SIEMENS

Data sheet



SIMATIC S7-1500, CPU 1518-4 PN/DP, central processing unit with 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: Ethernet, 4th interface: PROFIBUS, 1 ns bit performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1518-4 PN/DP
HW functional status	FS11
Firmware version	V3.1
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	V19 (FW V3.1); V13 (FW V1.5) 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
Input current	
Current consumption (rated value)	1.55 A
Current consumption, max.	1.9 A
Inrush current, max.	1.9 A; Rated value
l²t	0.4 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.	24 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	

• integrated (for program)	6 Mhyte
integrated (for program) integrated (for data)	6 Mbyte
integrated (for data) Load memory	60 Mbyte
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	32 Obyte
maintenance-free	Yes
CPU processing times	165
	1 ns
for bit operations, typ. for word operations, typ.	2 ns
for fixed point arithmetic, typ.	2 ns
for floating point arithmetic, typ.	6 ns
CPU-blocks	0 113
Number of elements (total)	20 000; Blocks (OB, FB, FC, DB) and UDTs
DB	20 000, Blocks (OB, 1 B, 1 O, BB) and OB 13
Number range	1 60 999; subdivided into: number range that can be used by the user: 1
• Number range	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 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	, (s.a) minor of the manifemory
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
- adjustable IEC timer	1.00
Number	Any (only limited by the main memory)
Retentivity	, any totaly infliced by the main memory)
— adjustable	Yes
— aujustable Data areas and their retentivity	160
Retentive data area (incl. timers, counters, flags), max.	768 kbyte; In total; available retentive memory for bit memories, timers,
recentive data area (inol. tillicis, couliteis, llays), illax.	counters, DBs, and technology data (axes): 700 KB
Extended retentive data area (incl. timers, counters, flags), max.	20 Mbyte; When using PS 6 0W 24/48/60 V DC HF
Flag	
гіау	

