SIEMENS

Data sheet

6ES7515-2AN03-0AB0



SIMATIC S7-1500, CPU 1515-2 PN, central processing unit with work memory 1 MB for program and 4.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 6 ns bit performance, SIMATIC Memory Card required *** approvals and certificates according to entry 109816732 at support.industry.siemens.com to be considered! ***

General information	
Product type designation	CPU 1515-2 PN
HW functional status	FS01
Firmware version	V3.0
Product function	
 I&M data 	Yes; I&M0 to I&M3
Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 375 μs (distributed) and 1 ms (central)
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V18 (FW V3.0); with older TIA Portal versions configurable as 6ES7515-2AM02-0AB0
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	8
Mode buttons	2
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.83 A
Current consumption, max.	1.03 A
Inrush current, max.	1.15 A; Rated value
l²t	0.6 A ² ·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	6.2 W
Power loss	
Power loss, typ.	7.9 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	



 integrated (for program) 	1 Mbyte
• integrated (for data)	4.5 Mbyte
Load memory	
 Plug-in (SIMATIC Memory Card), max. 	32 Gbyte
Backup	
 maintenance-free 	Yes
CPU processing times	
for bit operations, typ.	6 ns
for word operations, typ.	7 ns
for fixed point arithmetic, typ.	9 ns
for floating point arithmetic, typ.	37 ns
CPU-blocks	
Number of elements (total)	8 000; 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.	4.5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
Number range	0 65 535
• Size, max.	1 Mbyte
FC	0 65 535
Number rangeSize, max.	0 65 535 1 Mbyte
• Size, max. 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 250 µs
 Number of process alarm OBs 	50
Number of DPV1 alarm OBs	3
 Number of isochronous mode OBs 	2
 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	N .
— adjustable	Yes
S7 times	2.049
Number Potentivity	2 048
Retentivity	Yes
— adjustable 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.	512 kbyte; In total; available retentive memory for bit memories, timers,
	counters, DBs, and technology data (axes): 472 KB
Extended retentive data area (incl. timers, counters, flags),	4.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF
max.	
Flag	
• Size, max.	16 kbyte
6ES75152AN030AB0	Subject to change without notice



Number of clock memories	8: 8 clock memory bit grouped into one clock memory byte
Number of clock memories Data blocks	8; 8 clock memory bit, grouped into one clock memory byte
Retentivity adjustable	Yes
Retentivity preset	No
Local data	10
 per priority class, max. 	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	8 192; max. number of modules / submodules
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems Number of DP masters	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)
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
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1
Number of ports	2
integrated switch	Yes
Protocols IP protocol	Yes; IPv4
PROFINET IO Controller	Yes, IPV4 Yes
PROFINETIO Controller PROFINETIO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	Yes



PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— 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.	256; 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, 	256
max.	
— of which in line, max.	256
 Number of IO Devices that can be 	8; in total across all interfaces
simultaneously activated/deactivated, max.	
 Number of IO Devices per tool, max. 	8
— Updating times	The minimum value of the update time also depends on communication
	share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for IRT	
— for send cycle of 250 µs	250 μs to 4 ms; Note: In the case of IRT with isochronous mode, the
	minimum update time of 375 μs of the isochronous OB is decisive
— for send cycle of 500 μs	500 µs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
 — With IRT and parameterization of "odd" send 	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625
cycles	µs 3 875 µs)
Update time for RT	050 1 400
— 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	Vee
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; per user program
— Shared device	Yes
 — Number of IO Controllers with shared device, max. 	4
max. — activation/deactivation of I-devices	Yes; per user program
— Asset management record	Yes; per user program
2. Interface	
Interface types	
RJ 45 (Ethernet)	Yes; X2
Number of ports	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
Media redundancy	No
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— Direct data exchange	No
— IRT	No



