SIEMENS

Data sheet

6ES7516-3FP03-0AB0

Siemens EcoTech



SIMATIC S7-1500F, CPU 1516F-3 PN/DP, central processing unit with work memory 3 MB for program and 7.5 MB for data 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFIBUS, 6 ns bit performance, SIMATIC Memory Card required ****approvals and certificates according to entry 109817466 at support.industry.siemens.com to be considered! -

Product type designation CPU 1516F-3 PN/DP HW functional status FS04 Firmware version V4.0 • FW update possible Yes Product function • I&M data • Isochronous mode Yes; I&MO to I&M3 • Isochronous mode Area (Institute and central; with minimum OB 6x cycle of 375 µs (distributed) and 1 ms (central) • SysLog Yes Engineering with • STEP 7 TIA Portal configurable/integrated from version V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 516-3FN02-0AB0 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) permissible range, lower limit (DC) 19.2 V permissible range, upper limit (DC) 28.8 V Reverse polarity protection Yes • Mains/voltage failure stored energy time • Tis A; Rated value (DC) Qurent consumption (rated value) 0.69 A Current consumption, max. 1.16 A; Rated value Pt 0.06 A*s Power consumption from the backplane bus (balanced) 6.7 W Power loss	General information			
Firmware version FW update possible FW update possible FVes Product function • I&M data • Isochronous mode • Isochronous mode • Syst.og Formal Mains (central) • STEP 7 TIA Portal configurable/integrated from version • V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 516-3FN02-0AB0 Configuration control via dataset Ves Display Screen diagonal [cm] • 6.1 cm Control elements Number of keys 8 Mode buttons 2 Supply voltage Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) Reverse polarity protection yes Mains buffering • Mains/voltage failure stored energy time • Repeat rate, min. 1/8 Input current Current consumption (rated value) Current consumption max. 1.08 A Inrush current, max. 1.15 A; Rated value Power Infleed power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W	Product type designation	CPU 1516F-3 PN/DP		
Product function Product function Risk data I sochronous mode SysLog SysLog Engineering with STEP 7 TIA Portal configurable/integrated from version versions as 6ES7 516-3FN02-0AB0 Configuration control Vaid ataset Power Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) Reverse polarity protection Wainsvoltage failure stored energy time Rapeat rate, min. Page 1 1.98 A Inrush current, max. Infleed power to the backplane bus (bed) Power consumption from the backplane bus (bed) Yes 12 W Power consumption from the backplane bus (bed) Perwiss power of the backplane bus Power consumption from the backplane bus (bed) Yes (last in the minimum OB 6x cycle of 375 µs (distributed) Alex (per in list) Yes (listributed and central; with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list, with minimum OB 6x cycle of 375 µs (distributed) Alex (per in list,	HW functional status	FS04		
Product function IAM data ISM data ISOSCHORONOUS mode Syst.Log Syst.Log Yes Engineering with STEP 7 TIA Portal configurable/integrated from version V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 516-3FN02-0AB0 Configuration control Vaid dataset Yes Display Screen diagonal [cm] Control elements Number of keys 8 Mode buttons 2 Supply voltage Rated value (DC) permissible range, lower limit (DC) 19.2 V permissible range, upper limit (DC) 28.8 V Reverse polarity protection Mains buffering Mains buffering Alians data failure stored energy time Repeat rate, min. 1/8 Input current Current consumption (rated value) Current consumption (rated value) Current consumption, max. 1.08 A Inrush current, max. 1.15 A; Rated value Power consumption from the backplane bus (balanced) 6.7 W	Firmware version	V4.0		
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Engineering with STEP 7 TIA Portal configurable/integrated from version versions as 6ES7 516-3FN02-0AB0 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) permissible range, upper limit (DC) permissible range, upper limit (DC) Permissible range, upper limit (DC) Reverse polarity protection Mains buffering Mains/voltage failure stored energy time Repeat rate, min. Input current Current consumption (rated value) Current consumption, max. Inush current, max. Inush current, max. Inush current, max. Inush current, max. Infeed power to the backplane bus Power consumption from the backplane bus (balanced) 12 W Power consumption from the backplane bus (balanced) 6.7 W	• Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 375 μs (distributed) and 1 ms (central)		
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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 • Repeat rate, min. 1/s Input current Current consumption (rated value) 0.69 A Current consumption, max. 1.08 A Inrush current, max. 1.15 A; Rated value I't 0.6 A²-s Power Infeed power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W	via dataset	Yes		
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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) 0.69 A Current consumption, max. 1.08 A Inrush current, max. 1.15 A; Rated value It 0.6 A²-s Power Infeed power to the backplane bus (balanced) 6.7 W	Control elements			
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permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes Mains buffering Mains/voltage failure stored energy time Repeat rate, min. Input current Current consumption (rated value) Current consumption, max. Inush current, max.	Supply voltage			
permissible range, upper limit (DC) Reverse polarity protection Mains buffering Mains/voltage failure stored energy time Repeat rate, min. Input current Current consumption (rated value) Current consumption, max. Inush current, max.	Rated value (DC)	24 V		
Reverse polarity protection Mains buffering Mains/voltage failure stored energy time Repeat rate, min. Input current Current consumption (rated value) Current consumption, max. Inrush current, max. Insub current,	permissible range, lower limit (DC)	19.2 V		
Mains buffering ■ Mains/voltage failure stored energy time ■ Repeat rate, min. Input current Current consumption (rated value) Current consumption, max. Inrush current, max. Insuft current, m	permissible range, upper limit (DC)	28.8 V		
Mains/voltage failure stored energy time Repeat rate, min. Input current Current consumption (rated value) Current consumption, max. Inrush current, max. Insuft current,	Reverse polarity protection	Yes		
● Repeat rate, min. 1/s Input current Current consumption (rated value) 0.69 A Current consumption, max. 1.08 A Inrush current, max. 1.15 A; Rated value I²t 0.6 A²-s Power Infeed power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W				
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Inrush current, max. 1.15 A; Rated value I²t 0.6 A²-s Power Infeed power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W	Current consumption (rated value)	0.69 A		
Power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W	Current consumption, max.	1.08 A		
Power Infeed power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W	Inrush current, max.	1.15 A; Rated value		
Infeed power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W	l²t	0.6 A ² ·s		
Power consumption from the backplane bus (balanced) 6.7 W	Power			
	Infeed power to the backplane bus	12 W		
Power loss	Power consumption from the backplane bus (balanced)	6.7 W		
	Power loss			

