SIEMENS

Data sheet

6ES7512-1SM03-0AB0

SIMATIC DP, CPU 1512SP F-1 PN for ET 200SP, central processing unit with work memory 600 KB for program and 2 MB for data, 1st interface: PROFINET IRT with 3-port switch, 25 ns bit performance, SIMATIC Memory Card required, BusAdapter required for port 1 and 2 * *** approvals and certificates according to entry 109817615 at support.industry.siemens.com to be observed! ****

General information	support.industry.siemens.com to be observed:
Product type designation	CPU 1512SP F-1 PN
HW functional status	FS01
Firmware version	V3.0
FW update possible	Yes
Product function	V 10M0 to 10M0
• I&M data	Yes; I&M0 to I&M3
Module swapping during operation (hot swapping)	Yes; Multi-hot swapping
Isochronous mode	Yes; only with PROFINET; with minimum OB 6x cycle of 500 µs
Engineering with	V40 (EVAL) (0.0) with older TIA Destal warries and investigation of CEO7
 STEP 7 TIA Portal configurable/integrated from version 	V18 (FW V3.0); with older TIA Portal versions configurable as 6ES7 512-1SK01-0AB0
Configuration control	
	Mar.
via dataset	Yes
Control elements	
Mode selector switch	1
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
Mains/voltage failure stored energy time	10 ms
Input current	
Current consumption (rated value)	0.51 A
Current consumption, max.	0.7 A
Inrush current, max.	1.34 A; Rated value
l ² t	0.3 A ² ·s
Power	
Infeed power to the backplane bus	8.05 W
	0.05 W
Power loss	
Power loss, typ.	6.5 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
 integrated (for program) 	600 kbyte
 integrated (for data) 	2 Mbyte
Load memory	
 Plug-in (SIMATIC Memory Card), max. 	32 Gbyte
Backup	
 maintenance-free 	Yes
CPU processing times	
for bit operations, typ.	25 ns
for word operations, typ.	32 ns
for fixed point arithmetic, typ.	42 ns
for floating point arithmetic, typ.	170 ns
CPU-blocks	

Number of elements (total)	4 000: Blocks (OB EB EC DB) and UDTa
Number of elements (total) DB	4 000; Blocks (OB, FB, FC, DB) and UDTs
Number range	1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	2 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
Number range	0 65 535
• Size, max.	600 kbyte
FC	,
Number range	0 65 535
• Size, max.	600 kbyte
OB	
• Size, max.	600 kbyte
 Number of free cycle OBs 	100
Number of time alarm OBs	20
Number of delay alarm OBs	
Number of cyclic interrupt OBs	20; With minimum OB 3x cycle of 250 μs
Number of process alarm OBs Number of DBV/1 alarm OBs	50
 Number of DPV1 alarm OBs Number of isochronous mode OBs 	3
 Number of isochronous mode OBs Number of technology synchronous alarm OBs 	2
Number of startup OBs	2 100
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	0.040
Number Detentivity	2 048
Retentivity	Vec
— adjustable IEC timer	Yes
Number	Any (only limited by the main memory)
Retentivity	/ ary (only influed by the main memory)
— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	256 kbyte; in total; available retentive memory for bit memories, timers,
Notoniavo dala area (indi. liniero, codificio, fiago), fildx.	counters, DBs, and technology data (axes): 216 KB
Flag	
• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
 Retentivity adjustable 	Yes
Retentivity preset	No
Local data	
 per priority class, max. 	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	2 048; max. number of modules / submodules
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	0 khuta
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte

Imputs (volume) Imputs (volume) Imputs (volume) Rolphoness images Imputs (volume) Rolphoness images Imputs (volume) Rolphoness images Imputs (volume) Rolphoness images Imputs (volume) Rolphoness (v	per CM/CP	
- Outputs (volume) 8 kkyie 8 kkyie 8 kkyie 9 k	•	8 kbyte
• Number of subprocess images, max. 32 • Address space per module, max. 288 byte; For input and output data respectively Address space per station - • Address space per station 2590 byte; for enput and outputs and outputs, depending on configuration: 2; defaults of FET 200SP modules + 512 bytes for ET 200AL modules * Marker sconfiguration 2.440 bytes for FET 200SP modules + 512 bytes for ET 200AL modules or includes, but also by the connection of I/O via AS-i master modules or includes, but also by the connection of I/O via AS-i master modules or includes, but also by the connection of I/O via AS-i master modules or includes, but also by the connection of I/O via AS-i master modules or includes, but also by the connection of I/O via AS-i master modules or includes, but also by the connection of I/O via AS-i master modules or includes, but also by the connection of I/O via AS-i master modules or includes by the includes or includes for GO controllers • Via CM 0 • Number of I/O controllers 1 • Via CM 0 • Quantity of operable ET 200AL modules, max. 1 • Quantity of operable ET 200AL modules, max. 1 • Quantity of operable ET 200AL modules, max. 1 • Pipe CM Hardware clock • Backup time 6 wk, 440 °C ambient temperature, typically • Double time, max. 1 • Pipe CM 9 • Order 9 • Cock 9 • Type 9		•
Address space per module • Address space per module, max. 2850 byte; for input and output data respectively • Address space per station, max. • Via CM • Address per rack, max. • Modules per rack, max. • Address per station, max. • Address per rack, max. • Address	Subprocess images	
• Address space per station 288 byte; For input and output data respectively • Address space per station, max. 2 590 byte; for central inputs and outputs; depending on configuration; 2 • Madress space per station, max. 2 590 byte; for central inputs and outputs; depending on configuration; 2 • Number of distributed IO systems 2; A distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the number of distributed IO system is characterized not only by the number of available slots • Quantity of operable ET 200AL modules, max. 64 • Number of PIP CMs te number of connectable PIP CMs is only limited by the number of available slots • Time of day 64, ki, 440 °C ambient temperature, typically • Obvisition per day, max. 10 • Dip, naster Yes; Via CM DP module • DoP, paster Yes; Via CM DP module	 Number of subprocess images, max. 	32
Address space per station 2 50 byte: for central inputs and outputs: depending on configuration; 2 48 bytes for ET 200SP modules + 512 bytes for ET 200AL modules Year/ware configuration 32, A distributed 10 system is characterized not only byte integration if characterized not only byte integration modules, but also by the connection of 100 via AS-1 master modules or links (e.g., IE/PB-Link) Number of DP masters - • Via CM 1 • Via CM 1 • Via CM 0 Rask 82; CPU + 64 modules + server module (mounting width max. 1 m) + 16 • Via CM 0 Rask 82; CPU + 64 modules + server module (mounting width max. 1 m) + 16 • Output of operable ET 200SP modules, max. 64 • Number of IP CMs the number of connectable PIP CMs is only limited by the number of available slots • Number of IPP CMs the number of connectable PIP CMs is only limited by the number of available slots • Output of operable ET 2004, modules, max. 10 • Number of PIP CMs the number of connectable PIP CMs is only limited by the number of available slots. • Number of PIP CMs the number of connectable PIP CMs is only limited by the number of available slots. • Operating hour source 64 • DP, isstem 10	Address space per module	
Address space per station, max. 2 590 byte; for central inputs and outputs: depending on configuration: 2 Address space per station, max. Integrated Address space per station, max. Address space per station, max. Address space per station, max. Integrated Integrated Integrated Integrated Integrated Integrated Integra	 Address space per module, max. 	288 byte; For input and output data respectively
048 bytis for ET 2005P modules = \$12 bytes for ET 200AL modules Number of distributed IO systems 22. A distributed IO system is obtancetorized not only by the integration modules, but also by the connection of I/O via AS-i master modules or link (e.g., IEPP-Link) Number of DC masters 1 • Via CM 1 • Via CM 1 • Via CM 0 • Rack 22. CPU + 64 modules + server module (mounting width max. 1 m) + 16 • Countily of operable ET 2005P modules, max. 62. CPU - 64 modules + server module (mounting width max. 1 m) + 16 • Outanity of operable ET 2005P modules, max. 1 • Number of PD CMs the number of connectable PIP CMs is only limited by the number of available sicts • Number of PD CMs the number of connectable PIP CMs is only limited by the number of available sicts • Time of day 6 wk: At 40 °C ambient temperature, typically • Doyer in part and part	Address space per station	
Number of distributed I/O system is characterized not only by the integration modules, but also by the connection of I/O via AS-i master modules or links (e.g. IEPB-Link) Number of DP masters 1 • Via CM 1 • Integrated 1 • Via CM 1 • Via CM 1 • Via CM 0 Rack 82. CPU + 64 modules + server module (mounting width max. 1 m) + 16 ET 200AL modules • Cuantity of operable ET 200SP modules, max. 64 • Number of IPIP CMs 1 • Number of IPIP CMs 1 • Number of PIP CMs 1 • Number of PIP CMs 1 • Number of PIP CMs 1 • Deviation per day, max. 10 • Occks gentromization 64 • Number of PIP CMs 1 • Number of PIP CMs 1 • Number of PIP CMs 90 with rule and water clock • Backup time 6 with A4 0* Ca mathem temperature, typically • Deviation per day, max. 10 sir Typ: 2 site Clock • Only store 7 with X4 0* Ca mathem temperature, typically • Deviation per day, max. 10 sir Ty	 Address space per station, max. 	
