SIEMENS

Data sheet

6ES7515-2TN03-0AB0



SIMATIC S7-1500T, CPU 1515T-2 PN, central processing unit with 1.5 MB work memory 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 109816881 at support.industry.siemens.com to be observed! ****

Figure similar

General information	
Product type designation	CPU 1515T-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 6ES7515-2TM01-0AB0
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.	3.6 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes



Work memory	
integrated (for program)	1.5 Mbyte
integrated (for brogram) integrated (for data)	4.5 Mbyte
Load memory	4.5 Mbyte
·	22 Chuto
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	N .
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	
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 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	
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max.	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), max.	4.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF
Extended retentive data area (ind. inners, counters, hays), illax.	The mayte, when using to 0 000 24/40/00 V DO HE



Flag	
Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	o, o clock memory bit, grouped into one clock memory byte
Retentivity adjustable	Yes
Retentivity preset	No
Local data	
	64 khita: may 16 KD par black
 per priority class, max. Address area 	64 kbyte; max. 16 KB per block
	0.400 men sumber effere dalar / substantia
Number of IO modules	8 192; max. number of modules / submodules
I/O address area	20 libites All invite are in the presses image
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	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	
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
integrated	2
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	
Modules per rack, max.	32; CPU + 31 modules
Number of lines, max.	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
• 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	Voc. V1
RJ 45 (Ethernet)	Yes; X1
Number of ports	2
integrated switch	Yes
Protocols	Ver ID-4
• IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
 SIMATIC communication 	Yes



