SIEMENS

Data sheet

6ES7515-2FM02-0AB0



SIMATIC S7-1500F, CPU 1515F-2 PN, central processing unit with work memory 750 KB for program and 3 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 30 ns bit performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1515F-2 PN
HW functional status	FS01
Firmware version	V2.9
Product function	
 I&M data 	Yes; I&M0 to I&M3
Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 500 μs (distributed) and 1 ms (central)
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V17 (FW V2.9) / V16 (FW V2.8) or higher; with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0
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)	0.8 A
Current consumption, max.	1.1 A
Inrush current, max.	2.4 A; Rated value
l²t	0.02 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.	6.3 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	

Indiginal (10 program) Indiginal (10 pr	a integrated (for program)	750 kbyta
Lead memory PLg-inft (MATIC Memory Card), max. 32 Cityte Backup - maintenance-free Yes CPU processing times - file for bit operations, typ. 30 file for bit operations, typ. 48 ins for field operations, typ. 48 ins for the dement (total) 8 000; Blocks (OB, FE, FC, DB) and UDTs DB - Number range 1 60 990; subdivided into: number range that can be used by the use in the use of DBs researd va SFC 56; 60 000 isSize, max. 500 kbyte 500 kbyte FE - Number range 0. 65 S3 isSize, max. 500 kbyte 500 kbyte 500 kbyte GB - Number range 0. 65 S3 isSize, max. 500 kbyte 500 kbyte GB - Number range 0. 65 S3 isSize, max.	integrated (for program)	750 kbyte
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max. Flag	_	
Flag		3 Mbyte; When using PS 6 0W 24/48/60 V DC HF
♥ 0125, HIdA.		16 kbyte
	• SILE, IIIAA.	

Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
Retentivity adjustable	Yes
Retentivity preset	No
Local data	
 per priority class, max. 	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	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	
	64: A distributed 1/0 proton is appropriate and and any but he internation
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	
• 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 Clock sumshanization	16
Clock synchronization	Vac
supportedin AS, master	Yes
 in AS, master 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
PROFINET IO Device	Yes
 SIMATIC communication 	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
 Media redundancy 	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0

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
for condicide of 500 up	minimum update time of 500 μ s 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 cycles 	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs 3 875 µs)
Update time for RT	µs 3 673 µs)
— for send cycle of 250 μs	250 µs to 128 ms
— for send cycle of 230 μs	500 µs to 256 ms
	1 ms to 512 ms
— for send cycle of 1 ms	2 ms to 512 ms
— for send cycle of 2 ms	
— for send cycle of 4 ms PROFINET IO Device	4 ms to 512 ms
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	Yes
	Yes; per user program
— PROFlenergy — Shared device	Yes
 — Shared device — Number of IO Controllers with shared device. 	4
max.	4
 — activation/deactivation of I-devices 	Yes; per user program
— Asset management record	Yes; per user program
2. Interface	
Interface types	Voc: V2
RJ 45 (Ethernet)	Yes; X2 1
Number of ports integrated switch	
integrated switch Protocols	No
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET TO Controller PROFINET TO Device	Yes
SIMATIC communication	Yes
	Yes; Optionally also encrypted
 Open IE communication Web server 	Yes
Media redundancy	Yes
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— Direct data exchange	No
— Direct data exchange — IRT	No
— 11/1	NU

— 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, 	32
max.	