Substance of cock memorities Number of Cock memorities Peterotricity adjustable Peterotricity adjustable Peterotricity adjustable Peterotricity greate No Substance Peterotricity greate No Substance Peterotricity greate Peterotricity gr		
Data blokes Potentially preset P	• Size, max.	16 kbyte
Petershirty preset No		8; 8 clock memory bit, grouped into one clock memory byte
a Potentinary procet		
Local data Per priority class, max. 64 kbyte; max. 16 kBl per block		
Author of IO Controllers - Inguis colinguistics - Number of IO Controllers - Inguis (10 Activity II) - Inguis (10 Activity III) - Inguis (10	7.	No
Number of IO modules 16 384; max. number of modules / submodules 28 kbyte; All inputs are in the process image per integrated IO subsystem —inputs (volume) —Outputs (volume) —Outputs (volume) 32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4 —Departs (volume) —Purputs (volume) —Purputs (volume) —Subprocess images • Number of subprocess images, max. 8 kbyte Subprocess images • Number of distributed IO systems 4 kbyte Subprocess images • Number of distributed IO systems 6 kt. 4 distributed IO system is characterized not only by the integration of distributed IO via PROFIBIUS communication modules, but also by the connection of IO via AS-I master modules or links (e.g. IE/PB-Link) Number of ID masters • integrated • Via CM Integrated • Via CM Rack • Nodules per rack, max. PPP CM • Uniform of PIP CMs Subprocess **War Ad O'C amminer of PIP CMs **War Character of PIP CMs **Character of PIP CMs **Ch		
Number of IO modules 16 384; max. number of modules 1 submodules 18 384; max. number of modules 1 submodules 18 382 kbyte; All inputs are in the process image 2 kbyte; All inputs are in the process image — inputs — inputs (volume) — Outputs (volume) — Out		64 kbyte; max. 16 KB per block
#*Doubter sares** • Inputs** • Outputs**	Address area	
	Number of IO modules	16 384; max. number of modules / submodules
Outputs per integrated 10 subsystem Inputs (volume) Outputs (volume)	I/O address area	
per integrated (IO subsystem	• Inputs	32 kbyte; All inputs are in the process image
Inputs volume)	Outputs	32 kbyte; All outputs are in the process image
per CM/CP - Inputs (volume)	per integrated IO subsystem	
Inputs (volume)	— Inputs (volume)	32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4
- Inputs (volume) 8 kbyte - Outputs -	— Outputs (volume)	32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4
Outputs (volume) Subprocess images Number of subprocess images, max. Subprocess images, max. Subprocess images, max. Subprocess images, max. Sala A distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O via PROFIBUS communication modulus, 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 integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrated integrat	per CM/CP	
Subprocess images • Number of subprocess images, max. Alardware configuration Number of De masters • Integrated • Via CM S. A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack • Via CM Rack • Modules per rack, max. • Integrated • Number of ID Controllers • Integrated • Via CM Rack • Modules per rack, max. • PIP CM • Number of PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack • Modules per rack, max. • Integrated • Number of PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack • Modules per rack, max. • S2; CPU + 31 modules PIP CM • Number of PIP CMs • Integrated • Via CM • System of a Connectable PIP CMs is only limited by the number of available slots Sicks System of a Connectable PIP CMs	— Inputs (volume)	8 kbyte
Hardware configuration Number of distributed I/O systems is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O via PROFIRUS communication modules, but also by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I master modules or links (e.g., IE/P8-Link) by the connection of I/O via AS-I mas	— Outputs (volume)	8 kbyte
Hardware configuration Number of distributed IO systems 64; A distributed IO via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-I master modules or links (e.g. IE/PE-Link) Number of DP masters • integrated • Via CM 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Number of IO Controllers • integrated • Via CM 8 A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Number of IO Controllers • integrated • Via CM 8 A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack • Modules per rack, max. • PIP CM • Number of PIP CMs • Number of PIP CMs • Hardware clock • Type • Backup time • Deviation per day, max. • Deviation per day, max. • Deviation per day, max. • Supported • Number • Supported • Ves • In AS, master • Yes • In AS, save • on Ethernet via NTP Yes • Interfaces Number of PROFIBUS interfaces • RJ 45 (Ethernet) • Protocols • IP protocol	Subprocess images	
Number of distributed IO systems 64: A distributed IO vis 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	Number of subprocess images, max.	32
distributed I/O via PRCFINET or PRCFIBUS communication modules, but also by the connection of I/O via AS-i master modules or links (e.g. IE/PB-Link) Number of IO Masters integrated integrated integrated integrated integrated Mumber of IO Controllers integrated integrated Mumber of IO Controllers integrated Mumber of PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack Modules per rack, max. PIP CM Number of PIP CMs Mumber of PIP CMs Mumber of PIP CMs Mumber of PIP CMs Mumber of Connectable PIP CMs is only limited by the number of available slots Solve Ask (At 40 "C ambient temperature, typically Deviation per day, max. Operating hours counter Number Number Number Mumber Modernate In total Yes Io DP, master Yes Io DP, slave In AS, slav	Hardware configuration	
integrated	Number of distributed IO systems	distributed I/O via PROFINET or PROFIBUS communication modules, but also
Via CM 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total inserted in	Number of DP masters	
