6ES7517-3AP00-0AB0

SIEMENS

Data sheet



SIMATIC S7-1500, CPU 1517-3 PN/DP, central processing unit with work memory 2 MB for program and 8 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFIBUS, 2 ns bit performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1517-3 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 250 μs (distributed) and 1 ms (central)
SysLog	Yes
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V19 (FW V3.1); V13 Update 3 (FW V1.6) 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

Modernoon	
Work memory	O.Mi. da
• integrated (for program)	2 Mbyte
integrated (for data)	8 Mbyte
Load memory	
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	2 ns
for word operations, typ.	3 ns
for fixed point arithmetic, typ.	3 ns
for floating point arithmetic, typ.	12 ns
CPU-blocks	
Number of elements (total)	12 000; 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.	8 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.ii) intition of the main memory)
— adjustable	Yes
— aujustable S7 times	100
Number	2 048
	2 010
Retentivity	Vec
— adjustable	Yes
IEC timer	Any (ant) limited by the mair
Number Patenticity	Any (only limited by the main memory)
Retentivity	V.
— 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.	8 Mbyte; When using PS 6 0W 24/48/60 V DC HF
Extended retentive data area (inol. timers, counters, hays), flax.	O Midyto, William doing to 0 000 24/40/00 V DO TII

Flag	
• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	e, a man manner, and grouped into another morning offe
Retentivity adjustable	Yes
Retentivity adjustable Retentivity preset	No
Local data	
• per priority class, max.	64 kbyte; max. 16 KB per block
Address area	טד וטאנט, ווומא. זט ועט אָכו טוטטג
Number of IO modules	16 394: may number of modules / submodules
I/O address area	16 384; max. number of modules / submodules
	22 khyte: All inpute are in the process image
• Inputs	32 kbyte; All cutouts are in the process image
Outputs Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	20 khuta May 20 KD via V4, may 0 KD via V2 az V2
— Inputs (volume)	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
— Outputs (volume)	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
per CM/CP	9 khuto
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	00
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	IIISEREU III (Otal
Modules per rack, max.	32; CPU + 31 modules
Number of lines, max.	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
• Number	16
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• on DP, device	Yes
• in AS, master	Yes
• in AS, device	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
Number of PROFIBUS interfaces	1
Interface	1
Interface types	Vac. V4
RJ 45 (Ethernet)	Yes; X1
Number of ports	2
• integrated switch	Yes
Protocols	

IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open 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 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
— 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
2. Interface Interface types	
RJ 45 (Ethernet)	Yes; X2
 Number of ports 	1
• integrated switch	No
Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes

Services	Media redundancy	No
Services	·	
- Direct data exchange - IRT - PROFileneity - PROFileneity - Profiled status - PROFileneity - Profiled status - Number of connectable IO Devices, max Number of connectable IO Devices for RT, max of which in line, max Number of IO Devices that can be simultaneously activate/discarcivated, max Number of IO Devices per bol, max Number of IO Devices per bol, max Updating times - PROFINET Security Class - PROFINET Security Class - India to the status - India to the s	Services	
	— Isochronous mode	No
- IRT PROFIberery Yes; per user program - Number of connectable 10 Devices, max. PROFIBER or Whith in line, max. 128 In lotal, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBER or Whith in line, max. 128 — Number of Connectable 10 Devices for RT, max. 128 — Number of I/O Devices that can be simultaneously activated/deadevivere, max. 128 — Number of I/O Devices per tool, max. 128 — Number of I/O Devices per tool, max. 128 — Number of I/O Devices per tool, max. 128 — PROFINET Security Class 11 — From the number of I/O devices, and on the quantity of configuration are for RT — For earl cycle of 1 ms 1 ms to 512 ms - PROFINET Security Class 11 ms to 512 ms - I I I I I I I I I I I I I I I I I I		
PROFIbererry Prioritized startup No Number of connectable IO Devices, nax. PROFIBUS or PROFINET Number of connectable IO Devices for RT, max. Of which in line, max. Number of connectable IO Devices for RT, max. Number of IO Devices that can be simultaneously advised deviced, max. Number of IO Devices per tool, max. Number of IO Devices per tool per too		No
- Prioritized startup - Number of connectable IO Devices, max Number of connectable IO Devices for RT, max Number of Connectable IO Devices for RT, max of which in line, max of which in line, max Number of IO Devices that can be simultaneously admissible developed and the simultaneously admissible simultaneous		
- Number of connectable IO Devices, max Number of connectable IO Devices for RT, max of which in line, max of which in line, max Number of IO Devices that can be simultaneously advantaged devices developed the connectable IO Devices for RT, max Number of IO Devices per tool, max Updating times - PROFINET Security Class - PROFINET Security Class - Isochronous mode - IRT - PROFINET Security Class - Isochronous mode - IRT - PROFINET Security Class - Isochronous mode - IRT - PROFINET Security Class - Isochronous mode - IRT - PROFINET Security Class - Services - Services - Number of IO Controllers with shared device, max advanced device of the service of th		
PROFIBUS of PROFINET - Number of connectable IC Devices for RT, max of which in line, max Number of IO Devices that can be simultaneously activated deciduated, max Number of IO Devices per tool, max Updating times - Updating times - PROFINET Security Class - PROFINET Security Class - PROFINET O Devices - PROFINET Do Device - Incordingued user data - PROFINET Do Devices - Incordingued user data - PROFINET Do Device - Incordingued user data - PROFINET Security Class - Asset management record - PROFINET Security Class - Asset management record - PROFINET Security Class - Interface bytes - RS 485 - RS 485 - RS 485 - RN 485 - RN 485 - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of Dord devices - Equidistance - Incordingued user data user and	·	
- of which is like, max Number of ID Devices that can be simultaneously adviseded/depotiveled, max Number of ID Devices per tool, max Updating these services per tool, max PROFINET Security Class - PROFINET Security Class - PROFINET Security Class - PROFINET Security Class - From the services services - It ms to 512 ms - PROFINET Security Class - It ms to 512 ms - PROFINET Security Class - It ms to 512 ms - PROFINET Security Class - It ms to 512 ms - PROFINET Security Class - It ms to 512 ms - PROFINET Security Class - It ms to 512 ms - PROFINET Security Class - It ms to 512 ms - PROFINET Security Class - It ms to 512 ms - PROFINET Security Class - Services - Number of IO Controllers with shared device, max Asset management record yes, per user program - PROFINET Security Class - PROFINET Security Class - PROFINET Security Class - RS 485 - Yes, per user program - PROFINET Security Class - RS 485 - Yes, per user program - PROFINED Security Class - RS 485 - Yes, X3 - Number of ports - PROFINED SP master - PROFINED SP master - PROFINED SP device - SIMATIC communication - Yes - PROFINED SP device - SIMATIC communication - Yes - RS 685		PROFIBUS or PROFINET
## Author of IO Devices that can be simultaneously advivated/deactivated, max. ## Author of IO Devices per tool, max. ## Updating times ## PROFINET Security Class ## Update time for RT ## Or send cycle of 1 ms ## PROFINET IO, on the number of IO devices, and on the quantity of configured user data ## Update time for RT ## Or send cycle of 1 ms ## PROFINET IO Device ## Services ## Ins to 512 ms ## PROFINET IO Device ## Services ## Ins to 512 ms ## PROFINET IO Device ## PROFINET IO Device ## PROFINET Security Class ## Ins to 512 ms ## PROFINET Security Class ## Ins to 512 ms ## PROFINET Security Class ## Ins to 512 ms ## Ins to 512 ms ## Ins to 512 ms ## PROFINET Security Class ## Ins to 512 ms ## Ins to 512 ms ## Ins to 512 ms ## PROFINET Security Class ## Ins to 512 ms ## Ins to 5	•	
activate-dideactivated, max. — Number of I/O Devices per tool, max. B institute of the update time also depends on communication share set for PROFINET IO, on the number of I/O devices, and on the quantity of configured user data — PROFINET Security Class 1 Update time for RT — for send cycle of 1 ms PROFINET IO Device Services — Isochronous mode — IRT — No — PROFInerry — Prionitized startup — No — Shared device — No — Shared device — No — Shared device — No — Asset management record — PROFINET Security Class 3. Interface Interface types — RS 485 — Number of IO Controllers with shared device, max. — Asset management record — PROFIBUS DP master — PROFIBUS DP master — PROFIBUS DP master — ROFIBUS DP device — PROFIBUS DP device — Rome of D		
