SIEMENS

Data sheet

6ES7518-4AP00-0AB0



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
Repeat rate, min.	1/s
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 Mbyte
integrated (for brogram) integrated (for data)	60 Mbyte
	oo mbyte
Load memory Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	32 Obyte
maintenance-free	Yes
	Tes
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)	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	
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	
— 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.	768 kbyte; In total; available retentive memory for bit memories, timers, 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	
• 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	52 kbyte, Air outputs are in the process image
	32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4
— Inputs (volume)	
— 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
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 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
Number	16
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
	100
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

Procession P	ID restand	
PRCFINET ID Device Yes • SUMPT Communication Yes • West server Yes • Media includinary Yes • Device that exchange Yes • PROFINET ID Devices Yes • PROFINET of Devices that in P Yes • PROFINET of Devices that in P Yes • Of which ID devices with INT, max. F4 • Of which ID devices with INT, max. F12 • Of which ID devices with INT, max. F12 • Of which ID devices with INT, max. F12 • Of which ID devices with INT, max. F12 • Of which ID devices with INT, max. F12 • Of which ID devices with INT, max. F12 • Of which ID devices with INT, max. F12 • Or device IT Security Class T12 • Or device IT Security Class T12 • Or device IT Security Class T12 • Or device IT Security Class T2 • Or device IT Security Class T2 • Or device IT Security Class T2 • Or device Qvice IT Security Class	IP protocol	Yes; IPv4
• Open IE communication Yes • We barrer Yes • We barrer Yes • Modur redundancy Yes PERDINET Of Controller Services Yes - Instructure and the service of the servi		
Yes, Optionally also encrypted Web server Yes, Optionally also encrypted Media redundancy Yes PROFINET to Controle Service Service Service Service Yes Service Yes, Requirement: IRT and sochronous mode (MRPD optional) IRT Yes Interface Yes, Kax: 32 PROFINET devices Interface Yes, Kax: 32 PROFINET devices Interface Statution (MRPD optional) Interface		
• Web server Yes • Mode includinary Yes PROFINET IO Controls • Services • • Incontronous mode Yes, Requirement: IRT and isochronous mode (MRPD options) • IF I Yes, per user program • • <t< td=""><td></td><td></td></t<>		
• Mail a redundancy Yes PROFINITIO Controler Services - Isochtronous mode Yes - Ref Class exchange Yes, Requirement: IRT and isochtronous mode (MRPD optional) - RFT Yes - PROFINERTY Yes, Yes, Yes per user program - RFT Yes, Max, 32 PROFINET devices - Worther of connectable IO Devices, max. 512 - Or which In line, max. 512 - Worther of Devices per tool, max. 512 - Worther of Devices per tool, max. 512 - Worther IO Devices per tool, max. 512 - Worther IO Devices per tool, max. 512 - Worther IO Devices per tool, max. 8 - Updating times 1 - PROFINET Besort PROFINET IO, on the number of IO devices, and on the quantity of configured user data - Fro send cycle of 125 µs 125 µs - For send cycle of 200 µs 250 µs to 4 ms - For send cycle of 200 µs 250 µs to 4 ms - For send cycle of 200 µs 250 µs to 4 ms - For send cycle of 200 µs 250 µs to 4 ms - For send cycle of 200 µs 250 µs to 4 ms <t< td=""><td>Open IE communication</td><td>Yes; Optionally also encrypted</td></t<>	Open IE communication	Yes; Optionally also encrypted
PROFINET IC Controls Service - Inschronous mode Yes - Direct data schange Yes, Requirement: IRT and isochronous mode (MRPD optional) - IRT Yes - PROFINET IO Controls Yes - PROFINET gy Yes, program - Mumber of connectable IO Devices, max. 512. In ball, up to 1000 distributed IO devices can be connected via AS-i. - Winhin IO devices with IRT, max. 64 - Winhin IO income bat on the simultaneously 6. In total across all interfaces - whither of IO Devices per tool, max. 512 - Winhin IO devices that can be simultaneously 6. In total across all interfaces - Winher of IO Devices per tool, max. 6. - Updating times The minimum value of the updatis time also depende on communication where derive drols of 125 js - For end cycle of 125 js 127 js - for send cycle of 125 js 127 js - for send cycle of 125 js 125 js - for send cycle of 126 js 250 js to 4 ms - for send cycle of 126 js 250 js to 4 ms - for send cycle of 1 ms 1 ms to 16 ms - for send cycle of 1 ms 2 ms to 32 ms		Yes
Services - local data exchange Yes - Direct data exchange Yes, Requirement: IRT and isochronous mode (MRPD optional) - IRT Yes, Per user program - PROCPlenergy Yes, per user program - Number of connectable ID Devices, max. 612 - Of which ID devices with IRT, max. 64 - Of which ID devices with IRT, max. 612 - of which ID devices for RT, max. 512 - Of which ID new max. 512 - Winnber of Devices for RT, max. 8 - Updating times 8 - Updating times 8 - For send cycle of 125 µs 125 µs - for send cycle of 125 µs 125 µs - for send cycle of 125 µs 125 µs - for send cycle of 126 µs 250 µs to 4 ms - for send cycle of 20 µs 250 µs to 5 ms - for send cycle of 20 µs 250 µs to 5 ms - for send cycle of 20 µs 250 µs to 5 ms - for send		Yes
	PROFINET IO Controller	