of distributed I/O via PROFINET or PROFINET and PROFINET or PROFINET and PROFINET or PROFINET and PROFINET interfaces intra (e.g., IE/PB-Link) Number of IO O via AS-i master modules or links (e.g., IE/PB-Link) Number of IO Controllers integrated integra	Hardware configuration	
• Via GM 1 Number of IO Controllers - • Integrated 1 • Via CM 0 Rack B2: CPU + 64 modules + server module (mounting width max. 1 m) + 16 • Modules per rack, max. B2: CPU + 64 modules + server module (mounting width max. 1 m) + 16 • Quantity of operable ET 200AL modules, max. 64 • Quantity of operable ET 200AL modules, max. 16 • Number of lines, max. 1 • Number of PP CMs 1 • Number of PP CMs 1 • Number of available slots 1 Operating hours counter 6 wk: At 40 °C ambient temperature, typically • Deviation per day, max. 10 • Clock 10 s. Typ. 2 s • Number 16 Clock with the number of connectable PIP CMs is only limited by the number of available slots • Number of Ins. 10 s. Typ. 2 s Operating hours counter 10 • Lo DP, naster Yes; Via CM DP module • In AS, master Yes; Via CM DP module • In AS, slave Yes • or Ethernet Via NTP Yes	Number of distributed IO systems	of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-i master modules or
Number of IO Controllers Image and the server module (mounting width max. 1 m) + 16 First 0 Rack 82; CPU + 64 modules + server module (mounting width max. 1 m) + 16 ET 200AL modules 52; CPU + 64 modules + server module (mounting width max. 1 m) + 16 Cluantity of operable ET 200SP modules, max. 64 • Quantity of operable ET 200AL modules, max. 1 • Number of Ines, max. 1 PIP CM the number of connectable PIP CMs is only limited by the number of available slots Clock 5 wk; At 40 °C ambient temperature, typically • Dyperating hours counter 6 wk; At 40 °C ambient temperature, typically • Number 16 Clock 5 wk; At 40 °C ambient temperature, typically • Deviation per day, max. 10 • Days counter 16 Number 16 Clock wich for the synaptic term of the synaptic term of the synaptic term of the synaptic term of term o	Number of DP masters	
integrated i	• Via CM	1
• Via CM 0 Rack • Modules per rack, max. 82; CPU + 64 modules + server module (mounting width max, 1 m) + 16 ET 200AL modules • Quantity of operable ET 200SP modules, max. 64 • Number of Ines, max. 1 PIP CM 1 • Number of PIP CMs the number of connectable PIP CMs is only limited by the number of available slots Time of day - Clock • (Ya CM) (motion per day, max. • Division per day, max. 10 • Doviation per day, max. 10 • Doviation per day, max. 10 • Operating hours counter 6 wK, 31 40 °C ambient temperature, typically • Doviation per day, max. 10 • Operating hours counter 10 • Number 16 Clock synchronization Yes; Via CM DP module • to DP, master Yes; Via CM DP module • to DP, master Yes • in AS, slave Yes • in AS, slave Yes • Diretraces 1, Via CM DP module • Diretraces	Number of IO Controllers	
Rack Bit Construction • Modules per rack, max. 82, CPU + 64 modules + server module (mounting width max. 1 m) + 16 ET 200AL modules • Quantity of operable ET 200AL modules, max. 64 • Quantity of operable ET 200AL modules, max. 16 • Number of lines, max. 1 PIP CM the number of connectable PIP CMs is only limited by the number of available slots Time of day the number of connectable PIP CMs is only limited by the number of available slots Time of day Elecket Clock Elecket • Number of PAP CMs 6 wk; At 40 °C amblent temperature, typically • Deviation per day, max. 10 s; Typ. 2 s Operating hours counter 6 • Number 16 Clock synchronization Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • in AS, slave: Yes • on Ethernet via NTP Yes Interface Nomber of PROFINET interfaces • Number of PROFINET interfaces 1. Via CM DP module • in AS, slave: Yes • in AS, slave: Yes • in AS deptrice (PROFINET) <td> integrated </td> <td>1</td>	 integrated 	1
Modules per rack, max. Set CPU + 64 modules + server module (mounting width max. 1 m) + 16 ET 200AL modules Countity of operable ET 200SP modules, max. Quantity of operable ET 200AL modules, max. Aumber of lines, max. Aumber of PIP CMs Number of PIP CMs Hardware statement of connectable PIP CMs is only limited by the number of available stots Time of day Clock Time of PROFINET interface Time of PROFINET interfaces Time of the day	Via CM	0
ET 200AL modules ET 200AL modules Ouantity of operable ET 200AL modules, max. Ouantity of operable ET 200AL modules, max. I Ouantity of operable ET 200AL modules I operable ET 200AL module Ves Via CM DP module I outper of PIP CMs I of DP, master Ves, Via CM DP module Ves, Via CM DP module I on DP, slave Ves Interface Interface I Number of PROFINET I interfaces Vis CM DP module Ves Interface I Number of PROFINET I interfaces Vis CM DP module Number of PROFINET I interfaces Vis CM DP module Ves Ves Ves Ves Ves Ves Ves Ves Ves Ve	Rack	
• Quantily of operable ET 200AL modules, max. 1 • Number of lines, max. 1 PP CM the number of connectable PIP CMs is only limited by the number of available slots Time of day the number of connectable PIP CMs is only limited by the number of available slots Time of day Hardware clock • Dype A 0 structure • Operating hours counter 6 wk; At 40 °C ambient temperature, typically • Deviation per day, max. 10 structure • Operating hours counter 6 • Number 16 Clock synchronization Yes • supported Yes • to DP, master Yes, Via CM DP module • to DP, slave Yes • on Rtherment Via NTP Yes Interfaces 1 Number of PROFINET interfaces 1 Number of PROFINET interfaces 1 Number of PROFINET interfaces 1 Number of prots 1; Via CM DP module Optical interface No Interface No Interface Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • RU J45 (Ethernet) 3; 1, Integr. + 2. via BusAdapter • RU J45 (Ethernet) Yes; IPV4 • PROFINET IO Controller Yes • PROFINET		ET 200AL modules
• Number of lines, max. 1 PIP CM the number of connectable PIP CMs is only limited by the number of available slots Time of day Clock • Number of PIP CMs 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 Yes • Number of PROFINET Yes; Via CM DP module • to DP, master Yes • to DP, slave Yes; Via CM DP module • in AS, inster Yes • and S, slave Yes • on PROFINET interfaces 1 Number of PROFINET interfaces 1 Number of PROFIBUS interfaces 1 • Interface types Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of profs 3; 1, integr. + 2, via BusAdapter • Number of PROFINETIO Yes; IPV4 • Nondapter (PROFINET) Yes • BusAdapter (PROFINET IO Controller Yes • IProtocol Yes • IProtocol Yes • SIMATIC com		
PIP CM • Number of PIP CMs the number of connectable PIP CMs is only limited by the number of available slots Time of day Clock • Type • Backup time • Deviation per day, max. 10 s; Typ. 2 s Operating hours counter • Number • Number 16 Clock synchronization • supported • to DP, master • to DP, master • to DP, slave Yes Interfaces Number of PROFINET interfaces 1; Via CM DP module Optical interface No 1Interface PROFINET interfaces • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1, integr. + 2. via BusAdapter: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocol Yes; IPV4 • PROFI		