Power loss, typ.	4 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	100
integrated (for program)	3 Mbyte
• integrated (for data)	7.5 Mbyte
Load memory	1.5 Mbyte
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	32 Obyto
maintenance-free	Yes
CPU processing times	165
	6 no
for bit operations, typ.	6 ns 7 ns
for word operations, typ. for fixed point arithmetic, typ.	9 ns
for floating point arithmetic, typ.	
CPU-blocks	37 ns
	0.000 Plants (OP EP EO PP) and HPT-
Number of elements (total)	8 000; Blocks (OB, FB, FC, DB) and UDTs
DB a Number range	4 CO 000; published into a series that are be used to the
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.	7.5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	, , , , , , , , , , , , , , , , , , , ,
Number range	0 65 535
• Size, max.	1 Mbyte
FC	
Number range	0 65 535
• Size, max.	1 Mbyte
OB	,
Size, max.	1 Mbyte
Number of free cycle OBs	100
Number of time alarm OBs	20
Number of delay alarm OBs	20
Number of cyclic interrupt OBs	20; With minimum OB 3x cycle of 250 µs
Number of process alarm OBs	50
Number of DPV1 alarm OBs	3
Number of isochronous mode OBs	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	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
Retentivity	, (, , , , , , , , , , , , , , , , , ,
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	The terms will be a second of the main memory
— adjustable	Yes
— ασμοτανίο	100

Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB
Extended retentive data area (incl. timers, counters, flags), max. Flag	7.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF
• 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	or rayto, max to the por block
Number of IO modules	8 192; max. number of modules / submodules
I/O address area	6 132, max. number of modules / submodules
	22 khuto: All inpute are in the process image
• Inputs	32 kbyte; All outputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	9 khyto
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	Oldeste
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	64; A distributed I/O system is characterized not only by the integration of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-i master modules or links (e.g. IE/PB-Link)
Number of DP masters	
integrated	1
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
integrated	2
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	
 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	Hardware clock
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
Number	16
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• on DP, device	Yes; via PROFIBUS CM / CP
• in AS, master	Yes
• in AS, device	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
Number of PROFIBUS interfaces	1
1. Interface	
Interface types	