• Web servor Yes • Media redundary Yes • PROPNET I/O Contradie Yes • PROP communication Yes • PROP communication Yes • PROP communication Yes • PROP communication Yes • Provided acchange Yes, Requirement, IRT and isochronous mode (MRPD optional) • NRT Yes • PROPEnergy Yes, Nax, 22 PROFINET or vices • PROPEnergy Yes, Nax, 22 PROFINET or vices • Winther of connectable ID Devices for RT, max. 64 • Winther of Concess that can be simulaneously 61 in total across all interfaces • Winther of IO Devices per tool, max. 8 • Winther of IO Devices per tool, max. 8 • Or draid of this The minimum value of the update time also depends on communication share set in PROFINET in Out across all interfaces • Or draid cycle of 500 µs 500 µs to 4 ms 10 devices, and on the quantity of the update time of 370 µs of the update time of 10 devices in the minimum value of the update time of 10 devices in the minimum value of the update time of 10 devices in the minimum value of the update time of 10 devices in the minimum value of the update time of 10 devices in the minimum value of the update tin the opdate of 500 µs of 500 µs of 500 µs to 50 µs of 5	Open IE communication	Yes; Optionally also encrypted
PHOLINE U Q Controluis PROLP communication Yes - PGOP communication Yes - Direct dat exchange Yes, Requirement, IRT and isochronous mode (MRPD optional) - IRT Yes, Requirement, IRT and isochronous mode (MRPD optional) - RRDF lenergy Yes, Requirement, IRT and isochronous mode (MRPD optional) - RRDF or communication (D Devices, max. 256: In total up to 1000 dimitual U0 devices can be connected via AS-i, PROFINET - Of which I/O devices with IRT, max. 64 - Mumber of connectable (D Devices for RT, max. 256 - Mumber of IO Devices that can be simultaneously 8: In total across all interfaces - Of which IIO devices with IRT, max. 64 - Mumber of IO Devices per tool, max. 76 - Mumber of IO Devices per tool, max. 76 - Or stard cycle of 50 µs 500 µs to 8 me - for stard cycle of 50 µs 500 µs to 8 me - for stard cycle of 50 µs 500 µs to 8 me - for stard cycle of 50 µs 250 µs to 6 me - for stard cycle of 50 µs 250 µs to 128 ms - for stard cycle of 50 µs 250 µs to 128 ms - for stard cycle of 20 µs 250 µs to 128 ms <tr< td=""><td>-</td><td></td></tr<>	-	
Services - PGiOP communication Yes - PGiOP communication Yes - Direct data exchange Yes, Requirement: INT and isochronous mode (MRPD optional) - FROFIenergy Yes, Per user program - PROFIENERGY Yes, Per user program - Prioritic distribute 255; In total, up to 100 distributed I/O devices can be connected via AS-i, PROFIENET devices - Of which I/O devices with IRT. max. 64 - Number of connected I/O Devices from T, max. 256 - Witchich Infle, max. 256 - Witchich Infle, max. 8 - Wunder of I/O Devices first can be simultaneously activitated of the update time also depends on communication share candigues user data - Ubdate time for IRT - Song in 6 are song unret data first cans all interfaces - Ubdate time for IRT - Song in 6 are song unret data - For send cycle of 250 µs 250 µs 10 a ms - Song in 5 are song cycle of 1 ms 1 ms to 15 are - For send cycle of 250 µs 250 µs 10 a ms - For send cycle of 250 µs 250 µs 10 are - For send cycle of 250 µs 250 µs 10 are - For send cycle of 250 µs 250 µs 10 are - For send cycle of	Media redundancy	Yes
- PGOP communication Yes - Note: data exchange Yes, Requirement: IRT and isochronous mode (MRPD optional) - IRT Yes - PROFInetry Yes, per user program - PROFInetry Yes, Max: 32 PROFINET devices - Number of connectable IO Devices, max. 64 - Of which IO devices with IRT, max. 64 - Of which IO devices with IRT, max. 64 - Mumber of connectable IO Devices for FT, max. 256 - Workbort Of Devices per tool, max. 8 - Number of IO Devices per tool, max. 8 - Number of IO Devices per tool, max. 8 - For send oycle of 30 µs 250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the minimum value of the update time also depends an communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configure user data - for send oycle of 30 µs 250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the minimum value of the update time also depends an communication share set for PROFINET IO, on the number of IO devices, and on the quantity of the isochronous OB is decisive - for send oycle of 30 µs 250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the minimum value of the update time also depends an communication share set for PROFINET IO, on the undevice is and oycle of 1 ms	PROFINET IO Controller	
- Isochronous modeYes- Isochronous mode (MRPD optional)- IRTYes- PROFilendryYes, Per user program- PROFilendryYes, Per user program- Protoce startupYes, Nax, 22 PROFINET devices- Number of connectable ID Devices, max.64- Number of connectable Dovices, IRT, max.64- Number of connectable Dovices for RT, max.55- Number of Dovices that ran be simultaneous?8: In total user of 10 Devices for RT, max Number of Dovices per tool, max.6- Number of Dovices per tool, max.6- Number of 10 Devices per tool, max.7- For send cycle of 500 us500 us to 4 ms. Note: In the case of RT with isochronous mode, the minimum update for update time also depends on communication share are for send cycle of 1 ms For send cycle of 250 us250 us to 4 ms. Note: In the case of RT with isochronous mode, the minimum update of the case of RT with isochronous mode. Note: In the case of RT with isochronous mode. Note: In the case of RT with isochronous DE is decisive- For send cycle of 250 us250 us to 4 ms. Note: In the case of RT with isochronous DE is decisive- For send cycle of 260 us250 us to 4 ms. Note: In the case of RT with isochronous mode. Note: In the case of RT with isochronous mode. Note: In the case of RT with isochronous mode. Note: In the case of RT with isochronous isochronus DE isochronus. DE isochronus DE isochronus. DE isochronus Decis	Services	
- Direct data exchange Yes, Requirement. IRT and isochronous mode (MRPD optional) - IRT Yes - Profilentry Yes, for user program - Profilentry Yes, Max. 32 PROFINET devices - Number of connectable IO Devices, max. 256 - of which IO devices with IRT, max. 64 - of which ID bevices for RT, max. 58 - of which ID bevices that can be simultaneously 8 - Number of IO Devices per tool, max. 7 - Or send cycle of 250 µs 250 µs - for send cycle of 250 µs 250 µs In 4 ms; Note: In the actao of IRT with incohronous mode, the minimum waites firm cycles in the number of IO devices, and on the quantity of 250 µs In 4 ms; Note: In the case of IRT with incohronous mode, the minimum waites firm cycles of 150 µs - for send cycle of 250 µs 250 µs In 4 ms; Note: In the case of IRT with incohronous mode, the minimum waites firm cycles of 150 µs - for send cycle of 27 ms 250 µs In 28 ms - for send cycle of 27 ms 2 ms Io 32 ms - for send cycle of 28 µs 2 ms Io 32 ms - for send cycle of 27 ms 2 ms Io 32 ms - for send cycle of 28 µs 2 ms Io 32 ms - for send cycle of 17ms 1 ms Io 18 ms <	— PG/OP communication	Yes