• Number of PtP CMs the number of connectable PtP CMs is only limited by the number of available slots Time of day Clock • Type Hardware clock • Backup time 6 wk: kt 40 °C ambient temperature, typically • Deviation per day, max. 10 s; Typ: 2 s Operating hours counter 16 • Number 16 Clock synchronization Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • in AS, slave Yes • on Ethernet via NTP Yes Interfaces 1 Number of PROFIBUS interfaces 1 Number of PROFIBUS interfaces 1; Via CM DP module • RUPFIBUS interfaces 1; Via CM DP module • Rupper of PROFIBUS interfaces 1; Via CM DP module • Interface No • Interface types • es; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Interface types • yes; Compatible BusAdapter • Interface types Yes; Compatible BusAdapter • ROFINET IO Controller Yes • ROFINET IO Controller Yes • IP protocol Yes; IPv4 • PROF		1
available slots Time of day Clock • Type Hardware clock • Backup time 6 wtk: At 40 °C ambient temperature, typically • Devrating hours counter 10 s; Typ.: 2 s • Number 16 Clock synchronization * • supported Yes; Via CM DP module • to DP, master Yes; Via CM DP module • to DP, slave Yes • on Ethernet via NTP Yes Valido of PROFIBUS interfaces 1; Via CM DP module Optical interface No Interface types • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter BA 2x RJ45 • Number of ports S; 1. integr. + 2. via BusAdapter • Number of ports Yes; Optionality also encrypted • Protocol Yes; IPv4 • PROFINET IO Controller Yes • ROFINET IO Device Yes • SIMATI		
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 16 • Number 16 Clock synchronization *es; Via CM DP module • to DP, master Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • to DP, slave Yes • in AS, master Yes • on Ethernet via NTP Yes Interfaces 1 Number of PROFINET interfaces 1 Number of PROFIBUS interfaces 1; Via CM DP module Optical interface No 1.Interface No 2.Interface types *es; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter BA 2x RJ45 • Number of ports 3; 2. integr. + 2. via BusAdapter • PROFINET IO Controller Yes • PROFINET IO Controller Yes • PROFINET IO Device Yes • Open IE communication Yes; Optiona		
Type Hardware clock Backup time 6 wt; 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; Via CM DP module to DP, slave Yes; Via CM DP module in AS, master Yes in AS, slave Yes interface Interface Interface Ypes integrated switch Yes integrated S	Time of day	
Backup time Backup ti	Clock	
• Deviation per day, max. 10 s; Typ.: 2 s Operating hours counter 16 • Number 16 Clock synchronization Yes • to DP, master Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • in AS, master Yes • on Ethernet via NTP Yes Interfaces 1 Number of PROFINET interfaces 1 Number of PROFINET interfaces 1; Via CM DP module Optical interface No Optical interface No 10 terface No 11 therface types 1; Via CM DP module • Number of prOFINET interfaces 1; Via CM DP module Optical interface No 0 pottal interface No 10 terface 1 • Number of ports 3; 1, integr. + 2, via BusAdapter BA 2x RJ45 • Number of ports 3; 1, integr. + 2, via BusAdapter • Number of ports 3; 1, integr. + 2, via BusAdapter • Protocol Yes; IPV4 • PROFINET IO Controller Yes • PROFINET	• Туре	Hardware clock
Operating hours counter 16 Clock synchronization 16 Clock synchronization Yes • to DP, master Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • in AS, master Yes • on Ethernet via NTP Yes Interfaces 1 Number of PROFINET interfaces 1; Via CM DP module Optical interface No Interfaces 1; Via CM DP module Number of PROFIBUS interfaces 1; Via CM DP module Optical interface No Interface types • • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter • integrated switch Yes • BusAdapter (PROFINET) Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocols * • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • SIMATIC communication Yes • Open IE communication Yes • Open IE communication Yes • Web server Yes	Backup time	6 wk; At 40 °C ambient temperature, typically
• Number 16 Clock synchronization Yes • supported Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • in AS, master Yes • on Ethernet via NTP Yes Interfaces 1 Number of PROFINET interfaces 1 Number of PROFIBUS interfaces 1; Via CM DP module Optical interface No 1. Interface No 1. Interface types • • R2 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter • integrated switch Yes • BusAdapter (PROFINET) Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes • Optical communication Yes; Optionally also encrypted • Web server Yes • PROFINET IO Controller Yes • PROFINET IO Controller Yes • PROFINET IO Controller Yes • PROFINET IO Co		10 s; Typ.: 2 s
Clock synchronization Yes • supported Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • in AS, master Yes • in AS, slave Yes • on Ethernet via NTP Yes Interfaces 1 Number of PROFIBUS interfaces 1 Number of PROFIBUS interfaces 1; Via CM DP module Optical interface No 1. Interface No 1. Interface types - • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter • integrated switch Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocols - • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted • Web server Yes • Media redundancy Yes PROFINET IO Controller Yes • Media redundancy Yes	Operating hours counter	
• supported Yes • to DP, master Yes; Via CM DP module • to DP, slave Yes; Via CM DP module • to AS, master Yes • in AS, slave Yes • on Ethernet via NTP Yes Interfaces 1 Number of PROFIBUS interfaces 1 Number of PROFIBUS interfaces 1; Via CM DP module Optical interface No 1. Interface No Interface types - • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter • BusAdapter (PROFINET) Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocols - • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted • Web server Yes • Media redundancy Yes • PROFINET IO Controller Yes • Open IE controller Yes • Media redundancy Yes		16
• to DP, masterYes; Via CM DP module• to DP, slaveYes; Via CM DP module• in AS, masterYes• in AS, slaveYes• on Ethemet via NTPYesInterfacesNumber of PROFINET interfaces1Number of PROFIBUS interfaces1Number of PROFIBUS interfaces1; Via CM DP moduleOptical interfaceNoInterface types• RJ 45 (Ethernet)Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45• Number of ports3; 1. integr. + 2. via BusAdapter• integrated switchYes• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12ProtocolsIP protocol• IP protocolYes; IPv4• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes• Web serverYes• Media redundancyYes• PROFINET IO ControllerYes• Media r		
• to DP, slaveYes; Via CM DP module• in AS, masterYes• in AS, slaveYes• on Ethernet via NTPYesInterfacesNumber of PROFINET interfaces1Number of PROFIBUS interfaces1Number of PROFIBUS interfaces1; Via CM DP moduleOptical interfaceNoInterface typesYes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45• RJ 45 (Ethernet)Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45• Number of ports3; 1. integr. + 2. via BusAdapter• integrated switchYes• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12ProtocolsYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• Media redundancyYes• PROFINET IO ControllerYes• Media redundancyYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• Media redundancyYes• PRO		
• in AS, master Yes • in AS, slave Yes • on Ethernet via NTP Yes Interfaces Interfaces Number of PROFINET interfaces 1 Number of PROFIBUS interfaces 1; Via CM DP module Optical interface No Interface types • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter • integrated switch Yes • BusAdapter (PROFINET) Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocols IP protocol • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • SIMATIC communication Yes; Optionally also encrypted • Web server Yes • Media redundancy Yes PROFINET IO Controller Yes • Open IE communication Yes • PROFINET IO Controller Yes • Rudia redundancy Yes		