 - Direct data exchange - Picrot data exchange - REOF inergy - Ves - Picolized startup - Picolized startup - Number of connectable ID Devices, max. - Of which ID devices with IRT, max - Of which ID Devices for RT, max - Startup - Number of ID Devices for RT, max - Startup - Number of ID Devices for RT, max - Updating imms - Updating imms - Updating imms - Updating imms - PROFINET For on the number of ID Devices, and on the quantity of of the opdate time also depends on communication share and topic of 100 devices, and on the quantity of the of PROFINET For on the number of ID Devices, and on the quantity of of the opdate time also depends on communication share and topic of 135 µs - For send cycle of 20 µs	Services	
	— Isochronous mode	Yes
- PROFInency Yes; per user program - Prioritized startup Yes; Max. 32 PROFINET devices - Number of connectable ID Devices, max. PROFINET of Ob distributed VD devices can be connected via ASI, PROFINET - Of which ID devices with IRT, max. 64 - Number of connectable ID Devices for RT, max. 512 - Wumber of D Devices that can be simultaneously activated/distributed VD devices can be connected via ASI, PROFINET Gevices, max. 81 - Number of D Devices that can be simultaneously activate/distributed VD devices, and on the guantity of configured user data 8 - Updating times 8 - Updating times 10 - FROFINET Security Class 125 µs - for send cycle of 1725 µs 125 µs - for send cycle of 1725 µs 125 µs - for send cycle of 1725 µs 125 µs - for send cycle of 1725 µs 125 µs - for send cycle of 1725 µs 125 µs - for send cycle of 1725 µs 125 µs - for send cycle of 178 s 125 µs - for send cycle of 178 s 225 µs to 128 ms - for send cycle of 178 s 250 µs to 4 ms - for send cycle of 178 s 250 µs to 128 ms - for send cycle of 178 s 250 µs to 128 ms - for send cycle of 178 s 250 µs to 128 ms - for send cycle of 178 s 250 µ	— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- Produzed shup Yes; Max. 22 PROFINET devices - Number of connectable IO Devices, max. F12: In tabul, up 1 n00 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which I/O devices with IRT, max. F12 - Number of IO Devices for RT, max. F12 - Number of Dovices part can be simultaneously activated/deactivated, max. 8 - Updating times 8 - Updating times 8 - Update time for IRT 8 - PROFINET Security Class 1 - FROFINET Security Class 1 - for send cycle of 725 µs 157 µs - for send cycle of 725 µs 157 µs - for send cycle of 750 µs 250 µs to 4 ms - for send cycle of 750 µs 250 µs to 4 ms - for send cycle of 750 µs 250 µs to 32 ms - for send cycle of 750 µs 250 µs to 32 ms - for send cycle of 750 µs 250 µs to 52 ms - for send cycle of 750 µs 250 µs to 52 ms - for send cycle of 750 µs 250 µs to 52 ms - for send cycle of 750 µs 250 µs to 52 ms - for send cycle of 750 µs 250 µs to 52 ms - for send cycle of 750 µs 250 µs to 52 ms - for send cycle of 750 µs 250 µs to 52 ms - for send cycle of 750 µs 50 µs to 512 ms -	— IRT	Yes
- Number of connectable IO Devices, max. 512: In total up 1 1 000 distributed I/O devices can be connected via AS-i, PKOFIBUS or PROFINET - Of which II IO exices with IRT, max. 64 - Number of connectable IO Devices for RT, max. 512 - Number of D Devices that can be simultaneously activated/distributed I/O Devices par tool, max. 8 - Number of IO Devices par tool, max. 8 - Updating times 125 µs - PROFINET Socurity Class 125 µs - for send cycle of 1875 µs 1875 µs - for send cycle of 1875 µs 1875 µs - for send cycle of 1875 µs 1875 µs - for send cycle of 1875 µs 1875 µs - for send cycle of 1875 µs 1875 µs - for send cycle of 1875 µs 1875 µs - for send cycle of 1875 µs 1875 µs - for send cycle of 1875 µs 250 µs to 4 ms - for send cycle of 1875 µs 1875 µs - for send cycle of 1875 µs 250 µs to 4 ms - for send cycle of 280 µs 250 µs to 128 ms - for send cycle of 1875 µs 250 µs to 28 ms - for send cycle of 280 µs 250 µs to 128 ms - for send cycle of 178 250 µs to 128 ms - for send cycle of 280 µs 500 µs to 526 ms - for send cycle of 280 µs 250 µs to 128 ms - for send cycle of 78	- PROFlenergy	Yes; per user program
PROFINET Of which 10 devices with IRT, max. Of which 10 devices with IRT, max. Number of connectable 10 Devices for RT, max. Number of to Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited/decivited, max. Number of 10 Devices that can be simultaneously activited for PGCINET (0) on the number of 10 devices, and on the quantity of configured user data. PROFINET Security Class I the maximum value of the update time also depends on communication share est of PGCINET (0) on the number of 10 devices, and on the quantity of configured user data. PROFINET Security Class I to for send cycle of 125 µs for send cycle of 125 µs for send cycle of 125 µs for send cycle of 126 µs for send cycle of 250 µs for send cy	— Prioritized startup	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices for RT, max. 512 - of which in line, max. 512 - Number of IO Devices that can be simultaneously activate/deactivated, max. 8 - Number of IO Devices per tool, max. 8 - Updating times The minimum value of the update time also depends on communication share stor PROFINETI IO, on the number of IO devices, and on the quantity of configured user data - PROFINET Security Class 1 - for send cycle of 125 µs 125 µs - for send cycle of 125 µs 250 µs to 4 ms - for send cycle of 175 µs 500 µs - for send cycle of 175 µs 500 µs - for send cycle of 175 µs 500 µs to 8 ms - for send cycle of 175 µs 500 µs - for send cycle of 175 µs 500 µs to 8 ms - for send cycle of 178 1 ms to 16 ms - for send cycle of 178 1 ms to 16 ms - for send cycle of 178 2 ms to 32 ms - for send cycle of 178 2 ms to 52 ms - for send cycle of 178 250 µs to 128 ms - for send cycle of 20 µs 250 µs to 128 ms - for send cycle of 178 2 ms to 512 ms - for send cycle of 178 2 ms to 512 ms - for send cycle of 178 2 ms to 512 ms - for send cycle of 178 Yes; per user program - horsend cycle	- Number of connectable IO Devices, max.	
