6ES7517-3FP00-0AB0

Data sheet



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

General information	
Product type designation	CPU 1517F-3PN/DP
HW functional status	FS10
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 $250~\mu s$ (distributed) and 1 ms (central)
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V17 (FW V2.9) / V13 Update 3 (FW V1.6) or higher
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	6
Mode selector switch	1
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
 Repeat rate, min. 	1/s
Input current	
Current consumption (rated value)	1.55 A
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)	30 W
Power loss	
Power loss, typ.	24 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
integrated (for program)	3 Mbyte

integrated (for data)	8 Mbyte
Load memory	
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	2 ns
for word operations, typ.	3 ns
for fixed point arithmetic, typ.	3 ns
for floating point arithmetic, typ.	12 ns
CPU-blocks	12 110
	42 000: Blacks (OR ER EC DR) and LIDTs
Number of elements (total)	12 000; Blocks (OB, FB, FC, DB) and UDTs
Number range	1 60 999; subdivided into: number range that can be used by the
	user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	8 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
Number range	0 65 535
• Size, max.	1 Mbyte
FC	
Number range	0 65 535
• Size, max.	1 Mbyte
OB	
• Size, max.	1 Mbyte
 Number of free cycle OBs 	100
 Number of time alarm OBs 	20
 Number of delay alarm OBs 	20
 Number of cyclic interrupt OBs 	20; with minimum OB 3x cycle of 100 μs
 Number of process alarm OBs 	50
 Number of DPV1 alarm OBs 	3
 Number of isochronous mode OBs 	3
 Number of technology synchronous alarm OBs 	2
Number of startup OBs	100
Number of asynchronous error OBs	4
Number of synchronous error OBs	2
Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24; Up to 8 possible for F-blocks
Counters, timers and their retentivity	7.1
S7 counter	2.049
Number Petentivity	2 048
Retentivity	Voc
— adjustable	Yes
IEC counter	Any (anly limited by the main marrow)
Number Petentivity	Any (only limited by the main memory)
Retentivity	Voo
— adjustable	Yes
S7 times	2.040
Number Patentivity	2 048
Retentivity	V
— adjustable	Yes
IEC timer	A / LP % II II
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB
Extended retentive data area (incl. timers, counters, flags),	8 Mbyte; When using PS 6 0W 24/48/60 V DC HF
max.	
Flag	
• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte

Data blocks	
Retentivity adjustable	Yes
Retentivity preset	No
Local data	
• per priority class, max.	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	16 384; max. number of modules / submodules
I/O address area	
Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
— Outputs (volume) per CM/CP	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
— Inputs (volume)	8 kbyte
Outputs (volume)	8 kbyte
Subprocess images	O Noyte
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	64; A distributed I/O system is characterized not only by the integration
	of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-i master modules or links (e.g. IE/PB-Link)
Number of DP masters	
integrated	1
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can
Number of IO Controllers	be inserted in total
• 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	the number of connectable DtD ONA is and 11 11 11 11
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
Number	16
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
Number of PROFIBUS interfaces	1
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1
Number of ports	2
• integrated switch	Yes
Protocols	V ID-A
IP protocol DROFINET IO Controller	Yes; IPv4
PROFINET IO Controller PROFINET IO Davises	Yes
PROFINET IO Device SIMATIC communication	Yes Yes
SIMATIC communication Open IE communication	
● Open i⊑ confinunication	Yes; Optionally also encrypted

• Media redundancy PROFINET IO Controller Services - PGOP communication - Ibacchronous mode - Direct data exchange - IRT - PROFlenergy - Prioritized startup - Prioritized startup - Number of connectable IO Devices, max Number of connectable IO Devices for RT, max Of which In line, max - Number of Connectable IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices ger tool, max Updating times - Update time for IRT - for send cycle of 250 µs - for send cycle of	Web server	Yes
PROFINET IO Controller Services		
- PGOP communication - Isochronous mode - Direct data exchange - Direct data exchange - IRT - PROFilenergy - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Number of connectable IO Devices for RT, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times - To send cycle of 250 µs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 1 ms - With IRT and parameterization of "odd" send cycles of RT - For send cycle of 1 ms - For send cycle of 2 ms - For send cycle of 3 ms - For send cycle of 4 ms - For send cycle of 500 µs - For	· · · · · · · · · · · · · · · · · · ·	
