SIEMENS

Data sheet

6ES7518-4AX00-1AC0



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

General information	
Product type designation	CPU 1518-4 PN/DP MFP
HW functional status	FS03
Firmware version	V2.9
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)
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V17 (FW V2.9) / V15 (FW V2.5) or higher
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	6
Mode selector switch	1
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)	1.7 A
Current consumption, max.	2 A
Inrush current, max.	2.7 A; Rated value
l²t	0.02 A ² ·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	35 W
Power loss	
Power loss, typ.	29 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	

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 integrated (for program) 	6 Mbyte
 integrated (for data) 	60 Mbyte
 integrated (for CPU function library of CPU 	50 Mbyte; Note: The "CPU function library of the CPU" are C/C++
Runtime)	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) 	1 024 Mbyte
 available (for Linux runtime application) 	1 Gbyte
Load memory	
 Plug-in (SIMATIC Memory Card), max. 	32 Gbyte; the memory card must have at least 2 GB of space on it
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
	0.113
CPU-blocks	
Number of elements (total)	20 000; 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	0.05.505
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 technology synchronous alarm OBs	2
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	(only inflice by the fidin memory)
	Yes
— adjustable	
S7 times	2.049
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	

6ES75184AX001AC0 Page 2/9 Retentive data area (incl. timers, counters, flags), max.

Extended retentive data area (incl. timers, counters, flags), max.

768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB 20 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; max. 32 KB via X1; max. 8 KB via X2 or X4
— Outputs (volume)	32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
	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	
• 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	100, 1Jp. 20
Number	16
Clock synchronization	
	Vos
• 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	
1. Interface	
Interface types	Yee: X1
	Yes; X1 2

 integrated switch 	Yes
integrated switch Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
 Open IE communication Web server 	Yes; Optionally also encrypted Yes
	Yes
Media redundancy PROFINET IO Controller	res
Services	
— PG/OP communication	Yes
— Isochronous mode	Yes
— Direct data exchange — IRT	Yes; Requirement: IRT and isochronous mode (MRPD optional) Yes
— PROFlenergy	Yes; per user program
— 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	8; in total across all interfaces
simultaneously activated/deactivated, max.	ט, ווו נטנמו מנושפי מוו ווונרומניבי
— 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 	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625
cycles	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
— Isochronous mode	No
— IRT	Yes; Minimum send cycle of 250 µs
— PROFlenergy	Yes; per user program
— Shared device	Yes
 Number of IO Controllers with shared device, 	4
max. — activation/deactivation of I-devices	Voe: per user program
	Yes; per user program Yes; per user program
Asset management record	
2. Interface	
Interface types	V
• RJ 45 (Ethernet)	Yes; X2
Number of ports	1
integrated switch	No
Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes

• SIAATIC communication Yes • Open Economulcation Yes • Media refundancy Yes • Media refundancy Yes • PROFINET IC Controller Services • Pack Open Economulcation Yes • Isectionous mode No • Isectionous mode No • Isectionous mode No • FIRIT No • Statistical statup No • Murcher of concerable IO Devices for RT, max 8 • First Mode Grade Carutono, max 8 • First Mode Grade Carutono, max 8 • Fort PROFINET IO Device First Mode Grade Carut		Yes
Web server PROFINET IO Controller Services PROFINET IO Controller Services PROFINET IO Controller No PROFINET No PROFINET No No No No PROFINET No No No No PROFINET No No No No No No PROFINET No	Open IF communication	
• Module redundancy No PROCIPIET ICO Controller Services - - PCIOP communication Yes - blockhorous mode No - Direct data exchange No - Direct data exchange No - PROFILEREDY Yes, per user program - Profilerergy Yes, per user program - Number of connectable IO Devices (RT, max 128 - Number of Connectable IO Devices for RT, max 128 - Number of Connectable IO Devices for RT, max 128 - Number of Devices per tool, max 8 - Number of Devices per tool, max 8 - Number of IO Devices per tool, max 8 - Number of IO Devices per tool, max 8 - Defined cycle 01 ms Thre to 512 ms PROFINET IO Device Yes - PROFIC Portmunication Yes - Number of IO Controllers with shared device, max Yes, per user program - PROFIET PD Device Yes, per user program - PROFIET PD Device Yes, per user program - Number of IO Controllers with shared device, max Yes, per user program - Number of IO Controllers with shared devi		
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Services	· ·	
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		Yes
Instrumentation I		
PPOFIlenergy Yes; per user program Protocols Proceedings	-	
 Prioritized startup No Number of connectable IO Devices, max. Author of connectable IO Devices for RT, max. of which in line, max. 128 Number of IO Devices that can be assessed interfaces Second Control Devices per tool, max. Number of IO Devices per tool, max. No to SI2 ms PROFINET IO Device IT PROFINET IO Device IT Services PROFINET IO Device IT Services PROFINET IO Device IT Services Services<td></td><td></td>		
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AS-, PROFINET AS		
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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 8 — Updating times 8 — Updating times 1 ms to 512 ms PROFINET IO Devices 9 PROFINET IO Device 9 Services 9 — Isochronous mode No — RT M No — PROFerrery Yes; per user program — Asset management record Yes; per user program — Asset management record Yes; per user program — Asset management record Yes; yes user program PROFERT IO Controllers Yes; X3 • Number of ports 1: C/C++ Runtime can also be reached via this port • Interface types Yes; IPV4 • PROFIET IO Controller No • PROFIET IO Cont	 — Number of connectable IO Devices for RT. 	
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3. Interface Interface types • RJ 45 (Ethernet) Yes; X3 • Number of ports 1; C/C++ Runtime can also be reached via this port • Interface types No Protocols Yes; IPv4 • PROFINET IO Controller No • PROFINET IO Device No • SIMATIC communication Yes • Web server Yes 4. Interface Yes; X4 • Number of ports 1 Protocols Yes PROFIBUS DP master Yes • PROFIBUS DP master Yes • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services - PG/OP communication Yes <		
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Protocols• IP protocolYes; IPv4• PROFINET IO ControllerNo• PROFINET IO DeviceNo• SIMATIC communicationYes• Open IE communicationYes• Web serverYes4. InterfaceInterface types• RS 485Yes; X4• Number of ports1Protocols• PROFIBUS DP masterYes• PROFIBUS DP slaveNo• SIMATIC communicationYesPROFIBUS DP masterYes• PROFIBUS DP masterYes• Number of connections, max.48; for the integrated PROFIBUS DP interface• Number of DP slaves, max.425; In total, up to 1 000 distributed I/O devices can be connected via Asi, PROFIBUS DP ROFIBUS OF PROFIBUS OF PROFIB		
• IP protocol Yes; IPv4 • PROFINET IO Controller No • PROFINET IO Device No • SIMATIC communication Yes • Open IE communication Yes • Web server Yes 4. Interface Yes Interface types Yes; X4 • Number of ports 1 Protocols Yes • PROFIBUS DP master Yes • PROFIBUS DP master Yes • RSHATIC communication Yes • Number of ports 1 PROFIBUS DP master Yes • PROFIBUS DP master Yes • PROFIBUS DP master Yes • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. Yes Services — PG/OP communication — PG/OP commun		No
• PROFINET IO ControllerNo• PROFINET IO DeviceNo• SIMATIC communicationYes• Open IE communicationYes• Web serverYes 1 Interface Yes 1 Interface types Yes; X4• Number of ports1ProtocolsYes• PROFIBUS DP masterYes• PROFIBUS DP slaveNo• SIMATIC communicationYes PROFIBUS DP master Yes• PROFIBUS DP slaveNo• SIMATIC communicationYes PROFIBUS DP master 125; in total, up to 1 000 distributed I/O devices can be connected via AS; in pROFIBUS or PROFINETServices PG/OP communicationYes- PG/OP communicationYes- PG/OP communicationYes- PG/OP communicationYes- EquidistanceYes	Protocols	
• PROFINET IO DeviceNo• SIMATIC communicationYes• Open IE communicationYes• Web serverYes• Web serverYes• InterfaceYes• Interface typesYes; X4• Number of ports1• Protocols1• PROFIBUS DP masterYes• PROFIBUS DP masterYes• PROFIBUS DP slaveNo• SIMATIC communicationYes• ROFIBUS DP masterYes• Number of connections, max.48; for the integrated PROFIBUS DP interface• Number of DP slaves, max.125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or		