• in AS, slaveYes• on Ethernet via NTPYesInterfacesINumber of PROFINET interfaces1Number of PROFIBUS interfaces1; Via CM DP moduleOptical interfaceNo1. InterfaceNo1. Interface typesInterface types• RJ 45 (Ethernet)Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45• Number of ports3; 1. integr. + 2. via BusAdapter• integrated switchYes• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12ProtocolsYes• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• Media redundancyYes• Media redundancyYes• Media redundancyYes• Media redundancyYes• Media redundancyYes• Media redundancy <td></td> <td></td>		
• on Ethernet via NTPYesInterfacesNumber of PROFINET interfaces1Number of PROFIBUS interfaces1; Via CM DP moduleOptical interfaceNoInterface types• RJ 45 (Ethernet)Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45• Number of ports3; 1. integr. + 2. via BusAdapter• integrated switchYes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12ProtocolsYes; IPv4• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• RUMATIC communicationYes• Open IE communicationYes• PROFINET IO ControllerYes• Media redundancyYes• PROFINET IO ControllerYes• Media redundancyYes• PROFINET IO ControllerYes• Media redundancyYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• Media redundancyYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• Media redundancyYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• Open IE communicationYes• Media redundancyYes• PROFINET IO Contr		
Interfaces Number of PROFINET interfaces 1 Number of PROFIBUS interfaces 1; Via CM DP module Optical interface No Interface No Interface Interface Interface types Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter • integrated switch Yes • BusAdapter (PROFINET) Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocols IP protocol • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted • Web server Yes • Media redundancy Yes PROFINET IO Controller Yes		
Number of PROFINET interfaces 1 Number of PROFIBUS interfaces 1; Via CM DP module Optical interface No 1. Interface No Interface Interface No 1. Interface No Interface Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 Number of ports 3; 1. integr. + 2. via BusAdapter • Integrated switch Yes • BusAdapter (PROFINET) Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocol Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device Yes • Media redundancy Yes		Yes
Number of PROFIBUS interfaces1; Via CM DP module NoOptical interfaceNoInterfaceInterface types• RJ 45 (Ethernet)Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter• Number of ports3; 1. integr. + 2. via BusAdapter• Integrated switchYes• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12Protocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• Media redundancyYes		
Optical interfaceNo1. InterfaceInterface types• RJ 45 (Ethernet)Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45• Number of ports3; 1. integr. + 2. via BusAdapter• integrated switchYes• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12ProtocolsIP protocol• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• ROFINET IO ControllerYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• ServicesYes		
1. Interface Interface types • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter • integrated switch Yes • BusAdapter (PROFINET) Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocols IP protocol • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • SIMATIC communication Yes; Optionally also encrypted • Web server Yes • Media redundancy Yes PROFINET IO Controller Yes		
Interface types • RJ 45 (Ethernet) Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 • Number of ports 3; 1. integr. + 2. via BusAdapter • integrated switch Yes • BusAdapter (PROFINET) Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12 Protocols IP protocol • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • SIMATIC communication Yes; Optionally also encrypted • Web server Yes • Media redundancy Yes PROFINET IO Controller Yes • SIMATIC communication Yes • Res Yes • Media redundancy Yes	Optical interface	No
• RJ 45 (Ethernet)Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45• Number of ports3; 1. integr. + 2. via BusAdapter• integrated switchYes• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12ProtocolsYes; IPv4• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• ServicesYes	1. Interface	
• RJ 45 (Ethernet)Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45• Number of ports3; 1. integr. + 2. via BusAdapter• integrated switchYes• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12ProtocolsYes; IPv4• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• ServicesYes	Interface types	
• Number of ports3; 1. integr. + 2. via BusAdapter• integrated switchYes• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12Protocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYes• Redia redundancyYes• Redia redundancyYes• Services		Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45
• BusAdapter (PROFINET)Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12Protocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes; Optionally also encrypted• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYesServicesYes		
Protocols Yes; IPv4 PROFINET IO Controller Yes PROFINET IO Device Yes SIMATIC communication Yes; Optionally also encrypted Open IE communication Yes; Optionally also encrypted Web server Yes Media redundancy Yes PROFINET IO Controller Yes Services Yes	 integrated switch 	Yes
• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes; Optionally also encrypted• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYesServicesYes	BusAdapter (PROFINET)	Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12
• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYesPROFINET IO ControllerYesServicesYes	Protocols	
• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyYes• PROFINET IO ControllerYesServicesYes	IP protocol	Yes; IPv4
• SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted • Web server Yes • Media redundancy Yes PROFINET IO Controller Yes	PROFINET IO Controller	Yes
Open IE communication Yes; Optionally also encrypted Web server Yes Media redundancy Yes PROFINET IO Controller Services	PROFINET IO Device	Yes
Web server Yes Media redundancy Yes PROFINET IO Controller Services	 SIMATIC communication 	Yes
Media redundancy Yes PROFINET IO Controller Services		
PROFINET IO Controller Services		Yes
Services	•	Yes
	PROFINET IO Controller	
- PG/OP communication Yes		
	— PG/OP communication	Yes

 — Isochronous mode 	
	Yes
— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes; per user program
 Prioritized startup 	Yes; Max. 32 PROFINET devices
 Number of connectable IO Devices, max. 	128; In total, up to 512 distributed I/O devices can be connected via AS- i, PROFIBUS or PROFINET
 Of which IO devices with IRT, max. 	64
 — Number of connectable IO Devices for RT, max. 	128
— of which in line, max.	128
— Number of IO Devices that can be	8; in total across all interfaces
simultaneously activated/deactivated, max.	
