes	Yes	Yes	Yes
OPC UA					
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions	Yes	Yes	Yes	Yes	Yes

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Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1UL03-0AB0 CPU 1511TF-1PN, 450KB Prg., 1.5MB Data	6ES7515-2UN03-0AB0 CPU 1515TF-2 PN, 1.5MB Progr, 4.5MB Data	6ES7516-3UP10-0AB0 CPU 1516TF-3 PN, 3MB prog., 25MB Data	6ES7517-3UQ10-0AB0 CPU 1517TF-3 PN, 6MB prog., 50MB Data	6ES7518-3UT10-0AB0 CPU 1518TF-3 PN, 18MB prog., 150MB Data
Supported technology objects					
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	1 120	2 400	12 800	20 480	30 720
• Required Motion Control resources					
- per speed-controlled axis	40	40	40	40	40
- per positioning axis	80	80	80	80	80
- per synchronous axis	160	160	160	160	160
- per external encoder	80	80	80	80	80
- per output cam	20	20	20	20	20
- per cam track	160	160	160	160	160
- per probe	40	40	40	40	40
• Number of available Extended Motion Control resources for technology objects	90	120	540	720	1 560
• Required Extended Motion Control resources					
- per cam (1 000 points and 50 segments)	2	2	2	2	2
- per cam (10 000 points and 50 segments)	20	20	20	20	20
- per cam (50 points and 600 segments)	2	2	2	2	2
- per cam (50 points and 6 000 segments)	20	20	20	20	20
- for each set of kinematics	30	30	30	30	30
- per Interpreter	60	60	60	60	60
- Per leading axis proxy	3	3	3	3	3
• kinematics functions					
- kinematics with up to 4 interpolating axes	Yes; max. 3D + orientation	Yes; max. 3D + orientation	Yes; max. 3D + orientation	Yes; max. 3D + orientation	Yes; max. 3D + orientation
- kinematics with 5 or more interpolating axes	No	No	No	No	Yes
- user-defined kinematics	No	No	Yes	Yes	Yes
- SIMATIC Safe Kinematics	No	No	No	Yes	Yes
Controller					
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring					
• High-speed counter	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates					
Highest safety class achievable in safety mode					
Probability of failure (for service life of 20 years and repair time of 100 hours)					
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05	< 2.00E-05	< 2.00E-05	< 2.00E-05	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09	< 1.00E-09	< 1.00E-09	< 1.00E-09	< 1.00E-09

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Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1UL03-0AB0 CPU 1511TF-1PN, 450KB Prog., 1.5MB Data	6ES7515-2UN03-0AB0 CPU 1515TF-2 PN, 1.5MB Progr, 4.5MB Data	6ES7516-3UP10-0AB0 CPU 1516TF-3 PN, 3MB prog., 25MB Data	6ES7517-3UQ10-0AB0 CPU 1517TF-3 PN, 6MB prog., 50MB Data	6ES7518-3UT10-0AB0 CPU 1518TF-3 PN, 18MB prog., 150MB Data
Product functions / security					
PROFINET Security Class	1		1	1	1
signed firmware update	Yes		Yes	Yes	Yes
Secure Boot	Yes		Yes	Yes	Yes
safely removing data	Yes		Yes	Yes	Yes
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-30 °C; No condensation	-30 °C; No condensation	0 °C	0 °C	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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
Configuration					
Configuration / programming					
Programming language					
- LAD	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes	Yes
- CFC	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality	Yes; either CFC or failsafe functionality
- GRAPH	Yes	Yes	Yes	Yes	Yes
Know-how protection					
• User program protection/ password protection	Yes	Yes	Yes	Yes	Yes
• Copy protection	Yes	Yes	Yes	Yes	Yes
• Block protection	Yes	Yes	Yes	Yes	Yes
Access protection					
• protection of confidential configuration data	Yes	Yes	Yes	Yes	Yes
• Password for display	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection	Yes	Yes	Yes; Specific write protection both for Standard and for Failsafe	Yes; Specific write protection both for Standard and for Failsafe	Yes; Specific write protection both for Standard and for Failsafe
• Protection level: Read/write protection	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection for Failsafe	Yes	Yes	Yes	Yes	Yes
• Protection level: Complete protection	Yes	Yes	Yes	Yes	Yes
• User administration	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized	Yes; device-wide and centralized
• Number of users	100	100	100	100	100

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7511-1UL03-0AB0	6ES7515-2UN03-0AB0	6ES7516-3UP10-0AB0	6ES7517-3UQ10-0AB0	6ES7518-3UT10-0AB0
	CPU 1511TF-1PN, 450KB Prog., 1.5MB Data	CPU 1515TF-2 PN, 1.5MB Progr, 4.5MB Data	CPU 1516TF-3 PN, 3MB prog., 25MB Data	CPU 1517TF-3 PN, 6MB prog., 50MB Data	CPU 1518TF-3 PN, 18MB prog., 150MB Data
Dimensions					
Width	35 mm	70 mm	175 mm	175 mm	175 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
Weights					
Weight, approx.	336 g	456 g	1 499 g	1 499 g	1 637 g

Article number	6ES7516-3TN00-0AB0	6ES7516-3UN00-0AB0	6ES7517-3TP00-0AB0	6ES7517-3UP00-0AB0	6ES7518-4TP00-0AB0	6ES7518-4UP00-0AB0
	CPU 1516T-3 PN/DP, 3MB prog./ 7.5MB data	CPU 1516TF-3 PN/DP, 3MB prog./ 7.5MB data	CPU 1517T-3 PN/DP, 3MB prog./ 8MB data	CPU 1517TF-3 PN/DP, 3MB prog., 8MB data	CPU 1518T-4 PN/DP, 9MB Prog., 60MB data	CPU 1518TF-4 PN/DP, 9MB Prog, 60MB data
General information						
Product type designation	CPU 1516T-3 PN/DP	CPU 1516TF-3 PN/DP	CPU 1517T-3 PN/DP	CPU 1517TF-3 PN/DP	CPU 1518T-4 PN/DP	CPU 1518TF-4 PN/DP
Engineering with						
• STEP 7 TIA Portal configurable/integrated from version	V19 (FW V3.1) / V15 (FW V2.5) or higher	V19 (FW V3.1) / V15 (FW V2.5) or higher	V19 (FW V3.1) / V14 (FW V2.0) or higher	V19 (FW V3.1) / V14 (FW V2.0) or higher	V19 (FW V3.1) / V17 (FW V2.9) or higher	V19 (FW V3.1) / V17 (FW V2.9) or higher
Display						
Screen diagonal [cm]	6.1 cm	6.1 cm	6.1 cm	6.1 cm	6.1 cm	6.1 cm
Supply voltage						
Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V
Memory						
Work memory						
• integrated (for program)	3 Mbyte	3 Mbyte	3 Mbyte	3 Mbyte	9 Mbyte	9 Mbyte
• integrated (for data)	7.5 Mbyte	7.5 Mbyte	8 Mbyte	8 Mbyte	60 Mbyte	60 Mbyte
Load memory						
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte	32 Gbyte
CPU processing times						
for bit operations, typ.	6 ns	6 ns	2 ns	2 ns	1 ns	1 ns
for word operations, typ.	7 ns	7 ns	3 ns	3 ns	2 ns	2 ns
for fixed point arithmetic, typ.	9 ns	9 ns	3 ns	3 ns	2 ns	2 ns
for floating point arithmetic, typ.	37 ns	37 ns	12 ns	12 ns	6 ns	6 ns
Counters, timers and their retentivity						
S7 counter						
• Number	2 048	2 048	2 048	2 048	2 048	2 048
IEC counter						
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times						
• Number	2 048	2 048	2 048	2 048	2 048	2 048
IEC timer						
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity						
Flag						
• Size, max.	16 kbyte	16 kbyte	16 kbyte	16 kbyte	16 kbyte	16 kbyte
Address area						
I/O address area						
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image

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Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7516-3TN00-0AB0 CPU 1516T-3 PN/DP, 3MB prog./ 7.5MB data	6ES7516-3UN00-0AB0 CPU 1516TF-3 PN/DP, 3MB prog./ 7.5MB data	6ES7517-3TP00-0AB0 CPU 1517T-3 PN/DP, 3MB prog./ 8MB data	6ES7517-3UP00-0AB0 CPU 1517TF-3 PN/DP, 3MB prog., 8MB data	6ES7518-4TP00-0AB0 CPU 1518T-4 PN/DP, 9MB Prog., 60MB data	6ES7518-4UP00-0AB0 CPU 1518TF-4 PN/DP, 9MB Prog., 60MB data
Time of day						
Clock						
• Type	Hardware clock	Hardware clock	Hardware clock	Hardware clock	Hardware clock	Hardware clock
1. Interface						
Interface types						
• RJ 45 (Ethernet)	Yes; X1	Yes; X1	Yes; X1	Yes; X1	Yes; X1	Yes; X1
• Number of ports	2	2	2	2	2	2
• Integrated switch	Yes	Yes	Yes	Yes	Yes	Yes
Protocols						
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes	Yes	Yes
• Media redundancy	Yes	Yes	Yes	Yes	Yes	Yes
PROFINET IO Controller						
Services						
- Isochronous mode	Yes	Yes	Yes	Yes	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes	Yes	Yes	Yes	Yes
- PROFINET energy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64	64	64	64	64
- Number of connectable IO Devices for RT, max.	256	256	512	512	512	512
- of which in line, max.	256	256	512	512	512	512
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8	8	8	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1	1	1

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7516-3TN00-0AB0	6ES7516-3UN00-0AB0	6ES7517-3TP00-0AB0	6ES7517-3UP00-0AB0	6ES7518-4TP00-0AB0	6ES7518-4UP00-0AB0
	CPU 1516T-3 PN/DP, 3MB prog./ 7.5MB data	CPU 1516TF-3 PN/DP, 3MB prog./ 7.5MB data	CPU 1517T-3 PN/DP, 3MB prog./ 8MB data	CPU 1517TF-3 PN/DP, 3MB prog., 8MB data	CPU 1518T-4 PN/DP, 9MB Prog., 60MB data	CPU 1518TF-4 PN/DP, 9MB Prog., 60MB data
PROFINET IO Device						
Services						
- Isochronous mode	No	No	No	No	No	No
- IRT	Yes	Yes	Yes	Yes	Yes; Minimum send cycle of 250 µs	Yes; Minimum send cycle of 250 µs
- PROFINergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Shared device	Yes	Yes	Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4	4	4	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
2. Interface						
Interface types						
• RJ 45 (Ethernet)	Yes; X2	Yes; X2	Yes; X2	Yes; X2	Yes; X2	Yes; X2
• Number of ports	1	1	1	1	1	1
• integrated switch	No	No	No	No	No	No
Protocols						
• IP protocol	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes	Yes	Yes	Yes	Yes
• Media redundancy	No	No	No	No	No	No
PROFINET IO Controller						
Services						
- Isochronous mode	No	No	No	No	No	No
- Direct data exchange	No	No	No	No	No	No
- IRT	No	No	No	No	No	No
- PROFINergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	No	No	No	No	No	No
- Number of connectable IO Devices, max.	32; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	32; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.	32	32	128	128	128	128
- of which in line, max.	32	32	128	128	128	128
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8	8	8	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1	1	1	1	1

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7516-3TN00-0AB0 CPU 1516T-3 PN/DP, 3MB prog./ 7.5MB data	6ES7516-3UN00-0AB0 CPU 1516TF-3 PN/DP, 3MB prog./ 7.5MB data	6ES7517-3TP00-0AB0 CPU 1517T-3 PN/DP, 3MB prog./ 8MB data	6ES7517-3UP00-0AB0 CPU 1517TF-3 PN/DP, 3MB prog., 8MB data	6ES7518-4TP00-0AB0 CPU 1518T-4 PN/DP, 9MB Prog., 60MB data	6ES7518-4UP00-0AB0 CPU 1518TF-4 PN/DP, 9MB Prog., 60MB data
PROFINET IO Device						
Services						
- Isochronous mode	No	No	No	No	No	No
- IRT	No	No	No	No	No	No
- PROFINergy	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Prioritized startup	No	No	No	No	No	No
- Shared device	Yes	Yes	Yes	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4	4	4	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
3. Interface						
Interface types						
• RJ 45 (Ethernet)					Yes; X3	Yes; X3
• RS 485	Yes; X3	Yes; X3	Yes; X3	Yes; X3		
• Number of ports	1	1	1	1	1	1
• integrated switch					No	No
Protocols						
• IP protocol					Yes; IPv4	Yes; IPv4
• PROFINET IO Controller					No	No
• PROFINET IO Device					No	No
• PROFIBUS DP master	Yes	Yes	Yes	Yes		
• PROFIBUS DP device	No	No	No	No		
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes	Yes
• Open IE communication					Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server					Yes	Yes
PROFIBUS DP master						
• max. number of DP devices	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET		
4. Interface						
Interface types						
• RS 485					Yes; X4	Yes; X4
• Number of ports					1	1
Protocols						
• PROFIBUS DP master					Yes	Yes
• PROFIBUS DP device					No	No
• SIMATIC communication					Yes	Yes
PROFIBUS DP master						
• max. number of DP devices					125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
Protocols						
Number of connections						
• Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs	256; via integrated interfaces of the CPU and connected CPs / CMs	320; via integrated interfaces of the CPU and connected CPs / CMs	320; via integrated interfaces of the CPU and connected CPs / CMs	384; via integrated interfaces of the CPU and connected CPs / CMs	384; via integrated interfaces of the CPU and connected CPs / CMs

SIMATIC S7-1500 Advanced Controllers

Central processing units
Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7516-3TN00-0AB0	6ES7516-3UN00-0AB0	6ES7517-3TP00-0AB0	6ES7517-3UP00-0AB0	6ES7518-4TP00-0AB0	6ES7518-4UP00-0AB0
	CPU 1516T-3 PN/DP, 3MB prog./ 7.5MB data	CPU 1516TF-3 PN/DP, 3MB prog./ 7.5MB data	CPU 1517T-3 PN/DP, 3MB prog./ 8MB data	CPU 1517TF-3 PN/DP, 3MB prog., 8MB data	CPU 1518T-4 PN/DP, 9MB Prog., 60MB data	CPU 1518TF-4 PN/DP, 9MB Prog., 60MB data
Redundancy mode						
Media redundancy						
- Media redundancy	only via 1st interface (X1)	only via 1st interface (X1)	only via 1st interface (X1)	only via 1st interface (X1)	only via 1st interface (X1)	only via 1st interface (X1)
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50	50	50	50	50
SIMATIC communication						
• S7 routing	Yes	Yes	Yes	Yes	Yes	Yes
OPC UA						
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space
• Alarms and Conditions	Yes	Yes	Yes	Yes	Yes	Yes
Supported technology objects						
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	6 400	6 400	10 240	10 240	15 360	15 360
• Required Motion Control resources						
- per speed-controlled axis	40	40	40	40	40	40
- per positioning axis	80	80	80	80	80	80
- per synchronous axis	160	160	160	160	160	160
- per external encoder	80	80	80	80	80	80
- per output cam	20	20	20	20	20	20
- per cam track	160	160	160	160	160	160
- per probe	40	40	40	40	40	40
• Number of available Extended Motion Control resources for technology objects	192	192	256	256	512	512

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7516-3TN00-0AB0	6ES7516-3UN00-0AB0	6ES7517-3TP00-0AB0	6ES7517-3UP00-0AB0	6ES7518-4TP00-0AB0	6ES7518-4UP00-0AB0
	CPU 1516T-3 PN/DP, 3MB prog./ 7.5MB data	CPU 1516TF-3 PN/DP, 3MB prog./ 7.5MB data	CPU 1517T-3 PN/DP, 3MB prog./ 8MB data	CPU 1517TF-3 PN/DP, 3MB prog., 8MB data	CPU 1518T-4 PN/DP, 9MB Prog., 60MB data	CPU 1518TF-4 PN/DP, 9MB Prog., 60MB data
- Required Extended Motion Control resources - per cam (1 000 points and 50 segments) - per cam (10 000 points and 50 segments) - for each set of kinematics - per Interpreter - Per leading axis proxy - kinematics functions - kinematics with up to 4 interpolating axes - kinematics with 5 or more interpolating axes - user-defined kinematics - SIMATIC Safe Kinematics	2 20 30 60 3	2 20 30 60 3	2 20 30 60 3	2 20 30 60 3	2 20 30 60 3	2 20 30 60 3
Controller						
- PID_Compact - PID_3Step - PID-Temp	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
Counting and measuring						
High-speed counter	Yes	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates						
Highest safety class achievable in safety mode						
Probability of failure (for service life of 20 years and repair time of 100 hours)						
- Low demand mode: PFDavg in accordance with SIL3		< 2.00E-05		< 2.00E-05		< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3		< 1.00E-09		< 1.00E-09		< 1.00E-09
Ambient conditions						
Ambient temperature during operation						
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off

SIMATIC S7-1500 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Technical specifications

Article number	6ES7516-3TN00-0AB0 CPU 1516T-3 PN/DP, 3MB prog./ 7.5MB data	6ES7516-3UN00-0AB0 CPU 1516TF-3 PN/DP, 3MB prog./ 7.5MB data	6ES7517-3TP00-0AB0 CPU 1517T-3 PN/DP, 3MB prog./ 8MB data	6ES7517-3UP00-0AB0 CPU 1517TF-3 PN/DP, 3MB prog., 8MB data	6ES7518-4TP00-0AB0 CPU 1518T-4 PN/DP, 9MB Prog., 60MB data	6ES7518-4UP00-0AB0 CPU 1518TF-4 PN/DP, 9MB Prog., 60MB data
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	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Configuration						
Configuration / programming						
Programming language						
- LAD	Yes	Yes; incl. failsafe	Yes	Yes; incl. failsafe	Yes	Yes; incl. failsafe
- FBD	Yes	Yes; incl. failsafe	Yes	Yes; incl. failsafe	Yes	Yes; incl. failsafe
- STL	Yes	Yes	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes	Yes	Yes
- CFC	Yes	Yes; either CFC or failsafe functionality	Yes	Yes; either CFC or failsafe functionality	Yes	Yes; either CFC or failsafe functionality
- GRAPH	Yes	Yes	Yes	Yes	Yes	Yes
Know-how protection						
• User program protection/ password protection	Yes	Yes	Yes	Yes	Yes	Yes
• Copy protection	Yes	Yes	Yes	Yes	Yes	Yes
• Block protection	Yes	Yes	Yes	Yes	Yes	Yes
Access protection						
• protection of confidential configuration data	Yes	Yes	Yes	Yes	Yes	Yes
• Password for display	Yes	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection	Yes	Yes	Yes	Yes	Yes	Yes
• Protection level: Read/write protection	Yes	Yes	Yes	Yes	Yes	Yes
• Protection level: Write protection for Failsafe	No	Yes	No	Yes	No	Yes
• Protection level: Complete protection	Yes	Yes	Yes	Yes	Yes	Yes
• User administration	Yes; device-wide	Yes; device-wide	Yes; device-wide	Yes; device-wide	Yes; device-wide	Yes; device-wide
Dimensions						
Width	175 mm	175 mm	175 mm	175 mm	175 mm	175 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm	129 mm
Weights						
Weight, approx.	1 929 g	1 929 g	1 929 g	1 929 g	2 079 g	2 079 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Overview



- 16, 32 and 64-channel digital input modules
- Sinking and sourcing input versions available
- Module for recording NAMUR signals
- Optional with internal counter for 6 kHz, 10 kHz or 20 kHz
- For flexible adaptation of the PLC to the corresponding task
- For subsequent expansion of the system with additional inputs
- 35 mm wide modules with parameters and diagnostic functions
- 25 mm wide modules for use in tight spaces: particularly economical, without parameters or diagnostic functions

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Ordering data

Article No.

Article No.

SM 521 digital input modules

Module width 35 mm

SIMATIC S7-1500, digital input module DI 16x 24 V DC HF

16 channels in groups of 16; of which 2 inputs can be used as counters; input delay 0.05...20 ms; input type 3 (IEC 61131); diagnostics; hardware interrupts: order front connectors (screw terminals or push-in) separately

6ES7521-1BH00-0AB0

SIMATIC S7-1500, digital input module DI 32x 24 V DC HF

32 channels in groups of 16; of which 2 inputs can be used as counters; input delay 0.05...20 ms; input type 3 (IEC 61131); diagnostics; hardware interrupts: order front connectors (screw terminals or push-in) separately

6ES7521-1BL00-0AB0

SIMATIC S7-1500, digital input module DI 16x24 V DC HS

16 channels in groups of 8; for 24 V encoders; 24 V DC sensor supply; input type 2 (IEC 61131); input delay parameterizable 0.05...20 ms; isochronous mode up to 250 µs; integr. counting function up to 20 kHz; pulse stretching; flutter monitoring; signal inversion; diagnostics; hardware interrupts: order front connectors (screw terminals or push-in) and, if required, shielding set separately

6ES7521-7BH00-0AB0

SIMATIC S7-1500, digital input module, DI 64x 24 V DC SNK/SRC BA

64 channels in groups of 16; input delay typ. 3.2 ms, input type 3 (IEC 61131); sinking/sourcing input. 35 mm wide, cable and terminal blocks to be ordered separately as accessories

6ES7521-1BP00-0AA0

SIMATIC S7-1500, digital input module DI 16x 24 V DC BA, sourcing input

16 channels in groups of 16; input delay 3.2 ms; input type 3 (IEC 61131); order front connectors (screw terminals or push-in) separately

6ES7521-1BH50-0AA0

SIMATIC S7-1500, digital input module DI 16x 230 V AC BA

16 channels in groups of 4; input delay 20 ms; input type 1 (IEC 61131); order front connectors (screw terminals or push-in) separately

6ES7521-1FH00-0AA0

SIMATIC S7-1500, digital input module DI 16x 24...125 V UC HF

16 channels in groups of 1; input delay 0.05...20 ms; input type 3 (IEC 61131); diagnostics; hardware interrupts: order front connectors (screw terminals or push-in) separately

6ES7521-7EH00-0AB0

SIMATIC S7-1500, digital input module DI 16xNAMUR HF

16 channels in groups of 8; for 8.2 V NAMUR encoders; 8.2 V sensor supply; input delay; parameterizable 0.05 ... 20 ms; integr. counting function up to 20 kHz pulse stretching; flutter monitoring; signal inversion; diagnostics; hardware interrupts; all components required for shielding are included in the scope of delivery; please order front connector (screw terminals or push-in) separately

6ES7521-7TH00-0AB0

Module width 25 mm; front connector (push-in) included in scope of delivery

SIMATIC S7-1500, digital input module DI 16x 24 V DC BA

16 channels in groups of 16; input delay typ. 3.2 ms, input type 3 (IEC 61131); delivery incl. push-in front connector

6ES7521-1BH10-0AA0

SIMATIC S7-1500, digital input module DI 32x 24 V DC BA

32 channels in groups of 16; input delay typ. 3.2 ms, input type 3 (IEC 61131); delivery incl. push-in front connector

6ES7521-1BL10-0AA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Ordering data	Article No.		Article No.
Accessories		Universal front door for I/O modules	
Front connector		SIMATIC S7-1500, spare part front door for 35 mm	6ES7528-0AA00-7AA0
SIMATIC S7-1500, front connector screw-type connection system 40-pin for 35 mm wide modules including 4 jumper links and cable ties	6ES7592-1AM00-0XB0	Wide IO modules; consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit	
SIMATIC S7-1500, front connector with push-in technology 40-pin, for 35 mm wide modules including 4 jumper links and cable ties	6ES7592-1BM00-0XB0	SIMATIC S7-1500, spare part front door for 25 mm	6ES7528-0AA00-0AA0
SIMATIC S7-1500, front connector with push-in technology 40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie	6ES7592-1BM00-0XA0	Wide IO modules; consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit	
SIMATIC S7-1500, spare part jumper links For front connectors for 35 mm wide IO modules; can be used for all 24 V DC modules; 20 units per packing unit; Note: not suitable for 230 V, not suitable for analog modules	6ES7592-3AA00-0AA0	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0
DIN A4 labeling sheets		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2
SIMATIC S7-1500, labeling sheets for 35 mm Wide S7-1500 modules, color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules	6ES7592-2AX00-0AA0		
SIMATIC S7-1500, labeling sheets for 25 mm Wide S7-1500 modules and compact CPUs, color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 20 strips per packing unit sufficient for 200 modules	6ES7592-1AX00-0AA0		
SIMATIC S7-1500, spare part, U-connector For connecting I/O modules; self-assembling backplane bus 5 units per packing unit	6ES7590-0AA00-0AA0		

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Technical specifications

Article number	6ES7521-1BH00-0AB0 S7-1500, DI 16x24VDC HF	6ES7521-1BL00-0AB0 S7-1500, DI 32x24VDC HF	6ES7521-7BH00-0AB0 S7-1500, DI 16x24VDC HS	6ES7521-1BH50-0AA0 S7-1500, DI 16x24VDC SRC BA	6ES7521-1FH00-0AA0 S7-1500, DI 16x230VAC BA	6ES7521-1BP00-0AA0 S7-1500, DI 64x24VDC SNK/SRC BA
General information						
Product type designation	DI 16x24VDC HF	DI 32x24VDC HF	DI 16x24 V DC HS	DI 16x24VDC SRC BA	DI 16x230VAC BA	DI 64x24VDC BA
Product function						
• Isochronous mode	Yes	Yes	Yes	No	No	No
• Prioritized startup	Yes	Yes	Yes	Yes	Yes	No
Engineering with						
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 / -	V13 SP1 / -	STEP 7 V17 or higher	V12 / V12	V12 / V12	V16 with HSP 0319 / V17
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V2.35 / -
Operating mode						
• DI	Yes	Yes	Yes	Yes	Yes	Yes
• Counter	Yes	Yes	Yes	No	No	No
• Oversampling	No	No	Yes			No
• MSI	Yes	Yes	Yes	Yes	Yes	Yes
Supply voltage						
Rated value (DC)	24 V	24 V	24 V			
Reverse polarity protection	Yes	Yes	Yes			
Encoder supply						
Number of outputs			16; 2x 24 V DC			
Short-circuit protection			Yes			
24 V encoder supply						
• 24 V			Yes			
• Short-circuit protection			Yes; Per group, electronic			
• Output current, max.			150 mA; per group			
• Output current per module, max.			300 mA			
Digital inputs						
Number of digital inputs	16	32	16	16	16	64
Digital inputs, parameterizable	Yes	Yes	Yes	No	No	No
Source/sink input	P-reading	P-reading	P-reading	Sourcing	P-reading	Yes
Input characteristic curve in accordance with IEC 61131, type 1					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		Yes
Pulse extension			Yes; 0.05 s, 0.1 s, 0.2 s, 0.5 s, 1 s, 2 s			
Edge evaluation			Yes; Positive edge, negative edge			
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			
Number of simultaneously controllable inputs						
• Number of simultaneously controllable inputs						64; see additional description in the manual
Digital input functions, parameterizable						
• Gate start/stop	Yes	Yes	Yes; software/hardware gate			
• Freely usable digital input	Yes	Yes	Yes			
• Digital input with oversampling			Yes			

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Technical specifications

Article number	6ES7521-1BH00-0AB0 S7-1500, DI 16x24VDC HF	6ES7521-1BL00-0AB0 S7-1500, DI 32x24VDC HF	6ES7521-7BH00-0AB0 S7-1500, DI 16x24VDC HS	6ES7521-1BH50-0AA0 S7-1500, DI 16x24VDC SRC BA	6ES7521-1FH00-0AA0 S7-1500, DI 16x230VAC BA	6ES7521-1BP00-0AA0 S7-1500, DI 64x24VDC SNK/SRC BA
Input voltage • Rated value (DC) • Rated value (AC) • for signal "0" • for signal "1"	24 V -30 to +5 V +11 to +30V	24 V -30 to +5 V +11 to +30V	24 V -30 to +5 V +11 to +30V	24 V -5 to +30V -11 to -30V	230 V; 120/230 V AC, 50/60 Hz 0V AC to 40V AC 79V AC to 264V AC	24 V -5 ... +5 V (reference potential is COM) -11 ... -30 V; +11 ... +30 V (reference potential is COM)
Input current • for signal "1", typ.	2.5 mA	2.5 mA	9 mA	4.5 mA	11 mA; At 230 V AC and 5.5 mA at 120 V AC	2.7 mA
Input delay (for rated value of input voltage) for standard inputs - parameterizable for interrupt inputs - parameterizable for technological functions - parameterizable	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms Yes Yes	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms Yes Yes	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms Yes Yes	No No No	No No No	No No No
Encoder Connectable encoders • 2-wire sensor - permissible quiescent current (2-wire sensor), max.	Yes 1.5 mA	Yes 1.5 mA	Yes 2 mA	Yes 1.5 mA	Yes 2 mA	Yes 1.5 mA
Isochronous mode Filtering and processing time (TCI), min. Bus cycle time (TDP), min.	80 µs; At 50 µs filter time 250 µs	80 µs; At 50 µs filter time 250 µs	60 µs; At 50 µs filter time 250 µs			
Interrupts/diagnostics/ status information Diagnostics function	Yes	Yes	Yes	No	No	No
Alarms • Diagnostic alarm • Hardware interrupt	Yes Yes	Yes Yes	Yes Yes	No No	No No	No No
Diagnoses • Monitoring the supply voltage • Monitoring of encoder power supply • Wire-break • Short-circuit • Group error	Yes Yes; to I < 350 µA No	Yes Yes; to I < 350 µA No	Yes Yes; short-circuit Yes; to I < 350 µA No	No No No	No No No	No No No
Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • for module diagnostics	Yes; green LED Yes; red LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED	Yes; green LED Yes; red LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED	Yes; green LED Yes; red LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED	Yes; green LED Yes; red LED No Yes; green LED No No	Yes; green LED Yes; red LED No Yes; green LED No Yes; red LED	Yes; green LED Yes; red LED No Yes; via SIMATIC TOP connect connection module Yes; via SIMATIC TOP connect connection module No No

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Technical specifications

Article number	6ES7521-1BH00-0AB0 S7-1500, DI 16x24VDC HF	6ES7521-1BL00-0AB0 S7-1500, DI 32x24VDC HF	6ES7521-7BH00-0AB0 S7-1500, DI 16x24VDC HS	6ES7521-1BH50-0AA0 S7-1500, DI 16x24VDC SRC BA	6ES7521-1FH00-0AA0 S7-1500, DI 16x230VAC BA	6ES7521-1BP00-0AA0 S7-1500, DI 64x24VDC SNK/SRC BA
Potential separation						
Potential separation channels • between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates						
Suitable for safety functions	No	No	No	No	No	No
Product functions / security						
signed firmware update		No	No	No	No	No
data integrity	No	No	No	No	No	No
Ambient conditions						
Ambient temperature during operation						
• horizontal installation, min.	-30 °C; From FS05	-30 °C; From FS05	-30 °C	-25 °C; From FS05	-30 °C; From FS05	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; From FS05	-30 °C; From FS05	-30 °C	-25 °C; From FS05	-30 °C; From FS05	-30 °C
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °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
Dimensions						
Width	35 mm	35 mm	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm	129 mm
Weights						
Weight, approx.	240 g	260 g	240 g	230 g	300 g	250 g
Other						
Note:						Please order cable and connection modules separately

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Technical specifications

Article number	6ES7521-7EH00-0AB0 S7-1500, DI 16 x 24...125V UC HF	6ES7521-7TH00-0AB0 S7-1500, DI 16xNAMUR HF
General information		
Product type designation	DI 16x24 ... 125 V UC HF	DI 16xNAMUR HF
Product function		
• Isochronous mode	No	Yes
• Prioritized startup	Yes	Yes
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 / -	STEP 7 V17 or higher
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -
Operating mode		
• DI	Yes	Yes
• Counter	No	Yes
• Oversampling	No	No
• MSI	Yes	Yes
Supply voltage		
Rated value (DC)		24 V
Reverse polarity protection		Yes
Encoder supply		
Number of outputs		16; 2x 8.2 V DC
Short-circuit protection		Yes
NAMUR encoder supply		
• 8.2 V		Yes
• Short-circuit protection		Yes; Per group, electronic
• Output current, max.		100 mA; per group
• Output current per module, max.		200 mA
Digital inputs		
Number of digital inputs	16	16; NAMUR
Digital inputs, parameterizable	Yes	Yes
Source/sink input	Yes	P-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes; At 24 V DC	
Pulse extension		Yes; 0.05 s, 0.1 s, 0.2 s, 0.5 s, 1 s, 2 s
Edge evaluation		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
Digital input functions, parameterizable		
• Gate start/stop		Yes; software/hardware gate
• Freely usable digital input		Yes
Input voltage		
• Rated value (DC)	24 V; 48 V, 125 V	8.2 V
• Rated value (AC)	24 V; 48 V, 125 V (50 - 60 Hz)	
• for signal "0"	-5 ... +5 V	
• for signal "1"	+11 ... +146 V	
Input current		
• for signal "1", typ.	3 mA; At 24 V DC	10 mA
for 10 k switched contact		
- 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.		10 mA
for unswitched contact		
- for signal "0", max. (permissible quiescent current)		0.35 to 1.2 mA
- for signal "1", typ.		2.1 ... 10 mA

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Technical specifications

Article number	6ES7521-7EH00-0AB0 S7-1500, DI 16 x 24...125V UC HF	6ES7521-7TH00-0AB0 S7-1500, DI 16XNAMUR HF
for NAMUR encoders - for signal "0", min. - for signal "0", max. - for signal "1", min. - for signal "1", max.		0.35 mA 1.2 mA 2.1 mA 10 mA
Input delay (for rated value of input voltage)		
for standard inputs - parameterizable	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms parameterizable with DC, 20 ms fixed with AC	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms
for interrupt inputs - parameterizable	Yes	Yes
for technological functions - parameterizable	No	Yes
for NAMUR inputs - at "0" to "1", max. - at "1" to "0", max.		20 ms 20 ms
Encoder		
Connectable encoders • NAMUR encoder/changeover contact according to EN 60947 • Single contact / changeover contact unconnected • Single contact / changeover contact connected with 10 kΩ • 2-wire sensor - permissible quiescent current (2-wire sensor), max.	Yes 1.5 mA	Yes; no CO contact Yes; no CO contact Yes; no CO contact Yes 1.2 mA
Isochronous mode Filtering and processing time (TCI), min. Bus cycle time (TDP), min.		60 μs; At 50 μs filter time 250 μs
Interrupts/diagnostics/ status information		
Diagnostics function	Yes	Yes
Alarms • Diagnostic alarm • Hardware interrupt	Yes Yes	Yes Yes
Diagnoses • Monitoring the supply voltage • Monitoring of encoder power supply • Wire-break • Short-circuit	No Yes; To I < 550 μA No	Yes Yes; short-circuit Yes; to I < 350 μA No
Diagnostics indication LED • RUN LED • ERROR LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • for module diagnostics	Yes; green LED Yes; red LED No Yes; green LED Yes; red LED Yes; red LED	Yes; green LED Yes; red LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED
Potential separation		
Potential separation channels • between the channels and backplane bus	Yes	Yes
Standards, approvals, certificates		
Suitable for safety functions	No	No
Product functions / security signed firmware update data integrity	No No	No No

SIMATIC S7-1500 Advanced Controllers

I/O modules
Digital modules

SM 521 digital input modules

Technical specifications

Article number	6ES7521-7EH00-0AB0 S7-1500, DI 16 x 24...125V UC HF	6ES7521-7TH00-0AB0 S7-1500, DI 16XNAMUR HF
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	0 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	0 °C	-30 °C
• vertical installation, max.	40 °C	40 °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	35 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	240 g	240 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Technical specifications

Article number	6ES7521-1BH10-0AA0 S7-1500, DI 16x24VDC BA	6ES7521-1BL10-0AA0 S7-1500, DI 32x24VDC BA
General information		
Product type designation	DI 16 x 24 V DC BA	DI 32x24VDC BA
Product function		
• Isochronous mode	No	No
• Prioritized startup	Yes	Yes
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V13 / V13	V13 / V13
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -
Operating mode		
• DI	Yes	Yes
• Counter	No	No
• MSI	Yes	Yes
Supply voltage		
Rated value (DC)	24 V	24 V
Digital inputs		
Number of digital inputs	16	32
Digital inputs, parameterizable	No	No
Source/sink input	P-reading	P-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-30 to +5 V	-30 to +5 V
• for signal "1"	+11 to +30V	+11 to +30V
Input current		
• for signal "1", typ.	2.7 mA	2.7 mA
Input delay (for rated value of input voltage)		
for standard inputs		
- parameterizable	No	No
for interrupt inputs		
- parameterizable	No	No
for technological functions		
- parameterizable	No	No
Encoder		
Connectable encoders		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Interrupts/diagnostics/ status information		
Diagnostics function	No	No
Alarms		
• Diagnostic alarm	No	No
• Hardware interrupt	No	No
Diagnoses		
• Monitoring the supply voltage	No	No
• Wire-break	No	No
• Short-circuit	No	No

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 521 digital input modules

Technical specifications

Article number	6ES7521-1BH10-0AA0 S7-1500, DI 16x24VDC BA	6ES7521-1BL10-0AA0 S7-1500, DI 32x24VDC BA
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)	No	No
• Channel status display	Yes; green LED	Yes; green LED
• for channel diagnostics	No	No
• for module diagnostics	No	No
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Standards, approvals, certificates		
Suitable for safety functions	No	No
Product functions / security		
signed firmware update	No	No
data integrity	No	No
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-30 °C; from FS04	-30 °C; from FS04
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	-30 °C; from FS04	-30 °C; from FS04
• vertical installation, max.	40 °C	40 °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
Dimensions		
Width	25 mm	25 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	230 g	260 g
Other		
Note:	Supplied incl. 40-pole push-in front connectors	Supplied incl. 40-pole push-in front connectors

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 522 digital output modules

Overview



- 8, 32, 16 and 64-channel digital output modules
- Sinking and sourcing output versions available
- For flexible adaptation of the PLC to the corresponding task
- Optional with PWM functionality
- Optional with integrated counter of switching cycles for predictive maintenance for the connected actuator
- Relay modules provide an integrated counter of switching cycles for predictive maintenance for the integrated relays
- For subsequent expansion of the system with additional outputs
- High Feature modules with parameters and diagnostic functions
- 25 mm wide modules for use in tight spaces: particularly economical, without parameters or diagnostic functions

5

Ordering data

Article No.

Article No.