- Updating times The minimum value of the update time also depends on communication share set for PROFINET ID, on the number of ID devices, and on the quantity of configured user data - PROFINET Security Class 1 ms to 512 ms - For send cycle of 1 ms 1 ms to 512 ms - FORDINET ID Device - Services Isochronous mode No		o, in total across all interfaces
set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data - PROFINET Security Class 1 - From the send cycle of 1 ms 1 ms to 512 ms - FROFINET IO Device - Isochronous mode No - IRT No - PROFINET Security Class 1 - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes, per user program - PROFINET Security Class 1 - PROFINET Security Class 1 - Number of ports 1 - PROFINED SP device No - SIMATIC communication Yes - PROFIBUS DP master Yes - PROFIBUS DP device No - SIMATIC communication Yes - PROFIBUS DP device No - SIMATIC communication Yes - PROFIBUS DP device No - SIMATIC communication Yes - Revices Yes - Equidistance Yes - Activation/deactivation of DP devices Yes - Authoropsity Profibus	 Number of IO Devices per tool, max. 	8
Update time for RT - for send cycle of 1 ms 1 ms to 512 ms PROFINET ID Device Services - Isochronous mode - IRT - PROFInergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of 1-devices - Asset management record - PROFINET Security Class - Asset management record - PROFINET Security Class - Number of Donatol Profits - RS 485 - Number of Donatol Profits - PROFIBUS DP master - PROFIBUS DP master - Number of Device - SIMATIC communication - PROFIBUS DP device - Number of Devices - Equidistance - Isochronous mode - Leguidistance - Isochronous mode - Calculation Security - Autonogation - Autocrossing - Autonogation - Autocrossing - Autonogation - Autocrossing - Ves - Industrial Ethernet status LED - Yes - Industrial Ethernet status LED - Yes - ROFIGIES - Number of connections, max Autocrossing - Yes - Autonogatiation - Yes - Industrial Ethernet status LED - Yes - ROFIGIES - Number of Connections - Number of connections - Autocrossing - Yes - Autonogatiation - Yes - PROFIGIES - Number of Connections - Number of connections, max Number of connections, max.	— Updating times	set for PROFINET IO, on the number of IO devices, and on the quantity of
for send cycle of 1 ms PROFIDET IO Device Services Isochronous mode	— PROFINET Security Class	1
Services Services	Update time for RT	
Services - Isochronous mode - IRT - PROFlenergy - Prioritized startup - Prioritized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - PROFINET Security Class - Asset management record - PROFINET Security Class - RS 485 - Number of ports - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP device - SIMATIC communication - PROFIBUS DP master - Number of DP devices - RS 485 - Simatic Communication - PROFIBUS DP master - PROFIBUS DP master - Number of DP devices - SIMATIC communication - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - Equidistance - activation/deactivation of DP devices - Equidistance - activation/deactivation of DP devices - Tesperature of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices - PROFIBUS DP master - Number of DP devices	— for send cycle of 1 ms	1 ms to 512 ms
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- Shared device - Number of IO Controllers with shared device, max 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 - PROFINET Security Class - SNMP Configuration and DCP Read Only - PROFINET Security Class - SNMP Configuration and DCP Read Only - PROFINET Security Class - SNMP Configuration and DCP Read Only - PROFINET Security Class - SNMP Configuration and DCP Read Only - PROFINET Security Class - SNMP Configuration and DCP Read Only - SNMP Configuration -	— PROFlenergy	Yes; per user program
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- activation/deactivation of I-devices Yes; per user program Yes; per user program Yes; per user program Yes; per user program SNMP Configuration and DCP Read Only 3. Interface Interface types • RS 485 • Number of ports • PROFIBUS DP master • PROFIBUS DP device • SIMATIC communication Yes PROFIBUS DP master • Number of connections, max. • Als; for the integrated PROFIBUS DP interface • Interface types - Equidistance - Isochronous mode - activation/deactivation of DP devices PROFIBUS or PROFIBUS or PROFINET 8 evices - Equidistance - Isochronous mode - activation/deactivation of DP devices PROFIBUS OF PROFINET 8 145 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Autorossing • Profices • Transmission rate, max. • Transmission rate, max. • Number of connections, max. • Number of connections, max. • Number of connections, max. • Number of connections, max. • Number of connections, max. • Number of connections, max. • Number of connections, max. • Number of connections, max. • Number of connections, max. • Number of connections reserved for ES/HMI/web 10	— Shared device	Yes
- Asset management record - PROFINET Security Class SNMP Configuration and DCP Read Only 3. Interface types - RS 485	 Number of IO Controllers with shared device, max. 	4
- Asset management record - PROFINET Security Class SNMP Configuration and DCP Read Only 3. Interface types RS 485 Yes; X3 Number of ports 1 Protocols PROFIBUS DP master Yes No SIMATIC communication Yes PROFIBUS DP master Number of connections, max. 48; for the integrated PROFIBUS DP interface max. number of DP devices 125; in total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFIBUS or PROFIBUS or PROFIBUS or PROFINET Services - Equidistance Yes - Isochronous mode Yes - activation/deactivation of DP devices Yes Interface types RJ 45 (Ethernet) Autocrossing Yes - Autoregotiation Yes - Industrial Ethernet status LED Yes RS 485 Transmission rate, max. 12 Mbit/s Protocols PROFISES No Number of connections, max. 320; via integrated interfaces of the CPU and connected CPs / CMs Number of connections, max. 320; via integrated interfaces of the CPU and connected CPs / CMs Number of connections, max. 320; via integrated interfaces of the CPU and connected CPs / CMs	 activation/deactivation of I-devices 	Yes; per user program