- Number of IO Devices per tool, max.	8
— Updating times	The minimum value of the update time also depends on communication
	share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for IRT	
— for send cycle of 250 μs	250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the
	minimum update time of 500 μs of the isochronous OB is decisive
— for send cycle of 500 μs	500 μs to 8 ms; Note: In the case of IRT with isochronous mode, the
	minimum update time of 625 μs of the isochronous OB is decisive
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
— With IRT and parameterization of "odd" send	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625
cycles	μs 3 875 μs)
Update time for RT	
— for send cycle of 250 μs	250 µs to 128 ms
— for send cycle of 500 μs	500 µs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	
	Yes; per user program
 — Shared device 	Yes
Number of IO Operates liens with the second device	
 — Number of IO Controllers with shared device, max 	4
max.	
max. — activation/deactivation of I-devices	Yes; per user program
max. — activation/deactivation of I-devices — Asset management record	
max. — activation/deactivation of I-devices — Asset management record 2. Interface	Yes; per user program
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types	Yes; per user program Yes; per user program
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types • RS 485	Yes; per user program
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types	Yes; per user program Yes; per user program
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types • RS 485	Yes; per user program Yes; per user program Yes; Via CM DP module
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types • RS 485 • Number of ports	Yes; per user program Yes; per user program Yes; Via CM DP module
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types • RS 485 • Number of ports Protocols	Yes; per user program Yes; per user program Yes; Via CM DP module 1
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP slave	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes
max. — activation/deactivation of I-devices — Asset management record 2. Interface Interface types — RS 485 — Number of ports Protocols — PROFIBUS DP master — PROFIBUS DP slave — SIMATIC communication PROFIBUS DP master	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes Yes Yes
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes Yes Yes Yes In total, up to 512 distributed I/O devices can be connected via AS-
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes Yes Yes Yes In total, up to 512 distributed I/O devices can be connected via AS-
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes 48; Of which 4 each reserved for ES and HMI 125; In total, up to 512 distributed I/O devices can be connected via AS- i, PROFIBUS or PROFINET
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes 48; Of which 4 each reserved for ES and HMI 125; In total, up to 512 distributed I/O devices can be connected via AS- i, PROFIBUS or PROFINET
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes 48; Of which 4 each reserved for ES and HMI 125; In total, up to 512 distributed I/O devices can be connected via AS- i, PROFIBUS or PROFINET
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes 48; Of which 4 each reserved for ES and HMI 125; In total, up to 512 distributed I/O devices can be connected via AS- i, PROFIBUS or PROFINET Yes No
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes 48; Of which 4 each reserved for ES and HMI 125; In total, up to 512 distributed I/O devices can be connected via AS- i, PROFIBUS or PROFINET Yes No
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes 48; Of which 4 each reserved for ES and HMI 125; In total, up to 512 distributed I/O devices can be connected via AS- i, PROFIBUS or PROFINET Yes No No Yes
max. 	Yes; per user program Yes; per user program Yes; Via CM DP module 1 Yes Yes Yes Yes 48; Of which 4 each reserved for ES and HMI 125; In total, up to 512 distributed I/O devices can be connected via AS- i, PROFIBUS or PROFINET Yes No

	Vec
 Autocrossing Industrial Ethernet status LED 	Yes Yes
RS 485	Tes
Transmission rate, max.	12 Mbit/s
Protocols	
PROFIsafe	Yes; V2.4 / V2.6
Number of connections	400 via interrete distorfaces of the ODU and some shed ODs / OMs
Number of connections, max.	128; 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	88
Number of connections per CP/CM	32
Number of S7 routing paths	16
Redundancy mode	Vee
H-Sync forwarding	Yes
Media redundancy	Vaci anticuia Rua Adantar
— Media redundancy	Yes; only via BusAdapter
— 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,	Yes
supported	
 ISO-on-TCP (RFC1006) 	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; max. 78 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
OPC UA	
Runtime license required	Yes; "Small" 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.	4
 Number of nodes of the client interfaces, recommended max. 	1 000
 — Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C max. 	300
 — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. 	20
— Number of elements for one call of	100
OPC_UA_MethodGetHandleList, max.	

— Number of simultaneous calls of the client	1
instructions for session management, per connection, max.	
— Number of simultaneous calls of the client	5
instructions for data access, per connection, max.	
— Number of registerable nodes, max.	5 000
- Number of registerable method calls of	100
OPC_UA_MethodCall, max.	
 — Number of inputs/outputs when calling OPC_UA_MethodCall, max. 	20
• OPC UA Server	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms &
	Condition (A&C), Custom Address Space
 Application authentication 	Yes
— Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15,
	Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
 User authentication 	"anonymous" or by user name & password
 — GDS support (certificate management) 	Yes
 Number of sessions, max. 	32
 Number of accessible variables, max. 	50 000
 — Number of registerable nodes, max. 	10 000
 — Number of subscriptions per session, max. 	50
— Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
 — Number of server methods, max. 	20
 — Number of inputs/outputs per server method, 	20
max.	
 — 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 	15 000
interfaces, max.	
 Alarms and Conditions 	Yes
 — Number of program alarms 	100
 — Number of alarms for system diagnostics 	50
Further protocols	
	50 Yes; MODBUS TCP
Further protocols	
Further protocols MODBUS 	
Further protocols MODBUS S7 message functions	Yes; MODBUS TCP
Further protocols MODBUS S7 message functions Number of login stations for message functions, max.	Yes; MODBUS TCP 32
Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max.	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm"
Further protocols • MODBUS S7 message functions S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering)	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems
Further protocols • MODBUS S7 message functions S7 message functions Number of login stations for message functions, 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 commission (Team Engineering) Status block	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients)
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8
Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms • Number of program alarms • Number of program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe),
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. - of which status variables, max.	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. - of which status variables, max.	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. - of which status variables, max.	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job 200; per job
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 simultaneously active program alarms • Number of program alarms • Number of program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max.	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job 200; per job 200; per job
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. - of which status variables, max. - of which control variables, max. - Forcing • Forcing • Forcing	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job 200; per job
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of variables • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. — of which control variables, max. Forcing • Forcing • Forcing • Number of variables, max.	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job 200; per job 200; per job
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. - of which status variables, max. - of which control variables, max. - Forcing • Forcing • Forcing	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job 200; per job Yes; without fail-safe peripheral inputs/outputs (without fail-safe)
