Data sheet

6ES7516-3AP03-0AB0

Siemens EcoTech



SIMATIC S7-1500, CPU 1516-3 PN/DP, central processing unit with 2 MB work memory 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 1516-3 PN/DP HW functional status FS04 Firmware version V4.0 FW update possible Yes Product function I li	General information		
Firmware version FW update possible FW update possible Product function IMM data Sischronous mode Syst.og Figure 1 Title Portal configurable/integrated from version For Gundard 1 ms (central) Figure 1 Step 1 Title Portal configurable/integrated from version For Gundard 1 ms (central) Figure 2 Title Portal configurable/integrated from version For Gundard 1 ms (central) Figure 2 Title Portal configurable/integrated from version For Gundard 2 Title Portal configurable with older TIA Portal versions as 6ES7516-3AN02-0AB0 For Gundard 2 Title Portal configurable with older TIA Portal versions as 6ES7516-3AN02-0AB0 For Gundard 2 Title Portal configurable with older TIA Portal versions as 6ES7516-3AN02-0AB0 For Gundard 2 Title Portal configurable with older TIA Portal versions as 6ES7516-3AN02-0AB0 For Gundard 2 Title Portal configurable with older TIA Portal versions as 6ES7516-3AN02-0AB0 For Gundard 2 Title Portal configurable with older TIA Portal versions as 6ES7516-3AN02-0AB0 For Gundard 2 Title Portal versions	Product type designation	CPU 1516-3 PN/DP	
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Product function • I&M data • Isochronous mode • SysLog • SysLog • SysLog • 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 6ES7516-3AN02-0AB0 Configuration control • Vas Green diagonal [cm] • 6.1 cm Control olements 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/voltage failure stored energy time • Repeat rate, min. Input current Current consumption (rated value) Current consumption (rated value) Current consumption (rated value) 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	Firmware version	V4.0	
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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. Inrush current, max. Inrush current, max. Insurant cur	Supply voltage		
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Mains buffering	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. Inrush current, max. Integrated to the backplane bus Power consumption from the backplane bus (balanced) 10 ms 1	Reverse polarity protection	Yes	
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Power Infeed power to the backplane bus 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 Power consumption from the backplane bus (balanced) 6.7 W	l²t	0.6 A²-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	
integrated (for program)	2 Mbyte
• integrated (for data)	7.5 Mbyte
Load memory	1.0 mbyte
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	32 03).0
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	6 ns
for word operations, typ.	7 ns
for fixed point arithmetic, typ.	9 ns
for floating point arithmetic, typ.	37 ns
CPU-blocks	
Number of elements (total)	8 000; Blocks (OB, FB, FC, DB) and UDTs
DB	, (. , , , , , , , , , , , , , , , ,
Number range	1 60 999; subdivided into: number range that can be used by the user: 1
-	59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	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
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
• Number	Any (only limited by the main memory)
Retentivity	V
— adjustable	Yes
S7 times	0.040
• Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes

Data areas and their retentivity		
Retentive data area (incl. timers, counters, flags), max.	512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB	
Extended retentive data area (incl. timers, counters, flags), max. 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 hayte, max. To he per block	
Number of IO modules	8 192; max. number of modules / submodules	
I/O address area	0 132, max. number of modules / submodules	
	22 khyto: All inputs are in the process image	
• Inputs	32 kbyte; All cutouts are in the process image	
Outputs Outputs	32 kbyte; All outputs are in the process image	
per integrated IO subsystem	O liby do	
— Inputs (volume)	8 kbyte	
— Outputs (volume)	8 kbyte	
per CM/CP	Olderte	
— 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 eleck	
• 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 500 µs For send cycle of 7 ms For send cycle o	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 advivaled/shartuhated, max Number of Operices that can be simultaneously advivaled/shartuhated, max Number of Operices that can be simultaneously advivaled/shartuhated, max Number of Devices that can be simultaneously advivaled/shartuhated, max Number of Operices that can be simultaneously advivaled/shartuhated, max PROFINET Security Class - Fro send cycle of 250 µs - For send cycle of 1500 µs - For send cycle of 27 ms - For send cycle of 1500 µs - For send cycle of 10 ms - F	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 6 ms — for send cycle of 6 ms — for send cycle of 6 ms — for send cycle of 7 ms — for send cycle of 6 ms — for send cycle of 7 ms — for send cycle of 7 ms — for send cycle of 7 ms — for send cycle of 6 ms — for send cycle of 6 ms — for send cycle of 7 ms — for send cycle of 6 ms — for send cycle of 6 ms — for send cycle of 6 ms — for send cycle of 7 ms — for send cycle of 6 ms — for send cycle of 6 ms — for send cycle of 7 ms — for send cycle of 6 ms — for send cycle of 7 ms — for send cycle of 6 ms — for send cycle of 7 ms — for send cycle of 6 ms — for send cycle of 6 ms — for send cycle of 6 ms — for send c	 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 1 ms - for send cycle of 500 µs - for sen	 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 550 µs - For se	 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 — services — Isochronous mode — IRT — PROFINET IO Device Services — Services — Number of IO Controllers with shared device, max. — activation/deactivation of Lefevices — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — PROFINET Security Class SMMP Configuration and DCP Read Only 2. Interface • RJ 45 (Ethernet) • IN J 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 60 µs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 500 µs - for send cycle of 250 µs - for send cycle of 500 µs - for send c	— 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 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; yer user program SNMP Configuration and DCP Read Only 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, 1674		

