SIEMENS

Data sheet

Conoral informati

6ES7518-4AP00-0AB0

SIMATIC S7-1500, CPU 1518-4 PN/DP, CENTRAL PROCESSING UNIT WITH WORKING MEMORY 4 MB FOR PROGRAM AND 20 MB FOR DATA, 1. INTERFACE: PROFINET IRT WITH 2 PORT SWITCH, 2. INTERFACE: PROFINET RT, 3. INTERFACE: ETHERNET, 4. INTERFACE: PROFIBUS, 1 NS BIT-PERFORMANCE, SIMATIC MEMORY CARD NECESSARY



General information	
Product type designation	CPU 1518-4 PN/DP
HW functional status	FS04
Firmware version	V2.0
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	V14
Configuration control	
via dataset	Yes
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
Mains buffering	
Mains/voltage failure stored energy time	5 ms
Input current	
Current consumption (rated value)	1.55 A
Inrush current, max.	2.4 A; Rated value
²t	0.02 A ² ·s
Power	
Power consumption from the backplane bus	30 W
(balanced)	
Infeed power to the backplane bus	12 W
Power loss	
Power loss, typ.	24 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
 integrated (for program) 	4 Mbyte
 integrated (for data) 	20 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 elements (total)	10 000; Blocks (OB, FB, FC, DB) and UDTs
DB	
 Number range 	1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	16 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 \ensuremath{KB}
FB	
Number range	0 65 535
• Size, max.	512 kbyte
FC	

size, max.512 kbyte6868686060616162626364 </th <th>Number range</th> <th>0 65 535</th>	Number range	0 65 535
OB 512 kbyte • Size, max. 512 kbyte • Number of free cycle OBs 100 • Number of time alarn OBs 20 • Number of cyclic interrupt OBs 20 • Number of opcics alarn OBs 20 • Number of process alarn OBs 50 • Number of process alarn OBs 3 • Number of isochnonus mode OBs 2 • Number of sisochnonus andro OBs 100 • Number of saynchronous andro OBs 100 • Number of saynchronous error OBs 4 • Number of saynchronous error OBs 1 • Number of saynchronous error OBs 1 • Number of saynchronous error OBs 1 • Number of dagnostic alarn OBs 2 • Number Yes <td>-</td> <td></td>	-	
Number of free cycle OBs100• Number of time alarm OBs20• Number of delay alarm OBs20• Number of cycle interrupt OBs20• Number of process alarm OBs50• Number of DPV1 alarm OBs3• Number of technology synchronous alarm OBs2• Number of technology synchronous alarm OBs2• Number of startup OBs4• Number of signchronous entor OBs2• Number of signchronous entor OBs2• Number of alagnostic alarm OBs2• Number of alignostic alarm OBs2 <t< td=""><td></td><td>,</td></t<>		,
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• Number of cyclic interrupt OBs20, With minimum OB 3x cycle of 100 µs• Number of process alarm OBs50• Number of DPV1 alarm OBs3• Number of stochnonous mode OBs2• Number of stochnonous mode OBs100• Number of stochnonous enror OBs4• Number of asynchronous enror OBs2• Number of asynchronous enror OBs2• Number of diagnostic alarm OBs100• Number of diagnostic alarm OBs2• Number of alaynostic alarm OBs2• Alaynostic alarm OBs	 Number of delay alarm OBs 	20
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Flag • Number, max. 16 kbyte • Number of clock memories 8; 8 clock memory bits, grouped into one clock memory byte Data blocks 2000 memory bits, grouped into one clock memory byte	— adjustable	Yes
 Number, max. Number of clock memories Data blocks 16 kbyte 8; 8 clock memory bits, grouped into one clock memory byte 	Data areas and their retentivity	
• Number of clock memories 8; 8 clock memory bits, grouped into one clock memory byte Data blocks		
Data blocks	• Number, max.	16 kbyte
	 Number of clock memories 	8; 8 clock memory bits, grouped into one clock memory byte
Retentivity adjustable Yes	Data blocks	
	Retentivity adjustable	Yes

Retentivity preset	No
Local data	
• per priority class, max.	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	16 384; max. number of modules / submodules
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	64; A distributed I/O system is characterized not only by the
·	integration of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS- i master modules or links (e.g. IE/PB-Link)
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	2
• 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	
• Туре	Hardware clock
Backup time	6 why At 40 °C ambient temperature typically
	6 wk; At 40 °C ambient temperature, typically

Operating hours counter	
• Number	16
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
 on Ethernet via NTP 	Yes
Interfaces	
Number of PROFINET interfaces	3
Number of PROFIBUS interfaces	1
1. Interface	
Interface types	
Number of ports	2
 integrated switch 	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
 SIMATIC communication 	Yes
 Open IE communication 	Yes
Web server	Yes
 Media redundancy 	Yes
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	Yes
— Open IE communication	Yes
— IRT	Yes
— MRP	Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50
— MRPD	Yes; Requirement: IRT
— 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 AS-i, PROFIBUS or PROFINET
— Of which IO devices with IRT, max.	64
 — Number of connectable IO Devices for RT, max. 	512
— of which in line, max.	512