Ves Yes; Requirement: IRT and isochronous mode (MRPD optional) PROFlenergy Prioritized startuy Number of connectable IO Devices, max. Of which Io devices with IRT, max. Number of connectable IO Devices for RT, max. Of which In line, max. Number of connectable IO Devices for RT, max. Of which In line, max. Number of IO Devices that can be simultaneously activated/deactivated, max. Updating times Update time for IRT I for send cycle of 500 µs I for send cycle of 500 µs I for send cycle of 4 ms With IRT and parameterization of "odd" send cycles Update time for IRT I for send cycle of 450 µs I for send cycle of 550 µs I for send cycle of 550 µs I for send cycle of 450 µs I for send cycle of 550 µs I for send cycle of 550 µs I for send cycle of 1 ms I for send cycle of 2 ms I for send cycle of 2 ms I for send cycle of 1 ms I for send cycle of 2 ms I for send cycle of 2 ms I for send cycle of 2 ms I for send cycle of 3 ms I for send cycle of 500 µs I for send cycle of 5	Services	
- Direct data exchange - IRT - PROFilenergy - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Number of connectable IO Devices for RT, max Within In line, max In which in line, max In which in line, max Which in line, max In which of Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times - For send cycle of 250 µs - For send cycle of 1500 µs - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 1500 µs - For send	— PG/OP communication	Yes
PROFlenergy Prioritized startup PROFlenergy Prioritized startup Prioritized startup Prioritized startup Number of connectable IO Devices, max. Of which IO devices with IRT, max. Number of connectable IO Devices for RT, max. Of which in line, max. Number of IO Devices that can be simultaneously activated/deactivated, max. Number of IO Devices that can be simultaneously activated/deactivated, max. Number of IO Devices per tool, max. Updating times Profesial Controller For send cycle of 250 μs For send cycle of 550 μs For send cycle of 1 ms For send cycle of 1 ms For send cycle of 1 ms For send cycle of 20 ms For send cycle of 550 μs For send cycle of 550 μs For send cycle of 550 μs For send cycle of 1 ms For send cycle of 1 ms For send cycle of 10 ms For send cycle	 Isochronous mode 	Yes
- PROF lenergy - Prioritzed startup - Number of connectable IO Devices, max. - Of which IO devices with IRT, max Number of connectable IO Devices for RT, max Number of connectable IO Devices for RT, max Of which in line, max Of which in line, max Of which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Updating times - Updating times - Updating times - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles Update time for RT - For send cycle of 250 µs - For send cycle of 2550 µs - For send cycle of 2550 µs - For send cycle of 2550 µs - For send cycle o	 Direct data exchange 	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Number of connectable IO Devices for RT, max Number of connectable IO Devices for RT, max Of which in line, max Number of IO Devices that can be simultaneously activate/deactivated, max Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times - For send cycle of 250 µs - For send cycle of 500 µs - For send cycle of 10 ms - For send cycle of 27 ms - For send cycle of 28 ms - With IRT and parameterization of "odd" send cycles of 10 ms - For send cycle of 10 ms - For send cycle of 250 µs - For send cycle of 10 ms - For send cycle of 10 ms - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 10 ms - For send cycle of 250 µs - For send cycle of 30 ms - For send cycle of 4 ms - F	— IRT	Yes
Number of connectable IO Devices, max Of which IO devices with IRT, max Number of connectable IO Devices for RT, max Of which in line, max Number of IO Devices that can be simultaneously activate/deactivated, max Updating times Updating times Of send cycle of 250 µs For send cycle of 250 µs For send cycle of 1 ms For send cycle of 260 µs For send cycle of 1 ms For send cycle of 250 µs For send cycle of 250	— PROFlenergy	Yes; per user program