- PROFINET Security Class 3. Interface Interface types - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP device - SIMATIC communication - Yes PROFIBUS DP master - Number of connections, max max. number of DP devices - I25; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFIBU	Asset management record	
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PROFIBUS DP master PROFIBUS DP device No SIMATIC communication PROFIBUS DP master Number of connections, max. Tequidistance Services - Equidistance - Isochronous mode - activation/deactivation of DP devices RJ 45 (Ethernet) Autocrossing Autocrossing Industrial Ethernet status LED Protocols PROFISafe Number of connections, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET 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 - Lequidistance - Yes - Lequidistance - Yes - Interface types RJ 45 (Ethernet) - 100 Mbps - Autonegotiation - Yes - Autocrossing - Yes - Industrial Ethernet status LED - Yes - Industrial Ethernet status LED - Yes - RS 485 - Transmission rate, max Transmission rate, max. 12 Mbit/s Protocols PROFISafe - No - Number of connections, max Number of connections, max Number of connections reserved for ES/HMI/web - 10	● Number of Dons	
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max. number of DP devices	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication	Yes No
- Equidistance Yes - Isochronous mode Yes - activation/deactivation of DP devices Yes Interface types RJ 45 (Ethernet) • 100 Mbps Yes • 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. • Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master	Yes No Yes
- Equidistance Yes - Isochronous mode Yes - activation/deactivation of DP devices Yes Interface types RJ 45 (Ethernet) • 100 Mbps Yes • 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. • Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max.	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,
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	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services	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
Interface types RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED RS 485 • Transmission rate, max. Protocols PROFIsafe No Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance	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
RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED RS 485 • Transmission rate, max. 12 Mbit/s Protocols PROFIsafe No Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode	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 Autonegotiation Autocrossing Industrial Ethernet status LED Yes RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web 10 	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices	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
 Autorossing Industrial Ethernet status LED Yes RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Autocrossing Yes Yes Yes Nes No No Number of connections 320; via integrated interfaces of the CPU and connected CPs / CMs Number of connections reserved for ES/HMI/web 10 	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types	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
 Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Mbit/s Protocols PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web 10 	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types RJ 45 (Ethernet)	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 Yes
Industrial Ethernet status LED Yes RS 485 Transmission rate, max. 12 Mbit/s Protocols PROFIsafe No Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps	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 Yes
RS 485 • Transmission rate, max. 12 Mbit/s Protocols PROFIsafe No Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation	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 Yes Yes
● Transmission rate, max. Protocols PROFIsafe No Number of connections ● Number of connections, max. ● Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing	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 Yes Yes Yes Yes
Protocols PROFIsafe No Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED	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 Yes Yes Yes Yes
PROFIsafe No Number of connections Number of connections, max. Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections reserved for ES/HMI/web	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485	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 Yes Yes Yes Yes Yes Yes
Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web 320; via integrated interfaces of the CPU and connected CPs / CMs 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max.	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 Yes Yes Yes Yes Yes Yes
 Number of connections, max. Number of connections reserved for ES/HMI/web 320; via integrated interfaces of the CPU and connected CPs / CMs 10 	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max.	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 Yes Yes Yes Yes Yes Yes Yes Ye
Number of connections reserved for ES/HMI/web 10	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe	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 Yes Yes Yes Yes Yes Yes Yes Ye
	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe	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 Yes Yes Yes Yes Yes Yes Yes Ye
Number of connections via integrated interfaces 288	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections	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 Yes Yes Yes Yes Yes Yes Yes Ye
	Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections Number of connections, max.	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 Yes Yes Yes Yes Yes Yes Your Mile Market Mile Mile Mile Mile Mile Mile Mile Mile