— of which in line, max.	32
 — 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 RT	1
— 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,	4
max. — activation/deactivation of I-devices	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: V2 4 / V2 6
PROFIsafe	Yes; V2.4 / V2.6
PROFIsafe Number of connections	
PROFIsafe	Yes; V2.4 / V2.6 192; via integrated interfaces of the CPU and connected CPs / CMs 10
PROFIsafe Number of connections • Number of connections, max.	192; via integrated interfaces of the CPU and connected CPs / CMs
PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web	192; via integrated interfaces of the CPU and connected CPs / CMs 10
PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108
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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108
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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 16
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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 16
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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP
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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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
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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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
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.	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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
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 — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max.	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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
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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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
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 — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max.	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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
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 - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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
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 — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • S7 routing • S7 communication, as server	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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
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 — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • S7 routing • S7 communication, as server • S7 communication, as client	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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 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 — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • S7 communication, as server • S7 communication, as client • User data per job, max.	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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 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 - MRPD - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 communication, as server • S7 communication, as client • User data per job, max. Open IE communication	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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 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 - MRP - MRP - MRP - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 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,	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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 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 - MRP - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 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	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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 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 - MRPD - Switchover time on line break, typ. - Number of stations in the ring, max. SIMATIC communication • S7 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 • ISO-on-TCP (RFC1006)	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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 Yes Yes See online help (S7 communication, user data size) Yes 64 kbyte 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 interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication S7 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 ISO-on-TCP (RFC1006) — Data length, max.	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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 Yes See online help (S7 communication, user data size) Yes Yes Yes 64 kbyte 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 S7 routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication ISO-on-TCP (RFC1006) — Data length, max. UDP	192; via integrated interfaces of the CPU and connected CPs / CMs 108 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 Yes Yes See online help (S7 communication, user data size) Yes Yes 64 kbyte Yes 64 kbyte 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 S7 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 ISO-on-TCP (RFC1006) — Data length, max.	192; via integrated interfaces of the CPU and connected CPs / CMs 10 108 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 Yes See online help (S7 communication, user data size) Yes Yes Yes 64 kbyte Yes 64 kbyte