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 Number of connectable I/O Devices, max. Number of connectable I/O Devices for RT, max. - Aumber of Connectable I/O Devices for RT, max. - of which in line, max. - of which in line, max. - and the of I/O Devices for RT. - Number of I/O Devices for I/O Devices for RT. - Number of I/O Devices for I/O Devices for I/O RAME - Number of I/O Devices for I/O RAME - PSOP Communication - Number of Connections reserved for ES-MMUveb - Number of connections reserved for ES-MMUveb - Number of connections reserved for ES-MMUveb -	— PROFlenergy	Yes; per user program
AS-L PROFIGUES or PROFINET AS-L PROFIGUES or PROFINET AS-L PROFIGUES OF PROFINET AS		
 - Number of connectable I/D Devices for RT, max. - of which in line, max. 32 Number of I/D Devices that can be simultaneously activated/deact/welds, max. Number of I/D Devices parton, max. - Updating times activated/deact/welds, max. - Updating times of I/D Devices parton, max. - The minimum value of the update time also depends on communication stars act of PROFINET I/O, on the number of I/D devices, and on the quantity of configured user data - Or send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PCOP communication - For send cycle of 1 ms - PACIP communication - For send cycle of 1 ms - PACIP communication - For send cycle of 1 ms - PACIP communication - For send cycle of 1 ms - Shared device - Asset management record - Yes - Autorossing - Number of connections reavered for ESHML/Web Number of connections relevice in the first set set se	- Number of connectable IO Devices, max.	
max. 32 - Number of IO Devices that can be simultaneoully activated deactivated, max. 8; In total across all interfaces - Number of IO Devices per tool, max. - Update time also depends on communication shares set for PROFINET IO, on the number of IO devices, and on the quartity of configured user data Update time for RT 1 ms to 512 ms - FROFNET IO Device - Services - - Information of the service of the update time also depends on communication share set for PROFNET IO. - - Information of the update time also depends on communication share set for PROFNET IO. - - Information of the update time also depends on communication share set for PROFINET IO. - - Information of the update time also depends on communication share set for PROFNET IO. - - Information of the update time also depends on communication shares set for PROFNET IO. - - Information of the update time also depends on communication shares set for PROFNET IO. - - Information of the update time also depends on communication shares set for PROFNET IO. - - PROFNET IO Device - - Stand device Yes - Advatorogen on the update time also depends on communication shares set for PROFNET IO. - - Advatorogen on the update time also depends on communication shares set for PROFNET IO. - - Advatorogen on the update set management record Yes	 — Number of connectable IO Devices for RT. 	
Number of IO Devices that can be simultaneously activate/deactivated, max. 8 Number of IO Devices per tool, max. 8 Update time for RT	max.	
simultaneously activated/deactivated, max. - Number of IO Devices per tool, max. - Updating times - Updating times - for send cycle of 1 ms - f		32
		8; in total across all interfaces
— Updating times The minimum value of the update time also depends on communication equatily of configured user data — for send cycle of 1 ms 1 ms to 512 ms — for send cycle of 1 ms 1 ms to 512 ms PROFINET 100 on the unumber of 10 devices, and on the quantity of configured user data 1000000000000000000000000000000000000		
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	PROFINET IO Device	
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- Prioritized startup No - Shared device Yes - Number of IO Controllers with shared device, rax. - - activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program Interface types - RI 45 (Ethernet) - • Autorospination Yes • Profocols - Profocoris - • Number of connections, max. 256; via integrated interfaces of the CPU and connected CPs / CMs • Number of connections via integrated interfaces 128 • Number of connections via integrated interfaces 16 Redundancy mode - • H-Sync forwarding Yes Media redundancy - • MRP Manager: MRP Clein • MRPD Yes • MRPD Yes • Storburg time on line break, typ. 200 ms; For MRP. Jumpless for MRPD • Data length, max. See online help (S7 communication, user data size) Open Le communication, as seitert		
 Shared device Number of IO Controllers with shared device, max. activation/deactivation of 1/devices Yes; per user program activation/deactivation of 1/devices Yes; per user program Interface types RJ45 (Ethernet) Ves (100 Mbps Yes Autonegotiation Yes None Number of connections, max. Xes Yes forwarding Number of connections reserved for ES/HMUweb Number of connections via integrated interfaces Number of connections via integrated interfaces Number of connections via integrated interfaces Number of connections with the proves Number of connections with the proves Number of connections with RPN Yes Media redundancy MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manger, MRP Client MRP Automanager according to IEC 62439-2 Edition 3.0 Yes; Recryterment: IRT Switchover time on line break, typ. Out an exerit passive connections actient<td></td><td></td>		