* R.J. 46 (Ethernet) * Number of ports * integrated switch * Protocord * integrated switch * Protocord		
Freize available freize	• RJ 45 (Ethernet)	Yes; X1
### Protocol #PROFINET IO Controller #PROFINET IO Device #PROFINET IO Controller #PROFINET Security Class #PROFINET IO Controller #PROFINET IO CONTROL	 Number of ports 	2
PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Ves Soptionally also encrypted Ves SIMATIC communication Ves Soptionally also encrypted Ves Media redundancy Ves Media redundancy Ves Services I socknonus mode Direct data exchange IRT PROFINET IO Controller Ves PROFINET IO Controller Ves PROFINET OF Controller Ves PROFINET OF Controller Ves PROFINET OF Controller Ves PROFINET OF Controller Ves PROFINET OF Controller Ves Ves Ves PROFINET OF Controller Ves Ves Ves Ves Ves Ves PROFINET OF Controller Ves	 integrated switch 	Yes
PROFINET IO Controller PROFINET IO Device SIMATIC communication Ves PROFINET IO Device Ves PROFINET IO Device Ves Ves Ves Ves Ves Ves Ves Ves Ves Ve	Protocols	
PROCINET IO Device SIMATIC communication Ves Open IE communication Ves Ves Hodiar redundancy Ves Services PROFINET Go Centroller PROFINET Go Centroller PROFINET Go Centroller PROFINET Go Centroller PROFILE GO Centroller Ves PROFILE GO Centroller The minimum value of the update time also depends on communication share enter for PROFINET GO, on the number of IO devices, and on the quantity of configured user data The minimum value of the update time also depends on communication share enter for PROFINET GO, on the number of IO devices, and on the quantity of configured user data PROFILE GO Centroller PROFINET Security Class 1 Update time for IRT For send cycle of 250 µs For send cycle of 250 µs For send cycle of 250 µs For send cycle of 4 ms For send cycle of 5 ms For send cycle of 4 ms For send cycle of 5 ms For send cycle of 5 ms For send cycle of 4 ms For send cycle of 4 ms For send cycle of	IP protocol	Yes; IPv4
SIMATIC communication Ves Severor Ves (April Description of Controller Services) And a redundancy Ves Severor And a redundancy Ves Severor Services Services Isobortunous mode Direct data exchange Ves, Requirement: IRT and isochronous mode (MRPD optional) Ves Ves PROFIlerority Per Services Isobortunous mode Ves, Requirement: IRT and isochronous mode (MRPD optional) Ves Ves, Requirement: IRT and isochronous mode (MRPD optional) Ves Ves, Provided Services Ves Ves Vers Program Ves, Max. 32 PROFINET devices Ves, Naver 32 PROFINET devices Ves, Ves, Ves, Ves, Ves, Ves, Ves, Ves,	PROFINET IO Controller	Yes
Open IE communication With bearrer Was Media redundancy Yes Services Services - Direct date exchange - Direct date exchange - PROFINET of Controller - PROFilenergy - Prioritical startup - Of which in line, max - Number of Devices that can be simultaneously actival exchange to prioritical startup - Priorit	PROFINET IO Device	Yes
• Web server • Media redundancy PROFINET ID Controller Services — Isochronous mode — Direct data exchange — Direct data exchange — IFT — PROFINETOR — PROFINETOR — PROFINETOR — PROFINETOR — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Of which in line, max. — Of which in line, max. — Of which in line, max. — Number of connectable IO Devices for RT, max. — Of which in line, max. — Number of Devices that can be simultaneously activate/decideactivate, max. — Number of IO Devices per tool, max. — Number of IO Devices per tool, max. — Updating times — PROFINET Security Class — PROFINET Security Class — From the Connectable IO Services of the Connectable IO Services for RT, max. — Updating times — PROFINET Security Class — 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 — From the Connectable IO Service ID Services — From the Connectable IO Service ID Services — For send cycle of 500 µs — for send cycle of 2 ms — 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 500 µs — for	 SIMATIC communication 	Yes
PROCINET Securior Services - Isochronous mode - Direct data exchange - Direct data exchange - PROFlenergy - Prioritized startup - Promitized swrtch -	Open IE communication	Yes; Optionally also encrypted
Services	Web server	Yes
Services - Isochronous mode - Direct data exchange - LiRT - PROFilerary - PROFIlerary - PROFIlerary - Number of connectable IO Devices, max Of which IO devices with IRT, max Number of connectable to Devices for RT, max Of which In line, max Number of Connectable to Devices for RT, max Number of IO Devices that can be simultaneously activated/decervated, max Number of IO Devices that can be simultaneously activated/decervated, max Number of IO Devices that can be simultaneously activated/decervated, max Number of IO Devices per tool, max Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times - PROFINET Security Class - PROFINET Security Class - For send cycle of 250 µs - for send cycle of 250 µs - for send cycle of 250 µs - for send cycle of 350 µs - for send cycle of 350 µs - for send cycle of 350 µs - for send cycle of 500 µs - for send cycle of 1 ms - for send cycle of 3 ms - for send cycle of 4 ms - for send cycle of 5 ms - for	Media redundancy	Yes
Isochronous mode	PROFINET IO Controller	
- Direct data exchange	Services	
- IRT - PROFInerty - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Of which III line, max Number of connectable IO Devices for RT, max Of which III line, max Number of connectable IO Devices for RT, max Of which III line, max Number of IO Devices per tool, max Updating times - PROFINET Security Class - PROFINET Security Class - For send cycle of 250 μs - For send cycle of 250 μs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 2 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 1 ms - 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 - With IRT and parameterization of "odd" send cycles - For send cycle of 1 ms - For send cycle of 2 ms - For send cyc	— Isochronous mode	Yes
PROFIlenergy Prioritized startup Prioritized prior	 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 IO Devices that can be simultaneously activated/deactivated, max. Number of IO Devices per tool, max. Number of I	— IRT	Yes
- Number of connectable IO Devices, max. Of which IO devices with IRT, max. - Number of connectable IO Devices for RT, max. - With Which In line, max. - Number of IO Devices that can be simultaneously activated discavlated, max. - Number of IO Devices per tool, max. - Number of IO Devices per tool, max. - Updating times - Updating times - PROFINET Security Class 1 Update time for IRT - for send cycle of 250 µs - for send cycle of 500 µs - for send cycle of 500 µs - 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 1 ms - for send cycle of 4 ms - with IRT and parameterization of "odd" send cycles - 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 500 µs - 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 1 ms - 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 send cycle of 500	— PROFlenergy	Yes; per user program
PROFINET - Of which I/O devices with IRT, max Number of connectable I/O Devices for RT, max of which in line, max Which in line, max Number of I/O Devices that can be simultaneously activated/deactivated, max Number of I/O Devices per tool, max Number of I/O Devices per tool, max Number of I/O Devices per tool, max Updating times - PROFINET Security Class - 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 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 Max - 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 1 ms - for send cycle of 500 µs - for send cy	 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 Number of IO Devices per tool, max Updating times - Updating times - PROFINET Security Class - PROFINET Security Class - PROFINET Security Class - PROFINET Security Class - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 550 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 3 ms - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 500 µs - For send cycle of 4 ms - For send cycle of 4 ms - For send cycle of 4 ms - For send cycle of 500 µs - For send cyc	 Number of connectable IO Devices, 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 - PROFINET Security Class - PROFINET Security Class - PROFINET Security Class - For send cycle of 250 µs - For send cycle of 500 µs - For send cycle of 1 ms - For send cycle of 4 ms - For send cycle of 4 ms - With IRT and parameterization of "add" send cycles - For send cycle of 500 µs - For send cycle of 500 µs - For send cycle of 4 ms - With IRT and parameterization of "add" send cycles - For send cycle of 500 µs - For send cycle of 4 ms - For send cycle of 500 µs - For s	Of which IO devices with IRT, max.	64