- of which in line, max. 512 - Number of IO Devices that can be simultaneously activated/dead/which, max. 8; in total across all interfaces - Number of IO Devices per tool, max. 8 - Updating times 8 - Updating times 1 - PROFINET Security Class 1 - PROFINET Security Class 125 µs - for send cycle of 125 µs 125 µs - for send cycle of 125 µs 250 µs to 4 ms - for send cycle of 20 µs 250 µs to 4 ms - for send cycle of 175 µs 100 evices, and on the quantity of configure diverses - for send cycle of 1 ms 1 ms to 16 ms - for send cycle of 1 ms 1 ms to 16 ms - for send cycle of 20 µs 200 µs to 4 ms - for send cycle of 2 ms 4 ms to 44 ms - for send cycle of 2 ms 2 ms to 32 ms - for send cycle of 1 ms 1 ms to 16 ms - for send cycle of 20 µs 500 µs to 256 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - For Send cycle of 20 µs Yes; per u	- Of which IO devices with IRT, max.	64
Number of IO Devices that can be simultaneously edivided/deactivited, max. 8: in total across all interfaces Number of IO Devices per tool, max. 8 Updating times 8: in total across all interfaces Updating times 8: in total across all interfaces	- Number of connectable IO Devices for RT, max.	512
edivaled/deactivated, max.	— of which in line, max.	512
- Number of IO Devices per tool, max. 8 - Updating times The initiancif value of the update time also depends on communication share set for PCPINET IO, on the number of IO devices, and on the quantity of configured user data - PROFINET Security Class 1 Update time for IN - - for send cycle of 125 µs 125 µs - for send cycle of 137.5 µs 137.5 µs - for send cycle of 1300 µs 500 µs to 8 ms - for send cycle of 1300 µs 500 µs to 8 ms - for send cycle of 1 ms 1 ms to 16 ms - for send cycle of 1 ms 1 ms to 16 ms - for send cycle of 1 ms 1 ms to 32 ms - for send cycle of 1 ms 1 ms to 34 ms - for send cycle of 1 ms 1 ms to 16 ms - for send cycle of 1 ms 1 ms to 54 ms - for send cycle of 1 ms 1 ms to 54 ms - for send cycle of 1 ms 1 ms to 54 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - lactorhonous mode No <		8; in total across all interfaces
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Update time for IRTIs- for send cycle of 125 µs187.5 µs- for send cycle of 250 µs250 µs to 4 ms- for send cycle of 500 µs500 µs to 8 ms- for send cycle of 1 ms1 ms to 16 ms- for send cycle of 2 ms2 ms to 32 ms- for send cycle of 4 ms4 ms to 64 ms- for send cycle of 250 µs250 µs to 128 ms- for send cycle of 2 ms2 ms to 32 ms- for send cycle of 2 ms2 ms to 32 ms- for send cycle of 250 µs250 µs to 128 ms- for send cycle of 250 µs250 µs to 128 ms- for send cycle of 250 µs250 µs to 128 ms- for send cycle of 250 µs250 µs to 512 ms- for send cycle of 2 ms2 ms to 512 ms- for send cycle of 2 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- shared deviceYes; per user program- shared deviceYes; per user program- Shared deviceYes; per user program- Asset management reco	— Updating times	set for PROFINET IO, on the number of IO devices, and on the quantity of
- for send cycle of 125 μs 125 μs - for send cycle of 187.5 μs 187.5 μs - for send cycle of 500 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 - for send cycle of 250 μs 250 μs to 18 ms - for send cycle of 4 ms 4 ms to 64 ms - for send cycle of 250 μs 250 μs to 128 ms - for send cycle of 1250 μs 250 μs to 128 ms - for send cycle of 10 ms 1 ms to 512 ms - for send cycle of 2 ms 2 ms to 32 ms - for send cycle of 2 ms 2 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 - for send cycle of 4 ms 4 ms to 512 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 10 controllers with shared device, max. 4 - ROFlenergy Yes; per user program - Shared device Yes; per user program - Asset management record Yes; per user program - Roberliser Security Class SNMP Configurati	- PROFINET Security Class	1
- 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 250 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 2 ms 4 ms to 64 ms - for send cycle of 250 µs 250 µs to 12 ms - Wth IRT and parameterization of 'odd' send cycles Update time = set 'odd' send clock (any multiple of 125 µs: 375 µs, 625 µs 3 # for send cycle of 250 µs 250 µs to 128 ms - for send cycle of 250 µs 500 µs to 256 ms - for send cycle of 280 µs 250 µs to 512 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 4 ms 4 ms to 64 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 4 ms 4 ms to 64 ms - for send cycle of 2 ms 4 ms to 512 ms - for send cycle of 2 ms 4 ms to 512 ms - for send cycle of 2 ms 4 ms to 512 ms - Rotof lonerry Yes; per user program	Update time for IRT	
- for send cycle of 250 µs250 µs to 4 ms- for send cycle of 500 µs500 µs to 8 ms- for send cycle of 1 ms1 ms to 16 ms- for send cycle of 2 ms2 ms to 32 ms- for send cycle of 4 ms4 ms to 64 ms- for send cycle of 250 µs250 µs to 128 ms- for send cycle of 250 µs250 µs to 128 ms- for send cycle of 250 µs500 µs to 256 ms- for send cycle of 100 µs500 µs to 256 ms- for send cycle of 20 µs200 µs to 250 ms- for send cycle of 20 µs200 µs to 250 ms- for send cycle of 2 ms2 ms to 512 ms- for send cycle of 2 ms2 ms to 512 ms- for send cycle of 2 ms4 ms to 512 ms- for send cycle of 2 ms4 ms to 512 ms- for send cycle of 2 ms4 ms to 512 ms- for send cycle of 2 ms4 ms to 512 ms- for send cycle of 2 ms4 ms to 512 ms- for send cycle of 10 µsYes; Minimum send cycle of 250 µs- IRTYes; Minimum send cycle of 250 µs- Shared deviceYes- Asset management recordYes; per user program- Asset management recordYes; per user program- Asset management recordYes; per user program- RJ 45 (Ethernet)Yes; X2- Interface types1- Interface types1- Interface types1- Interface types1- Interface types1- Interface typesYes; IPv4- PROFINET IO ControllerYes; IPv4- PROFINET IO Controller	— for send cycle of 125 µs	125 µs