• NNSYes• SNMPYes• SNMPYes• SOPYes• LDPYes• LDPYes• ITTPSYes• ITTPSYes• ITTPSYes• ITTPSYes• CPC UAYes• CPC UAYes• CPC UAYes• CPC UAYes• CPC UAYes• CPC UAYes• CPC UA ClinetYes• CPC UA ClinetYes• User authenticationYes• Number of concolines, max.2000• Number of elements for one call of OPC_UA, NeedpecedIndexList. max.20• Number of elements for one call of OPC_UA, NeedpecedIndexList. max.100• Number of simultaneous calls of the client instructions for data access, per connection, max.5000• Number of instrutaneous calls of the client instructions for data access, per connection, max.5000• Number of registrable method calls of oPC_UA, MethodCall, max.5000• Number of registrable method calls of oPC_UA, MethodCall, max.5000• Number of registrable method calls of valuable security policies. None, Basic128Rea15, Basic256Rea15, Basic256Rea15, Basic256Rea15, Basic256Rea15, Basic256Rea15, Basic256Rea15, Basic256Rea15, Basic256Rea15, Basic256Rea15, Basic256Rea15, B	• DHCP	Yes
• NAP Yes • DCP Yes • DCP Yes • ICP Yes • OPC UA Yes • OPC UA Server Yes • OPC UA Server Yes		
OCP Vs Encryption Vs Encryptin Vs Encryption Vs Encryption Vs Encryption Vs Encryption Vs Encry		
• LLDP Yes • Encryption Yes: Splotal • Virtises Yes: Splotal and user pages • ITTPS Yes: Splotal and user pages • OPC UA * Aurilable accurity policies: None. Basic128Rsa15. Basic256Rsa15. • Splotal mathemication Yes • Aurilable accurity policies: None. Basic128Rsa15. Basic256Rsa15. Basic226SSh2256 • Number of connections, max. 10 • Number of simultaneous calls of the client 1 instructions for asis an engement, per 5 • OPC LUA (Method Cell mediate) LIM accus 5 • Number of simultaneous calls of the client 5 instructions for asis an engement, per 5 • OPC LUA (Method Cell mediate) LIM accus 5 • Number of simultaneous calls of the client 5 instructions for disa access, per connection, max. 5		
Web server		
 HTTP HTTP HTTPS Ves: Standard and user pages OPC UA Runtime loose required Ves: Vasi Standard and user pages OPC UA Cilent Application authentication Number of connections, max. Number of connections for one call of OPC, UA, NenoScelfandeLise/OPC, UA, ReadListor Number of sension concellent, max. Number of sension concellent, max. Number of sension sension management, per connection, max. Number of registrable nodes, max. Number of sension, max. Number of sension, max. Number of registrable nodes, max. Number of sension, max. Number of sension, max. Number of registrable nodes, max. Number of sension, max. Number of sension, max. Number of sension, max. Number of registrable nodes, max. Number of sension, max. Number of sension, max. Number of sension, max. Number of registrable nodes, max. Number of notification Number of notification <		
HTTPS Yes, Standard and user pages POP UA POP P		Yes: Standard and user pages
OPC UA • Runther licenser equired Yes • OPC UA Client Yes • OPC UA Client Yes • OPC UA Client Yes • Security policies Basic 128Raa15, Basic 256Rsa15, Basic 256Rsa15, Basic 256Rsa15, Basic 258Rsa25 - User authentication Yes - Number of concellont interfaces, and the client instructions for assess, per connection, max. 20 - Number of elements for one call of OPC_UA, NoteGetHandleList, max. 10 00 - Number of elements for one call of OPC_UA, MedoGetHandleList, max. 10 00 - Number of elements for one call of OPC_UA, MedoGetHandleList, max. 10 00 - Number of registerable method calls of OPC_UA, MethodCall, max. 5000 10 - Number of registerable method calls of OPC_UA, MethodCall, max. 5000 10 - Number of assess, per connection, max. 7 100 - Security policies 100 20 - Application authentication Yes Yes bata access (read. write, subscribe), method call, custom address space - Application authentication Yes Yes bata access (read. write, subscribe), method call, custom address space - Number of ascessible variables, max. </td <td>• HTTPS</td> <td></td>	• HTTPS	
OPC UA Client Application authentication Yes Application authentication Security policies Available security policies: None, Basic 128Rsa15, Basic 256Rsa15, Basic 226Sha25 User authentication Number of econnections, max. Number of econnections, max. Number of econnections, max. Number of elements for one call of OPC_UA, Note SpeceCetIndexLst, max. Number of elements for one call of OPC_UA, NoneSpeceCetIndexLst, max. Number of elements for one call of OPC_UA, NoneSpeceCetIndexLst, max. Number of elements for one call of OPC_UA, NoneSpeceCetIndexLst, max. Number of elements for one call of OPC_UA, NoneSpeceCetIndexLst, max. Number of elements for one call of OPC_UA, NoneSpeceCetIndexLst, max. Number of elements for one call of OPC_UA, NoneSpeceCetIndexLst, max. Number of elements for one call of OPC_UA, NoneSpeceCetIndexLst, max. Number of registerable nodes, max. OPC UA Server OPC UA Server Spece Application authentication Security policies Ves: Data access (read, write, subscribe), method call, custom address spece Application authentication Security policies Ves: Data access (read, write, subscribe), method call, custom address spece Application authentication Security policies Ves: Data access (read, write, subscribe), method call, custom address spece Application authentication Security policies Ves: Data access (read, write, subscribe), method call, custom address spece OPC UA Server Security policies Ves: Data access (read, write, subscribe), method call, custom address spece OPC UA without of the spece method, max. Number of accessions, max. So OVC Security opticies Security policies Security policies Ves Number of serv	OPC UA	
Application authentication Security policies Action Security policies Action Security policies Action Security policies Action Security policies Action Security policies Action Action Security policies Action Security policies Security policies Action Security policies Action Security policies Security policies Security policies Action Security policies Security policies Action Security policies Security	Runtime license required	Yes