activated/deactivated, max. — Number of IO Devices per tool, max. — Number of IO Devices per tool, max. — Updating times — PROFINET Security Class 1 Update time for IRT — for send cycle of 250 μs — 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 1 ms — for send cycle of 1500 μs — for send cycle of 4 ms — With IRT and parameterization of "odd" send cycles — for send cycle of 550 μs — 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 250 μs — for send cycle of 1 ms — in the 1512 ms — for send cycle of 4 ms — for send cycle of 4 ms — for send cycle of 4 ms — in the 1512 ms — for send cycle of 4 ms — in the 1512 ms — for send cycle of 4 ms — in the 1512 ms — for send cycle of 4 ms — in the 1512 ms — 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 Security Class • RJ 45 (Ethernet) • RJ 45 (Ethernet) • Interface Rypes • RJ 45 (Ethernet) • Interface Rypes • RJ 45 (Ethernet) • Interface which • Integrated switch • No • Protocolos	 Number of connectable IO Devices for RT, max. 	256
activated/deactivated, max. - Number of IO Devices per tool, max. - Updating times - PROFINET Security Class 1 Update time for IRT - for send cycle of 250 µs - for send cycle of 100 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 250 µs - for send cycle of 500 µs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - for send cycle of 500 µs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - for send cycle of 250 µs - for send cycle		256
- Updating times Shared set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data - PROFINET Security Class 1 Update time for IRT - for send cycle of 250 µs 250 µs 10 kms. Note: In the case of IRT with isochronous mode, the minimum update time of 375 µs of the isochronous OB is decisive 500 µs 500 µs 10 kms. Note: In the case of IRT with isochronous mode, the minimum update time of 375 µs of the isochronous OB is decisive 500 µs 500 µs 0 kms. Os 0 kms.		8; in total across all interfaces
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 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 4 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 - for send cycle of 250 µs - 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 2 ms - for send cycle of 4 ms - for send cycle of 500 µs - for send c	 Number of IO Devices per tool, max. 	
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 1 ms — for send cycle of 1 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 250 μs — for send cycle of 250 μs — With IRT and parameterization of "odd" send cycles — For send cycle of 250 μs — for send cycle of 1 ms — the to 512 ms — for send cycle of 4 ms — which is to 512 ms — for send cycle of 4 ms — PROFINET IO Device Services — Isochronous mode — IRT — PROFleneray — Shared device — Number of 10 Controllers with shared device, max. — activation/deactivation of I-devices — Services — Asset management record — PROFINET Security Class SMMP Configuration and DCP Read Only 2. Interface Interface types • RJ 45 (Ethernet) • Integrated switch • Number of ports • integrated switch • Number of ports • integrated switch No Protocols	— Updating times	set for PROFINET IO, on the number of IO devices, and on the quantity of
— 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 1 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 1 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — for send cycle of 4 ms — this to 512 ms — this to 512 ms — for send cycle of 4 ms — this to 512	— PROFINET Security Class	1
update time of 375 μs of the isochronous OB is decisive — 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 — 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 250 μs — for send cycle of 1 ms — 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 send cycle of 500 μs — for send cycle of 1 ms — 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 4 ms — for send cycle of 500 μs — for send cycle of 120 μs — for send cycle of	Update time for IRT	
- 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 = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 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 2 ms - for send cycle of 4 ms - for send cycle of 9 ms - f	— for send cycle of 250 μs	
- 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 - 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 4 ms - for send cycle of 4 ms - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 µs - f	— for send cycle of 500 μs	500 μs to 8 ms
- for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - 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 2 ms - for send cycle of 4 ms - for send cycle of 50 μs - for send cycle of 1 ms - for send cycle of 10 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 10 μs - for	— for send cycle of 1 ms	1 ms to 16 ms
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 500 μs — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 4 ms — for send cycle of 500 μs — for send cycle of 250 μs — for send cycle of 250 μs — for send cycle of 250 μs	— for send cycle of 2 ms	2 ms to 32 ms
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 2 ms — for send cycle of 2 ms — for send cycle of 4 ms PROFINET IO Device Services — Isochronous mode — IRT — PROFIenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record — PROFINET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch No Protocols	— for send cycle of 4 ms	4 ms to 64 ms
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 2 ms — for send cycle of 4 ms — to send cycle of 4 ms — to send cycle of 4 ms — was to 512 ms PROFINET IO Device Services — Isochronous mode — IRT — PROF lenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record — PROF INET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch No Protocols	— With IRT and parameterization of "odd" send cycles	
- for send cycle of 500 µs 500 µs 500 µs to 256 ms 1 ms to 512 ms 1 ms to 512 ms 2 ms to 512 ms 4 ms to 512 ms 500 µs to 256 ms 1 ms to 512 ms 500 µs to 256 ms 1 ms to 512 ms 500 µs to 256 ms 5	·	• •
- for send cycle of 1 ms		
for send cycle of 2 ms for send cycle of 4 ms for send cycle of 4 ms PROFINET IO Device Services Isochronous mode IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record PROFINET Security Class Interface types RJ 45 (Ethernet) integrated switch for send cycle of 2 ms 4 ms to 512 ms 4 ms to 512 ms No No No No No No No No PROFINET Security Class Asset management record PROFINET Security Class RJ 45 (Ethernet) Frotocols No Protocols		500 μs to 256 ms
for send cycle of 4 ms PROFINET IO Device Services Isochronous mode IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record PROFINET Security Class Interface types RJ 45 (Ethernet) integrated switch Protocols 4 ms to 512 ms 4 ms to 512 ms 4 ms to 512 ms No Yes Yes Yes Yes Yes Yes Yes Ye	•	1 ms to 512 ms
PROFINET IO Device Services - Isochronous mode	•	2 ms to 512 ms
Services - Isochronous mode - IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - PROFINET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types RJ 45 (Ethernet) Number of ports - integrated switch Protocols		4 ms to 512 ms
- Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max. 4 - activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program - PROFINET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols		
- IRT - PROFlenergy - Shared device - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - PROFINET Security Class Interface Interface types • RJ 45 (Ethernet) • integrated switch Protocols Yes; per user program - No Protocols		
- PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - PROFINET Security Class Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols Yes; per user program Yes; yes; per user program No Protocols		
- Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - PROFINET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch No Protocols		
- Number of IO Controllers with shared device, max. - activation/deactivation of I-devices - Asset management record - PROFINET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols		
activation/deactivation of I-devices Asset management record PROFINET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols Yes; per user program No NoProtocols		
- Asset management record - PROFINET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols Yes; per user program SNMP Configuration and DCP Read Only 1 Yes; X2 • Number of ports • integrated switch No		
— PROFINET Security Class SNMP Configuration and DCP Read Only Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch No Protocols		
2. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols 2. Interface Yes; X2 No Yes; X2 No	-	
Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols Yes; X2 No No	<u> </u>	SNMP Configuration and DCP Read Only
 RJ 45 (Ethernet) Number of ports integrated switch Protocols Yes; X2 1 No Protocols		
 Number of ports integrated switch Protocols 	* *	V V2
• integrated switch No Protocols		
Protocols	•	
		NO
• IP protocol Yes; IPV4		Veg IDv4
	• IP protocol	165, 164