	— Isochronous mode	Yes
- PROFInergy Yes; Per user program - Prioritized startup Yes; Max. 32 PROFINET devices - Number of connectable IO Devices (max. 26 - Of which IO devices with IRT, max. 266 - of which in Ime, max. 266 - Number of IO Devices per tool, max. 8 - Number of IO Devices per tool, max. 8 - Number of IO Devices per tool, max. 8 - Number of IO Devices per tool, max. 8 - Number of IO Devices per tool, max. 8 - Or send cycle of 250 µs 250 µs to 4 ms. Note: In the case of IRT with isochronous mode, the mainture of the update time alto depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of consent cycle of 250 µs - for send cycle of 250 µs 250 µs to 4 ms. Note: In the case of IRT with isochronous mode, the mainture of the update time alto depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of consent cycle of 1 ms 1 ms to 18 ms - for send cycle of 250 µs 250 µs to 4 ms. Note: In the case of IRT with isochronous mode, the mainture of the update time alto depends on communication share set for PROFINET IO. - for send cycle of 500 µs 250 µs to 4 ms. Note: In the case of IRT with isochronous mode, the mainture of the update time alto depends on communication share set of the mainture of the update time alto depends on communication share set of the mainture of the update time alto depends on communication share set of the mainture of the update time alto depends on com	— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
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- Number of connectable IO Devices, max. 256: In total, up to 1 000 distributed I/O devices can be connected via AS-I, PR/PRISUS or PROFINET - Of which IO devices with IRT, max. 64 - Of which IO Devices that Can be simultaneously activited/descrived. 256 - Number of IO Devices part tool, max. 8 - Number of IO Devices part tool, max. 8 - Updating times 8 - Updating times 250 jus to 4 ms; Note: In the case of IRT with isochronous mode, the minimum value the of 760 functions. - for send cycle of 250 jus 250 jus to 4 ms; Note: In the case of IRT with isochronous mode, the minimum value the of 376 jus of the lucothronous OB is decisive - for send cycle of 250 jus 500 jus to 5 ms - for send cycle of 2 ms 2 ms to 32 ms - for send cycle of 250 jus 250 jus to 4 ms; Note: In the case of IRT with isochronous mode; the minimum value to the organized service of 375 jus. - for send cycle of 2 ms 2 ms to 16 ms - for send cycle of 2 ms 2 ms to 32 ms - for send cycle of 250 jus 250 jus to 128 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 1 ms 1 ms to 512 ms - for se	- PROFlenergy	Yes; per user program
PROFIDUS or PROFINET — Or which IO devices with IRT, max. 268 — Number of connectable IO Devices for RT, max. 258 — Or which In line, max. 258 — Number of IO Devices that can be simultaneously activated/deactivated/max. 8 — Number of IO Devices per tool, max. 8 — Updating times The minimum value of the update time also depends on communication share activated/deactivated, max. — Updating times 250 jus to 4 ms; Note: in the case of IRT with isochronous mode, the minimum value of the sochronous OB is decisive — of send cycle of 250 jus 250 jus to 4 ms; Note: in the case of IRT with isochronous mode, the minimum value of the sochronous OB is decisive — of send cycle of 250 jus 250 jus to 4 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 250 jus 500 jus to 256 ms — for send cycle of 2 ms 4 ms to 64 ms — for send cycle of 1 ms 1 ms to 1512 ms — for send cycle of 1 ms 4 ms to 512 ms — for send cycle of 1 ms 4 ms to 512 ms — for send cycle of 1 ms 4 ms to 512 ms — for send cycle of 1 ms 4 ms to 512 ms	— Prioritized startup	Yes; Max. 32 PROFINET devices
	- Number of connectable IO Devices, max.	
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 - Number of IO Devices per tool, max. Number of IO Devices per tool, max. Updating times The minimum value of the update time also depends on communication share set of PROFINET IO, on the number of IO devices, and on the quantity of configured user data Updating times for send cycle of 250 µs Update time for IRT - for send cycle of 500 µs S00 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 2 ns S00 µs to 4 ms - for send cycle of 2 ns - for send cycle of 2 ns - for send cycle of 2 ns - for send cycle of 500 µs - for send cycle of 2 ns - for send cycle of 500 µs - for send cycle of 2 ns - for send cycle of 500 µs - for send cycle of 2 ns - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 1 ms - for send cycle of 1 ns - for send cycle of 1 ns - for send cycle of 2 ns - for send cycle of 2 ns - for send cycle of 1 ms - for send cycle of 2 ns <l< td=""><td> — Number of connectable IO Devices for RT, max. </td><td>256</td></l<>	 — Number of connectable IO Devices for RT, max. 	256
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- for send cycle of 1 ms1 ms to 16 ms- for send cycle of 2 ms2 ms to 32 ms- for send cycle of 4 ms4 ms to 64 ms- Wth IRT and parameterization of "odd" send cyclesUpdate time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs 3Voidate time for RT250 µs to 128 ms- for send cycle of 250 µs250 µs to 128 ms- for send cycle of 27 ms250 µs to 128 ms- for send cycle of 1 ms1 ms to 512 ms- for send cycle of 2 ms2 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 ms4 ms to 512 ms- for send cycle of 4 msYes- for send cycle of 6 ms <td< td=""><td>— for send cycle of 250 μs</td><td>update time of 375 µs of the isochronous OB is decisive</td></td<>	— for send cycle of 250 μs	update time of 375 µs of the isochronous OB is decisive
for send cycle of 2 ms2 ms to 32 ms for send cycle of 4 ms4 ms to 64 ms With IRT and parameterization of "odd" send cycles375 µs)Update time for RT500 µs to 250 ms for send cycle of 520 µs500 µs to 256 ms for send cycle of 500 µs500 µs to 256 ms for send cycle of 1 ms1 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 msYes for		500 µs to 8 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 µs: 375 µs, 625 µs3 Update time for RT for send cycle of 250 µs 250 µs to 128 ms for send cycle of 1 ms 1 ms to 512 ms for send cycle of 1 ms for send cycle of 1 ms 1 ms to 512 ms for send cycle of 4 ms for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms PROFINET IO Device for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms PROFINET IO Device for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms Yes for send cycle of 4 ms for send cycle of 4 ms Yes for send cycle of 4 ms for send cycle of 4 ms Yes for send cycle of 4 ms for Send cycle of 4 ms Yes for send cycle of 4 ms FROFINET IO Device Yes, per user program for send cycle of 4 ms activation/ideactivation of I-devices Yes; per user program for sen cycle of 4 ms <td< td=""><td>-</td><td>1 ms to 16 ms</td></td<>	-	1 ms to 16 ms