SM 522 digital output modules

Module width 35 mm

SIMATIC S7-1500, digital output module DQ 8x24 V DC/2 A HF

8 channels in groups of 8; 8 A per group; diagnostics; substitute value: 2 channels can be used for pulse width modulation (PWM), the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. order front connectors (screw terminals or push-in) separately

6ES7522-1BF00-0AB0

SIMATIC S7-1500, digital output module DQ 8x 24 V DC/2 A HS

8 channels in groups of 4; 5 A per channel, 8 A per group; two channels can be parallel-switched per group (2 x 8 A), 8 channels with pulse width modulation (PWM; max. 12.5 kHz), front connector (screw terminal or push-in) to be ordered separately

6ES7522-5BF00-0AB0

SIMATIC S7-1500, digital output module, DQ 16x24 V DC/0.5 A HF

16 channels in groups of 8; 4 A per group; single-channel diagnostics; substitute value: switching cycle counter for connected actuators. the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. order front connectors (screw terminals or push-in) separately

6ES7522-1BH01-0AB0

SIMATIC S7-1500, digital output module DQ 32x24 V DC/0.5 A HF

32 channels in groups of 8; 4 A per group; single-channel diagnostics; substitute value, switching cycle counter for connected actuators. the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. order front connectors (screw terminals or push-in) separately

6ES7522-1BL01-0AB0

SIMATIC S7-1500, digital output module DQ 64x24 V DC/0.3 A BA

64 channels in groups of 16, 2 A per group at 60 °C, sourcing output, 35 mm wide, the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. Order cables and terminal blocks separately as accessories

6ES7522-1BP00-0AA0

SIMATIC S7-1500, digital output module DQ 64x24 V DC/0.3 A SNK BA

64 channels in groups of 16, 2 A per group at 60 °C, sinking output, 35 mm wide cable and terminal blocks to be ordered separately as accessories

6ES7522-1BP50-0AA0

SIMATIC S7-1500, digital output module DQ 8x230 V AC/5 A ST

Relay; 8 channels in groups of 1; 5 A per group; diagnostics; substitute value: Switching cycle counter for integrated relays, the module supports the safety-related shutdown of load groups up to SIL1 according to EN IEC 62061:2021 and Category 2 / PL c according to EN ISO 13849-1:2015. order front connectors (screw terminals or push-in) separately

6ES7522-5HF00-0AB0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 522 digital output modules

Ordering data	Article No.		Article No.
SIMATIC S7-1500, digital output module DQ 16x 230V AC/2A ST Relay 16 channels in groups of 2; 4 A per group; switching cycle counter for integrated relays, diagnostics; substitute value: the module supports the safety-related shutdown of load groups up to SIL1 according to EN IEC 62061:2021 and Category 2 / PL c according to EN ISO 13849-1:2015. order front connectors (screw terminals or push-in) separately	6ES7522-5HH00-0AB0	DIN A4 labeling sheets	
SIMATIC S7-1500, digital output module DQ 8x230 V AC/2 A ST TRIAC; 8 channels in groups of 1; 2 A per group; substitute value: order front connectors (screw terminals or push-in) separately	6ES7522-5FF00-0AB0	SIMATIC S7-1500, labeling sheets For 35 mm width S7-1500 modules, color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules	6ES7592-2AX00-0AA0
SIMATIC S7-1500, digital output module DQ 16x230 V AC/1 A ST TRIAC; 16 channels in groups of 2; 2 A per group; substitute value: order front connectors (screw terminals or push-in) separately	6ES7522-5FH00-0AB0	SIMATIC S7-1500, labeling sheets For 25 mm wide S7-1500 modules and compact CPUs, color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 20 strips per packing unit sufficient for 200 modules	6ES7592-1AX00-0AA0
SIMATIC S7-1500, digital output module DQ 16x24.. 48 V UC/ 125 V DC/0.5 A ST 16 channels in groups of 1; 0.5 A per group; substitute value: Observe derating; the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. order front connectors (screw terminals or push-in) separately <u>Module width 25 mm;</u> <u>front connector (push-in)</u> <u>included in scope of delivery</u>	6ES7522-5EH00-0AB0	SIMATIC S7-1500, spare part U-type connector for connecting I/O modules Self-assembling backplane bus 5 units per packing unit	6ES7590-0AA00-0AA0
16 outputs, 24 V DC, 0.5 A Basic, isolated	6ES7 522-1BH10-0AA0	Universal front door for I/O modules	
32 outputs, 24 V DC, 0.5 A Basic, isolated	6ES7 522-1BL10-0AA0	SIMATIC S7-1500, spare part front door For 35 mm wide I/O modules; consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit	6ES7528-0AA00-7AA0
Accessories		SIMATIC S7-1500, spare part front door For 25 mm wide I/O modules; consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit	6ES7528-0AA00-0AA0
Front connector		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0
SIMATIC S7-1500, front connector screw-type connection system 40-pin for 35 mm wide modules including 4 jumper links and cable ties	6ES7592-1AM00-0XB0	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2
SIMATIC S7-1500, front connector with push-in technology 40-pin, for 35 mm wide modules including 4 jumper links and cable ties	6ES7592-1BM00-0XB0		
SIMATIC S7-1500, front connector with push-in technology 40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie	6ES7592-1BM00-0XA0		
SIMATIC S7-1500, spare part jumper links for front connector For 35 mm wide IO modules; can be used for all 24 V DC modules; 20 units per packing unit, Note: not suitable for 230 V, not suitable for analog modules	6ES7592-3AA00-0AA0		

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-1BH01-0AB0 S7-1500, DQ 16x24V DC/0.5A HF	6ES7522-1BL01-0AB0 S7-1500, DQ 32x24VDC/0.5A HF	6ES7522-1BF00-0AB0 S7-1500, DQ 8x24VDC/2A HF	6ES7522-5BF00-0AB0 S7-1500, DQ 8x24VDC/5A HS	6ES7522-5EH00-0AB0 S7-1500, DQ 16x24...48VUC/125VDC/0.5A ST
General information					
Product type designation	DQ 16x24VDC/0.5A HF	DQ 32x24VDC/0.5A HF	DQ 8x24VDC/2A HF	DQ 8x24VDC/5A HS	DQ 16x24 ... 48 V UC/125 V DC/0.5 A ST
Product function					
• Isochronous mode	Yes	Yes	No	Yes; 250 µs	No
• Prioritized startup	Yes	Yes	Yes	Yes	Yes
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 / -	V13 SP1 / -	V13 SP1 / -	V18 with HSP 0434 / V20	V13 SP1 / -
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	STEP 7 V5.7 or higher SP1 or higher	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	revision 3 / version 5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V 2.43 / -	V2.3 / -
Operating mode					
• DQ	Yes	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	Yes; with an application	Yes; Valve control	No
• PWM	No	No	Yes	Yes; max. 12.5 kHz	No
• Cam control (switching at comparison values)	No	No	No	No	No
• Oversampling	No	No	No	Yes	No
• MSO	Yes	Yes	Yes	Yes	Yes
• Integrated operating cycle counter	Yes	Yes	Yes	Yes	Yes; FW V1.1.0 or higher
Supply voltage					
Rated value (DC)	24 V	24 V	24 V	24 V	
Reverse polarity protection	Yes; through internal protection with 7 A per group	Yes; through internal protection with 7 A per group	Yes; through internal protection with 10 A per group	Yes; through internal protection with 10 A per group	
Digital outputs					
Type of digital output	Transistor	Transistor	Transistor	Transistor	Transistor
Number of digital outputs	16	32	8	8	16
Current-sinking				No	Yes
Current-sourcing	Yes	Yes	Yes	Yes; Push-pull output	Yes
Digital outputs, parameterizable	Yes	Yes	Yes	Yes	Yes
output type acc. to IEC 61131, type 0.5	Yes	Yes			
output type acc. to IEC 61131, type 2			Yes		
Short-circuit protection	Yes; Clocked electronically	Yes; Clocked electronically	Yes	Yes	
Open-circuit detection				No	
Overload protection				Thermal overload protection	
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)	-17 V	M (-1 V)	200 V (suppressor diode)
Controlling a digital input	Yes	Yes	Yes	Yes	Yes
Digital output functions, parameterizable					
• Freely usable digital output			Yes	Yes	
• PWM output			Yes; FS02 and FW V2.1.0 or higher	Yes	
- Number, max.			2	8	
• Digital output with oversampling				Yes	
- Number, max.				8	
Switching capacity of the outputs					
• with resistive load, max.	0.5 A	0.5 A		5 A	0.5 A
• with inductive load, max.				5 A	
• on lamp load, max.	5 W	5 W	10 W	10 W	40 W; At 125 V DC, 10 W at 48 V UC, 5 W at 24 V UC

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I/O modules

Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-1BH01-0AB0 S7-1500, DQ 16x24V DC/0.5A HF	6ES7522-1BL01-0AB0 S7-1500, DQ 32x24VDC/0.5A HF	6ES7522-1BF00-0AB0 S7-1500, DQ 8x24VDC/2A HF	6ES7522-5BF00-0AB0 S7-1500, DQ 8x24VDC/5A HS	6ES7522-5EH00-0AB0 S7-1500, DQ 16x24...48VUC/125VDC/0.5A ST
Load resistance range					
• lower limit	48 Ω	48 Ω	12 Ω	4.8 Ω	
• upper limit	12 kΩ	12 kΩ	4 kΩ	4 kΩ	
Output voltage					
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-1.0 V)
Output current					
• for signal "1" rated value	0.5 A	0.5 A	2 A	5 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA	0.5 mA	
Output delay with resistive load					
• "0" to "1", typ.			80 μs	3 μs	
• "0" to "1", max.	100 μs	100 μs	100 μs		5 ms
• "1" to "0", typ.			300 μs	3 μs	
• "1" to "0", max.	500 μs	500 μs	500 μs		5 ms
Parallel switching of two outputs					
• for logic links	Yes	Yes	Yes	No	Yes
• for uprating	No	No	No	Yes; 8A for parallel connection of channel 0 and 1 / channel 4 and 5	No
• for redundant control of a load	Yes	Yes	Yes	No	Yes
Switching frequency					
• with resistive load, max.	100 Hz	100 Hz	100 Hz; With PWM operation: 500 Hz	12.5 kHz	25 Hz
• with inductive load, max.	0.5 Hz; According to IEC 60947-5-1, DC-13	0.5 Hz; According to IEC 60947-5-1, DC-13	0.5 Hz; According to IEC 60947-5-1, DC-13; max. 500 Hz with PWM operation only with external circuit; see additional description in the manual	12.5 kHz; According to IEC 60947-5-1, DC-13	0.5 Hz
• on lamp load, max.	10 Hz	10 Hz	10 Hz	12.5 kHz	10 Hz
Total current of the outputs					
• Current per channel, max.	0.5 A; see additional description in the manual	0.5 A; see additional description in the manual	2 A; see additional description in the manual	5 A; see additional description in the manual	0.5 A
• Current per group, max.	4 A; see additional description in the manual	4 A; see additional description in the manual	8 A; see additional description in the manual	8 A; see additional description in the manual	0.5 A
• Current per module, max.	8 A; see additional description in the manual	16 A; see additional description in the manual	16 A; see additional description in the manual	16 A; see additional description in the manual	8 A
Total current of the outputs (per module)					
horizontal installation					
- up to 40 °C, max.				8 A	
- up to 60 °C, max.				5 A	
vertical installation					
- up to 40 °C, max.				5 A	
Isochronous mode					
Execution and activation time (TCO), min.	70 μs	70 μs			
Bus cycle time (TDP), min.	250 μs	250 μs		250 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
• Maintenance interrupt	Yes	Yes	Yes	Yes	Yes

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I/O modules

Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-1BH01-0AB0 S7-1500, DQ 16x24V DC/0.5A HF	6ES7522-1BL01-0AB0 S7-1500, DQ 32x24VDC/0.5A HF	6ES7522-1BF00-0AB0 S7-1500, DQ 8x24VDC/2A HF	6ES7522-5BF00-0AB0 S7-1500, DQ 8x24VDC/5A HS	6ES7522-5EH00-0AB0 S7-1500, DQ 16x24...48VUC/125VDC/0.5A ST
Diagnoses					
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	No
• Wire-break	Yes	Yes	No	No	No
• Short-circuit	Yes	Yes	Yes	Yes	No
• Group error	Yes	Yes	Yes	Yes	
Diagnostics indication LED					
• RUN LED	Yes; green 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	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 LED	Yes; green LED	Yes; green LED	Yes; green LED	No
• Channel status display	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED	No
• for module diagnostics	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red 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	Yes; From FS02	Yes; From FS02	Yes; From FS03	No	Yes; From FS02
Highest safety class achievable for safety-related tripping of standard modules					
• Performance level according to ISO 13849-1	PL d	PL d	PL d		PL d
• Category according to ISO 13849-1	Cat. 3	Cat. 3	Cat. 3		Cat. 3
• SIL acc. to IEC 62061	SIL 2	SIL 2	SIL 2		
• SILCL according to IEC 62061					SILCL 2
Product functions / security					
signed firmware update	No	No	No	Yes	Yes
data integrity	No	No	No	No	No
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C; From FS03	-30 °C; From FS03	-30 °C; From FS06	-30 °C	-25 °C; From FS05
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; From FS03	-30 °C; From FS03	-30 °C; From FS06	-30 °C	-25 °C; From FS05
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C	40 °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	35 mm	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
Weights					
Weight, approx.	230 g	280 g	240 g	236 g	230 g

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I/O modules

Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-5HF00-0AB0 S7-1500, DQ 8x230VAC/ 5A ST (Relay)	6ES7522-5HH00-0AB0 S7-1500, DQ 16x230VAC/ 2A ST (Relay)	6ES7522-5FF00-0AB0 S7-1500, DQ 8x230VAC/ 2A ST (Triac)	6ES7522-5FH00-0AB0 S7-1500, DQ 16x230VAC/ 1A ST (Triac)
General information				
Product type designation	DQ 8x230 V AC/5 A ST (relay)	DQ 16x 230 V AC/2 A ST (relay)	DQ 8x230 V AC/2A ST (triac)	DQ 16x230VAC/1A ST (Triac)
Product function				
• Isochronous mode	No	No	No	No
• Prioritized startup	Yes	Yes	Yes	Yes
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	V12 / V12	V13 SP1 / -	V12 / V12	V13 SP1 / -
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode				
• DQ	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	No	No
• PWM	No	No	No	No
• Oversampling	No	No	No	No
• MSO	Yes	Yes	Yes	Yes
• Integrated operating cycle counter	Yes; FW V2.1.0 or higher	Yes; FW V1.1.0 or higher	Yes; FW V2.3.0 or higher	Yes; FW V1.3.0 or higher
Supply voltage				
Rated value (DC)	24 V	24 V		
Reverse polarity protection	Yes	Yes		
Digital outputs				
Type of digital output	Relays	Relays	Triac	Triac
Number of digital outputs	8	16	8	16
Current-sinking	Yes	Yes		Yes
Current-sourcing	Yes	Yes	Yes	Yes
Digital outputs, parameterizable	Yes	Yes	Yes	Yes
Short-circuit protection	No	No	No	No
Controlling a digital input	Yes; possible	Yes		
Size of motor starters according to NEMA, max.	5	5	5	4
Switching capacity of the outputs				
• with resistive load, max.			2 A	1 A
• on lamp load, max.	1 500 W; 10 000 operating cycles	50 W (230 V AC), 5 W (24 V DC)	50 W	50 W
• Low energy/fluorescent lamps with electronic control gear	10x 58 W (25 000 operating cycles)			
• Fluorescent tubes, conventionally compensated	1x 58 W (25 000 operating cycles)			
• Fluorescent tubes, uncompensated	10x 58 W (25 000 operating cycles)			
Output voltage				
• for signal "1", min.			L1 (-1.5 V) at maximum output current; L1 (-8.5 V) at minimum output current	L1 (-1.5 V) at maximum output current; L1 (-8.5 V) at minimum output current
Output current				
• for signal "1" rated value	5 A	2 A	2 A	1 A
• for signal "0" residual current, max.	0 A	0 A	2 mA	2 mA
Output delay with resistive load				
• "0" to "1", max.			1 AC cycle	1 AC cycle
• "1" to "0", max.			1 AC cycle	1 AC cycle
Parallel switching of two outputs				
• for logic links	Yes	Yes	No	No
• for uprating	No	No	No	No
• for redundant control of a load	Yes	Yes	Yes	Yes

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Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-5HF00-0AB0 S7-1500, DQ 8x230VAC/ 5A ST (Relay)	6ES7522-5HH00-0AB0 S7-1500, DQ 16x230VAC/ 2A ST (Relay)	6ES7522-5FF00-0AB0 S7-1500, DQ 8x230VAC/ 2A ST (Triac)	6ES7522-5FH00-0AB0 S7-1500, DQ 16x230VAC/ 1A ST (Triac)
Switching frequency				
• with resistive load, max.	2 Hz	1 Hz	10 Hz	10 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	2 Hz	1 Hz	1 Hz	1 Hz
Total current of the outputs				
• Current per channel, max.	8 A; see additional description in the manual	2 A; see additional description in the manual	2 A; see additional description in the manual	1 A; see additional description in the manual
• Current per group, max.	8 A; see additional description in the manual	4 A; see additional description in the manual	2 A; see additional description in the manual	2 A; see additional description in the manual
• Current per module, max.	64 A; see additional description in the manual	32 A; see additional description in the manual	10 A; see additional description in the manual	10 A; see additional description in the manual
Relay outputs				
• Number of relay outputs	8	16		
• Rated supply voltage of relay coil L+ (DC)	24 V	24 V		
• Current consumption of relays (coil current of all relays), typ.	80 mA	150 mA		
• external protection for relay outputs	With miniature circuit breaker with characteristic B for: cos ϕ 1.0: 600 A cos ϕ 0.5 ... 0.7: 900 A with 8 A Diazed fuse: 1 000 A	Miniature circuit breaker B10 / B16		
• Contact connection (internal)	No	No		
• Number of operating cycles, max.	4 000 000; see additional description in the manual	see additional description in the manual		
• Relay approved acc. to UL 508	Yes; 250 V AC/5 A g.p.; 120 V AC TV-4 tungsten; A300, R300			
Switching capacity of contacts				
- with inductive load, max.	see additional description in the manual	2 A; see additional description in the manual		
- with resistive load, max.	see additional description in the manual	2 A; see additional description in the manual		
Interrupts/diagnostics/status information				
Diagnostics function	Yes		No	No
Substitute values connectable	Yes	Yes	Yes	Yes
Alarms				
• Diagnostic alarm	Yes	Yes	No	No
• Maintenance interrupt	Yes	Yes	Yes; maintenance alarm for switching cycle counter	Yes; maintenance alarm for switching cycle counter
Diagnoses				
• Monitoring the supply voltage	Yes	Yes	No	No
• Wire-break	No	No	No	No
• Short-circuit	No	No	No	No
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		
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED	Yes; green LED	No	No
• 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; red LED	Yes; red LED	Yes; red LED	Yes; red LED
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes

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Digital modules

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Article number	6ES7522-5HF00-0AB0 S7-1500, DQ 8x230VAC/ 5A ST (Relay)	6ES7522-5HH00-0AB0 S7-1500, DQ 16x230VAC/ 2A ST (Relay)	6ES7522-5FF00-0AB0 S7-1500, DQ 8x230VAC/ 2A ST (Triac)	6ES7522-5FH00-0AB0 S7-1500, DQ 16x230VAC/ 1A ST (Triac)
Standards, approvals, certificates				
Suitable for safety functions	No	No	No	No
Suitable for safety-related tripping of standard modules	Yes; From FS03	Yes; From FS02		
Highest safety class achievable for safety-related tripping of standard modules				
• Performance level according to ISO 13849-1	PL c	PL c		
• Category according to ISO 13849-1	Cat. 2	Cat. 2		
• SIL acc. to IEC 62061	SIL 1	SIL 1		
Product functions / security				
signed firmware update	No	No	No	No
data integrity	No	No	No	No
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-30 °C; From FS03	-25 °C; From FS02	-25 °C; From FS05	-25 °C; from FS04
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; From FS03	-25 °C; From FS02	-25 °C; From FS05	-25 °C; from FS04
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C
Dimensions				
Width	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm
Weights				
Weight, approx.	350 g	350 g	290 g	310 g

Article number	6ES7522-1BP00-0AA0 S7-1500, DQ 64x24VDC/0.3A BA	6ES7522-1BP50-0AA0 S7-1500, DQ 64x24VDC/0.3A SNK BA
General information		
Product type designation	DQ 64x24VDC/0.3A BA	DQ 64x24VDC/0.3A SNK BA
Product function		
• Isochronous mode	No	No
• Prioritized startup	No	No
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V16 with HSP 0319 / V17	V16 with HSP 0319 / V17
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.35 / -	V2.35 / -
Operating mode		
• DQ	Yes	Yes
• DQ with energy-saving function	No	No
• PWM	No	No
• Cam control (switching at comparison values)	No	No
• Oversampling	No	No
• MSO	Yes	Yes
• Integrated operating cycle counter	No	No
Supply voltage		
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes; through internal protection with 7 A per group	Yes; Through internal protection with 4 A per group

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Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-1BP00-0AA0 S7-1500, DQ 64x24VDC/0.3A BA	6ES7522-1BP50-0AA0 S7-1500, DQ 64x24VDC/0.3A SNK BA
Digital outputs		
Type of digital output	Transistor	Transistor
Number of digital outputs	64	64
Current-sinking	No	Yes
Current-sourcing	Yes	No
Digital outputs, parameterizable	No	No
Short-circuit protection	Yes	No; external fusing necessary, max. 4 A per group, tripping characteristic type B or C
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)
Controlling a digital input	Yes	Yes
Switching capacity of the outputs		
• with resistive load, max.	0.3 A	0.3 A
• on lamp load, max.	5 W	5 W
Load resistance range		
• lower limit	80 Ω	80 Ω
• upper limit	10 kΩ	10 kΩ
Output voltage		
• for signal "1", min.	L+ (-0.8 V)	M+ (0.5 V)
Output current		
• for signal "1" rated value	0.3 A	0.3 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Output delay with resistive load		
• "0" to "1", max.	100 μs	100 μs
• "1" to "0", max.	500 μs	500 μs
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.	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz; According to IEC 60947-5-1, DC-13	0.5 Hz; According to IEC 60947-5-1, DC-13
• on lamp load, max.	10 Hz	10 Hz
Total current of the outputs		
• Current per channel, max.	0.3 A	0.3 A
• Current per group, max.	2 A	2 A
• Current per module, max.	8 A	8 A
Total current of the outputs (per module)		
horizontal installation		
- up to 60 °C, max.	8 A	8 A
vertical installation		
- up to 40 °C, max.	8 A	8 A
Interrupts/diagnostics/status information		
Diagnostics function	No	No
Substitute values connectable	No	No
Alarms		
• Diagnostic alarm	No	No
• Maintenance interrupt	No	No
Diagnoses		
• Monitoring the supply voltage	No	No
• Wire-break	No	No
• Short-circuit	No	No
• Group error	No	No

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Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-1BP00-0AA0 S7-1500, DQ 64x24VDC/0.3A BA	6ES7522-1BP50-0AA0 S7-1500, DQ 64x24VDC/0.3A SNK BA
Diagnostics indication LED		
• RUN LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED
• MAINT LED	No	No
• Monitoring of the supply voltage (PWR-LED)	Yes; via SIMATIC TOP connect connection module	Yes; via SIMATIC TOP connect connection module
• Channel status display	Yes; via SIMATIC TOP connect connection module	Yes; via SIMATIC TOP connect connection module
• for channel diagnostics	No	No
• for module diagnostics	No	No
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Standards, approvals, certificates		
Suitable for safety functions	No	No
Suitable for safety-related tripping of standard modules	Yes; From FS01	No
Highest safety class achievable for safety-related tripping of standard modules		
• Performance level according to ISO 13849-1	PL d	
• Category according to ISO 13849-1	Cat. 3	
• SIL acc. to IEC 62061	SIL 2	
Product functions / security		
signed firmware update		No
data integrity		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.	40 °C	40 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
Dimensions		
Width	35 mm	35 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	270 g	270 g
Other		
Note:	Please order cable and connection modules separately	Please order cable and connection modules separately

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-1BH10-0AA0 S7-1500, DQ 16x24VDC/0.5A BA	6ES7522-1BL10-0AA0 S7-1500, DQ 32x24VDC/0.5A BA
General information		
Product type designation	DQ 16x24VDC/0.5A BA	DQ 32x24VDC/0.5A BA
Product function		
• Isochronous mode	No	No
• Prioritized startup	Yes	Yes
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V13 / V13	V13 / V13
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -
Operating mode		
• DQ	Yes	Yes
• DQ with energy-saving function	No	No
• PWM	No	No
• Oversampling	No	No
• MSO	Yes	Yes
Supply voltage		
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes; through internal protection with 7 A per group	Yes; through internal protection with 7 A per group
Digital outputs		
Type of digital output	Transistor	Transistor
Number of digital outputs	16	32
Current-sourcing	Yes	Yes
Digital outputs, parameterizable	No	No
output type acc. to IEC 61131, type 0.5	Yes	Yes
Short-circuit protection	Yes	Yes
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)
Controlling a digital input	Yes	Yes
Switching capacity of the outputs		
• with resistive load, max.	0.5 A	0.5 A
• on lamp load, max.	5 W	5 W
Load resistance range		
• lower limit	48 Ω	48 Ω
• upper limit	12 kΩ	12 kΩ
Output voltage		
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)
Output current		
• for signal "1" rated value	0.5 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Output delay with resistive load		
• "0" to "1", max.	100 μs	100 μs
• "1" to "0", max.	500 μs	500 μs
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.	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz; According to IEC 60947-5-1, DC-13	0.5 Hz; According to IEC 60947-5-1, DC-13
• on lamp load, max.	10 Hz	10 Hz
Total current of the outputs		
• Current per channel, max.	0.5 A; see additional description in the manual	0.5 A; see additional description in the manual
• Current per group, max.	4 A; see additional description in the manual	4 A; see additional description in the manual
• Current per module, max.	8 A; see additional description in the manual	16 A; see additional description in the manual

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 522 digital output modules

Technical specifications

Article number	6ES7522-1BH10-0AA0 S7-1500, DQ 16x24VDC/0.5A BA	6ES7522-1BL10-0AA0 S7-1500, DQ 32x24VDC/0.5A BA
Interrupts/diagnostics/ status information		
Diagnostics function	No	No
Substitute values connectable	No	No
Alarms		
• Diagnostic alarm	No	No
• Maintenance interrupt	No	No
Diagnoses		
• Monitoring the supply voltage	No	No
• Wire-break	No	No
• Short-circuit	No	No
• Group error	No	No
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 LED	Yes; green LED
• Channel status display	Yes; green LED	Yes; green LED
• for channel diagnostics	No	No
• for module diagnostics	No	No
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Standards, approvals, certificates		
Suitable for safety functions	No	No
Suitable for safety-related tripping of standard modules	Yes; From FS02	Yes; From FS02
Highest safety class achievable for safety-related tripping of standard modules		
• Performance level according to ISO 13849-1	PL d	PL d
• Category according to ISO 13849-1	Cat. 3	Cat. 3
• SIL acc. to IEC 62061	SIL 2	SIL 2
Product functions / security		
signed firmware update	No	No
data integrity	No	No
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-30 °C; from FS04	-30 °C; from FS04
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	-30 °C; from FS04	-30 °C; from FS04
• vertical installation, max.	40 °C	40 °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
Dimensions		
Width	25 mm	25 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	230 g	280 g
Other		
Note:	Supplied incl. 40-pole push-in front connectors	Supplied incl. 40-pole push-in front connectors

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 523 digital input/output modules

Overview



- 16 digital inputs and 16 digital outputs (25 mm wide)
- 32 digital inputs, sinking/sourcing / 32 digital outputs, sourcing (35 mm wide)
- For flexible adaptation of the PLC to the corresponding task
- For subsequent expansion of the system with additional inputs and outputs
- For use in the tightest spaces: particularly economical, without parameters or diagnostic functions

5

Ordering data

Article No.

SM 523 digital input/output module

Module width 35 mm

SIMATIC S7-1500 digital input/output module, DI 32x24 V DC BA SNK / SRC

32 channels in groups of 16, input delay typ. 3.2 ms, input type 3 (IEC 61131), sinking/sourcing input, DQ 32x24 V DC/0.3 A SNK BA; 32 channels in groups of 16; 2 A per group at 60 °C; sinking output; 35 mm wide; order cables and terminal blocks separately as accessories

Module width 25 mm; front connector (push-in) included in scope of delivery

6ES7523-1BP50-0AA0

SIMATIC S7-1500 digital input/output module, DI 16x 24 V DC

16 channels in groups of 16, input delay typ. 3.2 ms, input type 3 (IEC 61131), DQ 16x24 V DC/0.5 A BA; 16 channels in groups of 8; 4 A per group; the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 2 / PL c according to EN ISO 13849-1:2015. Supplied with push-in front connector

6ES7523-1BL00-0AA0

Accessories

Front connector

SIMATIC S7-1500, front connector with push-in technology

40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie

6ES7592-1BM00-0XA0

Article No.

DIN A4 labeling sheets

SIMATIC S7-1500, labeling sheets

For 25 mm wide S7-1500 modules and compact CPUs, color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 20 strips per packing unit sufficient for 200 modules

6ES7592-1AX00-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus 5 units per packing unit

6ES7590-0AA00-0AA0

Universal front door for I/O modules

SIMATIC S7-1500, spare part front door

For 25 mm wide I/O modules; consisting of:
* front door (unlasered),
* labeling strips (front)
* cabling diagram,
5 units per packing unit

6ES7528-0AA00-0AA0

SIMATIC Manual Collection DL in 5 languages¹⁾

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

6ES7998-8XE01-8YE0

Consignee email address required for delivery.

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice
Consignee email address required for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 523 digital input/output modules

Technical specifications

Article number	6ES7523-1BL00-0AA0 S7-1500, DI 16x24VDC/DQ 16x24VDC/0.5A BA	6ES7523-1BP50-0AA0 S7-1500, DI 32x24VDC/DQ 32x24VDC/0.3A BA
General information		
Product type designation	DI 16x24VDC / DQ 16x24VDC/0.5A BA	DI 32 x 24 V DC / DQ 32 x 24 V DC/0.3A SNK BA
Product function		
• Isochronous mode	No	No
• Prioritized startup	Yes	No
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V13 / V13	V16 with HSP 0319 / V17
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.35 / -
Operating mode		
• DI	Yes	Yes
• Counter	No	No
• DQ	Yes	Yes
• DQ with energy-saving function	No	No
• PWM	No	No
• Cam control (switching at comparison values)		No
• Oversampling	No	No
• MSI	Yes	Yes
• MSO	Yes	Yes
• Integrated operating cycle counter		No
Supply voltage		
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes; through internal protection with 7 A per group	Yes; Through internal protection with 4 A per group
Digital inputs		
Number of digital inputs	16	32
Digital inputs, parameterizable	No	No
Source/sink input	P-reading	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes
Number of simultaneously controllable inputs		32
• Number of simultaneously controllable inputs		
horizontal installation		32
- up to 60 °C, max.		
vertical installation		16
- up to 40 °C, max.		
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-30 to +5 V	-5 ... +5 V (reference potential is COM)
• for signal "1"	+11 to +30V	-11 ... -30 V; +11 ... +30 V (reference potential is COM)
Input current		
• for signal "1", typ.	2.7 mA	2.7 mA
Input delay (for rated value of input voltage)		
for standard inputs		
- parameterizable	No	No
for interrupt inputs		
- parameterizable	No	No
for technological functions		
- parameterizable		No

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 523 digital input/output modules

Technical specifications

Article number	6ES7523-1BL00-0AA0 S7-1500, DI 16x24VDC/DQ 16x24VDC/0.5A BA	6ES7523-1BP50-0AA0 S7-1500, DI 32x24VDC/DQ 32x24VDC/0.3A BA
Digital outputs		
Type of digital output	Transistor	Transistor
Number of digital outputs	16	32
Current-sinking	Yes	Yes
Current-sourcing	Yes	No
Digital outputs, parameterizable	No	No
Short-circuit protection	Yes	No; external fusing necessary, max. 4 A per group, tripping characteristic type B or C
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)
Controlling a digital input	Yes	Yes
Switching capacity of the outputs		
• with resistive load, max.	0.5 A	0.3 A
• on lamp load, max.	5 W	5 W
Load resistance range		
• lower limit	48 Ω	80 Ω
• upper limit	12 kΩ	10 kΩ
Output voltage		
• for signal "1", min.	L+ (-0.8 V)	M+ (0.5 V)
Output current		
• for signal "1" rated value	0.5 A	0.3 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Output delay with resistive load		
• "0" to "1", max.	100 μs	100 μs
• "1" to "0", max.	500 μs	500 μs
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.	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz; According to IEC 60947-5-1, DC-13
• on lamp load, max.	10 Hz	10 Hz
Total current of the outputs		
• Current per channel, max.	0.5 A; see additional description in the manual	0.3 A
• Current per group, max.	4 A; see additional description in the manual	2 A
• Current per module, max.	8 A; see additional description in the manual	4 A
Total current of the outputs (per module)		
horizontal installation - up to 60 °C, max.		4 A
vertical installation - up to 40 °C, max.		4 A
Encoder		
Connectable encoders		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA

SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

SM 523 digital input/output modules

Technical specifications

Article number	6ES7523-1BL00-0AA0 S7-1500, DI 16x24VDC/DQ 16x24VDC/0.5A BA	6ES7523-1BP50-0AA0 S7-1500, DI 32x24VDC/DQ 32x24VDC/0.3A BA
Interrupts/diagnostics/ status information		
Diagnostics function	No	No
Substitute values connectable	No	No
Alarms		
• Diagnostic alarm	No	No
• Maintenance interrupt	No	No
• Hardware interrupt	No	No
Diagnoses		
• Monitoring the supply voltage	No	No
• Wire-break	No	No
• Short-circuit	No	No
• Group error	No	No
Diagnostics indication LED		
• RUN LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED
• MAINT LED		No
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED	Yes; via SIMATIC TOP connect connection module
• Channel status display	Yes; green LED	Yes; via SIMATIC TOP connect connection module
• for channel diagnostics	No	No
• for module diagnostics	No	No
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Standards, approvals, certificates		
Suitable for safety-related tripping of standard modules	Yes; From FS03	
Highest safety class achievable for safety-related tripping of standard modules		
• Performance level according to ISO 13849-1	PL d	
• Category according to ISO 13849-1	Cat. 3	
• SIL acc. to IEC 62061	SIL 2	
Product functions / security		
signed firmware update	No	No
data integrity	No	No
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-30 °C; from FS04	-30 °C
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	-30 °C; from FS04	-30 °C
• vertical installation, max.	40 °C	40 °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
Dimensions		
Width	25 mm	35 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	280 g	250 g
Other		
Note:	Supplied incl. 40-pole push-in front connectors	Please order cable and connection modules separately

SIMATIC S7-1500 Advanced Controllers

I/O modules
SIPLUS digital modules

SIPLUS SM 521 digital input modules

Overview



- 16 and 32-channel digital input modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs

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 SM 521 digital input modules (Extended temperature range and exposure to environmental substances) 16 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts 32 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts 16 inputs, 24 V DC, isolated, input delay 3.2 ms 16 inputs, 230 V AC, isolated, input delay 20 ms 16 inputs, 48 ... 125 V UC, input delay 0.05 ... 20 ms, parameterizable diagnostics and hardware interrupts	6AG1521-1BH00-7AB0 6AG1521-1BL00-7AB0 6AG1521-1BH50-7AA0 6AG1521-1FH00-7AA0 6AG1521-7EH00-7AB0
Accessories SIPLUS S7-1500 U connector Spare part for connecting I/O modules; self-assembling backplane bus; 5 pieces per packaging unit; with conformal coating, -40...+70 °C	6AG1590-0AA00-7AA0
Other accessories	See SIMATIC S7-1500, SM 521 digital input modules, page 5/211

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS digital modules

SIPLUS SM 521 digital input modules

Technical specifications

Article number	6AG1521-1BH00-7AB0	6AG1521-1BL00-7AB0	6AG1521-1BH50-7AA0	6AG1521-1FH00-7AA0	6AG1521-7EH00-7AB0
Based on	6ES7521-1BH00-0AB0 SIPLUS S7-1500 DI 16X24VDC HF	6ES7521-1BL00-0AB0 SIPLUS S7-1500 DI 32X24VDC HF	6ES7521-1BH50-0AA0 SIPLUS S7-1500 DI 16X24VDC SRC BA	6ES7521-1FH00-0AA0 SIPLUS S7-1500 DI 16X230VAC BA	6ES7521-7EH00-0AB0 SIPLUS S7-1500 DI 48VUC/125VDC 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	70 °C; = Tmax; > +60 °C number of simultaneously controllable inputs max. 16	70 °C; = Tmax; > +60 °C number of simultaneously controllable inputs max. 8	70 °C; = Tmax; > +60 °C number of simultaneously controllable inputs max. 8	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. 4 inputs (no adjacent points)
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m	5 000 m	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 - 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 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)	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)	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, *
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; *

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS digital modules

SIPLUS SM 521 digital input modules

Technical specifications

Article number	6AG1521-1BH00-7AB0	6AG1521-1BL00-7AB0	6AG1521-1BH50-7AA0	6AG1521-1FH00-7AA0	6AG1521-7EH00-7AB0
Based on	6ES7521-1BH00-0AB0 SIPLUS S7-1500 DI 16X24VDC HF	6ES7521-1BL00-0AB0 SIPLUS S7-1500 DI 32X24VDC HF	6ES7521-1BH50-0AA0 SIPLUS S7-1500 DI 16X24VDC SRC BA	6ES7521-1FH00-0AA0 SIPLUS S7-1500 DI 16X230VAC BA	6ES7521-7EH00-0AB0 SIPLUS S7-1500 DI 48VUC/125VDC 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)	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

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS digital modules

SIPLUS SM 522 digital output modules

Overview



- 8, 16 and 32-channel digital output modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs

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 SM 522 digital output modules

(Extended temperature range and exposure to environmental substances)

- 8 outputs, 24 V DC; 2 A, isolated
- 16 outputs, 24 V DC; 0.5 A, isolated
- 32 outputs, 24 V DC; 0.5 A, isolated
- 8 relay outputs, 230 V AC, 5 A
- 16 relay outputs, 230 V AC, 2 A
- 8 outputs (triac), 230 V AC, 2 A
- 16 outputs (triac), 230 V AC, 1 A
- 16 outputs, 24 ... 48 V UC, 125 V DC, 0.5 A, isolated

- 6AG1522-1BF00-7AB0**
- 6AG1522-1BH01-7AB0**
- 6AG1522-1BL01-7AB0**
- 6AG1522-5HF00-2AB0**
- 6AG1522-5HH00-7AB0**
- 6AG1522-5FF00-7AB0**
- 6AG1522-5FH00-7AB0**
- 6AG1522-5EH00-7AB0**

Accessories

SIPLUS S7-1500 U connector

Spare part for connecting I/O modules; self-assembling backplane bus; 5 pieces per packaging unit; with conformal coating, -40...+70 °C

6AG1590-0AA00-7AA0

Other accessories

See SIMATIC S7-1500, SM 522 digital output modules, page 5/221

Technical specifications

Article number	6AG1522-1BF00-7AB0	6AG1522-1BH01-7AB0	6AG1522-1BL01-7AB0	6AG1522-5EH00-7AB0
Based on	6ES7522-1BF00-0AB0	6ES7522-1BH01-0AB0	6ES7522-1BL01-0AB0	6ES7522-5EH00-0AB0
	SIPLUS S7-1500 DQ 8X24VDC/2A HF	SIPLUS S7-1500 DQ 16X24VDC/0.5A HF	SIPLUS S7-1500 DQ 32X24VDC/0.5A HF	SIPLUS S7-1500 DQ 16x48VUC/125VDC 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)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax; > +60 °C Number of simultaneously controllable outputs max. 8x 0.5 A, max. total current per group 2 A	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. aggregate current 2 A per group	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. aggregate current 2 A per group	70 °C; = Tmax; > +60 °C max. 0.25 A per output
• vertical installation, min.	-40 °C; = Tmin			
• vertical installation, max.	40 °C; = Tmax			
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 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 - 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)
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

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS digital modules

SIPLUS SM 522 digital output modules

Technical specifications

Article number	6AG1522-1BF00-7AB0	6AG1522-1BH01-7AB0	6AG1522-1BL01-7AB0	6AG1522-5EH00-7AB0
Based on	6ES7522-1BF00-0AB0	6ES7522-1BH01-0AB0	6ES7522-1BL01-0AB0	6ES7522-5EH00-0AB0
	SIPLUS S7-1500 DQ 8X24VDC/2A HF	SIPLUS S7-1500 DQ 16X24VDC/0.5A HF	SIPLUS S7-1500 DQ 32X24VDC/0.5A HF	SIPLUS S7-1500 DQ 16x48VUC/125VDC ST
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; *
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; *
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

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS digital modules

SIPLUS SM 522 digital output modules

Technical specifications

Article number	6AG1522-5HH00-7AB0	6AG1522-5HF00-2AB0	6AG1522-5FF00-7AB0	6AG1522-5FH00-7AB0
Based on	6ES7522-5HH00-0AB0	6ES7522-5HF00-0AB0	6ES7522-5FF00-0AB0	6ES7522-5FH00-0AB0
	SIPLUS S7-1500 16DQ 230VAC 2A RLY	SIPLUS S7-1500 DQ 8X230VAC/5A ST (RELAY)	SIPLUS S7-1500 DQ 8X230VAC/2A ST (TRIAC)	SIPLUS S7-1500 16DQ 230VAC 1A ST TRIAC
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-25 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. 8 outputs (no adjacent points)	60 °C; = Tmax	70 °C; = Tmax; > +60 °C number of simultaneously controllable outputs max. 8x 0.25 A, max. total current 2 A	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. 4 A aggregate current per module, max. 0.25 A per output
• vertical installation, min.	-40 °C; = Tmin; Startup @ -25 °C	-25 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	40 °C	40 °C; = Tmax	40 °C; = Tmax	60 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 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 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 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)	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; *
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; *

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS digital modules

SIPLUS SM 522 digital output modules

Technical specifications

Article number	6AG1522-5HH00-7AB0	6AG1522-5HF00-2AB0	6AG1522-5FF00-7AB0	6AG1522-5FH00-7AB0
Based on	6ES7522-5HH00-0AB0	6ES7522-5HF00-0AB0	6ES7522-5FF00-0AB0	6ES7522-5FH00-0AB0
	SIPLUS S7-1500 16DQ 230VAC 2A RLY	SIPLUS S7-1500 DQ 8X230VAC/5A ST (RELAY)	SIPLUS S7-1500 DQ 8X230VAC/2A ST (TRIAC)	SIPLUS S7-1500 16DQ 230VAC 1A ST TRIAC
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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 531 analog input modules

Overview



- 4, 8 or 16-channel analog input modules
- Optionally with extremely short conversion times and/or oversampling
- For the connection of analog sensors without additional amplifiers
- Modules with integrated HART communication available
- Optional with "measuring range adjustment" and "measured value scaling" available
- Even solves more complex automation tasks
- Analog input module for cell voltage measurement on electrolyzers and fuel cells

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Ordering data

SM 531 analog input modules

SIMATIC S7-1500, analog input module AI 4xU/I/RTD/TC ST

16-bit resolution, accuracy 0.3%, 4 channels in groups of 4, 2 channels for RTD measurement, common mode voltage 10 V; diagnostics; hardware interrupts; supplied with push-in front connector, infeed element, shielding bracket, and shield terminal

Article No.

6ES7531-7QD00-0AB0

SIMATIC S7-1500, analog input module, AI 8xU/I/R/RTD BA

16-bit resolution, accuracy 0.5%, 8 channels in groups of 8, 4 V DC common mode voltage, diagnostics; hardware interrupts; delivery including infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7531-7QF00-0AB0

SIMATIC S7-1500, analog input module AI 8xU/I HS

16-bit resolution, accuracy 0.3%, 8 channels in groups of 8, common mode voltage 10 V; diagnostics; hardware interrupts 8 channels in 0.0625 ms oversampling; delivery including infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7531-7NF10-0AB0

SIMATIC S7-1500, analog input module AI 8xU/I/RTD/TC ST

16-bit resolution, accuracy 0.3%, 8 channels in groups of 8, 4 channels for RTD measurement, common mode voltage 10 V; diagnostics; hardware interrupts; supplied with infeed element, shielding bracket and shield terminal order front connectors (screw terminals or push-in) separately

6ES7531-7KF00-0AB0

Article No.

SIMATIC S7-1500, analog input module AI 8xU/I HF

Up to 24-bit resolution, accuracy 0.1%, 8 channels in groups of 1, common mode voltage: 30 V AC/60 V DC, diagnostics; hardware interrupts measured values scalable, measuring range adaptation, calibration in RUN mode; delivery including infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7531-7NF00-0AB0

SIMATIC S7-1500, analog input module AI 8xU/R/RTD/TC HF

16-bit resolution, up to 21-bit resolution for RTD and TC, accuracy 0.1%, 8 channels in groups of 1, common mode voltage: 30 V AC/60 V DC, diagnostics; hardware interrupts scalable temperature measuring range, type C thermocouple, calibration in RUN mode; delivery including infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7531-7PF00-0AB0

SIMATIC S7-1500, analog input module, AI 16xU BA

16-bit resolution, accuracy 0.5%, 16 channels in groups of 16, 4 V DC common mode voltage, diagnostics; hardware interrupts; delivery including infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7531-7LH00-0AB0

SIMATIC S7-1500, analog input module, AI 16xI BA

16-bit resolution, accuracy 0.5%, 16 channels in groups of 16, 4 V DC common mode voltage, diagnostics; hardware interrupts; delivery including infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7531-7MH00-0AB0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 531 analog input modules

Ordering data

Article No.

SIMATIC S7-1500, analog input module AI 8xHART HF

Accuracy 0.1%, 8 channels in groups of 4, common mode voltage: 30 V AC/60 V DC, diagnostics; hardware interrupts for calibration in RUN mode; delivery including infeed element, shielding bracket and shield terminal

6ES7531-7TF00-0AB0

SIMATIC S7-1500, analog input module for cell voltage measurement AI 24xCVM HF

Up to 24-bit resolution, accuracy: 0.1%, 24 channels in groups of 12, insulation voltage: 600 V DC, diagnostics; hardware interrupts for calibration in RUN mode; Delivery including infeed element, shielding bracket and shield terminal: Front connector (push-in) included Note: Module is not suitable for regular voltage measurement of +/- 5 V!

6ES7531-7LK00-0AB0

Accessories

Front connector

SIMATIC S7-1500, front connector screw-type connection system

40-pin for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1AM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin, for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1BM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie

6ES7592-1BM00-0XA0

DIN A4 labeling sheets

SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules

Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules

6ES7592-2AX00-0AA0

SIMATIC S7-1500, labeling sheets for 25 mm wide S7-1500 modules and compact CPUs

Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 20 strips per packing unit sufficient for 200 modules

6ES7592-1AX00-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus 5 units per packing unit

6ES7590-0AA00-0AA0

Universal front door for I/O modules

SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules

Consisting of:
* front door (unlasered),
* labeling strips (front)
* cabling diagram,
5 units per packing unit

6ES7528-0AA00-7AA0

SIMATIC S7-1500, spare part front door for 25 mm wide I/O modules

Consisting of:
* front door (unlasered),
* labeling strips (front)
* cabling diagram,
5 units per packing unit

6ES7528-0AA00-0AA0

Shielding set I/O

SIMATIC S7-1500, spare part, shielding set

Consisting of:
* shield terminal,
* shielding bracket,
* 24 V DC infeed element with screw-type connection system, suitable for analog and technology modules of the S7-1500, suitable for all front connectors for 35 mm wide modules 5 units per packing unit

6ES7590-5CA00-0AA0

SIMATIC S7-1500, spare part, shielding set

Consisting of:
* 4x shield terminal,
* 4x shielding bracket,
* 4x 24 V DC infeed element with push-in technology, suitable for analog modules, technology modules and compact CPU of the S7-1500, suitable for all front connectors for 25 mm wide modules

6ES7590-5CA10-0XA0

SIMATIC S7-1500, spare part shield terminal

Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element, 10 units per packing unit

6ES7590-5BA00-0AA0

SIMATIC Manual Collection DL in 5 languages¹⁾

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

Consignee email address required for delivery.