PROFINET IO Controller	Yes	
PROFINET IO Device	Yes	
SIMATIC communication	Yes	
Open IE communication	Yes; Optionally also encrypted	
Web server	Yes	
Media redundancy	No	
PROFINET IO Controller		
Services		
— Isochronous mode	No	
 Direct data exchange 	No	
— IRT	No	
— PROFlenergy	Yes; per user program	
 Prioritized startup 	No	
— Number of connectable IO Devices, max.	32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	
 Number of connectable IO Devices for RT, max. 	32	
— of which in line, max.	32	
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8; in total across all interfaces	
 Number of IO Devices per tool, max. 	8	
— Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	
— PROFINET Security Class	1	
Update time for RT		
— for send cycle of 1 ms	1 ms to 512 ms	
PROFINET IO Device		
Services		
— Isochronous mode	No	
— IRT	No	
— PROFlenergy	Yes; per user program	
 Prioritized startup 	No	
— Shared device	Yes	
 Number of IO Controllers with shared device, max. 	4	
 activation/deactivation of I-devices 	Yes; per user program	
Asset management record	Yes; per user program	
— PROFINET Security Class	SNMP Configuration and DCP Read Only	
3. Interface		
Interface types		
• RS 485	Yes; X3	
Number of ports	1	
Protocols		
PROFIBUS DP master	Yes	
PROFIBUS DP device	No	
SIMATIC communication	Yes	
PROFIBUS DP master		
Number of connections, max.	48; for the integrated PROFIBUS DP interface	
max. number of DP devices	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	
Services		
— Equidistance	Yes	
Isochronous mode	Yes	
activation/deactivation of DP devices	Yes	
Interface types		
RJ 45 (Ethernet)		
• 100 Mbps	Yes	
Autonegotiation	Yes	
Autorogotiation Autocrossing	Yes	
Industrial Ethernet status LED	Yes	
RS 485		
110 100		
Transmission rate, max.	12 Mbit/s	
	12 Mbit/s	