 — 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 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 125 μs	125 µs
— for send cycle of 187.5 μ s	187.5 µs
— 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 μs : 375 μs , 625 μs 3 875 μs)
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
— MRP	Yes
— MRPD	Yes; Requirement: IRT
— PROFlenergy	Yes
— Shared device	Yes
- Number of IO Controllers with shared	4
device, max.	
2. Interface	
Interface types	1
Number of ports	1
• integrated switch	No Voz X2
• RJ 45 (Ethernet)	Yes; X2
Functionality	Vez
 PROFINET IO Controller 	Yes

PROFINET IO Device	Yes
 SIMATIC communication 	Yes
 Open IE communication 	Yes
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— PROFlenergy	Yes
— Prioritized startup	No
 — Number of connectable IO Devices, max. 	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. 	128
— of which in line, max.	128
 — Number of IO Devices that can be simultaneously activated/deactivated, max. 	8; in total across all interfaces
— 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 RT	
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
— Prioritized startup	No
— Shared device	Yes
 — Number of IO Controllers with shared device, max. 	4
2 Interface	

3. Interface

Interface types	
Number of ports	1
 integrated switch 	No
• RJ 45 (Ethernet)	Yes; X3
Functionality	
PROFINET IO Controller	No
PROFINET IO Device	No
 SIMATIC communication 	Yes
Open IE communication	Yes
• Web server	Yes
4. Interface	
Interface types	
Number of ports	1
• RS 485	Yes; X4
Functionality	
PROFIBUS DP master	Yes
PROFIBUS DP slave	No
SIMATIC communication	Yes
Interface types RJ 45 (Ethernet)	
• 100 Mbps	Yes
• 1000 Mbps	Yes; Only possible at the X3 interface of the CPU 1518
Autonegotiation	Yes
Autocrossing	Yes
 Industrial Ethernet status LED 	Yes
RS 485	
 Transmission rate, max. 	12 Mbit/s
Protocols	
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 PROFIBUS
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
• UDP	Yes
— Data length, max.	1 472 byte
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
PROFIBUS DP master	
 Number of connections, max. 	48; for the integrated PROFIBUS DP interface
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Data record 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 AS-i, PROFIBUS or PROFINET
 Activation/deactivation of DP slaves 	Yes
OPC UA	
OPC UA Server	Yes; Data access (read, write, subscribe), runtime license required
 Application authentication 	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
Further protocols	
• MODBUS	Yes; MODBUS TCP
Media redundancy	
• Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
 Number of stations in the ring, max. 	50
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 125 µs
to terminary	

Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	32
Block related messages	Yes
Number of configurable alarms, max.	10 000
Number of simultaneously active alarms in alarm	
pool	
 Number of reserved user alarms 	1 000
 Number of reserved alarms for system 	200
diagnostics	
 Number of reserved alarms for Motion Control 	160
technology objects	
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 10 engineering
	systems
Status block	Yes; Up to 16 simultaneously (in total across all ES clients)
Single step	No
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers,
	counters
• Number of variables, max.	
— of which status variables, max.	200; per job
— of which control variables, max.	200; per job
Forcing	
Forcing, variables	Peripheral inputs/outputs
• Number of variables, max.	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— of which powerfail-proof	1 000
Traces	
 Number of configurable Traces 	8; Up to 512 KB of data per trace are possible
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 objects	
Motion Control	Yes; Note: The number of axes affects the cycle time of the PLC
	program; selection guide via the TIA Selection Tool or SIZER

 Number of available Motion Control resources 	10 240
for technology objects (except cam disks)	
 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
 Positioning axis 	
 — Number of positioning axes at motion control cycle of 4 ms (typical value) 	128
 — Number of positioning axes at motion control cycle of 8 ms (typical value) 	128
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
 High-speed counter 	Yes
Ambient conditions	
	0 °C
Ambient conditions Ambient temperature during operation	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50
Ambient conditions Ambient temperature during operation • horizontal installation, min.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min.	 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
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	 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
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation	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
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min.	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
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Mbient temperature during storage/transportation • min. • max.	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
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max.	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
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, min. • vertical installation, max. Mbient temperature during storage/transportation • min. • max. Configuration Programming	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
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Configuration Programming Programming language	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 -40 °C 70 °C
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, min. • vertical installation, max. Mbient temperature during storage/transportation • min. • max. Configuration Programming Programming language — LAD	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 -40 °C 70 °C Yes
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Configuration • min. • max. Configuration Programming Programming language - LAD - FBD	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 -40 °C 70 °C Yes Yes
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. • moment temperature during storage/transportation • min. • max. Configuration Programming Programming language - LAD - FBD - STL	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 -40 °C 70 °C Yes Yes Yes
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Configuration • max. Configuration Programming Programming language - LAD - STL - SCL	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 -40 °C 70 °C Yes Yes Yes Yes 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
upper limit Dimensions	adjustable maximum cycle time
	adjustable maximum cycle time 175 mm
Dimensions	
Dimensions Width	175 mm
Dimensions Width Height	175 mm 147 mm
Dimensions Width Height Depth	175 mm 147 mm