6ES7998-8XE01-8YE0

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice. Consignee email address required for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 531 analog input modules

Technical specifications

Article number	6ES7531-7QD00-0AB0 S7-1500, AI 4xU/I/RTD/TC ST	6ES7531-7QF00-0AB0 S7-1500, AI 8xU/I/R/RTD BA	6ES7531-7KF00-0AB0 S7-1500, AI 8xU/I/RTD/TC ST	6ES7531-7NF10-0AB0 S7-1500, AI 8xU/I HS	6ES7531-7NF00-0AB0 S7-1500, AI 8xU/I HF
General information					
Product type designation	AI 4xU/I/RTD/TC ST	AI 8xU/I/R/RTD BA	AI 8xU/I/RTD/TC ST	AI 8xU/I HS	AI 8xU/I HF
Product function					
• Isochronous mode	No		No	Yes	No
• Prioritized startup	No	No	No	Yes	Yes
• Measuring range scalable	No		No	No	No
• Scalable measured values	No		No	No	Yes
• Adjustment of measuring range	No		No	No	Yes
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V13 / V13.0.2	V15.1 / V16	V12 / V12	V14 / -	V14 / -
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode					
• Oversampling	No	No	No	Yes	No
• MSI	Yes	Yes	Yes	Yes	Yes
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	8	8	8	8
• For current measurement	4	8	8	8	8
• For voltage measurement	4	8	8	8	8
• For resistance/resistance thermometer measurement	2	8	4		
• For thermocouple measurement	4		8		
permissible input voltage for voltage input (destruction limit), max.	28.8 V	12 V; 12 V continuous, 30 V for max. 1 s	28.8 V	28.8 V	28.8 V
permissible input current for current input (destruction limit), max.	40 mA	40 mA	40 mA	40 mA	40 mA
Constant measurement current for resistance-type transmitter, typ.	150 Ohm, 300 Ohm, 600 Ohm, Pt100, Pt200, Ni100: 1.25 mA; 6 000 Ohm, Pt500, Pt1000, Ni1000, LG-Ni1000: 0.625 mA; PTC: 0.472 mA	230 ... 370 µA	150 Ohm, 300 Ohm, 600 Ohm, Pt100, Pt200, Ni100: 1.25 mA; 6 000 Ohm, Pt500, Pt1000, Ni1000, LG-Ni1000: 0.625 mA; PTC: 0.472 mA		
Technical unit for temperature measurement adjustable	Yes; °C/°F/K	Yes; °C/°F/K	Yes; °C/°F/K		
Analog input with oversampling	No				
Standardization of measured values	No				
Input ranges (rated values), voltages					
• 0 to +5 V	No	No	No	No	No
• 0 to +10 V	No	No	No	No	No
• 1 V to 5 V	Yes	Yes	Yes	Yes	Yes
• -1 V to +1 V	Yes	Yes	Yes		
• -10 V to +10 V	Yes	Yes	Yes	Yes	Yes
• -2.5 V to +2.5 V	Yes	No	Yes	No	Yes
• -25 mV to +25 mV	No	No	No	No	No
• -250 mV to +250 mV	Yes	No	Yes	No	No
• -5 V to +5 V	Yes	Yes	Yes	Yes	Yes
• -50 mV to +50 mV	Yes	Yes	Yes	No	No
• -500 mV to +500 mV	Yes	Yes	Yes	No	No
• -80 mV to +80 mV	Yes	No	Yes	No	No

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Input ranges (rated values), currents					
• 0 to 20 mA	Yes	Yes	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes	Yes	Yes
Input ranges (rated values), thermocouples					
• Type B	Yes	No	Yes	No	No
• Type C	No	No	No	No	No
• Type E	Yes	No	Yes	No	No
• Type J	Yes	No	Yes	No	No
• Type K	Yes	No	Yes	No	No
• Type L	No	No	No	No	No
• Type N	Yes	No	Yes	No	No
• Type R	Yes	No	Yes	No	No
• Type S	Yes	No	Yes	No	No
• Type T	Yes	No	Yes	No	No
• Type U	No	No			
• Type TXK/TXK(L) to GOST	No	No	No	No	No
Input ranges (rated values), resistance thermometer					
• Cu 10	No	No	No	No	No
• Cu 10 according to GOST	No	No	No	No	No
• Cu 50	No	No	No	No	No
• Cu 50 according to GOST	No	No	No	No	No
• Cu 100	No	No	No	No	No
• Cu 100 according to GOST	No	No	No	No	No
• Ni 10	No	No	No	No	No
• Ni 10 according to GOST	No	No	No	No	No
• Ni 100	Yes; Standard/climate	Yes; Standard/climate	Yes; Standard/climate	No	No
• Ni 100 according to GOST	No	No	No	No	No
• Ni 1000	Yes; Standard/climate	Yes; Standard/climate	Yes; Standard/climate	No	No
• Ni 1000 according to GOST	No	No	No	No	No
• LG-Ni 1000	Yes; Standard/climate	Yes; Standard/climate	Yes; Standard/climate	No	No
• Ni 120	No	No	No	No	No
• Ni 120 according to GOST	No	No	No	No	No
• Ni 200	No	No		No	No
• Ni 200 according to GOST	No	No	No	No	No
• Ni 500	No	No	No	No	No
• Ni 500 according to GOST	No	No	No	No	No
• Pt 10	No	No	No	No	No
• Pt 10 according to GOST	No	No	No	No	No
• Pt 50	No	No	No	No	No
• Pt 50 according to GOST	No	No	No	No	No
• Pt 100	Yes; Standard/climate	Yes; Standard/climate	Yes; Standard/climate	No	No
• Pt 100 according to GOST	No	No	No	No	No
• Pt 1000	Yes; Standard/climate	Yes; Standard/climate	Yes; Standard/climate	No	No
• Pt 1000 according to GOST	No	No	No	No	No
• Pt 200	Yes; Standard/climate	No	Yes; Standard/climate	No	No
• Pt 200 according to GOST	No	No	No	No	No
• Pt 500	Yes; Standard/climate	No	Yes; Standard/climate	No	No
• Pt 500 according to GOST	No	No	No	No	No

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Input ranges (rated values), resistors					
• 0 to 150 ohms	Yes	No	Yes	No	No
• 0 to 300 ohms	Yes	No	Yes	No	No
• 0 to 600 ohms	Yes	Yes	Yes	No	No
• 0 to 3000 ohms	No	No	No	No	No
• 0 to 6000 ohms	Yes	Yes	Yes	No	No
• PTC	Yes	Yes	Yes	No	No
Thermocouple (TC)					
Temperature compensation					
- parameterizable	Yes		Yes		
Cable length					
• shielded, max.	800 m; for U/I, 200 m for R/RTD, 50 m for TC	200 m; 50 m at 50 mV	800 m; for U/I, 200 m for R/RTD, 50 m for TC	800 m	800 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	24 bit; When using the function "Scaling of the measured values" or "Measuring range adaptation" (32 bit REAL format); 16 bit when using the S7 format (16 bit INTEGER)
• Integration time, parameterizable	Yes	Yes	Yes		Yes
• Integration time (ms)	2,5 / 16,67 / 20 / 100 ms	2,5 / 16,67 / 20 / 100 ms	2,5 / 16,67 / 20 / 100 ms		Fast mode: 2,5 / 16,67 / 20 / 100 ms, standard mode: 7,5 / 50 / 60 / 300 ms
• Basic conversion time, including integration time (ms)	9 / 23 / 27 / 107 ms	10 / 24 / 27 / 107 ms	9 / 23 / 27 / 107 ms		Fast mode: 4 / 18 / 22 / 102 ms; Standard mode: 9 / 52 / 62 / 302 ms
- additional conversion time for resistance measurement	150 ohm, 300 ohm, 600 ohm, Pt100, Pt200, Ni100: 2 ms, 6000 ohm, Pt500, Pt1000, Ni1000, LG-Ni1000, PTC: 4 ms	8 ms	150 ohm, 300 ohm, 600 ohm, Pt100, Pt200, Ni100: 2 ms, 6000 ohm, Pt500, Pt1000, Ni1000, LG-Ni1000, PTC: 4 ms		
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10	400 / 60 / 50 / 10 Hz	400 / 60 / 50 / 10 Hz		400 / 60 / 50 / 10 Hz
• Basic execution time of the module (all channels released)				62,5 µs; independent of number of activated channels	Corresponds to the channel with the highest basic conversion time
Smoothering of measured values					
• parameterizable	Yes	Yes	Yes	Yes	Yes
Encoder					
Connection of signal encoders					
• for voltage measurement	Yes	Yes	Yes	Yes	Yes
• for current measurement as 2-wire transducer	Yes	Yes; with external supply	Yes	Yes	Yes; with external transmitter supply
- Burden of 2-wire transmitter, max.	820 Ω		820 Ω	820 Ω	
• for current measurement as 4-wire transducer	Yes	Yes	Yes	Yes	Yes
• for resistance measurement with two-wire connection	Yes; Only for PTC	Yes; Only for PTC	Yes; Only for PTC	No	No
• for resistance measurement with three-wire connection	Yes; All measuring ranges except PTC; internal compensation of the cable resistances	Yes; All measuring ranges except PTC; internal compensation of the cable resistances	Yes; All measuring ranges except PTC; internal compensation of the cable resistances	No	No
• for resistance measurement with four-wire connection	Yes; All measuring ranges except PTC		Yes; All measuring ranges except PTC	No	No

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Analog modules

SM 531 analog input modules

Technical specifications

Article number	6ES7531-7QD00-0AB0 S7-1500, AI 4xU/I/RTD/TC ST	6ES7531-7QF00-0AB0 S7-1500, AI 8xU/I/R/RTD BA	6ES7531-7KF00-0AB0 S7-1500, AI 8xU/I/RTD/TC ST	6ES7531-7NF10-0AB0 S7-1500, AI 8xU/I HS	6ES7531-7NF00-0AB0 S7-1500, AI 8xU/I HF
Errors/accuracies					
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to input range, (+/-)	0.1 %	0.3 %	0.1 %	0.2 %	0.05 %
• Current, relative to input range, (+/-)	0.1 %	0.3 %	0.1 %	0.2 %	0.05 %
• Resistance, relative to input range, (+/-)	0.1 %	0.3 %	0.1 %		
• Resistance thermometer, relative to input range, (+/-)	0.1 %; Ptxxx standard: ±0.7 K, Ptxxx climate: ±0.2 K, Nixxx standard: ±0.3 K, Nixxx climate: ±0.15 K	Ptxxx Standard: ±1.0 K, Ptxxx Climate: ±0.5 K, Nixxx Standard: ±0.5 K, Nixxx Climate: ±0.5 K	Ptxxx standard: ±0.7 K, Ptxxx climate: ±0.2 K, Nixxx standard: ±0.3 K, Nixxx climate: ±0.15 K		
• Thermocouple, relative to input range, (+/-)	0.1 %; Type B: > 600 °C ±1.7 K, type E: > -200 °C ±0.7 K, type J: > -210 °C ±0.8 K, type K: > -200 °C ±1.2 K, type N: > -200 °C ±1.2 K, type R: > 0 °C ±1.9 K, type S: > 0 °C ±1.9 K, type T: > -200 °C ±0.8 K		Type B: > 600 °C ±1.7 K, type E: > -200 °C ±0.7 K, type J: > -210 °C ±0.8 K, type K: > -200 °C ±1.2 K, type N: > -200 °C ±1.2 K, type R: > 0 °C ±1.9 K, type S: > 0 °C ±1.9 K, type T: > -200 °C ±0.8 K		
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency					
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB	40 dB		80 dB; in the Standard operating mode, 40 dB in the Fast operating mode
• Common mode voltage, max.	10 V	4 V	10 V	10 V	60 V DC/30 V AC
• Common mode interference, min.	60 dB	60 dB	60 dB	50 dB at 400 Hz; 60 dB at 60 / 50 / 10 Hz	80 dB
Isochronous mode					
Filtering and processing time (TCI), min.				80 µs	
Bus cycle time (TDP), min.				250 µs	
Interrupts/diagnostics/status information					
Diagnostics function	Yes	Yes	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	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	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case
Diagnoses					
• Monitoring the supply voltage	Yes	No	Yes	Yes	Yes
• Wire-break	Yes; Only for 1 to 5 V, 4 to 20 mA, TC, R, and RTD	Yes; Only for 1 ... 5 V, 4 ... 20 mA, R, and RTD	Yes; Only for 1 to 5 V, 4 to 20 mA, TC, R, and RTD	Yes; only for 1 ... 5 V and 4 ... 20 mA	Yes; only for 1 ... 5 V and 4 ... 20 mA
• Short-circuit		No			
• Group error		No			
• Overflow/underflow	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED					
• RUN LED	Yes; green 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	Yes; red LED
• MAINT LED		No			
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED	No	Yes; green LED	Yes; green LED	Yes; green 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	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED
• for module diagnostics	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED

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I/O modules

Analog modules

SM 531 analog input modules

Technical specifications

Article number	6ES7531-7QD00-0AB0	6ES7531-7QF00-0AB0	6ES7531-7KF00-0AB0	6ES7531-7NF10-0AB0	6ES7531-7NF00-0AB0
	S7-1500, AI 4xU/I/RTD/TC ST	S7-1500, AI 8xU/I/R/RTD BA	S7-1500, AI 8xU/I/RTD/TC ST	S7-1500, AI 8xU/I HS	S7-1500, AI 8xU/I HF
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; Based on AMS 2750 E		
Product functions / security					
signed firmware update	No	No	No	No	No
data integrity	No	No	No	No	No
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-25 °C; From FS03	-30 °C; From FS05	-25 °C; From FS08	-25 °C; From FS02	-30 °C; From FS02
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-25 °C; From FS03	-30 °C; From FS05	-25 °C; From FS08	-25 °C; From FS02	-30 °C; From FS02
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C	40 °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	25 mm	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
Weights					
Weight, approx.	210 g	250 g	310 g	300 g	280 g
Other					
Note:	Supplied incl. 40-pole push-in front connectors. Additional basic error and noise for integration time = 2.5 ms: Voltage: ±250 mV (±0.02%), ±80 mV (±0.05%), ±50 mV (±0.05%); resistance: 150 Ohms (±0.02%); resistance thermometer: Pt100 climate: ±0.08 K, Ni100 climate: ±0.08 K; thermoelement: Type B, R, S: ±3 K, type E, J, K, N, T: ±1 K		Additional basic error and noise for integration time = 2.5 ms: Voltage: ±250 mV (±0.02%), ±80 mV (±0.05%), ±50 mV (±0.05%); resistance: 150 ohms ±0.02%; resistance thermometer: Pt100 climate: ±0.08 K, Ni100 climate: ±0.08 K; thermocouple: Type B, R, S: ±3 K, type E, J, K, N, T: ±1 K		

Article number	6ES7531-7LH00-0AB0	6ES7531-7MH00-0AB0
	S7-1500, AI 16xU BA	S7-1500, AI 16xI BA
General information		
Product type designation	AI 16xU BA	AI 16xI BA
Product function		
• Isochronous mode	No	No
• Prioritized startup	No	No
• Measuring range scalable	No	No
• Scalable measured values	No	No
• Adjustment of measuring range	No	No

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I/O modules

Analog modules

SM 531 analog input modules

Technical specifications

Article number	6ES7531-7LH00-0AB0 S7-1500, AI 16xU BA	6ES7531-7MH00-0AB0 S7-1500, AI 16xI BA
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V16 with HSP 312 / V17	V16 with HSP 312 / V17
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -
Operating mode		
• Oversampling	No	No
• MSI	Yes	Yes
Analog inputs		
Number of analog inputs	16	16
• For current measurement		16
• For voltage measurement	16	
permissible input voltage for voltage input (destruction limit), max.	12 V; 12 V continuous, 30 V for max. 1 s	
permissible input current for current input (destruction limit), max.		40 mA
Input ranges (rated values), voltages		
• 0 to +5 V	No	
• 0 to +10 V	No	
• 1 V to 5 V	Yes	
• -1 V to +1 V	Yes	
• -10 V to +10 V	Yes	
• -2.5 V to +2.5 V	No	
• -25 mV to +25 mV	No	
• -250 mV to +250 mV	No	
• -5 V to +5 V	Yes	
• -50 mV to +50 mV	No	
• -500 mV to +500 mV	No	
• -80 mV to +80 mV	No	
Input ranges (rated values), currents		
• 0 to 20 mA		Yes
• -20 mA to +20 mA		Yes
• 4 mA to 20 mA		Yes
Cable length		
• shielded, max.	200 m	800 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)	2,5 / 16,67 / 20 / 100 ms	2,5 / 16,67 / 20 / 100 ms
• Basic conversion time, including integration time (ms)	10 / 24 / 27 / 107 ms	10 / 24 / 27 / 107 ms
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10 Hz	400 / 60 / 50 / 10 Hz
Smoothing of measured values		
• parameterizable	Yes	Yes

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SM 531 analog input modules

Technical specifications

Article number	6ES7531-7LH00-0AB0 S7-1500, AI 16xU BA	6ES7531-7MH00-0AB0 S7-1500, AI 16xI BA
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	No
• for current measurement as 2-wire transducer		Yes; with external supply
• for current measurement as 4-wire transducer		Yes
• for resistance measurement with two-wire connection		No
• for resistance measurement with three-wire connection		No
• for resistance measurement with four-wire connection		No
Errors/accuracies		
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.3 %	
• Current, relative to input range, (+/-)		0.3 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 = \text{interference frequency}$		
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB
• Common mode voltage, max.	4 V	4 V
• Common mode interference, min.	60 dB	60 dB
Interrupts/diagnostics/status information		
Diagnostics function	Yes	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
Diagnoses		
• Monitoring the supply voltage	No	No
• Wire-break	Yes; Only for 1 ... 5 V	Yes; Only for 4 ... 20 mA
• Short-circuit	No	No
• Group error	No	No
• Overflow/underflow	Yes	Yes
Diagnostics indication LED		
• RUN LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED
• MAINT LED	No	No
• Monitoring of the supply voltage (PWR-LED)	No	No
• Channel status display	Yes; green LED	Yes; green LED
• for channel diagnostics	Yes; red LED	Yes; red LED
• for module diagnostics	Yes; red LED	Yes; red LED
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Product functions / security		
signed firmware update	No	No
data integrity	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.	40 °C	40 °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

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Technical specifications

Article number	6ES7531-7LH00-0AB0 S7-1500, AI 16xU BA	6ES7531-7MH00-0AB0 S7-1500, AI 16xI BA
Dimensions		
Width	35 mm	35 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	250 g	250 g
Article number	6ES7531-7PF00-0AB0 S7-1500, AI 8 X U/R/RTD/TC HF	6ES7531-7TF00-0AB0 S7-1500, AI 8xHART HF
General information		
Product type designation	AI 8xU/R/RTD/TC HF	AI 8xHART HF
Product function		
• Isochronous mode	No	No
• Prioritized startup	Yes	No
• Measuring range scalable	Yes	No
• Scalable measured values	No	No
• Adjustment of measuring range	No	No
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V14 / -	V17/V18 with HSP 383
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.42 / -
Operating mode		
• Oversampling	No	No
• MSI	Yes	Yes
Supply voltage		
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes
Analog inputs		
Number of analog inputs	8; Plus one additional RTD (reference) channel	8
• For current measurement		8
• For voltage measurement	8; Plus one additional RTD (reference) channel	
• For resistance/resistance thermometer measurement	8; Plus one additional RTD (reference) channel	
• For thermocouple measurement	8; Plus one additional RTD (reference) channel	
permissible input voltage for voltage input (destruction limit), max.	20 V	
permissible input current for current input (destruction limit), max.		40 mA
Constant measurement current for resistance-type transmitter, typ.	150 Ohm, 300 Ohm, 600 Ohm, Cu10, Cu50, Cu100, Ni10, Ni100, Ni120, Ni200, Pt10, Pt50, Pt100, Pt200 climate: 1 mA; 6 kOhm, Ni500, Ni1000, LG-Ni1000, Pt200 standard, Pt500, Pt1000, PTC: 0.25 mA	
Technical unit for temperature measurement adjustable	Yes; °C/°F/K	
Input ranges (rated values), voltages		
• 0 to +5 V	No	
• 0 to +10 V	No	
• 1 V to 5 V	No	
• -1 V to +1 V	Yes	
• -10 V to +10 V	No	
• -2.5 V to +2.5 V	No	
• -25 mV to +25 mV	Yes	
• -250 mV to +250 mV	Yes	
• -5 V to +5 V	No	
• -50 mV to +50 mV	Yes	
• -500 mV to +500 mV	Yes	
• -80 mV to +80 mV	Yes	

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 531 analog input modules

Technical specifications

Article number	6ES7531-7PF00-0AB0 S7-1500, AI 8 X U/R/RTD/TC HF	6ES7531-7TF00-0AB0 S7-1500, AI 8xHART HF
Input ranges (rated values), currents		
• 0 to 20 mA	No	Yes
• -20 mA to +20 mA	No	Yes
• 4 mA to 20 mA	No	Yes
Input ranges (rated values), thermocouples		
• Type B	Yes	
• Type C	Yes	
• Type E	Yes	
• Type J	Yes	
• Type K	Yes	
• Type L	No	
• Type N	Yes	
• Type R	Yes	
• Type S	Yes	
• Type T	Yes	
• Type TXK/TXK(L) to GOST	Yes	
Input ranges (rated values), resistance thermometer		
• Cu 10	Yes; Standard/climate	
• Cu 10 according to GOST	Yes; Standard/climate	
• Cu 50	Yes; Standard/climate	
• Cu 50 according to GOST	Yes; Standard/climate	
• Cu 100	Yes; Standard/climate	
• Cu 100 according to GOST	Yes; Standard/climate	
• Ni 10	Yes; Standard/climate	
• Ni 10 according to GOST	Yes; Standard/climate	
• Ni 100	Yes; Standard/climate	
• Ni 100 according to GOST	Yes; Standard/climate	
• Ni 1000	Yes; Standard/climate	
• Ni 1000 according to GOST	Yes; Standard/climate	
• LG-Ni 1000	Yes; Standard/climate	
• Ni 120	Yes; Standard/climate	
• Ni 120 according to GOST	Yes; Standard/climate	
• Ni 200	Yes; Standard/climate	
• Ni 200 according to GOST	Yes; Standard/climate	
• Ni 500	Yes; Standard/climate	
• Ni 500 according to GOST	Yes; Standard/climate	
• Pt 10	Yes; Standard/climate	
• Pt 10 according to GOST	Yes; Standard/climate	
• Pt 50	Yes; Standard/climate	
• Pt 50 according to GOST	Yes; Standard/climate	
• Pt 100	Yes; Standard/climate	
• Pt 100 according to GOST	Yes; Standard/climate	
• Pt 1000	Yes; Standard/climate	
• Pt 1000 according to GOST	Yes; Standard/climate	
• Pt 200	Yes; Standard/climate	
• Pt 200 according to GOST	Yes; Standard/climate	
• Pt 500	Yes; Standard/climate	
• Pt 500 according to GOST	Yes; Standard/climate	
Input ranges (rated values), resistors		
• 0 to 150 ohms	Yes	
• 0 to 300 ohms	Yes	
• 0 to 600 ohms	Yes	
• 0 to 3000 ohms	No	
• 0 to 6000 ohms	Yes	
• PTC	Yes	

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 531 analog input modules

Technical specifications

Article number	6ES7531-7PF00-0AB0 S7-1500, AI 8 X U/R/RTD/TC HF	6ES7531-7TF00-0AB0 S7-1500, AI 8xHART HF
Thermocouple (TC)		
Temperature compensation		
- parameterizable	Yes	
Cable length		
• shielded, max.	800 m; at U; 200 m at R/RTD/TC	800 m
Analog value generation for the inputs		
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	21 bit; For measuring mode RTC and TC when using the function "Scalable temperature measuring range" (32 bit REAL format); 16 bit for measuring mode R and U; 16 bit for all measuring modes when using the S7 format (16 bit INTEGER)	16 bit
• Integration time, parameterizable	Yes	Yes
• Integration time (ms)	Fast mode: 2.5 / 16.67 / 20 / 100 ms, standard mode: 7.5 / 50 / 60 / 300 ms	Fast mode: 2.5 / 16.67 / 20 / 100 ms, standard mode: 7.5 / 50 / 60 / 300 ms
• Basic conversion time, including integration time (ms)	Fast mode: 4 / 18 / 22 / 102 ms; Standard mode: 9 / 52 / 62 / 302 ms	Fast Mode: 7 / 22 / 25 / 106 ms; Standard Mode: 12 / 55 / 65 / 308 ms
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10 Hz	10 / 50 / 60 / 400 Hz
• Basic execution time of the module (all channels released)	Corresponds to the channel with the highest basic conversion time	channel 0 and 4, 1 and 5, etc. measure in pairs simultaneously. The slower channel of each pair determines the basic execution time of the channel pair. The basic execution time of the module is calculated by adding the basic conversion times of the channel pairs.
Smoothering of measured values		
• parameterizable	Yes	Yes
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	No
• for current measurement as 2-wire transducer	No	Yes
- Burden of 2-wire transmitter, max.		820 Ω; at 24 V input voltage
• for current measurement as 4-wire transducer	No	Yes
• for resistance measurement with two-wire connection	Yes	No
• for resistance measurement with three-wire connection	Yes; All measuring ranges except PTC; internal compensation of the cable resistances	No
• for resistance measurement with four-wire connection	Yes; All measuring ranges except PTC	No
Errors/accuracies		
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.05 %	0.05 %; without HART communication
• Current, relative to input range, (+/-)		
• Resistance, relative to input range, (+/-)	0.05 %	
• Resistance thermometer, relative to input range, (+/-)	Cuxxx Standard: ±0.3 K, Cuxxx Klima: ±0.2 K, Ptxxx Standard: ±0.5 K, Ptxxx Klima: ±0.2 K, Nixxx Standard: ±0.3 K, Nixxx Klima: ±0.15 K	
• Thermocouple, relative to input range, (+/-)	Type B: > 600 °C ±1 K, Type E: > -200 °C ±0.5 K, Type J: > -210 °C ±0.5 K, Type K: > -200 °C ±1 K, Type N: > -200 °C ±1 K, Type R: > 0 °C ±1 K, Type S: > 0 °C ±1 K, Type T: > -200 °C ±0.5 K, Type C: ±2 K, Type TXK/TXK(L): ±0.5 K	
Influence of a HART signal modulated on the input signal in relation to input range		
• error occurred at interference frequency suppression: 400 Hz		0.19 %; in the Standard operating mode, 0.55 % in the Fast operating mode
• error occurred at interference frequency suppression: 60 Hz		0.05 %; in the Standard operating mode, 0.1 % in the Fast operating mode
• error occurred at interference frequency suppression: 50 Hz		0.04 %; in the Standard operating mode, 0.09 % in the Fast operating mode
• error occurred at interference frequency suppression: 10 Hz		0.02 %; in the Standard operating mode, 0.03 % in the Fast operating mode

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 531 analog input modules

Technical specifications

Article number	6ES7531-7PF00-0AB0 S7-1500, AI 8 X U/R/RTD/TC HF	6ES7531-7TF00-0AB0 S7-1500, AI 8xHART HF
Interference voltage suppression for $f = n \times (f_1 \pm 1\%)$, f_1 = interference frequency - Series mode interference (peak value of interference < rated value of input range), min. - Common mode voltage, max. - Common mode interference, min.	80 dB; in the Standard operating mode, 40 dB in the Fast operating mode 60 V DC/30 V AC 80 dB	80 dB; in the Standard operating mode, 40 dB in the Fast operating mode 60 V DC/30 V AC 80 dB
Interrupts/diagnostics/status information		
Diagnostics function	Yes	Yes
Alarms		
- Diagnostic alarm - Limit value alarm	Yes Yes; two upper and two lower limit values in each case	Yes Yes; two upper and two lower limit values in each case
Diagnoses		
- Monitoring the supply voltage - Wire-break - Overflow/underflow	Yes Yes; Only with TC, R, RTD Yes	Yes Yes; With 4 mA to 20 mA, channel by channel Yes
Diagnostics indication LED		
- RUN LED - ERROR LED - Monitoring of the supply voltage (PWR-LED) - Channel status display - for channel diagnostics - for module diagnostics	Yes; green LED Yes; red LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED	Yes; green LED Yes; red LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED
Potential separation		
Potential separation analog inputs		
between the channels and backplane bus		Yes
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	
Product functions / security		
signed firmware update	No	No
data integrity	No	No
Ambient conditions		
Ambient temperature during operation		
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-30 °C; From FS02 60 °C -30 °C; From FS02 40 °C	-30 °C 60 °C -30 °C 40 °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	35 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	290 g	270 g
Other		
Note:	for the R/RDT three-wire measurement, the conductor compensation is made alternating with the measurement; this then requires two module cycles for a measured value	

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 531 analog input modules

Technical specifications

Article number	6ES7531-7LK00-0AB0 S7-1500, AI 24xCVM HF
General information	
Product type designation	AI 24xCVM HF
Operating mode	
• Oversampling	No
• MSI	Yes
Analog inputs	
Number of analog inputs	24
• For voltage measurement	24; at ± 3.5 V; 16 channels at ± 5 V
permissible input voltage for voltage input (destruction limit), max.	160 V
Input ranges (rated values), voltages	
• -5 V to +5 V	Yes
Cable length	
• shielded, max.	200 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; 24 bits in floating-point format
• Integration time, parameterizable	Yes
• Integration time (ms)	2,5 / 16,67 / 20 / 100 ms
• Basic conversion time, including integration time (ms)	10 / 24 / 28 / 109 ms
• Basic execution time of the module (all channels released)	Channel 0 and 12, 1 and 13, etc. measure in pairs simultaneously. The slower channel of each pair determines the basic execution time of the channel pair. The basic execution time of the module is calculated by adding the basic conversion times of the channel pairs.
Smoothing of measured values	
• Number of smoothing levels	4
• parameterizable	Yes
Encoder	
Connection of signal encoders	
• for voltage measurement	Yes
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min.	36 dB
• Common mode interference, min.	70 dB

Article number	6ES7531-7LK00-0AB0 S7-1500, AI 24xCVM HF
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
• Overflow/underflow	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	No
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; red LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
Suitable for applications according to AMS 2750	No
Suitable for applications according to CQI-9	No
Product functions / security	
signed firmware update	Yes
data integrity	No
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	40 °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 entry ID: 109763260
Dimensions	
Width	25 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	240 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 532 analog output modules

Overview



- 2, 4 and 8-channel analog output modules
- Optionally with extremely short conversion times and/or oversampling
- For connecting analog actuators without additional amplifiers
- Modules with integrated HART communication available
- Even solves more complex automation tasks

5

Ordering data

Article No.

Article No.

SM 532 analog output modules

Module width 25 mm

SIMATIC S7-1500, analog output module AQ 2x U/I ST

16-bit resolution, accuracy 0.3%.
2 channels in groups of 2, diagnostics; substitute value; the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 2 / PL c according to EN ISO 13849-1:2015. Supplied with push-in front connector, infeed element, shielding bracket and shield terminal

6ES7532-5NB00-0AB0

Module width 35 mm

SIMATIC S7-1500, analog output module AQ 4xU/I ST

16-bit resolution, accuracy 0.3%.
4 channels in groups of 4, diagnostics; substitute value; the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 2 / PL c according to EN ISO 13849-1:2015. Supplied with infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7532-5HD00-0AB0

SIMATIC S7-1500, analog output module AQ 8xU/I HS

16-bit resolution, accuracy 0.3%,
8 channels in groups of 8, diagnostics; substitute value
8 channels in 0.125 ms oversampling; the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. Supplied with infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7532-5HF00-0AB0

SIMATIC S7-1500, analog output module AQ 4xU/I HF

16-bit resolution, accuracy 0.1%,
4 channels in groups of 1, common mode voltage: 30 V AC/60 V DC, diagnostics; substitute value, isochronous mode; the module supports the safety-related shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. Supplied with infeed element, shielding bracket and shield terminal: order front connectors (screw terminals or push-in) separately

6ES7532-5ND00-0AB0

SIMATIC S7-1500, analog output module AQ 8xHART HF

16-bit resolution, accuracy 0.2%,
8 channels in groups of 8, diagnostics, substitute values, delivery including infeed element, shielding bracket and shield terminal;
Order front connectors (screw terminals or push-in) separately

6ES7532-8TF00-0AB0

Accessories

Front connector

SIMATIC S7-1500, front connector screw-type connection system

40-pin for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1AM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin, for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1BM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie

6ES7592-1BM00-0XA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 532 analog output modules

Ordering data	Article No.	Article No.
DIN A4 labeling sheets		
SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules	6ES7592-2AX00-0AA0	Shielding set I/O
SIMATIC S7-1500, labeling sheets for 25 mm wide S7-1500 modules and compact CPUs Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 20 strips per packing unit sufficient for 200 modules	6ES7592-1AX00-0AA0	SIMATIC S7-1500, spare part, shielding set Consisting of: * shield terminal, * shielding bracket, * 24 V DC infeed element with screw-type connection system, suitable for analog and technology modules of the S7-1500, suitable for all front connectors for 35 mm wide modules 5 units per packing unit
SIMATIC S7-1500, spare part U-type connector for connecting I/O modules Self-assembling backplane bus 5 units per packing unit	6ES7590-0AA00-0AA0	SIMATIC S7-1500, spare part, shielding set Consisting of: * 4x shield terminal, * 4x shielding bracket, * 4x 24 V DC infeed element with push-in technology, suitable for analog modules, technology modules and compact CPU of the S7-1500, suitable for all front connectors for 25 mm wide modules
Universal front door for I/O modules		SIMATIC S7-1500, spare part shield terminal Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element 10 units per packing unit
SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit	6ES7528-0AA00-7AA0	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC S7-1500, spare part front door for 25 mm wide I/O modules Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit	6ES7528-0AA00-0AA0	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

Technical specifications

Article number	6ES7532-5NB00-0AB0	6ES7532-5HD00-0AB0	6ES7532-5HF00-0AB0	6ES7532-5ND00-0AB0	6ES7532-8TF00-0AB0
	S7-1500, AQ 2xU/I ST	S7-1500, AQ 4xU/I ST	S7-1500, AQ 8xU/I HS	S7-1500, AQ 4xU/I HF	S7-1500, AQ 8xHART HF
General information					
Product type designation	AQ 2xU/I ST	AQ 4xU/I ST	AQ 8xU/I HS	AQ 4xU/I HF	AQ 8xHART HF
Product function					
• Isochronous mode	No	No	Yes	Yes	No
• Prioritized startup	No	No	No	Yes	No
• Output range scalable	No	No	No		No
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V13 / V13.0.2	V12 / V12	V14 / -	V14 / -	V18 and V19 with HSP0423
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V 2.43 / -

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 532 analog output modules

Technical specifications

Article number	6ES7532-5NB00-0AB0 S7-1500, AQ 2xU/I ST	6ES7532-5HD00-0AB0 S7-1500, AQ 4xU/I ST	6ES7532-5HF00-0AB0 S7-1500, AQ 8xU/I HS	6ES7532-5ND00-0AB0 S7-1500, AQ 4xU/I HF	6ES7532-8TF00-0AB0 S7-1500, AQ 8xHART HF
Operating mode					
• Oversampling	No	No	Yes	No	No
• MSO	Yes	Yes	Yes	Yes	Yes
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	4	8	4	8
Cycle time (all channels), min.	3.2 ms; independent of number of activated channels	3.2 ms; independent of number of activated channels	125 µs; independent of number of activated channels	125 µs; independent of number of activated channels	5 ms; independent of number of activated channels
Output ranges, voltage					
• 0 to 10 V	Yes	Yes	Yes	Yes	
• 1 V to 5 V	Yes	Yes	Yes	Yes	
• -5 V to +5 V	No	No	No	No	
• -10 V to +10 V	Yes	Yes	Yes	Yes	
Output ranges, current					
• 0 to 10 mA					No
• 0 to 20 mA	Yes	Yes	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes	Yes	No
• 4 mA to 20 mA	Yes	Yes	Yes	Yes	Yes
Connection of actuators					
• for voltage output two-wire connection	Yes	Yes	Yes	Yes	
• for voltage output four-wire connection	Yes	Yes	Yes	Yes	
• for current output two-wire connection	Yes	Yes	Yes	Yes	Yes
Load impedance (in rated range of output)					
• with voltage outputs, min.	1 kΩ; 0.5 kΩhm at 1 to 5 V	1 kΩ; 0.5 kΩhm at 1 to 5 V	1 kΩ	1 kΩ; 0.5 kΩhm at 1 to 5 V	
• with voltage outputs, capacitive load, max.	1 µF	1 µF	100 nF	1 µF	
• with current outputs, max.	750 Ω	750 Ω	500 Ω	750 Ω	750 Ω
• with current outputs, inductive load, max.	10 mH	10 mH	1 mH	10 mH	10 mH
Cable length					
• shielded, max.	800 m; for current, 200 m for voltage	800 m; for current, 200 m for voltage	200 m	800 m; for current, 200 m for voltage	800 m
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
• Conversion time (per channel)	0.5 ms	0.5 ms	50 µs; independent of number of activated channels	125 µs; independent of number of activated channels	
Settling time					
• for resistive load	1.5 ms	1.5 ms	30 µs; see additional description in the manual	0.2 ms; see additional description in the manual	3 ms; see additional description in the manual
• for capacitive load	2.5 ms	2.5 ms	100 µs; see additional description in the manual	1.8 ms; see additional description in the manual	
• for inductive load	2.5 ms	2.5 ms	100 µs; see additional description in the manual	2 ms; see additional description in the manual	3 ms; see additional description in the manual
Errors/accuracies					
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to output range, (+/-)	0.2 %	0.2 %	0.2 %	0.06 %	
• Current, relative to output range, (+/-)	0.2 %	0.2 %	0.2 %	0.1 %	0.1 %

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 532 analog output modules

Technical specifications

Article number	6ES7532-5NB00-0AB0	6ES7532-5HD00-0AB0	6ES7532-5HF00-0AB0	6ES7532-5ND00-0AB0	6ES7532-8TF00-0AB0
	S7-1500, AQ 2xU/I ST	S7-1500, AQ 4xU/I ST	S7-1500, AQ 8xU/I HS	S7-1500, AQ 4xU/I HF	S7-1500, AQ 8xHART HF
Isochronous mode					
Execution and activation time (TCO), min.			100 µs	100 µs	
Bus cycle time (TDP), min.			250 µs	250 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; Only for output type "current"	Yes; Only for output type "current"	Yes; Only for output type "current"	Yes; Only for output type "current"	Yes
• Short-circuit	Yes; Only for output type "voltage"	Yes; Only for output type "voltage"	Yes; Only for output type "voltage"	Yes; Only for output type "voltage"	Yes
• Overflow/underflow	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED					
• RUN LED	Yes; green 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	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green 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	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED
• for module diagnostics	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates					
Suitable for safety-related tripping of standard modules	Yes; From FS02	Yes; From FS05	Yes; from FS04		No
Highest safety class achievable for safety-related tripping of standard modules					
• Performance level according to ISO 13849-1	PL d	PL d	PL d		
• Category according to ISO 13849-1	Cat. 3	Cat. 3	Cat. 3		
• SIL acc. to IEC 62061	SIL 2	SIL 2	SIL 2		
• SILCL according to IEC 62061	SIL 2				
Product functions / security					
signed firmware update	No	No	No	No	Yes
data integrity	No	No	No	No	No
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-30 °C; from FS04	-30 °C; From FS06	-30 °C; From FS03	-25 °C; From FS02	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; from FS04	-30 °C; From FS06	-30 °C; From FS03	-25 °C; From FS02	-30 °C
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C	40 °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	25 mm	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
Weights					
Weight, approx.	200 g	310 g	325 g	300 g	300 g
Other					
Note:	Supplied incl. 40-pole push-in front connectors				

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 534 analog input/output modules

Overview



- 4 analog inputs/ 2 analog outputs
- For flexible adaptation of the PLC to the corresponding task
- For subsequent expansion of the system with additional inputs and outputs
- For use in the tightest spaces

5

Ordering data

SM 534 analog input/output module

Module width 25 mm

SIMATIC S7-1500, analog input/output module AI 4x U/I/R/RTD/TC ST

4 channels in groups of 4; hardware interrupts; diagnostics AQ 2x U/I ST; 2 channels in groups of 2; substitute value; diagnostics common mode voltage approx. 10 V 16 bit; accuracy 0.3%; Supplied with push-in front connector, infeed element, shielding bracket and shield terminal

Article No.

6ES7534-7QE00-0AB0

Accessories

Front connector

SIMATIC S7-1500, front connector with push-in technology

40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie

6ES7592-1BM00-0XA0

DIN A4 labeling sheets

SIMATIC S7-1500, labeling sheets for 25 mm wide S7-1500 modules and compact CPUs

Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 20 strips per packing unit sufficient for 200 modules

6ES7592-1AX00-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus 5 units per packing unit

6ES7590-0AA00-0AA0

Universal front door for I/O modules

SIMATIC S7-1500, spare part front door for 25 mm wide I/O modules

Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit

6ES7528-0AA00-0AA0

Article No.

Shielding set I/O

SIMATIC S7-1500, spare part, shielding set

Consisting of: * 4x shield terminal, * 4x shielding bracket, * 4x 24 V DC infeed element with push-in technology, suitable for analog modules, technology modules and compact CPU of the S7-1500, suitable for all front connectors for 25 mm wide modules

6ES7590-5CA10-0XA0

SIMATIC S7-1500, spare part shield terminal

Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element, 10 units per packing unit

6ES7590-5BA00-0AA0

SIMATIC Manual Collection DL in 5 languages¹⁾

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

6ES7998-8XE01-8YE0

Consignee email address required for delivery.