 Number of S7 routing paths 	64; in total, only 16 S7-Routing connections are supported via PROFIBUS
Redundancy mode	and the state of t
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 A Ligar data parish, may	Yes
User data per job, max. Open IE communication	See online help (S7 communication, user data size)
TCP/IP	Yes
— Data length, max.	64 kbyte
several passive connections per port, supported	Yes
ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; 128 multicast circuits (of which max. 5 via X1)
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
• web API	
Number of sessions, max.	200
 number of simultaneous HTTP calls, max. 	4
— HTTP request body, max.	131 072 byte
OPC UA	
Runtime license required	Yes; "Large" license required
OPC UA Client	Yes; Data Access (registered Read/Write), Method Call
— Application authentication	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
Number of connections, max.	40
 Number of nodes of the client interfaces, recommended max. 	5 000
 Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I max. 	300 L
 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 	1
instructions for session management, per connection, max.	
instructions for session management, per connection,	5
instructions for session management, per connection, max.— Number of simultaneous calls of the client	5 5 000

OPC_UA_MethodCall, max.	
Number of inputs/outputs when calling	20
OPC_UA_MethodCall, max.	
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
— 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. 	10 000; 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. 	30 000
 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.	20 000
Program alarms	Yes
Program alarms Number of configurable program messages, max.	Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
	10 000; Program messages are generated by the "Program_Alarm" block,
Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of configurable program messages, max. Number of loadable program messages in RUN, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms • Number of program alarms	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering)	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients)
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable Variables	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable Variables Number of variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Status/control variable Variables Number of variables, max. — of which status variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable Variables Number of variables, max. — of which status variables, max. — of which control variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Status/control variable Variables Number of variables, max. of which status variables, max. of which control variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Status/control variable Variables Number of variables, max. of which status variables, max. Forcing Forcing	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Status/control variable Variables Number of variables, max. of which status variables, max. Forcing Forcing Forcing Forcing, variables	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Status/control variable Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing Forcing, variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing, variables, max. Diagnostic buffer	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs 200
Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs 200 Yes

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
Wollon Control	program; selection guide via the TIA Selection Tool
 Number of available Motion Control resources for 	10 240
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 of 4 ms (typical value)	70
Number of positioning axes at motion control cycle	128
of 8 ms (typical value)	120
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	
Counting and measuring • High-speed counter	Yes
High-speed counter	Yes
High-speed counter Ambient conditions	Yes
High-speed counter Ambient conditions Ambient temperature during operation	
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min.	0 °C
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max.	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. • vertical installation, min.	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max.	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max.	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min.	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max.	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max.	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / programming / header	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language LAD FBD STL SCL CFC	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes Yes Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language LAD FBD STL SCL CFC GRAPH	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes Yes Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes Yes Yes Yes Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes Yes Yes Yes Yes Yes
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
High-speed counter Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language LAD FBD STL SCL CFC GRAPH Know-how protection User program protection/password protection Copy protection Block protection Block protection Access protection	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye

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.	1 929 g

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