PROFIsafe	Yes; V2.4 / V2.6	
Number of connections		
Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs	
 Number of connections reserved for ES/HMI/web 	10	
Number of connections via integrated interfaces	128	
Number of S7 routing paths	16	
Redundancy mode		
H-Sync forwarding	Yes	
Media redundancy		
— Media redundancy	only via 1st interface (X1)	
— MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;	
	MRP Client	
 MRP interconnection, supported 	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	
— MRPD	Yes; Requirement: IRT	
 Switchover time on line break, typ. 	200 ms; For MRP, bumpless for MRPD	
 Number of stations in the ring, max. 	50	
SIMATIC communication		
 PG/OP communication 	Yes; encryption with TLS V1.3 pre-selected	
• S7 routing	Yes	
Data record routing	Yes	
 S7 communication, as server 	Yes	
 S7 communication, as client 	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, supported	Yes	
• ISO-on-TCP (RFC1006)	Yes	
— Data length, max.	64 kbyte	
• UDP	Yes	
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast	
— UDP multicast	Yes; max. 118 multicast circuits	
• DHCP	Yes	
• DNS	Yes	
• SNMP	Yes	
• DCP	Yes	
• LLDP	Yes	
 Encryption 	Yes; Optional	
Web server		
• HTTP	Yes; Standard and user pages	
• HTTPS	Yes; Standard and user pages	
• web API	,	
Number of sessions, max.	100	
— number of simultaneous HTTP calls, max.	4	
— HTTP request body, max.	131 072 byte	
OPC UA		
Runtime license required	Yes; "Medium" license required	
OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	
Application authentication	Yes	
Application authentication Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15,	
occurry pondice	Basic256Sha256	
— User authentication	"anonymous" or by user name & password	
 Number of connections, max. 	10	
 Number of nodes of the client interfaces, recommended max. 	2 000	
 Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I max. 	300	
— Number of elements for one call of	20	
OPC_UA_NameSpaceGetIndexList, max.		
OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max.	100	