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice. Consignee email address required for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 534 analog input/output modules

Technical specifications

Article number	6ES7534-7QE00-0AB0 S7-1500, AI 4x U/I/RTD/TC/AQ 2x U/I ST
General information	
Product type designation	AI 4xU/I/RTD/TC /AQ 2xU/I ST
Product function	
• Isochronous mode	No
• Prioritized startup	No
• Measuring range scalable	No
• Scalable measured values	No
• Adjustment of measuring range	No
• Output range scalable	No
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13 / V13.0.2
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1
• PROFINET from GSD version/ GSD revision	V2.3 / -
Operating mode	
• Oversampling	No
• MSI	Yes
• MSO	Yes
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Analog inputs	
Number of analog inputs	4
• For current measurement	4
• For voltage measurement	4
• For resistance/resistance thermometer measurement	2
• For thermocouple measurement	4
permissible input voltage for voltage input (destruction limit), max.	28.8 V
permissible input current for current input (destruction limit), max.	40 mA
Constant measurement current for resistance-type transmitter, typ.	150 Ohm, 300 Ohm, 600 Ohm, Pt100, Pt200, Ni100: 1.25 mA; 6 000 Ohm, Pt500, Pt1000, Ni1000, LG-Ni1000: 0.625 mA; PTC: 0.472 mA
Technical unit for temperature measurement adjustable	Yes; °C/°F/K
Analog input with oversampling	No
Standardization of measured values	No
Input ranges (rated values), voltages	
• 0 to +5 V	No
• 0 to +10 V	No
• 1 V to 5 V	Yes
• -1 V to +1 V	Yes
• -10 V to +10 V	Yes
• -2.5 V to +2.5 V	Yes
• -25 mV to +25 mV	No
• -250 mV to +250 mV	Yes
• -5 V to +5 V	Yes
• -50 mV to +50 mV	Yes
• -500 mV to +500 mV	Yes
• -80 mV to +80 mV	Yes

Article number	6ES7534-7QE00-0AB0 S7-1500, AI 4x U/I/RTD/TC/AQ 2x U/I ST
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Input ranges (rated values), thermocouples	
• Type B	Yes
• Type C	No
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type L	No
• Type N	Yes
• Type R	Yes
• Type S	Yes
• Type T	Yes
• Type U	No
• Type TXK/TXK(L) to GOST	No
Input ranges (rated values), resistance thermometer	
• Cu 10	No
• Cu 10 according to GOST	No
• Cu 50	No
• Cu 50 according to GOST	No
• Cu 100	No
• Cu 100 according to GOST	No
• Ni 10	No
• Ni 10 according to GOST	No
• Ni 100	Yes; Standard/climate
• Ni 100 according to GOST	No
• Ni 1000	Yes; Standard/climate
• Ni 1000 according to GOST	No
• LG-Ni 1000	Yes; Standard/climate
• Ni 120	No
• Ni 120 according to GOST	No
• Ni 200	No
• Ni 200 according to GOST	No
• Ni 500	No
• Ni 500 according to GOST	No
• Pt 10	No
• Pt 10 according to GOST	No
• Pt 50	No
• Pt 50 according to GOST	No
• Pt 100	Yes; Standard/climate
• Pt 100 according to GOST	No
• Pt 1000	Yes; Standard/climate
• Pt 1000 according to GOST	No
• Pt 200	Yes; Standard/climate
• Pt 200 according to GOST	No
• Pt 500	Yes; Standard/climate
• Pt 500 according to GOST	No

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 534 analog input/output modules

Technical specifications

Article number	6ES7534-7QE00-0AB0 S7-1500, AI 4x U/I/RTD/TC/AQ 2x U/I ST
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes
• 0 to 300 ohms	Yes
• 0 to 600 ohms	Yes
• 0 to 3000 ohms	No
• 0 to 6000 ohms	Yes
• PTC	Yes
Thermocouple (TC)	
Temperature compensation	
- parameterizable	Yes
Cable length	
• shielded, max.	800 m; for U/I, 200 m for R/RTD, 50 m for TC
Analog outputs	
Number of analog outputs	2
Cycle time (all channels), min.	3.2 ms; ±0.5 ms, regardless of the number of activated channels
Output ranges, voltage	
• 0 to 10 V	Yes
• 1 V to 5 V	Yes
• -5 V to +5 V	No
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	
• for voltage output two-wire connection	Yes
• for voltage output four-wire connection	Yes
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 kΩ; 0.5 kΩhm at 1 to 5 V
• with voltage outputs, capacitive load, max.	1 μF
• with current outputs, max.	750 Ω
• with current outputs, inductive load, max.	10 mH
Cable length	
• shielded, max.	800 m; for current, 200 m for voltage

Article number	6ES7534-7QE00-0AB0 S7-1500, AI 4x U/I/RTD/TC/AQ 2x U/I ST
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Integration time, parameterizable	Yes
• Integration time (ms)	2.5 / 16.67 / 20 / 100 ms
• Basic conversion time, including integration time (ms)	9 / 23 / 27 / 107 ms
- additional conversion time for resistance measurement	150 ohm, 300 ohm, 600 ohm, Pt100, Pt200, Ni100: 2 ms, 6000 ohm, Pt500, Pt1000, Ni1000, LG-Ni1000, PTC: 4 ms
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10
Smoothing of measured values	
• parameterizable	Yes
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Conversion time (per channel)	0.5 ms
Settling time	
• for resistive load	1.5 ms
• for capacitive load	2.5 ms
• for inductive load	2.5 ms
Encoder	
Connection of signal encoders	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes
- Burden of 2-wire transmitter, max.	820 Ω
• for current measurement as 4-wire transducer	Yes
• for resistance measurement with two-wire connection	Yes; Only for PTC
• for resistance measurement with three-wire connection	Yes; All measuring ranges except PTC; internal compensation of the cable resistances
• for resistance measurement with four-wire connection	Yes; All measuring ranges except PTC

SIMATIC S7-1500 Advanced Controllers

I/O modules

Analog modules

SM 534 analog input/output modules

Technical specifications

Article number	6ES7534-7QE00-0AB0 S7-1500, AI 4x U/I/RTD/TC/AQ 2x U/I ST
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.1 %
• Current, relative to input range, (+/-)	0.1 %
• Resistance, relative to input range, (+/-)	0.1 %
• Resistance thermometer, relative to input range, (+/-)	0.1 %; Ptxxx standard: ± 0.7 K, Ptxxx climate: ± 0.2 K, Nixxx standard: ± 0.3 K, Nixxx climate: ± 0.15 K
• Thermocouple, relative to input range, (+/-)	0.1 %; Type B: > 600 °C ± 1.7 K, type E: > -200 °C ± 0.7 K, type J: > -210 °C ± 0.8 K, type K: > -200 °C ± 1.2 K, type N: > -200 °C ± 1.2 K, type R: > 0 °C ± 1.9 K, type S: > 0 °C ± 1.9 K, type T: > -200 °C ± 0.8 K
• Voltage, relative to output range, (+/-)	0.2 %
• Current, relative to output range, (+/-)	0.2 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB
• Common mode voltage, max.	10 V
• Common mode interference, min.	60 dB
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	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; only for input type 1 ... 5 V, 4 ... 20 mA, TC, R, RTD and output type current
• Short-circuit	Yes; Only for output type "voltage"
• Overflow/underflow	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; red LED

Article number	6ES7534-7QE00-0AB0 S7-1500, AI 4x U/I/RTD/TC/AQ 2x U/I ST
Potential separation	
Potential separation analog inputs	
• between the channels and backplane bus	Yes
Potential separation analog outputs	
• between the channels and backplane bus	Yes
Product functions / security	
signed firmware update	No
data integrity	No
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C; from FS04
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C; from FS04
• vertical installation, max.	40 °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	25 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	250 g
Other	
Note:	Supplied incl. 40-pole push-in front connectors. Additional basic error and noise for integration time = 2.5 ms: Voltage: ± 250 mV ($\pm 0.02\%$), ± 80 mV ($\pm 0.05\%$), ± 50 mV ($\pm 0.05\%$); resistance: 150 Ohms ($\pm 0.02\%$); resistance thermometer: Pt100 climate: ± 0.08 K, Ni100 climate: ± 0.08 K; thermoelement: Type B, R, S: ± 3 K, type E, J, K, N, T: ± 1 K

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS analog modules

SIPLUS SM 531 analog input modules

Overview



- 8-channel analog input modules
- Optionally with extremely short conversion times
- For the connection of analog sensors without additional amplifiers
- Even solves more complex automation tasks

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 SM 531 analog input modules

(Extended temperature range and exposure to environmental substances)

8 analog inputs, ± 10 V, ± 5 V, 1 ... 5 V or 0/4 ... 20 mA, ± 20 mA, 16 bits + sign; incl. infeed element, shielding bracket, shield terminal, labeling strips, U connector, printed front door

6AG1531-7NF10-7AB0

8 analog inputs ± 10 V, ± 5 V, ± 2.5 V, ± 1 V, ± 500 mV, ± 250 mV, ± 80 mV, ± 50 mV, 1 ... 5 V, 0/4 ... 20 mA, ± 20 mA, thermocouples type B, E, J, K, N, R, S, T, resistance thermometers Ni 100, Ni 1000, LG-Ni 1000, Pt 100, Pt 1000, Pt 250, Pt 500, resistors 0...150/300/600/6000 ohms, 16 bits

6AG1531-7KF00-7AB0

8 analog inputs, ± 10 V, ± 5 V, 1 ... 5 V or 0/4 ... 20 mA, ± 20 mA, 16 bits + sign; including infeed element, shielding bracket, shield terminal, labeling strips, U connector, printed front door

6AG1531-7NF00-7AB0

8 analog inputs, ± 1 V, ± 500 mV, ± 250 mV, ± 80 mV, ± 50 mV, ± 25 mV; thermocouples type B, E, J, K, N, R, S, T, TXK/TXK(L) according to GOST; resistance thermometers Cu 10, Cu 50, Cu 100, Ni 10, Ni 100, Ni 120, Ni 200, Ni 500, Ni 1000, LG-Ni 1000, Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000; resistors 0...150/300/600/6000 ohms, PTC; 16 bit; incl. infeed element, shielding bracket, shield terminal, labeling strips, U connector, printed front door

6AG1531-7PF00-4AB0

Analog input module, AI 16xU BA, 16-bit resolution, accuracy 0.5%, 16 channels in groups of 16, 4 V DC common mode voltage, diagnostics, hardware interrupts;

6AG1531-7LH00-7AB0

Analog input module, AI 16xI BA, 16-bit resolution, accuracy 0.5%, 16 channels in groups of 16, 4 V DC common mode voltage, diagnostics, hardware interrupts;

6AG1531-7MH00-7AB0

Accessories

SIPLUS S7-1500 U connector

Spare part for connecting I/O modules; self-assembling backplane bus; 5 pieces per packaging unit; with conformal coating, -40...+70 °C

6AG1590-0AA00-7AA0

Other accessories

See SIMATIC S7-1500, SM 531 analog input modules, page 5/244

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS analog modules

SIPLUS SM 531 analog input modules

Technical specifications

Article number	6AG1531-7NF10-7AB0	6AG1531-7KF00-7AB0	6AG1531-7NF00-7AB0	6AG1531-7PF00-4AB0	6AG1531-7LH00-7AB0	6AG1531-7MH00-7AB0
Based on	6ES7531-7NF10-0AB0 SIPLUS S7-1500 AI 8XU/I HS	6ES7531-7KF00-0AB0 SIPLUS S7-1500 AI 8XU/I/RTD/TC ST	6ES7531-7NF00-0AB0 SIPLUS S7-1500 AI 8XU/I HF	6ES7531-7PF00-0AB0 SIPLUS S7-1500 AI 8XU/R/RTD/TC HF	6ES7531-7LH00-0AB0 SIPLUS S7-1500 AI 16xU BA	6ES7531-7MH00-0AB0 SIPLUS S7-1500 AI 16xI 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)	-30 °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	60 °C	70 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-30 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax	40 °C	40 °C; = Tmax	40 °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 1 080 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 1 140 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 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	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	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 according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	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!	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. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS analog modules

SIPLUS SM 531 analog input modules

Technical specifications

Article number	6AG1531-7NF10-7AB0	6AG1531-7KF00-7AB0	6AG1531-7NF00-7AB0	6AG1531-7PF00-4AB0	6AG1531-7LH00-7AB0	6AG1531-7MH00-7AB0
Based on	6ES7531-7NF10-0AB0 SIPLUS S7-1500 AI 8XU/I HS	6ES7531-7KF00-0AB0 SIPLUS S7-1500 AI 8XU/I/RTD/TC ST	6ES7531-7NF00-0AB0 SIPLUS S7-1500 AI 8XU/I HF	6ES7531-7PF00-0AB0 SIPLUS S7-1500 AI 8XU/R/RTD/TC HF	6ES7531-7LH00-0AB0 SIPLUS S7-1500 AI 16xU BA	6ES7531-7MH00-0AB0 SIPLUS S7-1500 AI 16xI BA
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; *
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

SIMATIC S7-1500 Advanced Controllers

I/O modules
SIPLUS analog modules

SIPLUS SM 532 analog output modules

Overview



- 4 and 8-channel analog output modules
- Optionally with extremely short conversion times
- For connecting analog actuators without additional amplifiers
- Even solves more complex automation tasks

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 SM 532
analog output modules**

(Extended temperature range and exposure to environmental substances)

4 analog outputs, $\pm 10\text{ V}$, 1 ... 5 V, 0 ... 10 V or $\pm 20\text{ mA}$, 0/4 ... 20 mA, 16-bit

6AG1532-5HD00-7AB0

8 analog outputs, $\pm 10\text{ V}$, 1 ... 5 V, 0 ... 10 V or $\pm 20\text{ mA}$, 0/4 ... 20 mA, 16-bit; incl. infeed element, shielding bracket, shield terminal, labeling strips, U connector, printed front door

6AG1532-5HF00-7AB0

Accessories

SIPLUS S7-1500 U connector

Spare part for connecting I/O modules; self-assembling backplane bus; 5 pieces per packaging unit; with conformal coating, $-40\text{...}+70\text{ }^{\circ}\text{C}$

6AG1590-0AA00-7AA0

Other accessories

See SIMATIC S7-1500, SM 532 analog output modules, page 5/257

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS analog modules

SIPLUS SM 532 analog output modules

Technical specifications

Article number	6AG1532-5HD00-7AB0	6AG1532-5HF00-7AB0
Based on	6ES7532-5HD00-0AB0 SIPLUS S7-1500 AQ 4XU/I ST	6ES7532-5HF00-0AB0 SIPLUS S7-1500 AQ 8XU/I HS
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
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax; > +60 °C max. 4x ±10 V permissible
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	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)
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 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
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, *
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
- 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; *
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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM Count 2x24V counter module

Overview



- 2-channel high-speed counter module
- With comprehensive parameterization options for an optimum adaptation to the task and reduction of control load
- Speed and time period measuring
- Storage and comparison functions
- Connection of 24 V encoders

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Ordering data

Article No.

Article No.

SIMATIC S7-1500, TM count 2x24 V counter module

2 channels for 24 V incremental encoder, 3 DI, 2 DQ per channel

6ES7550-1AA01-0AB0

Accessories

Front connector

SIMATIC S7-1500, front connector screw-type connection system

40-pin for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1AM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin, for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1BM00-0XB0

SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules

Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules

6ES7592-2AX00-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus 5 units per packing unit

6ES7590-0AA00-0AA0

SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules

Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit

6ES7528-0AA00-7AA0

SIMATIC S7-1500, spare part, shielding set

Consisting of: * shield terminal, * shielding bracket, * 24 V DC infeed element with screw-type connection system, suitable for analog and technology modules of the S7-1500, suitable for all front connectors for 35 mm wide modules 5 units per packing unit

6ES7590-5CA00-0AA0

SIMATIC S7-1500, spare part shield terminal

Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element, 10 units per packing unit

6ES7590-5BA00-0AA0

SIMATIC Manual Collection DL in 5 languages¹⁾

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

6ES7998-8XE01-8YE0

Consignee email address required for delivery.

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice. Consignee email address required for delivery.

6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM Count 2x24V counter module

Technical specifications

Article number	6ES7550-1AA01-0AB0 S7-1500, TM Count 2x24V
General information	
Product type designation	TM Count 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	V16 with HSP 0332 / V17
• PROFIBUS from GSD version/ GSD revision	GSD Revision 5
• PROFINET from GSD version/ GSD revision	V2.3 / -
Installation type/mounting	
Rail mounting	Yes; S7-1500 mounting rail
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Encoder supply	
Number of outputs	1; A common 24V encoder supply for both channels
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	1 A; total current of all encoders/channels
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
Digital input functions, parameterizable	
• Gate start/stop	Yes
• Capture	Yes
• Synchronization	Yes
• Freely usable digital input	Yes
• Probe	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
for technological functions	
- parameterizable	Yes
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	4; 2 per channel
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Limitation of inductive shutdown voltage to	L+ (-53 V)
Controlling a digital input	Yes

Article number	6ES7550-1AA01-0AB0 S7-1500, TM Count 2x24V
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	
• Type of output voltage	DC
• 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.	2 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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM Count 2x24V counter module

Technical specifications

Article number	6ES7550-1AA01-0AB0 S7-1500, TM Count 2x24V
Interrupts/diagnostics/ status information	
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
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 LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
Integrated Functions	
Counter	Yes
• Number of counters	2
• 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; Per channel
- Direction dependency	Yes
- Can be changed from user program	Yes
Position detection	
• Incremental acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes
• suitable for SIMOTION	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.	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

Article number	6ES7550-1AA01-0AB0 S7-1500, TM Count 2x24V
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; Please note derating for inductive loads
• vertical installation, min.	-30 °C
• vertical installation, max.	40 °C; Please note derating for inductive loads
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 200MP system 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	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	250 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM PosInput 2 counter and position detection module

Overview



- 2-channel counter and position detection module with RS422 interface
- Extensive parameterization options for optimum task-specific adaptation
- Reduces load on controller due to preprocessing on the module
- Position detection with incremental and SSI absolute encoders
- Speed and time period measuring
- Storage and comparison functions
- Connection of encoders with RS422 signals or 5V-TTL signals
- Fast Mode with reduced functionality for particularly short cycle times

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Ordering data	Article No.		Article No.
SIMATIC S7-1500, TM PosInput 2 counting and position detection module For RS422 incremental encoders or SSI absolute encoders, 2 channels, 2 DI, 2 DQ per channel	6ES7551-1AB01-0AB0	SIMATIC S7-1500, spare part, shielding set Consisting of: * shield terminal, * shielding bracket, * 24 V DC infeed element with screw-type connection system, suitable for analog and technology modules of the S7-1500, suitable for all front connectors for 35 mm wide modules 5 units per packing unit	6ES7590-5CA00-0AA0
Accessories			
Front connector			
SIMATIC S7-1500, front connector screw-type connection system 40-pin for 35 mm wide modules including 4 jumper links and cable ties	6ES7592-1AM00-0XB0	SIMATIC S7-1500, spare part shield terminal Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element, 10 units per packing unit	6ES7590-5BA00-0AA0
SIMATIC S7-1500, front connector with push-in technology 40-pin, for 35 mm wide modules including 4 jumper links and cable ties	6ES7592-1BM00-0XB0	SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0
SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules	6ES7592-2AX00-0AA0	SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2
SIMATIC S7-1500, spare part U-type connector for connecting I/O modules Self-assembling backplane bus 5 units per packing unit	6ES7590-0AA00-0AA0		
SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules Consisting of: * front door (unlabeled), * labeling strips (front) * cabling diagram, 5 units per packing unit	6ES7528-0AA00-7AA0		

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM PosInput 2 counter and position detection module

Technical specifications

Article number	6ES7551-1AB01-0AB0 S7-1500, TM PosInput 2
General information	
Product type designation	TM PosInput 2
Number of channels	2
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V17
• PROFIBUS from GSD version/ GSD revision	GSD Revision 5
• PROFINET from GSD version/ GSD revision	V2.3 / -
Installation type/mounting	
Rail mounting	Yes; S7-1500 mounting rail
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Encoder supply	
Number of outputs	4; One 5V and 24V encoder supply per channel
5 V encoder supply	
• 5 V	Yes; 5.2 V $\pm$ 2 %
• Short-circuit protection	Yes
• Output current, max.	300 mA; Per channel
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	300 mA; Per channel
Digital inputs	
Number of digital inputs	4; 2 per channel
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
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	
• 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
for technological functions	
- parameterizable	Yes

Article number	6ES7551-1AB01-0AB0 S7-1500, TM PosInput 2
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	4; 2 per channel
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Limitation of inductive shutdown voltage to	L+ (-33 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 k Ω
Output voltage	
• Type of output voltage	DC
• 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 μ s
• "1" to "0", max.	50 μ s
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.	2 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
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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM PosInput 2 counter and position detection module

Technical specifications

Article number	6ES7551-1AB01-0AB0 S7-1500, TM PosInput 2
• 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	
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
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 LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
Integrated Functions	
Counter	Yes
• Number of counters	2
• 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

Article number	6ES7551-1AB01-0AB0 S7-1500, TM PosInput 2
Comparator	
- Number of comparators	2; Per channel
- 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
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; Please note derating for inductive loads
• vertical installation, min.	-30 °C
• vertical installation, max.	40 °C; Please note derating for inductive loads
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 200MP system 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	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	325 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM Timer DIDQ 24x24V time-based IO module

Overview



- 8 digital inputs, 16 digital outputs, can be used in different configurations as technological, time-controlled channels
- Inputs for detecting the input edges with μs accuracy
- Outputs for outputting 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

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Ordering data

Article No.	Article No.
SIMATIC S7-1500, TM timer DIDQ 24 x 24 V time-controlled digital inputs and outputs, max. 8 DI, 16 DQ; counting, PWM, oversampling	SIMATIC S7-1500, spare part, shielding set Consisting of: * shield terminal, * shielding bracket, * 24 V DC infeed element with screw-type connection system, suitable for analog and technology modules of the S7-1500, suitable for all front connectors for 35 mm wide modules 5 units per packing unit
Accessories	6ES7590-5CA00-0AA0
Front connectors	6ES7590-5BA00-0AA0
SIMATIC S7-1500, front connector screw-type connection system 40-pin for 35 mm wide modules including 4 jumper links and cable ties	SIMATIC S7-1500, spare part shield terminal Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element, 10 units per packing unit
SIMATIC S7-1500, front connector with push-in technology 40-pin, for 35 mm wide modules including 4 jumper links and cable ties	SIMATIC Manual Collection download 5 languages All manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT Consignee email address required for delivery.
SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules	6ES7998-8XE01-8YE0
SIMATIC S7-1500, spare part U-type connector for connecting I/O modules Self-assembling backplane bus 5 units per packing unit	SIMATIC Manual Collection Software Update Service (SUS) download 5 languages Within the scope of this contract, you will receive for one year all current software versions as download. The contract is automatically extended by 1 year if not canceled 3 months prior to expiration. Delivery and service period: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit	6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM Timer DIDQ 24x24V time-based IO module

Technical specifications

Article number	6ES7552-1AA01-0AB0 S7-1500, TM Timer DIDQ 24x24V
General information	
Product type designation	TM Timer DIDQ 24x24V
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 V19 with HSP or higher
Installation type/mounting	
Rail mounting	Yes; S7-1500 mounting rail
Supply voltage	
Load voltage 1L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes; against destruction
Load voltage 2L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes; against destruction
Encoder supply	
Number of outputs	8; max. depending on parameterization
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	1.2 A; Total current of all encoders / channels, max. 0.5 A per output
Digital inputs	
Number of digital inputs	8; max. depending on parameterization
• in groups of	8
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Digital input with time stamp - Number, max.	Yes 8
• Counter - Number, max.	Yes 4
• Counter for incremental encoder - Number, max.	Yes 4
• Digital input with oversampling - Number, max.	Yes 8
• HW enable for digital input - Number, max.	Yes 4
• HW enable for digital output - Number, max.	Yes 4
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

Article number	6ES7552-1AA01-0AB0 S7-1500, TM Timer DIDQ 24x24V
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	16; max. depending on parameterization
• in groups of	8
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	
• Digital output with time stamp - Number, max.	Yes 16
• PWM output - Number, max.	Yes 16
• Digital output with oversampling - Number, max.	Yes 16
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; 0.1 A with High Speed output
Load resistance range	
• lower limit	48 Ω; 240 ohm with High Speed output
• upper limit	12 kΩ
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
Total current of the outputs	
• Current per group, max.	4 A
• Current per module, max.	8 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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM Timer DIDQ 24x24V time-based IO module

Technical specifications

Article number	6ES7552-1AA01-0AB0 S7-1500, TM Timer DIDQ 24x24V
Isochronous mode	
Bus cycle time (TDP), min.	250 µs
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	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• MAINT LED	Yes; Yellow LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
Integrated Functions	
Counter	Yes
• Number of counters	4
• Counting frequency, max.	200 kHz; with quadruple evaluation
Counting functions	
• Continuous counting	Yes
Position detection	
• Incremental acquisition	Yes

Article number	6ES7552-1AA01-0AB0 S7-1500, TM Timer DIDQ 24x24V
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Product functions / security	
signed firmware update	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.	40 °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 200MP system manual
Decentralized operation	
to SIMATIC S7-1500	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	320 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM PTO 4 interface module for PTO (Pulse Train Output)

Overview



- 4-channel interface module for PTO (Pulse Train Output)
- 3 signal interfaces can be configured for speed and direction:
 - 24 V asymmetrical up to 200 kHz
 - RS422, 5 V symmetrical up to 1 MHz
 - TTL 5 V asymmetrical up to 200 kHz
- 3 signal types can be configured:
 - Pulse and direction
 - Pulses for forward movement and pulses for backwards movement
 - 2 phase-shifted signals, with simple or quadruple evaluation
- Supported technology objects:
 - Speed axis (S7-1500, S7-1500T)
 - Positioning axis (S7-1200, S7-1500, S7-1500T)
 - Synchronous axis (S7-1500, S7-1500T)
 - Measuring input (S7-1500, S7-1500T)

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Ordering data

Article No.	Article No.
SIMATIC S7-1500, TM PTO 4 interface module For stepper drives 4 channels pulse train output PTO: 24 V, RS422, 5 V, 2 DI, 1 DQ 24 V DC per channel	SIMATIC S7-1500, spare part shield terminal Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element, 10 units per packing unit
Accessories Front connector SIMATIC S7-1500, front connector screw-type connection system 40-pin for 35 mm wide modules including 4 jumper links and cable ties	6ES7590-5BA00-0AA0 SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.
SIMATIC S7-1500, front connector with push-in technology 40-pin, for 35 mm wide modules including 4 jumper links and cable ties	6ES7998-8XE01-8YE0 SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.
SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules	6ES7998-8XE01-8YE2
SIMATIC S7-1500, spare part U-type connector for connecting I/O modules Self-assembling backplane bus 5 units per packing unit	
SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram, 5 units per packing unit	
SIMATIC S7-1500, spare part, shielding set Consisting of: * shield terminal, * shielding bracket, * 24 V DC infeed element with screw-type connection system, suitable for analog and technology modules of the S7-1500, suitable for all front connectors for 35 mm wide modules 5 units per packing unit	

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM PTO 4 interface module for PTO (Pulse Train Output)

Technical specifications

Article number	6ES7553-1AA01-0AB0 S7-1500, TM PTO4
General information	
Product type designation	TM PTO 4
Number of channels	4; Axes
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 V19 or higher
• STEP 7 configurable/ integrated from version	V5.5 SP3 with GSD file / -
• PROFINET from GSD version/ GSD revision	GSDML V2.43
Installation type/mounting	
Rail mounting	Yes; S7-1500 mounting rail
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Digital inputs	
Number of digital inputs	12; 3 per channel, of which 1 DIQ
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Synchronization	Yes
• Probe	Yes
• Drive ready	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.	-5 V
• 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
for technological functions	
- parameterizable	Yes
Digital outputs	
Number of digital outputs	12; 3 per channel, of which 1 DIQ
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Controlling a digital input	Yes

Article number	6ES7553-1AA01-0AB0 S7-1500, TM PTO4
Digital output functions, parameterizable	
• PTO (pulse train output) signal interface	
- 24 V asymmetrical	Yes
- RS 422 symmetrical	Yes
- TTL (5 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 DIQn.2
Load resistance range	
• lower limit	240 Ω; 48 ohms for DIQn.2
• upper limit	12 kΩ
Output voltage	
• Type of output voltage	DC
• for signal "1", min.	23.2 V; L+ (-0.8 V), L+ (-1.3 V) for DIQn.2
Output current	
• for signal "1" rated value	0.1 A; 0.5 A for DIQn.2
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", typ.	1 μs; 28 μs for DIQn.2
• "1" to "0", typ.	1 μs; 25 μs for DIQn.2
Switching frequency	
• with resistive load, max.	1 kHz; For DIQn.2
• with inductive load, max.	0.5 Hz; According to IEC 60947-5-1, DC-13, for DIQn.2
• For signal interface 24 V asymmetrical	200 kHz; With DQn.0 and DQn.1
• For signal interface RS 422 symmetrical	1 MHz
• For signal interface TTL (5 V) asymmetrical	200 kHz
Isochronous mode	
Bus cycle time (TDP), min.	250 μs; 375 μs if all 4 channels are used
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Short-circuit	Yes; Thermal overload protection
• Group error	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 LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM PTO 4 interface module for PTO (Pulse Train Output)

Technical specifications

Article number	6ES7553-1AA01-0AB0 S7-1500, TM PTO4
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Product functions / security	
signed firmware update	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.	40 °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 200MP system manual

Article number	6ES7553-1AA01-0AB0 S7-1500, TM PTO4
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 PROFINET controller	Yes; Via control and feedback interface
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	300 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM FAST user-programmable high-speed module

Overview



- User-programmable technology module with extremely short internal cycle time and very fast digital input and output signals
- The following are available:
 - 8 x digital input 24 V DC
 - 8 x digital output 24 V DC
 - 4 x digital input/output 24 V DC
 - 8 x RS485/RS422, usable as digital input or output with differential signal or as TTL asymmetrically
- Programming the application with the Intel® Quartus® Prime software
- Cycle time of the application typ. 20 ns (nanoseconds); Thus a response time terminal – terminal from the application of a signal change at the input to a reaction at the output of significantly less than 1 µs can be achieved.

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Ordering data

Article No.

SIMATIC S7-1500, TM FAST Field Adaptable High-Speed Technology

Programmable with Intel(R) Quartus(R) Prime SW, 8xDI, 8xDQ, 4xDIQ 24 V, 8xRS485 DIQ, for extremely short response time of less than 1 µs

6ES7554-1AA00-0AB0

Accessories

TM FAST Debug Connector

For connecting a USB blaster to TM FAST, for commissioning and service purposes only

6ES7554-1AA00-5AA0

Front connector

SIMATIC S7-1500, front connector screw-type connection system

40-pin for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1AM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin, for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1BM00-0XB0

SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules

Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules

6ES7592-2AX00-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus 5 units per packing unit

6ES7590-0AA00-0AA0

SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules

Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram 5 units per packing unit

6ES7528-0AA00-7AA0

Article No.

SIMATIC S7-1500, spare part, shielding set

Consisting of: * shield terminal, * shielding bracket, * 24 V DC infeed element with screw-type connection system, suitable for analog and technology modules of the S7-1500, suitable for all front connectors for 35 mm wide modules 5 units per packing unit

6ES7590-5CA00-0AA0

SIMATIC S7-1500, spare part shield terminal

Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element 10 units per packing unit

6ES7590-5BA00-0AA0

SIMATIC Manual Collection DL in 5 languages¹⁾

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

6ES7998-8XE01-8YE0

Consignee email address required for delivery.

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice

6ES7998-8XE01-8YE2

Consignee email address required for delivery.

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM FAST user-programmable high-speed module

Technical specifications

Article number	6ES7554-1AA00-0AB0 S7-1500, TM FAST
General information	
Product type designation	TM FAST
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
• PROFINET from GSD version/ GSD revision	GSDML V2.35
Installation type/mounting	
Rail mounting	Yes; S7-1500 mounting rail
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Digital inputs	
Number of digital inputs	12; including 4 DIQs
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	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.	-5 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 frequency	
• For signal interface 24 V asymmetrical	200 kHz
• For signal interface RS 422 symmetrical	5 MHz
• For signal interface TTL (5 V) asymmetrical	1 MHz
Input delay (for rated value of input voltage)	
• Minimum pulse width for program reactions	application specific below 1µs possible
for standard inputs	
- parameterizable	Yes; customer defined / 0.001 / 0.003 / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
Digital outputs	
Number of digital outputs	12; including 4 DIQs
Short-circuit protection	Yes; electronic/thermal
Switching capacity of the outputs	
• with resistive load, max.	0.1 A; 0.3 A for DIQs
Load resistance range	
• lower limit	240 Ω; 80 ohms for DIQs
• upper limit	12 kΩ

Article number	6ES7554-1AA00-0AB0 S7-1500, TM FAST
Output voltage	
• Type of output voltage	DC
• for signal "1", min.	23.2 V; L+ (-0.8 V), L+ (-1.3 V) for DIQs
Output current	
• for signal "1" rated value	0.1 A; 0.3 A for DIQs
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", typ.	420 ns; for DQn
• "1" to "0", typ.	420 ns; for DQn
Switching frequency	
• with resistive load, max.	200 kHz; 1 kHz for DIQs
• For signal interface 24 V asymmetrical	200 kHz; 1 kHz for DIQs
• For signal interface RS 422 symmetrical	2 MHz
• For signal interface TTL (5 V) asymmetrical	200 kHz
Encoder	
Interface types	
• TTL 5 V	Yes; 8 channels (direction switchable)
• RS 422	Yes; 8 channels (direction switchable)
• Source/sink input	Yes
• Input characteristic curve in accordance with IEC 61131, type 3	Yes
Isochronous mode	
Bus cycle time (TDP), min.	250 µs
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; for RS485/RS422/TTL Input
• Short-circuit	Yes; Thermal overload protection
• Group error	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 LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes

SIMATIC S7-1500 Advanced Controllers

I/O modules
Technology modules

TM FAST user-programmable high-speed module

Technical specifications

Article number	6ES7554-1AA00-0AB0
	S7-1500, TM FAST
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	40 °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 200MP system manual

Article number	6ES7554-1AA00-0AB0
	S7-1500, TM FAST
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	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	300 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM NPU technology module for artificial intelligence applications

Overview



- Technology module for artificial intelligence applications
- Integrated AI-enabled processor "Intel Movidius Myriad X" enables the processing of loadable neuronal networks with very low power demand (max. 2 - 3 W)
- With interfaces for connecting cameras (USB 3.1: Intel RealSense, Gigabit Ethernet: GigE Vision)
- SD card slot for holding SIMATIC Memory Cards; allows the installation of neuronal networks and a user program (Micropython)
- Use of AI Model Deployer V1.1 to convert the neuronal network for classification and object detection applications
- Arbitrary adaptation of the module function via the Micropython script and the integrated Micropython Interpreter

Ordering data

Article No.

SIMATIC S7-1500, TM NPU

Technology module for artificial intelligence applications
1x Ethernet, 1x USB, 1x SD
Special sales release required

6ES7556-1AA00-0AB0

Accessories

SIMATIC S7, memory card for S7-1x 00 CPU

3.3 V Flash, 2 GB

6ES7954-8LP04-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus
5 units per packing unit

6ES7590-0AA00-0AA0

SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules

Consisting of: * front door (unlabeled), * labeling strips (front)
* cabling diagram,
5 units per packing unit

6ES7528-0AA00-7AA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

TM NPU technology module for artificial intelligence applications

Technical specifications

Article number	6ES7556-1AA00-0AB0 S7-1500, TM NPU
General information	
Product type designation	TM NPU
Product function	
• I&M data	Yes; I&M0 to I&M3
• Artificial intelligence/processing of neural networks	Yes
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V17 or higher with HSP
• STEP 7 configurable/integrated from version	- / -
• PROFIBUS from GSD version/GSD revision	- / -
• PROFINET from GSD version/GSD revision	GSDML V2.35
Installation type/mounting	
Mounting position	Horizontal, vertical
Rail mounting	Yes
Control cabinet installation	Yes
Supply voltage	
Rated value (DC)	24 V
Mains buffering	
• Mains/voltage failure stored energy time	5 ms
Interfaces	
Number of Ethernet interfaces	1
Number of USB interfaces	1
1. Interface	
Interface type	Ethernet
supported image format	YUYV422, UYVY422
supported image resolution	1 280 x 1 024, 1 280 x 720, 640 x 480
Interface types	
• RJ 45 (Ethernet)	Yes
• Number of ports	1
• integrated switch	No
2. Interface	
Interface type	USB
supported image format	YUYV422
supported image resolution	1 280 x 720
Interface types	
• USB	Yes; only for commissioning and test purposes
• Number of ports	1
• Output current of the interface, max.	900 mA
Interface types	
RJ 45 (Ethernet)	
• 1000 Mbps	Yes
USB port	
• USB specification	USB 3.1
• Design of the USB ports	USB type A socket

Article number	6ES7556-1AA00-0AB0 S7-1500, TM NPU
Protocols	
Protocols (Ethernet)	
• GigE Vision	Yes; V2.1
Web server	
• supported	Yes; only for Debug purposes. Should be disabled during normal operation.
Interrupts/diagnostics/status information	
Status indicator	Yes
Alarms	No
Diagnostics function	Yes
Diagnostics indication LED	
• RUN LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes
• LINK LED	Yes
• Monitoring of the supply voltage (PWR-LED)	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.	40 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	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	No
to standard PROFINET controller	No
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	400 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

SIWAREX WP521 / WP522 ST

Overview



Weighing electronics TM SIWAREX WP521 ST (left) and TM SIWAREX WP522 ST (right)

The TM SIWAREX WP521 ST and WP522 ST (ST = Standard) are versatile weighing modules for the SIMATIC S7-1500 Advanced Controller family. With these electronic weighing systems, simple weighing applications, such as platform or hopper scales, can be seamlessly integrated into the S7-1500 automation environment.

Ordering data

Ordering data	Article No.
Weighing electronics TM SIWAREX WP521 ST Single-channel, for platform scales or hopper scales with analog load cells (1 - 4 mV/V), 1 x LC, 4 x DQ, 3 x DI, 1 x RS 485, Ethernet port, including shielding set.	7MH4980-1AA01
Weighing electronics TM SIWAREX WP522 ST Two-channel, for two separate platform scales or hopper scales with analog load cells (1 - 4 mV/V), per channel 1 x LC, 4 x DQ, 3 x DI, 1 x RS 485, Ethernet port, including shielding set.	7MH4980-2AA01
SIMATIC S7-1500, front connector with screw-type terminals 40-pin, for 35 mm wide modules, including 4 jumper links and cable ties	6ES7592-1AM00-0XB0
SIMATIC S7-1500, front connector with push-in technology 40-pin, for 35 mm wide modules, including 4 jumper links and cable ties	6ES7592-1BM00-0XB0
SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP52x ST to a PC (SIWATOOL V7 or Modbus TCP/IP)	6XV1850-2GH20

Ordering data

Article No.

Accessories SIWAREX EB extension box For extending sensor cables	7MH4710-2AA
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes	7MH5001-0AA20
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel	7MH5001-0AA00
SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination 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. - Short-circuit current < 199 mA DC - Short-circuit current < 137 mA DC	7MH4710-5BA 7MH4710-5CA
Cable (optional) Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 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 - Sheath color (for hazardous atmospheres): blue	7MH4702-8AG 7MH4702-8AF
Remote display (optional) The digital remote displays can be connected directly to the SIWAREX WP231 via the RS 485 interface. Suitable remote display: S102 Siebert Industrieelektronik GmbH PO Box 1180 D-66565 Eppelborn Tel.: +49 6806/980-0 Fax: +49 6806/980-999 https://www.siebert-group.com/en/ Detailed information is available from the manufacturer.	

SIMATIC S7-1500 Advanced Controllers

I/O modules

Technology modules

SIWAREX WP521 / WP522 ST

Technical specifications

SIWAREX WP521 ST / WP522 ST	
Weighing modes	Non-automatic scales, e.g. platform and hopper scales
Ports	1 × SIMATIC S7-1500 system bus 1 × Ethernet (SIWATOOL, Modbus TCP/IP) 1 × RS 485 per channel (Modbus RTU or remote display) 3 × digital inputs per channel (24 V DC) 4 × digital outputs (24 V DC short-circuit proof) per channel
Functions	3 limits - Zeroing - Tare - Tare specification - Zero adjustment - Trace function for signal analysis - Internal restore point - SIMATIC S7-1500 integrated and/or stand-alone operation
Parameter assignment	- Using function block in SIMATIC S7-1500 and HMI - Using SIWATOOL V7 - Using Modbus TCP/IP - Using Modbus RTU
Remote display (see accessories)	
Connection	Via RS 485
Display	Additional display for weight value
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	Up to ± 4 million parts
Number of measurements/second	100 or 120 (selectable)
Filter	- Low-pass filter 0.05 ... 50 Hz - Average value filter
Weighing functions	
Weight values	- Gross - Net - Tare
Limit values	2 × min/max 1 × empty
Zeroing	Per command
Tare	Per command
Tare specification	Per command
Compatible sensors	Analog load cells / full-bridge strain gauges (1-4 mV/V) in 4-wire or 6-wire system

SIWAREX WP521 ST / WP522 ST	
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	R_{Lmin} R_{Lmax}
With SIWAREX IS Ex interface	R_{Lmin} R_{Lmax}
Load cell characteristic	1 ... 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	800 m (2 624 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Certificates	- ATEX Zone 2 - UL - KCC - EAC - RCM - FM - IECEX
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption WP521 ST / WP522 ST	120 mA / 200 mA
Max. power consumption SIMATIC Bus	35 mA @ 15 V
IP degree of protection to EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min(IND)} \dots T_{max(IND)}$ (operating temperature)	
• Horizontal installation	-10 ... +60 °C (14 ... 140 °F)
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
EMC requirements	According to IEC 61000-6-2:2004; IEC 61000-6-4:2007+A1:2011
Dimensions (W × H × D)	35 × 147 × 129 mm (1.38 × 5.79 × 5.08 inch)

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS technology modules

SIPLUS TM Count 2x24V counter module

Overview



- 2-channel high-speed counter module
- With comprehensive parameterization options for an optimum adaptation to the task and reduction of control load
- Speed and time period measuring
- Storage and comparison functions
- Connection of 24 V encoders

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 2x24V counter module	6AG1550-1AA01-7AB0
(Extended temperature range and exposure to environmental substances)	
With 2 channels, max. 200 kHz; for 24 V encoder	
Accessories	
SIPLUS S7-1500 U connector	6AG1590-0AA00-7AA0
Spare part for connecting I/O modules; self-assembling backplane bus; 5 pieces per packaging unit; with conformal coating, -40...+70 °C	
Other accessories	See SIMATIC S7-1500, TM Count 2x24V counter module, page 5/270

Technical specifications

Article number	6AG1550-1AA01-7AB0
Based on	6ES7550-1AA01-0AB0 SIPLUS S7-1500 TM COUNT 2X24V
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.	40 °C; = Tmax

Article number	6AG1550-1AA01-7AB0
Based on	6ES7550-1AA01-0AB0 SIPLUS S7-1500 TM COUNT 2X24V
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, *
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; *
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

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS technology modules

SIPLUS TM PosInput 2 position detection module

Overview



- 2-channel counter and position detection module with RS422 interface
- Comprehensive parameterization options for optimum adaptation to the task
- Offloading of controller through preprocessing on the module
- Position detection with incremental and SSI absolute-value encoders
- Speed and time period measuring
- Storage and comparison functions
- Connection of encoders with RS422 signals or 5 V TTL signals

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 S7-1500 TM PosInput 2

6AG1551-1AB01-7AB0

Counter and position feedback module, 2 channels, for RS-422 incremental encoders or SSI absolute encoders, 2 DI, 2 DQ per channel, with conformal coating, -40...+70 °C

Accessories

SIPLUS S7-1500 U connector

6AG1590-0AA00-7AA0

With conformal coating, -40...+70 °C, spare part for connecting I/O modules; self-assembling backplane bus, 5 units per packing unit

Other accessories

See SIMATIC S7-1500, TM PosInput 2 counter and positioning module, page 5/273

Technical specifications

Article number	6AG1551-1AB01-7AB0
Based on	6ES7551-1AB01-0AB0 SIPLUS S7-1500 TM POSINPUT 2
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)

Article number	6AG1551-1AB01-7AB0
Based on	6ES7551-1AB01-0AB0 SIPLUS S7-1500 TM POSINPUT 2
• horizontal installation, max.	70 °C; Please note derating for inductive loads
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	40 °C; Please note derating for inductive loads
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, *
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; *
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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM PtP

Overview



- Modules for serial communication connections, scaled according to interface types, protocols, and performance
- 4 versions with different physical transmission characteristics:
 - RS 232C, max. 19.2 kbps
 - RS 232C, max. 115.2 kbps
 - RS 422/RS 485, max. 19.2 kbps
 - RS 422/RS 485, max. 250 Kbps
- Protocols supported
 - Freepoint: user-parameterizable frame format for universal communication
 - 3964(R) for improved transmission reliability
 - Modbus RTU master
 - Modbus RTU slave
 - USS, implemented through instructions
 - Suitable for DMX512
 - Standard mode for large frames up to 4 KB
 - Performance mode: fast updating with many interfaces and shorter frames
 - Diagnostic trace: simple determination of the causes of connection faults

Ordering data

Article No.

SIMATIC S7-1500, CM PTP RS232 BA Communications module for serial connection RS-232 Freeport, 3964 (R), USS, 19200 bps, 9-pin D-sub connector	6ES7540-1AD01-0AA0
SIMATIC S7-1500, CM PTP RS232 HF Communications module for serial connection RS-232 Freeport, 3964 (R), USS, MODBUS RTU master, device, 115200 bps, 9-pin D-sub connector	6ES7541-1AD01-0AB0
SIMATIC S7-1500, CM PTP RS422/485 BA Communications module for serial connection RS422, RS485 Freeport, 3964 (R), USS, 19200 bps, 15-pin D-sub socket	6ES7540-1AB01-0AA0
SIMATIC S7-1500, CM PTP RS-422/485 HF Communications module for serial connection RS-422 and RS-485 Freeport, 3964 (R), USS, MODBUS RTU master, device, 250 000 bps, 15-pin D-sub socket	6ES7541-1AB01-0AB0

Ordering data

Article No.