inserted in total Number of IO Controllers integrated Via CM 8: A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack Modules per rack, max. S2; CPU + 31 modules PIP CM Number of PtP CMs Ithe number of connectable PtP CMs is only limited by the number of available slots Time of day Clock Type Backup time Devaltion per day, max. Operating hours counter Number Number Rack Yes Io DP, master DP, slave	integrated	1
Number of IO Controllers integrated Via CM 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack • Modules per rack, max. 932; CPU + 31 modules PIP CM • Number of PtP CMs 8 the number of connectable PtP CMs is only limited by the number of available slots Time of day Clock • Type	• Via CM	
integrated Via CM Si, A maximum of & CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack Modules per rack, max. Siz CPU + 31 modules PEP CM Number of PIP CMs the number of connectable PtP CMs is only limited by the number of available slots Time of day Clock Type Backup time Special Success Special Special Success Special Spec		inserted in total
Via CM 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total inserted in		
inserted in total Rack Modules per rack, max. PIP CM Number of PIP CMs Time of day Clock Type Backup time Deviation per day, max. Operating hours counter Number Number Number Number Number Number Po Poil Save To DP, slave To	-	
Rack • Modules per rack, max. • Modules per rack, max. • Number of PtP CMs • Type • Backup time • Deviation per day, max. • Operating hours counter • Number • Number • Number • Number • Number • Lick synchronization • supported • to DP, slave • in AS, master • in AS, slave • on Ethernet via NTP Interfaces Number of PROFINET interfaces • RJ 45 (Ethernet) • RJ 45 (Ethernet) • Number of prots • integrated switch • Yes • integrated switch • Protocols • IP protocol • Interfaces 1 3 2; CPU + 31 modules 32; CPU + 31 modules 32; CPU + 31 modules 32; CPU + 31 modules 34; CPU + 31 modules 34; CPU + 31 modules 36; CPU + 31 modules 48; CPU + 31 modules 49; CPU + 31 modules 49; CPU + 31 modules 40; CPU + 31 mod	Via CM	
Modules per rack, max. PIP 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 Backup time Backup time Deviation per day, max. Operating hours counter Number Number To DP, master To DP, slave Deviation DP, slave Deviation DR, slave Deviation DR, slave DR, sla	Rack	
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 Backup time Deviation per day, max. Operating hours counter Number Number Number To DP, master To DP, slave To DP, slave To DP, slave To DR, slave To DR		32: CPLL+ 31 modules
Number of PtP CMs the number of connectable PtP CMs is only limited by the number of available slots Time of day Clock Type Backup time Sexup time time perature, typically Sexup time perature, tit		or, or or a modulo
Clock		
Clock	Time of day	
■ Type ■ Backup time ■ Backup time ■ Deviation per day, max. 10 s; Typ.: 2 s Operating hours counter ● Number ● Number 16 Clock synchronization ● supported ● to DP, master ● to DP, slave ● in AS, master ● in AS, slave ● on Ethernet via NTP Interfaces Number of PROFINET interfaces Interface types ● RJ 45 (Ethernet) ● Number of ports ● integrated switch Protocols ● IP protocol ● Protocols ● Protocols ● IP protocol 10 s; Typ.: 2 s 6 wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wes (a wk; At 40 °C ambient temperature, typically 10 sites of the face of the		
Backup time Deviation per day, max. Operating hours counter Number Number Supported To DP, slave In AS, slave On Ethernet via NTP Number of PROFIBUS interfaces RJ 45 (Ethernet) Number of ports Integrated switch Protocols Pixer Number of Protocol Poperating hours counter Number of Protocol Swith A40 °C ambient temperature, typically 10 s; Typ.: 2 s Wix, At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wix, At 40 °C ambient temperature, typically 16 Wix, T440 °C ambient temperature, typically 16 Wix, Typ.: 2 s Wix, At 40 °C ambient temperature, typically Yes Wix, T440 °C ambient temperature, tempera		Hardware clock
■ Deviation per day, max. Operating hours counter ■ Number ■ Number ■ Supported ■ Su		6 wk: At 40 °C ambient temperature, typically
Operating hours counter 16 Clock synchronization Yes ● supported Yes ● to DP, master Yes ● to DP, slave 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 ● RJ 45 (Ethernet) Yes; X1 ● Number of ports 2 ● integrated switch Yes Protocols Yes; IPv4	•	
Number		, .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Clock synchronization • supported Yes • to DP, master Yes • to DP, slave 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 • RJ 45 (Ethernet) Yes; X1 • Number of ports 2 • integrated switch Yes Protocols Yes; IPv4	· · ·	16
	-	Yes
	**	
in AS, master in AS, slave on Ethernet via NTP Yes Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol Yes; IPv4	·	
 in AS, slave on Ethernet via NTP Yes Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1 1. Interface Interface types RJ 45 (Ethernet) Number of ports Number of ports integrated switch Protocols IP protocol Yes Yes IPv4 		
● on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1 1. Interface Interface types ● RJ 45 (Ethernet) ● Number of ports ● integrated switch Protocols ● IP protocol Yes; IPv4		
Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1 1. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol Yes; IPv4		
Number of PROFINET interfaces Number of PROFIBUS interfaces 1 1. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol Yes; IPv4		169
Number of PROFIBUS interfaces 1. Interface Interface types • RJ 45 (Ethernet) Yes; X1 • Number of ports 2 • integrated switch Yes Protocols • IP protocol Yes; IPv4		
1. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch • Yes • rotocols • IP protocol • IP protocol • Yes; IPv4 • IPv4		
Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol Yes; X1 2 Yes; X1 Yes Yes		1
 RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol Yes; X1 Yes; X1 Yes 		
 Number of ports integrated switch Protocols IP protocol Yes; IPv4 	* '	
• integrated switch Protocols • IP protocol Yes; IPv4		
Protocols • IP protocol Yes; IPv4	•	
IP protocol Yes; IPv4	integrated switch	Yes
PROFINET IO Controller Yes	IP protocol	Yes; IPv4
	PROFINET IO Controller	Yes

