SIEMENS

Data sheet

6ES7215-1AG40-0XB0



SIMATIC S7-1200, CPU 1215C, compact CPU, DC/DC/DC, 2 PROFINET ports, onboard I/O: 14 DI 24 V DC; 10 DO 24 V DC; 0.5A; 2 AI 0-10 V DC, 2 AO 0-20 mA DC, Power supply: DC 20.4-28.8V DC, Program/data memory 125 KB

General information	
Product type designation	CPU 1215C DC/DC/DC
Firmware version	V4.5
Engineering with	
Programming package	STEP 7 V17 or higher
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Load voltage L+	
Rated value (DC)	24 V
 permissible range, lower limit (DC) 	20.4 V
 permissible range, upper limit (DC) 	28.8 V
Input current	
Current consumption (rated value)	500 mA; CPU only
Current consumption, max.	1 500 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V DC
l²t	0.5 A ² ·s
Output current	
for backplane bus (5 V DC), max.	1 600 mA; Max. 5 V DC for SM and CM
Encoder supply	
24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	12 W
Memory	
Work memory	
integrated	125 kbyte
expandable	No
Load memory	
• integrated	4 Mbyte
 Plug-in (SIMATIC Memory Card), max. 	with SIMATIC memory card
Backup	
• present	Yes
 maintenance-free 	Yes

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without battery	Yes
CPU processing times	
for bit operations, typ.	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction
CPU-blocks	2.0 ps, 7 mondonom
Number of blocks (total)	DBs, FCs, FBs, counters and timers. The maximum number of
Number of blocks (total)	addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used
OB	
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	14 kbyte
Flag	
• Size, max.	8 kbyte; Size of bit memory address area
Local data	
per priority class, max.	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
Address area	
Process image	
 Inputs, adjustable 	1 kbyte
 Outputs, adjustable 	1 kbyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
Time of day	
Clock	
Hardware clock (real-time)	Yes
Backup time	480 h; Typical
Deviation per day, max.	±60 s/month at 25 °C
Digital inputs	
Number of digital inputs	14; Integrated
of which inputs usable for technological functions	6; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	14
Input voltage	
Rated value (DC)	24 V
• for signal "0"	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA
Input delay (for rated value of input voltage)	10 V DO U(2.0 HI) (
for standard inputs	
— parameterizable	0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable
parametenzable	in groups of four
— at "0" to "1", min.	0.2 ms
— at "0" to "1", max.	12.8 ms
for interrupt inputs	
— parameterizable	Yes
for technological functions	
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	10
of which high-speed outputs	4; 100 kHz Pulse Train Output
	, , , , , , , , , , , , , , , , , , , ,
Limitation of inductive shutdown voltage to	L+ (-48 V)

Switching capacity of the outputs	
 with resistive load, max. 	0.5 A
on lamp load, max.	5 W
Output voltage	
for signal "0", max.	0.1 V; with 10 kOhm load
● for signal "1", min.	20 V
Output current	
● for signal "1" rated value	0.5 A
for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	
• "0" to "1", max.	1 µs
• "1" to "0", max.	5 μs
Switching frequency	
of the pulse outputs, with resistive load, max.	100 kHz
Relay outputs	
Number of relay outputs	0
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
Analog inputs	
Number of analog inputs	2
Input ranges	
Voltage	Yes
Input ranges (rated values), voltages	103
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	≥100k ohms
Cable length	2 TOOK OTHIS
• shielded, max.	100 m; twisted and shielded
Analog outputs	100 III, twisted and sincided
Analog outputs	
Ni walana af awalan a wasanta	0
Number of analog outputs	2
Output ranges, current	
Output ranges, current • 0 to 20 mA	2 Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs	
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel	Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max.	Yes 10 bit
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable	Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max.	Yes 10 bit
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable	Yes 10 bit Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel)	Yes 10 bit Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs	Yes 10 bit Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel	Yes 10 bit Yes 625 µs
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max.	Yes 10 bit Yes 625 µs
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder	Yes 10 bit Yes 625 µs
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders	Yes 10 bit Yes 625 µs 10 bit
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface	Yes 10 bit Yes 625 µs 10 bit
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor	Yes 10 bit Yes 625 µs 10 bit Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes Yes Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes Yes Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet)	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes Yes Yes Yes Yes Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes Yes Yes Yes Yes Yes Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes Yes Yes Yes Yes Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes Yes Yes Yes Yes Yes Yes Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • PROFINET IO Controller	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols	Yes 10 bit Yes 625 µs 10 bit Yes PROFINET Yes Yes Yes Yes Yes Yes Yes Yes