AS-I, PROFIBUS or PROFINET AS-I, PROFIBUS or PROFINET 64 AS-I, PROFIBUS or PROFINET 64 AS-I, PROFIBUS or PROFINET 6512 512 512 512 512 512 512 51	 Prioritized startup 	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices for RT, max. - of which in line, max. - Number of IO Devices that can be simultaneously activated/deactivated, max. - Number of IO Devices per tool, max. - Updating times - Updating times - For send cycle of 250 µs - For send cycle of 500 µs - For send cycle of 1 ms - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - Update time for RT - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 250 µs - For send cycle of 1 ms - For send cycle of 250 µs - For send cycle of 1 ms - For send cycle of 250 µs - For send cycle of 4 ms - For send cycle of 4 ms - For send cycle of 500 µs - For send cycle of 4 ms - For send cycle of 4 ms - For send cycle of 500 µs - For send cycle of 250 µs - For	Number of connectable IO Devices, max.	512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
max. — Of which in line, max. — Number of IO Devices that can be simultaneously activated/deactivated, max. — Number of IO Devices per tool, max. — Updating times Devices per tool, max. — Update time for IRT Device of 250 μs — for send cycle of 250 μs — for send cycle of 10 ms — for send cycle of 10 ms — for send cycle of 10 ms — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles Update time for RT Device of 500 μs — for send cycle of 4 ms — for send cycle of 500 μs — for send cycle of 4 ms — for send cycle of 4 ms — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 4 ms — reproduce the following send cycle of 500 μs to 512 ms PROPINET IO Device Services — PGC/Po communication — lsochronous mode — No — IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record — yes; per user program — yes; per	 Of which IO devices with IRT, max. 	64
- of which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times - Updating times - For send cycle of 250 µs - For send cycle of 550 µs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 2 ms - For send cycle of 2 ms - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - Update time for RT - For send cycle of 250 µs - For send cycle of 250	·	512
- Number of I/O Devices that can be simultaneously activated/deactivated, max Number of I/O Devices per tool, max Updating times - Updating times - Update time for IRT - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 2 ms - with IRT and parameterization of "odd" send cycles - for send cycle of 2 ms - for send cycle of 250 μs - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 1 ms - for send cycle of 4 ms - for send cycle of 1 ms - for send cycle of 4 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 3 ms - for send cycle of 4 ms - PROFINET I/O Device - Number of I/O Controllers with shared device, max activation/deactivation of I-devices - Number of I/O Controllers with shared device, max activation/deactivation of I-devices - RJ 45 (Ethernet) - Number of ports - integrated switch - No - Protocols - IPT - PROFINET I/O Controller		E40
simultaneously activated/deactivated, max. — Number of IO Devices per tool, max. — Updating times The minimum value of the update time also depends on communical 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 — for send cycle of 250 µs — for send cycle of 2 ms — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles Update time for RT — for send cycle of 550 µs — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 4 ms — the state of the send cycle of 2 ms — for send cycle of 4 ms PROFINET IO Device Services — PG/OP communication — Iscorbronous mode — IRT — PROFlenergy — Shared device, — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Shared device — Number of ports — integrated switch Protocools • IP protocol • PROFINET IO Controller • PROFINET IO Communication • Web server • Web server Yes; Optionally also encrypted • Web server		
- Number of IO Devices per tool, max. - Updating times The minimum value of the update time also depends on communical 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 - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles - for send cycle of 250 µs - for send cycle of 550 µs - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - FROFINET IO Device Services - PC/OP communication - Isochronous mode - IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 2 Interface Interface types R J 4 (Ethemet) - RJ 4 (Ethemet) - No - Interface Interface types - RJ 4 5 (Ethemet) - No - Interface - PROFINET IO Controller - PROFINET IO Contr		8; in total across all interfaces
- Updating times The minimum value of the update time also depends on communica share set for PPOFINET IO, on the number of IO devices, and on th quantity of configured user data Update time for IRT — for send cycle of 250 μs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms — for send cycle of 4 ms — With IRT and parameterization of "odd" send cycles Update time for RT — for send cycle of 250 μs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms PROFINET IO Device Services — PG/OP communication — IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices PROFINET (D Controllers with shared device, max. — activation/deactivation of I-devices — Number of ports — interface types — RJ 45 (Eithernet) — interface	-	8