instructions for session management, per connection, max.	
 Number of simultaneous calls of the client instructions for data access, per connection, max. 	5
Number of registerable nodes, max.	5 000
Number of registerable method calls of OPC_UA_MethodCall, max.	100
Number of inputs/outputs when calling OPC_UA_MethodCall, max.	20
OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
 Application authentication 	Yes
— Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
User authentication	"anonymous" or by user name & password
GDS support (certificate management)	Yes
— Number of sessions, max.	48
 Number of accessible variables, max. 	100 000
 Number of registerable nodes, max. 	20 000
Number of subscriptions per session, max.	50
— Sampling interval, min.	100 ms
— Publishing interval, min.	100 ms
Number of server methods, max.	50; max. 20 concurrently running jobs each for asynchronous instructions OPC UA ServerMethodPre and OPC UA ServerMethodPost
 Number of inputs/outputs per server method, max. 	20
Number of ministered items, recommended max.	4 000; for 1 s sampling interval and 1 s send interval
Number of server interfaces, max.	10 of each "Server interfaces" / "Companion specification" type and 20 of the
Number of nodes for user-defined server interfaces,	type "Reference namespace" 30 000
max.	Voo
Alarms and Conditions	Yes
Number of program alarms	200
Number of alarms for system diagnostics	100
Further protocole	
Further protocols	Voc. MODRIIS TOD
• MODBUS	Yes; MODBUS TCP
MODBUS Isochronous mode	
MODBUS Isochronous mode Equidistance	Yes; MODBUS TCP Yes
MODBUS Isochronous mode Equidistance S7 message functions	Yes
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max.	Yes 64
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max.	Yes 64 500
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max.	Yes 64 500 8 000
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max.	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block,
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max.	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max.	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block,
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering)	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients)
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes Yes; without fail-safe
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times,
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable Variables	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times,
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Status/control variable Variables Number of variables, max.	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control Status/control variable Variables Number of variables, max. — of which status variables, max.	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job