for send cycle of 500 µs500 µs to 8 ms for send cycle of 1 ms1 ms to 16 ms for send cycle of 2 ms2 ms to 32 ms for send cycle of 4 ns4 ms to 64 nns With IRT and parameterization of "odd" send cyclesUpdate time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs 3 76 µs) for send cycle of 250 µs250 µs to 128 ms for send cycle of 500 µs500 µs to 256 ms for send cycle of 1 ms1 ms to 512 ms for send cycle of 2 ms2 ms to 512 ms for send cycle of 2 ms2 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms services services services services extration/deactivation of I-devicesYes; per user program Asset management recordYes; per user program Asset management recordYes; yer yer user program Asset management recordYes; Y2 Number of ports1 Number of ports	— for send cycle of 187.5 µs	187.5 µs
for send cycle of 1 ms1 ms to 16 ms for send cycle of 2 ms2 ms to 32 ms for send cycle of 4 ms4 ms to 64 ms With IRT and parameterization of "odd" send cyclesWpdate time set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs3 875 µs)Update time for RT for send cycle of 500 µs500 µs to 256 ms for send cycle of 1 ms1 ms to 512 ms for send cycle of 1 ms1 ms to 512 ms for send cycle of 1 ms4 ms to 512 ms for send cycle of 1 ms4 ms to 512 ms for send cycle of 1 ms4 ms to 512 ms for send cycle of 1 ms1 ms to 512 ms for send cycle of 1 ms4 ms to 512 ms for send cycle of 1 ms4 ms to 512 ms for send cycle of 2 ms4 ms to 512 ms for send cycle of 1 ms4 ms to 512 ms for send cycle of 1 ms4 ms to 512 ms for send cycle of 2 ms4 ms to 512 ms for send cycle of 2 ms4 ms to 512 ms for send cycle of 2 ms4 ms to 512 ms for send cycle of 2 ms4 ms to 512 ms for send cycle of 1 msYes; per user program servicesYes; per user program setvation/deactivation of 1-devicesYes; per user program Asset management recordYes; per user program Asset management recordYes; X2 Number of ports1 Number of ports1 integrated switchNo PROFINET IO ControllerYes PROFINET	— for send cycle of 250 µs	250 µs to 4 ms
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	— for send cycle of 2 ms	2 ms to 32 ms
B75 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 4 ms 2 ms to 512 ms - for send cycle of 4 ms 4 ms to 512 ms - for send cycle of 4 ms 4 ms to 512 ms - for send cycle of 4 ms 4 ms to 512 ms - for send cycle of 4 ms 4 ms to 512 ms - for send cycle of 4 ms 4 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 - for send cycle of 4 ms 4 ms to 512 ms - for Send cycle of 4 ms 4 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 - for Send cycle of 2 ms 2 ms to 512 ms - for Send cycle of 4 ms 4 ms to 512 ms - RAT Yes; per user program - Shared device Yes; per user program - Asset management record Yes; per user program - RAST fuerified Yes; X2 • Number of ports 1 • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No PROF	— for send cycle of 4 ms	4 ms to 64 ms
 – 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 4 ms 2 ms to 512 ms – for send cycle of 4 ms 4 ms to 512 ms – for send cycle of 4 ms 4 ms to 512 ms PROFINET IO Device Services – Iscothronous mode – IRT – Shared device – Shared device – Shared device – activation/deactivation of I-devices – PROFINET Security Class SNIMP Configuration and DCP Read Only 2. Interface Interface types – RJ 45 (Ethernet) – itiggrated switch No Protocol Yes; IPv4 PROFINET IO Controller Yes 	- With IRT and parameterization of "odd" send cycles	
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- for send cycle of 2 ms2 ms to 512 ms- for send cycle of 4 ms4 ms to 512 msPROFINET IO DeviceServices- Ischronous modeNo- IRTYes; Minimum send cycle of 250 µs- PROFInergyYes; per user program- Shared deviceYes- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user program- PROFINET Security ClassSNMP Configuration and DCP Read OnlyProferergy- RJ 45 (Ethernet)Yes; X2• RJ 45 (Ethernet)1• Interface types1- Interface switchNoProtocolsYes; IPv4• PROFINET IO ControllerYes; IPv4• PROFINET IO ControllerYes• PROFINET IO ControllerYes		•
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- IRTYes; Minimum send cycle of 250 µs- PROF lenergyYes; per user program- Shared deviceYes- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user program- Asset management recordSNMP Configuration and DCP Read Only- PROFINET Security ClassSNMP Configuration and DCP Read Only2. InterfaceInterface types• RJ 45 (Ethernet)Yes; X2• RJ 45 (Ethernet)No• integrated switchNoProtocolsI• IP protocolYes; IPV4• PROFINET IO ControllerYes• PROFINET IO DeviceYes		No
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- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user program- PROFINET Security ClassSNMP Configuration and DCP Read Only2. InterfaceInterface types• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes		
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Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes		
• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNo• Protocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes		
• Number of ports1• integrated switchNoProtocolsProtocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes		Voc. X2
• integrated switch No Protocols Protocol • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes		
Protocols • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes		
• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes		NO
PROFINET IO Controller Yes PROFINET IO Device Yes		Ver ID-4
PROFINET IO Device Yes		
SIMATIC communication 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, PROFIBUS or PROFINET
 Number of connectable IO Devices for RT, max. 	128
— of which in line, max.	