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 simultaneously active program alarms • Number of program alarms • Number of program alarms • Number of alarms for system diagnostics • Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. — of which control variables, max. Prorcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job 200; per job 200; per job 200; per job Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes
Further protocols • MODBUS S7 message functions Number of login stations for message functions, 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 commission (Team Engineering) Status block Single step Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Beroring • Forcing • Forcing • Forcing variables, max. Diagnostic buffer	Yes; MODBUS TCP 32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500 600 100 160 Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters 200; per job 200; per job 200; per job 200; per job 200; per job

Number of configurable Traces 4. Up to 512 KB of data per trace are possible Interrupt diagnostic status information Eigenostic status information Eigenostic status information Eigenostic status information Version Version Version Main TLED Yes Monit ong the supply outging (PWR-LED) Yes Monit on gring the supply outging (PWR-LED) Yes Supported to Exclusion display LINK TXRX Yes Supported to Exclusion display LINK TXRX Yes Supported to Exclusion display LINK TXRX Yes Motion Control Yes, Nutc: The muther of Exclusion gring assistic to cycle time of the PLC program; selection gring assistic to cycle time of the PLC program; selection gring assistic to cycle and assistic cycle and assistic to cycle and assistic to cycle and assistic cycle and assistic to cycle and assistic cycle and assistic cycle and assistic cycle and assistic to cycle and assistic cycle and assi	— of which powerfail-proof	500
Interrupt (diapostics indicates LED Ves ERROR LED Yes • RUNSTOP LED Yes • MAINT LED Yes • Monitoring of the supply voltage (PVR-LED) Yes • Connection display LINK TORX Yes Supported technology objects Midion Control Midion 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 40 - per speed-controlled axis 80 - per speed controlled axis 80 - per probe 40 - per probe 40 - per probe 40 - per probe 40 - Per solutioning axis 11 - que of am (typical value) 14 - Aumber of positioning axes at motion control que of am (typical value) 14 - PROS Yes: Universal PID controller with integrated optimization + PID_Sistip Yes: Donothiler with integrated optimization for valves + PID_Sistip Yes - Hight-gasted countrol Yes		4: Up to 512 KB of data per trace are possible
Diagnostics indication LED Yes • RUNKTOP LED Yes • RENOR LED Yes • MAINT LED Yes • Connection display LINK VIKX Yes Supported technology objects Yes Motion of splay LINK VIKX Yes Supported technology objects Yes, Note: The number of technology objects affects the cycle time of the FLC program, selection guide via the TIA Selection Tool • Number of realizing attraction display LINK VIKX Yes • Required Motion Control resources for underwork Motion Control resources for underwork Motion Control resources 1100 • Per spect-controlled axis 80 - per problowing axis 160 - per problowing axis 160 - per problowing axis 160 - per problowing axis 11 • Aumber of positioning axes at motion control cycle of 6 ms (typical value) 11 • Per problewing axis 11 • Per problewing axis 120 • Positioning axis 120 • Positioning axis 14 • Positioning axis 11 • Positioning axis 120		
• RINNSTOP LED Yes • ERROR LED Yes • Monotion of the supply voltage (PWR-LED) Yes • Monotion of the supply voltage (PWR-LED) Yes • Monotion of orland Yes, Note: The number of technology objects affects the cycle time of the PLC program, selection guide via the TIA Selection Tool • Monotion of a valable Molion Control resources for technology objects 1.20 • Required Molion Control resources for technology objects 60 - per speci-ontrolled and the supply objects 80 - per speci-ontrolled technology objects 80 - Number of posiolining axes at molion contr		
 ERROR LED Yes Monitoring of the supply voltage (PWR-LED) Yes Connection display LINK TX/RX Yes Supported technology objects Who of control Wes 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 Required Motion Control resources — per specific control resources — per synchronous axis = per specific control resources = per can track = por probe = Number of positioning axes at motion control cycle of a ms (typical value) — whome of positioning axes at motion control cycle of a ms (typical value) = Number of positioning axes at motion control cycle of a ms (typical value) = Number of positioning axes at motion control cycle of a ms (typical value) = Number of positioning axes at motion control cycle of a ms (typical value) = Number of positioning axes at motion control cycle of a ms (typical value) = Number of positioning axis = PD_Compact = Yes = PD_Compact = Yes = Portomatic for temperature = Ves = Portomatic for a solution to ratio of 20 years and regare time of 100 hours) = Log dam mode (PEP ang) in accordiance = Ves = Stata.cx: to EC #1500 = Stata.cx: to EC #1500 = Ve	-	Yes
• Monitoring of the supply voltage (PWR-LED) Yes Supported technology objects Yes: Note: The number of technology objects affects the cycle time of technology objects affects the cycle time of technology objects • Number of available Motion Control resources for technology objects affects the cycle time of technology objects 1120 • Required Motion Control resources - - per speed: controlled axis 80 - per synchronous axis 180 - per synchronous axis 180 - per synchronous axis 180 - per cam track 180 - per probe 40 - Positioning axis 180 - mome of positioning axes at motion control 11 - Where of positioning axes at motion control 14 - Controller Yes: PID controller with integrated optimization for valves • PID_Senp Yes: PID controller with integrated optimization for valves • PID_Senp Yes: PID controller with integrated optimization for valves • PID_Senp Yes: PID controller with integrated optimization for valves • PID_Senp Yes: PID controller with integrated optimization for valves • PID_Senp Yes: PID controller with integrated optimizati		
Connection display LINK TX/RX Yes Supported technology objects Motion Control Motion Control Motion Control Number of available Motion Control resources for the PLC program: selection guide via the TIA Selection Tool 1 Ta0 The speed-controlled axis Requires Motion Control resources - per speed-controlled axis Requires Motion Control resources - per speed-controlled axis Requires Motion Control resources - per output can - per output can - per output can - per output can - per probe 40 - per output can - per probe 40 - perotall instaliation for installati	MAINT LED	Yes
Connection display LINK TX/RX Yes Supported technology objects Motion Control Motion Control Motion Control Number of available Motion Control resources for the PLC program: selection guide via the TIA Selection Tool 1 Ta0 The speed-controlled axis Requires Motion Control resources - per speed-controlled axis Requires Motion Control resources - per speed-controlled axis Requires Motion Control resources - per output can - per output can - per output can - per output can - per probe 40 - per output can - per probe 40 - perotall instaliation for installati	 Monitoring of the supply voltage (PWR-LED) 	Yes
Motion Control Yes: Note: The number of technology objects affects the cycle time of technology objects • Number of available Motion Control resources for technology objects 1120 • Perspection Control resources 40 • - per spect-controlled axis 80 per synchronous axis 100 - per output cam 20 - per probe 40 • Positioning axis 100 per probe 40 • Positioning axis 100 per probe 40 • Positioning axis 11 worther of nositioning axes at motion control cycle of an (typical value) 11 Number of positioning axes at motion control cycle of an (typical value) 14 • PD_ Compact Yes; PID controller with integrated optimization for valves • PD_ Temp Yes Counting and measuing * • High-speed counter Yes • Stata cot LEC 61508 SLI. 3 Probability of failure (for service) life of 20 years and regarter time of 100 hours) - Low demand mode: PFDag in accordance with SLI.3 Probability of failure (for service) life of 20 years and regarter		Yes
the PLC program: selection guide via the TIA Selection Tool technology objects Program selection guide via the TIA Selection Tool 120 Per select-controlled axis Per spect-controlled axis Per spect-con	Supported technology objects	
