SIEMENS

Data sheet

6AG1512-1DK01-2AB0



SIPLUS ET 200SP CPU 1512SP-1 PN -40...+60°C with conformal coating based on 6ES7512-1DK01-0AB0 . CPU 1512SP-1 PN for ET 200SP, Central processing unit with Work memory 200 KB for program and 1 MB for data, first interface: PROFINET IRT with 3-port switch, 48 ns bit performance, SIMATIC Memory Card required, BusAdapter required for port 1 and 2

Figure similar

General information	
Product type designation	CPU 1512SP-1 PN
Configuration control	
via dataset	Yes
Control elements	
Mode selector switch	1
Supply voltage	
Type of supply voltage	24 V DC
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Input current	
Current consumption (rated value)	0.6 A
Inrush current, max.	4.7 A; Rated value

l²t	0.14 A ² ·s
Power	
Infeed power to the backplane bus	8.75 W
Power loss Power loss, typ.	5.6 W
	5.0 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
 integrated (for program) 	200 kbyte
 integrated (for data) 	1 Mbyte
Load memory	
 Plug-in (SIMATIC Memory Card), max. 	32 Gbyte
Backup	
• maintenance-free	Yes
CPU processing times	
for bit operations, typ.	48 ns
for word operations, typ.	58 ns
for fixed point arithmetic, typ.	77 ns
for floating point arithmetic, typ.	307 ns
for housing point analitoto, typ.	
CPU-blocks	
	2 000; In addition to blocks such as DBs, FBs and FCs, UDTs,
CPU-blocks Number of elements (total)	
CPU-blocks Number of elements (total) DB	2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements
CPU-blocks Number of elements (total)	2 000; In addition to blocks such as DBs, FBs and FCs, UDTs,
CPU-blocks Number of elements (total) DB	 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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
CPU-blocks Number of elements (total) DB • Number range	 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64
CPU-blocks Number of elements (total) DB • Number range • Size, max.	 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB	 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range	 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range • Size, max.	 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range • Size, max. FB • Size, max. FC	 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535 200 kbyte
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range • Size, max. FC • Number range • Number range	2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535 200 kbyte 0 65 535
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range • Size, max. FC • Number range • Size, max.	2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535 200 kbyte 0 65 535
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range • Size, max. FC • Number range • Size, max. FC • Number range • Size, max. FC • Number range • Size, max.	 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535 200 kbyte 0 65 535 200 kbyte
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range • Size, max. FC • Number range • Size, max. OB • Size, max.	2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535 200 kbyte 200 kbyte 200 kbyte
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range • Size, max. FC • Number range • Size, max. OB • Size, max. • Number range • Size, max. • Number range • Size, max. OB • Size, max. • Number of free cycle OBs • Number of time alarm OBs	2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535 200 kbyte 200 kbyte 200 kbyte 100
CPU-blocks Number of elements (total) DB • Number range • Size, max. FB • Number range • Size, max. FC • Number range • Size, max. OB • Size, max. • Number range • Size, max. • Number range • Size, max. OB • Size, max. • Number of free cycle OBs	2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 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 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 0 65 535 200 kbyte 200 kbyte 200 kbyte 100 20

 Number of process alarm OBs 	50
 Number of DPV1 alarm OBs 	3
 Number of isochronous mode OBs 	1
 Number of technology synchronous alarm OBs 	2
 Number of startup OBs 	100
 Number of asynchronous error OBs 	4
 Number of synchronous error OBs 	2
 Number of diagnostic alarm OBs 	1
Nesting depth	
• per priority class	24
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
• Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	128 kbyte; Available retentive memory for bit memories, timers,
max.	counters, DBs, and technology data (axes): 88 KB
Flag	
• Number, 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
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

8 kbyte
8 kbyte
8 kbyte
8 kbyte
32
32 byte; For input and output data respectively
1 280 byte; for central inputs and outputs; depending on configuration
20
1
1
0
64; CPU + 64 modules + server module (mounting width max. 1 m)
1
the number of connectable PtP CMs is only limited by the number of available slots
Hardware clock
6 wk; At 40 °C ambient temperature, typically
10 s; Typ.: 2 s
16
Yes
Yes
Yes
1