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Interface types Interface types RJ 45 (Ethernet) Yes • 100 Mbps Yes • Autoregotiation Yes • Autoregotiation Yes • Autoregotiation Yes • Industrial Ethernet status LED Yes PROFIsate No Number of connections, max. 256; via integrated interfaces of the CPU and connected CPs / CMs • Number of connections via integrated interfaces 10 • Number of connections via integrated interfaces 128 • Number of S7 routing paths 16 Redundancy mode Yes • H-Sync forwarding Yes MRP Only via 1st interface (X1) - MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager, MRP Client - MRP Yes; NRP Automanager according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD - Switchover time on line break, typ. 200 ms; For MRP, bumpless for MRPD - Switchover time on line ing, max. 50 SIMATIC communication Yes; encryption with TLS V1.3 pre-selected • S7 communication, as client Yes • Data length, max. G4 kbyte • User data per job, max. Ge according to grad asize) Opent Ec communication Yes <		
RJ 45 (Ethernet) 100 Mbps Yes Autocrossing Yes Autocrossing Yes Industrial Ethernet status LED Yes Protocols PROFIsafe No Number of connections, max. Number of connections reserved for ES/HMI/web Number of sonnections reserved for ES/HMI/web Number of sonnections reserved for ES/HMI/web Number of sonnections reserved for ES/HMI/web Number of S7 routing paths Redundancy mode H-Sync forwarding Yes Media redundancy MRP Media redundancy MRP Yes (MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager, MRP Client MRPD Switchover time on line break, typ. Number of stations in the ring, max. S0 SIMATIC communication Yes (encryption with TLS V1.3 pre-selected Yes Data record routing Yes See online help (S7 communication, as server Yes See online help (S7 communication, as client Yes User data per job, max. See online help (S7 communication, user data size) Open IE communication Yes Data length, max. G4 kbyte Yes Data length, max. G4 kbyte Data length, max. G4 kbyte Data length, max. G4 kbyte Nearching (S7 communication) Max (S6 kbyte Non-TCP (RFC1006)		
• 100 Mbps Yes • Autonegotiation Yes • Autorossing Yes • Industrial Ethernet status LED Yes PROFIsafe No Number of connections • Number of connections via integrated interfaces 256; via integrated interfaces of the CPU and connected CPs / CMs • Number of connections via integrated interfaces 10 • Number of connections via integrated interfaces 128 • Number of S7 routing paths 16 Redundancy mode • H-Syne forwarding Yes • MRP Yes (MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client • MRP Yes; NRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client • MRP Yes; NRP Automanager according to IEC 62439-2 Edition 3.0 Yes; as IMRP Ting node according to IEC 62439-2 Edition 3.0 Yes; Requirement. IRT • MRP Yes; sin KRP Client Yes; sin KRP 2.00 • MRP Yes; encryption with TLS V1.3 pre-selected Yes; Stouting • S7 routing Yes Yes • S16MATIC communication Yes Yes • S7 communication, as server Yes Yes • S7 communication, as server Yes Yes • S7 communication, as server Yes Yes<		
• AutonogotiationYes• AutocrossingYes• AutocrossingYes• AutocrossingYes• Industrial Ethemet status LEDYes• Protocols•• RADFleafeNo• Number of connections, max.256; via integrated interfaces of the CPU and connected CPs / CMs• Number of connections via integrated interfaces10• Number of sonnections via integrated interfaces128• Number of Sr outing paths16• Redundancy mode•• H-Sync forwardingYes• Media redundancyonly via 1st interface (X1)- MRPMager; MRP Automanager conding to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client- MRP Interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0- MRPDYes; mager; MRP Client- Switchover time on line break, typ.200 ms; For MRP Dient- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• S7 communication, as serverYes• Data record routingYes• S7 communication, as serverYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• Several passive connections per port, supportedYes• Data length, max.64 kbyte• Data length, max.64 kbyte		Yes
• Autocrossing Yes • Industrial Ethernet status LED Yes PROFisafe No Number of connections max. 256; 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 128 • Number of ST routing paths 16 • Redundancy redundancy - Media redundancy only via 1st interface (X1) - MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; Requirement: IRT - 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 Yes; encryption with TLS V1.3 pre-selected * S7 conting Yes • Data record routing Yes • S7 communication, as server Yes • Data length, max. See online help (S7 communication, user data size) <		
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PROFIsafe No Number of connections 256; 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 128 Number of S7 routing paths 16 Redundancy mode Yes Media redundancy Yes Media redundancy only via 1st interface (X1) - MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client - 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 Yes; encryption with TLS V1.3 pre-selected • S7 routing Yes • Data record routing Yes • User data per job, max. See online help (S7 communication, user data size) Open IE communication Yes • TCP/IP Yes - Data length, max. 64 kbyte • ISO-on-TCP (RFC1006) Yes • Data length, max. 64 kbyte		