• Number of available Molino Control resources for technology objects 1 120 • Pequired Molino Control resources 40 - per synchronous axis 160 - per synchronous axis 160 - per output cam 20 - per output cam 11 - 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) 14 Controller • PID_Compact Yes: PID controller with integrated optimization for valves • PID_Step Yes: PID controller with integrated optimization for valves Yes: PID controller with integrated optimization for valves • PID-Temp Yes: PID controller with integrated optimization for valves Yes: PID controller with integrated optimization for valves • PID-Temp Yes: PID controller with integrated optimization for valves Yes: PID controller with integrated optimization for valves • PID-Temp Yes: PID controller with integrated optimization for valves Yes: PID controller with integrated optimization for valves • PiD_Compact Yes: VID controller with integrated optimization for valves<	Motion Control	Yes; Note: The number of technology objects affects the cycle time of
eRequired Motion Control resources		the PLC program; selection guide via the TIA Selection Tool
• Required Motion Control resources 40 - per synchronous axis 80 - per synchronous axis 180 - per authoria 80 - Number of positioning axes at motion control cycle of 8 ms (typical value) 11 - Number of positioning axes at motion control cycle of 8 ms (typical value) 14 Controller Yes; Universal PID controller with integrated optimization PID_Step Yes; PID controller with integrated optimization for valves PID-Temp Yes; PID controller with integrated optimization for valves PID-Temp Yes; VID controller with integrated optimization for temperature Counting and measuring Yes • High-speed counter Yes Probabiity of failure (for service life of 20 ye		1 120
		40
- per output cam 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 4 ms (typical value) 14 - Number of positioning axes at motion control cycle of 8 ms (typical value) Yes; Universal PID controller with integrated optimization • PID_Compact Yes; Universal PID controller with integrated optimization for valves • PID-Temp Yes; PID controller with integrated optimization for temperature Counting and measuring * • High-speed counter Yes • Performance level according to ISO 13849-1 PLe • Election S Sill 3 Probability of failure (for service life of 20 years and repair time of 100 hours) - - Low demand mode: PFDay in accordance <2.00E-05		
— per probe 40 ● Positioning axis 11 … Number of positioning axes at motion control 11 … Number of positioning axes at motion control 14 … Number of positioning axes at motion control 14 … PID_Compact Yes; Universal PID controller with integrated optimization ● PID_Temp Yes; PID controller with integrated optimization for valves ● PID_Temp Yes; PID controller with integrated optimization for temperature Counting and measuring • High-speed counter ● PID_Temp Yes; PID controller with integrated optimization for temperature Counting and measuring • Yes Standards, approvals, certificates Yes Highest safety class achievable in safety mode • Le • Performance level according to ISO 13849-1 PLe • Sta. co. to IEC 61508 Stl. 3 Probability of failure (for service life of 20 years and repair time of 100 hours) - Low demand mode: PFDay in accordance - — Low demand mode: PFDay in accordance < 2.00E-05		
 Postioning axis Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 8 ms (typical value) PID_Compact PID_Compact Yes: Universal PID controller with integrated optimization for valves PID_Temp Yes: PID controller with integrated optimization for valves PID_Temp Yes: PID controller with integrated optimization for temperature Ves: PID controller with integrated optimization for valves Ves: PID controller with integrated optimization for temperature Ves: PID controller with integrated optimization for valves Ves: PID controller with integrated optimization for temperature Ves: Volume (for service life of 20 years and repair time of 100 hours) Low demand mode: PFDavg in accordance Ves: Volume of this databon, main. Solution accordance with SIL3 Ambient conditions Ambient conditions max. Solution accordance with SIL3 Ambient conditions max. Solo C Ves: incl. failsation attitude above sea level, max. Solo m; Restrictions for installation attitudes > 2 000 m; see manual configuration / bacer Programming language IAD Yes: incl. failsate Solo m; Restrictins f	•	
cycle of 4 ms (typical value) 14 - Number of positioning axes at motion control cycle of 8 ms (typical value) 14 Controller * • PID_Compact Yes; Universal PID controller with integrated optimization • PID_Step Yes; PID controller with integrated optimization for valves • PID-Temp Yes; PID controller with integrated optimization for temperature Counting and measuring * • High-speed counter Yes Standards, approvals, certificates * Highest staft values activable 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 of 100 hours) - Low demand mode: PFDarg in accordance <2.00E-05		
- Number of positioning axes at motion control cycle of 8 ms (typical value) 14 - PID_Compact Yes; Universal PID controller with integrated optimization • PID_Step Yes; PID controller with integrated optimization for valves • PID-Temp Yes; PID controller with integrated optimization for temperature Countroller Yes; PID controller with integrated optimization for temperature Counting and measuring Yes; • High-speed counter Yes Standards, approvals, certificates PLe Statact to IEC 61508 SIL 3 Probability of failure (for service life of 20 years and repair time of 100 hours) - - Low demand mode: PFDavg in accordance with SIL3 Ambient conditions < 1.00E-09	 Number of positioning axes at motion control 	11
cycle of 8 ms (typical value) Controller • PID_Compact • PID_Step • PID-Temp • PID-Temp • Pid-step • Performance level according to ISO 13849-1 • Performance level according to ISO 13849-1 • Performance level according to ISO 13849-1 • Performance level according to ISO 13849-1 • Pidb demand/continuous mode: PFDavg in accordance • with SiL3 • Tow demand mode: PFDavg in accordance • with all stallation, min. • Anbient conditions Ambient conditions • Morizati installation, max. • O'C • vertical installation, max. • O'C No condensation		
Controller Yes; Universal PID controller with integrated optimization • PID_Step Yes; PID controller with integrated optimization for valves • PID-Temp Yes; PID controller with integrated optimization for temperature Counting and measuring - • High-speed counter Yes Standards, approvals, certificates - Highest safety class achievable in safety mode - • Sta acc. to IEC 61508 SL 3 Probability of failure (for service life of 20 years and repair time of 100 hours) - Low demand mode: PFDavg in accordance with SL3 - Ambient temperature during operation < 1.00E-09		14
• PID_Compact Yes; Universal PID controller with integrated optimization for valves • PID_Temp Yes; PID controller with integrated optimization for valves • PID_temp Yes; PID controller with integrated optimization for temperature • Nigh-speed counter Yes; • Nigh-speed counter Yes Standards, approvals, cortificates		
• 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, cortificates * 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 of 100 hours) - - Low demand mode: PFDavg in accordance with SiL3 Ambient conditions Ambient temperature during operation < 1.00E-09		Vegi Universal DID controller with integrated entimization
• PID-Temp Yes; PID controller with integrated optimization for temperature Counting and measuring Yes Standards, approvals, cortificates Figh-speed counter High-speed counter Yes Standards, approvals, cortificates Figh-speed counter High-stafety class achievable in safety mode Figh-speed counter • Performance level according to ISO 1349-1 PLe • SL acc. to IEC 61508 SL 3 Probability of failure (for service life of 20 years and repair time of 100 hours) - - Low demand mode: PFDavg in accordance with SL3 <1.00E-09		
Counting and measuring Yes High-speed counter Yes Standards, approvals, certificates Highest safety class achievable in safety mode • Performance level according to ISO 13849-1 PLe • SIL acc. to IEC 61508 SIL 3 Probability of failure (for service life of 20 years and repair time of 100 hours)		
High-speed counter Yes Standards, approvals, cortificates 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 of 100 hours)		res, rib controller with integrated optimization for temperature
Standards, approvals, certificates Highest safety class achievable in safety mode • Performance level according to ISO 13849-1 PLe • SIL acc. to IEC 61508 SIL 3 Probability of failure (for service life of 20 years and repair time of 100 hours) - - Low demand mode: PFDavg in accordance with SIL3 < 2.00E-05		Yes
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 of 100 hours) - Low demand mode: PFDavg in accordance with SIL3 < 2.00E-05	0	