Interface Interface types • Number of ports 3: 1. integr. + 2. via BusAdapter • Integrated switch Yes • RJ 45 (Ethernet) Yes; X1 • BusAdapter (PROFINET) Yes: Applicable BusAdapter: BA 2x RJ45, BA 2x FC, BA 2x Protocols • PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes • Web server Yes • Media redundancy Yes • Interface types 1 • Number of ports 1 • RS 485 Yes; Via CM DP module Protocols • • PROFIBUS DP master Yes • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes • Autorossing Yes <	With optical interface	Yes; Via BusAdapter BA 2x SCRJ
Interface types 3; 1. integr. + 2. via BusAdapter • Number of ports 3; 1. integr. + 2. via BusAdapter • integrated switch Yes • RJ 45 (Elhernet) Yes: X1 • BusAdapter (PROFINET) Yes: Applicable BusAdapter: BA 2x RJ45, BA 2x FC, BA 2x SCRJ, BA SCRJ / RJ45, BA SCRJ / FC Protocols - • PROFINET IO Device Yes • SIMATIC communication Yes • Qope IE communication Yes • Web server Yes • Media redundancy Yes 2. Interface - Interface types 1 • Number of ports 1 • RS 485 Yes; Via CM DP module Protocols - • PROFIBUS DP master Yes • SIMATIC communication Yes • SIMATIC communication Yes • SIMATIC communication Yes • Interface types - RJ 45 (Ethernet) - • 100 Mbps Yes • Autonegotation Yes • Autonegotation Yes • Autonegotation Yes • Transmission rat	1. Interface	
• integrated switchYes• RJ 45 (Ethernet)Yes; X1• BusAdapter (PROFINET)Yes; X1• BusAdapter (PROFINET)SCRJ, BA SCRJ / RJ45, BA SCRJ / FCProtocols• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes• Web serverYes• Media redundancyYes2. InterfaceProtocols1• R3 485Yes; Via CM DP moduleProtocols1• R4 485Yes; Via CM DP moduleProtocols1• SIMATIC communicationYes• SIMATIC communicationYes• SIMATIC communicationYes• SIMATIC communicationYes• SIMATIC communicationYes• Industrial Ethernet status LEDYes• Industrial Ethernet status LEDYes• Industrial Ethernet status LEDYes• Number of connections max.88• Number of connections via integrated interfaces88• Number of connections via integrated interfaces88• Number of Strouting paths16PROFINET IO Controller16		
IRJ 45 (Elhernet) Yes; X1 BusAdapter (PROFINET) Yes; Applicable BusAdapter: BA 2x RJ45, BA 2x FC, BA 2x PROFINET IO Controller Yes • SIMATIC communication Yes • Open IE communication Yes • Web server Yes • Media redundancy Yes 2. Interface 1 Interface types 1 • Number of ports 1 • PROFIBUS DP master Yes; Via CM DP module Protocols - • PROFIBUS DP save Yes • SIMATIC communication Yes • SIMATIC communication Yes • Interface types - • INterface types - • Industrial Ethemet status LED Yes • Industrial Ethemet status LED Yes • Industrial Ethemet status LED Yes • Number of connections reserved for 10 ES/HMI/web 88 • Number	Number of ports	3; 1. integr. + 2. via BusAdapter
• Buskdapter (PROFINET) Yes: Applicable Buskdapter: BA 2x RJ45, BA 2x FC, BA 2x SCRJ, BA SCRJ / FC Protocols · • PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes • Web server Yes • Media redundancy Yes • Interface Bypes 1 • Number of ports 1 • RS 485 Yes; Via CM DP module ProofIBUS DP master Yes • PROFIBUS DP master Yes • SIMATIC communication Yes • Number of ports 1 • RS 485 Yes • PROFIBUS DP master Yes • SIMATIC communication Yes Interface types Yes RJ 45 (Ethernet) Yes • 100 Mbps Yes • Autoerosting Yes • Autoerosting Yes • Industrial Ethernet status LED Yes • RS 485 Immer of connections rearved for • Number of connections rearved for 10 ES/HMI/web 88	 integrated switch 	Yes
SCRJ, BA SCRJ / RJ45, BA SCRJ / FC PROFINET IO Controller Yes PROFINET IO Controller Yes PROFINET OD Device Yes SIMATIC communication Yes Open IE communication Yes Web server Yes Media redundancy Yes 2. Interface Yes Number of ports 1 • RS 485 Yes; Via CM DP module Protocols Yes • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types Yes RJ 45 (Ethernet) Yes • 100 Mbps Yes • Autonegoliation Yes • Autoenzosing Yes • Industrial Ethernet status LED Yes • Re 485 Yes • Transmission rate, max. 12 Mbit/s Protocols Yes • Number of connections, max. 88 • Number of connections via integrated interfaces 88 • Number of connection	• RJ 45 (Ethernet)	Yes; X1
• PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes • Web server Yes • Media redundancy Yes 2. Interface Interface Interface types • • Number of ports 1 • RS 485 Yes; Via CM DP module Protocols • • PROFIBUS DP master Yes • SIMATIC communication Yes • SIMATIC communication Yes • SIMATIC communication Yes • SIMATIC communication Yes • Interface types Yes • Ido Mbps Yes • Autorcossing Yes • Industrial Ethernet status LED Yes • Transmission rate, max. 12 Mbit/s Protocols ************************************	 BusAdapter (PROFINET) 	
PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes • Web server Yes • Media redundancy Yes 2. Interface Interface types • Number of ports 1 • RS 485 Yes; Via CM DP module Protocols Interface types • PROFIBUS DP master Yes • PROFIBUS DP master Yes • SIMATIC communication Yes SIMATIC communication Yes • Number of ports 1 • Number of ports 1 • ROFIBUS DP master Yes • SIMATIC communication Yes • SIMATIC communication Yes Interface types Yes R 426 Yes • Autoengotiation Yes • Autoengotiation Yes • Industrial Ethernet status LED Yes R 485 12 Mbit/s Protocols Interfaces • Number of connections, max. 83 • Number of connections via integrated interfaces 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller Interface	Protocols	
• SIMATIC communication Yes • Open IE communication Yes • Web server Yes • Media redundancy Yes 2. Interface Yes Interface types 1 • Number of ports 1 • RS 485 Yes; Via CM DP module Protocols • • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types Yes RJ 45 (Ethernet) Yes • 100 Mbps Yes • Autonegotiation Yes • Autocrossing Yes • Industrial Ethernet status LED Yes • Transmission rate, max. 12 Mbit/s Protocols Number of connections, max. • Number of connections via integrated interfaces 88 • Number of connections via integrated 88 • Number of S7 routing paths 16 PROFILINET IO Controller 16	PROFINET IO Controller	Yes
Open IE communicationYes• Open IE communicationYes• Web serverYes• Media redundancyYes2. InterfaceInterface types• Number of ports1• RS 485Yes; Via CM DP moduleProtocolsInterface types• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• SIMATIC communicationYesInterface typesInterface typesRJ 45 (Ethernet)Yes• 100 MbpsYes• AutorossingYes• Industrial Ethernet status LEDYesRS 485Industrial Ethernet status LEDYesYesNumber of connections, max.88• Number of connections wai integrated interfaces88• Number of connections via integrated interfaces88• Number of S7 routing paths16PROFINET IO ControllerFinderface set	PROFINET IO Device	Yes
• Web server Yes • Media redundancy Yes 2. Interface Interface types • Number of ports 1 • RS 485 Yes; Via CM DP module Protocols Interface types • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types Interface types RI 45 (Ethernet) Yes • 100 Mbps Yes • Autocrossing Yes • Industrial Ethernet status LED Yes RI 485 Interface types • Transmission rate, max. 12 Mbit/s Protocols Interfaces • Number of connections, max. 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller Interfaces	SIMATIC communication	Yes
Media redundancy Yes 2. Interface Interface types • Number of ports 1 • RS 485 Yes; Via CM DP module Protocols • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autonegotiation Yes • Autoregotiation Yes • Industrial Ethernet status LED Yes RS 485 • Transmission rate, max. 12 Mbit/s Protocols Number of connections, max. 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller	Open IE communication	Yes
2. Interface Interface types • Number of ports 1 • RS 485 Yes; Via CM DP module Protocols • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types Interface types RJ 45 (Ethernet) Yes • 100 Mbps Yes • Autonegotiation Yes • Autorcossing Yes • Industrial Ethernet status LED Yes RS 485 Transmission rate, max. • Transmission rate, max. 12 Mbit/s Protocols Number of connections, max. • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller 10	• Web server	Yes
Interface types 1 • RS 485 Yes; Via CM DP module Protocols • • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types • RJ 45 (Ethernet) • • 100 Mbps Yes • Autonegotiation Yes • Autonegotiation Yes • Industrial Ethernet status LED Yes RS 485 • • Transmission rate, max. 12 Mbit/s Protocols • Number of connections, max. 88 • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller 16	Media redundancy	Yes
• Number of ports 1 • RS 485 Yes; Via CM DP module Protocols ************************************	2. Interface	
• RS 485 Yes; Via CM DP module Protocols Yes • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types Interface types RJ 45 (Ethernet) Yes • 100 Mbps Yes • Autonegotiation Yes • Autocrossing Yes • Industrial Ethernet status LED Yes RS 485 Ital Wbit/s Protocols Ital Wbit/s Protocols 88 • Number of connections, max. 88 • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller Figure 10	Interface types	
