



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



General information

Product type designation	CPU 1518T-3 PN
HW functional status	FS02
Firmware version	V4.1
• FW update possible	Yes
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 125 µs (distributed) and 1 ms (central)
• SysLog	Yes
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V21 (FW V4.1) / V20 (FW V4.0) or higher

Configuration control

via dataset	Yes
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Display

Screen diagonal [cm]	6.1 cm
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Control elements

Number of keys	8
Mode buttons	2

Supply voltage

Rated value (DC)	24 V
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
• Repeat rate, min.	1/s

Input current

Current consumption (rated value)	1.35 A; 1.45 A with performance boost
Current consumption, max.	2.1 A
Inrush current, max.	2.1 A; Rated value
I ² t	0.5 A ² ·s

Power

Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	30 W

Power loss

Power loss, typ.	20.4 W; 22.8 W with performance boost
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
• integrated (for program)	18 Mbyte
• integrated (for data)	150 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
• maintenance-free	Yes
CPU processing times	
for bit operations, typ.	0.3 ns
for word operations, typ.	0.8 ns
for fixed point arithmetic, typ.	0.8 ns
for floating point arithmetic, typ.	2.5 ns
CPU-blocks	
Number of elements (total)	40 000; 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 DBs with absolute addressing, the max. size is 64 KB
FB	
• Number range	0 ... 65 535
• Size, max.	1 Mbyte
FC	
• Number range	0 ... 65 535
• Size, max.	1 Mbyte
OB	
• Size, max.	1 Mbyte
• Number of free cycle OBs	100
• Number of time alarm OBs	20
• Number of delay alarm OBs	20
• Number of cyclic interrupt OBs	20; with minimum OB 3x cycle of 100 µs
• Number of process alarm OBs	50
• Number of DPV1 alarm OBs	3
• Number of isochronous mode OBs	3
• Number of startup OBs	100
• Number of asynchronous error OBs	4
• Number of synchronous error OBs	2
• Number of diagnostic alarm OBs	1
Nesting depth	
• per priority class	24
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
• Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
• Number	Any (only limited by the main memory)
Retentivity	

— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	4.5 Mbyte; in total; for bit memories, timers, counters, DBs, and technology data (axes)
Extended retentive data area (incl. timers, counters, flags), max.	100 Mbyte; When using PS 6 0W 24/48/60 V DC HF
Flag	
• Size, max.	16 kbyte
• Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
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)	32 kbyte
— Outputs (volume)	32 kbyte
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	
• 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	
• 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	64
Clock synchronization	
• supported	Yes
• to DP, master	Yes; via PROFIBUS CM / CP
• on DP, device	Yes; via PROFIBUS CM / CP
• in AS, master	Yes
• in AS, device	Yes
• on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	3
Number of PROFIBUS interfaces	0

1. Interface

Interface types	
• RJ 45 (Ethernet)	Yes; X1
• Number of ports	2
• integrated switch	Yes
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IEC communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes
PROFINET IO Controller	
Services	
— Isochronous mode	Yes
— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFenergy	Yes; per user program
— Prioritized startup	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
— Of which IO devices with IRT, max.	64; with DFP: 256 IO devices in 8 DFP groups
— 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 µs	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 ... 3875 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	
— Isochronous mode	Yes
— IRT	Yes; Minimum send cycle of 250 µs
— PROFenergy	Yes; per user program
— Shared device	Yes
— Number of IO Controllers with shared device, max.	4
— activation/deactivation of I-devices	Yes; per user program
— Asset management record	Yes; per user program

2. Interface

Interface types	
• RJ 45 (Ethernet)	Yes; X2
• Number of ports	2

• integrated switch	Yes
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IEC communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes
PROFINET IO Controller	
Services	
— Isochronous mode	Yes
— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFIdirect	Yes; per user program
— Prioritized startup	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
— Of which IO devices with IRT, max.	64; with DFP: 256 IO devices in 8 DFP groups
— 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 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 ... 3875 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	
— Isochronous mode	Yes
— IRT	Yes
— PROFIdirect	Yes; per user program
— Shared device	Yes
— Number of IO Controllers with shared device, max.	4
— activation/deactivation of I-devices	Yes; per user program
— Asset management record	Yes; per user program
3. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X3
• Number of ports	1
• integrated switch	No
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	No
• PROFINET IO Device	No
• SIMATIC communication	Yes

• Open IE communication	Yes; Optionally also encrypted
• Web server	Yes
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
• 1000 Mbps	Yes; only possible at the X3 interface of the CPU
• Autonegotiation	Yes
• Autocrossing	Yes
• Industrial Ethernet status LED	Yes
Protocols	
PROFIsafe	No
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	320
• Number of S7 routing paths	64
Redundancy mode	
• H-Sync forwarding	Yes
Media redundancy	
— Media redundancy	via the X1 or X2 interface
— MRP	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
— MRPD	Yes; Requirement: IRT
— Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
— Number of stations in the ring, max.	50
SIMATIC communication	
• PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
• S7 routing	Yes
• Data record routing	Yes
• 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.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; 128 multicast circuits (of which max. 5 via X1)
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
• Encryption	Yes; Optional
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
• web API	
— Number of sessions, max.	200
— number of simultaneous HTTP calls, max.	4
— HTTP request body, max.	131 072 byte
OPC UA	
• Runtime license required	Yes; "Large" license required
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call
— Application authentication	Yes

— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
— Number of connections, max.	40
— Number of nodes of the client interfaces, recommended max.	5 000
— Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_UA_WriteList, max.	300
— Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.	20
— Number of elements for one call of OPC_UA_MethodGetHandleList, max.	100
— Number of simultaneous calls of the client instructions for session management, per connection, max.	1
— Number of simultaneous calls of the client instructions for data access, per connection, max.	5; for OPC_UA_MethodCall 300 in total (no limit per connection)
— Number of registerable nodes, max.	5 000
— Number of registerable method calls of OPC_UA_MethodCall, max.	100
— Number of inputs/outputs when calling OPC_UA_MethodCall, max.	20
● OPC UA Server	
— Application authentication	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space
— Security policies	Yes
— User authentication	available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
— GDS support (certificate management)	"anonymous" or by user name & password
— Number of sessions, max.	Yes
— Number of accessible variables, max.	64
— Number of registerable nodes, max.	200 000
— Number of subscriptions per session, max.	100 000
— Sampling interval, min.	50
— Publishing interval, min.	10 ms
— Number of server methods, max.	10 ms
— Number of inputs/outputs per server method, max.	8 000; max. 200 concurrently running jobs each for asynchronous instructions OPC_UA_ServerMethodPre (V1.1) and OPC_UA_ServerMethodPost (V1.1)
— Number of monitored items, recommended max.	20
— Number of server interfaces, max.	60 000; for 1 s sampling interval and 1 s send interval
— Number of nodes for user-defined server interfaces, max.	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
● Alarms and Conditions	50 000
— Number of program alarms	Yes
— Number of alarms for system diagnostics	400
— Number of alarms for motion technology objects	200

Further protocols

● MODBUS	Yes; MODBUS TCP
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S7 message functions

Number of login stations for message functions, max.	64
Number of subscriptions, max.	750
Number of tags/attributes for subscriptions, max.	120 000
Program alarms	Yes
Number of configurable program messages, max.	20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	20 000
Number of simultaneously active program alarms	
● Number of program alarms	4 000
● Number of alarms for system diagnostics	1 000
● Number of alarms for motion technology objects	960

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	
Number of breakpoints	20	
Profiling	Yes	
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	Yes	
• 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	
• Memory size per trace, max.	512 kbyte	
Interrupts/diagnostics/status information		
Diagnostics indication LED		
• RUN/STOP LED	Yes	
• ERROR LED	Yes	
• MAINT LED	Yes	
• STOP ACTIVE LED	Yes	
• Connection display LINK TX/RX	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	
• Number of available Motion Control resources for technology objects	30 720	
• 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	
• Number of available Extended Motion Control resources for technology objects	1 560	
• Required Extended Motion Control resources		
— per cam (1 000 points and 50 segments)	2	
— per cam (10 000 points and 50 segments)	20	
— per cam (50 points and 600 segments)	2	
— per cam (50 points and 6 000 segments)	20	
— for each set of kinematics	30	
— per Interpreter	60	
— Per leading axis proxy	3	
• kinematics functions		
— kinematics with up to 4 interpolating axes	Yes; max. 3D + orientation	
— kinematics with 5 or more interpolating axes	Yes	
— user-defined kinematics	Yes	
— SIMATIC Safe Kinematics	No	
• Positioning axis		
— Number of positioning axes at motion control cycle of 4 ms (typical value)	280	
— Number of positioning axes at motion control cycle of 8 ms (typical value)	384	

Controller	<ul style="list-style-type: none"> • PID_Compact • PID_3Step • PID-Temp 	Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature
Counting and measuring	<ul style="list-style-type: none"> • High-speed counter 	Yes
Standards, approvals, certificates		
Siemens Eco Profile (SEP)	Siemens EcoTech	
Recycler Guide available	Yes	
Ecological footprint		
Global warming potential		
— global warming potential, (total) [CO2 eq]	432 kg	
— global warming potential, (during production) [CO2 eq]	71.7 kg	
— global warming potential, (during operation) [CO2 eq]	368 kg	
— global warming potential, (after end of life cycle) [CO2 eq]	-7.7 kg	
Security		
PROFINET Security Class	1	
signed firmware update	Yes	
Secure Boot	Yes	
safely removing data	Yes	
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	
Configuration		
Programming		
Programming language		
— LAD	Yes	
— FBD	Yes	
— STL	Yes	
— SCL	Yes	
— CFC	Yes	
— GRAPH	Yes	
Know-how protection		
• User program protection/password protection	Yes	
• Copy protection	Yes	
• Block protection	Yes	
Access protection		
• protection of confidential configuration data	Yes	
• Password for display	Yes	
• Protection level: Write protection	Yes	
• Protection level: Read/write protection	Yes	
• Protection level: Write protection for Failsafe	No	
• Protection level: Complete protection	Yes	
• User administration	Yes; device-wide and centralized	
• Number of users	100	
• Number of groups	100	
• Number of roles	50	

Cycle time monitoring																																						
• lower limit	adjustable minimum cycle time																																					
Dimensions																																						
Width	175 mm																																					
Height	147 mm																																					
Depth	129 mm																																					
Weights																																						
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Classifications																																						
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Approvals / Certificates
General Product Approval



[Miscellaneous](#)

[Manufacturer Declaration](#)

[KC](#)

[China RoHS](#)

General Product Approval	EMV	For use in hazardous locations
 	TUEV	KC

For use in hazardous locations	Maritime application
FM 	IECEx

Maritime application	other
 LRS	NK / Nippon Kaiji Kyokai

Environment

last modified:

11/26/2025 