Data sheet

SIPLUS S7-1500 CPU 1518-4 PN/DP with conformal coating based on 6ES7518-4AP00-0AB0 . Central processing unit with Work memory 3 MB for Program and 10 MB for data, 1st interface, PROFINET IRT with 2-port switch, 2nd interface, Ethernet, 3rd interface, Ethernet, 4th interface, PROFIBUS, 1 ns bit-performance, SIMATIC Memory Card required



Figure similar

General information	
Product type designation	CPU 1518-4 PN/DP
HW functional status	FS01
Firmware version	V1.5
Engineering with	
 STEP 7 TIA Portal configurable/integrated as of version 	V13
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	6
Mode selector switch	1
Supply voltage	
Type of supply voltage	24 V DC
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V

Reverse polarity protection	Yes
Input current	
Current consumption (rated value)	1.55 A
Inrush current, max.	2.4 A; Rated value
l²t	0.45 A²·s
Dower	
Power Infeed power to the backplane bus	12 W
Power consumption from the backplane bus	30 W
(balanced)	
2	
Power loss Power loss, typ.	24 W
Power loss, typ.	24 VV
Memory	
SIMATIC memory card required	Yes
Work memory	
integrated (for program)	3 Mbyte
• integrated (for data)	10 Mbyte
Load memory	
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	1 ns
for word operations, typ.	2 ns
for fixed point arithmetic, typ.	2 ns
for floating point arithmetic, typ.	6 ns
CPU-blocks	
Number of blocks (total)	10 000
DB	
• Number, max.	10 000; Number range: 1 to 65535
• Size, max.	10 Mbyte
FB	
Number, max.	9 998; Number range: 1 to 65535
• Size, max.	512 kbyte
FC	
Number, max.	9 999; Number range: 1 to 65535
• Size, max.	512 kbyte
OB	
• Cina many	512 kbyte
Size, max.	•
Size, max.Number of free cycle OBs	100

Number of process alarm OBs Number of IDPV1 alarm OBs Number of isochronous mode OBs Number of isochronous mode OBs Number of sechnology synchronous alarm OBs Number of startup OBs Number of startup OBs Number of synchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Nesting depth Per priority class Counters, timers and their retentivity S7 counter Number No No No Local data Per priority class, max. 64 kbyte; max. 16 KB per block	Number of delay alarm OBsNumber of cyclic interrupt OBs	20 20
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Local data ● per priority class, max. 64 kbyte; max. 16 KB per block		
• per priority class, max. 64 kbyte; max. 16 KB per block	• •	
		64 kbyte; max. 16 KB per block
	Address area	

Number of IO modules	8 192
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	16 kbyte; 16 KB via the integrated PROFINET IO interface, 8 KB via the integrated DP interface
— Outputs (volume)	16 kbyte; 16 KB via the integrated PROFINET IO interface, 8 KB via the integrated DP interface
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	10
Number of DP masters	
• integrated	1
● Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
• integrated	1
● Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	
Modules per rack, max.	32; CPU + 31 modules
 Number of lines, max. 	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
• Number	8
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
→ III AO, SIAVE	100

Interfaces	• on Ethernet via NTP	Yes
Number of PROFINET Interfaces 3	Interfaces	
Interface types • Number of ports • Integrated switch • PROFINET IO Controller • Mumber of ports • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Ves • Media redundancy 2. Interface Interface types • Number of ports • integrated switch • PROFINET IO Controller • No • SIMATIC communication • Yes • SIMATIC communication • Yes • SIMATIC communication • Yes • Web server 3. Interface Interface types • Number of ports • integrated switch • No • RJ 45 (Ethernet) • Yes 9 PROFINET IO Controller • No • PROFINET IO Controller • No • SIMATIC communication • Yes • Web server 7 Yes 3. Interface Interface Interface Interface types • Number of ports • integrated switch • No • RJ 45 (Ethernet) • Yes • Web server 7 Yes 4. Interface 1. Interface • PROFINET IO Controller •		3
Number of ports 2	Number of PROFIBUS interfaces	1
Number of ports integrated switch RJ 45 (Ethernet) Yes PROFINET IO Controller PROFINET IO Device PROFINET IO Controller PROFINET IO Evice SIMATIC communication Yes Open IE communication Yes Web server Media redundancy 2. Interface Interface types Number of ports integrated switch RJ 45 (Ethernet) PROFINET IO Controller PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes Protocols PROFINET IO Device SIMATIC communication Yes Sumber of ports integrated switch No PROFINET IO Device No SIMATIC communication Yes Web server SIMATIC communication Yes Number of ports integrated switch No PROFINET IO Controller No RJ 45 (Ethernet) PROFINET IO Controller No PROFINET IO Controller PROFINET IO Controller No PROFINET IO Controller No PROFINET IO Controller No PROFINET IO Controller PROFINET IO Controller PROFINET IO Controller No PROFINET IO Controller No PROFINET IO Controller No PROFINET IO Controller No PROFINET IO Controller PROFINET IO Controller No No No No No No No No No	1. Interface	
integrated switch	Interface types	
R.J. 45 (Ethernet) Yes	Number of ports	2
Protocols	• integrated switch	Yes
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Ves Web server Media redundancy 2. Interface types Number of ports integrated switch PROFINET IO Controller PROFINET IO Device SIMATIC communication Ves 3. Interface Interface Interface types Number of ports integrated switch PROFINET IO Controller PROFINET IO Device SIMATIC communication Ves Ves 3. Interface types Number of ports integrated switch No RJ 45 (Ethernet) Yes Protocols PROFINET IO Controller No No RJ 45 (Ethernet) Yes Protocols PROFINET IO Controller No PROFINET IO Controller No PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes Ves Ves 4. Interface	• RJ 45 (Ethernet)	Yes
PROFINET IO Device SIMATIC communication Yes Open IE communication Yes Web server Media redundancy 2. Interface Interface Interface types Number of ports integrated switch PROFINET IO Controller PROFINET IO Device SIMATIC communication Web server 3. Interface Interface types ● Number of ports ● PROFINET IO Device No PROFINET IO Device SIMATIC communication Yes 3. Interface Interface types ● Number of ports integrated switch No PROFINET IO Controller No PROFINET IO Device SIMATIC communication Yes Protocols ● PROFINET IO To the label to the	Protocols	
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Web server Media redundancy Pes Number of ports Interface types Number of ports Interface types No RJ 45 (Ethernet) PROFINET IO Controller PROFINET IO Device SIMATIC communication Web server No RJ 45 (Ethernet) Protocols PROFINET IO Device No SIMATIC communication Pes RJ 45 (Ethernet) Protocols PROFINET IO Device No PROFINET IO Device No RJ 45 (Ethernet) Protocols Protocols Profinerace types Number of ports Number of ports RJ 45 (Ethernet) Protocols PROFINET IO Controller No RJ 45 (Ethernet) Protocols PROFINET IO Controller PROFINET IO Device No SIMATIC communication PROFINET IO Device SIMATIC communication Yes Open IE communication Yes Web server Ves No Web server Ves	Open IE communication	Yes
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Interface types	Media redundancy	Yes
Interface types • Number of ports • integrated switch • RJ 45 (Ethernet) Protocols • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Web server 3. Interface Interface types • Number of ports • integrated switch • RJ 45 (Ethernet) Protocols • PROFINET IO Controller • No • Web server 1 • No • RJ 45 (Ethernet) Protocols • PROFINET IO Controller • RJ 45 (Ethernet) PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • PROFINET IO Device • SIMATIC communication • Yes • Open IE communication • Yes • Web server 4. Interface	2. Interface	
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PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes Open IE communication Web server No No No No Number of ports Interface types No RJ 45 (Ethernet) PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes No Open IE communication Yes No PROFINET IO Device No SIMATIC communication Yes Open IE communication Yes Web server No Web server Yes	• RJ 45 (Ethernet)	Yes
	Protocols	
SIMATIC communication Open IE communication Web server Yes 3. Interface Interface types Number of ports Integrated switch RJ 45 (Ethernet) Yes PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Yes Yes Yes Yes 4. Interface	PROFINET IO Controller	No
Open IE communication Web server Yes Interface Interface types Number of ports Integrated switch Integrated switch RJ 45 (Ethernet) Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Ves Interface Yes 4. Interface	PROFINET IO Device	No
Web server Yes Interface Interface types Number of ports Integrated switch Integrated switch RJ 45 (Ethernet) Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Interface	 SIMATIC communication 	Yes
3. Interface Interface types • Number of ports • integrated switch • RJ 45 (Ethernet) Protocols • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface	Open IE communication	Yes
Interface types • Number of ports • integrated switch • RJ 45 (Ethernet) Protocols • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 1 1 No Yes No Yes Yes 4. Interface	• Web server	Yes
 Number of ports integrated switch RJ 45 (Ethernet) Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface 	3. Interface	
 integrated switch RJ 45 (Ethernet) Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface 	Interface types	
 RJ 45 (Ethernet) Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface 	Number of ports	1
Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface	integrated switch	No
 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Yes A. Interface 	• RJ 45 (Ethernet)	Yes
 PROFINET IO Device SIMATIC communication Open IE communication Web server Yes 4. Interface 	Protocols	
 SIMATIC communication Open IE communication Web server Yes Yes Yes A. Interface 	PROFINET IO Controller	No
 Open IE communication Web server Yes Yes 4. Interface 	PROFINET IO Device	No
Web server Yes 4. Interface	 SIMATIC communication 	Yes
• Web server Yes 4. Interface	Open IE communication	Yes
		Yes
	4. Interface	

Number of ports	1	
• RS 485	Yes	
Protocols		
PROFIBUS DP master	Yes	
 PROFIBUS DP slave 	No	
 SIMATIC communication 	Yes	
Interface types		

Interface types		
RJ 45 (Ethernet)		
• 100 Mbps	Yes	
 Autonegotiation 	Yes	
 Autocrossing 	Yes	
 Industrial Ethernet status LED 	Yes	
RS 485		
Transmission rate, max.	12 Mbit/s	