- Socurity policies: Available security policies: Resides 2658 haz 56 - User authentication *anonymous" or by user name & password - Number of nones of the client interfaces, 2000 - Number of nodes of the client interfaces, 2000 - Number of elements for one call of OPC_UA_ReadListor 300 - Number of elements for one call of OPC_UA_ReadListor 20 - Number of elements for one call of OPC_UA_ReadListor 20 - Number of elements for one call of OPC_UA_ReadListor 20 - Number of seasion namespaceScleintedulat, max. 100 - Number of seasion namespaces client of the client instructions for data access, per connection, max. 100 - Number of seasion namespaces client of client instructions for data access, per connection, max. 5000 - Number of registerable nodes, max. 5000 - Security policies: None, Basic 128Rsa15, Basic 256Rsa15, Basic 256Rsa1	OPC UA Client	Yes
Basic2565ba256 - Number of connections, max. 10 - Number of connections, max. 2000 - Number of the client interfaces. 2000 - Connections, max. 300 - Number of elements for one call of OPC, UL, NoreSceletideukList, max. 300 - Number of elements for one call of OPC, UL, NoreSceletideukList, max. 20 - Number of elements for one call of OPC, UL, NoreSceletideukList, max. 100 - Number of elements for one call of OPC, UL, NoreSceletideukList, max. 100 - Number of elements for one call of OPC, UL, NoreSceletideukList, max. 1 - Number of simultaneous calls of the client instructions for dia access, per connection, max. 5 - Number of registerable method calls of OPC_UA_MethodCall, max. 5 - Number of inputs/publicities 5 - OPC UA_MethodCall, max. 5 - Application authentication Yes - Application authentication Yes - Number of security policies Taionorymous" or by user name & password - Number of security policies Taionorymous" or by user name & password - Application authentication Yes - Application authentication <	 Application authentication 	Yes
 Number of connections, max. Number of connections, max. Number of elements for one call of OPC_UA_NedeGetHandleList/OPC_UA_ReadList/oPC_UA_NedeGetHandleList/OPC_UA_ReadList/oPC_UA_NetoGetHandleList/OPC_UA_ReadList/oPC_UA_NetoGetHandleList/OPC_UA_ReadList/oPC_UA_NetoGetHandleList/OPC_UA_ReadList/oPC_UA_NetoGetHandleList.max. Number of elements for one call of OPC_UA_NetoGetHandleList.max. Number of elements for one call of OPC_UA_NetoGetHandleList.max. Number of elements for one call of the client instructions for data access, per connection, max. Number of faultaneous calls of the client instructions for data access, per connection, max. Number of registerable method calls of 100 OPC_UA_MethodGetHandCist.max. Number of registerable method calls of 100 OPC_UA_MethodGetHandCist.max. OPC UA_Server Ves: Data access (read, write, subscribe), method call, custom address space Application authentication Ves: Available security policies: None, Basic128Rsa15, Basic256Rsa15, B	— Security policies	
	— User authentication	"anonymous" or by user name & password
recommended max. Number of elements for one call of OPC_UA_NedGetHandleList/OPC_UA_ReadList/C max. - Number of elements for one call of OPC_UA_NedGetHandleList/OPC_UA_ReadList/C - Number of elements for one call of OPC_UA_NetmospaceGetIndexList, max. - Number of simultaneous calls of the client instructions for sassion management, per connection, max. - Number of simultaneous calls of the client instructions for sassion management, per connections for ada caces, per connection, max. - Number of registerable method calls of OPC_UA_MethodCall, max. - Number of registerable method calls of - User authentication - Security policies: - User authentication - Number of registerable nodes, max. - Number of registerable nodes, max. - Number of sessions, max. - Number of registerable nodes, max. - Number of negisterable nodes or user. - Number of nodes for user. - Number of nodes for user. -	 Number of connections, max. 	
OPC_UA_NedGetHandleList/OPC_UA_ReadList/C max. - Number of elements for one call of OPC_UA_NethorGetHadxList, max. - Number of elements for one call of OPC_UA_NethorGetHadxList, max. - Number of simultaneous calls of the client Instructions for session management, per connection, max. - Number of simultaneous calls of the client Instructions for data access, per connection, max. - Number of registerable method calls of OPC_UA_MethodCall, max. - Number of registerable method calls of OPC_UA_MethodCall, max. - Number of registerable method calls of OPC_UA_MethodCall, max. - Number of registerable method calls of OPC_UA_MethodCall, max. - Application authentication - Server - User authentication - Number of registerable nodes, max. - Number of sessions, max. - Number of registerable nodes, max.		2 000
OPC_UA_NemeSpaceGetIndexList, max. 100 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 method calls of OPC_UA_MethodCall, max. 5 Number of registerable method calls of OPC_UA_MethodCall, max. 5 Number of registerable method calls of OPC_UA_MethodCall, max. 7 Number of input/storuputs when calling OPC_UA_MethodCall, max. 20 Number of sessions, max. Yes: Data access (read, write, subscribe), method call, custom address space Application authentication Yes: Data access (read, write, subscribe), method call, custom address space Number of registerable nodes, max. 20 Number of sessions, max. 48 Number of sessions, max. 48 Number of subscriptions per session, max. 20 Number of sessions, max. 20 Number of sessions, max. 20 Number of sessions, max. 20 Number of subscriptions per session, max. 20 Number of sessions, max. 20 Number of sessions, max. 20 Number of noutsculutus and the secont per session, max. <td< td=""><td>OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C</td><td>300</td></td<>	OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C	300