 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 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	
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
4. Interface	
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	
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	
- Equidistance	Ves
— Equidistance	Yes
 — Equidistance — Isochronous mode — Activation/deactivation of DP slaves 	Yes Yes

Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
• 100 Mbps	Yes; Only possible at the X3 interface of the CPU 1518
Autonegotiation	Yes
	Yes
 Autocrossing Industrial Ethernet status LED 	
	Yes
RS 485	10 Mbit/s
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	
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 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

Licor authoritication	"aponymous" or by usor name & password
 User authentication Number of connections, max. 	"anonymous" or by user name & password 40
- Number of nodes of the client interfaces,	5 000
recommended max.	000
 — Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_L 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
 — 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, 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 subscriptions per session, max.	50 10 ms
— Sampling interval, min.	10 ms
— Publishing interval, min.	100
 — Number of server methods, max. — Number of inputs/outputs per server method, max. 	20
 Number of impuls/outputs per server method, max. 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
Isochronous mode	
Equidistance	Yes
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	4.000
Number of program alarms	4 000
Number of alarms for system diagnostics	1 000
Number of alarms for motion technology objects Toot commissioning functions	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 20
Number of breakpoints	20

Promit No Bisula Societal Yes • Variables Imputsionations • Variables Imputsionations • Variables Imputsionations • Variables - of which battle variables, max. • of which battle variables, max. 200, per job • Foring - of which battle variables, max. • Poroing Yes • Foring Yes • Foring Yes • Number of variables, max. 200 • Pageportal putsionations 200 • Runche of childia, max. 3 200 • Runche of childia, max. 3 200 • Runche of childia, max. 5 21 keyle • Runche of childia, max. 5 20 keyle • Runche of variables, max. 5 21 keyle • Runche of variables, max. 5 20 keyle • Runche of variables, max. 5 20 keyle • Runche of variables, max. 5 20 keyle <th>Drofiling</th> <th>No</th>	Drofiling	No
Suburbania (Suburbania)	Profiling	No
• Number of variables, max. 200, per job - of which status variables, max. 200, per job - of which status variables, max. 200, per job • Forring Yes • Forring, variables Peripheral Inputsionapuis • Forring, variables 200 • Forring, variables, max. 200 • Forring variables of per fore (max. 520 • Number of romfigurable Traces 8 • Renord size per fore (max. 521 Adv/de • Forring variables maincines 8 • RENOR LED Yes • RENOR VED Yes • RENOR VED TO		N Contraction of the second
• Number of variables, max. 200, per job — of which status variables, max. 200, per job Forma 200, per job Forming Yes • Forcing, variables Peropheral inputsion/puts • Number of variables, max. 200, per job • Diagnosts buffer • • Pareing • • Pareing • • Works of variables, max. 200 • Diagnosts buffer • • Peropheral inputsion/puts • • Pareing • • Number of configurable Traces 8 • Morney is go parlace, max. 512 kayte • Peropheral inputsion/putsion • • Pareing State Status Information • • Pareing State Status Information • • Pareing Status Information Yes • Mann's LED Yes • Mann's buffer of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the PLC program: scleotion guide via the TLR Status in of the scleotion guide via the TLR St		
- of which stants variables, max. 200; per job Forcen Forcing Forcig Forcing Forcing Forcing Forcing Forcing Forc		Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing Yes • Forcing, variables Perpheral inputs/turputs • Number of variables, max. 200 Deagnetic tuber Perpheral inputs/turputs • Number of variables, max. 200 • Number of centigurable Traces 8 • Number of centigurable Traces 9 • Remony size per traces, max. 512 kbyte Delegoetatic Matcalation LED • • RUMONTOLED Yes • RUMONTOLED Yes • Connection display LINK TX/RX Yes Supparatic Matchalogy objects 15 500 Motion Control Yes, Note: The number of decimalogy objects affects the cycle time of the PLC program; selection Tool • Per paced control resources for technology objects 15 500 • Perphering attract the cycle time of the PLC program; selection Tool 15 500 • Per protonon axis 80 • per protonon axis 100 • per protonon axis 100 • per seationania a		
• Fording, valables Yes • Fording, valables, max. 200 • Diagnostic buffer • • present Yes • Number of entines, max. 3.200 - of which powefals-proof 1000 • Traces 8 • Number of entines, max. 512 kbyte • Connector Yes • Connector Yes • Connector Yes • Number of entines, max. 15 360 • Per opositioning asis 160 • per eatmak 160 <td></td> <td>200; per job</td>		200; per job
Forcing. Peripheral inputs/outputs Vector 200 Objector 200 Interference 200	Forcing	
Image: Product Surface 200 Diagnostic buffer Yes • Invested entries, max. 3 200 - of which powefails prod 1000 Traces 8 • Memory size per trace, max. 512 koyle • Number of contigurable Traces 8 • Memory size per trace, max. 512 koyle • Number of contigurable Traces 8 • Memory size per trace, max. 512 koyle • Number of contigurable Traces 6 • REROR RED Yes • MAINT LED Yes • 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 affects the cycle time of the PLC program, selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects affects the cycle time of the PLC program, selection guide via the TIA Selection Tool • Prostoming axis 80 - per positioning axis 80 - per source at mack 160 - per output cam 20 - per probe 40 - per probe 100 - per output cam 20 - per output cam 20 - per probe 102 - Probe output cam	• Forcing	Yes