Number of connections		
	 Number of connections, max. 	384; via integrated interfaces of the CPU and connected CPs / CMs
	 Number of connections reserved for ES/HMI/web 	10
	 Number of connections via integrated interfaces 	192
	 Number of S7 routing paths 	64; in total, only 16 S7-Routing connections are supported via

Number of S7 routing paths	PROFIBUS
PROFINET IO Controller	

Services			
— PG/OP communication	Yes		
— S7 routing	Yes		
— Isochronous mode	Yes		
— Open IE communication	Yes		
— IRT	Yes		
— PROFlenergy	Yes		
— Prioritized startup	Yes; Max. 32 PROFINET devices		
— Number of connectable IO Devices, max.	512; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET		
— Of which IO devices with IRT, max.	64		
 Number of connectable IO Devices for RT, 	512		
max.			
— of which in line, max.	512		
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8		
— Number of IO Devices per tool, max.	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
Update time for IRT	
— for send cycle of 250 μs	250 μs to 4 ms
— 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 $\mu s.$ 375 $\mu s,$ 625 μs 3 875 $\mu s)$
Update time for RT	
— for send cycle of 250 μs	250 μs to 128 ms
— for send cycle of 500 μs	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
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
 Open IE communication 	Yes
— IRT	Yes
— PROFlenergy	Yes
— Shared device	Yes
 Number of IO Controllers with shared device, max. 	4
Redundancy mode	
• MRP	Yes; as MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50
SIMATIC communication	
 S7 communication, as server 	Yes
 S7 communication, as client 	Yes
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	
• TCP/IP	Yes
— Data length, max.	64 kbyte
 several passive connections per port, supported 	Yes
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte

	V
• UDP	Yes
— Data length, max.	1 472 byte
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	Yes; Standard and user-defined pages
• HTTPS	Yes; Standard and user-defined pages
PROFIBUS DP master	
Number of connections, max.	48; for the integrated PROFIBUS DP interface
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	Yes
— Equidistance	Yes
— Number of DP slaves	125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET
 Activation/deactivation of DP slaves 	Yes
Further protocols	
• MODBUS	Yes; MODBUS TCP
Media redundancy	
Switchover time on line break, typ.	200 ms
 Number of stations in the ring, max. 	50
-	
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	32
Program alarms	Yes
Number of configurable program messages, max.	10 000
Number of simultaneously active program alarms	1 000
Test commissioning functions	
Status block	Yes; Up to 16 simultaneously
Single step	No
Status/control	
Status/control variable	Yes
 Variables 	Inputs, outputs, memory bits, DB, times, counters
Number of variables, max.	
— of which status variables, max.	200; per job

of which control variables, max.	200; per job	
— or which control variables, max.	200, per jub	
• Forcing, variables	Inputs, outputs	
Number of variables, max.	200	
Diagnostic buffer	200	
	Yes	
• present	3 200	
Number of entries, max.	1 000	
— of which powerfail-proof	1 000	
Traces	0	
Number of configurable Traces	8	
Interrupts/diagnostics/status information		
Diagnostics indication LED		
RUN/STOP LED	Yes	
• ERROR LED	Yes	
• MAINT LED	Yes	
 Connection display LINK TX/RX 	Yes	
Supported technology chiests		
Supported technology objects Motion Control	Yes	
Speed-controlled axis		
Number of speed-controlled axes, max.	128; Up to 128 axes in total (speed-controlled, positioning axis,	
Number of speed controlled axes, max.	external encoders) are supported	
Positioning axis		
 Number of positioning axes, max. 	128; Up to 128 axes in total (speed-controlled, positioning axis,	
	external encoders) are supported	
External encoders		
 Number of external encoders, max. 	128; Up to 128 axes in total (speed-controlled, positioning axis,	
	external encoders) are supported	
Controller		
PID_Compact	Yes; Universal PID controller with integrated optimization	
PID_3Step	Yes; PID controller with integrated optimization for valves	
Counting and measuring		
High-speed counter	Yes	
Ambient conditions		
Ambient temperature during operation		
horizontal installation, min.	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	
• vertical installation, min.	0 °C; = Tmin	
vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40	
vortion installation, max.	°C, the display is switched off	
Ambient temperature during storage/transportation		
• min.	-40 °C	

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 availability
 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

Configuration		
Programming		
Programming language		
— LAD	Yes	
— FBD	Yes	
— STL	Yes	
— SCL	Yes	
— GRAPH	Yes	
Know-how protection		
User program protection/password protection	Yes	
 Copy protection 	Yes	
 Block protection 	Yes	
Access protection		
Password for display	Yes	
 Protection level: Write protection 	Yes	
 Protection level: Read/write protection 	Yes	
 Protection level: Complete protection 	Yes	
Cycle time monitoring		
• lower limit	adjustable minimum cycle time	
• upper limit	adjustable maximum cycle time	
Dimensions		
Width	175 mm	
Height	147 mm	
Depth	129 mm	
Weights		
Weight, approx.	1 988 g	
last modified:	08/30/2019	