OPC_UA_MethodCetHandleList, max. - 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 method, max. 5 000 Number of registerable method, and the client instructions for data access, per connection, max. 5 000 Number of registerable method, and the client instructions for data access, per connection, max. 5 000 Number of registerable method, and the client instructions for session, max. 5 000 OPC UA MethodCall, max. - OPC UA Server Yes: Data access (read, write, subscribe), method call, custom address space Application authentication Yes Security policies Available security policies: None, Basic 128Rea 15, Basic 256Rea 16, West 2000 Number of session max. 48 Number of subscriptions per session, max. 100 000 Number of subscriptions per session, max. 20 Number of server method, max. 50 Number of nonitored items, recommended max. 10 of each "Server interfaces" / "Companio		20
instructions for session management, per connection, max. - Number of egisterable nodes, max. - Number of registerable method calls of OPC_UA_MethodCall, max. - Number of server methods, max. - Application authentication - Security policies - Application authentication - Security policies - User authentication - Number of sessions, max. Number of sessible variables, max. - Number of subscriptions per session, max. - Number of server methods, max. - Number of nonitored items, recommended max. - Number of nonitored items, recommended - Numbe		100
instructions for data access, per connection, max. 500 - Number of registerable nodes, max. 500 - Number of registerable nodes, max. 100 OPC_UA_MethodCall, max. 20 - Number of inputs/outputs when calling OPC_UA_MethodCall, max. 20 - Application authentication Yes; Data access (read, write, subscribe), method call, custom address space - Application authentication Yes - Security policies Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication "anonymous" or by user name & password - Number of sessions, max. 48 - Number of subscriptions per session, max. 20 - Sampling interval, min. 20 - Publishing interval, min. 20 - Number of of nontored items, recommended max. 20 - Number of nontored items, recommended max. 2000; for 1 s sampling interval and 1 s send interval - Number of nodes for user-defined 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. 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" • MOBBUS Yes; MODBUS	instructions for session management, per	1
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, custom address space Application authentication Yes Security policies Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 User authentication "anonymous" or by user name & password Number of security policies: 100 000 Number of security policies, max. 100 000 Number of subscriptions per session, max. 20 000 Number of subscriptions per server method, max. 100 ms Publishing interval, min. 20 ms Number of nonitored items, recommended max. 2 000; for 1 s sampling interval and 1 s send interval Number of nonitored items, recommended max. Number of server interfaces, max. Number of odes for user-defined server interfaces, max. 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" • MODBUS Yes Structure Yes Struesces, max. 10 odo each "Server Interfaces		5
OPC_UA_MethodCall, max. 20 • OPC_UA_MethodCall, max. 20 • OPC UA Server Yes; Data access (read, write, subscribe), method call, custom address space - Application authentication Yes - Security policies Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication "anonymous" or by user name & password - Number of sessions, max. 48 - Number of subscriptions per session, max. 20 - Sampling interval, min. 100 000 - Number of inputs/outputs per server method, max. 20 - Number of inputs/outputs per server method, max. 20 - Number of inputs/outputs per server method, max. 20 - Number of nonitored items, recommended max. 20 - Number of server interfaces, max. 20 000 - Number of server interfaces, max. 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" - Number of nonitored items, recommended max. 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" • Number of ordes for user-defined 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. 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference na	 — Number of registerable nodes, max. 	5 000
OPC_UA_MethodCall, max. Yes; Data access (read, write, subscribe), method call, custom address space - Application authentication Yes - Security policies Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication "anonymous" or by user name & password - Number of sessions, max. 48 - Number of registerable nodes, max. 100 000 - Number of registerable nodes, max. 20 000 - Number of registerable nodes, max. 20 000 - Number of registerable nodes, max. 20 000 - Number of server methods, max. 20 000 ms - Number of registerable nodes, max. 20 000 ms - Number of server methods, max. 50 - Number of of server methods, max. 50 - Number of nonitored items, recommended 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. 500 - Number of nodes for user-defined server interfaces, max. 5000 - Number of nodes for user-defined server interfaces, max. 5000 • MODBUS Yes; MODBUS TCP Sochronous mode Yes Equidistance Y		100
space space - Application authentication Yes - Security policies Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication "anonymous" or by user name & password - Number of sessions, max. 48 - Number of accessible variables, max. 100 000 - Number of accessible variables, max. 20 000 - Number of subscriptions per session, max. 20 - Sampling interval, min. 100 ms - Number of server methods, max. 50 - Number of nonitored items, recommended max. 20 000; for 1 s sampling interval and 1 s send interval max. - Number of nones for user-defined 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. 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" - Number of nodes for user-defined 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. 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" - Number of login stations for message functions, max. Fey S7 message functions 64 Program alarms Yes </td <td> — Number of inputs/outputs when calling OPC_UA_MethodCall, max. </td> <td>20</td>	 — Number of inputs/outputs when calling OPC_UA_MethodCall, max. 	20