Accessories	
SIMATIC S7-1500, spare part front door For the 35 mm wide power supply and PTP CP 5 units per packing unit	6ES7528-0AA80-7AA0
RS 232 connecting cable	
SIMATIC S7/M7, cable for point-to-point connection RS-232C-RS-232C, 9-pin D-sub socket respectively 5 m long	6ES7902-1AB00-0AA0
SIMATIC S7/M7, cable for point-to-point connection RS-232C-RS-232C, 9-pin D-sub socket respectively 10 m long	6ES7902-1AC00-0AA0
SIMATIC S7/M7, cable for point-to-point connection RS-232C-RS-232C, 9-pin D-sub socket respectively 15 m long	6ES7902-1AD00-0AA0
RS 422/485 connecting cable	
SIMATIC S7/M7, cable for point-to-point connection RS-422-RS-422, 15-pole D-sub pins respectively 5 m long	6ES7902-3AB00-0AA0
SIMATIC S7/M7, cable for point-to-point connection RS-422-RS-422, 15-pole D-sub pins respectively 10 m long	6ES7902-3AC00-0AA0
SIMATIC S7/M7, cable for point-to-point connection RS-422-RS-422, 15-pole D-sub pins respectively 50 m long	6ES7902-3AG00-0AA0
SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0
SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM PtP

Technical specifications

Article number	6ES7540-1AD01-0AA0 S7-1500, CM PTP RS232 BA	6ES7541-1AD01-0AB0 S7-1500, CM PTP RS232 HF	6ES7540-1AB01-0AA0 S7-1500, CM PTP RS422/485 BA	6ES7541-1AB01-0AB0 S7-1500, CM PTP RS422/485 HF
General information				
Product type designation	CM PtP RS 232 BA	CM PtP RS 232 HF	CM PtP RS 422 / 485 BA	CM PtP RS 422 / 485 HF
Product function				
• I&M data	Yes; I&M 0	Yes; I&M 0	Yes; I&M 0	Yes; I&M 0
• Fast startup	Yes	Yes	Yes	Yes
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	V18 with HSP 0367 / V19; with older TIA Portal versions configurable as 6ES7540-1AD00-0AA0	V18 with HSP 0367 / V19; with older TIA Portal versions configurable as 6ES7541-1AD00-0AA0	V18 with HSP 0367 / V19; with older TIA Portal versions configurable as 6ES7540-1AB00-0AA0	V18 with HSP 0367 / V19; with older TIA Portal versions configurable as 6ES7541-1AB00-0AA0
• STEP 7 configurable/ integrated from version	V5.5 SP2 with GSD file	V5.5 SP2 with GSD file	V5.5 SP2 with GSD file	V5.5 SP2 with GSD file
• PROFIBUS from GSD version/ GSD revision	- / -	- / -	- / -	- / -
• PROFINET from GSD version/ GSD revision	GSDML V2.42	GSDML V2.42	GSDML V2.42	GSDML V2.42
Installation type/mounting				
Rail mounting	Yes; S7-1500 mounting rail	Yes; S7-1500 mounting rail	Yes; S7-1500 mounting rail	Yes; S7-1500 mounting rail
Interface types				
RS 232				
• Transmission rate, max.	19.2 kbit/s	115.2 kbit/s		
• Cable length, max.	15 m	15 m		
• RS 232 auxiliary signals	RTS, CTS, DTR, DSR, RI, DCD	RTS, CTS, DTR, DSR, RI, DCD		
RS 485				
• Transmission rate, max.			19.2 kbit/s	250 kbit/s
• Cable length, max.			1 200 m	1 200 m
RS 422				
• Transmission rate, max.			19.2 kbit/s	115.2 kbit/s
• Cable length, max.			1 200 m	1 200 m
• 4-wire full duplex connection			Yes	Yes
• 4-wire multipoint connection			No	No
Protocols				
Integrated protocols				
Freeport				
- Telegram length, max.	1 kbyte	4 kbyte	1 kbyte	4 kbyte
- Bits per character	7 or 8	7 or 8	7 or 8	7 or 8
- Number of stop bits	1 or 2 bit	1 or 2 bit	1 or 2 bit	1 or 2 bit
- Parity	None, even, odd, always 1, always 0, any	None, even, odd, always 1, always 0, any	None, even, odd, always 1, always 0, any	None, even, odd, always 1, always 0, any
3964 (R)				
- Telegram length, max.	1 kbyte	4 kbyte	1 kbyte	4 kbyte
- Bits per character	7 or 8	7 or 8	7 or 8	7 or 8
- Number of stop bits	1 or 2 bit	1 or 2 bit	1 or 2 bit	1 or 2 bit
- Parity	None, even, odd, always 1, always 0, any	None, even, odd, always 1, always 0, any	None, even, odd, always 1, always 0, any	None, even, odd, always 1, always 0, any
Modbus RTU master				
- Address area		1 to 247, extended 1 to 65535		1 to 247, extended 1 to 65535
- max. number of devices		1		32
Protocols / Modbus RTU device				
- Address area		1 to 247, extended 1 to 65535		1 to 247, extended 1 to 65535
Telegram buffer				
• Buffer memory for telegrams	2 kbyte	8 kbyte	2 kbyte	8 kbyte
• Number of telegrams which can be buffered	255	255	255	255

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM PtP

Technical specifications

Article number	6ES7540-1AD01-0AA0 S7-1500, CM PTP RS232 BA	6ES7541-1AD01-0AB0 S7-1500, CM PTP RS232 HF	6ES7540-1AB01-0AA0 S7-1500, CM PTP RS422/485 BA	6ES7541-1AB01-0AB0 S7-1500, CM PTP RS422/485 HF
Interrupts/diagnostics/ status information				
Diagnostics function	Yes	Yes	Yes	Yes
Alarms				
• Diagnostic alarm	Yes	Yes	Yes	Yes
• Hardware interrupt	No	No	No	No
Diagnoses				
• Wire-break	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
• Receive RxD	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED
• Transmit TxD	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED
Potential separation				
between backplane bus and interface	Yes	Yes	Yes	Yes
Product functions / security				
signed firmware update	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.	40 °C	40 °C	40 °C	40 °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 200MP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual
Decentralized operation				
to SIMATIC S7-300	Yes	Yes	Yes	Yes
to SIMATIC S7-400	Yes	Yes	Yes	Yes
to SIMATIC S7-1500	Yes	Yes	Yes	Yes
to standard PROFINET controller	Yes	Yes	Yes	Yes
Dimensions				
Width	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	127 mm	127 mm	127 mm	127 mm
Weights				
Weight, approx.	0.22 kg	0.22 kg	0.22 kg	0.22 kg

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM 8xIO-Link**Overview**

- Communication module for connecting up to 8 IO-Link devices (three-wire connection) or 8 standard sensors
- Can be used directly downstream of an S7-1500 CPU or distributed in ET 200MP via PROFINET or PROFIBUS
- Powerful diagnostics functions facilitate preventive maintenance to avoid plant standstills
- Easy replacement of sensors/actuators without time-consuming parameter assignment

Ordering data**Article No.****S7-1500, CM 8xIO-Link, communications module IO-Link Master V1.1****6ES7547-1JF00-0AB0**

order front connectors (screw terminals or push-in) separately

Accessories**SIMATIC Manual Collection DL in 5 languages¹⁾****6ES7998-8XE01-8YE0**

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

Consignee email address required for delivery.

SIMATIC Manual Collection DL in 5 languages¹⁾**6ES7998-8XE01-8YE2**

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration.

Period of delivery and service:
1 year from date of invoice

Consignee email address required for delivery.

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM 8xIO-Link

Technical specifications

Article number	6ES7547-1JF00-0AB0 S7-1500, CM 8xIO-Link
General information	
Product type designation	CM 8xIO-Link
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	No
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V15.1 with HSP 274
• STEP 7 configurable/ integrated from version	Configurable via GSD file
• PROFIBUS from GSD version/ GSD revision	GSD as of Revision 5
• PROFINET from GSD version/ GSD revision	GSDML V2.34
Operating mode	
• IO-Link	Yes
• DI	Yes
• DQ	No
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	8
Output current	
• Rated value	1 A; 4 A total current per module
24 V encoder supply	
• Short-circuit protection	Yes; per channel, electronic
IO-Link	
Number of ports	8
• of which simultaneously controllable	8
IO-Link protocol 1.0	Yes
IO-Link protocol 1.1	Yes
Cycle time, min.	2 ms
Size of process data, input per port	33 byte; max.
Size of process data, input per module	240 byte; max.
Size of process data, output per port	32 byte; max.
Size of process data, output per module	240 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
Time Based IO	
• TIO IO-Link IN	No
• TIO IO-Link OUT	No
• TIO IO-Link IN/OUT	No
Connection of IO-Link devices	
• Port type A	Yes
• Port type B	Yes; 24 V DC via external terminal

Article number	6ES7547-1JF00-0AB0 S7-1500, CM 8xIO-Link
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 LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; red 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.	40 °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
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM 1542-5

Overview



DP-M	DP-S	FMS	PG/OP	S7	
●	●		●	●	●

The CM 1542-5 communications module adds a PROFIBUS connection to the SIMATIC S7-1500 controller for communication with lower-level PROFIBUS devices at transfer rates of 9.6 Kbps to 12 Mbps. The module can also be used to implement separate PROFIBUS lines, in other words, to control a number of different field devices via a number of PROFIBUS segments. The CM 1542-5 assumes all communication tasks, thus reducing the CPU workload.

The CM 1542-5 is suitable for S7 communication as well as for conventional PROFIBUS communication. This makes it possible to establish communication between the S7-1500 PLC and other devices, for example those from the SIMATIC S7-300/400 range.

- PROFIBUS DP master or DP slave with electrical interface for connecting the SIMATIC S7-1500 to PROFIBUS at up to 12 Mbps (including 45.45 Kbps)
- Communications services:
 - PROFIBUS DP
 - PG/OP communication
 - S7 communication
 - Open user communication (SEND/RECEIVE) via FDL
- Time synchronization
- Simple programming and configuration over PROFIBUS
- Cross-network PG communication using S7 routing
- Module replacement without programming device/engineering station
- Data record routing (PROFIBUS DP)
- Adding or modifying distributed I/O during operation

Hardware innovations of the CM 1542-5 product with new article number 6GK7542-5DX10-0XE0 extend the permissible ambient temperature for operation from -25 °C to 60 °C (no condensation or icing) for a horizontally mounted rack and -25 °C to 40 °C (no condensation or icing) for a vertically mounted rack.

Furthermore, the permissible installation altitude for the CM 1542-5 module (6GK7542-5DX10-0XE0) has been extended to installation altitudes of up to 5000 m.

Ordering data

Article No.

CM 1542-5 communications module

Communications module for electrical connection of SIMATIC S7-1500 to PROFIBUS as DP master or DP slave; S7 and PG/OP communication, data record routing, time synchronization, diagnostics

6GK7542-5DX10-0XE0

Accessories

PROFIBUS FastConnect RS485 connection plug

With 90° cable outlet; with insulation displacement terminals, max. transfer rate 12 Mbps

- Without programming device interface
- With programming device interface

6ES7972-0BA52-0XA0

6ES7972-0BB52-0XA0

PROFIBUS FC standard cable

2-core bus cable, shielded, special design for fast installation, sold by the meter; delivery unit: max. 1000 m, minimum order quantity 20 m

6XV1830-0EH10

PROFIBUS FastConnect stripping tool

Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable

6GK1905-6AA00

PROFIBUS bus terminal 12M

Bus terminal for connection of PROFIBUS stations up to 12 Mbps with connecting cable

6GK1500-0AA10

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM 1542-5

Technical specifications

Article number	6GK7542-5DX10-0XE0
product type designation	CM 1542-5
transfer rate	
transfer rate	
• at the 1st interface according to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	0
number of electrical connections	
• at the 1st interface according to PROFIBUS	1
type of electrical connection	
• at the 1st interface according to PROFIBUS	9-pin Sub-D socket (RS485)
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	15 V
relative symmetrical tolerance at DC	
• at 15 V	3 %
consumed current	
• from backplane bus at DC at 15 V typical	0.2 A
power loss [W]	3 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	-30 ... +40 °C
• for horizontally arranged busbars during operation	-30 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
• note	without condensation or icing
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation altitude	restrictions for installation altitudes > 2 000 m, see manual
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
• with condensation according to IEC 60068-2-38 maximum	
chemical resistance to commercially available cooling lubricants	
resistance to biologically active substances	
• conformity according to EN 60721-3-3	
• conformity according to EN 60721-3-6	
resistance to chemically active substances	
• conformity according to EN 60721-3-3	
• conformity according to EN 60721-3-6	
resistance to mechanically active substances	
• conformity according to EN 60721-3-3	
• conformity according to EN 60721-3-6	
coating for equipped printed circuit board according to EN 61086	
type of coating protection against pollution according to EN 60664-3	

Article number	6GK7542-5DX10-0XE0
product type designation	CM 1542-5
type of test of the coating according to MIL-I-46058C	
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-1500 single width
width	35 mm
height	142 mm
depth	129 mm
net weight	0.4 kg
fastening method	
• S7-1500 rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	8
• note	depending on CPU type
performance data open communication	
number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	30
data volume	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte
performance data PROFIBUS DP	
service as DP master	
• DPV1	Yes
number of DP slaves	
• on DP master operable	125
data volume	
• of the address range of the inputs as DP master total	8 192 byte
• of the address range of the outputs as DP master total	8 192 byte
• of the address range of the inputs per DP slave	244 byte
• of the address range of the outputs per DP slave	244 byte
service as DP slave	
• DPV0	Yes
• DPV1	Yes
data volume	
• of the address range of the inputs as DP slave total	240 byte
• of the address range of the outputs as DP slave total	240 byte
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	48; depending on the system upper limit
performance data multi-protocol mode	
number of active connections with multi-protocol mode	48

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM 1542-5

Technical specifications

Article number	6GK7542-5DX10-0XE0
product type designation	CM 1542-5
performance data telecontrol	
protocol is supported	
• TCP/IP	No
product functions management, configuration, engineering	
configuration software	
• required	STEP 7 Professional V18 (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 S7-1500 CPU
product functions time	
product function pass on time synchronization	Yes
standards, specifications, approvals	
reference code	
• according to IEC 81346-2:2019	KEC

Article number	6GK7542-5DX10-0XE0
product type designation	CM 1542-5
standards, specifications, approvals	
Environmental Product Declaration	
Environmental Product Declaration	Yes
global warming potential [CO2 eq]	
• total	115.52 kg
• during manufacturing	21.24 kg
• during operation	93.93 kg
• after end of life	0.35 kg
further information internet links	
internet link	
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud
• to website: Industrial communication	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb
• to website: CAx-Download-Manager	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1542-5

Overview



DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●	●	●

The CP 1542-5 communications processor expands the SIMATIC S7-1500 controller to include a PROFIBUS connection for communication with lower-level PROFIBUS devices in transfer rates from 9.6 Kbps to 12 Mbps. This CPU allows the implementation of separate PROFIBUS lines, in other words the control of multiple field devices over multiple PROFIBUS segments. The CP 1542-5 handles all communication tasks, thus reducing the CPU load.

- PROFIBUS DP master or DP slave with electrical interface for connecting the SIMATIC S7-1500 to PROFIBUS at up to 12 Mbps (including 45.45 Kbps)

Communications services:

- PROFIBUS DP
- PG/OP communication
- Time synchronization
- Simple programming and configuration over PROFIBUS
- Cross-network PG communication using S7 routing
- Module replacement without programming device/engineering station

Hardware innovations of the CP 1542-5 product with new article number 6GK7542-5FX10-0XE0 extend the permissible ambient temperature for operation from -25 °C to 60 °C (no condensation or icing) for a horizontally mounted rack and -25 °C to 40 °C (no condensation or icing) for a vertically mounted rack.

In addition, the permissible installation altitude for the CP 1542-5 module (6GK7542-5FX10-0XE0) has been extended to installation altitudes of up to 5000 m.

The use of innovative, high-quality hardware components to fulfill the requirements listed above results in higher power consumption from the backplane bus in the new product CP 1542-5 (6GK7542-5FX10-0XE0) compared with the predecessor product.

Ordering data

Article No.

CP 1542-5 communications processor

Communications module for electrical connection of SIMATIC S7-1500 to PROFIBUS as DP master or DP slave; PG/OP communication, time synchronization, diagnostics; smaller quantity structure

6GK7542-5FX10-0XE0

Accessories

PROFIBUS FastConnect RS485 connection plug

With 90° cable outlet; with insulation displacement terminals, max. transfer rate 12 Mbps

- Without programming device interface
- With programming device interface

6ES7972-0BA52-0XA0

6ES7972-0BB52-0XA0

PROFIBUS FC standard cable

2-core bus cable, shielded, special design for fast installation, sold by the meter; delivery unit: max. 1000 m, minimum order quantity 20 m

6XV1830-0EH10

PROFIBUS FastConnect stripping tool

Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable

6GK1905-6AA00

PROFIBUS bus terminal 12M

Bus terminal for connection of PROFIBUS stations up to 12 Mbps with connecting cable

6GK1500-0AA10

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1542-5

Technical specifications

Article number	6GK7542-5FX10-0XE0
product type designation	CP 1542-5
transfer rate	
transfer rate	
• at the 1st interface according to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	0
number of electrical connections	
• at the 1st interface according to PROFIBUS	1
type of electrical connection	
• at the 1st interface according to PROFIBUS	9-pin Sub-D socket (RS485)
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	15 V
relative symmetrical tolerance at DC	
• at 15 V	3 %
consumed current	
• from backplane bus at DC at 15 V typical	0.2 A
power loss [W]	3 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	-30 ... +40 °C
• for horizontally arranged busbars during operation	-30 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
• note	without condensation or icing
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation altitude	restrictions for installation altitudes > 2 000 m, see manual
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-1500 single width
width	35 mm
height	142 mm
depth	129 mm
net weight	0.4 kg
fastening method	
• S7-1500 rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	8
• note	depending on CPU type
performance data PROFIBUS DP	
service as DP master	
• DPV1	Yes
number of DP slaves	
• on DP master operable	32
data volume	
• of the address range of the inputs as DP master total	2 048 byte

Article number	6GK7542-5FX10-0XE0
product type designation	CP 1542-5
• of the address range of the outputs as DP master total	2 048 byte
• of the address range of the inputs per DP slave	244 byte
• of the address range of the outputs per DP slave	244 byte
service as DP slave	
• DPV0	Yes
• DPV1	Yes
data volume	
• of the address range of the inputs as DP slave total	240 byte
• of the address range of the outputs as DP slave total	240 byte
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	16; depending on the system upper limit
performance data multi-protocol mode	
number of active connections with multi-protocol mode	16
performance data telecontrol	
protocol is supported	
• TCP/IP	No
product functions management, configuration, engineering	
configuration software	
• required	STEP 7 Professional V18 (TIA Portal) or higher
identification & maintenance function	
• I&MO - device-specific information	Yes
• I&M1 - higher level designation/location designation	Yes
product functions diagnostics	
product function web-based diagnostics	Yes; via S7-1500 CPU
product functions time	
product function pass on time synchronization	Yes
standards, specifications, approvals	
reference code	
• according to IEC 81346-2:2019	KEC
standards, specifications, approvals Environmental Product Declaration	
Environmental Product Declaration	Yes
global warming potential [CO2 eq]	
• total	115.52 kg
• during manufacturing	21.24 kg
• during operation	93.93 kg
• after end of life	0.35 kg
further information internet links	
internet link	
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud
• to website: Industrial communication	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM 1542-1

Overview



ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
	●	●	●	●	●	●	●

Communications module for connecting a SIMATIC S7-1500 to PROFINET networks as PROFINET IO controller or PROFINET IO device.

The CM 1542-1 supports the following communications services:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- PROFINET communication
- IT communication;
 - Web diagnostics by means of access to the web server of the S7-1500 system
 - Static IP routing with up to 1 Mbps via IPv4 to other CP 1543-1/CM 1542-1 units in an S7-1500 system, e.g. for web server access without real-time capability

Hardware innovations of the CM 1542-1 product with new Article No. 6GK7542-1AX10-0XE0 extend the permissible ambient temperature for operation from -30 °C to 60 °C (no condensation or icing) for a horizontally mounted rack and -30 °C to 40 °C (no condensation or icing) for a vertically mounted rack.

Furthermore, the permissible installation altitude for the module CM 1542-1 (6GK7542-1AX10-0XE0) has been extended to installation altitudes of up to 5000 m.

Ordering data

Article No.

CM 1542-1 communications module

For connecting SIMATIC S7-1500 to PROFINET IO, TCP/IP, ISO-on-TCP, UDP, S7 communication, IP broadcast/multicast, SNMPV1, time synchronization via NTP; 2 x RJ45 interface with 10/100 Mbps

6GK7542-1AX10-0XE0

Accessories

IE FC RJ45 plug 4 x 2

RJ45 connector for Industrial Ethernet (10/100/1000/10000 Mbps, Cat6A) 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/CPU with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB12-2AA0
6GK1901-1BB12-2AB0
6GK1901-1BB12-2AE0

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
- AWG24, for connection to IE FC RJ45 plug 4 x 2

6XV1870-2E

6XV1878-2A

SCALANCE XC206-2SFP G Industrial Ethernet switch

Manageable Layer 2 IE switch IEC 62443-4-2 certified 6x 10/100/1000 Mbps RJ45 ports 2x 1000 Mbps SFP 1x console port

6GK5206-2GS00-2AC2

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM 1542-1

Technical specifications

Article number	6GK7542-1AX10-0XE0
product type designation	CM 1542-1
transfer rate	
transfer rate	
• at the 1st interface	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	RJ45 port
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	15 V
relative symmetrical tolerance at DC	
• at 15 V	3 %
consumed current	
• from backplane bus at DC at 15 V typical	0.22 A
power loss [W]	3.3 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	-30 ... +40 °C
• for horizontally arranged busbars during operation	-30 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
• note	without condensation or icing
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation altitude	restrictions for installation altitudes > 2 000 m, see manual
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-1500 single width
width	35 mm
height	142 mm
depth	129 mm
net weight	0.4 kg
fastening method	
• S7-1500 rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	8
• note	depending on CPU type
performance data open communication	
number of possible connections for open communication	
• by means of T blocks maximum	64; depending on the system upper limit
data volume	
• as user data per ISO on TCP connection for open communication by means of T blocks maximum	65 536 byte
number of Multicast stations	6

Article number	6GK7542-1AX10-0XE0
product type designation	CM 1542-1
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	64; depending on the system upper limit
performance data multi-protocol mode	
number of active connections with multi-protocol mode	64
performance data PROFINET communication as PN IO controller	
product function PROFINET IO controller	Yes
number of PN IO devices on PROFINET IO controller operable total	128
number of PN IO IRT devices on PROFINET IO controller operable	64
number of external PN IO lines with PROFINET per rack	10
data volume	
• as user data for input variables as PROFINET IO controller maximum	8 Kibyte
• as user data for output variables as PROFINET IO controller maximum	8 Kibyte
• as user data for input variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for output variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for input variables per PN IO device for each sub-module as PROFINET IO controller maximum	256 byte
• as user data for output variables per PN IO device for each sub-module as PROFINET IO controller maximum	256 byte
performance data PROFINET communication as PN IO device	
product function PROFINET IO device	Yes
data volume	
• as user data for input variables as PROFINET IO device maximum	8 192 byte
• as user data for output variables as PROFINET IO device maximum	8 192 byte
• as user data for input variables for each sub-module as PROFINET IO device	256 byte
• as user data for output variables for each sub-module as PROFINET IO device	256 byte
• as user data for the consistency area for each sub-module	256 byte
number of submodules per PROFINET IO-Device	32
performance data telecontrol	
protocol is supported	
• TCP/IP	Yes

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CM 1542-1

Technical specifications

Article number	6GK7542-1AX10-0XE0
product type designation	CM 1542-1
product functions management, configuration, engineering	
product function MIB support	Yes
protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
configuration software	
• required	STEP 7 Professional V18 (TIA Portal) or higher
identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 - higher level designation/ location designation	Yes
product function is supported identification link	Yes; acc. to IEC 61406-1:2022
product functions diagnostics	
product function web-based diagnostics	Yes; via S7-1500 CPU
product functions switch	
product feature switch	Yes
product function	
• switch-managed	No
• with IRT PROFINET IO switch	Yes
• configuration with STEP 7	Yes
product functions routing	
service routing note	IP routing up to 1 Mbps
product function	
• static IP routing	Yes
• static IP routing IPv6	No
• dynamic IP routing	No
• dynamic IP routing IPv6	No
protocol is supported	
• RIP v1	No
• RIPv2	No
• RIPnG for IPv6	No
• OSPFv2	No
• OSPFv3 for IPv6	No
• VRRP	No
• VRRP for IPv6	No
• BGP	No
• PPP	No
• PPoE via DSL	No

Article number	6GK7542-1AX10-0XE0
product type designation	CM 1542-1
product functions redundancy	
product function	
• ring redundancy	Yes
• redundancy manager	Yes
protocol is supported Media Redundancy Protocol (MRP)	Yes
product functions security	
product function	
• switch-off of non-required services	Yes
• blocking of communication via physical ports	No
• log file for unauthorized access	No
product functions time	
product function SICLOCK support	Yes
product function pass on time synchronization	Yes
protocol is supported	
• NTP	Yes
standards, specifications, approvals	
reference code	
• according to IEC 81346-2:2019	KEC
standards, specifications, approvals Environmental Product Declaration	
Environmental Product Declaration	Yes
global warming potential [CO2 eq]	
• total	124.91 kg
• during manufacturing	21.24 kg
• during operation	103.32 kg
• after end of life	0.35 kg
further information internet links	
internet link	
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud
• to website: Industrial communication	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1543-1

Overview



ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●			●	●	●	●

The SIMATIC CP 1543-1 communications processor securely connects the SIMATIC S7-1500 PLC to Industrial Ethernet networks. By combining a variety of security features such as stateful packet inspection firewalls and VPNs, and data encryption protocols such as FTPS and SNMPv3, the communications processor protects individual S7-1500 stations or even entire automation cells against unauthorized access.

The CP can also be used for integrating the S7-1500 station into an IPv6-based network. All functions are configured using STEP 7 Professional V14 (TIA Portal) or higher.

The CP 1543-1 supports the following communications services:

- PG/OP communication
- S7 communication
- Open user communication (SEND/RECEIVE, FETCH/WRITE)
- IT communication
 - FTP functions (File Transfer Protocol FTP/FTPS) for file management and access to data blocks in the CPU (client and server function)
 - Access (read and write modes) to csv files stored on the memory card of the CPU via FTP(S)
 - Sending emails via SMTP or ESMTP with "SMTP-Auth" for authentication on an email server (also with IPv6)
 - Static IP routing with up to 1 Mbps via IPv4 to other CP 1543-1 / CM 1542-1 units in an S7-1500 system, e.g. for web server access without real-time capability
- Security Integrated
 - Stateful Packet Inspection Firewall
 - Secure communication via VPN (IPsec)
 - Network authentication according to IEEE 802.1X using the EAP methods MD5, TLS, PEAP, TTLS, MSCHAPv2 or PWD
- Protocols for secure communication
 - Secure access to the web server of the CPU via the HTTPS protocol
 - Secure file transfer using FTPS
 - Secure time of day transfer (NTP)
 - SNMPv3 for tap-proof transfer of network analysis information
 - Encrypted email communication via SMTPS (Port 587)
 - Secure open communication over TCP/IP
 - Connection to SINEMA Remote Connect via OpenVPN
- Integration of the S7-1500 into IPv6-based networks; An IPv6-compliant IP address can be used for the following communications services:
 - FETCH/WRITE access (CP as server)
 - FTP server mode
 - FTP client mode with addressing via program block
 - Email transfer with addressing via program block

Hardware innovations of the CP 1543-1 product with new article number 6GK7543-1AX10-0XE0 extend the permissible ambient temperature for operation from -30 °C to 60 °C (no condensation or icing) for a horizontally mounted rack and -30 °C to 40 °C (no condensation or icing) for a vertically mounted rack.

In addition, the permissible installation altitude for the module CP 1543-1 (6GK7543-1AX10-0XE0) has been extended up to 5 000 m.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1543-1

Ordering data	Article No.		Article No.
Communications processor CP 1543-1 For connecting SIMATIC S7-1500 to Industrial Ethernet; TCP/IP, ISO, UDP, S7 communication, IP broadcast/multicast, security (VPN, firewall) diagnostics SNMPv1/v3, DHCP, FTP client/server, email, IPv4/IPv6, IEEE 802.1X (radius), time synchronization via NTP, 1x RJ45 (10/100/1 000 Mbps)	6GK7543-1AX10-0XE0	IE FC TP standard cable GP 2 x 2 (type A) 4-core, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; <u>sold by the meter</u> ; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10
Accessories		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; <u>sold by the meter</u> ; max. delivery unit 1000 m, minimum order quantity 20 m • AWG22, for connection to IE FC RJ45 modular outlet • AWG24, for connection to IE FC RJ45 plug 4 x 2	6XV1870-2E 6XV1878-2A
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/CPU with Industrial Ethernet interface • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0	IE FC stripping tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
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/CPU with Industrial Ethernet interface • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units	6GK1901-1BB12-2AA0 6GK1901-1BB12-2AB0 6GK1901-1BB12-2AE0	SCALANCE XC206-2SFP Industrial Ethernet switch Manageable Layer 2 IE switch; IEC 62443-4-2 certified; 6x 10/100 Mbps RJ45 ports; 2x 100/1000 Mbps SFP; 1x console port	6GK5206-2BS00-2AC2

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SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1543-1

Technical specifications

Article number	6GK7543-1AX10-0XE0
product type designation	CP 1543-1
transfer rate	
transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	1
number of electrical connections	
• at the 1st interface according to Industrial Ethernet	1
type of electrical connection	
• at the 1st interface according to Industrial Ethernet	RJ45 port
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	15 V
relative symmetrical tolerance at DC	
• at 15 V	3 %
consumed current	
• from backplane bus at DC at 15 V typical	0.25 A
power loss [W]	3.75 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	-30 ... +40 °C
• for horizontally arranged busbars during operation	-30 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
• note	without condensation or icing
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation altitude	restrictions for installation altitudes > 2 000 m, see manual
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-1500 single width
width	35 mm
height	142 mm
depth	129 mm
net weight	0.26 kg
fastening method	
• S7-1500 rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	8
• note	depending on CPU type

Article number	6GK7543-1AX10-0XE0
product type designation	CP 1543-1
performance data open communication	
number of possible connections for open communication	
• by means of T blocks maximum	118; depending on the system upper limit
data volume	
• as user data per ISO on TCP connection for open communication by means of T blocks maximum	65 536 byte
number of Multicast stations	118
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	118; depending on the system upper limit
performance data multi-protocol mode	
number of active connections with multi-protocol mode	118
performance data IT functions	
number of possible connections	
• as client by means of FTP maximum	32
• as server by means of FTP maximum	16
number of possible connections	
• as server by means of HTTP maximum	4
• as email client maximum	1
data volume as user data for email maximum	64 Kibyte
performance data telecontrol	
protocol is supported	
• TCP/IP	Yes
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 V19 (TIA Portal) or higher
identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 - higher level designation/ location designation	Yes
product function is supported	Yes; acc. to IEC 61406-1:2022
identification link	
product functions diagnostics	
product function web-based diagnostics	Yes; via S7-1500 CPU

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1543-1

Technical specifications

Article number	6GK7543-1AX10-0XE0
product type designation	CP 1543-1
product functions routing	
service routing note	IP routing up to 1 Mbps
product function	
• static IP routing	Yes
• static IP routing IPv6	No
• dynamic IP routing	No
• dynamic IP routing IPv6	No
protocol is supported	
• RIP v1	No
• RIPv2	No
• RIPnG for IPv6	No
• OSPFv2	No
• OSPFv3 for IPv6	No
• VRRP	No
• VRRP for IPv6	No
• BGP	No
• PPP	No
• PPoE via DSL	No
product functions security	
firewall version	stateful inspection
product function with VPN connection	IPSec
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, SHA-256, SHA-384, SHA-512
number of possible connections with VPN connection	16
product function	
• IEEE 802.1x (radius)	Yes
• password protection for Web applications	No
• ACL - IP-based	No
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• blocking of communication via physical ports	No
• log file for unauthorized access	Yes

Article number	6GK7543-1AX10-0XE0
product type designation	CP 1543-1
product functions time	
product function SICLOCK support	No
product function pass on time synchronization	Yes
protocol is supported	
• NTP	Yes
standards, specifications, approvals	
reference code	
• according to IEC 81346-2:2019	KEC
standards, specifications, approvals Environmental Product Declaration	
Environmental Product Declaration	Yes
global warming potential [CO2 eq]	
• total	140.88 kg
• during manufacturing	21.24 kg
• during operation	119.29 kg
• after end of life	0.35 kg
further information internet links	
internet link	
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud
• to website: Industrial communication	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1545-1

Overview



ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●			●	●	●	●

The SIMATIC CP 1545-1 communications processor securely connects the SIMATIC S7-1500 PLC to Industrial Ethernet networks. The new CloudConnect functionality enables easy and reliable transfer of all selected data from the SIMATIC S7-1500 to a cloud solution that supports the standardized MQTT protocol, e.g. Microsoft Azure or IBM Cloud or Amazon Web Services (AWS). The CP protects the SIMATIC S7-1500 station from unauthorized access with the integrated SPI (Stateful Packet Inspection) firewall. Data from cloud systems or MQTT brokers can also be received using the MQTT protocol.

The CloudConnect function of the CP 1545-1 is easy to configure with a few input screens in TIA Portal. First, all the parameters required for the different cloud platforms are specified. The data intended for the cloud is then selected from the tag management of the SIMATIC S7-1500 and saved as topics to be transferred with the corresponding trigger conditions.

All functions are configured using STEP 7 Professional V15.1 update 3 (TIA Portal) or higher.
The CP 1545-1 supports the following communications services:

- PG/OP communication
- S7 communication
- Open user communication (SEND/RECEIVE, FETCH/WRITE)
- IT communication
 - MQTT Publish for transferring selected data to a cloud system or MQTT broker
 - MQTT Subscribe for receiving data from a cloud system or MQTT broker
 - FTP functions (File Transfer Protocol FTP/FTPS) for file management and access to data blocks in the CPU (client and server function)
 - Access (read and write modes) to csv files stored on the memory card of the CPU via FTP(S)
 - Sending emails via SMTP or ESMTP with "SMTP-Auth" for authentication on an email server (also with IPv6)
 - Static IP routing with up to 1 Mbps via IPv4 to other CP 1545-1 / CP 1543-1 / CM 1542-1 units in the S7-1500 system, e.g. for web server accesses without real-time capability
- Security Integrated
 - Stateful Packet Inspection Firewall
 - Secure communication via VPN (IPsec)
 - Network authentication according to IEEE 802.1X using the EAP methods MD5, TLS, PEAP, TTLS, MSCHAPv2 or PWD in the product CP 1545-1 (6GK7545-1GX10-0XE0)
- Protocols for secure communication
 - Secure access to the web server of the CPU via the HTTPS protocol
 - Secure file transfer using FTPS
 - Secure time of day transfer (NTP)
 - SNMPv3 for tap-proof transfer of network analysis information
 - Encrypted email communication via SMTPS (Port 587)
 - Secure open communication over TCP/IP
 - Connection of the new product CP 1545-1 (6GK7545-1GX10-0XE0) to SINEMA Remote Connect via OpenVPN
- Integration of the S7-1500 into IPv6-based networks
An IPv6-compliant IP address can be used for the following communications services:
 - MQTT
 - FETCH/WRITE access (CP as server)
 - FTP server mode
 - FTP client mode with addressing via program block
 - Email transfer with addressing via program block

Hardware innovations of the CP 1545-1 product with new article number 6GK7545-1GX10-0XE0 extend the permissible ambient temperature for operation from -30 °C to 60 °C (no condensation or icing) for a horizontally mounted rack and -30 °C to 40 °C (no condensation or icing) for a vertically mounted rack.

In addition, the permissible installation altitude for the CP 1545-1 module (6GK7545-1GX10-0XE0) has been extended to installation altitudes of up to 5000 m.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1545-1

Technical specifications

Article number	6GK7545-1GX10-0XE0
product type designation	CP 1545-1
transfer rate	
transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	1
number of electrical connections	
• at the 1st interface according to Industrial Ethernet	1
type of electrical connection	
• at the 1st interface according to Industrial Ethernet	RJ45 port
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	15 V
relative symmetrical tolerance at DC	
• at 15 V	3 %
consumed current	
• from backplane bus at DC at 15 V typical	0.25 A
power loss [W]	3.75 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	-30 ... +40 °C
• for horizontally arranged busbars during operation	-30 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
• note	without condensation or icing
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation altitude	restrictions for installation altitudes > 2 000 m, see manual
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-1500 single width
width	35 mm
height	142 mm
depth	129 mm
net weight	0.26 kg
fastening method	
• S7-1500 rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	8
• note	depending on CPU type

Article number	6GK7545-1GX10-0XE0
product type designation	CP 1545-1
product functions cloud connectivity	
protocol is supported	
• Message Queuing Telemetry Transport (MQTT)	Yes
• Advanced Message Queuing Protocol (AMQP)	No
product function for cloud connectivity	
• trigger management	Yes
• time stamping	Yes
product feature for cloud connectivity buffered message frame memory	No
number of data points per device maximum	500
performance data open communication	
number of possible connections for open communication	
• by means of T blocks maximum	118; depending on the system upper limit
data volume	
• as user data per ISO on TCP connection for open communication by means of T blocks maximum	65 536 byte
number of Multicast stations	118
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	118; depending on the system upper limit
performance data multi-protocol mode	
number of active connections with multi-protocol mode	118
performance data IT functions	
number of possible connections	
• as client by means of FTP maximum	32
• as server by means of FTP maximum	16
number of possible connections	
• as server by means of HTTP maximum	4
• as email client maximum	1
data volume as user data for email maximum	64 Kibyte
performance data telecontrol	
protocol is supported	
• TCP/IP	Yes

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

CP 1545-1

Technical specifications

Article number	6GK7545-1GX10-0XE0
product type designation	CP 1545-1
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 V19 (TIA Portal) or higher
identification & maintenance function	
• I&MO - device-specific information	Yes
• I&M1 - higher level designation/location designation	Yes
product function is supported	Yes; acc. to IEC 61406-1:2022
identification link	
product functions diagnostics	
product function web-based diagnostics	Yes; via S7-1500 CPU
product functions routing	
service routing note	IP routing up to 1 Mbps
product function	
• static IP routing	Yes
• static IP routing IPv6	No
• dynamic IP routing	No
• dynamic IP routing IPv6	No
protocol is supported	
• RIP v1	No
• RIPv2	No
• RIPnG for IPv6	No
• OSPFv2	No
• OSPFv3 for IPv6	No
• VRRP	No
• VRRP for IPv6	No
• BGP	No
• PPP	No
• PPoE via DSL	No

Article number	6GK7545-1GX10-0XE0
product type designation	CP 1545-1
product functions security	
firewall version	stateful inspection
product function with VPN connection	IPSec
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, SHA-256, SHA-384, SHA-512
number of possible connections with VPN connection	16
product function	
• IEEE 802.1x (radius)	Yes
• password protection for Web applications	No
• ACL - IP-based	No
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• blocking of communication via physical ports	No
• log file for unauthorized access	Yes
product functions time	
product function SICLOCK support	No
product function pass on time synchronization	Yes
protocol is supported	
• NTP	Yes
standards, specifications, approvals	
reference code	
• according to IEC 81346-2:2019	KEC
standards, specifications, approvals Environmental Product Declaration	
Environmental Product Declaration	Yes
global warming potential [CO2 eq]	
• total	140.88 kg
• during manufacturing	21.24 kg
• during operation	119.29 kg
• after end of life	0.35 kg
further information internet links	
internet link	
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud
• to website: Industrial communication	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

TIM 1531 IRC (for S7-1500)

Overview



- TIM 1531 IRC communications module for telecontrol applications with four interfaces as a stand-alone device for SIMATIC S7-1500, S7-400, S7-300 and ET 200SP for use in wide area networks (WANs)
- For universal use in a station, node station and control center
- Communication either via the SINAUT ST7, IEC 60870-5-101/104 or DNP3 telecontrol protocols
- Operation via VPN (IPsec/OpenVPN) with additional SIMATIC NET components
- Wireless communication via mobile wireless routers, modems or radio devices
- Wired communication via Ethernet, internet, 2-/4-wire cables (SHDSL), dial-up modems or dedicated line modem
- Frame buffer for seamless recording of data
- Support of redundant communication paths
- Simple configuration with STEP 7 Professional (TIA Portal)
- Device redundancy TIM 1531 IRC (as station): Redundant telecontrol connection of an S7-1500R/H system to a PCS 7 process control system

Ordering data

Article No.

TIM 1531 IRC communications module

TIM 1531 IRC communications module for SIMATIC S7-1500, S7-400, S7-300 and ET 200 SP with SINAUT ST7, DNP3 and IEC 60870-5-101/104 with three RJ45 interfaces for communication via IP-based networks (WAN/LAN) and an RS232/RS485 interface for communication via conventional WANs

6GK7543-1MX00-0XE0

STEP 7 Professional V19 engineering software

- SIMATIC STEP 7 Professional V19 floating license
- Upgrade SIMATIC STEP 7 Basic V11 ... V18 → V19 floating license

6ES7822-1AE23-0YA5

6ES7822-0AE23-0YE5

Accessories

Mounting rail

SIMATIC S7-1500, 160 mm mounting rail; incl. grounding screw, integrated DIN rail for mounting small items, such as terminals, relays

6ES7590-1AB60-0AA0

SIMATIC Memory Card

SIMATIC S7, Memory Card for S7-1x 00 CPU/SINAMICS, 3.3 V flash, 24 MB

6ES7954-8LF03-0AA0

SCALANCE M876-4

4G router; for wireless IP communication of Ethernet-based programmable controllers via LTE (4G) mobile wireless optimized for worldwide use, VPN, firewall, NAT; 4-port switch; 2 x SMA antenna, MIMO technology; 1 x digital input, 1 x digital output; note country approvals!

6GK5876-4AA10-2BA2

Article No.

SCALANCE MUM853-1

5G router (EU), IP30, for wireless IP communication of Ethernet-based applications via public 3/4/5G mobile wireless networks and private 5G networks, VPN, firewall, NAT, IPv6, connection to SINEMA RC via CLP, 4 SMA connectors, 1 x micro SIM slot, 4 x 10/100/1000 Mbps RJ45 port, redundant 24 V DC, -30 ... +60 °C, CLP slot, 1 x DI and 1 x DQ, note country approvals!