Protocols • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types Interface types RJ 45 (Ethernet) Yes • 100 Mbps Yes • Autonegotiation Yes • Autorcossing Yes • Industrial Ethernet status LED Yes RS 485 Transmission rate, max. • Transmission rate, max. 12 Mbit/s Protocols Number of connections, max. • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller Free Status Set	Number of ports	1
• PROFIBUS DP master Yes • PROFIBUS DP slave Yes • SIMATIC communication Yes Interface types Interface types RJ 45 (Ethernet) Yes • 100 Mbps Yes • Autonegotiation Yes • Autocrossing Yes • Industrial Ethernet status LED Yes RS 485 12 Mbit/s Protocols Number of connections, max. • Number of connections reserved for ES/HMI/web 10 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller Free	• RS 485	Yes; Via CM DP module
PROFIBUS DP slave Yes SIMATIC communication Yes Interface types RJ 45 (Ethernet) 100 Mbps Yes Autonegotiation Yes Autoregotiation Yes Autocrossing Yes Industrial Ethernet status LED Yes RS 485 Transmission rate, max. 12 Mbit/s Protocols Number of connections, max. 88 Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths 16 PROFINET IO Controller	Protocols	
• SIMATIC communication Yes Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autonegotiation Yes • Autocrossing Yes • Industrial Ethernet status LED Yes RS 485 Yes • Transmission rate, max. 12 Mbit/s Protocols Industrial Ethernet of connections, max. • Number of connections reserved for ES/HMI/web 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller Free Status IC Status	PROFIBUS DP master	Yes
Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autonegotiation Yes • Autorossing Yes • Industrial Ethernet status LED Yes RS 485 Yes • Transmission rate, max. 12 Mbit/s Protocols Yes Number of connections, max. 88 • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated 88 • Number of S7 routing paths 16 PROFINET IO Controller 16	PROFIBUS DP slave	Yes
RJ 45 (Ethernet) • 100 Mbps Yes • Autonegotiation Yes • Autocrossing Yes • Autocrossing Yes • Industrial Ethernet status LED Yes RS 485 Yes • Transmission rate, max. 12 Mbit/s Protocols Yes Number of connections, max. 88 • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated 88 • Number of S7 routing paths 16 PROFINET IO Controller Yes	 SIMATIC communication 	Yes
• 100 MbpsYes• AutonegotiationYes• AutocrossingYes• Industrial Ethernet status LEDYesRS 485Yes• Transmission rate, max.12 Mbit/sProtocolsNumber of connections, max.88• Number of connections reserved for ES/HMI/web10• Number of connections via integrated interfaces88• Number of S7 routing paths16PROFINET IO ControllerYes	Interface types	
• Autonegotiation Yes • Autocrossing Yes • Industrial Ethernet status LED Yes RS 485 12 Mbit/s • Transmission rate, max. 12 Mbit/s Protocols • Number of connections, max. 88 • Number of connections reserved for 10 ES/HMI/web 10 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller Ves	RJ 45 (Ethernet)	
• Autocrossing Yes • Industrial Ethernet status LED Yes RS 485 12 Mbit/s • Transmission rate, max. 12 Mbit/s Protocols Number of connections, max. • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller 16	• 100 Mbps	Yes
Industrial Ethernet status LED Yes RS 485 • Transmission rate, max. 12 Mbit/s Protocols Number of connections, max. 88 • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths 16 PROFINET IO Controller	 Autonegotiation 	Yes
RS 485 • Transmission rate, max. 12 Mbit/s Protocols	Autocrossing	Yes
• Transmission rate, max. 12 Mbit/s Protocols Number of connections • Number of connections, max. 88 • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller 16	 Industrial Ethernet status LED 	Yes
Protocols Number of connections 88 • Number of connections, max. 88 • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated 88 • Number of connections via integrated 88 • Number of s7 routing paths 16 PROFINET IO Controller 10	RS 485	
Number of connections 88 • Number of connections max. 88 • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated 88 interfaces 16 PROFINET IO Controller 16	• Transmission rate, max.	12 Mbit/s
• Number of connections, max. 88 • Number of connections reserved for 10 ES/HMI/web 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16 PROFINET IO Controller 88		
 Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths PROFINET IO Controller 		
ES/HMI/web 88 • Number of connections via integrated interfaces 88 • Number of S7 routing paths 16		
interfaces 16 PROFINET IO Controller 16		10
PROFINET IO Controller	-	88
	 Number of S7 routing paths 	16
Services	PROFINET IO Controller	
	Services	

— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	Yes
— Open IE communication	Yes
— IRT	Yes
— PROFlenergy	Yes
— Prioritized startup	Yes; Max. 32 PROFINET devices
— Number of connectable IO Devices, max.	128; In total, up to 253 distributed I/O devices can be connected via PROFIBUS or PROFINET
— Of which IO devices with IRT, max.	64
— Number of connectable IO Devices for RT,	128
max.	
— of which in line, max.	128
 Number of IO Devices that can be 	8
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 625 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 cycles 	Update time = set "odd" send clock (any multiple of 125 μs : 375 μs , 625 μs 3 875 μs)
Update time for RT	
— for send cycle of 250 µs	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
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes

- IRT Yes - PROFInengy Yes - Shared device Yes - Number of IO Controllers with shared device, max. 4 Redundancy mode - • MRP Yes: as MRP redundancy manager and/or MRP client; max. number of devices in the ring; 50 SIMATIC communication - • S7 communication, as client Yes • S7 communication, as client Yes • User data per job, max. 64 kbyle • Data length, max. 64 kbyle - Data length, max. 64 kbyle - several passive connections per port, supported Yes • IDOP Yes - Data length, max. 64 kbyle • UDP Yes - Data length, max. 64 kbyle • UDP Yes - Data length, max. 1472 byle • UDP Yes • Data length, max. 1472 byle • DDP Yes		
- Shared device Yes - Number of IO Controllers with shared device, max. 4 Redundancy mode Yes, as MRP redundancy manager and/or MRP client; max. number of devices in the ring; 50 SiMATIC communication Yes * S7 communication, as server Yes * S7 communication, as device Yes * TOPIP Yes • Data length, max. 64 kbyte - several passive connections per port, supported Yes • IDOP Yes - Data length, max. 64 kbyte • UDP Yes - Data length, max. 64 kbyte • UDP Yes • DocP Yes • DocP Yes • HTTP Yes Standard and user-defined pages • HTTP Yes • Number of connectons, max. 48 Service		
Number of IO Controllers with shared device, max. 4 Redundancy mode		
device, max.redundancy modeRefunctionYes; as ARP redundancy manager and/or MRP client, max. number of devices in the ring: 50SIMATIC communicationYesST communication, as clientYesST communication, as clientSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)Open IE communicationSee caline help (ST communication, user data size)SupportedYes- Data length, max.See Caline help (ST communication, user data size)- Data length, max.I 472 byte- DGLPYes- HTTPYes Standard and user-defined pages- HTTPYes Standard and user-defined pages- HTTPYes Standard and user-defined pages- PGVOP communicationYes- PGVOP communicationYes- StroutingYes- Data length is provideYes- Data length is provideNo- Data length is provideNo- Data length is pr		
Redundancy mode Yes; as MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 SIMATIC communication under of devices in the ring: 50 SIMATIC communication, as server 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 64 kbyte - Data length, max. 64 kbyte - Sola length, max. 64 kbyte - several passive connections per port, supported Yes - Data length, max. 64 kbyte - Data length, max. 94 Ses - Dota length, max. 94 Ses - DCP Yes - HTCP Yes: Standard and user-defi		4
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• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communication-• TCP/IPYes• Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte• Data length, max.64 kbyte• UDPYes- Data length, max.1472 byte• DHCPNo• SIMPYes• DCPYes• HTTPYes: Standard and user-defined pages• HTTPYes: Standard and user-defined pages• PG/IBUS DP master48• Services PG/OP communicationYes- ST routingYes- Data record routingYes- Isochronous modeNo- EquidistanceNo- Activation/deactivation of DP slavesYes• Activation/deactivation of DP slavesYes• Activation/deactivation of DP slavesYes• Activation/deactivation of DP slavesYes• MODBUSYes: MODBUS TCP		
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• UDPYes- Data length, max.1 472 byte• DHCPNo• SNMPYes• DCPYes• LLDPYes• LLDPYes• Web serverYes; Standard and user-defined pages• HTTPYes; Standard and user-defined pages• HTTPSYes; Standard and user-defined pages• Number of connections, max.48ServicesYes- PG/OP communicationYes- S7 routingYes- Data record routingYes- Isochronous modeNo- EquidistanceNo- Number of DP slaves125- Activation/deactivation of DP slavesYes; MODBUS TCP• MODBUSYes; MODBUS TCP	 ISO-on-TCP (RFC1006) 	Yes
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• DCPYes• LLDPYesWeb serverYes; Standard and user-defined pages• HTTPYes; Standard and user-defined pages• HTTPSYes; Standard and user-defined pages• HTTPSYes; Standard and user-defined pages• Number of connections, max.48ServicesYes- PG/OP communicationYes- S7 routingYes- Data record routingYes- Isochronous modeNo- EquidistanceNo- Number of DP slaves125- Activation/deactivation of DP slavesYes- MODBUSYes; MODBUS TCPMedia redundancyYes; MODBUS TCP	• DHCP	No
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Web server • HTTP Yes; Standard and user-defined pages • HTTPS Yes; Standard and user-defined pages • HTTPS Yes; Standard and user-defined pages PROFIBUS DP master Yes; Standard and user-defined pages • Number of connections, max. 48 Services - - PG/OP communication Yes - S7 routing Yes - Data record routing Yes - Isochronous mode No - Equidistance No - Number of DP slaves 125 - Activation/deactivation of DP slaves Yes; MODBUS TCP • MODBUS Yes; MODBUS TCP	• DCP	Yes
• HTTPYes; Standard and user-defined pages• HTTPSYes; Standard and user-defined pagesPROFIBUS DP master48• Number of connections, max.48Services PG/OP communicationYes- S7 routingYes- Data record routingYes- Isochronous modeNo- EquidistanceNo- Number of DP slaves125- Activation/deactivation of DP slavesYes; MODBUS TCPMODBUSYes; MODBUS TCP	• LLDP	Yes
• HTTPSYes; Standard and user-defined pagesPROFIBUS DP master• Number of connections, max.48Services- PG/OP communicationYes- S7 routingYes- Data record routingYes- Isochronous modeNo- EquidistanceNo- Number of DP slaves125- Activation/deactivation of DP slavesYes; MODBUSFurther protocolsYes; MODBUS TCP	Web server	
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• Number of connections, max. 48 Services - PG/OP communication Yes - S7 routing Yes - Data record routing Yes - Isochronous mode No - Equidistance No - Number of DP slaves 125 - Activation/deactivation of DP slaves Yes • MODBUS Yes; MODBUS TCP	• HTTPS	Yes; Standard and user-defined pages
Services - PG/OP communication Yes - S7 routing Yes - Data record routing Yes - Isochronous mode No - Equidistance No - Number of DP slaves 125 - Activation/deactivation of DP slaves Yes Further protocols Yes; MODBUS TCP Media redundancy Yes; MODBUS TCP	PROFIBUS DP master	
PG/OP communicationYes S7 routingYes Data record routingYes Isochronous modeNo EquidistanceNo Number of DP slaves125 Activation/deactivation of DP slavesYesFurther protocolsYes• MODBUSYes; MODBUS TCPMedia redundancyYes; MODBUS TCP	 Number of connections, max. 	48
- S7 routingYes- Data record routingYes- Isochronous modeNo- EquidistanceNo- Number of DP slaves125- Activation/deactivation of DP slavesYesFurther protocols• MODBUSYes; MODBUS TCPMedia redundancyYes; MODBUS TCP	Services	
- Data record routing Yes - Isochronous mode No - Equidistance No - Number of DP slaves 125 - Activation/deactivation of DP slaves Yes Further protocols Yes; MODBUS ModBus Yes; MODBUS TCP	— PG/OP communication	Yes
- Isochronous mode No - Equidistance No - Number of DP slaves 125 - Activation/deactivation of DP slaves Yes Further protocols Yes; MODBUS TCP Media redundancy Yes; MODBUS TCP	— S7 routing	Yes
- Equidistance No - Number of DP slaves 125 - Activation/deactivation of DP slaves Yes Further protocols Yes; MODBUS TCP Media redundancy Yes; MODBUS TCP	— Data record routing	Yes
- Number of DP slaves 125 - Activation/deactivation of DP slaves Yes Further protocols Yes; MODBUS TCP Media redundancy Yes; MODBUS TCP	— Isochronous mode	No
Activation/deactivation of DP slaves Yes Further protocols Yes; MODBUS TCP Media redundancy Yes; MODBUS TCP	— Equidistance	No
Further protocols • MODBUS Yes; MODBUS TCP	— Number of DP slaves	125
MODBUS Yes; MODBUS TCP Media redundancy	 Activation/deactivation of DP slaves 	Yes
Media redundancy	Further protocols	
	• MODBUS	Yes; MODBUS TCP
Switchover time on line break, typ. 200 ms	Media redundancy	
	• Switchover time on line break, typ.	200 ms