- Security policies Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Rsa256 - User authentication "anonymous" or by user name & password - 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. 20 - Sampling interval, min. 200 ms - Number of server methods, max. 50 - Number of monitored items, recommended max. 2000; for 1 s sampling interval and 1 s send interval max. - 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. 5000 - Number of nodes for user-defined server interfaces. 5000 - Number of nodes for user-defined server interfaces. 5000 - Number of login stations for message functions, max. 64 Program alarms Yes Number of configurable program messages, max. 64	OPC UA Server	
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Number of sessions, max.48 Number of accessible variables, max.100 000 Number of registerable nodes, max.20 000 Number of registerable nodes, max.20 Number of registerable nodes, max.20 Sampling interval, min.100 ms Publishing interval, min.200 ms Number of server methods, max.50 Number of inputs/outputs per server method, max.20 Number of monitored items, recommended max.2000; for 1 s sampling interval and 1 s send interval max Number of nonitored items, recommended 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.5000 Number of nodes for userver interfaces, max.5000<	— Security policies	Basic256Sha256
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Sampling interval, min.100 ms Publishing interval, min.200 ms Number of server methods, max.50 Number of inputs/outputs per server method, max.20 Number of monitored items, recommended max.2 000; 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.10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"Further protocolsYes; MODBUS TCPIsochronous modeYesS7 message functionsYesNumber of login stations for message functions, max. Program alarms64 YesNumber of configurable program messages, max.10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH	-	
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Number of server methods, max.50 Number of inputs/outputs per server method, max.20 Number of monitored items, recommended max.2 000; 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.5000 SupportYes; MODBUS TCPIsochronous modeYes;EquidistanceYesS7 message functions Program alarms64 YesNumber of login stations for message functions, max. Program alarms64 YesNumber of configurable program messages, max.10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH		
Number of inputs/outputs per server method, max.20 Number of monitored items, recommended max.2 000; 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.5 000Further protocols5 000• MODBUSYes; MODBUS TCPIsochronous modeYesS7 message functionsYesS7 message functions64 YesNumber of login stations for message functions, max.64 YesNumber of configurable program messages, max.10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH	-	
Number of monitored items, recommended max.2 000; 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.5 000Further protocols5 000• MODBUSYes; MODBUS TCPIsochronous modeYesEquidistanceYesS7 message functions64Program alarmsYesNumber of login stations for message functions, max.64Program alarmsYesNumber of configurable program messages, max.10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH	- Number of inputs/outputs per server method,	
- Number of server interfaces, max.10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" 5 000- Number of nodes for user-defined server interfaces, max.5 000Further protocolsYes; MODBUS TCPIsochronous modeYesEquidistanceYesS7 message functions64 YesNumber of login stations for message functions, max. Program alarms64 YesNumber of configurable program messages, max.10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH	- Number of monitored items, recommended	2 000; for 1 s sampling interval and 1 s send interval
- Number of nodes for user-defined server interfaces, max.5 000Further protocols• MODBUSYes; MODBUS TCPIsochronous modeEquidistanceYesS7 message functions64Program alarmsYesNumber of login stations for message functions, max.64Program alarmsYesNumber of configurable program messages, max.10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH		
MODBUS Yes; MODBUS TCP Isochronous mode Equidistance Yes S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH		
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Equidistance Yes S7 message functions 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	• MODBUS	Yes; MODBUS TCP
S7 message functions 64 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	Isochronous mode	
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	Equidistance	Yes
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	S7 message functions	
Program alarms Yes Number of configurable program messages, max. 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH		64
Number of configurable program messages, max. 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH		Yes
Number of loadable program messages in RUN, max. 5 000	-	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	800
Number of alarms for system diagnostics	200 160
Number of alarms for motion technology objects Test commissioning functions	100
Test commissioning functions	Vac: Darallel enline access passible for up to 9 engineering systems
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; without fail-safe
Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
 Number of variables, max. 	