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 — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles — With IRT and parameterization of "odd" send cycles — for send cycle of 500 µs — for send cycle of 500 µs — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 4 ms — the send cycle of 2 ms — for send cycle of 4 ms — the send cycle of 2 ms — for send cycle of 4 ms — repeated by the send cycle of 4 ms — laschronous mode — IRT — PROFINET IO Device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface Interface types ■ RJ 45 (Ethernet) ■ Interface types ■ RJ 45 (Ethernet) ■ Interface ■ PROFINET IO Controller ■ PROFINET IO Control		
- for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - with IRT and parameterization of "odd" send cycles Update time for RT - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 4 ms - for send cycle of 500 μs - for se		share set for PROFINET IO, on the number of IO devices, and on the
for send cycle of 500 μs for send cycle of 1 ms for send cycle of 2 ms for send cycle of 2 ms for send cycle of 4 ms with IRT and parameterization of "odd" send cycles Update time for RT for send cycle of 500 μs for send cycle of 1 ms for send cycle of 2 ms for send cycle of 2 ms for send cycle of 4 ms for send cycle of 8 ms for send cycle of 9 ms for send cycle of 1 ms for send cycle of 2 ms for send cycle of 4 ms for send cycle of 8 ms for send cycle of 9 ms	·	
- for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles - For send cycle of 250 μs - For send cycle of 250 μs - For send cycle of 500 μs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 4 ms - FOFINET IO Device - Services - PG/OP communication - IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - Interface Interface Interface types - RJ 45 (Ethernet) - Interface types - PROFINET IO Device - PROFINET IO Controller - PROFINET IO Controller - PROFINET IO Controller - PROFINET IO Device - PROFINET	— for send cycle of 250 μs	250 µs to 4 ms
- for send cycle of 2 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, μs 3 875 μs) Update time for RT - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 8 ms - for send cycle of 8 ms - for send cycle of 9 ms - for send cycle of 9 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 5 ms - for send cycle of 5 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for s		
- for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles Update time for RT - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 2 ms - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 10 ms - for send cycle of 10 ms - lab to 12 ms - for send cycle of 2 ms - No - lRT - PROFINET IO Device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - yes; per user program - Asset management record - Ves; per user program - Asset management record - Ves; per user program - Yes; per user program - Ves; pe	· ·	
- With IRT and parameterization of "odd" send cycles Update time for RT - for send cycle of 550 μs - for send cycle of 550 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - FOFINET IO Device Services - PG/OP communication - Isochronous mode - IRT - PROFIenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 2. Interface Interface types - RJ 45 (Ethernet) - Number of ports - PGFINET IO Controller - PROFINET IO Communication - Open IE communication - Ves - SIMATIC communication - Ves - Web server - Web server - With IRT = set "odd" send clock (any multiple of 125 μs 3 875 μs) - 800 μs in 250 μs ms - 800 μs	— for send cycle of 2 ms	2 ms to 32 ms
cycles Update time for RT — for send cycle of 250 µs — for send cycle of 500 µs — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms PROFINET IO Device Services — PG/OP communication — Isochronous mode — IRT — PROFIenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types • RJ 45 (Ethernet) • IRT • Interface switch No Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Controller • Yes; IPv4 • PROFINET IO Controller • Yes; Optionally also encrypted • Web server • Web server	-	
Update time for RT — for send cycle of 250 µs — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms — for send cycle of 5 ms — for send cycle of 2 ms — the send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 2 ms — the send cycle of 2 ms — prof of 3 ms — prof of 3 ms — activation/deactivation of 1-devices — nax. — activation/deactivation of 1-devices — Asset management record 2. Interface Interface types • RJ 45 (Ethernet) • No Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Communication • Open IE communication • Ves • SIMATIC communication • Web server Yes • Optionally also encrypted • Web server		Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625