With IRT and parameterization of "odd" send cyclesUpdate time = set "odd" send cycle (ary multiple of 125 µs: 375 µs, 625 µs3Update time for RT for send cycle of 250 µs250 µs to 128 ms for send cycle of 500 µs500 µs to 256 ms for send cycle of 1 ms1 ms to 512 ms for send cycle of 2 ms2 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 ms4 ms to 512 ms for Send cycle of 4 msYes schorbonous modeNo liRTYes schorbonous modeYes for Send deviceYes activation/deactivation of 1-devicesYes; per user program activation/deactivation of 1-devicesYes; per user program Asset management recordYes; yes user program RIV 45 (Ethernet)Yes; X2 flact bypes1 flact bypesInterface bypes flact bypesYes; Number of ports flact bypesYes; Number of ports flact bypesYes; Sen	— for send cycle of 2 ms	2 ms to 32 ms
B75 µs) B75 µs) Update time for RT for send cycle of 250 µs 500 µs to 128 ms for send cycle of 500 µs 500 µs to 256 ms for send cycle of 1 ms 1 ms to 512 ms for send cycle of 4 ms 2 ms to 512 ms for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms 4 ms to 512 ms for send cycle of 4 ms Yes	— for send cycle of 4 ms	4 ms to 64 ms
	— With IRT and parameterization of "odd" send cycles	
	Update time for RT	
	— for send cycle of 250 μs	•
- for send cycle of 2 ms2 ms to 512 ms- for send cycle of 4 ms4 ms to 512 msPROFINET IO DeviceServices PG/OP communicationYes- Ischronous modeNo- IRTYes- PROFIenergyYes; per user program- Shared deviceYes; per user program- Shared deviceYes; per user program- Asset management recordYes; per user programInterface types	— for send cycle of 500 μs	500 µs to 256 ms
- for send cycle of 4 ms4 ms to 512 msPROFINET IO DeviceServices- PG/OP communicationYes- Isochronous modeNo- Isochronous modeYes- PROFIenergyYes; per user program- Shared deviceYes- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user programInterfaceInterfaceVes; X2Number of ports1integrated switchYes; IPv4PROFINET IO ControllerYes; IPv4PROFINET IO ControllerYes• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo	— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device Services	— for send cycle of 2 ms	2 ms to 512 ms
Services- PG/OP communicationYes- Isochronous modeNo- Isochronous modeYes- IRTYes- PROFlenergyYes; per user program- Shared deviceYes- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user program- Asset management recordYes; per user programtetraceYes; per user programInterfaceYes; per user programintegrade switchYes; X2Interface switchNoProtocolsYes; NPV4PROFINET IO ControllerYes; IPV4IP protocolYes; IPV4PROFINET IO ControllerYesIP PROFINET IO DeviceYesSIMATIC communicationYes; Optionally also encryptedVeb serverYesWeb serverNo		4 ms to 512 ms
PG/OP communicationYes Isochronous modeNo IRTYes PROFlenergyYes; per user program Shared deviceYes Number of IO Controllers with shared device, max.4 activation/deactivation of I-devicesYes; per user program Asset management recordYes; per user program Asset management recordYes; per user program Iterface typesYes; yer user program RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Qopen IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo	PROFINET IO Device	
Isochronous modeNo- IRTYes- PROFlenergyYes; per user program- Shared deviceYes- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user program- Asset management recordYes; per user programInterfaceYes; per user programInterface types1• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
- IRTYes- PROFlenergyYes; per user program- Shared deviceYes- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user program- Asset management recordYes; yer user programc. InterfaceYes; yer user programInterface typesYes; X2• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocolsYes; IPv4• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
PROFlenergyYes- Shared deviceYes- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user program- Asset management recordYes; per user programc. InterfaceYes; per user programe. RJ 45 (Ethernet)Yes; X2• Number of ports1• Integrated switchNoProtocolsYes; IPv4• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes; Optionally also encrypted• Web serverYes; Optionally also encrypted• Media redundancyNo		
- Shared deviceYes- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user program- Asset management recordYes; per user programInterface typesInterface types• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocolsInterface types• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
- Number of IO Controllers with shared device, max.4- activation/deactivation of I-devicesYes; per user program- Asset management recordYes; per user programInterfaceInterfaceInterface typesYes; X2• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocolsYes; IPv4• PROFINET IO ControllerYes; Ves• PROFINET IO DeviceYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
activation/deactivation of I-devicesYes; per user program Asset management recordYes; per user program Interface Interface types• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
Asset management recordYes; per user programInterfaceInterface types• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes; Optionally also encrypted• Media redundancyNo		
Interface Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols IP protocol • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted • Web server Yes • Media redundancy No		
Interface types• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		Yes; per user program
• RJ 45 (Ethernet)Yes; X2• Number of ports1• integrated switchNoProtocols• IP protocolYes; IPv4• PROF INET IO ControllerYes• PROF INET IO DeviceYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
Number of ports1integrated switchNoProtocolsI P protocolYes; IPv4PROFINET IO ControllerYesPROFINET IO DeviceYesSIMATIC communicationYes; Optionally also encryptedOpen IE communicationYes; Optionally also encryptedWeb serverNoMedia redundancyNo		
• integrated switchNoProtocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
Protocols • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes; Optionally also encrypted • Open IE communication Yes; Optionally also encrypted • Web server Yes • Media redundancy No	-	
IP protocolYes; IPv4PROFINET IO ControllerYesPROFINET IO DeviceYesSIMATIC communicationYesOpen IE communicationYes; Optionally also encryptedWeb serverYesMedia redundancyNo		No
• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
• SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted • Web server Yes • Media redundancy No		
• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo		
Web server Yes Media redundancy No		
Media redundancy No	-	
······································		
PROFINET IO Controller		No
	PROFINET IO Controller	