Number of connections, max. 256; 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 128 • Number of S7 routing paths 16 • H-Sync forwarding Yes • Hedia redundancy only via 1st interface (X1) - Media redundancy only via 1st interface (X1) - MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client - MRP Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 - MRPD Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 - MRPD Yes; sequirement: IRT - Switchover time on line break, typ. 200 ms; For MRP, bumpless for MRPD - Number of stations in the ring, max. 50 SIMATIC communication Yes; encryption with TLS V1.3 pre-selected • S7 routing Yes • Data record routing Yes • S7 communication, as server Yes • S7 communication, as server Yes • S7 communication, as server Yes • Data length, max. 64 kbyte - several passive connections per port, supported Yes <td>Protocols</td> <td></td>	Protocols	
• Number of connections, max. 256; via integrated interfaces of the CPU and connected CPs / CMs • Number of connections reserved for ES/HMI/web 10 • Number of S7 routing paths 16 Redundancy mode 16 • H-Sync forwarding Yes Media redundancy only via 1st interface (X1) - MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 - 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 Yes; encryption with TLS V1.3 pre-selected • S7 routing Yes • Data record routing Yes • S7 communication, as server Yes • S7 communication, as server Yes • S7 communication, as server Yes • User data per job, max. See online help (S7 communication, user data size) Open IE communication Yes • TCP/IP Yes • Data le		Νο
• Number of connections reserved for ES/HMI/web 10 • Number of connections via integrated interfaces 128 • Number of S7 routing paths 16 Redundancy mode - • H-Sync forwarding Yes Media redundancy only via 1st interface (X1) - Media redundancy only via 1st interface (X1) - 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 Yes; encryption with TLS V1.3 pre-selected • S7 routing Yes • Data record routing Yes • S7 communication, as client Yes • User data per job, max. See online help (S7 communication, user data size) Open IE communication Yes • Data length, max. 64 kbyte - several passive connections per port, supported Yes • ISO-on-TCP (R	PROFIsafe	No
• Number of S7 routing paths16Redundancy modeYes• H-Sync forwardingYesMedia redundancyonly via 1st interface (X1)- MRPYes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client- MRP interconnection, supportedYes; as MRP rolient- MRPDYes; Requirement: IRT- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes• S7 communication, as serverYes• S7 communication, as clientYes• S7 communication, as clientYes• TCP/IPYes• Data length, max.64 kbyte- Data length, max.64 kbyte- Data length, max.64 kbyte- Data length, max.64 kbyte	PROFIsafe Number of connections	
Redundancy mode Yes Media redundancy only via 1st interface (X1) - MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client - MRP 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 Yes; encryption with TLS V1.3 pre-selected • S7 routing Yes • Data record routing Yes • User data per job, max. See online help (S7 communication, user data size) Open IE communication Yes • TCP/IP Yes • Data length, max. 64 kbyte • ISO-on-TCP (RFC1006) Yes • ISO-on-TCP (RFC1006) Yes • ISO-on-TCP (RFC1006) Yes	PROFIsafe Number of connections • Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs
• H-Sync forwardingYesMedia redundancyonly via 1st interface (X1)- Media redundancyonly via 1st interface (X1)- MRPYes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client- MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0- MRPDYes; sequirement: IRT- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes• Data length, max.64 kbyte• S0-on-TCP (RFC1006)Yes• ISO-on-TCP (RFC1006)Yes• Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web	256; via integrated interfaces of the CPU and connected CPs / CMs 10
Media redundancy only via 1st interface (X1) - MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client - MRP Yes; as MRP find 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 Yes; encryption with TLS V1.3 pre-selected • S7 routing Yes • Data record routing Yes • S7 communication, as client Yes • User data per job, max. See online help (S7 communication, user data size) Open IE communication Yes • 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	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128
- Media redundancyonly via 1st interface (X1)- MRPYes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client- MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0- MRPDYes; Requirement: IRT- Switchover time on line break, typ. - Number of stations in the ring, max.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes; Yes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128
MRPYes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0 MRPDYes; Requirement: IRT Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD Number of stations in the ring, max.50SIMATIC communication•- PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes• Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes• Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16
Manager; MRP Client MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0 MRPDYes; Requirement: IRT Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD Number of stations in the ring, max.50SIMATIC communicationPG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16
- MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0- MRPDYes; Requirement: IRT- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes• PG/OP communicationYes• PG/OP communication, as serverYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes• Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1)
- MRPDYes; Requirement: IRT- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communication• PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes• Data length, max.64 kbyte• ISO-on-TCP (RFC1006)Yes• ISO-on-TCP (RFC1006)Yes• Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy — Media redundancy	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP
- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy — Media redundancy — MRP	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP interconnection, supported	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
SIMATIC communication Yes; encryption with TLS V1.3 pre-selected • 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 Yes • 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	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP interconnection, supported — MRPD	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT
• PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ.	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD
S7 routingYesData record routingYesS7 communication, as serverYesS7 communication, as clientYesUser data per job, max.See online help (S7 communication, user data size)Open IE communicationYesTCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes- ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy — MRP — MRP — MRP Interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max.	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD
Data record routingYesS7 communication, as serverYesS7 communication, as clientYesUser data per job, max.See online help (S7 communication, user data size)Open IE communicationYesTCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes- ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50
 S7 communication, as client User data per job, max. See online help (S7 communication, user data size) Open IE communication TCP/IP Data length, max. Several passive connections per port, supported ISO-on-TCP (RFC1006) Data length, max. 64 kbyte Mes Several passive connections per port, supported Several passive connections per port, supported	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected
• 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	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • PG/OP communication • S7 routing	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes
Open IE communication Yes • 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	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication § S7 routing Data record routing	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes
 TCP/IP Yes Data length, max. several passive connections per port, supported ISO-on-TCP (RFC1006) Data length, max. 64 kbyte 	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes
 Data length, max. several passive connections per port, supported ISO-on-TCP (RFC1006) Data length, max. 64 kbyte 	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing S7 communication, as server S7 communication, as client User data per job, max.	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes Yes
 several passive connections per port, supported ISO-on-TCP (RFC1006) Data length, max. Yes 64 kbyte 	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing Data record routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes Yes
supported • ISO-on-TCP (RFC1006) Yes — Data length, max. 64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing Data record routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes See online help (S7 communication, user data size)
ISO-on-TCP (RFC1006) Yes Data length, max. 64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing Data record routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication TCP/IP — Data length, max.	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes See online help (S7 communication, user data size)
— Data length, max. 64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing Data record routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication TCP/IP — Data length, max. — several passive connections per port,	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes See online help (S7 communication, user data size)
	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing Data record routing S7 communication, as server S7 communication, as client User data per job, max. Copen IE communication TCP/IP — Data length, max. — several passive connections per port, supported	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes See online help (S7 communication, user data size) Yes 64 kbyte Yes
	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing Data record routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication TCP/IP — Data length, max. — several passive connections per port, supported EST (REC1006)	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes See online help (S7 communication, user data size) Yes Yes Yes Yes
	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy - Media redundancy - MRP - MRP NRP - MRP NRP - MRP - Switchover time on line break, typ Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing Data record routing S7 communication, as server S7 communication, as client User data per job, max several passive connections per port, supported SOP (RFC1006) - Data length, max Data le	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes Only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes See online help (S7 communication, user data size) Yes 64 kbyte Yes Yes Yes



— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; max. 118 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
	Yes; Standard and user pages
HTTPS OPC UA	Yes; Standard and user pages
Runtime license required	Yes; "Medium" 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. 	10
 Number of nodes of the client interfaces, 	2 000
recommended max.	000
 — Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C max. 	300
 Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. 	20
 — Number of elements for one call of OPC_UA_MethodGetHandleList, max. 	100
 Number of simultaneous calls of the client instructions for session management, per connection, max. 	1
 Number of simultaneous calls of the client 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.	48
 Number of accessible variables, max. 	100 000
 Number of registerable nodes, max. 	20 000
 — Number of subscriptions per session, max. — Sampling interval, min. 	50 100 ms
— Publishing interval, min.	100 ms
— Number of server methods, max.	50
 Number of server methods, max. Number of inputs/outputs per server method, 	20
max.	20
 — Number of monitored items, recommended max. 	4 000; 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 	200
 — Number of alarms for system diagnostics 	100
Further protocols	
MODBUS	Yes; MODBUS TCP
S7 message functions	
Number of login stations for message functions, max.	64



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Program alarms	Yes
Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm"
	block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	
Number of program alarms	1 000
Number of alarms for system diagnostics	200
 Number of alarms for motion technology objects 	160
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 8 engineering systems
Status block	Yes; Up to 8 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	8
Status/control	
 Status/control variable 	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
 Number of variables, max. 	
— of which status variables, max.	200; per job
 — of which control variables, max. 	200; per job
Forcing	
• Forcing	Yes
Forcing, variables	Peripheral inputs/outputs
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
 Number of entries, max. 	3 200
— of which powerfail-proof	500
Traces	
 Number of configurable Traces 	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
ERROR LED	Yes
MAINT LED	Yes
STOP ACTIVE LED	Yes
Connection display LINK TX/RX	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
 Number of available Motion Control resources for 	2 400
technology objects	2 400
Required Motion Control resources	
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per external encoder — per output cam	20
— per cam track	160
— per probe	40
Positioning axis	
 Positioning axis — Number of positioning axes at motion control 	11
cycle of 4 ms (typical value)	
— Number of positioning axes at motion control	20
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 conditions	
Ambient temperature during operation	
Ambient temperature during operation	-30 °C: No condensation
 horizontal installation, min. 	-30 °C; No condensation 60 °C: Display: 50 °C, at an operating temperature of typically 50 °C, the
	-30 °C; No condensation 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the



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Weight, approx.	456 g
Weights	
Depth	129 mm
Height	147 mm
Width	70 mm
Dimensions	
• upper limit	adjustable maximum cycle time
lower limit	adjustable minimum cycle time
programming / cycle time monitoring / header	
 Protection level: Complete protection 	Yes
 Protection level: Write protection for Failsafe 	No
 Protection level: Read/write protection 	Yes
Protection level: Write protection	Yes
 Password for display 	Yes
 protection of confidential configuration data 	Yes
Access protection	
Block protection	Yes
Copy protection	Yes
User program protection/password protection	Yes
Know-how protection	
— GRAPH	Yes
— 302 — CFC	Yes
— STL — SCL	Yes
— STL	Yes
— FBD	Yes
— LAD	Yes
configuration / programming / header Programming language	
configuration / header	
Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Altitude during operation relating to sea level	70 0
• mm. • max.	-40 °C
Ambient temperature during storage/transportation min. 	-40 °C
Ambient temperature during storage/traper attation	display is switched off
 vertical installation, max. 	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the
 vertical installation, min. 	-30 °C; No condensation
	display is switched off