PROFINET IO Device	Yes
 SIMATIC communication 	Yes
Open IE 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
— 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 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
— PROFINET Security Class	1
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 μ s: 375 μ s, 625 μ s 3 875 μ 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	
— 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, max.	4
— activation/deactivation of I-devices	Yes; per user program
Asset management record	Yes; per user program
— PROFINET Security Class	SNMP Configuration and DCP Read Only
Interface	The configuration and 2 of 1 toda only
Interface types	
• RJ 45 (Ethernet)	Yes; X2
Number of ports	1
integrated switch	No
	INO
Protocols • IP protocol	Voc. IDv4
IP protocol PROFINET IO Controller	Yes; IPv4
PROFINET IO Controller PROFINET IO Povice	Yes
PROFINET IO Device ONATIO construiries ties.	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes

Media redundancy	No
PROFINET IO Controller	
Services	
— Isochronous mode	No
Direct data exchange	No
— IRT	No
— PROFlenergy	Yes; per user program
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,
Number of connectable IO Devices for RT, max.	PROFIBUS or PROFINET
— of which in line, max.	128
Number of IO Devices that can be simultaneously	8; in total across all interfaces
activated/deactivated, max.	o, in total across an 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
— PROFINET Security Class	1
Update time for RT	
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes; per user program
— Prioritized startup	No
— 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
— PROFINET Security Class	SNMP Configuration and DCP Read Only
3. Interface	or this configuration and por read only
Interface types	
• RJ 45 (Ethernet)	Yes; X3
Number of ports	1
• integrated switch	No
Protocols	Van ID-A
• IP protocol	Yes; IPv4
PROFINET IO Controller	No
PROFINET IO Device	No
SIMATIC communication	Yes
SIMATIC communicationOpen IE communication	Yes Yes; Optionally also encrypted
SIMATIC communicationOpen IE communicationWeb server	Yes
SIMATIC communicationOpen IE communication	Yes Yes; Optionally also encrypted
SIMATIC communicationOpen IE communicationWeb server	Yes Yes; Optionally also encrypted
 SIMATIC communication Open IE communication Web server 4. Interface	Yes Yes; Optionally also encrypted
SIMATIC communication Open IE communication Web server 4. Interface Interface types	Yes; Optionally also encrypted Yes
SIMATIC communication Open IE communication Web server Interface Interface types RS 485	Yes; Optionally also encrypted Yes Yes; X4
SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports	Yes; Optionally also encrypted Yes Yes; X4
SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols	Yes; Optionally also encrypted Yes Yes; X4
SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master	Yes; Optionally also encrypted Yes Yes; X4 1 Yes
SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave	Yes; Optionally also encrypted Yes Yes; X4 1 Yes No
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	Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes
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	Yes; Optionally also encrypted Yes Yes; X4 1 Yes No
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.	Yes; Optionally also encrypted 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,
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	Yes; Optionally also encrypted 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,
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.	Yes; Optionally also encrypted 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
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 — Equidistance	Yes; Optionally also encrypted 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 Yes
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 — Equidistance — Isochronous mode — Activation/deactivation of DP slaves	Yes; Optionally also encrypted 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 Yes Yes
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 — Equidistance — Isochronous mode	Yes; Optionally also encrypted 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 Yes Yes

• 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	
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; in total, only 16 S7-Routing connections are supported via PROFIBUS
Redundancy mode	04, in total, only 10 07-routing connections are supported via 1 from 1000
H-Sync forwarding	Yes
Media redundancy	165
·	only via 1st interface (V1)
— Media redundancy	only via 1st interface (X1)
— 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	, 5.4
Number of sessions, max.	200
— number of sessions, max. — number of simultaneous HTTP calls, max.	4
HTTP request body, max.	131 072 byte
OPC UA	101 0/2 byte
 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_U 	300
max. — 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, 	1
max.— Number of simultaneous calls of the client instructions for data access, per connection, max.	5
 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, Alarms & Condition (A&C), Custom Address Space
 Application authentication 	Yes
Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15,
— occurry policies	Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
— 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 registerable flodes, max. Number of subscriptions per session, max.	50
— 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 max. 	24 000; for 1 s sampling interval and 1 s send interval
 Number of server interfaces, max. 	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
 Number of nodes for user-defined server interfaces, max. 	50 000
 Alarms and Conditions 	Yes
 Number of program alarms 	400
 Number of alarms for system diagnostics 	200
Further protocols	
• MODBUS	Yes; MODBUS TCP
S7 message functions	
Number of login stations for message functions, max.	64
number of subscriptions, max.	750
number of tags/attributes for subscriptions, max.	50 000
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.	10 000
Number of simultaneously active program alarms	
Number of program alarms	4 000
Number of alarms for system diagnostics	1 000
Number of alarms for system diagnostics Number of alarms for motion technology objects	480
Test commissioning functions	
	Voc. Parallel online access pessible for up to 40 anxions single systems
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	No
Status/control	
Status/control variableVariables	Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters

- Number of variables, may	
Number of variables, max.	000:
— 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
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	
— 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 	140
of 4 ms (typical value)	
Number of positioning axes at motion control cycle of 9 ms (typical yalua)	192
of 8 ms (typical value) Controller	
	Voc. Universal DID controller with interreted autimization
PID_Compact 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	
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
west and tracked at 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	and the second of the second o
min.	-40 °C
	70 °C
max. Altitude during expertion relating to each level.	
Altitude during operation relating to sea level	5 000 m. Destrictions for install 11 111 1 1 1 0 000
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	
	Yes 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
programming / cycle time monitoring / header	
 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.	2 079 g

last modified: 3/12/2024 **C**