 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 of 100 hours) Low demand mode: PFDavg in accordance with SIL3 OBE-05 with SIL3 High demand/continuous mode: PFH in accordance with SIL3 Ambient conditions Ambient temperature during operation horizontal installation, min. -30 °C; No condensation horizontal installation, min. -30 °C; No condensation vertical installation, max. 60 °C vertical installation, max. 50 °C Attitude during operation relating to sea level Installation, max. 50 °C Attitude during operation relating to sea level Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m; see manual configuration / header Programming / header Programming language LAD Yes; incl. failsafe FBD Yes; incl. failsafe STL SGL GRAPH Yes GRAPH Yes GRAPH Yes GRAPH Yes Block protection Yes 		
 SIL acc. to IEC 61508 SIL 3 Probability of failure (for service life of 20 years and repair time of 100 hours) Low demand mode: PFDay in accordance with SIL3 High demand/continuous mode: PFH in accordance with SIL3 Ambient conditions Ambient temperature during operation horizontal installation, min. -30 °C; No condensation horizontal installation, max. 60 °C vertical installation, max. 60 °C vertical installation, max. 50 °C; No condensation vertical installation, max. 50 °C Altitude during operation relating to sea level Installation altitude above sea level, max. 50 °C Altitude during operation relating to sea level Installation altitude above sea level, max. 50 00 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / programming / header Programming language LAD Yes; incl. failsafe SCL SCL Yes SCL Yes Know-how protection Ves Coppy protection Yes 		PLe
Probability of failure (for service life of 20 years and repair time of 100 hours) -	0	
with SL3 - High demand/continuous mode: PFH in accordance with SIL3 Ambient conditions Ambient temperature during operation • horizontal installation, min. -30 °C; No condensation • horizontal installation, max. 60 °C • vertical installation, max. 60 °C • vertical installation, max. 50 °C • vertical installation, max. 50 °C • Vertical installation, max. 50 °C • vertical installation attitude above sea level - • Installation attitude above sea level, max. 5 000 m; Restrictions for installation attitudes > 2 000 m, see manual configuration / header - Programming language - - LAD Yes; incl. failsafe - STL Yes - SCL Yes - SCL Yes - GRAPH Yes Know-how protection/password protection Yes • User program protection/password protection Yes • Block protection Yes	Probability of failure (for service life of 20 years and repair	
High demand/continuous mode: PFH in accordance with SIL3 < 1.00E-09	- Low demand mode: PFDavg in accordance	< 2.00E-05
accordance with SIL3 Ambient conditions Ambient temperature during operation • horizontal installation, min. -30 °C; No condensation • horizontal installation, max. 60 °C • vertical installation, max. 50 °C; No condensation • vertical installation, max. 50 °C • vertical installation, max. 50 °C • vertical installation, max. 50 °C • Installation altitude above sea level - • Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header - Programming language - - LAD Yes; incl. failsafe - FBD Yes; incl. failsafe - STL Yes - SCL Yes - GRAPH Yes - User program protection/password protection Yes • User program protection/password protection Yes • Block protection Yes		
Ambient conditions Ambient temperature during operation • horizontal installation, min. -30 °C; No condensation • horizontal installation, max. 60 °C • vertical installation, max. 50 °C Altitude during operation relating to sea level -30 °C; No condensation • Installation attitude above sea level 5 000 m; Restrictions for installation attitudes > 2 000 m, see manual configuration / header 5 000 m; Restrictions for installation attitudes > 2 000 m, see manual configuration / programming / header - Programming language - - LAD Yes; incl. failsafe - FBD Yes; incl. failsafe - STL Yes - SCL Yes - GRAPH Yes Ves program protection/password protection Yes • User program protection/password protection Yes • Block protection Yes		< 1.00E-09
Ambient temperature during operation horizontal installation, min. horizontal installation, max. 60 °C vertical installation, min. -30 °C; No condensation vertical installation, max. 50 °C Altitude during operation relating to sea level Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header Programming language LAD Yes; incl. failsafe SCL SCL Yes GRAPH Yes User program protection/password protection Yes Copy protection Yes Block protection Yes 		
 horizontal installation, min. -30 °C; No condensation horizontal installation, max. 60 °C vertical installation, max. -30 °C; No condensation vertical installation, max. 50 °C Altitude during operation relating to sea level Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header configuration / programming / header Programming language - LAD Yes; incl. failsafe - STL SCL - SCL Yes - GRAPH Ves Know-how protection Ves Know-how protection/password protection Yes Block protection Yes 		
 horizontal installation, max. 60 °C vertical installation, min. -30 °C; No condensation vertical installation, max. 50 °C Altitude during operation relating to sea level Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header configuration / programming / header Programming language LAD Yes; incl. failsafe FBD Yes; incl. failsafe SCL SCL GRAPH Yes Know-how protection User program protection/password protection Yes Block protection Yes 		20 °C: No condensation
 vertical installation, min. -30 °C; No condensation vertical installation, max. 50 °C Altitude during operation relating to sea level Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header configuration / programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Yes Know-how protection User program protection/password protection Yes — Soly protection Yes — Block protection Yes 	-	
• vertical installation, max.50 °CAltitude during operation relating to sea level• Installation altitude above sea level, max.5 000 m; Restrictions for installation altitudes > 2 000 m, see manualconfiguration / headerconfiguration / programming / headerProgramming language- LADYes; incl. failsafe- FBDYes; incl. failsafe- STLYes- SCLYes- GRAPHYesVesr program protection/password protectionYes• Lopy protectionYes• Block protectionYes		
Altitude during operation relating to sea level 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header restrictions for installation altitudes > 2 000 m, see manual configuration / header Programming / header Programming language - LAD - LAD Yes; incl. failsafe - FBD Yes; incl. failsafe - STL Yes - SCL Yes - GRAPH Yes Know-how protection Yes • User program protection/password protection Yes • Block protection Yes		
● Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / programming / header Programming language - LAD Yes; incl. failsafe - FBD Yes; incl. failsafe - STL Yes - SCL Yes - GRAPH Yes ● User program protection/password protection Yes ● Copy protection Yes ● Block protection Yes		
configuration / header Programming language		5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / programming / header Programming language Yes; incl. failsafe - LAD Yes; incl. failsafe - FBD Yes; incl. failsafe - STL Yes - SCL Yes - GRAPH Yes Vesr program protection/password protection Yes • Copy protection Yes • Block protection Yes		
Programming language - LAD Yes; incl. failsafe - FBD Yes; incl. failsafe - STL Yes - SCL Yes - GRAPH Yes • User program protection/password protection Yes • Copy protection Yes • Block protection Yes		
- LADYes; incl. failsafe- FBDYes; incl. failsafe- STLYes- SCLYes- GRAPHYesKnow-how protectionYes• User program protection/password protectionYes• Copy protectionYes• Block protectionYes		
FBDYes; incl. failsafe STLYes SCLYes GRAPHYesKnow-how protectionYes• User program protection/password protectionYes• Copy protectionYes• Block protectionYes		Yes: incl. failsafe
- STLYes- SCLYes- GRAPHYesKnow-how protectionYes• User program protection/password protectionYes• Copy protectionYes• Block protectionYes		
SCL GRAPHYesKnow-how protectionYesKnow-how protection/password protectionYes• User program protection/password protectionYes• Copy protectionYes• Block protectionYes		
Know-how protection Yes • User program protection/password protection Yes • Copy protection Yes • Block protection Yes		
• User program protection/password protectionYes• Copy protectionYes• Block protectionYes	— GRAPH	Yes
• User program protection/password protectionYes• Copy protectionYes• Block protectionYes	Know-how protection	
Copy protection Yes Block protection Yes		Yes
	Copy protection	Yes
Access protection		Yes
	Access protection	

 protection of confidential configuration data 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Write protection for Failsafe 	Yes
 Protection level: Complete protection 	Yes
programming / cycle time monitoring / header	
lower limit	adjustable minimum cycle time
upper limit	adjustable maximum cycle time
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	265 g
last modified:	4/2/2023