 — of which status variables, max. 	200; per job
 — of which control variables, max. 	200; per job
Forcing	
Forcing	Yes; without fail-safe
 Forcing, variables 	peripheral inputs/outputs (without fail-safe)
 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
Motion Control	the PLC program; selection guide via the TIA Selection Tool
 Number of available Motion Control resources for 	2 400
 Number of available Motion Control resources for technology objects 	2 400
technology objects	2 400
technology objectsRequired Motion Control resources	2 400
 technology objects Required Motion Control resources — per speed-controlled axis 	
technology objects Required Motion Control resources — per speed-controlled axis — per positioning axis 	40
 technology objects Required Motion Control resources — per speed-controlled axis 	40 80
technology objects Required Motion Control resources per speed-controlled axis per positioning axis per synchronous axis per external encoder 	40 80 160
technology objects Required Motion Control resources per speed-controlled axis per positioning axis per synchronous axis per external encoder per output cam 	40 80 160 80
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track	40 80 160 80 20 160
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe	40 80 160 80 20
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis	40 80 160 80 20 160 40
technology objects Required Motion Control resources per speed-controlled axis per positioning axis per synchronous axis per external encoder per output cam per cam track per probe Positioning axis Number of positioning axes at motion control	40 80 160 80 20 160
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value)	40 80 160 80 20 160 40
technology objects Required Motion Control resources per speed-controlled axis per positioning axis per synchronous axis per external encoder per output cam per cam track per probe Positioning axis Number of positioning axes at motion control	40 80 160 80 20 160 40
technology objects	40 80 160 80 20 160 40
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value)	40 80 160 80 20 160 40
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value)	40 80 160 80 20 160 40 7 14
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) Controller • PID_Compact	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization
technology objects Required Motion Control resources per speed-controlled axis per positioning axis per synchronous axis per external encoder per output cam per cam track per probe Positioning axis Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 8 ms (typical value) Controller PID_Compact PID_3Step	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves
technology objects Required Motion Control resources per speed-controlled axis per positioning axis per synchronous axis per external encoder per output cam per cam track per probe Positioning axis Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 8 ms (typical value) Controller PID_Compact PID_Temp	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) Controller • PID_Compact • PID_Temp Counting and measuring • High-speed counter	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) Controller • PID_Compact • PID_Step • PID-Temp Counting and measuring • High-speed counter Standards, approvals, certificates	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) Controller • PID_Compact • PID_3Step • PID-Temp Counting and measuring • High-speed counter Standards, approvals, certificates Highest safety class achievable in safety mode	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature Yes
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) Controller • PID_Compact • PID_Temp Counting and measuring • High-speed counter Standards, approvals, certificates Highest safety class achievable in safety mode • Performance level according to ISO 13849-1	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature Yes
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) Controller • PID_Compact • PID_Step • PID-Temp Counting and measuring • High-speed counter Standards, approvals, certificates Highest safety class achievable in safety mode • Performance level according to ISO 13849-1 • SIL acc. to IEC 61508	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature Yes
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) Controller • PID_Compact • PID_SStep • PID-Temp Counting and measuring • High-speed counter Standards, approvals, certificates Highest safety class achievable in safety mode • Performance level according to ISO 13849-1 • SIL acc. to IEC 61508 Probability of failure (for service life of 20 years and repa	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature Yes PLe SIL 3 irt time of 100 hours)
technology objects • Required Motion Control resources — per speed-controlled axis — per positioning axis — per synchronous axis — per external encoder — per output cam — per cam track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) Controller • PID_Compact • PID_Step • PID-Temp Counting and measuring • High-speed counter Standards, approvals, certificates Highest safety class achievable in safety mode • Performance level according to ISO 13849-1 • SIL acc. to IEC 61508	40 80 160 80 20 160 40 7 14 Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature Yes

 — High demand/continuous mode: PFH in accordance with SIL3 	< 1.00E-09
Ambient conditions	
Ambient temperature during operation	
 horizontal installation, min. 	-25 °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. 	-25 °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; incl. failsafe
— FBD	Yes; incl. failsafe
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
 User program protection/password protection 	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
 Password for display 	Yes
 Protection level: Write protection 	Yes; Specific write protection both for Standard and for Failsafe
 Protection level: Read/write protection 	Yes
 Protection level: Write protection for Failsafe 	Yes
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.	830 g
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