— PG/OP communication	Yes
	Yes
— Isochronous mode	
— Direct data exchange	No
— IRT	No
- PROFlenergy	Yes; per user program
— Prioritized startup	No
 Number of connectable IO Devices, max. 	32; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
 — Number of connectable IO Devices for RT, max. 	32
— of which in line, max.	32
 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
Update time for RT	
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes; per user program
- Prioritized startup	No
— Shared device	Yes
 — Number of IO Controllers with shared device, max. 	4
	Yes; per user program
— Asset management record	Yes; per user program
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
Autonegotiation	Yes
Autocrossing	Yes
Industrial Ethernet status LED	Yes
Protocols	
Protocols PROFIsafe	Yes No
Protocols	No
Protocols PROFIsafe	
Protocols PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web	No
Protocols PROFIsafe Number of connections • Number of connections, max.	No 256; via integrated interfaces of the CPU and connected CPs / CMs
Protocols PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web	No 256; via integrated interfaces of the CPU and connected CPs / CMs 10
Protocols PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces	No 256; via integrated interfaces of the CPU and connected CPs / CMs 10 128
Protocols 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	No 256; via integrated interfaces of the CPU and connected CPs / CMs 10 128
Protocols 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	No 256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16
Protocols 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	No 256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16
Protocols 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	No 256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes
Protocols 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	No 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;
Protocols 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	No 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
Protocols 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 interconnection, supported	No 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
Protocols 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	No 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
Protocols 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 — MRPD — Switchover time on line break, typ.	No 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
Protocols 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.	No 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
Protocols 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 — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication	No 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
Protocols 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 - MRPD - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 routing	No 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
Protocols PROFIsafe Number of connections • Number of connections reserved for ES/HMI/web • 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 — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • S7 routing • Data record routing	No 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
Protocols PROFIsafe Number of connections • 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 - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 routing • Data record routing • S7 communication, as server	No 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
Protocols 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 - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 routing • Data record routing • S7 communication, as server • S7 communication, as client	No 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 Yes Yes
Protocols PROFIsafe Number of connections • 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 - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 routing • Data record routing • S7 communication, as server • S7 communication, as client • User data per job, max.	No 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
Protocols PROFIsafe Number of connections • 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 - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 routing • Data record routing • S7 communication, as server • S7 communication, as client • User data per job, max. Open IE communication	No 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 See online help (S7 communication, user data size)
Protocols PROFIsafe Number of connections • 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 - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 routing • Data record routing • S7 communication, as server • S7 communication, as client • User data per job, max.	No 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 Yes Yes