for send cycle of 250 µs	· ·	μs 3 875 μs)
for send cycle of 500 µs for send cycle of 1 ms for send cycle of 2 ms for send cycle of 2 ms for send cycle of 4 ms send cycle of 4 ms PROFINET IO Device Services PG/OP communication Isochronous mode IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record Asset management record RJ 45 (Ethernet) RJ 45 (Ethernet) integrated switch No Protocols IP protocol PROFINET IO Controller PROFINET IO Controller PROFINET IO Controller PROFINET IO Conmunication Yes SIMATIC communication Yes Open IE communication Yes Ves Ves Open IE communication Yes Ves Open IE communication Yes Ves Ves Open IE communication Yes Ves Ves Ves Open IE communication Yes Ves Ves Ves Open IE communication Ves -	·	250 up to 120 mg
for send cycle of 1 ms for send cycle of 2 ms for send cycle of 4 ms for send cycle of 2 ms FROFINET IO Device Services PG/OP communication Isochronous mode IRT PROFIDENTY PROFIDENTY PROFINET IO Controllers with shared device, max activation/deactivation of I-devices Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program Asset management record 2. Interface Interface types RJ 45 (Ethernet) integrated switch No Protocols IP protocol IP protocol PROFINET IO Controller PROFINET IO Controller Yes SIMATIC communication Yes Open IE communication Yes; Optionally also encrypted Web server		
- for send cycle of 2 ms		•
for send cycle of 4 ms PROFINET IO Device Services PG/OP communication	-	
PROFINET IO Device Services - PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program 2. Interface Interface types - RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server Yes • Ves • Optionally also encrypted • Web server	•	
Services - PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication • Web server • Web server	· ·	4 1115 (0 312 1115
- PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program 2. Interface Interface types - RJ 45 (Ethernet) Yes; X2 - Number of ports 1 - integrated switch No Protocols - IP protocol - PROFINET IO Controller - PROFINET IO Device - SIMATIC communication - Open IE communication - Web server - Yes - Optionally also encrypted - Web server		
- Isochronous mode - IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 2. Interface Interface types • RJ 45 (Ethernet) • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Web server No Yes; per user program Yes; X2 • Number of ports • Interface types • Integrated switch • No Protocols • IP protocol • Yes; IPv4 • PROFINET IO Controller • Yes • SIMATIC communication • Yes • Open IE communication • Yes; Optionally also encrypted • Web server		Vos
- IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 2. Interface Interface types • RJ 45 (Ethernet) • Integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server Yes; per user program Yes; per user program Yes; per user program Yes; x2 Yes; X2 Yes; X2 Yes; X2 Yes; X2 Yes; X2 Yes; Yes Yes; Yes Yes; IPv4 Yes Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes Ye		
- PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 2. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server Yes; per user program		
- Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted • Web server		
- Number of IO Controllers with shared device, max. - activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted • Web server Yes	••	
max. — activation/deactivation of I-devices Yes; per user program — Asset management record Yes; per user program 2. Interface Interface Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols • IP protocol • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server Yes; Optionally also encrypted • Web server		
- Asset management record 2. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server Yes; per user program Yes; per user program Yes; X2 • Yes; X2 • Number of ports 1 • No Yes; IPv4 Yes Yes • SIMATIC sommunication Yes • Open IE communication Yes; Optionally also encrypted Yes	•	
- Asset management record 2. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server Yes; per user program Yes; per user program Yes; X2 • Yes; X2 • No • No Protocols Yes; IPv4 Yes Yes Yes Yes • SIMATIC sommunication Yes • Open IE communication Yes; Optionally also encrypted Yes	 activation/deactivation of I-devices 	Yes; per user program
2. Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes; Optionally also encrypted • Web server Yes	 Asset management record 	Yes; per user program