 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
 Memory size per trace, max. 	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
STOP ACTIVE LED	Yes
 Connection display LINK TX/RX 	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC
	program; selection guide via the TIA Selection Tool
 Number of available Motion Control resources for 	2 400
technology objects	
 Required Motion Control resources 	
— per speed-controlled axis	40
— per positioning axis	80
per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
 Positioning axis 	
 Number of positioning axes at motion control cycle of 4 ms (typical value) 	11
 Number of positioning axes at motion control cycle of 8 ms (typical value) 	20
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Standards, approvals, certificates	
Siemens Eco Profile (SEP)	Siemens EcoTech
Recycler Guide available	Yes
Ecological footprint	
Global warming potential	
— global warming potential, (total) [CO2 eq]	102 kg
— global warming potential, (during production) [CO2	26.5 kg
eq] — global warming potential, (during production) [CO2	76.7 kg
eq] — global warming potential, (after end of life cycle)	-0.898 kg
[CO2 eq] 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 repair time	
Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05
High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09
product functions / security / header	
PROFINET Security Class	1
signed firmware update	Yes
signou iliniwale upuale	100

Secure Boot	Yes			
safely removing data	Yes			
Ambient conditions				
Ambient temperature during operation				
horizontal installation, min.	-30 °C; No condensation	-30 °C; No condensation		
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off			
 vertical installation, min. 	-30 °C; No condensation			
• vertical installation, max.	40 °C; Display: 40 °C, at an open display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the		
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C		
• max.	70 °C	70 °C		
Altitude during operation relating to sea level				
 Installation altitude above sea level, max. 	5 000 m; Restrictions for install	ation 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			
— CFC	Yes; either CFC or failsafe fund	ctionality		
— GRAPH	Yes			
Know-how protection				
User program protection/password protection	Yes			
Copy protection	Yes			
Block protection	Yes			
Access protection	V			
protection of confidential configuration data Description for display.	Yes			
Password for displayProtection level: Write protection	Yes Yes			
Protection level: Write protection Protection level: Read/write protection	Yes			
Protection level: Write protection for Failsafe	Yes			
Protection level: Write protection Protection level: Complete protection	Yes			
User administration	Yes; device-wide and centralize	ad		
Number of users	100	ou .		
Number of groups	100			
Number of roles	50			
programming / cycle time monitoring / header	- 50			
• 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.	469 g			
Classifications				
		Version	Classification	
	eClass	14	27-24-22-07	
	eClass	12	27-24-22-07	
	eClass	9.1	27-24-22-07	
	eClass	9	27-24-22-07	
	eClass	8	27-24-22-07	
	eClass	7.1	27-24-22-07	
	eClass	6	27-24-22-07	
	ETIM	10	EC000236	
	ETIM	9	EC000236	

ETIM	8	EC000236
ETIM	7	EC000236
IDEA	4	3565
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval





Miscellaneous

Manufacturer Declara-<u>tion</u>



Miscellaneous

General Product Approval



<u>KC</u>



<u>FM</u>

For use in hazardous locations



<u>FM</u>

For use in hazardous locations



IECEx



Type Examination Cer-tificate

Miscellaneous

Type Examination Cer-tificate

Functional Saftey



Maritime application









NK / Nippon Kaiji Ky-okai



Maritime application

other

Environment

CCS (China Classification Society)



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