covered processive compositions now part coverented	Vac
— 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; max. 118 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
	Yes
• LLDP	Yes
Encryption Web server	Yes; Optional
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	
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/OPC_U max. 	300
— Number of elements for one call of	20
OPC_UA_NameSpaceGetIndexList, max.	
 — 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.	50
— Sampling interval, min.	100 ms
— Publishing interval, min.	100 ms
- Number of server methods, max.	50
 Number of inputs/outputs per server method, 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
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	
	Yes; Note: The number of technology objects affects the cycle time of the PLC
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
Supported technology objects	Yes; Note: The number of technology objects affects the cycle time of the PLC
Supported technology objects Motion Control • Number of available Motion Control resources for	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80 20
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per external encoder — per output cam — per cam track	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80 20 160
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per output cam — per probe • Number of available Extended Motion Control resources	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80 20
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per output cam — per probe • Number of available Extended Motion Control resources	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80 20 160 40
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per output cam — per probe • Number of available Extended Motion Control resources	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80 20 160 40 120
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per cam track — per probe • Number of available Extended Motion Control resources for technology objects • Required Extended Motion Control resources — per cam (1 000 points and 50 segments)	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80 20 160 40 120
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per cam track — per probe • Number of available Extended Motion Control resources for technology objects • Required Extended Motion Control resources — per cam (1 000 points and 50 segments) — per cam (10 000 points and 50 segments)	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80 20 160 40 120
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per cam track — per probe • Number of available Extended Motion Control resources for technology objects • Required Extended Motion Control resources — per cam (1 000 points and 50 segments)	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 40 80 160 80 20 160 40 120
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per output cam — per cam track — per probe • Number of available Extended Motion Control resources for technology objects • Required Extended Motion Control resources — per cam (1 000 points and 50 segments) — per cam (10 000 points and 50 segments)	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 80 160 80 20 160 40 120 2 2
Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per cam track — per probe • Number of available Extended Motion Control resources for technology objects • Required Extended Motion Control resources — per cam (1 000 points and 50 segments) — per cam (10 000 points and 50 segments) — for each set of kinematics	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 2 400 40 40 80 100 80 20 160 40 120 2 2 30



of 4 ma (turical value)	
of 4 ms (typical value)	20
 — Number of positioning axes at motion control cycle of 8 ms (typical value) 	20
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	
horizontal installation, min.	-30 °C; No condensation
 horizontal installation, max. 	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
 vertical installation, min. 	-30 °C; No condensation
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
 Installation altitude above sea level, max. 	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
 User program protection/password protection 	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
 protection of confidential configuration data 	Yes
 Password for display 	Yes
Protection level: Write protection	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Write protection for Failsafe 	No
Protection level: Complete protection	Yes
programming / cycle time monitoring / header	
• lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	535 g
last modified:	10/6/2022

last modified:

10/6/2023 🖸