 Number of stations in the ring, max. 	50
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; Only with PROFINET; with minimum OB 6x cycle of 625 μs
S7 message functions	
Number of login stations for message functions, max.	32
Program alarms	Yes
Number of configurable program messages, max.	5 000
Number of simultaneously active program alarms	
 Number of program alarms 	300
 Number of alarms for system diagnostics 	100
 Number of alarms for motion technology objects 	80
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 3 engineering
	systems
Status block	Yes; up to 8 simultaneously
Single step	No
Status/control	
 Status/control variable 	Yes
• Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
 Number of variables, max. 	
— of which status variables, max.	200; per job
— of which control variables, max.	200; per job
Forcing	
Forcing	Yes
 Forcing, variables 	Peripheral inputs/outputs
 Number of variables, max. 	200
Diagnostic buffer	
• present	Yes
• Number of entries, max.	1 000
— of which powerfail-proof	500
Traces	
 Number of configurable Traces 	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Monitoring of the supply voltage (PWR-LED)	Yes

 Connection display LINK TX/RX 	Yes
Supported technology objects	
Motion Control	Yes
 Speed-controlled axis 	
 — Number of speed-controlled axes, max. 	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
 Positioning axis 	
— Number of positioning axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
 Synchronized axes (relative gear synchronization) 	
— Number of axes, max.	3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
External encoders	
— Number of external encoders, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
Controller	_
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
 High-speed counter 	Yes
Ambient conditions	
Ambient temperature during operation	
 horizontal installation, min. 	-40 °C; = Tmin (incl. condensation/frost)
 horizontal installation, max. 	60 °C; = Tmax
 vertical installation, min. 	-40 °C; = Tmin
 vertical installation, max. 	50 °C; = Tmax
Altitude during operation relating to sea level	
 Installation altitude above sea level, max. 	5 000 m
• Ambient air temperature-barometric pressure- altitude	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m)
Relative humidity	
 With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	