6GK5853-2EA00-2DA1

SCALANCE M826-2 SHDSL router

For IP communication via the 2-wire and 4-wire cables of Ethernet-based programmable controllers; SHDSL topology: point-to-point, bonding, line bridge mode, routing mode with VPN, firewall, NAT; 4-port switch, 1 x digital input, 1 x digital output

6GK5826-2AB00-2AB2

SITOP compact 24 V/0.6 A

1-phase power supply with wide-range input 85 ... 264 V AC/110 to 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design

6EP1331-5BA00

SIMATIC PM 1507 24 V/3 A

Stabilized power supply for SIMATIC S7-1500
Input: 120/230 V AC
Output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507 24 V/8 A

Stabilized power supply for SIMATIC S7-1500
Input: 120/230 V AC
Output: 24 V DC/8 A

6EP1333-4BA00

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

TIM 1531 IRC (for S7-1500)

Technical specifications

Article number	6GK7543-1MX00-0XE0
product type designation	TIM 1531 IRC
transfer rate	
transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
• at the 2nd interface	10 ... 100 Mbit/s
• at the 3rd interface	10 ... 100 Mbit/s
• according to RS 232	300 ... 115 200 bit/s
interfaces	
number of interfaces according to Industrial Ethernet	3
number of electrical connections	
• for external data transmission according to RS 232	1
• for power supply	1
number of slots	
• for memory cards	1
type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
type of electrical connection	
• at interface 1 for external data transmission	9 pin Sub-D-connector, RS232 switchable to RS485
• for power supply	2-pole plugable terminal block
slot version	
• of the memory card	SD 1.0, SD 1.1, SDHC, Siemens SMC
storage capacity of the memory card maximum	32 Gbyte
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage	24 V
supply voltage	20.4 ... 28.8 V
supply voltage external at DC rated value	24 V
supply voltage external at DC rated value	20.4 ... 28.8 V
consumed current	
• from external supply voltage at DC at 24 V typical	0.15 A
• from external supply voltage at DC at 24 V maximum	0.3 A
power loss [W] with external supply voltage at 24 V DC	
• in update mode typical	3.9 W
• in communication mode typical	3.9 W
product extension optional backup battery	No

Article number	6GK7543-1MX00-0XE0
product type designation	TIM 1531 IRC
ambient conditions	
ambient temperature	
• during operation	0 ... 70 °C
• for vertical installation during operation	0 ... 50 °C
• for horizontally arranged busbars during operation	0 ... 70 °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	
module format	Compact module S7-1500 double-wide
width	70 mm
height	147 mm
depth	129 mm
net weight	0.525 kg
fastening method	
• 35 mm DIN-rail mounting	No
• S7-300 rail mounting	No
• S7-1500 rail mounting	Yes
product features, product functions, product components general	
product function	
• DynDNS client	No
number of units	
• note	Number of TIM per S7-1500: 1
wire length	
• with RS 232 interface maximum	6 m
• with RS 485 interface maximum	30 m

SIMATIC S7-1500 Advanced Controllers

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Communication

TIM 1531 IRC (for S7-1500)

Technical specifications

Article number	6GK7543-1MX00-0XE0
product type designation	TIM 1531 IRC
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	132; only via LAN
• with PG connections maximum	4
• with PG/OP connections maximum	4
• with OP connections maximum	4
service	
• of SIMATIC communication as server	Yes
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes
performance data IT functions	
number of possible connections	
• as server by means of HTTP maximum	2
• as server by means of HTTPS maximum	2; 2 per Ethernet interface
• as email client maximum	1
performance data telecontrol	
suitability for use	
• node station	Yes
• substation	Yes
• TIM control center	Yes
control center connection	Systems with ST7, DNP3 and IEC 60870-5-101/104 protocol
• by means of a permanent connection	Systems with ST7, DNP3 and IEC 60870-5-101/104 protocol
protocol is supported	
• DNP3	Yes
• IEC 60870-5	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	Yes
• Modbus RTU	No
product function data buffering if connection is aborted	Yes; 100000 data telegrams (ST7) or 250000 events (IEC 60870-5 / DNP3)
number of data points per station maximum	3 000
number of DNP3 masters	
• for Ethernet maximum	4
• with RS 232 interface maximum	4
product feature buffered message frame memory	Yes
transmission format	
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure
• with dial-up network with SINAUT ST7 protocol	spontaneous
hamming distance	
• for SINAUT ST7 protocol	4

Article number	6GK7543-1MX00-0XE0
product type designation	TIM 1531 IRC
performance data teleservice	
diagnostics function online diagnostics with SIMATIC STEP 7	Yes
product function	
• program download with SIMATIC STEP 7	Yes
• remote firmware update	Yes
• remote configuration	Yes
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 SP1 (TIA Portal) or higher
• for CPU configuring required SINAUT TD7 block library for CPU	No
• for PG configuring required SINAUT ST7 configuration software for PG	No
storage location of TIM configuration data	Flash or SD card of the TIM 1531 IRC
identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 - higher level designation/location designation	Yes
• I&M2 - installation date	Yes
• I&M3 - comment	Yes
product function is supported identification link	Yes; acc. to IEC 61406-1:2022
product functions diagnostics	
product function web-based diagnostics	Yes
product functions routing	
service routing note	IP routing up to 1 Mbps
product function	
• static IP routing	Yes
• static IP routing IPv6	Yes
• dynamic IP routing	No
• dynamic IP routing IPv6	No
protocol is supported	
• RIP v1	No
• RIPv2	No
• RIPv6 for IPv6	No
• OSPFv2	No
• OSPFv3 for IPv6	No
• VRRP	No
• VRRP for IPv6	No
• BGP	No
• PPP	No
• PoE via DSL	No

SIMATIC S7-1500 Advanced Controllers

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Communication

TIM 1531 IRC (for S7-1500)

Technical specifications

Article number	6GK7543-1MX00-0XE0
product type designation	TIM 1531 IRC
product functions security	
product function	
• MSC client via GPRS modem with MSC capability	Yes
protocol	
• is supported MSC protocol	Yes
• with Virtual Private Network MSC is supported	TCP/IP
key length for MSC with Virtual Private Network	128 bit
number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	127
product functions time	
product function SICLOCK support	No
product function pass on time synchronization	Yes
protocol is supported	
• NTP	Yes
• NTP (secure)	Yes
product component hardware real time clock	No
product feature hardware real time clock w. battery backup	No
time synchronization	
• from NTP-server	Yes
• from GPS-signal	No
• from control center	Yes
• from mobile network provider	No
• PC	No
• manual setting	No

Article number	6GK7543-1MX00-0XE0
product type designation	TIM 1531 IRC
product functions position detection	
product function	
• position detection with GPS	No
• pass on position data	No
standards, specifications, approvals	
reference code	
• according to IEC 81346-2:2019	KEC
further information internet links	
internet link	
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud
• to website: Industrial communication	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com

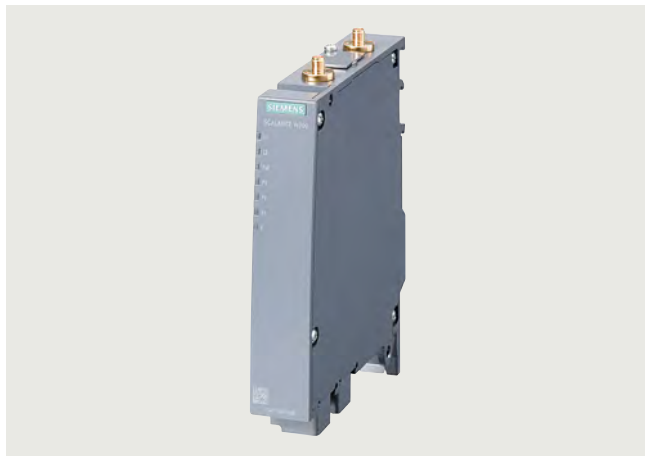
SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W774 RJ45 for the control cabinet

Overview



- Access points in SIMATIC S7-1500 design are suitable for applications where the device is to be mounted in the control cabinet

5

Ordering data

Article No.	Article No.
SCALANCE W774 access points IWLAN access points with built-in wireless interface for establishing radio connections with iFeatures; wireless networks IEEE 802.11a/b/g/n at 2.4/5 GHz up to 300 Mbps; WPA2/AES; integrated 2-port switch; Power over Ethernet (PoE), IP30 degree of protection (-20 °C to +60 °C); scope of delivery: Mounting hardware, 4-pin screw terminal for 24 V DC; manual on CD-ROM; German/English	KEY-PLUG W740 Removable data storage medium for activating iFeatures for SCALANCE W in Client Mode
SCALANCE W774-1 RJ45 IWLAN access point with one built-in wireless interface - Country approvals for operation outside the USA - Country approvals for operation within the USA¹⁾ - Country approvals for operation in Israel¹⁾	C-PLUG Removable data storage medium for simple device replacement in the event of a fault; for storing configuration data; can be used in SIMATIC NET products with PLUG slot
Accessories	IE FC RJ45 plug 180 2 x 2 RJ45 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/CPU's with Industrial Ethernet interface 1 pack = 1 unit 1 pack = 10 units 1 pack = 50 units
KEY-PLUG W780 iFeatures Removable data storage medium for enabling additional iFeatures, simple device replacement in the event of a fault and storage of configuration data; can be used in SCALANCE W access points with PLUG slot	IE FC standard cable GP 2 x 2 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
Security KEY-PLUG Removable data storage medium for enabling security features for SCALANCE W700 access points	IE FC stripping tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables
	Antennas and additional IWLAN accessories

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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W774 RJ45 for the control cabinet

Technical specifications

Article number product type designation ¹⁾	6GK5774-1FX00-0AA0 W774-1 RJ45	6GK5774-1FX00-0AB0 W774-1 RJ45 (USA)	6GK5774-1FX00-0AC0 W774-1 RJ45 (ISR)
transfer rate			
transfer rate			
• with WLAN maximum	300 Mbit/s	300 Mbit/s	300 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	2	2	2
• for power supply	1	1	1
• for redundant voltage supply	1	1	1
type of electrical connection			
• for network components or terminal equipment	RJ45 socket	RJ45 socket	RJ45 socket
• for power supply	4-pole screw terminal, PoE	4-pole screw terminal, PoE	4-pole screw terminal, PoE
memory			
design of the removable storage			
• C-PLUG	Yes	Yes	Yes
• KEY-PLUG	Yes	Yes	Yes
interfaces wireless			
number of radio cards permanently installed	1	1	1
transmission mode for multiple input multiple output (MIMO)	2x2	2x2	2x2
number of spatial streams	2	2	2
number of electrical connections for external antenna(s)	2	2	2
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
supply voltage			
• from Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af	48 V	48 V	48 V
consumed current			
• at DC at 24 V typical	0.25 A	0.25 A	0.25 A
• with Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af typical	0.125 A	0.125 A	0.125 A
power loss [W]			
• at DC at 24 V typical	6 W	6 W	6 W
• with Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af typical	6 W	6 W	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

SIMATIC S7-1500 Advanced Controllers

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SCALANCE W774 RJ45 for the control cabinet

Technical specifications

Article number product type designation ¹⁾	6GK5774-1FX00-0AA0 W774-1 RJ45	6GK5774-1FX00-0AB0 W774-1 RJ45 (USA)	6GK5774-1FX00-0AC0 W774-1 RJ45 (ISR)
ambient conditions			
ambient temperature			
• during operation	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °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	97 %	97 %	97 %
ambient condition for operation	When used under hazardous conditions (Zone 2), the SCALANCE W774-1 RJ45 or W734-1 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 W774-1 RJ45 or W734-1 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 W774-1 RJ45 or W734-1 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	IP30	IP30	IP30
design, dimensions and weights			
width	26 mm	26 mm	26 mm
height	156 mm	156 mm	156 mm
depth	127 mm	127 mm	127 mm
width of the enclosure without antenna	26 mm	26 mm	26 mm
height of the enclosure without antenna	147 mm	147 mm	147 mm
depth of the enclosure without antenna	127 mm	127 mm	127 mm
net weight	0.52 kg	0.52 kg	0.52 kg
fastening method	wall mounting only if flat mounted	wall mounting only if flat mounted	wall mounting only if flat mounted
• S7-300 rail mounting	Yes	Yes	Yes
• S7-1500 rail mounting	Yes	Yes	Yes
• 35 mm DIN-rail mounting	Yes	Yes	Yes
• wall mounting	Yes	Yes	Yes
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	Yes	Yes	Yes
product function client Mode	Yes	Yes	Yes
number of SSIDs	4	4	4
product function			
• iPCF Access Point	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF client	Yes; Only in combination with the 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W740 iFeatures'
• iPCF-MC Access Point	No	No	No
• iPCF-MC client	Yes; Only in combination with the 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W740 iFeatures'
number of iPCF-capable radio modules	1	1	1
product function iREF	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
number of iREF-capable radio modules	1	1	1
product function iPRP	Yes; In combination with the 'KEY-PLUG W780 iFeatures' only	Yes; In combination with the 'KEY-PLUG W780 iFeatures' only	Yes; In combination with the 'KEY-PLUG W780 iFeatures' only

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W774 RJ45 for the control cabinet

Technical specifications

Article number	6GK5774-1FX00-0AA0	6GK5774-1FX00-0AB0	6GK5774-1FX00-0AC0
product type designation ¹⁾	W774-1 RJ45	W774-1 RJ45 (USA)	W774-1 RJ45 (ISR)
product functions management, configuration, engineering			
number of manageable IP addresses in client	8	8	8
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
• operation with IWLAN controller	No	No	No
• operation with Enterasys WLAN controller	No	No	No
• forced roaming on IP down with IWLAN	Yes	Yes	Yes
• forced roaming on link down with IWLAN	Yes	Yes	Yes
• WDS	Yes	Yes	Yes
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	Yes	Yes	Yes
identification & maintenance function			
• I&M0 - device-specific information	Yes	Yes	Yes
• I&M1 - higher level designation/ location designation	Yes	Yes	Yes
product function is supported	Yes; acc. to IEC 61406-1:2022	Yes; acc. to IEC 61406-1:2022	Yes; acc. to IEC 61406-1:2022
identification link			
product functions diagnostics			
product function			
• PROFINET IO diagnosis	Yes	Yes	Yes
• link check	No	No	No
• connection monitoring IP-Alive	No	No	No
• localization via Aeroscout	Yes	Yes	Yes
• 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	Yes	Yes	Yes
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

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SCALANCE W774 RJ45 for the control cabinet

Technical specifications

Article number	6GK5774-1FX00-0AA0	6GK5774-1FX00-0AB0	6GK5774-1FX00-0AC0
product type designation ¹⁾	W774-1 RJ45	W774-1 RJ45 (USA)	W774-1 RJ45 (ISR)
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
standards, specifications, approvals			
standard			
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X
• for safety from CSA and UL	UL 60950-1 E115352, CSA C22.2 No. 60950-1	UL 60950-1 E115352, CSA C22.2 No. 60950-1	UL 60950-1 E115352, CSA C22.2 No. 60950-1
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
• railway application in accordance with EN 50121-4	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	Yes	Yes	Yes
• Power-over-Ethernet according to IEEE802.3at for type 2	Yes	Yes	Yes
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: www.siemens.com/wireless-approvals	You will find the current list of countries at: www.siemens.com/wireless-approvals	You will find the current list of countries at: www.siemens.com/wireless-approvals
reference code			
• according to IEC 81346-2:2019	KFE	KFE	KFE

SIMATIC S7-1500 Advanced Controllers

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Communication

SCALANCE W774 RJ45 for the control cabinet

Technical specifications

Article number	6GK5774-1FX00-0AA0	6GK5774-1FX00-0AB0	6GK5774-1FX00-0AC0
product type designation ¹⁾	W774-1 RJ45	W774-1 RJ45 (USA)	W774-1 RJ45 (ISR)
standards, specifications, approvals marine classification			
Marine classification association			
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes	Yes
• French marine classification society (BV)	Yes	Yes	Yes
• DNV GL	Yes	Yes	Yes
• Korean Register of Shipping (KRS)	Yes	Yes	Yes
• Lloyds Register of Shipping (LRS)	Yes	Yes	Yes
• Nippon Kaiji Kyokai (NK)	Yes	Yes	Yes
• Polski Rejestr Statkow (PRS)	Yes	Yes	Yes
• Royal Institution of Naval Architects (RINA)	Yes	Yes	Yes
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
• from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480
certificate of suitability CCC for hazardous zone according to GB standard	Yes; GB3836.1, GB3836.8	Yes; GB3836.1, GB3836.8	Yes; GB3836.1, GB3836.8
• as marking	Ex nA IIC T4 Gc	Ex nA IIC T4 Gc	Ex nA IIC T4 Gc
standards, specifications, approvals Environmental Product Declaration			
Environmental Product Declaration	Yes	Yes	Yes
global warming potential [CO2 eq]			
• total	195.92 kg	195.92 kg	195.92 kg
• during manufacturing	29.7 kg	29.7 kg	29.7 kg
• during operation	166.06 kg	166.06 kg	166.06 kg
• after end of life	0.16 kg	0.16 kg	0.16 kg
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
further information internet links			
internet link			
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358	https://support.industry.siemens.com/cs/ww/en/view/109766358	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud
• to web page: WLAN country approval	https://www.siemens.com/wireless-approvals	https://www.siemens.com/wireless-approvals	https://www.siemens.com/wireless-approvals
• to the website: IWLAN	https://www.siemens.com/iwlan	https://www.siemens.com/iwlan	https://www.siemens.com/iwlan
• to website: Industrial communication	https://www.siemens.com/simatic-net	https://www.siemens.com/simatic-net	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/	https://sieportal.siemens.com/	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb	https://www.automation.siemens.com/bilddb	https://www.automation.siemens.com/bilddb
• to website: CAX-Download-Manager	https://www.siemens.com/cax	https://www.siemens.com/cax	https://www.siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com	https://support.industry.siemens.com
	0.25 A	0.25 A	0.25 A

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

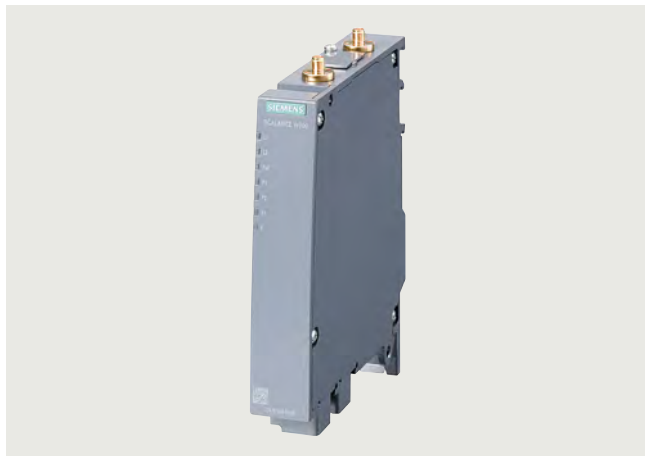
SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W734 RJ45 for the control cabinet

Overview



- Client modules in SIMATIC S7-1500 design are suitable for applications where the device is to be mounted in the control cabinet



ET 200MP station with SCALANCE W734 RJ45

Ordering data

Article No.

Article No.

SCALANCE W734 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 300 Mbps; WPA2/AES; integrated 2-port switch; Power over Ethernet (PoE), IP30 degree of protection (-20 °C to +60 °C); scope of delivery: Mounting hardware, 4-pin screw terminal for 24 V DC; manual on CD-ROM; German/English

SCALANCE W734-1 RJ45

For managing the radio link of up to eight connected devices with Industrial Ethernet connections;

- Country approvals for operation outside the USA
- Country approvals for operation within the USA¹⁾

Accessories

KEY-PLUG W740 iFeatures

Removable data storage medium for enabling additional iFeatures, for simple device replacement in the event of a fault, and for storing configuration data; can be used in SCALANCE W client modules with a PLUG slot

C-PLUG

Removable data storage medium for simple device replacement in the event of a fault; for storing configuration data; can be used in SIMATIC NET products with PLUG slot

6GK5734-1FX00-0AA0

6GK5734-1FX00-0AB0

6GK5907-4PA00

6GK1900-0AB10

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 CPUs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

IE FC standard cable GP 2 x 2

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

6XV1840-2AH10

IE FC stripping tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Antennas and additional IWLAN accessories

See SiePortal

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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W734 RJ45 for the control cabinet

Technical specifications

Article number	6GK5734-1FX00-0AA0	6GK5734-1FX00-0AB0
product type designation ¹⁾	W734-1 RJ45	W734-1 RJ45 (USA)
transfer rate		
transfer rate		
• with WLAN maximum	300 Mbit/s	300 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	2	2
• for power supply	1	1
• for redundant voltage supply	1	1
type of electrical connection		
• for network components or terminal equipment	RJ45 socket	RJ45 socket
• for power supply	4-pole screw terminal, PoE	4-pole screw terminal, PoE
memory		
design of the removable storage		
• C-PLUG	Yes	Yes
• KEY-PLUG	Yes	Yes
interfaces wireless		
number of radio cards permanently installed	1	1
transmission mode for multiple input multiple output (MIMO)	2x2	2x2
number of spatial streams	2	2
number of electrical connections for external antenna(s)	2	2
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
supply voltage		
• from Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af	48 V	48 V
consumed current		
• at DC at 24 V typical	0.25 A	0.25 A
• with Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af typical	0.125 A	0.125 A
power loss [W]		
• at DC at 24 V typical	6 W	6 W
• with Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af typical	6 W	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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W734 RJ45 for the control cabinet

Technical specifications

Article number	6GK5734-1FX00-0AA0	6GK5734-1FX00-0AB0
product type designation ¹⁾	W734-1 RJ45	W734-1 RJ45 (USA)
ambient conditions		
ambient temperature		
• during operation	-20 ... +60 °C	-20 ... +60 °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	95 %	95 %
maximum		
ambient condition for operation	When used under hazardous conditions (Zone 2), the SCALANCE W774-1 RJ45 or W734-1 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 W774-1 RJ45 or W734-1 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	IP30	IP30
design, dimensions and weights		
width	26 mm	26 mm
height	156 mm	156 mm
depth	127 mm	127 mm
width of the enclosure without antenna	26 mm	26 mm
height of the enclosure without antenna	147 mm	147 mm
depth of the enclosure without antenna	127 mm	127 mm
net weight	0.52 kg	0.52 kg
fastening method	wall mounting only if flat mounted	wall mounting only if flat mounted
• S7-300 rail mounting	Yes	Yes
• S7-1500 rail mounting	Yes	Yes
• 35 mm DIN-rail mounting	Yes	Yes
• wall mounting	Yes	Yes
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	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
• iPCF-MC client	Yes; Only in combination with 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
number of iPCF-capable radio modules	1	1
product function iPRP	Yes; In combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures' only	Yes; In combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures' only
product functions management, configuration, engineering		
number of manageable IP addresses in client	8	8
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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W734 RJ45 for the control cabinet

Technical specifications

Article number	6GK5734-1FX00-0AA0	6GK5734-1FX00-0AB0
product type designation ¹⁾	W734-1 RJ45	W734-1 RJ45 (USA)
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&MO - device-specific information	Yes	Yes
• I&M1 - higher level designation/location designation	Yes	Yes
product function is supported	Yes; acc. to IEC 61406-1:2022	Yes; acc. to IEC 61406-1:2022
identification link		
product functions diagnostics		
product function		
• PROFINET IO diagnosis	Yes	Yes
• 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

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W734 RJ45 for the control cabinet**Technical specifications**

Article number	6GK5734-1FX00-0AA0	6GK5734-1FX00-0AB0
product type designation ¹⁾	W734-1 RJ45	W734-1 RJ45 (USA)
standards, specifications, approvals		
standard		
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4, FM16US0205X
• for safety from CSA and UL certificate of suitability	UL 60950-1 E115352, CSA C22.2 No. 60950-1	UL 60950-1 E115352, CSA C22.2 No. 60950-1
• 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	Yes	Yes
• Power-over-Ethernet according to IEEE802.3at for type 2	Yes	Yes
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: www.siemens.com/wireless-approvals	You will find the current list of countries at: www.siemens.com/wireless-approvals
reference code		
• according to IEC 81346-2:2019	KFE	KFE
standards, specifications, approvals marine classification		
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes
• French marine classification society (BV)	Yes	Yes
• DNV GL	Yes	Yes
• Korean Register of Shipping (KRS)	Yes	Yes
• Lloyds Register of Shipping (LRS)	Yes	Yes
• Nippon Kaiji Kyokai (NK)	Yes	Yes
• Polski Rejestr Statkow (PRS)	Yes	Yes
• Royal Institution of Naval Architects (RINA)	Yes	Yes
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
• from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, Cl. 1, div. 2, GP. A, B, C, D, T4 / Cl. 1, Zone 2, GP IIC E240480
certificate of suitability CCC for hazardous zone according to GB standard	Yes; GB3836.1, GB3836.8	Yes; GB3836.1, GB3836.8
• as marking	Ex nA IIC T4 Gc	Ex nA IIC T4 Gc

SIMATIC S7-1500 Advanced Controllers

I/O modules

Communication

SCALANCE W734 RJ45 for the control cabinet

Technical specifications

Article number	6GK5734-1FX00-0AA0	6GK5734-1FX00-0AB0
product type designation ¹⁾	W734-1 RJ45	W734-1 RJ45 (USA)
standards, specifications, approvals		
Environmental Product Declaration		
Environmental Product Declaration	Yes	Yes
global warming potential [CO ₂ eq]		
• total	195.92 kg	195.92 kg
• during manufacturing	29.7 kg	29.7 kg
• during operation	166.06 kg	166.06 kg
• after end of life	0.16 kg	0.16 kg
accessories		
accessories	24 V DC screw terminal included in scope of delivery	24 V DC screw terminal included in scope of delivery
further information internet links		
internet link		
• to website: Selection guide for cables and connectors	https://support.industry.siemens.com/cs/ww/en/view/109766358	https://support.industry.siemens.com/cs/ww/en/view/109766358
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud
• to web page: WLAN country approval	https://www.siemens.com/wireless-approvals	https://www.siemens.com/wireless-approvals
• to the website: IWLAN	https://www.siemens.com/iwlan	https://www.siemens.com/iwlan
• to website: Industrial communication	https://www.siemens.com/simatic-net	https://www.siemens.com/simatic-net
• to web page: SiePortal	https://sieportal.siemens.com/	https://sieportal.siemens.com/
• to website: Image database	https://www.automation.siemens.com/bilddb	https://www.automation.siemens.com/bilddb
• to website: CAx-Download-Manager	https://www.siemens.com/cax	https://www.siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com
	0.25 A	0.25 A

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

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS communication

SIPLUS CM PtP

Overview



- Modules for serial communication connections, scaled according to interface types, protocols, and performance
- 4 versions with different physical transmission characteristics:
 - RS 232C, max. 19.2 kbps
 - RS 232C, max. 115.2 kbps
 - RS 422/RS 485, max. 19.2 kbps
 - RS 422/RS 485, max. 115.2 kbps
- Protocols supported
 - Freeport: User-parameterizable frame format for universal communication
 - 3964(R) for improved transmission reliability
 - Modbus RTU master
 - Modbus RTU device
 - USS, implemented through instructions

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.

Communications module SIPLUS S7-1500 CM PtP RS 232 BA

(Extended temperature range and exposure to environmental substances)

Basic communications module with 1 RS 232 interface, Freeport, 3964(R) and USS protocols, 9-pin D-sub connector, max. 19.2 Kbps

6AG1540-1AD01-7AA0

Communications module SIPLUS S7-1500 CM PtP RS 232 HF

(Extended temperature range and exposure to environmental substances)

High Feature communications module with 1 RS 232 interface, Freeport, 3964(R), USS and Modbus RTU protocols, 9-pin D-sub connector, max. 115.2 Kbps

6AG1541-1AD01-7AB0

Communications module SIPLUS S7-1500 CM PtP RS 422/485 BA

(Extended temperature range and exposure to environmental substances)

Basic communications module with 1 interface RS422/485, Freeport, 3964(R) and USS protocols, 15-pin D-sub socket, max. 19.2 Kbps

6AG1540-1AB01-7AA0

Communications module SIPLUS S7-1500 CM PtP RS 422/485 HF

(Extended temperature range and exposure to environmental substances)

High Feature communications module with 1 RS 422/485 interface, Freeport, 3964(R), USS and Modbus RTU protocols, 15-pin D-sub socket, max. 115.2 Kbps

6AG1541-1AB01-7AB0

Accessories

See SIMATIC S7-1500, CM PtP communications module, page 5/291

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS communication

SIPLUS CM PtP

Technical specifications

Article number	6AG1540-1AB01-7AA0	6AG1540-1AD01-7AA0	6AG1541-1AB01-7AB0	6AG1541-1AD01-7AB0
Based on	6ES7540-1AB01-0AA0	6ES7540-1AD01-0AA0	6ES7541-1AB01-0AB0	6ES7541-1AD01-0AB0
	SIPLUS S7-1500 CM PTP RS232 BA	SIPLUS S7-1500 CM PTP RS232 HF	SIPLUS S7-1500 CM PTP RS422/485 BA	SIPLUS S7-1500 CM PTP RS422/485 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)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual	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 %; 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
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; *
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)	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); *	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; *
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!

SIMATIC S7-1500 Advanced Controllers

I/O modules
SIPLUS communication

SIPLUS CM PtP

Technical specifications

Article number	6AG1540-1AB01-7AA0	6AG1540-1AD01-7AA0	6AG1541-1AB01-7AB0	6AG1541-1AD01-7AB0
Based on	6ES7540-1AB01-0AA0	6ES7540-1AD01-0AA0	6ES7541-1AB01-0AB0	6ES7541-1AD01-0AB0
	SIPLUS S7-1500 CM PTP RS232 BA	SIPLUS S7-1500 CM PTP RS232 HF	SIPLUS S7-1500 CM PTP RS422/485 BA	SIPLUS S7-1500 CM PTP RS422/485 HF
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS communication

SIPLUS NET CM 1542-5

Overview



DP-M	DP-S	FMS	PG/OP	S7	
●	●		●	●	6ES7 311-1CG03-0AB0

CM 1542-5

The CM 1542-5 communications module expands the SIMATIC S7-1500 Controller to include a PROFIBUS connection for communication with lower-level PROFIBUS devices in bandwidths from 9.6 kbps to 12 Mbps. The module can also be used to implement separate PROFIBUS lines, in other words, to control a number of different field devices via a number of PROFIBUS segments. The CM 1542-5 handles all communication tasks, thus reducing the CPU load.

Apart from classic PROFIBUS communication, the CM 1542-5 is also suitable for S7 communication. This makes it possible to establish communication between the S7-1500 controller and other devices, for example those from the SIMATIC S7-300/400 range.

- PROFIBUS DP device with electrical interface for connecting a SIMATIC S7-1500 to PROFIBUS at up to 12 Mbps (including 45.45 kbps)
- Communications services:
 - PROFIBUS DP
 - PG/OP communication
 - S7 communication
 - Open user communication (SEND/RECEIVE) via FDL
- Time synchronization
- Simple programming and configuration over PROFIBUS
- Cross-network PG communication using S7 routing
- Module replacement without programming device/engineering station
- Data record routing (PROFIBUS DP)
- Adding or modifying distributed I/O during operation

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

Communications module SIPLUS S7-1500 CM 1542-5

(Extended temperature range and exposure to environmental substances)

Communications module for electrical connection of SIMATIC S7-1500 to PROFIBUS; S7 and PG/OP communication, time-of-day, synchronization, diagnostics

Accessories

Article No.

6AG1542-5DX10-7XE0

See SIMATIC S7-1500, CM 1542-5 communications module, page 5/296

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS communication

SIPLUS NET CM 1542-5**Technical specifications**

Article number	6AG1542-5DX10-7XE0	6AG1542-5FX10-7XE0
Based on	6GK7542-5DX10-0XE0	6GK7542-5FX10-0XE0
product type designation	CM 1542-5	CP 1542-5
ambient conditions		
ambient temperature		
• for vertical installation during operation	-40 ... +40 °C	-40 ... +40 °C
• for horizontally arranged busbars during operation	-40 ... +70 °C	-40 ... +70 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C
• during transport	-40 ... +70 °C	-40 ... +70 °C
• note	Startup @ -25 °C	
installation altitude at height above sea level maximum	5 000 m	5 000 m
ambient condition relating to ambient temperature - air pressure - installation 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)
relative humidity		
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets	Yes; incl. airborne diesel and oil droplets
resistance to biologically active substances		
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request
• conformity 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)
resistance to chemically active substances		
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes	Yes
resistance to mechanically active substances		
• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1	Yes; Protection of the type 1
type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible	Yes; Coating discoloration during service life possible
product conformity of the coating 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
protection class IP	IP20	IP20

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS communication

SIPLUS NET CP 1543-1

Overview



ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●			●	●	●	●

The CP 1543-1 communications processor securely connects the SIMATIC S7-1500 PLC to Industrial Ethernet networks. By combining a variety of security features such as an SPI (Stateful Packet Inspection) firewall, VPN and data encryption protocols such as FTPS and SNMPv3, the communications processor protects individual S7-1500 stations or even entire automation cells against unauthorized access.

The CP can also be used for linking the S7-1500 station into an IPv6-based network. All functions are configured by means of STEP 7 Professional V12 (TIA Portal) or higher.

The CP 1543-1 supports the following communications services:

- PG/OP communication
- S7 communication
- Open user communication (SEND/RECEIVE, FETCH/WRITE)
- IT communication
 - FTP functions (File Transfer Protocol FTP/FTPS) for file management and access to data blocks in the CPU (client and server function)
 - Access (read and write modes) to csv files stored on the memory card of the CPU via FTP(S)
 - Sending emails via SMTP or ESMTP with "SMTP-Auth" for authentication on an email server (also with IPv6)
 - Static IP routing with up to 1 Mbps via IPv4 to other CP 1543-1/CM 1542-1 units in an S7-1500 system, e.g. for web server access without real-time capability
- Security Integrated
 - Stateful Packet Inspection Firewall
 - Secure communication via VPN (IPsec)
 - Network authentication according to IEEE 802.1X using the EAP methods MD5, TLS, PEAP, TTLS, MSCHAPv2 or PWD
- Protocols for secure communication
 - Secure access to the web server of the CPU via the HTTPS protocol
 - Secure file transfer using FTPS
 - Secure transfer of the time of day (NTP)
 - SNMPv3 for tap-proof transfer of network analysis information
 - Encrypted email communication via SMTPS (Port 587)
 - Secure open communication over TCP/IP
 - Connection to SINEMA Remote Connect via OpenVPN

- Integration of an S7-1500 into IPv6-based networks; An IPv6-compliant IP address can be used for the following communications services:
 - FETCH/WRITE access (CP as server)
 - FTP server mode
 - FTP client mode with addressing by program block
 - Email transfer with addressing by program block

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 NET CP 1543-1 communications processor

(Extended temperature range and exposure to environmental substances)

For connection of SIMATIC S7-1500 to Industrial Ethernet via TCP/IP, ISO and UDP and Security functions; 1 x RJ45 interface with 10/100/1000 Mbps; electronic manual on DVD

6AG1543-1AX00-2XE0

Accessories

See SIMATIC S7-1500, CP 1543-1 communications processor, page 5/305

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS communication

SIPLUS NET CP 1543-1

Technical specifications

Article number	6AG1543-1AX00-2XE0	Article number	6AG1543-1AX00-2XE0
Based on	6GK7543-1AX00-0XE0	Based on	6GK7543-1AX00-0XE0
product type designation	CP 1543-1	product type designation	CP 1543-1
ambient conditions			
ambient temperature		• conformity according to EN 60721-3-6	Yes
• for vertical installation during operation	-40 ... +40 °C	resistance to mechanically active substances	
• for horizontally arranged busbars during operation	-40 ... +70 °C	• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• during storage	-40 ... +70 °C		
• during transport	-40 ... +70 °C	• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
installation altitude at height above sea level maximum	5 000 m	coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
ambient condition relating to ambient temperature - air pressure - installation 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)	type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
relative humidity		type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation	product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets	protection class IP	IP20
resistance to biologically active substances			
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request		
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)		
resistance to chemically active substances			
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.		

SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

Front connectors

Overview



- Uniform, 40-pin front connector, suitable for SIMATIC S7-1500 I/O modules
- Versions for 25 mm wide or 35 mm wide modules
- With screw-type or push-in terminals
- Connectable core cross-sections: 0.25 mm² to 1.5 mm² (AWG 24 to 16)
- Front connector for 35 mm modules to be ordered separately; front connector for 25 mm modules included in scope of supply of modules

Design

- 40 terminals, arranged in two rows, numbered consecutively from 1 to 40
- Direct assignment of terminal to LED and labeling simplifies wiring, commissioning, and troubleshooting
- Holders for four potential bridges for simple and flexible creation of potential groups; four units are supplied with the front connector (optionally available as spare parts in packs of 20)
- Integrated shielding concept for analog modules and technology modules; allows space-saving installation without tools and ensures high ruggedness and EMC stability; components supplied with analog modules
- Cable ties for mechanical fixing of the cable bundle and for strain relief; 1 unit supplied with front connector

Ordering data

Article No.

Front connectors

SIMATIC S7-1500, front connector screw-type connection system

40-pin for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1AM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin, for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1BM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin for 25 mm wide modules and compact CPUs of the S7-1500, incl. cable tie

6ES7592-1BM00-0XA0

Accessories

SIMATIC S7-1500, spare part jumper links

For front connectors for 35 mm wide IO modules; can be used for all 24 V DC modules; 20 units per packing unit; Note: not suitable for 230 V, not suitable for analog modules

6ES7592-3AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-1500 and ET 200MP

Overview



With two cabling systems, SIMATIC TOP connect ensures efficient wiring of the input and output module of the SIMATIC S7-1500 (35 mm unit): Fully modular connection for fast and clearly arranged connecting to sensors and actuators in the field, and flexible connection for simple wiring inside the control cabinet.

With the TIA Selection Tool, you can select suitable system cabling for the individual I/O modules with a simple mouse click. Suitable components for the respective I/O module are always offered. These can be transferred to the order list and then ordered in the Industry Mall.

More information is available on the internet at

<http://www.siemens.com/tia-selection-tool>

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Design

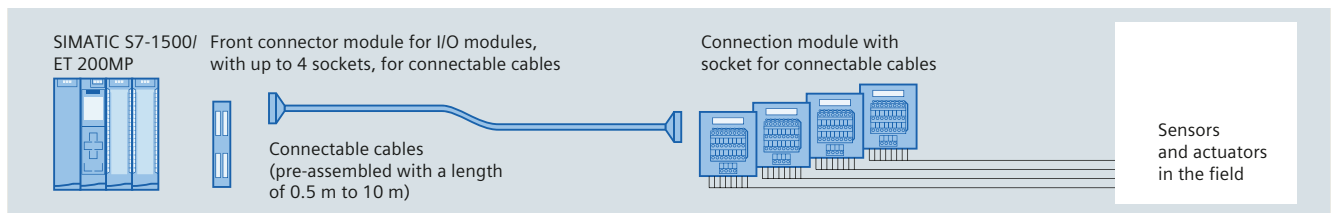
Two cabling variants are available for a wide range of control cabinet concepts:

Fully modular connection

The system consists of:

- Front connector module
- Connecting cable
- Connection modules in the following versions: Basic module, signal module and function module

Connection errors are thus practically excluded and installation overhead is significantly reduced. Systematic connection of the SIMATIC system. The assembly work for the connecting cables is drastically reduced thanks to the use of pre-assembled cables sold by the meter.



SIMATIC TOP connect for S7-1500/ET 200MP, fully modular connection

Flexible connection

Flexible connection with front connectors is available with 20 (Pin1 – 20) or 40 wired single cores.

These are available in lengths from 2.5 m to 10.0 m.

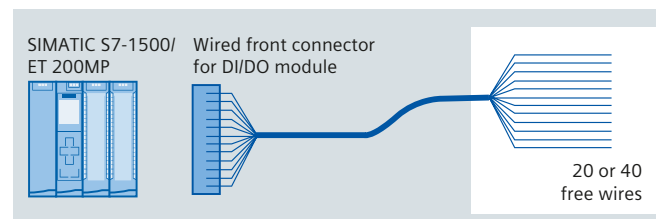
The single cores are available in different versions:

- Wire type H05V-K is used for industrial applications
- The UL/CSA-approved core is available for export to North America
- The halogen-free version is used where low smoke gas density in the event of fire is required, e.g. in building automation

The blue wires are numbered sequentially and can be routed direct to each element in the control cabinet. The numbering of the single cores corresponds to the coding of the front connector contacts.

In comparison to conventional single wiring, there is a cost saving of 50% for assembly, since the single cores that have already been checked on the connector are fixed.

Thus no complex pre-assembly of up to two times 20 single cores per module is necessary.



SIMATIC TOP connect for S7-1500/ET 200MP, flexible connection

SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-1500 and ET 200MP > Fully modular connection

Overview



The fully modular connection for connecting to the digital I/O modules of the SIMATIC S7-1500 or ET 200MP (35 mm design) consists of modified front connectors, called front connector modules, pre-assembled connecting cables of various lengths, and connection modules. Suitable components can be selected for the application in question and joined by means of simple plug-in connections. The connection modules are used instead of conventional terminal blocks and act as the interface to the sensors and actuators.

5

Benefits

- Front connector module, connecting cable and terminal module are easy to plug in
- Fast, low-cost wiring
- In the case of digital signals, the supply voltage can be connected to the front connector module or the connection module
- Reduction in wiring errors, clear control cabinet wiring
- Distribution of digital signals by byte or quadruple byte
- Each component can be replaced individually
- Use of pre-assembled cables possible

Design

Front connector module

Modified front connectors, called front connector modules, are available for connecting to the I/O modules (35 mm design). These are plugged into the I/O module to be wired instead of the front connector. The front connector modules are available in many different versions for digital I/O modules, analog I/O modules and for the 24 V, 2-ampère module. The connecting cables are plugged into these front connector modules.

Connecting cable

There are different versions of the connecting cable.

As a pre-assembled 16-pole or 50-pole round cable (shielded or unshielded) it is available in lengths up to 10 m.

When pre-assembled, there are one or two connectors in insulation displacement method (female ribbon connectors) at both ends of the cable.

The connecting cable connects the front connector module with the connection module.

As a pre-assembled round cable (unshielded) with a 40-pole plug on the side of the I/O module (64-channel) and a 50-pole plug for the connection to the connection module (4-byte version). The cable connectors are designed with the insulation displacement method.

Connection module

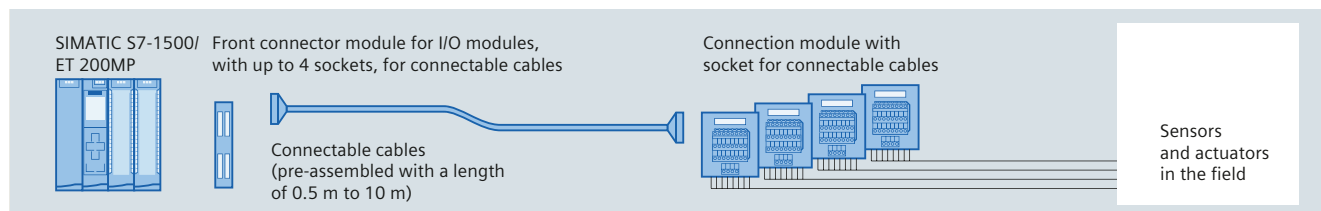
The system has both digital and analog connection modules for connecting the I/O signals. These are snapped onto the DIN rail. The connection modules with basic or signal functionality are available in 1-byte or 4-byte versions.

Connection modules are available for two different connection methods: with push-in or screw-type terminals. The potential can be fed in at the connection module or at the front connector module.

If other voltage or power levels are required in the field, the connection module for TPRo or TP0o output signals is used. For the TPRo connection module, relays are used for the implementation. For the TP0o connection module, optocouplers are used for the implementation. This converts the 24 V DC output signal simply and reliably to another voltage or power level. If 230 V AC or 110 V AC input signals have to be transmitted to the PLC in the field, a connection module with relay TPRi is available that simply converts the 230/110 V AC signal to 24 V DC. This means that there is always the same voltage level on the module side.

Use with optocouplers for the TPRo relay modules

If higher switching frequencies of the relay terminal module are required for the output signals, the relay can simply be replaced with an optocoupler (note technical specifications) in order to increase the switching frequency.



SIMATIC TOP connect for S7-1500/ET 200MP, fully modular connection

SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-1500 and ET 200MP > Fully modular connection

Ordering data

Article No.

Article No.

Front connectors¹⁾

Front connector module for digital modules for the connection of 16-pole connecting cables

Power supply via

- Push-in
- Screw terminals

6ES7921-5AH20-0AA0
6ES7921-5AB20-0AA0

Front connector module for digital modules for the connection of 50-pole connecting cables

Power supply via

- Push-in
- Screw terminals

6ES7921-5CH20-0AA0
6ES7921-5CB20-0AA0

Front connector module for 2 A digital output modules for the connection of 16-pole connecting cables

Power supply via

- Push-in
- Screw terminals

6ES7921-5AJ00-0AA0
6ES7921-5AD00-0AA0

Front connector module for analog modules for the connection of 16-pole connecting cables

6ES7921-5AK20-0AA0

Front connector module for analog modules for the connection of 50-pole connecting cables

6ES7921-5CK20-0AA0

¹⁾ The terminal assignment of these front connector modules is unique and the dimensional drawings are shown in the Equipment Manual of SIMATIC TOP connect for S7-1500 and ET 200MP. The equipment manual is available as a download from Customer Support with the following ID: 95924607.

Connecting cables

Connecting cables for SIMATIC S7-1500

Pre-assembled round cable

16-pin, 0.14 mm²

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-0BA50-0CB0
6ES7923-0BB00-0CB0
6ES7923-0BB50-0CB0
6ES7923-0BC00-0CB0
6ES7923-0BC50-0CB0
6ES7923-0BD00-0CB0
6ES7923-0BE00-0CB0
6ES7923-0BF00-0CB0
6ES7923-0BG50-0CB0
6ES7923-0BJ00-0CB0
6ES7923-0CB00-0CB0

Shielded

- 1.0 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-0BB00-0DB0
6ES7923-0BC00-0DB0
6ES7923-0BC50-0DB0
6ES7923-0BD00-0DB0
6ES7923-0BE00-0DB0
6ES7923-0BF00-0DB0
6ES7923-0BG50-0DB0
6ES7923-0BJ00-0DB0
6ES7923-0CB00-0DB0

Version 4 x 16 to 1 x 50-pin,
0.14 mm²

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-5BA50-0EB0
6ES7923-5BB00-0EB0
6ES7923-5BB50-0EB0
6ES7923-5BC00-0EB0
6ES7923-5BC50-0EB0
6ES7923-5BD00-0EB0
6ES7923-5BE00-0EB0
6ES7923-5BF00-0EB0
6ES7923-5BG50-0EB0
6ES7923-5BJ00-0EB0
6ES7923-5CB00-0EB0

Connecting cables for S7-1500

Pre-assembled round cable

50-pin, 0.14 mm²

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-5BA50-0CB0
6ES7923-5BB00-0CB0
6ES7923-5BB50-0CB0
6ES7923-5BC00-0CB0
6ES7923-5BC50-0CB0
6ES7923-5BD00-0CB0
6ES7923-5BE00-0CB0
6ES7923-5BF00-0CB0
6ES7923-5BG50-0CB0
6ES7923-5BJ00-0CB0
6ES7923-5CB00-0CB0

Shielded

- 1.0 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-5BB00-0DB0
6ES7923-5BC00-0DB0
6ES7923-5BC50-0DB0
6ES7923-5BD00-0DB0
6ES7923-5BE00-0DB0
6ES7923-5BF00-0DB0
6ES7923-5BG50-0DB0
6ES7923-5BJ00-0DB0
6ES7923-5CB00-0DB0

Version 1 x 40-pin to 1 x 50-pin,
0.14 mm²

Unshielded

- 1.0 m
- 2.0 m
- 2.5 m
- 3.0 m

6ES7923-5BB00-0GB0
6ES7923-5BC00-0GB0
6ES7923-5BC50-0GB0
6ES7923-5BD00-0GB0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-1500 and ET 200MP > Fully modular connection

Ordering data

Article No.

Article No.