 RJ 45 (Ethernet) Number of ports integrated switch No Protocols IP protocol PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Web server Yes; X2 Yes; X2 Yes; IPv4 Yes Optionally also encrypted Yes 	2. Interface	
 RJ 45 (Ethernet) Number of ports integrated switch No Protocols IP protocol PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Web server Yes; X2 Yes; X2 Yes; IPv4 Yes Optionally also encrypted Yes 	Interface types	
 Number of ports integrated switch No Protocols IP protocol PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Web server 1 Yes Optionally also encrypted Yes 	• •	Yes; X2
 integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Web server No Yes; IPv4 Yes Yes Optionally also encrypted Yes 		
Protocols IP protocol PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Web server Yes; Optionally also encrypted Yes		
 IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Yes; IPv4 Yes Yes Yes Optionally also encrypted Yes 		
 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Yes Optionally also encrypted Yes 		Yes; IPv4
 PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Yes; Optionally also encrypted Yes 	•	
 Open IE communication Web server Yes; Optionally also encrypted Yes 	PROFINET IO Device	Yes
Web server Yes	SIMATIC communication	Yes
Web server Yes	Open IE communication	Yes; Optionally also encrypted
Media redundancy No		
PROFINET IO Controller	•	
Services		
— PG/OP communication Yes	— PG/OP communication	Yes
— Isochronous mode No	— Isochronous mode	No
— Direct data exchange No	 Direct data exchange 	No

— IRT	No
— PROFlenergy	Yes; per user program
— Prioritized startup	No
 Number of connectable IO Devices, max. 	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
 Number of connectable IO Devices for RT, max. 	128
— of which in line, max.	128
 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	quantity of configured door data
— 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
3. Interface	
Interface types	
• RS 485	Yes; X3
Number of ports	1
Protocols	
PROFIBUS DP master	Yes
PROFIBUS DP slave	No
SIMATIC communication	Yes
PROFIBUS DP master	40. for the lists worked DDOSIDUO DD 1. 1. f
Number of connections, max. Number of DD players may.	48; for the integrated PROFIBUS DP interface
 Number of DP slaves, max. 	125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET
Services	
— PG/OP communication	Yes
— Equidistance	Yes
— Isochronous mode	Yes
Activation/deactivation of DP slaves	Yes
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
Autonegotiation	Yes
Autoriogonation Autocrossing	Yes
Industrial Ethernet status LED	Yes
RS 485	
Transmission rate, max.	12 Mbit/s
Protocols	
PROFIsafe	Yes; V2.4 / V2.6
Number of connections	100, 12.11 12.0
Number of connections, max.	320; via integrated interfaces of the CPU and connected CPs / CMs
Number of connections, max. Number of connections reserved for ES/HMI/web	10
Number of connections via integrated interfaces	288
Number of conflections via integrated interfaces Number of S7 routing paths	64; in total, only 16 S7-Routing connections are supported via
• Humber of Or Touting paties	PROFIBUS
Redundancy mode	
H-Sync forwarding	Yes
Media redundancy	
•	
 Media redundancy 	only via 1st interface (X1)

— MRP	Yes; as MRP redundancy manager and/or MRP client
 MRP interconnection, supported 	Yes; as ring node according to IEC 62439-2 Edition 2.0
— MRPD	Yes; Requirement: IRT
 Switchover time on line break, typ. 	200 ms; For MRP, bumpless for MRPD
 Number of stations in the ring, max. 	50
SIMATIC communication	
S7 routing	Yes
Data record routing	Yes
S7 communication, as server	Yes
S7 communication, as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	,
• TCP/IP	Yes
— Data length, max.	64 kbyte
several passive connections per port,	Yes
supported	
ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; 128 multicast circuits (of which max. 5 via X1)
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
 Encryption 	Yes; Optional
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	.,
Runtime license required	Yes
OPC UA Client	Yes
Application authentication	Yes
Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15,
cooding pondico	Basic256Sha256
 User authentication 	"anonymous" or by user name & password
 Number of connections, max. 	40
 number of nodes of the client interfaces, 	5 000
recommended max.	
 Number of elements for one call of 	300
OPC_UA_NodeGetHandleList/OPC_UA_ReadList/O	
max.	22
 Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. 	20
Number of elements for one call of	100
OPC_UA_MethodGetHandleList, max.	
number of simultaneous calls of the client	1
instructions for session management, per	
connection, max.	
number of simultaneous calls of the client	5
instructions for data access, per connection, max.	