 Resistant to commercially available 	Yes; Incl. diesel and oil droplets in the air
coolants and lubricants	
Use in stationary industrial systems	
 to biologically active substances according to EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
 to chemically active substances according to EN 60721-3-3 	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
 — to mechanically active substances according to EN 60721-3-3 	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
 Against mechanical environmental conditions acc. to EN 60721-3-3 	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea	
 to biologically active substances according to EN 60721-3-6 	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
 to chemically active substances according to EN 60721-3-6 	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2- 52 (severity degree 3); *
 — to mechanically active substances according to EN 60721-3-6 	Yes; Class 6S3 incl. sand, dust; *
 Against mechanical environmental conditions acc. to EN 60721-3-6 	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
 Against chemically active substances acc. to EN 60654-4 	Yes; Class 3 (excluding trichlorethylene)
 Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04 	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
 — Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
 Coatings for printed circuit board assemblies acc. to EN 61086 	Yes; Class 2 for high availability
 Protection against fouling acc. to EN 60664-3 	Yes; Type 1 protection
 Military testing according to MIL-I-46058C, Amendment 7 	Yes; Discoloration of coating possible during service life
 Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A 	Yes; Conformal coating, Class A
Configuration	
Programming	
Programming language	
— LAD	Yes

— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
 User program protection/password protection 	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Complete protection 	Yes
Cycle time monitoring	
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.	310 g
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