Connection modules

Connection module TP1

For 1-wire connection,
for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0AA20-0AC0
6ES7924-0AA20-0AA0

For 1-wire connection,
for 50-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-2AA20-0AC0
6ES7924-2AA20-0AA0

- Push-in terminals with LEDs
- Screw-type terminals with LEDs
- Push-in terminals, sourcing input, with LEDs

6ES7924-2AA20-0BC0
6ES7924-2AA20-0BA0

- Push-in terminals, sourcing input, with LEDs
- Screw-type terminals, sourcing input, with LEDs

6ES7924-2AK20-0BC0

- Push-in terminals, mid-point conductor signal, with LEDs
- Screw-type terminals, mid-point conductor signal, with LEDs

6ES7924-2AM20-0BC0

6ES7924-2AM20-0BA0

Connection module TP3

For 3-wire connection,
for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs
- Push-in terminals with LEDs and one isolating terminal per channel
- Screw-type terminals with LEDs and one isolating terminal per channel
- Push-in terminals with LEDs and fuse per channel
- Screw-type terminals with LEDs and fuse per channel

6ES7924-0CA20-0AC0
6ES7924-0CA20-0AA0

6ES7924-0CA20-0BC0
6ES7924-0CA20-0BA0
6ES7924-0CH20-0BC0

6ES7924-0CH20-0BA0

6ES7924-0CL20-0BC0

6ES7924-0CL20-0BA0

For 3-wire connection,
for 50-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-2CA20-0AC0
6ES7924-2CA20-0AA0

6ES7924-2CA20-0BC0
6ES7924-2CA20-0BA0

Connection module TPPro

Relay module for 8 outputs,
relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BD20-0BC0
6ES7924-0BD20-0BA0

Connection module TPRI

Relay module for 8 inputs
(110 V AC), relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BG20-0BC0
6ES7924-0BG20-0BA0

Connection module TPRI

Relay module for 8 inputs
(230 V AC), relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BE20-0BC0
6ES7924-0BE20-0BA0

Connection module TPOo

Optocoupler module for 8 outputs
(max. 24 V DC/4 A)

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BF20-0BC0
6ES7924-0BF20-0BA0

Connection module for digital output modules 2 A

Connection module TP2

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-0BB20-0AC0
6ES7924-0BB20-0AA0

Connection module for analog modules

TPA connection module, 16-pin

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-0CC20-0AC0
6ES7924-0CC20-0AA0

TPA connection module, 50-pin

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-2CC20-0AC0
6ES7924-2CC20-0AA0

Accessories

Labeling strip

Labels for connection modules
(6ES7924-... 20-0..0),
PU = 340 units

3RT2900-1SB20

Shield plate

For connection module 8 bits;
Pck. unit = 4 units (for 15-pin
connecting cable connection)

6ES7928-1AA20-4AA0

For connection module
analog 32 bits;
Pck. unit = 4 units (for 15-pin
connecting cable connection)

6ES7928-1BA20-4AA0

Shield connection clamp

For shield plate at SIMATIC end
PU = 10 units

6ES7590-5BA00-0AA0

For shield plate at field end,
2 x 2 to 6 mm

6ES7390-5AB00-0AA0

For shield plate at field end,
3 to 8 mm

6ES7390-5BA00-0AA0

For shield plate at field end,
4 to 13 mm

6ES7390-5CA00-0AA0

Relay

For TPPO 24 V DC,
coil voltage 24 V DC,
output 230 V AC, Pck. unit = 4 units

6ES7928-3AA20-4AA0

For TPRI 110 V AC,
coil voltage 110 V AC,
Pck. unit = 4 units

6ES7928-3EA20-4AA0

For TPRI 230 V AC,
coil voltage 230 V AC,
Pck. unit = 4 units

6ES7928-3BA20-4AA0

Solid-state relay for TPPO

Excitation voltage 24 V DC,
output 230 V AC,
Pck. unit = 4 units

6ES7928-3CA20-4AA0

Excitation voltage 24 V DC,
output 60 V DC,
Pck. unit = 4 units

6ES7928-3DA20-4AA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-1500 and ET 200MP > Fully modular connection

Ordering data

Article No.

Article No.

Housing cover for connection module

TP1 8 bits, Pck. unit = 4 units

6ES7928-5AA20-4AA0

TP2 / TP3 / TPA 8 bits, Pck. unit = 4 units

6ES7928-5BA20-4AA0

TP3 32 bits, Pck. unit = 4 units

6ES7928-5CA20-4AA0

TP1 32 bits / TP3 switch / TPRO 8 bits, Pck. unit = 4 units

6ES7928-5DA20-4AA0

TPA 32 bits / TP3 fuse / TPRI / TPOO 8 bits, Pck. unit = 4 units

6ES7928-5EA20-4AA0

Fuses

0.6 A, Pck. unit = 10 units

6ES7928-6AA20-0AA0

Technical specifications Front connector modules

Rated operating voltage	24 V DC	Permissible ambient temperature	0 to +60 °C
Max. permissible operating voltage	60 V DC	Test voltage	0.5 kV, 50 Hz, 60 sec.
Max. permissible continuous current • per connector pin	1 A	Clearance and creepage distances	IEC 664 (1980), IEC 664 A (1981), in accordance with DIN VDE 0110 (01.89), overvoltage class II, pollution degree 2
Max. permissible total current	2 A/byte		

Wiring rules for the front connector modules

SIMATIC TOP connect front connector module, connection for potential infeed

	Push-in	Screw terminals
	Modules up to 4 connections	
Connectable cable cross-sections		
• Solid conductors	No	
• Flexible cables with/without wire end ferrule	0.25 to 1.5 mm ²	
Number of cables per connection	1 or a combination of 2 wires up to 1.5 mm ² (total) in a common wire end ferrule	
Max. diameter of the cable insulation	3.1 mm	
Stripped length of the cables		
• Without insulating collar	6 mm	
• With insulating collar	-	
Wire end ferrules according to DIN 46228		
• Without insulating collar	Form A; 5 to 7 mm long	
• With insulating collar 0.25 to 1.0 mm ²	-	
• With insulating collar 1.5 mm ²	-	
Blade width of the screwdriver	3.5 mm (cylindrical design)	
Tightening torque for connecting the cables	0.4 Nm to 0.7 Nm	

Technical specifications Connecting cable

Technical specifications of connecting cable from SIMATIC S7 to connection module

Operating voltage	60 V DC
Continuous current per signal conductor	1 A
Max. total current	4 A/byte
Operating temperature	0 to +60 °C
Outer diameter of pre-assembled round cable in mm unshielded/shielded (16-pole)	Approx. 6.5/7.0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-1500 and ET 200MP > Flexible connection

Overview



Flexible connection of the cabling system consists of a S7-1500 front connector which has the 20 or 40 single cores already in place and which directly connects the I/O modules (35 mm design) with the sensors and actuators inside the control cabinet. With a cross-section of 0.5 square mm, the single wires are also suitable for higher currents and are available in different lengths and versions: as H05V-K cores (PVC insulation), H05Z-K (halogen-free insulation) or with UL/CSA certified cores. The halogen-free version has a low smoke gas density in the event of a fire and is thus particularly well suited for use in buildings.

Ordering data

Article No.

Front connector with single cores for 32 channels (pins 1-40)

Core type H05V-K (0.5 mm² with screw connection)

- 2.5 m
- 3.2 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7922-5BC50-0AC0
6ES7922-5BD20-0AC0
6ES7922-5BF00-0AC0
6ES7922-5BG50-0AC0
6ES7922-5BJ00-0AC0
6ES7922-5CB00-0AC0

Core type H05Z-K, halogen-free (0.5 mm² with screw connection)

- 2.5 m
- 3.2 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7922-5BC50-0HC0
6ES7922-5BD20-0HC0
6ES7922-5BF00-0HC0
6ES7922-5BG50-0HC0
6ES7922-5BJ00-0HC0
6ES7922-5CB00-0HC0

Core type UL/CSA-certified (0.5 mm² with screw connection)

- 3.2 m
- 5.0 m
- 6.5 m

6ES7922-5BD20-0UC0
6ES7922-5BF00-0UC0
6ES7922-5BG50-0UC0

Front connector with single cores for 16 channels (pins 1-20)

Core type H05V-K (0.5 mm² with screw connection)

- 2.5 m
- 3.2 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7922-5BC50-0AB0
6ES7922-5BD20-0AB0
6ES7922-5BF00-0AB0
6ES7922-5BG50-0AB0
6ES7922-5BJ00-0AB0
6ES7922-5CB00-0AB0

Core type H05Z-K, halogen-free (0.5 mm² with screw connection)

- 2.5 m
- 3.2 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7922-5BC50-0HB0
6ES7922-5BD20-0HB0
6ES7922-5BF00-0HB0
6ES7922-5BG50-0HB0
6ES7922-5BJ00-0HB0
6ES7922-5CB00-0HB0

Core type UL/CSA-certified (0.5 mm² with screw connection)

- 3.2 m
- 5.0 m
- 6.5 m

6ES7922-5BD20-0UB0
6ES7922-5BF00-0UB0
6ES7922-5BG50-0UB0

Technical specifications

Front connector with single cores for 16 channels (pins 1-20)

Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all cores, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Core type	H05V-K, UL 1007/1569; CSA TR64, or halogen-free
Number of single cores	20
Core cross-section	0.5 mm ² ; Cu
Bundle diameter in mm	approx. 15
Wire color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 20 (front connector contact = core number)
Assembly	Screw contacts

Front connector with single cores for 32 channels (pins 1-40)

Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all cores, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Core type	H05V-K, UL 1007/1569; CSA TR64, or halogen-free
Number of single cores	40
Core cross-section	0.5 mm ² ; Cu
Bundle diameter in mm	approx. 17
Wire color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 40 (front connector contact = core number)
Assembly	Screw contacts

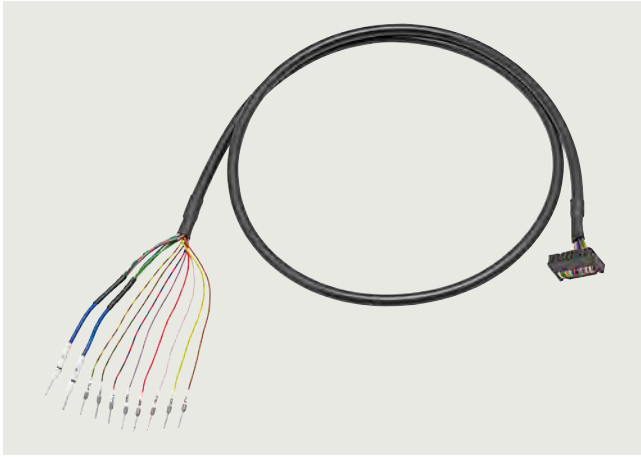
SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-1500 IO (25 mm), ET 200SP, S7-1200 and LOGO!

Overview



SIMATIC TOP connect universal connecting cable

The wiring of the

- SIMATIC S7-1500 IO (25 mm)
- SIMATIC ET 200SP
- SIMATIC S7-1200
- LOGO!

with the sensors/actuators is a significant factor with respect to time/cost overhead during configuration, control cabinet design, procurement and ease of servicing. The SIMATIC TOP connect system cabling makes connection easy, fast and secure.

5

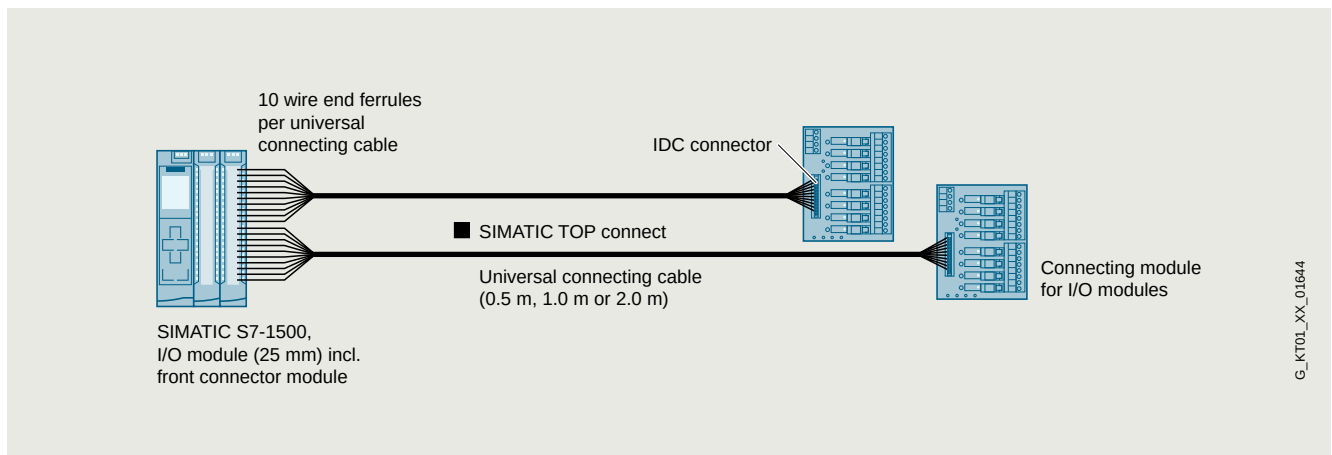
Design

The unshielded universal connection cable is offered for a wide range of control cabinet concepts.

It comprises:

- 16-pin round cable with a core cross-section of 0.14 mm², pre-assembled with wire end ferrules for connection to the controller:
 - Labeled with "0" ... "7" for the control inputs/outputs
 - Labeled with "M" for mass
 - Labeled with "L+" for 24 V DC potential

- 16-pin ID (insulation displacement) connector for connection to the SIMATIC TOP connect connection modules for 8 I/Os:
 - 3-wire connection using the appropriate connection module for quick, error-free wiring
 - Galvanic isolation and adaptation using a coupling relay for easy implementation of potential groups in the system
 - High output current (up to 4 A), even for higher switching frequencies, using an optocoupler module (overload and short-circuit proof)
 - Implementation of isolating terminals using switch modules enabling individual signals to be measured
 - Channel-wise protection of I/Os using a fuse module with a thermal fuse



SIMATIC TOP connect universal connection cable

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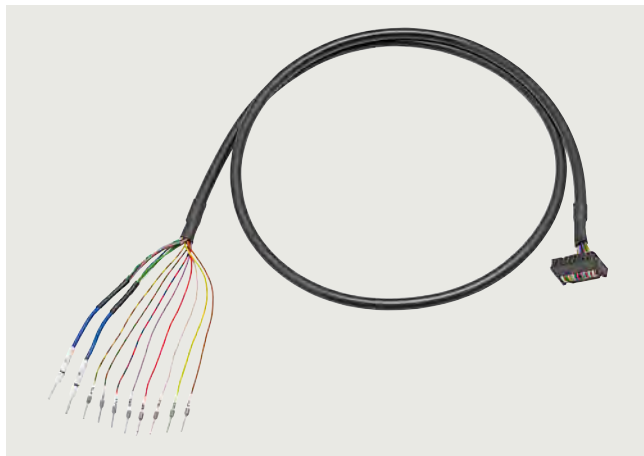
SIMATIC S7-1500 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-1500 IO (25 mm), ET 200SP, S7-1200 and LOGO!

Overview Universal connecting cable



SIMATIC TOP connect universal connecting cable

The universal connecting cable constitutes the link between the standard connection of the SIMATIC S7-1500 IO (25 mm), SIMATIC ET 200SP, SIMATIC S7-1200 or LOGO! and the SIMATIC TOP connect terminal module. It transmits 8 signals and the supply voltage. The connecting cable is available in lengths of 0.5 m / 1.0 m / 2.0 m. the maximum technically feasible length is 30 m.

Ordering data

Article No.

**Universal connecting cables for
SIMATIC S7-1500 IO (25 mm),
SIMATIC ET 200SP,
SIMATIC S7-1200 and LOGO!**

16 x 0.14 mm² unshielded

- 0.5 m
- 1.0 m
- 2.0 m

6ES7923-0BA50-0FB0
6ES7923-0BB00-0FB0
6ES7923-0BC00-0FB0

Overview Connection modules

The connection modules are used instead of conventional terminal blocks and act as the interface between the PLC and signals from the field. All digital modules with 8 I/Os can be used.

Ordering data

Article No.

TP1 connection module

For 1-conductor connection,
for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0AA20-0AC0
6ES7924-0AA20-0AA0
6ES7924-0AA20-0BC0
6ES7924-0AA20-0BA0

TP3 connection module

For 3-conductor connection,
for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs
- Push-in terminals with LEDs and one isolating terminal per channel
- Screw-type terminals with LEDs and one isolating terminal per channel
- Push-in terminals with LEDs and fuse per channel
- Screw-type terminals with LEDs and fuse per channel

6ES7924-0CA20-0AC0
6ES7924-0CA20-0AA0
6ES7924-0CA20-0BC0
6ES7924-0CA20-0BA0
6ES7924-0CH20-0BC0
6ES7924-0CH20-0BA0
6ES7924-0CL20-0BC0
6ES7924-0CL20-0BA0

TPRo connection module

Relay module for 8 outputs,
relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BD20-0BC0
6ES7924-0BD20-0BA0

TPRi connection module

Relay module for 8 inputs
(230 V AC), relay as normally
open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BE20-0BC0
6ES7924-0BE20-0BA0

TPRi connection module

Relay module for 8 inputs
(110 V AC), relay as normally
open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BG20-0BC0
6ES7924-0BG20-0BA0

TPOo connection module

Optocoupler module for 8 outputs
(max. 24 V DC/4 A)

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BF20-0BC0
6ES7924-0BF20-0BA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Digital F-input modules

Overview



Fail-safe digital input module:
F-DI 16x24VDC PROFISAFE

Important features:

- 16-channel fail-safe digital input module for ET 200MP/S7-1500
- For fail-safe reading of sensor information (1 or 2 channels)
- Provides integral discrepancy evaluation for 2-out-of-2 signals
- 4 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- LED display for error, operation, supply voltage and status
- Clear module labeling
 - Plain text identification of the module type
 - Complete Article No.
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Hardware and firmware version
- Optional labeling accessories
 - Labeling sheets, yellow
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7-1500 F-CPU's in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPU's.

Ordering data

Article No.

F-digital input module

SIMATIC S7-1500, F-digital input module
F-DI 16x 24 V DC PROFIsafe;
35 mm width; up to PLe
(ISO 13849-1)/ SIL 3 (IEC 61508)

6ES7526-1BH00-0AB0

Accessories

SIMATIC DP, spare part 5 e-coding elements type F
For ET 200MP modules F-DI, F-AI, F-DQ; 5 units per packing unit

6ES7592-6EF00-1AA0

Front connectors

SIMATIC S7-1500, front connector screw-type connection system
40-pin for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1AM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin, for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1BM00-0XB0

SIMATIC S7-1500, labeling sheets
For 35 mm width S7-1500 modules, color: yellow, material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules

6ES7592-2CX00-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus
5 units per packing unit

6ES7590-0AA00-0AA0

Front door for F-I/O modules

SIMATIC S7-1500, spare part front door for F-I/O modules
Consisting of: * front door (unlasered), * labeling strips (front, yellow for F-modules), * cabling diagram
5 units per packing unit

6ES7528-0AA10-7AA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Digital F-input modules

Ordering data

Article No.

Article No.

STEP 7 Safety Advanced V20

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 V20

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.

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive

Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F
Content: 1x USB

6ES7833-1FA24-0YA5

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key for download¹⁾

Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery

6ES7833-1FA24-0YH5

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

SIMATIC S7, F-programming tool S7 Distributed Safety V5.4, floating license for 1 user, engineering software, software and documentation on DVD

Class A, 3 languages (en, de, fr), runs on Windows 7 SP1, Windows 10 Professional, Windows 10 Enterprise, Windows Server 2008 R2 SP1, Windows Server 2012 R2, Windows Server 2016; 64-bit operating system required; from STEP 7 V5.5 SP1; reference hardware S7-300F/400F/WinAC F

6ES7833-1FC02-0YA5

SIMATIC S7, F-programming tool S7 Distributed Safety V5.4, floating license for 1 user, software, documentation and license key for downloading¹⁾

Class A, 3 languages (en, de, fr), runs on Windows 7 SP1, Windows 10 Professional, Windows 10 Enterprise, Windows Server 2008 R2 SP1, Windows Server 2012 R2, Windows Server 2016; 64-bit operating system required; from STEP 7 V5.5 SP1; reference hardware S7-300F/400F/WinAC F
Consignee email address required for delivery

6ES7833-1FC02-0YH5

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Digital F-input modules

Technical specifications

Article number	6ES7526-1BH00-0AB0 ET 200MP, F-DI 16X24VDC
General information	
Product type designation	F-DI 16x24VDC
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 with HSP 0086
Operating mode	
• DI	Yes
• MSI	No
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	4
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 1.8 A)
24 V encoder supply	
• 24 V	Yes; min. L+ (-1.5 V)
• Short-circuit protection	Yes
• Output current, max.	300 mA; Max. 100 mA when mounted vertically
Digital inputs	
Number of digital inputs	16
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

Article number	6ES7526-1BH00-0AB0 ET 200MP, F-DI 16X24VDC
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	No
• Short-circuit	Yes
• Group error	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; red 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.	40 °C
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	280 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Digital F-output modules

Overview



Digital fail-safe output module:
F-DQ 8x24VDC 2A PPM PROFISAFE

Important features:

- 8-channel digital fail-safe output module for ET 200MP/S7-1500
- Fail-safe 2-channel activation (parameterizable PM/PP switching) of actuators
- Actuators can be controlled up to 2 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- LED display for error, operation, supply voltage and status
- Clear module labeling
 - Plain text identification of the module type
 - Complete Article No.
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Hardware and firmware version
- Optional labeling accessories
 - Labeling sheets, yellow
- The module supports PROFIsafe in both PROFIBUS and PROFINET configurations.
- Can be used with all fail-safe SIMATIC S7-1500 F-CPU's in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPU's.

Ordering data

Article No.

F-digital output module

SIMATIC S7-1500, F-digital output module

F-DQ 8x 24 V DC 2 A PPM
PROFIsafe; 35 mm width; up to PL e
(ISO 13849-1)/ SIL3 (IEC 61508)

6ES7526-2BF00-0AB0

Accessories

SIMATIC DP, spare part 5 e-coding elements type F

For ET 200MP modules F-DI, F-AI, F-DQ; 5 units per packing unit

6ES7592-6EF00-1AA0

Front connectors

SIMATIC S7-1500, front connector screw-type connection system

40-pin for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1AM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin, for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1BM00-0XB0

SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules

Color: yellow, material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules

6ES7592-2CX00-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus 5 units per packing unit

6ES7590-0AA00-0AA0

Front door for F-I/O modules

SIMATIC S7-1500, spare part front door for F-I/O modules

Consisting of: * front door (unlabeled), * labeling strips (front, yellow for F-modules), * cabling diagram 5 units per packing unit

6ES7528-0AA10-7AA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Digital F-output modules

Ordering data	Article No.	Article No.
STEP 7 Safety Advanced V20 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 V20 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.		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
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F Content: 1x USB	6ES7833-1FA24-0YA5	SIMATIC S7, F-programming tool S7 Distributed Safety V5.4, floating license for 1 user, engineering software, software and documentation on DVD Class A, 3 languages (en, de, fr), runs on Windows 7 SP1, Windows 10 Professional, Windows 10 Enterprise, Windows Server 2008 R2 SP1, Windows Server 2012 R2, Windows Server 2016; 64-bit operating system required; from STEP 7 V5.5 SP1; reference hardware S7-300F/400F/WinAC F
SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾ Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery	6ES7833-1FA24-0YH5	SIMATIC S7, F-programming tool S7 Distributed Safety V5.4, floating license for 1 user, software, documentation and license key for downloading Class A, 3 languages (en, de, fr), runs on Windows 7 SP1, Windows 10 Professional, Windows 10 Enterprise, Windows Server 2008 R2 SP1, Windows Server 2012 R2, Windows Server 2016; 64-bit operating system required; from STEP 7 V5.5 SP1; reference hardware S7-300F/400F/WinAC F Consignee email address required for delivery

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Digital F-output modules

Technical specifications

Article number	6ES7526-2BF00-0AB0 ET 200MP, F-DQ 8x24VDC 2A PPM
General information	
Product type designation	F-DQ 8x24VDC/2A PPM
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13 SP1 with HSP 0086
Operating mode	
• DQ	Yes
• MSO	No
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Digital outputs	
Number of digital outputs	8
Current-sinking	Yes
Current-sourcing	Yes
Short-circuit protection	Yes
Open-circuit detection	Yes
Overload protection	Yes
Limitation of inductive shutdown voltage to	PM-switching: -24 V + (-47 V), PP-switching: -24 V
Controlling a digital input	Yes; digital output, according to IEC 61131-2, type 2
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	10 W
Load resistance range	
• lower limit	12 Ω
• upper limit	2 000 Ω
Output voltage	
• for signal "1", min.	24 V; L+ (-0.5 V)
Output current	
• for signal "1" rated value	2 A
• for signal "0" residual current, max.	0.5 mA; Current-sourcing, or current sourcing and sinking switches individually, current sinking: max. 1 mA
Switching frequency	
• with resistive load, max.	30 Hz
• with inductive load, max.	0.1 Hz
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per channel, max.	2 A
Total current of the outputs (per module)	
horizontal installation	
- up to 40 °C, max.	16 A
- up to 60 °C, max.	8 A
vertical installation	
- up to 40 °C, max.	8 A

Article number	6ES7526-2BF00-0AB0 ET 200MP, F-DQ 8x24VDC 2A PPM
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; red 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.	40 °C
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	300 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Analog F-input modules

Overview



Analog fail-safe input module:
F-AI 8xI 0(4)..20 mA

Important features:

- 8-channel analog fail-safe input module for ET 200MP/S7-1500
- Max. achievable safety classes: SIL3 (acc. to IEC 61508) and PLe (acc. to ISO 13849-1)
- Measurement type current, can be set for each channel:
 - 0 - 20 mA
 - 4 - 20 mA
- Interference frequency suppression: 50/60 Hz
- 8 analog inputs can be used as:
 - 8 channels - 1 of 1 (SIL3/Cat.3/PLd) or
 - Up to 4 channels - 1 of 2 (SIL3/Cat.4/PLe)
- Galvanic isolation:
 - To the backplane bus
 - Analog inputs in 2 groups of 4 channels
 - Between channels and power supply
- Resolution 16-bit including sign
- External encoder supply possible
- Internal short-circuit-proof encoder supply per channel
- Channel-wide and module-wide passivation
- HART communication
- Module width 35 mm
- LED display for error, operation, supply voltage and status
- Clear module labeling
 - Plain text identification of the module type
 - Complete Article No.
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Hardware and firmware version
- Optional labeling accessories
 - Labeling sheets, yellow
 - The module supports PROFIsafe in both PROFIBUS and PROFINET configurations.
 - Can be used with all fail-safe SIMATIC S7-1500 F-CPU's in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPU's.

Ordering data

Article No.

F-analog input module

SIMATIC S7-1500, F-analog input module
F-AI 8xI 0(4)..20 mA PROFIsafe, 35 mm, width; up to PLe (ISO 13849-1)/ SIL 3 (IEC 61508)

6ES7536-1MF00-0AB0

Accessories

SIMATIC DP, spare part 5 e-coding elements type F
For ET 200MP modules F-DI, F-AI, F-DQ; 5 units per packing unit

6ES7592-6EF00-1AA0

Front connectors

Incl. four potential bridges, cable ties and individual labeling strips, 40-pin

SIMATIC S7-1500, front connector screw-type connection system

40-pin for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1AM00-0XB0

SIMATIC S7-1500, front connector with push-in technology

40-pin, for 35 mm wide modules including 4 jumper links and cable ties

6ES7592-1BM00-0XB0

SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules

Color: yellow, material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules

6ES7592-2CX00-0AA0

SIMATIC S7-1500, spare part U-type connector for connecting I/O modules

Self-assembling backplane bus 5 units per packing unit

6ES7590-0AA00-0AA0

Front door for F-I/O modules

SIMATIC S7-1500, spare part front door for F-I/O modules

Consisting of: * front door (unlasered), * labeling strips (front, yellow for F-modules)
* Cabling diagram
5 units per packing unit

6ES7528-0AA10-7AA0

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Analog F-input modules

Ordering data

Article No.

Article No.

STEP 7 Safety Advanced V20

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 V20

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.

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software; floating license for 1 user; license key on USB flash drive

Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F
Content: 1x USB

6ES7833-1FA24-0YA5

SIMATIC S7, F-programming tool; STEP 7 Safety Advanced V20; engineering software, floating license for 1 user; license key for download¹⁾

Class A, 2 languages (en, de); runs with TIA Portal V20 STEP 7 Professional V20; for configuring SIMATIC S7-1200F/1500F, SIMATIC S7-1500F SW Controller, SIMATIC S7-300F/400F/WinAC F; Consignee email address required for delivery

6ES7833-1FA24-0YH5

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

SIMATIC S7, F-programming tool S7 Distributed Safety V5.4, floating license for 1 user, engineering software, software and documentation on DVD

Class A, 3 languages (en, de, fr), runs on Windows 7 SP1, Windows 10 Professional, Windows 10 Enterprise, Windows Server 2008 R2 SP1, Windows Server 2012 R2, Windows Server 2016; 64-bit operating system required; from STEP 7 V5.5 SP1; reference hardware S7-300F/400F/WinAC F

6ES7833-1FC02-0YA5

SIMATIC S7, F-programming tool S7 Distributed Safety V5.4, floating license for 1 user, software, documentation and license key for downloading

Class A, 3 languages (en, de, fr), runs on Windows 7 SP1, Windows 10 Professional, Windows 10 Enterprise, Windows Server 2008 R2 SP1, Windows Server 2012 R2, Windows Server 2016; 64-bit operating system required; from STEP 7 V5.5 SP1; reference hardware S7-300F/400F/WinAC F
Consignee email address required for delivery

6ES7833-1FC02-0YH5

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-1500 Advanced Controllers

I/O modules

Fail-safe I/O modules

Analog F-input modules

Technical specifications

Article number	6ES7536-1MF00-0AB0 ET 200MP, F-AI 8xI 0(4)..20mA
General information	
Product type designation	F-AI 8xI 0(4) ... 20 mA
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V18 with HSP0394 (FW V1.0) / V19 with HSP0451 (FW V2.0)
Operating mode	
• MSI	Yes; firmware V2.0 or higher
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	8
Analog inputs	
Number of analog inputs	8
permissible input current for current input (destruction limit), max.	35 mA
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Cable length	
• shielded, max.	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
• Integration time, parameterizable	Yes
• Integration time (ms)	20 / 16,667
• Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
Smoothing of measured values	
• Number of smoothing levels	7
• parameterizable	Yes
Encoder	
Connection of signal encoders	
• for current measurement as 2-wire transducer	Yes
- Burden of 2-wire transmitter, max.	650 Ω
• for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
• Current, relative to input range, (+/-)	0.05 %; without HART communication
Influence of a HART signal modulated on the input signal in relation to input range	
• error occurred at interference frequency suppression: 60 Hz	0.12 %
• error occurred at interference frequency suppression: 50 Hz	0.12 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, $f1 =$ interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB
• Common mode voltage, max.	60 V DC/30 V AC
• Common mode interference, min.	70 dB

Article number	6ES7536-1MF00-0AB0 ET 200MP, F-AI 8xI 0(4)..20mA
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Limit value alarm	No
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Overflow/underflow	Yes
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
Potential separation	
Potential separation analog inputs	
• between the channels and backplane bus	Yes
Standards, approvals, certificates	
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 SIL3	< 4.00E-05
- 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.	40 °C
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	290 g

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS F-digital/analog modules

SIPLUS digital F-input modules**Overview**

SIPLUS digital fail-safe input module:
F-DI 16x24 V DC

Important properties:

- 16-channel fail-safe digital input module for ET 200MP/S7-1500
- For fail-safe reading of sensor information (1 or 2 channels)
- Provides integral discrepancy evaluation for 2-out-of-2 signals
- 4 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- LED display for error, operation, supply voltage and status
- Clear module labeling
 - Plain text identification of the module type
 - Complete Article No.
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Hardware and firmware version
- Optional labeling accessories
 - Labeling sheets, yellow
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7-1500 F-CPU's in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPU's.

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.

Technical specifications

Article number	6AG1526-1BH00-2AB0
Based on	6ES7526-1BH00-0AB0 SIPLUS S7-1500 F-DI 16x24VDC
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax
• vertical installation, min.	-30 °C; = Tmin
• vertical installation, max.	40 °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
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, *
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; *
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

Ordering data**Article No.****SIPLUS F-digital input module**

16 inputs, 24 V DC, PROFISAFE

6AG1526-1BH00-2AB0**Accessories****Coding elements**

E-coding element type F for SIPLUS ET 200MP modules F-DI/F-DQ; 5 units, spare part

6AG1592-6EF00-2AA0**SIPLUS S7-1500 U connector**

Spare part for connecting I/O modules; self-assembling backplane bus; 5 pieces per packaging unit; with conformal coating, -40...+70 °C

6AG1590-0AA00-7AA0**Other accessories**

See SIMATIC S7-1500 F-digital input modules, page 5/344

SIMATIC S7-1500 Advanced Controllers

I/O modules

SIPLUS F-digital/analog modules

SIPLUS digital F-output modules

Overview



SIPLUS digital fail-safe output module:
F-DQ 8x24 V DC 2 A PPM

Important properties:

- 8-channel digital fail-safe output module for ET 200MP/S7-1500
- Fail-safe 2-channel activation (parameterizable PM/PP switching) of actuators
- Actuators can be controlled up to 2 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- LED display for error, operation, supply voltage and status
- Clear module labeling
 - Plain text identification of the module type
 - Complete Article No.
 - 2D matrix code (article and serial number)
 - Connection diagram
 - Hardware and firmware version
- Optional labeling accessories
 - Labeling sheets, yellow
- The module supports PROFIsafe in both PROFIBUS and PROFINET configurations.
- Can be used with all fail-safe SIMATIC S7-1500 F-CPU's in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPU's.

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.

Technical specifications

Article number	6AG1526-2BF00-2AB0
Based on	6ES7526-2BF00-0AB0 SIPLUS S7-1500 F-DQ 8x24VDC/2A
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax
• vertical installation, min.	-30 °C; = Tmin
• vertical installation, max.	40 °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
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, *
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; *
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

Ordering data

Article No.

SIPLUS F-digital output module

8 outputs, 24 V DC, 2 A, PROFISAFE, switching to sourcing/sinking output

6AG1526-2BF00-2AB0

Accessories

Coding elements

E-coding element type F for SIPLUS ET 200MP modules F-DI/F-DQ; 5 units, spare part

6AG1592-6EF00-2AA0

SIPLUS S7-1500 U connector

Spare part for connecting I/O modules; self-assembling backplane bus; 5 pieces per packaging unit; with conformal coating, -40...+70 °C

6AG1590-0AA00-7AA0

Other accessories

See SIMATIC S7-1500, F-digital output modules, page 5/347

SIMATIC S7-1500 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-1500 and ET 200MP)

Overview



The design and functionality of the SIMATIC PM 1507 single-phase load power supply (PM = power module) with automatic range selection of the input voltage makes it an optimal match to the SIMATIC S7-1500 PLC. It supplies the S7-1500 system components such as CPU, system power supply (PS), I/O circuits of the input and output modules and, if necessary, the sensors and actuators with 24 V DC.

Ordering data

Article No.

SIMATIC PM 1507

Stabilized power supply
for SIMATIC S7-1500
Input: 120/230 V AC
Output: 24 V DC/3 A

6EP1332-4BA00

SIMATIC PM 1507

Stabilized power supply
for SIMATIC S7-1500
Input: 120/230 V AC
Output: 24 V DC/8 A

6EP1333-4BA00

Accessories

Power plug

With coding element for power
supply module; spare part,
10 units per packing unit

6ES7590-8AA00-0AA0

DIN rail adapter

For adapting S7-1500 mounting
rails on low or flat DIN rails,
as pre-assembled in control
cabinets and terminal boxes,
for example. An adapter
must be placed every 25 cm.
Including mounting hardware.
10 units per packing unit

6ES7590-6AA00-0AA0

Technical specifications

Article number	6EP1332-4BA00	6EP1333-4BA00
product brand name	S7-1500 PM1507	S7-1500 PM1507
type of current supply	24 V/3 A	24 V/8 A
input		
type of the power supply network	1-phase AC	1-phase AC
supply voltage at AC	Automatic range selection	Automatic range selection
supply voltage	120 V/230 V	120 V/230 V
input voltage 1 at AC	85 ... 132 V	85 ... 132 V
input voltage 2 at AC	170 ... 264 V	170 ... 264 V
wide range input	No	No
overvoltage overload capability	2.3 × Vin rated, 1.3 ms	2.3 × Vin rated, 1.3 ms
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 Vin = 93/187 V	at Vin = 93/187 V
line frequency	50 Hz/60 Hz	50 Hz/60 Hz
line frequency	45 ... 65 Hz	45 ... 65 Hz
input current		
• at rated input voltage 120 V	1.4 A	3.7 A
• at rated input voltage 230 V	0.8 A	1.7 A
current limitation of inrush current at 25 °C maximum	23 A	62 A
duration of inrush current limiting at 25 °C		
• maximum	3 ms	3 ms
I _{2t} value maximum	1.3 A ² s	12 A ² s
fuse protection type	T 3, 15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
fuse protection type in the feeder	Recommended miniature circuit breaker: 16 A characteristic B or 6 A characteristic C	Recommended miniature circuit breaker: 16 A characteristic B or 10 A characteristic C

SIMATIC S7-1500 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-1500 and ET 200MP)

Technical specifications

Article number	6EP1332-4BA00	6EP1333-4BA00
product brand name	S7-1500 PM1507	S7-1500 PM1507
type of current supply	24 V/3 A	24 V/8 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
	24 V	24 V
output voltage adjustable	No	No
relative overall tolerance of the voltage	1 %	1 %
relative control precision of the output voltage		
• on slow fluctuation of input voltage	0.1 %	0.1 %
• on slow fluctuation of ohm loading	0.1 %	0.1 %
residual ripple		
• maximum	50 mV	50 mV
voltage peak		
• maximum	150 mV	150 mV
display version for normal operation	LED green for 24 V OK; LED red for error; LED yellow for stand-by	LED green for 24 V OK; LED red for error; LED yellow for stand-by
behavior of the output voltage when switching on	No overshoot of Vout (soft start)	No overshoot of Vout (soft start)
response delay maximum	1.5 s	1.5 s
voltage increase time of the output voltage		
• typical	10 ms	10 ms
output current		
• rated value	3 A	8 A
• rated range	0 ... 3 A	0 ... 8 A
	2.6 ... 4.9 A	5.1 ... 9.9 A
supplied active power typical	72 W	192 W
short-term overload current		
• on short-circuiting during the start-up typical	12 A	35 A
• at short-circuit during operation typical	12 A	35 A
duration of overloading capability for excess current		
• on short-circuiting during the start-up	70 ms	70 ms
• at short-circuit during operation	70 ms	70 ms
bridging of equipment	Yes	Yes
number of parallel-switched equipment resources	2	2
efficiency		
efficiency in percent	87 %	90 %
power loss [W]		
• at rated output voltage for rated value of the output current typical	11 W	21 W
closed-loop control		
relative control precision of the output voltage with rapid fluctuation of the input voltage by +/- 15% typical	0.1 %	0.1 %
relative control precision of the output voltage load step of resistive load 50/100/50 % typical	1 %	2 %
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	5 ms	5 ms
• load step 90 to 10% typical	5 ms	5 ms
• maximum	5 ms	5 ms

SIMATIC S7-1500 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-1500 and ET 200MP)

Technical specifications

Article number	6EP1332-4BA00	6EP1333-4BA00
product brand name	S7-1500 PM1507	S7-1500 PM1507
type of current supply	24 V/3 A	24 V/8 A
protection and monitoring		
design of the overvoltage protection	Additional control loop, limitation (closed loop control) at < 28.8 V	Additional control loop, limitation (closed loop control) at < 28.8 V
property of the output short-circuit proof	Yes	Yes
design of short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
response value current limitation	3.15 ... 3.6 A	8.4 ... 9.6 A
• typical	3.4 A	9 A
safety		
galvanic isolation between input and output	Yes	Yes
galvanic isolation	Safety extra-low output voltage Vout acc. to EN 60950-1 and EN 50178 and EN 61131-2	Safety extra-low output voltage Vout acc. to EN 60950-1 and EN 50178 and EN 61131-2
operating resource protection class	Class I	Class I
leakage current		
• maximum	3.5 mA	3.5 mA
• typical	0.4 mA	1.3 mA
protection class IP	IP20	IP20
EMC		
standard		
• for emitted interference	EN 55022 Class B	EN 55022 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
standards, specifications, approvals		
certificate of suitability		
• CE marking	Yes	Yes
• UL approval	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
• CSA approval	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
• UKCA marking	Yes	Yes
• EAC approval	Yes	Yes
• Regulatory Compliance Mark (RCM)	Yes	Yes
• NEC Class 2	No	No
type of certification		
• BIS	Yes; R-41183539	Yes; R-41183539
• CB-certificate	Yes	Yes
MTBF at 40 °C	1 611 993 h	1 362 918 h
standards, specifications, approvals hazardous environments		
certificate of suitability		
• IECEx	Yes; IECEx Ex nA nC IIC T4 Gc	Yes; IECEx Ex nA nC IIC T3 Gc
• ATEX	Yes; ATEX (EX) II 3G Ex nA nC IIC T4 Gc	Yes; ATEX (EX) II 3G Ex nA nC IIC T3 Gc
• ULhazloc approval	Yes; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	Yes; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T3, File E330455
• cCSAus, Class 1, Division 2	No	No
• UKEX	Yes	Yes
• CCC for hazardous zone according to GB standard	Yes	Yes
• FM registration	Yes; Class I, Div. 2, Group ABCD, T4	Yes; Class I, Div. 2, Group ABCD, T4
standards, specifications, approvals marine classification		
shipbuilding approval	Yes	Yes
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes
• French marine classification society (BV)	Yes	Yes
• Det Norske Veritas (DNV)	Yes	Yes
• Lloyds Register of Shipping (LRS)	No	No

SIMATIC S7-1500 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-1500 and ET 200MP)

Technical specifications

Article number	6EP1332-4BA00	6EP1333-4BA00
product brand name	S7-1500 PM1507	S7-1500 PM1507
type of current supply	24 V/3 A	24 V/8 A
standards, specifications, approvals		
Environmental Product Declaration		
global warming potential [CO ₂ eq]		
• total	309.9 kg	589.1 kg
• during manufacturing	8.6 kg	14 kg
• during operation	300.9 kg	574.4 kg
• after end of life	0.31 kg	0.51 kg
ambient conditions		
ambient temperature		
• during operation	0 ... 60; with natural convection	0 ... 60; with natural convection
• during transport	-40 ... +85	-40 ... +85
• during storage	-40 ... +85	-40 ... +85
environmental category according to IEC 60721	Climate class 3K3, 5 ... 95% no condensation	Climate class 3K3, 5 ... 95% no condensation
connection method		
type of electrical connection	Screw-/spring clamp connection	Screw-/spring clamp connection
• at input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ²	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ²
• at output	L+, M: 2 spring-loaded terminals each for 0.5 to 2.5 mm ²	L+, M: 2 spring-loaded terminals each for 0.5 to 2.5 mm ²
removable terminal at input	Yes	Yes
removable terminal at output	Yes	Yes
mechanical data		
width × height × depth of the enclosure	50 mm × 147 mm × 129 mm	75 mm × 147 mm × 129 mm
installation width × mounting height	50 mm × 205 mm	75 mm × 205 mm
required spacing		
• top	40 mm	40 mm
• bottom	40 mm	40 mm
• left	0 mm	0 mm
• right	0 mm	0 mm
fastening method	Can be mounted onto S7-1500 rail	Can be mounted onto S7-1500 rail
• DIN-rail mounting	No	No
• S7 rail mounting	Yes	Yes
• wall mounting	No	No
housing can be lined up	Yes	Yes
net weight	0.45 kg	0.74 kg
further information internet links		
internet link		
• to website: Industry Mall	https://mall.industry.siemens.com	https://mall.industry.siemens.com
• to web page: selection aid TIA Selection Tool	https://www.siemens.com/tstcloud	https://www.siemens.com/tstcloud
• to web page: power supplies	https://siemens.com/sitop	https://siemens.com/sitop
• to website: CAx-Download-Manager	https://siemens.com/cax	https://siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com
additional information		
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)
	24 V	24 V
	24 V	24 V
	0 °C	0 °C
	60 °C	60 °C

SIMATIC S7-1500 Advanced Controllers

Power supplies

System power supplies

Overview



- System power supplies for SIMATIC S7-1500
- For conversion of AC or DC line voltages to the operating voltages required for the internal electronics
- 25 or 60 W output power
- Can be used for S7-1500 or ET 200MP
- In addition with PS 60W 24/48/60V DC HF: Retentive storage of CPU work memory (data) for all S7-1500 CPUs

5

Ordering data

Article No.

Article No.

System power supply

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0KA00-0AB0

SIMATIC S7-1500, system power supply PS 25 W 24 V DC

Supplies operating voltage to the backplane bus of the S7-1500, integrated power meter function

6ES7505-0KA01-0AB0

SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7505-0RA00-0AB0

SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF

Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU

6ES7505-0RB00-0AB0

SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC

Supplies operating voltage to the backplane bus of the S7-1500

6ES7507-0RA00-0AB0

Accessories

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail 20 units per packing unit

6ES7590-5AA00-0AA0

SIMATIC S7-1500 spare part, connector

For system power supply modules (PS) and load current supply modules (PM), 10 pieces per packing unit

6ES7590-8AA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Power supplies

System power supplies

Technical specifications

Article number	6ES7505-0KA00-0AB0	6ES7505-0RA00-0AB0	6ES7505-0RB00-0AB0	6ES7507-0RA00-0AB0	6ES7505-0KA01-0AB0
	S7-1500, PS 25W 24V DC	S7-1500, PS 60W 24/48/60V DC	S7-1500, PS 60W 24/48/60V DC HF	S7-1500, PS 60W 120/230V AC/DC	S7-1500, PS 25W 24V DC
General information					
Product type designation	PS 25W 24VDC	PS 60 W 24/48/60 V DC	PS 60 W 24/48/60 V DC HF	PS 60 W 120/230 V AC/DC	PS 25W 24VDC
Product function					
• Voltage measurement					Yes; 19.2 ... 28.8 V DC (±2.5 %)
• Current measurement					Yes; 0 ... 1.67 A (±2.5 %)
• Power measurement					Yes; 0 ... 25 W (± 5 %)
• I&M data					Yes
Engineering with					
• STEP 7 TIA Portal configurable/ integrated from version	V12 / V12	V12 / V12	V14 SP1	V12 / V12	STEP 7 V18 or higher with HSP 0458
• STEP 7 configurable/ integrated from version	V5.5 SP3 or higher	V5.5 SP3 or higher		V5.5 SP3 or higher	STEP 7 V5.7 or higher SP1 or higher
• PROFINET from GSD version/ GSD revision					V2.45
Redundancy					
• Redundancy capability					Yes
- for uprating					Yes
Installation type/mounting					
Rail mounting					Yes
Supply voltage					
Rated value (DC)	24 V	24 V / 48 V / 60 V	24 V / 48 V / 60 V	120 V / 230 V	24 V
Rated value (AC)				120 V / 230 V	
Reverse polarity protection	Yes	Yes	Yes		Yes
Short-circuit protection	Yes	Yes	Yes	Yes	Yes
Line frequency					
• Rated value 50 Hz				Yes	
• permissible range, lower limit				47 Hz	
• permissible range, upper limit				63 Hz	
Mains buffering					
• Mains/voltage failure stored energy time	20 ms	20 ms	20 ms	20 ms	20 ms
Input current					
Rated value at 24 V DC	1.3 A	3 A	3 A		1.3 A
Rated value at 48 V DC		1.5 A	1.5 A		
Rated value at 60 V DC		1.2 A	1.2 A		
Rated value at 120 V DC				0.6 A	
Rated value at 230 V DC				0.3 A	
Rated value at 120 V AC				0.6 A	
Rated value at 230 V AC				0.34 A	
Inrush current, max.			≤ 8 A for t ≤ 1 s		
Output current					
Short-circuit protection	Yes	Yes	Yes	Yes	Yes
Power					
Infeed power to the backplane bus	25 W	60 W	60 W	60 W	25 W
Power loss					
Power loss at nominal rating conditions	6.2 W	12 W	12 W	12 W	6.2 W
Interrupts/diagnostics/ status information					
Status indicator	Yes	Yes	Yes	Yes	Yes
Potential separation					
primary/secondary	Yes	Yes; Electrical isolation for 230 V AC (reinforced isolation)		Yes	Yes

SIMATIC S7-1500 Advanced Controllers

Power supplies

System power supplies

Technical specifications

Article number	6ES7505-0KA00-0AB0	6ES7505-0RA00-0AB0	6ES7505-0RB00-0AB0	6ES7507-0RA00-0AB0	6ES7505-0KA01-0AB0
	S7-1500, PS 25W 24V DC	S7-1500, PS 60W 24/48/60V DC	S7-1500, PS 60W 24/48/60V DC HF	S7-1500, PS 60W 120/230V AC/DC	S7-1500, PS 25W 24V DC
EMC					
Interference immunity against voltage surge					
Interference immunity on supply lines acc. to IEC 61000-4-5	Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required	Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required	Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required	Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required	Yes; ±0.5 kV (acc. to IEC 61000-4-5; 2014; surge line to line), ±1 kV (acc. to IEC 61000-4-5; 2014; surge line to earth), no external protective circuit required
Degree and class of protection					
Equipment protection class	III, with protective conductor	I, with protective conductor	I, with protective conductor	I, with protective conductor	III
Product functions / security					
signed firmware update					Yes
Ambient conditions					
Ambient temperature during operation					
• min.	-25 °C; up to FS03: 0 °C	-25 °C; up to FS04: 0 °C	-25 °C; up to FS02: 0 °C	-25 °C; up to FS04: 0 °C	-30 °C
• max.	60 °C	60 °C	60 °C	60 °C	60 °C
• horizontal installation, min.	-25 °C; up to FS03: 0 °C	-25 °C; up to FS04: 0 °C	-25 °C; up to FS02: 0 °C		-25 °C
• horizontal installation, max.	60 °C	60 °C	60 °C		60 °C
• vertical installation, min.	-25 °C; up to FS03: 0 °C	-25 °C; up to FS04: 0 °C	-25 °C; up to FS02: 0 °C		-25 °C
• vertical installation, max.	40 °C	40 °C	40 °C		40 °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	2 000 m	2 000 m	2 000 m	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions					
Width	35 mm	70 mm	105 mm	70 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
Weights					
Weight, approx.	350 g	600 g	865 g	600 g	350 g

SIMATIC S7-1500 Advanced Controllers
SIPLUS power supplies

SIPLUS load current supplies

Overview



The design and functionality of the SIMATIC PM 1507 single-phase load power supply (PM = power module) with automatic range selection of the input voltage makes it an optimal match to the SIMATIC S7-1500 PLC. It supplies the S7-1500 system components such as CPU, system power supply (PS), I/O circuits of the input and output modules and, if necessary, the sensors and actuators with 24 V DC.

Note:

SIPLUS extreme products are based on Siemens standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Article No.

SIPLUS S7-1500 PM 1507
(Extended temperature range and exposure to environmental substances)
Input 120/230 V AC, output 24 V DC, 3 A
Input 120/230 V AC, output 24 V DC, 8 A

6AG1332-4BA00-7AA0
6AG1333-4BA00-7AA0

Accessories

See SITOP in SIMATIC design, 1-phase, 24 V DC (for S7-1500 and ET200MP), page 5/355

SIMATIC S7-1500 Advanced Controllers

SIPLUS power supplies

SIPLUS load current supplies

Technical specifications

Article number	6AG1332-4BA00-7AA0	6AG1333-4BA00-7AA0
Based on	6EP1332-4BA00	6EP1333-4BA00
product brand name	SIPLUS S7-1500 PM1507	SIPLUS S7-1500 PM1507
type of current supply	24 V/3 A	24 V/8 A
ambient conditions		
ambient temperature		
• in horizontal mounting position during operation	-40 ... +70 °C; with natural convection	-40 ... +70 °C; with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
installation altitude at height above sea level maximum	6 000 m	6 000 m
ambient condition relating to ambient temperature - air pressure - installation altitude	In case of operation at altitudes of 2000 - 6000 m above sea level: Output power derating of -7.5 %/1000 m or reduction of the ambient temperature by 5 K/1000 m	In case of operation at altitudes of 2000 - 6000 m above sea level: Output power derating of -7.5 %/1000 m or reduction of the ambient temperature by 5 K/1000 m
relative humidity with condensation according to IEC 60068-2-38 maximum	100 %; RH incl. condensation/frost (no commissioning if condensation is present), horizontal installation	100 %; RH incl. condensation/frost (no commissioning if condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
resistance to biologically active substances conformity according to EN 60721-3-3	Yes; Class 3B2 mold, fungal, sponge spores (except fauna); class 3B3 upon request	Yes; Class 3B2 mold, fungal, sponge spores (except fauna); class 3B3 upon request
resistance to chemically active substances conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity level 3)	Yes; Class 3C4 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity level 3)
resistance to mechanically active substances conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust	Yes; Class 3S4 incl. sand, dust
resistance to biologically active substances conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal, sponge spores (except fauna)	Yes; Class 6B2 mold, fungal, sponge spores (except fauna)
resistance to chemically active substances conformity according to EN 60721-3-6	Yes; Class 6C3 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity level 3)	Yes; Class 6C3 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity level 3)
resistance to mechanically active substances conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust	Yes; Class 6S3 incl. sand, dust
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
type of test of the coating according to MIL-I-46058C	Yes; Discoloration of the coating during service life possible	Yes; Discoloration of the coating during service life possible
product conformity of the coating 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

SIMATIC S7-1500 Advanced Controllers

SIPLUS power supplies

SIPLUS system power supplies

Overview



- System power supplies for the SIMATIC S7-1500
- For conversion of AC or DC line voltages to the operating voltages required for the internal electronics
- 25 or 60 W output power
- Can be used for S7-1500 or ET 200MP
- Engineering and configuration via STEP 7 V12

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 S7-1500 system power supply

(Extended temperature range and exposure to environmental substances)

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Accessories

See SIMATIC S7-1500, system power supplies, page 5/359

Technical specifications

Article number	6AG1505-0KA00-7AB0	6AG1505-0RA00-7AB0	6AG1507-0RA00-7AB0
Based on	6ES7505-0KA00-0AB0 SIPLUS S7-1500 PS 25W 24V DC	6ES7505-0RA00-0AB0 SIPLUS S7-1500 PS 60W 24/48/60V DC	6ES7507-0RA00-0AB0 SIPLUS S7-1500 PS 60W 120/230V AC/DC
Ambient conditions			
Ambient temperature during operation			
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	70 °C; = Tmax; for vertical mounting position Tmax = +40 °C	70 °C; = Tmax; > +60 °C max. power input 30 W; for vertical mounting position Tmax = +40 °C	70 °C; = Tmax; for vertical mounting position Tmax = +40 °C
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 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 - 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 under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

SIMATIC S7-1500 Advanced Controllers

SIPLUS power supplies

SIPLUS system power supplies

Technical specifications

Article number Based on	6AG1505-0KA00-7AB0 6ES7505-0KA00-0AB0 SIPLUS S7-1500 PS 25W 24V DC	6AG1505-0RA00-7AB0 6ES7505-0RA00-0AB0 SIPLUS S7-1500 PS 60W 24/48/60V DC	6AG1507-0RA00-7AB0 6ES7507-0RA00-0AB0 SIPLUS S7-1500 PS 60W 120/230V AC/DC
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, *
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; *
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

SIMATIC S7-1500 Advanced Controllers

Operator control and monitoring
Basic Panels

Standard devices 2nd Generation

Overview



Basic Panels 2nd Generation

With their fully developed HMI basic functions, SIMATIC HMI Basic Panels 2nd Generation are the ideal entry-level series for simple HMI applications.

The device family offers panels with 4", 7", 9" and 12" displays, as well as combined key and touch operation.

The innovative high-resolution widescreen displays with 64 000 colors are also suitable for upright installation, and they can be dimmed down to 100%. The innovative operator interface with improved usability opens up a diverse range of options thanks to new controls and graphics. The new USB interface enables the connection of keyboard, mouse or bar code scanner, and supports the simple archiving of data on a USB flash drive as well as the manual backup and restoring of the complete panel.

The integrated Ethernet or RS 485/422 interface (version-specific) enables simple connection to the controller.

More information is available at
<http://www.siemens.com/basic-panels>

Ordering data

Article No.

SIMATIC HMI Basic Panels (2nd Generation)

Key and touch devices

SIMATIC HMI KTP400 Basic

Key/touch operation; 4" TFT widescreen display, 65 536 colors, PROFINET interface

6AV2123-2DB03-0AX0

SIMATIC HMI TP400 Basic Keyless

Touch screen operation; 4" TFT widescreen display, 65 536 colors, PROFINET interface

6AV2143-6DB00-0AA0

SIMATIC HMI KTP700 Basic

Key/touch operation; 7" TFT display, 65 536 colors, PROFINET interface

6AV2123-2GB03-0AX0

SIMATIC HMI KTP700 Basic DP

Key/touch operation; 7" TFT display, 65 536 colors, PROFIBUS interface

6AV2123-2GA03-0AX0

SIMATIC HMI TP700 Basic Keyless

Touch screen operation; 7" TFT display, 65 536 colors, PROFINET interface

6AV2143-6GB00-0AA0

SIMATIC HMI KTP900 Basic

Key/touch operation; 9" TFT display, 65 536 colors, PROFINET interface

6AV2123-2JB03-0AX0

SIMATIC HMI TP900 Basic Keyless

Touch screen operation; 9" TFT display, 65 536 colors, PROFINET interface

6AV2143-6JB00-0AA0

SIMATIC HMI KTP1200 Basic

Key/touch operation; 12" TFT display, 65 536 colors, PROFINET interface

6AV2123-2MB03-0AX0

SIMATIC HMI KTP1200 Basic DP

Key/touch operation; 12" TFT display, 65 536 colors, PROFIBUS interface

6AV2123-2MA03-0AX0

Documentation

You can find the Equipment Manual for the Basic Panels on the Internet at:

<https://support.automation.siemens.com>

Accessories

See catalog ST 80 / ST PC or SiePortal

SIMATIC S7-1500 Advanced Controllers

Operator control and monitoring
Comfort Panels

SIMATIC HMI Unified Comfort Panels Standard

Overview



SIMATIC HMI MTP2200 Unified Comfort Panel Standard design front view

SIMATIC HMI Unified Comfort Panels - standard devices

SIMATIC HMI Unified Comfort Panels consist of six different devices with varying display sizes. All devices come with the same number of hardware interfaces and the same functionality – just select the perfect device for your needs based on the screen size.

Each Unified Comfort Panel is available in the standard design with Siemens and SIMATIC HMI branding and a silver-colored aluminum frame.

All Unified Comfort Panels come with integrated Edge functionality.

SIMATIC WinCC Unified contains visualization, communication, alarms/warnings, report creation, administration of parameter sets, archiving of user administration. Furthermore, a WinCC Unified Client Operate (V17 or higher) for remote operator control and monitoring, and a WinCC Unified Client Monitor (V18 or higher) for monitoring only are also included. Additional clients can be enabled with a license. Up to three client licenses can be used.

Client access is based on native web technologies such as HTML5, SVG and JavaScript. The visualization can be accessed via any modern web browser – without the need for additional installation.

Siemens Industrial Edge can be used in two different ways:

- Device-managed Edge
- Centrally-managed Edge (planned)

SIMATIC HMI Unified Comfort Panels can also be ordered with a neutral design.

Note:

The technical specifications of the neutral design devices correspond to the technical specifications of the devices with standard design.

Ordering data

Article No.

Touch devices for SIMATIC HMI Unified Comfort Panels

Standard design

SIMATIC HMI MTP700 Unified Comfort Panel

6AV2128-3GB06-0AX1

7" widescreen TFT display, touch operation, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source SW which is provided free of charge. See enclosed DVD

SIMATIC HMI MTP1000 Unified Comfort Panel

6AV2128-3KB06-0AX1

10.1" widescreen TFT display, touch operation, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source SW which is provided free of charge. See enclosed DVD

SIMATIC HMI MTP1200 Unified Comfort Panel

6AV2128-3MB06-0AX1

12.1" widescreen TFT display, touch operation, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source SW which is provided free of charge. See enclosed DVD

SIMATIC HMI MTP1500 Unified Comfort Panel

6AV2128-3QB06-0AX1

15.6" widescreen TFT display, touch operation, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source SW which is provided free of charge. See enclosed DVD

SIMATIC HMI MTP1900 Unified Comfort Panel

6AV2128-3UB06-0AX1

18.5" widescreen TFT display, touch operation, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source software, which is provided free of charge. See enclosed DVD

SIMATIC HMI MTP2200 Unified Comfort Panel

6AV2128-3XB06-0AX1

21.5" widescreen TFT display, touch operation, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source software, which is provided free of charge. See enclosed DVD

SIMATIC S7-1500 Advanced Controllers

Operator control and monitoring

Comfort Panels

SIMATIC HMI Unified Comfort Panels Standard

Ordering data	Article No.		Article No.
Neutral design			
SIMATIC HMI MTP700 Unified Comfort Panel Neutral, touch operation; 7" widescreen TFT display, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source software, which is provided free of charge. See enclosed DVD	6AV2128-3GB36-0AX1	SIMATIC HMI MTP1900 Unified Comfort Panel Neutral, touch operation; 18.5" widescreen TFT display, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source software, which is provided free of charge. See enclosed DVD	6AV2128-3UB36-0AX1
SIMATIC HMI MTP1000 Unified Comfort Panel Neutral, touch operation; 10.1" widescreen TFT display, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source software, which is provided free of charge. See enclosed DVD	6AV2128-3KB36-0AX1	SIMATIC HMI MTP2200 Unified Comfort Panel Neutral, touch operation; 21.5" widescreen TFT display, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source software, which is provided free of charge. See enclosed DVD	6AV2128-3XB36-0AX1
SIMATIC HMI MTP1200 Unified Comfort Panel Neutral, touch operation; 12.1" widescreen TFT display, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source software, which is provided free of charge. See enclosed DVD	6AV2128-3MB36-0AX1	Software	
SIMATIC HMI MTP1500 Unified Comfort Panel Neutral, touch operation; 15.6" widescreen TFT display, 16 million colors, PROFINET interface, configurable as from WinCC Unified Comfort V16; with additional certifications for explosion-proof areas and for use in marine engineering (see Technical specifications). Contains open source software, which is provided free of charge. See enclosed DVD	6AV2128-3QB36-0AX1	EDGE Runtime for SIMATIC Unified Comfort Runtime software, single license, license key for download, without software and documentation, Class A, email address required for delivery	6AV2170-2BA00-0AA0

SIMATIC S7-1500 Advanced Controllers

Operator control and monitoring
Comfort Panels

Comfort Panels standard devices

Overview



SIMATIC HMI Comfort Panels - Standard devices

- Excellent HMI functionality for demanding applications
- Widescreen TFT displays with 4", 7", 9", 12", 15", 19" and 22" diagonals (all 16 million colors) with up to 40% more visualization area as compared to the predecessor devices
- Integrated high-end functionality with archives, scripts, PDF/Word/Excel viewer, Internet Explorer, Media Player and Web Server
- Dimmable displays from 0 to 100% via PROFlenergy, via the HMI project or via a controller
- Modern industrial design, cast aluminum fronts for 7" upwards
- Upright installation for all touch devices
- Data security in the event of a power failure for the device and for the SIMATIC HMI Memory Card
- Innovative service and commissioning concept
- Maximum performance with short screen refresh times
- Suitable for extremely harsh industrial environments thanks to extended approvals such as ATEX 2/22 and marine approvals
- All versions can be used as an OPC UA client or as a server
- Key-operated devices with LED in every function key and new text input mechanism, similar to the keypads of mobile phones
- All keys have a service life of 2 million operations
- Configuring with the WinCC engineering software of the TIA Portal engineering framework

Note:

A 7" and a 15" Comfort Outdoor version are available. These devices have been specially designed for outdoor applications in difficult environments. Best display quality, even under sunlight, UV-resistant fronts and much more.

More information is available at
<http://www.siemens.com/comfort-panels>

Ordering data

Article No.

SIMATIC HMI Comfort Panels

Touch devices

SIMATIC HMI TP700 Comfort 6AV2124-0GC01-0AX0

Touch operation;
7" widescreen display

SIMATIC HMI TP900 Comfort 6AV2124-0JC01-0AX0

Touch operation;
9" widescreen display

SIMATIC HMI TP1200 Comfort 6AV2124-0MC01-0AX0

Touch operation;
12" widescreen display

SIMATIC HMI TP1500 Comfort 6AV2124-0QC02-0AX1

Touch operation;
15" widescreen display;
Ambient temperature up to 50 °C
(up to 55 °C with restriction)

SIMATIC HMI TP1500 Comfort 6AV2124-0QC02-0AX2

Touch operation;
15" widescreen display;
Ambient temperature up to 45 °C

SIMATIC HMI TP1900 Comfort 6AV2124-0UC02-0AX1

Touch operation;
19" widescreen display

SIMATIC HMI TP2200 Comfort 6AV2124-0XC02-0AX1

Touch operation;
22" widescreen display

Key devices

SIMATIC HMI KP700 Comfort 6AV2124-1GC01-0AX0

Key operation;
7" widescreen display

SIMATIC HMI KP900 Comfort 6AV2124-1JC01-0AX0

Key operation;
9" widescreen display

SIMATIC HMI KP1200 Comfort 6AV2124-1MC01-0AX0

Key operation;
12" widescreen display

SIMATIC HMI KP1500 Comfort 6AV2124-1QC02-0AX1

Key operation;
15" widescreen display;
Ambient temperature up to 50 °C
(up to 55 °C with restriction)

SIMATIC HMI KP1500 Comfort 6AV2124-1QC02-0AX2

Key operation;
15" widescreen display;
Ambient temperature up to 45 °C

Accessories

See catalog ST 80 / ST PC
or SiePortal

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Basic Panels (2nd Generation)

Overview



With their fully developed HMI basic functions, 2nd Generation SIPLUS Basic Panels are the ideal entry-level series for simple HMI applications.

The device family offers panels with 4", 7", 9" and 12" displays, as well as combined key and touch operation.

The innovative high-resolution widescreen displays with 64 000 colors are also suitable for upright installation, and they can be dimmed down to 100%. The innovative operator interface with improved usability opens up a diverse range of options thanks to new controls and graphics. The new USB interface enables the connection of keyboard, mouse or barcode scanner, and supports the simple archiving of data on a USB flash drive.

The integrated Ethernet or RS 485/422 interface (version-specific) enables simple connection to the controller.

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 HMI Basic Panels, Key and Touch

SIPLUS HMI KTP400 Basic

6AG1123-2DB03-2AX0

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -20 ... +60 °C

SIPLUS HMI KTP700 Basic

6AG1123-2GB03-2AX0

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -20 ... +50 °C

SIPLUS HMI KTP700 Basic DP

6AG1123-2GA03-2AX0

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -20 ... +50 °C

SIPLUS HMI KTP900 Basic

6AG1123-2JB03-2AX0

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -20 ... +50 °C

SIPLUS HMI KTP1200 Basic

6AG1123-2MB03-2AX0

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -10 ... +50 °C

SIPLUS HMI KTP1200 Basic DP

6AG1123-2MA03-2AX0

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -10 ... +50 °C

Accessories

See catalog ST 80/ST PC or SiePortal

Technical specifications

Article number	6AG1123-2DB03-2AX0	6AG1123-2GB03-2AX0	6AG1123-2GA03-2AX0
Based on	6AV2123-2DB03-0AX0 SIPLUS HMI KTP400 BASIC	6AV2123-2GB03-0AX0 SIPLUS HMI KTP700 BASIC	6AV2123-2GA03-0AX0 SIPLUS HMI KTP700 BASIC DP
Ambient conditions			
Suited for indoor use		Yes	Yes
Suited for outdoor use		No	No
Ambient temperature during operation			
Operation (vertical installation)			
- For vertical installation, min.	-20 °C; = Tmin	-20 °C	-20 °C; = Tmin
- For vertical installation, max.	60 °C; = Tmax	50 °C	50 °C
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)

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Basic Panels (2nd Generation)

Technical specifications

Article number	6AG1123-2DB03-2AX0	6AG1123-2GB03-2AX0	6AG1123-2GA03-2AX0
Based on	6AV2123-2DB03-0AX0	6AV2123-2GB03-0AX0	6AV2123-2GA03-0AX0
	SIPLUS HMI KTP400 BASIC	SIPLUS HMI KTP700 BASIC	SIPLUS HMI KTP700 BASIC DP
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 under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning when condensation present), vertical mounting position
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 - to chemically active substances according to EN 60721-3-3 - to mechanically 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 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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 - Protection against fouling acc. to EN 60664-3 - Military testing according to MIL-I-46058C, Amendment 7 - Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A
Article number	6AG1123-2JB03-2AX0	6AG1123-2MB03-2AX0	6AG1123-2MA03-2AX0
Based on	6AV2123-2JB03-0AX0	6AV2123-2MB03-0AX0	6AV2123-2MA03-0AX0
	SIPLUS HMI KTP900 BASIC	SIPLUS HMI KTP1200 BASIC	SIPLUS HMI KTP1200 BASIC DP
Ambient conditions			
Suited for indoor use	Yes	Yes	Yes
Suited for outdoor use	No	No	No
Ambient temperature during operation			
Operation (vertical installation)			
- For vertical installation, min. - For vertical installation, max.	-20 °C 50 °C	-10 °C; = Tmin 50 °C	-10 °C; = Tmin 50 °C

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Basic Panels (2nd Generation)

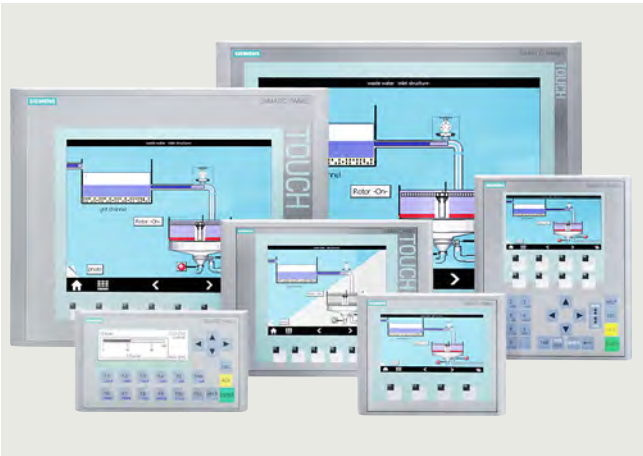
Technical specifications

Article number Based on	6AG1123-2JB03-2AX0 6AV2123-2JB03-0AX0 SIPLUS HMI KTP900 BASIC	6AG1123-2MB03-2AX0 6AV2123-2MB03-0AX0 SIPLUS HMI KTP1200 BASIC	6AG1123-2MA03-2AX0 6AV2123-2MA03-0AX0 SIPLUS HMI KTP1200 BASIC DP
Altitude during operation relating to sea level • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	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)	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)	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 when condensation present), vertical mounting position
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 - to chemically active substances according to EN 60721-3-3 - to mechanically 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 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea - to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology - Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

SIMATIC S7-1500 Advanced Controllers
SIPLUS Operator control and monitoring

SIPLUS Basic Panels (1st Generation)

Overview



- Ideal entry-level series of 3.8" to 15" for operating and monitoring compact machines and systems
- Clear process representation through the use of full-graphic displays
- Intuitive operation via touch and tactile function keys
- Equipped with all the necessary basic functions such as reporting, recipe management, curve representation, vector graphics, and language selection
- Easy connection to the controller via integrated Ethernet interface or a separate version with RS485/422
- Faster commissioning thanks to integrated diagnostics viewer and IP setting for SIMATIC S7-1200 and S7-1500 PLCs

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 HMI Basic Panels

SIPLUS HMI KP300 Basic mono PN

with conformal coating,
ambient temperature -25... +60°C,
based on 6AV6647-0AH11-3AX1

6AG1647-0AH11-2AX1

Accessories

See catalog ST 80/ST PC
or SiePortal

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Basic Panels (1st Generation)

Technical specifications

Article number	6AG1647-0AH11-2AX1
Based on	6AV6647-0AH11-3AX1 SIPLUS HMI KP300 Basic mono PN
Ambient conditions	
Suited for indoor use	Yes
Suited for outdoor use	No
Ambient temperature during operation	
Operation (vertical installation)	
- For vertical installation, min.	-25 °C; = Tmin
- For vertical installation, max.	60 °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 when condensation present), horizontal at vertical mounting position
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	6AG1647-0AH11-2AX1
Based on	6AV6647-0AH11-3AX1 SIPLUS HMI KP300 Basic mono PN
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

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS HMI Unified Comfort Panels Standard

Overview



SIPLUS HMI Unified Comfort Panels - standard devices

SIPLUS HMI Unified Comfort Panels consist of six different devices with varying display sizes.

All devices come with the same number of hardware interfaces and the same functionality – just select the perfect device for your needs based on the screen size.

Each Unified Comfort Panel is available in the standard design with Siemens and SIMATIC HMI branding and a silver-colored aluminum frame.

All Unified Comfort Panels come with integrated Edge functionality.

SIMATIC WinCC Unified contains visualization, communication, alarms/warnings, report creation, administration of parameter sets, archiving of user administration.

Furthermore, a WinCC Unified Client Operate (V17 or higher) for remote operator control and monitoring, and a WinCC Unified Client Monitor (V18 or higher) for monitoring only are also included. Additional clients can be enabled with a license. Up to three client licenses can be used.

Client access is based on native web technologies such as HTML5, SVG and JavaScript. The visualization can be accessed via any modern web browser – without the need for additional installation.

Siemens Industrial Edge can be used in two different ways:

- Device-managed Edge
- Centrally-managed Edge (planned)

SIMATIC HMI Unified Comfort Panels can also be ordered with a neutral design.

Note:

The technical specifications of the neutral design devices correspond to the technical specifications of the devices with standard design.

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.

Article No.

SIPLUS HMI Unified Comfort Panels

Standard design

SIPLUS HMI MTP700 Unified Comfort, with conformal coating

6AG1128-3GB06-4AX1

SIMATIC HMI MTP1000 Unified Comfort Panel, with conformal coating

6AG1128-3KB06-4AX1

SIMATIC HMI MTP1200 Unified Comfort Panel, with conformal coating

6AG1128-3MB06-4AX1

Accessories

EDGE Runtime for SIMATIC Unified Comfort

Runtime software, single license, license key for download, without software and documentation, Class A, email address required for delivery

6AV2170-2BA00-0AA0

Accessories

See catalog ST 80/ST PC or SiePortal

Technical specifications

Article number	6AG1128-3GB06-4AX1	6AG1128-3KB06-4AX1	6AG1128-3MB06-4AX1
Based on	6AV2128-3GB06-0AX1	6AV2128-3KB06-0AX1	6AV2128-3MB06-0AX1
	SIPLUS HMI MTP700 Unified Comfort	SIPLUS HMI MTP1000 Unified Comfort	SIPLUS HMI MTP1200 Unified Comfort
Ambient conditions			
Suited for indoor use	Yes	Yes	Yes
Suited for outdoor use	No	No	No
Ambient temperature during operation			
Operation (vertical installation)			
- For vertical installation, min.	0 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
- For vertical installation, max.	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS HMI Unified Comfort Panels Standard

Technical specifications

Article number	6AG1128-3GB06-4AX1	6AG1128-3KB06-4AX1	6AG1128-3MB06-4AX1
Based on	6AV2128-3GB06-0AX1	6AV2128-3KB06-0AX1	6AV2128-3MB06-0AX1
	SIPLUS HMI MTP700 Unified Comfort	SIPLUS HMI MTP1000 Unified Comfort	SIPLUS HMI MTP1200 Unified Comfort
Altitude during operation relating to sea level			
- Installation altitude above sea level, max. - Ambient air temperature-barometric pressure-altitude	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)	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)	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 when condensation present), horizontal at vertical mounting position	100 %; RH incl. condensation/frost (no commissioning when condensation present), horizontal at vertical mounting position	100 %; RH incl. condensation/frost (no commissioning when condensation present), horizontal at vertical mounting position
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 - to chemically active substances according to EN 60721-3-3 - to mechanically 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 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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 - Protection against fouling acc. to EN 60664-3 - Military testing according to MIL-I-46058C, Amendment 7 - Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Comfort Panels Standard

Overview



- Excellent HMI functionality for demanding applications
- Widescreen TFT displays with 4", 7", 9", 12", 15", 19" and 22" diagonals (all 16 million colors) with up to 40% more visualization area as compared to the predecessor devices
- Integrated high-end functionality with archives, scripts, PDF/Word/Excel viewer, Internet Explorer, Media Player
- Dimmable displays from 0 to 100% via PROFIenergy, via the HMI project or via a controller
- Modern industrial design, cast aluminum fronts for 7" upwards
- Upright installation for all touch devices
- Optimal selection option: seven touch and five key versions are available
- Data security in the event of a power failure for the device and for the SIMATIC HMI Memory Card
- Innovative service and commissioning concept through second SD card (automatic backup)
- Easy project transfer via standard cable (standard Ethernet cable, standard USB cable)
- Maximum performance with short screen refresh times
- Suitable for extremely harsh industrial environments thanks to extended approvals such as ATEX 2/22
- Wide range of communication options: PROFIBUS and PROFINET onboard; 2x PROFINET with integrated switch for 7" models or larger; plus 1 additional PROFINET with Gigabit support for 15" models or larger
- All variants can be used as an OPC UA client or as an OPC DA server
- Key-operated devices with LED in every function key and new text input mechanism, similar to the keypads of mobile phones
- Key-operated devices with stamped keys for optimum tactile feedback
- All keys have a service life of 2 million operations
- Configuring with the WinCC engineering software of the TIA Portal

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

SIPLUS HMI Comfort Panels, Touch	
SIPLUS HMI TP700 Comfort	6AG1124-0GC01-4AX0
SIPLUS HMI TP900 Comfort	6AG1124-0JC01-4AX0
SIPLUS HMI TP1200 Comfort	6AG1124-0MC01-4AX0
SIPLUS HMI TP1500 Comfort	6AG1124-0QC02-4AX1
SIPLUS HMI TP1900 Comfort	6AG1124-0UC02-4AX1
SIPLUS HMI TP2200 Comfort	6AG1124-0XC02-4AX1
SIPLUS HMI Comfort Panels, Keys	
SIPLUS HMI KP700 Comfort	6AG1124-1GC01-4AX0
SIPLUS HMI KP900 Comfort	6AG1124-1JC01-4AX0
SIPLUS HMI KP1200 Comfort	6AG1124-1MC01-4AX0
SIPLUS HMI KP1500 Comfort	6AG1124-1QC02-4AX1
Accessories	See catalog ST 80/ST PC or SiePortal

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Comfort Panels Standard

Technical specifications

Article number	6AG1124-0GC01-4AX0	6AG1124-0JC01-4AX0	6AG1124-0MC01-4AX0
Based on	6AV2124-0GC01-0AX0	6AV2124-0JC01-0AX0	6AV2124-0MC01-0AX0
	SIPLUS HMI TP700 COMFORT	SIPLUS HMI TP900 COMFORT	SIPLUS HMI TP1200 COMFORT
Ambient conditions			
Suited for indoor use	Yes	Yes	Yes
Suited for outdoor use	No	No	No
Ambient temperature during operation			
Operation (vertical installation)			
- For vertical installation, min.	0 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
- For 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
• 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 %; 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
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, *
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; *
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!

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Comfort Panels Standard

Technical specifications

Article number	6AG1124-0GC01-4AX0	6AG1124-0JC01-4AX0	6AG1124-0MC01-4AX0
Based on	6AV2124-0GC01-0AX0 SIPLUS HMI TP700 COMFORT	6AV2124-0JC01-0AX0 SIPLUS HMI TP900 COMFORT	6AV2124-0MC01-0AX0 SIPLUS HMI TP1200 COMFORT
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	6AG1124-0QC02-4AX1	6AG1124-0UC02-4AX1	6AG1124-0XC02-4AX1
Based on	6AV2124-0QC02-0AX1 SIPLUS HMI TP1500 Comfort	6AV2124-0UC02-0AX1 SIPLUS HMI TP1900 Comfort	6AV2124-0XC02-0AX1 SIPLUS HMI TP2200 Comfort
Ambient conditions			
Suited for indoor use	Yes	Yes	Yes
Suited for outdoor use	No	No	No
Ambient temperature during operation			
Operation (vertical installation)			
- For vertical installation, min.	0 °C	0 °C; = Tmin	0 °C; = Tmin
- For vertical installation, max.	50 °C; (55 °C, see entry ID: 64847814)	45 °C; = Tmax	45 °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 1 080 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 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
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, *
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; *

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Comfort Panels Standard

Technical specifications

Article number	6AG1124-0QC02-4AX1	6AG1124-0UC02-4AX1	6AG1124-0XC02-4AX1
Based on	6AV2124-0QC02-0AX1 SIPLUS HMI TP1500 Comfort	6AV2124-0UC02-0AX1 SIPLUS HMI TP1900 Comfort	6AV2124-0XC02-0AX1 SIPLUS HMI TP2200 Comfort
Usage in industrial process technology - Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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; Class 3 (excluding trichlorethylene) 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 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

Article number	6AG1124-1GC01-4AX0	6AG1124-1JC01-4AX0	6AG1124-1MC01-4AX0	6AG1124-1QC02-4AX1
Based on	6AV2124-1GC01-0AX0 SIPLUS HMI KP700 COMFORT	6AV2124-1JC01-0AX0 SIPLUS HMI KP900 COMFORT	6AV2124-1MC01-0AX0 SIPLUS HMI KP1200 COMFORT	6AV2124-1QC02-0AX1 SIPLUS HMI KP1500 Comfort
Ambient conditions				
Suited for indoor use	Yes	Yes	Yes	Yes
Suited for outdoor use	No	No	No	No
Ambient temperature during operation				
Operation (vertical installation) - For vertical installation, min. - For vertical installation, max.	0 °C; = Tmin 50 °C; = Tmax	0 °C; = Tmin 50 °C; = Tmax	0 °C; = Tmin 50 °C; = Tmax	0 °C 50 °C; (55 °C, see entry ID: 64847814)
Altitude during operation relating to sea level • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	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)	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)	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)	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 under condensation conditions)	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)

SIMATIC S7-1500 Advanced Controllers

SIPLUS Operator control and monitoring

SIPLUS Comfort Panels Standard

Technical specifications

Article number	6AG1124-1GC01-4AX0	6AG1124-1JC01-4AX0	6AG1124-1MC01-4AX0	6AG1124-1QC02-4AX1
Based on	6AV2124-1GC01-0AX0	6AV2124-1JC01-0AX0	6AV2124-1MC01-0AX0	6AV2124-1QC02-0AX1
	SIPLUS HMI KP700 COMFORT	SIPLUS HMI KP900 COMFORT	SIPLUS HMI KP1200 COMFORT	SIPLUS HMI KP1500 Comfort
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; *
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; *
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

SIMATIC S7-1500 Advanced Controllers

Accessories

Mounting rail

Overview



- Aluminum DIN rail for mounting the SIMATIC S7-1500 or ET 200MP
- With integrated top hat DIN rail for snapping on a wide range of standard components
- Attachment of modules with a single screw
- Installation by screwing to the control cabinet wall
- Entire length of rail can be used
- Can also be mounted on low or flat top hat DIN rails, e.g. in control cabinets and terminals boxes, using top hat DIN rail adapter

Ordering data

Article No.

SIMATIC S7-1500 mounting rail

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AB60-0AA0

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AC40-0AA0

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AE80-0AA0

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AF30-0AA0

SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches)

Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays

6ES7590-1AJ30-0AA0

SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches)

Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately

6ES7590-1BC00-0AA0

Article No.

SIMATIC S7-1500, grounding screw for connecting PE to the S7-1500 mounting rail

Absolutely necessary for the 2000 mm mounting rail
20 units per packing unit

6ES7590-5AA00-0AA0

SIMATIC S7-1500, DIN rail adapter

For adapting S7-1500 mounting rails on low or flat DIN rails, as preassembled in control cabinets and terminal boxes, for example. An adapter must be placed every 25 cm. Including mounting hardware. 10 units per packing unit

6ES7590-6AA00-0AA0

SIMATIC Manual Collection DL in 5 languages¹⁾

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

Consignee email address required for delivery.

6ES7998-8XE01-8YE0

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice
Consignee email address required for delivery.

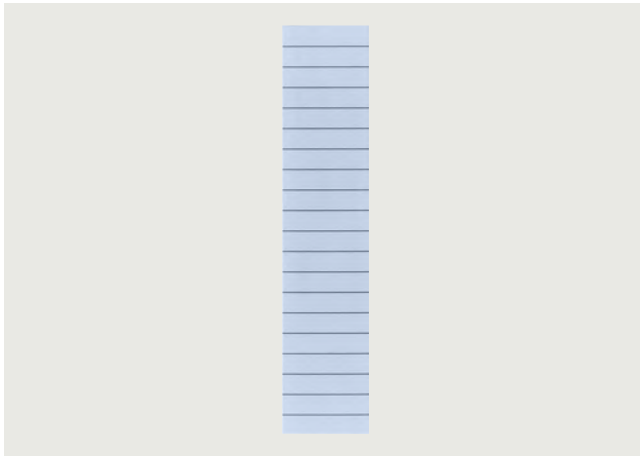
6ES7998-8XE01-8YE2

SIMATIC S7-1500 Advanced Controllers

Accessories

Labeling sheets

Overview



- Film sheets for the application-specific, automatic labeling of SIMATIC S7-1500 I/O modules using standard laser printers
- Direct printing possible from the TIA Portal
 - No double entry of symbols and/or addresses
 - Saves time and avoids typing errors
- Plain color films, tear-resistant, dirt-repellent
- Simple handling:
 - Perforated labeling sheets in DIN A4 format for easy separation of the labeling strips.
 - Detached strips can be inserted directly into the I/O modules.
- Different colors to differentiate module types; yellow reserved for fail-safe systems

Ordering data

Article No.

DIN A4 labeling sheet

SIMATIC S7-1500, labeling sheets for 35 mm wide S7-1500 modules

Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 10 strips per packing unit sufficient for 100 modules

6ES7592-2AX00-0AA0

SIMATIC S7-1500, labeling sheets for 25 mm wide S7-1500 modules and compact CPUs

Color: AL gray; material: film, perforated; suitable for printing with commercially available laser printers; 10 sheets of 20 strips per packing unit sufficient for 200 modules

6ES7592-1AX00-0AA0

SIMATIC Manual Collection DL in 5 languages¹⁾

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

Consignee email address required for delivery.

6ES7998-8XE01-8YE0

SIMATIC Manual Collection DL in 5 languages¹⁾

Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice

Consignee email address required for delivery.

6ES7998-8XE01-8YE2

SIMATIC S7-1500 Advanced Controllers

Accessories

Spare parts

Overview

Front doors



- Versions:
 - Universal front doors for digital and analog I/O modules
 - Universal front doors for the interface module IM155-5 PN ST
- Included in the scope of supply of the respective modules. Can be ordered as a spare part in a set consisting of five universal (unlabeled) front doors.
- Front doors for I/O modules: Universal labeling sheets and cabling diagrams are included. Cabling diagrams can be detached from perforated sheets and inserted inside the door.

U connector



- To interconnect the modules (self-assembling backplane bus)
- Implementation of a rugged, interference-free station setup through
 - Consistent separation of supply voltage of modules and data signals
 - Fully shielded, gold-plated contacts for the data bus
- Included in the scope of supply of each module. Available as spare part in sets of 5.

Shielding



- Components for implementing the integrated S7-1500 shielding concept:
 - 24 V DC infeed element for supplying the analog module: strict separation of infeed and analog signals ensures high EMC stability.
 - Shield bracket for insertion in the front connector: allows a low-impedance connection and optimally dissipates interference.
 - Universal shield terminal: connects the cable shield with the shield bracket and is simultaneously used for mechanical fixing.
- Included in the scope of supply of the analog modules. Available as a spare part in two versions:
 - Shielding set, comprising infeed element, shield bracket, and shield terminal (pack of 5 units each)
 - Individual shield terminals (pack of 20)
- No tool required for assembly/disassembly

SIMATIC S7-1500 Advanced Controllers

Accessories

Spare parts

Ordering data	Article No.		Article No.
SIMATIC ET 200MP, spare part front door For IM 155-5 (6ES7155-5AA00-0AB0) 5 units per packing unit	6ES7528-0AA70-7AA0		
Universal front door for I/O modules			
SIMATIC S7-1500, spare part front door for 35 mm wide I/O modules Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram 5 units per packing unit	6ES7528-0AA00-7AA0		
SIMATIC S7-1500, spare part front door for 25 mm wide I/O modules Consisting of: * front door (unlasered), * labeling strips (front) * cabling diagram 5 units per packing unit	6ES7528-0AA00-0AA0		
SIMATIC S7-1500, spare part U-type connector for connecting I/O modules Self-assembling backplane bus 5 units per packing unit	6ES7590-0AA00-0AA0		
Shielding set I/O			
SIMATIC S7-1500, spare part, shielding set Consisting of: * shield terminal, * shielding bracket, * 24 V DC infeed element with screw-type connection system, suitable for analog and technology modules of the S7-1500, suitable for all front connectors for 35 mm wide modules 5 units per packing unit	6ES7590-5CA00-0AA0	SIMATIC S7-1500, spare part, shielding set Consisting of: * 4x shield terminal, * 4x shielding bracket, * 4x 24 V DC infeed element with push-in technology, suitable for analog modules, technology modules and compact CPU of the S7-1500, suitable for all front connectors for 25 mm wide modules	6ES7590-5CA10-0XA0
		SIMATIC S7-1500, spare part shield terminal Suitable for analog modules and technology modules with 35 mm width without shielding bracket and without 24 V DC infeed element 10 units per packing unit	6ES7590-5BA00-0AA0
		SIMATIC Manual Collection DL in 5 languages¹⁾ 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 Consignee email address required for delivery.	6ES7998-8XE01-8YE0
		SIMATIC Manual Collection DL in 5 languages¹⁾ Software Update Service (SUS); within the framework of this contract, you will receive all current software versions as a download for one year. The contract is automatically extended by 1 year unless it is canceled 3 months before expiration. Period of delivery and service: 1 year from date of invoice Consignee email address required for delivery.	6ES7998-8XE01-8YE2