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• Web server Yes 4. Interface Interface types • RS 485 Yes; X4 • Number of ports 1 Protocols 1 • PROFIBUS DP master Yes • PROFIBUS DP slave No • SIMATIC communication Yes PROFIBUS DP master Yes • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. Yes Services - - PG/OP communication Yes - Peneticitation Yes	PROFINET IO Controller PROFINET IO Device	No No
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Interface types • RS 485 Yes; X4 • Number of ports 1 Protocols • PROFIBUS DP master Yes • PROFIBUS DP slave No • SIMATIC communication Yes PROFIBUS DP master Ves • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. Yes Services - PG/OP communication - Equidistance Yes	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication 	No No Yes Yes
• RS 485 Yes; X4 • Number of ports 1 Protocols 1 • PROFIBUS DP master Yes • PROFIBUS DP slave No • SIMATIC communication Yes PROFIBUS DP master Yes • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Deficience 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services - - PG/OP communication Yes - Equidistance Yes	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 	No No Yes Yes
• Number of ports1Protocols• PROFIBUS DP masterYes• PROFIBUS DP slaveNo• SIMATIC communicationYesPROFIBUS DP master• Number of connections, max.48; for the integrated PROFIBUS DP interface• Number of DP slaves, max.125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINETServices- PG/OP communicationYes- EquidistanceYes	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 	No No Yes Yes
Protocols Yes • PROFIBUS DP master Yes • PROFIBUS DP slave No • SIMATIC communication Yes PROFIBUS DP master Yes • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services — — PG/OP communication Yes — Equidistance Yes	PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface	No No Yes Yes
• PROFIBUS DP master Yes • PROFIBUS DP slave No • SIMATIC communication Yes PROFIBUS DP master Yes • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services — PG/OP communication — PG/OP communication Yes — Equidistance Yes	PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types	No No Yes Yes Yes
• PROFIBUS DP slave No • SIMATIC communication Yes PROFIBUS DP master • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services — — PG/OP communication Yes — Equidistance Yes	PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface RS 485	No No Yes Yes Yes
• SIMATIC communication Yes PROFIBUS DP master 48; for the integrated PROFIBUS DP interface • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services — — PG/OP communication Yes — Equidistance Yes	PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server <u>4. Interface Interface types RS 485 Number of ports } }</u>	No No Yes Yes Yes
PROFIBUS DP master 48; for the integrated PROFIBUS DP interface • Number of connections, max. 48; for the integrated PROFIBUS DP interface • Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services — — PG/OP communication Yes — Equidistance Yes	PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server <u>4. Interface Interface types </u>	No No Yes Yes Yes Yes; X4 1
Number of connections, max. Number of DP slaves, max. Number of DP slaves, max. Services PG/OP communication Equidistance Yes	PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server <u>4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master } }</u>	No No Yes Yes Yes Yes; X4 1 Yes
Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET OPG/OP communication PG/OP communication Yes Yes	PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server <u>4. Interface Interface RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave </u>	No No Yes Yes Yes Yes; X4 1 Yes No
Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET OPG/OP communication PG/OP communication Yes Yes	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication 	No No Yes Yes Yes Yes; X4 1 Yes No
Services — PG/OP communication Yes — Equidistance Yes	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master PROFIBUS DP master PROFIBUS DP master PROFIBUS DP master PROFIBUS DP master PROFIBUS DP master 	No No Yes Yes Yes; X4 1 Yes No Yes
— PG/OP communication Yes — Equidistance Yes	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. 	No No Yes Yes Yes Yes Yes No Yes No Yes A8; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via
— Equidistance Yes	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. 	No No Yes Yes Yes Yes Yes No Yes No Yes A8; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via
	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. 	No No Yes Yes Yes Yes; X4 1 Yes No Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Isochronous mode Yes	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services	No No Yes Yes Yes Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
	 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services PG/OP communication Equidistance 	No No Yes Yes Yes Yes Yes Yes No Yes A8; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via A8-i, PROFIBUS or PROFINET