Dispositio buffer Yes • Present 3 200 of which goverfall-proof 1 000 Traces 8 • Memory size per trace, max. 5 12 kbyte • Memory size per trace, max. 5 12 kbyte • Memory size per trace, max. 5 12 kbyte • Remory Size per trace, max. 5 12 kbyte • Remory Size per trace, max. 5 12 kbyte • Remory Size per trace, max. 5 12 kbyte • Remory Size per trace, max. 5 12 kbyte • Remory Size per trace, max. 5 12 kbyte • Remory Size per trace, max. Yes • Remover Size statuts Information • Remover Size statuts Information • Remover Size statuts Information Yes • Remover Size statuts Information Yes • Supported technology objects Yes • Required Motion Control resources for technology objects affects the cycle time of the PLC program: selection guide via the TIA Selection Tool • Per synchronous avis 100 • per cam track 40 • per cam track 160 • per cam track 160 • Prod Storing a	 Forcing, variables 	Peripheral inputs/outputs
• Present Yes • Number of entries, max. 3 200	 Number of variables, max. 	200
Number of entries, max. of which powerfail-proof 100 or which powerfail-proof 100 Trees Number of configurable Traces 8 Memory size port tace, max. 512 kryte Interrupts/diagnostics/status information POlegostics indication LED RUNSTOP LED Yes, Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool TO Sale Selection Number of available Motion Control resources for technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool TO Sale Per synchronous axis 00 per synchronous axis 00 per synchronous axis 00 per synchronous axis 00 per cam track 00 per cam track 00 per cam track 01 per cam track 02 per cam track 03 per cam track 04 per cam track 05 per cam track 01 per cam track 02 per cam track 03 per cam track 04 per cam track 01 per cam track 01 per cam track 012 pe	Diagnostic buffer	
− of which powerfail-proof 1 000 Traces 8 • Number of configurable Traces, max. 512 kityle Interruptsfidiagnostics/status information Ves • RUNSTOP LED Yes • ERROR LED Yes • Connection diaplay LINK TX/RX Yes Supported technology objects The connection diaplay LINK TX/RX Motion Control Yes, Note: The number of technology objects affects the cycle time of the PLC program; selection Tool • Number of available Motion Control resources for technology objects 15 360 • Required Motion Control resources for technology objects 40 - per postioning axis 160 - per postioning axis 160 - per output cam 20 - per cam track 140 - per cam track 140 - of a wity (typical value) 140 - Postioning axis 192 - PID_Compact Yes; PID controller with integrated optimization for values - PID_Step Yes; PID controller with integrated optimization for values - PID_Compact Yes; PID controller with integrated optimization for values <	• present	Yes
Traces 8 • Number of configurable Traces 8 • Memory size per trace, max. 512 ktypte Interruptiviling prostic situation information Diagnostic indication LED • RUNISTOP LED Yes • ERROR LED Yes • Connection display LINK TX/FX Yes • Supported interhology objects Wes • MAINT LED Yes • Number of available Motion Control resources for technology objects 40 • Required Motion Control resources for technology objects 40 • - per speed-controlled axis 40 • - per synchronous axis 180 • - per synchronous axis 180 • - per oblicining axis 20 • - per domate advisor 140 • - per oblicining axis 180 • Number of positioning axes at motion control cycle 192 • A strubber of positioning axes at motion control cycle 140 • A strubber of positioning axes at motion control cycle 140 • A strubber of positioning axes at motion control cycle 140 • A strubber of positioning axes at motion control cycle 140	 Number of entries, max. 	3 200
• Number of configurable Traces 8 • Memory size per trace, max. 512 kby/te Diagnostics indication LED • RUNSTOP LED • RUNSTOP LED Yes • ERROR LED Yes • Connection display LINK TXRX Yes Supported technology objects 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 15 360 • Required Motion Control resources 40 • per positioning axis 80 • per positioning axis 80 • per codput cam 20 • per codput cam 21 • Positioning axis 180 • Number of positioning axis at motion control cycle 140 • per codput cam 22 • Proper codput cam 23 • Proper codput cam 142 • Positioning axis at motion control cycle 140 • Positioning axis at motion control cycle 140 • PiD_Compact Yes; PID controller with integrated optimization for valves	— of which powerfail-proof	1 000
Intervents/diagnostic/skatus information Intervents/diagnostic/skatus information Diagnostic skatus information Pignostic skatus information Pignostic skatus information Pignostic skatus information Ves • RNON LED Yes • Connection display LINK TX/RX Yes Supported technology objects ************************************	Traces	
Interrupts/diagnostics/status information Diagnostics/status information Diagnostics/status information Diagnostics/status information Diagnostics/status information PRUNSTOP LED PRUNSTOP LED Yes PROR LED Yes AMAINT LED Yes Supported technology objects Motion Control Number of available Motion Control resources for technology objects Prespect-controlled axis Per synchronous axis Per synchronous axis Per synchronous axis Per synchronous axis Per output cam Per synchronous axis Per output cam Per synchronous axis Per output cam Per output cam Per output cam Per output cam Per probe Positioning axis Public Prespect Per output cam Per synchronous axis Per output cam Per synchronous axis Per output cam Per synchronous axis Per synchronous axis Per output cam Per outpu	 Number of configurable Traces 	8
Diagnostics indication LED Yes • ERROR LED Yes • Connection display LINK TXRX Yes MAINT LED Yes • Connection display LINK TXRX Yes 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 15 360 • Per specific-controlled axis 40 - per specific-controlled axis 80 - per controlled axis 80 - per controlled axis 80 - per controlled axis 160 - per controlled 170 - per controller 180 - per controller 192 Controller 192 Controller Yes; Universal PID controller with	Memory size per trace, max.	512 kbyte
• RUNSTOP LED Yes • ERROR LED Yes • MAINT LED Yes • Connection display LINK TX/RX Yes Supported technology adjects Yes, Note: The number of technology adjects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology adjects Yes, Note: The number of section Tool • Number of available Motion Control resources for technology adjects 40 - per speed-controlled axis 40 - per output cam 20 - per output cam 20 - per output cam 20 - per cam track 160 - per cam track 180 - per proble 40 • Positioning axis 140 - Number of positioning axes at motion control cycle 192 of ans (typical value) 192 Controller Yes; PID controller with integrated optimization • PID_Temp Yes; PID controller with integrated optimization • PID_Temp Yes; PID controller with integrated optimization • Pilp_speed counter Yes • horizontal installation, min. 0 °C <t< td=""><td>Interrupts/diagnostics/status information</td><td></td></t<>	Interrupts/diagnostics/status information	