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	
Autorossing	Yes	
Industrial Ethernet status LED	Yes	
RS 485		
Transmission rate, max.	12 Mbit/s	
-		
Protocols		

PROFIsafe	No	
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	
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15,	
	Basic256Sha256	
— User authentication	"anonymous" or by user name & password	
 Number of connections, max. 	10	
 Number of nodes of the client interfaces, 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 OPC_UA_NameSpaceGetIndexList, max. 	20	
 Number of elements for one call of OPC_UA_MethodGetHandleList, max. 	100	
 Number of simultaneous calls of the client 	1	

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
— — — — — — — — — — — — — — — — — — —	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 registerable nodes, max. Number of subscriptions per session, max.	50
Sampling interval, min.	100 ms
— Publishing interval, min.	100 ms
Publishing Interval, min. 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 monitored items, recommended max.	4 000; for 1 s sampling interval and 1 s send interval
 Number of server interfaces, max. 	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
 Number of nodes for user-defined server interfaces, max. 	30 000
Alarms and Conditions	Yes
Number of program alarms	200
Number of program alarms Number of alarms for system diagnostics	100
	100
Further protocols	
Further protocols • MODRUS	Yes: MODRUS TCP
• 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. number of tags/attributes for subscriptions, max. Program alarms	Yes 64 500 8 000 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.	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	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 1 000 200
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 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 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 Status/control	Yes 64 500 8 000 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 10 000 1 000 200 160 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
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
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 1 000 200 160 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
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 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 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 Inputs/outputs, memory bits, DBs, distributed I/Os, timers, 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 Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job
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. — of which control 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 Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job

- Number of veriables, may	200
Number of variables, max. Piagraphia huffer	200
Diagnostic buffer	V
• 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 technology objects 	2 400
Required Motion Control resources Per speed controlled axis.	40
— per speed-controlled axis	
— 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	20
of 8 ms (typical value)	
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Standards, approvals, certificates	
Siemens Eco Profile (SEP)	Siemens EcoTech
Ecological footprint	
environmental product declaration	Yes
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 operation) [CO2 	76.7 kg
eq]	
 — global warming potential, (after end of life cycle) [CO2 eq] 	-0.898 kg
product functions / security / header	
	1
PROFINET Security Class	1 Voc
signed firmware update	Yes
Secure Boot	Yes
safely removing data	Yes
Ambient conditions	
Ambient temperature during operation	
 horizontal installation, min. 	-30 °C; No condensation
 horizontal installation, max. 	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
e vartical installation, min	
vertical installation, min.	-30 °C; No condensation
vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the

	display is switched off		
Ambient temperature during storage/transportation	display is switched off		
• min.	-40 °C		
• max.	70 °C		
Altitude during operation relating to sea level	10 0		
Installation altitude above sea level, max.	5 000 m; Restrictions for insta	ullation altitudes > 2 000 n	n see manual
nfiguration / header			., 000
configuration / programming / header			
Programming language			
— LAD	Yes		
— FBD	Yes		
— STL	Yes		
— SCL	Yes		
— CFC	Yes		
— GRAPH	Yes		
Know-how protection			
User program protection/password protection	Yes		
Copy protection	Yes		
Block protection	Yes		
Access protection			
protection of confidential configuration data	Yes		
Password for display	Yes		
Protection level: Write protection	Yes		
 Protection level: Read/write protection 	Yes		
Protection level: Write protection for Failsafe	No		
 Protection level: Complete protection 	Yes		
 User administration 	Yes; device-wide and centralia	zed	
 Number of users 	100		
 Number of groups 	100		
Number of roles	50		
programming / cycle time monitoring / header			
• lower limit	adjustable minimum cycle time	е	
upper limit	adjustable maximum cycle tim	ne	
mensions			
Width	70 mm		
Height	147 mm		
Depth	129 mm		
eights			
Weight, approx.	469 g		
assifications			
		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	9	EC000236
	ETIM	8	EC000236
	ETIM	7	EC000236
	IDEA	4	3565
	LINODOO	15	32-15-17-05
	UNSPSC	10	02 10 11 00







Miscellaneous



General Product Approval

For use in hazardous locations

<u>KC</u>



<u>FM</u>



<u>FM</u>

Miscellaneous

For use in hazardous locations

Test Certificates

Marine / Shipping



Type Examination Certificate



Type Test Certificates/Test Report





Marine / Shipping





NK / Nippon Kaiji Kyokai



CCS (China Classification Society)



other

Environment

PROFINET



Profibus



Siemens EcoTech



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12/19/2024