- Activation/deactivation of DP slaves

Yes

— Activation/deactivation of DP slaves	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	
PROFIsafe	No
Number of connections	NO
Number of connections, max.	384; via integrated interfaces of the CPU and connected CPs / CMs
Number of connections, max. Number of connections reserved for ES/HMI/web	10
Number of connections reserved for Eon manweb	320
Number of S7 routing paths	64; in total, only 16 S7-Routing connections are supported via
	PROFIBUS
Redundancy mode	
H-Sync forwarding	Yes
Media redundancy	
— Media redundancy	only via 1st interface (X1)
— MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP
MDD interconnection ournerted	Manager; MRP Client
 MRP interconnection, supported MRPD 	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT
— Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD 50
 Number of stations in the ring, max. SIMATIC communication 	50
	Very energities with TLC V/4.2 are calented
PG/OP communication	Yes; encryption with TLS V1.3 pre-selected Yes
S7 routing	
Data record routing	Yes
 S7 communication, as server S7 communication, as client 	Yes
	Yes See online help (S7 communication, user data size)
User data per job, max. Open IE communication	See online help (37 continuation, user data size)
• TCP/IP	Yes
— Data length, max.	64 kbyte Yes
 several passive connections per port, supported 	1 05
 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
OPC UA	
 Runtime license required 	Yes; "Large" license required
OPC UA Client	Yes
 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
recommended max.	

 — Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C 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 	5
instructions for data access, per connection, max.	
 — 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	Yes; Data access (read, write, subscribe), method call, custom address space
 Application authentication 	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 — User authentication 	"anonymous" or by user name & password
 — GDS support (certificate management) 	Yes
 — Number of sessions, max. 	64
 — Number of accessible variables, max. 	200 000
 — Number of registerable nodes, max. 	50 000
 — Number of subscriptions per session, max. 	20
— Sampling interval, min.	10 ms
— Publishing interval, min.	10 ms
 — Number of server methods, max. 	100
 — Number of inputs/outputs per server method, max. 	20
 number of monitored items, recommended 	10 000; for 1 s sampling interval and 1 s send interval
max. — Number of server interfaces, max.	10 of each "Server interfaces" / "Companion specification" type and 20
 — Number of nodes for user-defined server 	of the type "Reference namespace" 30 000
interfaces, max. • Alarms and Conditions	Yes
— Number of program alarms	400
— Number of program atoms — Number of alarms for system diagnostics	200
Further protocols	200
MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	64
Program alarms	Yes
Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	5 000
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 	480
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
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	200, per job
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 technology objects affects the cycle time of
	the PLC program; selection guide via the TIA Selection Tool
Number of available Motion Control resources for	15 360
technology objects	
Required Motion Control resources	10
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160 80
— per external encoder	20
— per output cam — per cam track	160
— per probe	40
Positioning axis	10
— Number of positioning axes at motion control	140
cycle of 4 ms (typical value)	
 — Number of positioning axes at motion control 	192
cycle of 8 ms (typical value)	
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
	Tes
Ambient conditions	
Ambient temperature during operation	A*0
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 / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
- SCL	Yes
— GRAPH	Yes
Know-how protection	Voc
 User program protection/password protection Copy protection 	Yes
	100

 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: Complete protection 	Yes
programming / cycle time monitoring / header	
lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Open Development interfaces	
 Size of ODK SO file, max. 	9.8 Mbyte
Dimensions	
Width	175 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	2 117 g