• ERROR LED Yes • MAINT LED Yes • Connection display LINK TX/RX Yes Supported technology objects 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 affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Per syseed controlled axis 40 - per syseed controlled axis 80 - per probationing axis 80 - per output cam 20 - per output cam 192 • Positioning axis 180 - per output cam 20 - per output cam 20 - per output cam 192 • Positioning axis 180 - Number of positioning axes at motion control cycle 140 of a ms (typical value) 192 Controller Yes, 'Iniversal PID controller with integrated optimization • PID_Compact Yes, 'Iniversal PID controller with integrated optimization for valves • PID_Stapp Yes, 'Iniversal PID controller with integrated optimization for temperature • PiD_Compact Yes • PID_Compact Ye	Diagnostics indication LED	
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Connection display LINK TX/RX Yes Supported technology objects Motion Control Motion Control resources for technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 15 360 15 36	• ERROR LED	Yes
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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 15 360 • Required Motion Control resources 40 - per speed-controlled axis 40 - per synchronous axis 160 - per synchronous axis 160 - per output cam 20 - per adm tack 160 - per probe 40 • Positioning axis 180 - per output cam 20 - per output cam 20 - per orbe 40 • Positioning axis 180 - Number of positioning axes at motion control cycle 140 of A ms (typical value) 140 • PID_Compact Yes; Universal PID controller with integrated optimization • PID_Step Yes; PID controller with integrated optimization for temperature Counting and measuring Yes; Dispay: 50 °C, at an operating temperature of typically 50 °C, the display is switched off • Indical installation, min. 0 °C • vertical installation, min. 0 °C • vertical installation, max. 40 °C <td> Connection display LINK TX/RX </td> <td>Yes</td>	 Connection display LINK TX/RX 	Yes
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• Number of available Motion Control resources for technology objects 15 360 • Required Motion Control resources	Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC
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• Required Motion Control resources - per speed-controlled axis 40 - per synchronous axis 80 - per synchronous axis 160 - per external encoder 80 - per cam track 160 - per probe 40 • Positioning axis 160 - per cam track 160 - per probe 40 • Positioning axis 140 - Number of positioning axes at motion control cycle of 4 ms (typical value) 140 - Number of positioning axes at motion control cycle of 8 ms (typical value) 192 Controller 192 • PID_Compact Yes; Universal PID controller with integrated optimization integrated optimization for valves • PID_Temp Yes; PID controller with integrated optimization for valves • PID-Temp Yes Counting and measuring + Hgh-speed counter • High-speed counter Yes Ambient temperature during operation 0 °C • horizontal installation, min. 0 °C • vertical installation, min. 0 °C • vertical installation, max. display is switched off Ambient temperature during storag		15 360
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per synchronous axis 160 per external encoder 80 per output cam 20 per cam track 160 per ram track 160 per probe 40 • Positioning axis 140 Number of positioning axes at motion control cycle of 8 ms (typical value) 140 Number of positioning axes at motion control cycle of 8 ms (typical value) 192 Controller 192 PID_Compact Yes; Universal PID controller with integrated optimization of 8 ms (typical value) Ventiling and measuring Yes; PID controller with integrated optimization for valves • PID_Temp Yes; PID controller with integrated optimization for temperature Counting and measuring Yes • High-speed counter Yes Amblent conditions 0 °C Amblent installation, min. 0 °C • krighay is switched off 0 °C, at an operating temperature of typically 50 °C, the display is switched off • vertical installation, max. 40 °C • vertical installation, max. 0 °C • min. 40 °C • max. 70 °C Attuide during operation relating to sea		
per external encoder 80 per output cam 20 per cam track 160 per probe 40 •-Positioning axis		
	— per synchronous axis	
- per arrack 160 - per probe 40 • Positioning axis - - Number of positioning axes at motion control cycle of 4 ms (typical value) 140 - Number of positioning axes at motion control cycle of 8 ms (typical value) 192 Controller 192 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 temperature during operation 0 °C • horizontal installation, min. 0 °C • vertical installation, min. 0 °C • vertical installation, max. 40 °C • vertical installation, max. 70 °C Ambient temperature during storage/transportation - • max. 70 °C Attitude during operation relating to sea level - • installation attitude above sea level -	— per external encoder	
	— per output cam	20
 Positioning axis Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 8 ms (typical value) Number of positioning axes at motion control 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 Ambient temperature during operation horizontal installation, min. 0 °C o(°C) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	— per cam track	160
Number of positioning axes at motion control cycle of 4 ms (typical value) 140 Number of positioning axes at motion control cycle of 8 ms (typical value) 192 Controller 192 • PID_Compact Yes; Universal PID controller with integrated optimization • PID_3Step • PID_Temp Yes; PID controller with integrated optimization for valves • PID-Temp Counting and measuring • High-speed counter Yes Ambient conditions Yes Ambient temperature during operation • horizontal installation, min. 0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off • vertical installation, min. 0 °C 60 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off Ambient temperature during storage/transportation -40 °C 70 °C • min. -40 °C 70 °C • min. -40 °C • max. 70 °C Altitude during operation relating to sea level 5 000 m; Restrictions for installation attitudes > 2 000 m, see manual	— per probe	40