Number of registerable nodes, max.	5 000
Number of registerable method calls of OBC LIA MethodColl may	100
OPC_UA_MethodCall, max.	20
 — Number of inputs/outputs when calling OPC_UA_MethodCall, max. 	20
OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address
- 01 0 0/1 001 voi	space
 Application authentication 	Yes
Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15,
county politico	Basic256Sha256
 User authentication 	"anonymous" or by user name & password
Number of sessions, max.	64
Number of accessible variables, max.	200 000
Number of registerable nodes, max.	50 000
 Number of subscriptions per session, max. 	20

— Sampling interval, min.	10 ms
— Publishing interval, min.	10 ms
 Number of server methods, max. 	100
 Number of inputs/outputs per server method, max. 	20
 number of monitored items, recommended max. 	10 000; for 1 s sampling interval and 1 s send interval
Number of server interfaces, max.	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
 Number of nodes for user-defined server interfaces, max. 	30 000
Further protocols	
MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
·	165
S7 message functions	
Number of login stations for message functions, max.	64 Vaa
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 	2 000
 Number of alarms for system diagnostics 	1 000
Number of alarms for motion technology objects	480
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 10 engineering systems
Status block	Yes; Up to 16 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	20
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	1 000
Traces	
 Number of configurable Traces 	8; 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
 Connection display LINK TX/RX 	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of
	the PLC program; selection guide via the TIA Selection Tool 10 240
Number of available Motion Control resources for technology objects	10 270
Required Motion Control resources	
per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20

	400
— per cam track	160
— per probe	40
Positioning axis	
 Number of positioning axes at motion control cycle of 4 ms (typical value) 	70
Number of positioning axes at motion control	128
cycle of 8 ms (typical value)	120
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
● PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
Performance level according to ISO 13849-1	PLe
SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repa	
Low demand mode: PFDavg in accordance	< 2.00E-05
with SIL3	
— High demand/continuous mode: PFH in	< 1.00E-09
accordance with SIL3	
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	0 °C
 horizontal installation, max. 	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the
	display is switched off
 vertical installation, min. 	0 °C
 vertical installation, max. 	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
• may	70 °C
• max.	
Altitude during operation relating to sea level	
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
Altitude during operation relating to sea level	
Altitude during operation relating to sea level Installation altitude above sea level, max.	
Altitude during operation relating to sea level • Installation altitude above sea level, max. configuration / header	
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header	
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection • User program protection/password protection	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection Block protection	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection Block protection Access protection	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection Block protection Access protection Password for display	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection Block protection Access protection Password for display Protection level: Write protection	Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Read/write protection	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection	Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection programming / cycle time monitoring / header	Yes; incl. failsafe Yes; incl. failsafe Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection programming / cycle time monitoring / header • lower limit	Yes; incl. failsafe Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Area Yes; Specific write protection both for Standard and for Failsafe Yes Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection programming / cycle time monitoring / header	Yes; incl. failsafe Yes; incl. failsafe Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection programming / cycle time monitoring / header • lower limit	Yes; incl. failsafe Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Area Yes; Specific write protection both for Standard and for Failsafe Yes Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection programming / cycle time monitoring / header • lower limit • upper limit	Yes; incl. failsafe Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Area Yes; Specific write protection both for Standard and for Failsafe Yes Yes Yes Yes
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection programming / cycle time monitoring / header lower limit upper limit Dimensions	Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection programming / cycle time monitoring / header lower limit upper limit Dimensions Width	Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection In User program protection/password protection In Copy protection In Block protection Password for display In Protection level: Write protection In Protection level: Read/write protection In Protection level: Complete protection In Protection level: Complete protection In Programming / cycle time monitoring / header In lower limit In Upper limit In Dimensions Width In Height In Depth	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection programming / cycle time monitoring / header • lower limit • upper limit Dimensions Width Height Depth Weights	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection In User program protection/password protection In Copy protection In Block protection Password for display In Protection level: Write protection In Protection level: Read/write protection In Protection level: Complete protection In Protection level: Complete protection In Programming / cycle time monitoring / header In lower limit In Upper limit In Dimensions Width In Height In Depth	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Altitude during operation relating to sea level Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection programming / cycle time monitoring / header • lower limit • upper limit Dimensions Width Height Depth Weights	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Yes; incl. failsafe Yes; incl. failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Your side of the protection both for Standard and for Failsafe Yes Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes The protection both for Standard and for Failsafe Yes Yes Yes The protection both for Standard and for Failsafe Yes Yes Yes The protection both for Standard and for Failsafe Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye