based on ET 200SP Standard CPUs

Overview



- CPU 1512SP-1 PN for SIMATIC ET 200SP based on S7-1500 CPU 1513-1 PN
- For applications with medium requirements regarding the program scope and processing speed, for distributed setup via PROFINET IO or PROFIBUS DP.
- Increase in availability of systems and machines
- PROFINET IO controller for up to 128 IO devices
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO controller
- PROFINET shared I-device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), web server and S7 communication (with loadable FBs)
- OPC UA Server (Data Access) as runtime option for the easy connection of SIMATIC ET 200SP to third-party devices/ systems
- Optional PROFIBUS DP master for 125 PROFIBUS DP slaves (with CM DP module 6ES7545-5DA00-0AB0)
- Optional PROFIBUS DP slave (with CM DP module 6ES7545-5DA00-0AB0)
- · Configuration control (option handling)
- Integrated motion control functionalities for controlling speed-controlled and positioning axes, support for external encoders, cams/cam tracks and probes

Note

SIMATIC Memory Card required for operation of the CPU. BusAdapter is not included in scope of delivery and is to be ordered separately.

Technical specifications

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Article number	6ES7512-1DK01-0AB0
	CPU 1512SP-1 PN, 200KB
	PROG./1MB DAIA
General Information	
Product type designation	CPU 1512SP-1 PN
Engineering with	144
integrated as of version	V 14
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.6 W
Memory	
Work memory	
 integrated (for program) 	200 kbyte
 integrated (for data) 	1 Mbyte
Load memory	
 Plug-in (SIMATIC Memory Card), 	32 Gbyte
max.	
CPU processing times	
for bit operations, typ.	48 ns
for word operations, typ.	58 ns
for fixed point arithmetic, typ.	77 ns
for floating point arithmetic, typ.	307 ns
Counters, timers and their	
S7 counter	
• Number	2 048
IFC counter	2010
Number	Any (only limited by the main memory)
S7 times	
Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
Address space per module	
Address space per module, max.	288 byte; For input and output data respectively
Address space per station	
Address space per station, max.	2 560 byte; for central inputs and outputs; depending on configuration; 2 048 bytes for ET 200SP modules + 512 bytes for ET 200AL modules
Time of day	
Clock	
• Туре	Hardware clock

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CPU 1512SP-1 PN

Technical specifications	(continued)

Article number	6ES7512-1DK01-0AB0 CPU 1512SP-1 PN, 200KB PROG /1MB DATA	A
1. Interface		P
Interface types		s
Number of ports	3; 1. integr. + 2. via BusAdapter	
 integrated switch 	Yes	
RJ 45 (Ethernet)	Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45	
BusAdapter (PROFINET)	Yes; Compatible BusAdapter: BA 2x RJ45, BA 2x FC, BA 2x SCRJ, BA SCRJ / RJ45, BA SCRJ / FC, BA 2x LC, BA LC / RJ45, BA LC / FC	
Functionality		
 PROFINET IO Controller 	Yes	
PROFINET IO Device	Yes	
 SIMATIC communication 	Yes	_
 Open IE communication 	Yes	2
Web server	Yes	lı
Media redundancy	Yes	•
PROFINET IO Controller		_
Services		F
- PG/OP communication	Yes	•
- S7 routing	Yes	•
- Isochronous mode	Yes	
- Open IE communication	Yes	P
- IRI	Yes	N
- MKP	Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50	P
- MRPD	Requirement: IRT	
- PROFlenergy	Yes	
- Prioritized startup	Yes; Max. 32 PROFINET devices	14
- Number of connectable IO Devices, max.	1/28; 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	S
 Number of connectable IO Devices for RT, max. 	128	١
- of which in line, max.	128	
 Number of IO Devices that can be simultaneously activated/ deactivated, max. 	8; in total across all interfaces	•
 Number of IO Devices per tool, max 	8	
- Updating times	The minimum value of the update time also depends on communi- cation share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	
Update time for IRT		
- for send cycle of 250 µs	250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 500 µs of the isochronous OB is decisive	(
- for send cycle of 500 µs	500 µs to 8 ms	•
- for send cycle of 1 ms	1 ms to 16 ms	
- for send cycle of 2 ms	2 ms to 32 ms	•
- for send cycle of 4 ms	4 ms to 64 ms	
 With IRT and parameterization of "odd" send cycles 	Update time = set "odd" send clock (any multiple of 125 μ s: 375 μ s, 625	(
Update time for RT		•
- for send cycle of 250 us	250 µs to 128 ms	
- for send cycle of 500 us	500 µs to 256 ms	
- for send cycle of 1 ms	1 ms to 512 ms	
- for send cycle of 2 ms	2 ms to 512 ms	
- for send cycle of 4 ms	4 ms to 512 ms	

rticle number	6ES7512-1DK01-0AB0
	CPU 1512SP-1 PN, 200KB PROG./1MB DATA
ROFINET IO Device	
ervices	
- PG/OP communication	Yes
- S7 routing	Yes
- Isochronous mode	No
 Open IE communication 	Yes
- IRT	Yes
- MRP	Yes
- MRPD	Yes; Requirement: IRT
- PROFlenergy	Yes
- Shared device	Yes
 Number of IO Controllers with shared device, max. 	4
. Interface	
nterface types	
Number of ports	1
RS 485	Yes; Via CM DP module
unctionality	
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
SIMATIC communication	Yes
rotocols	
lumber of connections	
Number of connections, max.	128
ROFIBUS DP master	
ervices	
- Number of DP slaves	125; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
sochronous mode	
sochronous operation (application synchronized up to terminal)	Yes; Only with PROFINET; with minimum OB 6x cycle of 625 µs
upported technology objects	
Notion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
Number of available Motion Control resources for technology objects (except cam disks)	800
• Required Motion Control resources	
- per speed-controlled axis	40
- per positioning axis	80
- per synchronous axis	160
- per external encoder	80
- per output cam	20
- per cam track	160
- per probe	40
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
	optimization for temperature
High ano measuring	Voo
n ngn-speed counter	100

CPU 1512SP-1 PN

Technical specifications (continued)

Article number	6ES7512-1DK01-0AB0
	CPU 1512SP-1 PN, 200KB PROG./1MB DATA
Ambient conditions	
Ambient temperature during operation	
 horizontal installation, min. 	0 °C
 horizontal installation, max. 	60 °C
 vertical installation, min. 	0 °C
 vertical installation, max. 	50 °C
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- GRAPH	Yes

Article number	6ES7512-1DK01-0AB0
	CPU 1512SP-1 PN, 200KB
	PROG./1MB DATA
Know-how protection	
User program protection/password protection	Yes
 Copy protection 	Yes
 Block protection 	Yes
Access protection	
Protection level: Write protection	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Complete protection 	Yes
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	310 g

Ordering data	Article No.
CPU 1512SP-1 PN	6ES7512-1DK01-0AB0
Work memory 200 KB for program, 1 MB for data, PROFINET IO IRT interface; SIMATIC Memory Card required	
Accessories	
CM DP for ET 200SP CPU	6ES7545-5DA00-0AB0
PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbit/s	
SIMATIC Memory Card	
4 MB	6ES7954-8LC02-0AA0
12 MB	6ES7954-8LE02-0AA0
24 MB	6ES7954-8LF02-0AA0
256 MB	6ES7954-8LL02-0AA0
2 GB	6ES7954-8LP02-0AA0
32 GB	6ES7954-8LT03-0AA0
DIN rail 35 mm	
 Length: 483 mm for 19" cabinets 	6ES5710-8MA11
 Length: 530 mm for 600 mm cabinets 	6ES5710-8MA21
Length: 830 mm for 900 mm cabinets	6ES5710-8MA31
• Length: 2 m	6ES5710-8MA41
PE connection element for DIN rail 2000 mm	6ES7590-5AA00-0AA0

	Article No.
BusAdapter BA 2xRJ45	6ES7193-6AR00-0AA0
BusAdapter BA 2xFC for increased vibration and EMC loads	6ES7193-6AF00-0AA0
BusAdapter BA 2xSCRJ	6ES7193-6AP00-0AA0
BusAdapter BA SCRJ/RJ45	6ES7193-6AP20-0AA0
BusAdapter BA SCRJ/FC	6ES7193-6AP40-0AA0
BusAdapter BA 2xLC	6ES7193-6AG00-0AA0
BusAdapter BA LC/RJ45	6ES7193-6AG20-0AA0
BusAdapter BA LC/FC	6ES7193-6AG40-0AA0
Reference identification label	6ES7193-6LF30-0AW0
10 sheets of 16 labels	
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	6ES7193-6LA10-0AA0
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	6ES7193-6LA10-0AG0

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based on ET 200SP SIPLUS standard CPUs

Overview



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Note

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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	6AG1512-1DK01-2AB0
Based on	6ES7512-1DK01-0AB0
	SIPLUS ET 200SP CPU 1512SP-1 PN
Ambient conditions	
Ambient temperature during operation	
 horizontal installation, min. 	-40 °C; = Tmin; Startup @ -25 °C
 horizontal installation, max. 	60 °C
 vertical installation, min. 	0° 0
 vertical installation, max. 	50 °C
Extended ambient conditions	
 relative to ambient temperature- atmospheric pressure-installation 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)
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	
 against biologically active substances / conformity with EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
 against chemically active substances / conformity with EN 60721-3-3 	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!
 against mechanically active substances / conformity with EN 60721-3-3 	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!