of 4 ms (typical value) 192 Number of positioning axes at motion control cycle of 8 ms (typical value) 192 Controller 192 Controller Yes; Universal PID controller with integrated optimization • PID_Compact Yes; PID controller with integrated optimization for valves • PID_Temp Yes; PID controller with integrated optimization for temperature Counting and measuring Yes; PID controller with integrated optimization for temperature Counting and measuring Yes • High-speed counter Yes Ambient conditions 0 °C Ambient temperature during operation 0 °C • 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, max. 0 °C • vertical installation, max. 40 °C, at an operating temperature of typically 40 °C, the display is switched off Ambient temperature during storage/transportation -40 °C • min. -40 °C • max. 70 °C Altitude during operation relating to sea level 5 000 m; Restrictions for installation attitudes > 2 000 m, see manual	 Positioning axis 	
of 8 ms (typical value) Image: Step of 8 ms (typical value) Controller 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 valves Ocurning and measuring Yes; PID controller with integrated optimization for temperature Counting and measuring Yes • High-speed counter Yes Ambient temperature during operation 0 °C • 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, max. 0 °C • vertical installation, max. 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off • wertical installation, max. -40 °C • min. -40 °C • max. 70 °C Attitude during operation relating to sea level • Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual		140
• PID_Compact Yes; Universal PID controller with integrated optimization • PID_Temp 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 Yes Ambient temperature during operation 0 °C • 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, max. 0 °C • vertical installation, max. 0 °C • wertical installation, max. 0 °C • min. -40 °C • max. 70 °C • max. 70 °C • Installation altitude above sea level 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual		192
• 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 Yes Ambient temperature during operation 0 °C • 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, min. 0 °C • vertical installation, max. 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off • vertical installation, max. 0 °C • vertical installation, max. 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off • min. -40 °C • max. 70 °C Altitude during operation relating to sea level 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	Controller	
• PID-Temp Yes; PID controller with integrated optimization for temperature Counting and measuring Yes • High-speed counter Yes Ambient conditions Ambient temperature during operation 0 °C • 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. 60 °C; Display: 40 °C, at an operating temperature of typically 50 °C, the display is switched off • vertical installation, max. 0 °C • vertical installation, max. 40 °C, at an operating temperature of typically 40 °C, the display is switched off • min. -40 °C • max. 70 °C Altitude during operation relating to sea level -40 °C • Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	PID_Compact	Yes; Universal PID controller with integrated optimization
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 display is switched off • vertical installation, min. 0 °C • vertical installation, max. 0 °C • wertical installation, max. 0 °C • min. -40 °C • max. 70 °C Altitude during operation relating to sea level -40 °C • Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	PID_3Step	Yes; PID controller with integrated optimization for valves
High-speed counter Yes Ambient conditions O°C Ambient temperature during operation 0°C • 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. 0°C • wertical installation, max. 0°C • min. -40°C, at an operating temperature of typically 40°C, the display is switched off • min. -40°C • max. 70°C Altitude during operation relating to sea level 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	PID-Temp	Yes; PID controller with integrated optimization for temperature
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • horizontal installation, max. • horizontal installation, max. • vertical installation, min. • vertical installation, min. • vertical installation, max. • min. • min. • max. • max. • max. • No °C • max. • No °C • lnstallation altitude above sea level • lnstallation altitude above sea level, max. • 000 m; Restrictions for installation altitudes > 2 00	Counting and measuring	
Ambient temperature during operation 0 °C horizontal installation, min. 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 -40 °C max. 70 °C Altitude during operation relating to sea level Installation altitude above sea level, max. 	High-speed counter	Yes
• 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 -40 °C • min. -40 °C • max. 70 °C Altitude during operation relating to sea level 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	Ambient conditions	
• 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 -40 °C • min. -40 °C • max. 70 °C Altitude during operation relating to sea level -70 °C • Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	Ambient temperature during operation	
evertical 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 -40 °C • min. -40 °C • max. 70 °C Altitude during operation relating to sea level 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	horizontal installation, min.	0°0
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• 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 -40 °C • min. -40 °C • max. 70 °C Altitude during operation relating to sea level -5000 m; Restrictions for installation altitudes > 2 000 m, see manual		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	 vertical installation, min. 	
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	 vertical installation, max. 	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the
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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		
Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual		70 °C
configuration / header		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
— 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
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