* Web server	Open IE communication	Yes; Optionally also encrypted
• Transmission rate, max. • Transmission rate, max. Services - PSiOP communication - Isochronous mode - IRT - PROFlenery - Prioritized startup - Number of Connectable 10 Devices max Number of connectable 10 Devices for RT, max Number of connectable 10 Devices for RT, max of which in line, max of which in line, max Updating time - Number of 10 Devices that can be simultaneously activate/descrivated, max Updating time - PROFler to Device - Number of 10 Devices that can be simultaneously activate/descrivated, max Updating time - PROFler to Device - Number of 10 Devices that can be simultaneously activate/descrivated, max Updating time - PROFler to Device - Number of 10 Devices that can be simultaneously activated/descrivated, max Updating time - PROFler to Device - Number of 10 Devices that can be simultaneously activated/descrivated, max Updating time - PROFler to Device - Number of 10 Devices that can be simultaneously activated/descrivated, max Updating time - PROFler to Device - Number of 10 Devices that can be simultaneously activated/descrivated, max Updating time - PROFler to Device - Number of 10 Controllers with shared device, max PROFler to Device - Number of 10 Controllers with shared device, max Protocols - Supports protocol for PROFINET IO - PROFIBUS - Yes: OPC UA Server - AS-Interface - Yes: OPC UA Server - Number of 10 Controllers with shared device, max Yes - ULDP - Data length, max Yes - Data length, max Yes - Data length, max Yes - Use-of-of-of-of-of-of-of-of-of-of-of-of-of-		
	Media redundancy	Yes
Services - PG(OP communication - Isochronous mode - IRT - PROFlenergy - Promittzed startup - Number of IO devices with prioritized startup, max Number of connectable IO Devices, max Number of connectable IO Devices for RT, max Number of connectable IO Devices for RT, max A with in line, max A with in line, max A with in line, max A with interval in a	PROFINET IO Controller	
- PGOP communication - Isochronous mode - IRT - PROFilenergy - Prioritized startup, max Number of Connectable IO Devices, max Number of Connectable IO Devices for RT, max Number of Connectable IO Devices for RT, max Of which in line, max Updating time - Activation/deactivation of IO Devices - Number of ID Devices that can be simultaneously activated/deactivated, max Updating time - PROFIDE TO Devices - PGOP communication - Isochronous mode - IRT - PROFIDE TO Device - Number of IO Controllers with shared device, max. - PROFIDE TO Device - PROFIDE TO Device - PROFIDE TO Devices - PGOP communication - Isochronous mode - IRT - No - PROFIDE TO Device - Number of IO Controllers with shared device, max PROFIDE TO Device Services - Ves - Shared device - Number of IO Controllers with shared device, max PROFIDE TO PROFINET IO - PROFIDE TO PROFINET IO - PROFIDE TO TO The Controllers with shared device, max PROFIDE TO The Controllers with shared device, max Protocols - Protocols - Protocols - PROFIDE TO The Controllers with shared device, max PROFIDE TO The Controllers with shared device,	 Transmission rate, max. 	100 Mbit/s
No	Services	
— IRT	— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
- PROFlenergy Yes - Number of Connectable 10 Devices max Number of connectable 10 Devices for RT, max Number of connectable 10 Devices for RT, max of which in line, max of which in line, max Achivation/deactivation of 10 Devices - Number of Connectable 10 Devices for RT, max of which in line, max Achivation/deactivation of 10 Devices - Number of 10 Devices that can be simultaneously activated/deactivated, max Updating time communication component set for PROFINET 10, on the number of 10 devices and the quantity of configured user data. PROFINET IO Device Services - PG/OP communication - Isochronous made - IRT - No - PROFlenergy - Shared device - Number of 10 Controllers with shared device max. Protocols - Supports protocol for PROFINET IO - PROFIBUS - OPC UA - Yes - PROFIBUS - Yes; CM 1243-5 (master) or CM 1242-5 (slave) required - Yes; CM 1243-2 required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-3 (master) or CM 1242-5 (slave) required - Yes; CM 1243-5 (master) or CM 1242-5 (slave) required - Yes; CM 1243-5 (master) or CM 1242-5 (slave) required - Yes; CM 1243-5 (master) or CM 1242-5 (slave) required - Yes; CM 1243-5 (master) or CM 1242-5 (slave) required - Yes; CM 1243-5 (master) or CM 1242-5 (slave) required - Yes;	 Isochronous mode 	No
Prioritized startup Number of I O devices with prioritized startup, max. Number of connectable IO Devices, max. Number of connectable IO Devices for RT, max. of which in line, max. Activation/deactivation of IO Devices Number of IO Devices that can be simultaneously activated/deactivated, max. Updating time Proceeds Services PGOP communication IRT PROFilenergy Shared device Number of IO Controllers with shared device, max. PROFINET IO Device Services PPROFILE I O Device Services PROFILE I O Device Services PROFINET IO Device Services PROFILE I O Device Services Protocols (I Device I De	— IRT	No
	— PROFlenergy	No
max. - Number of connectable IO Devices, max Number of connectable IO Devices for RT, max. - Of which in line, max Activation/deactivation of IO Devices - Number of IO Devices that can be simultaneously activated/deactivated, max Updating time PROFINET IO Device Services - PGOP communication - Isochronous mode - Isochronous mode - IRT - PROFlenergy - Shared device - Number of IO Devices with shared device, max. PROFINET IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO - Yes; cM 1243-5 (master) or CM 1242-5 (slave) required - OPC UA - As-Interface - Yes; CM 1243-2 required - Yes; CM 1243-2 required - TCP/IP - OHCP - No - SNMP - Yes - SLUPP - No - SNMP - Yes - CLUP - Redundancy mode - Media redundancy - MIRP - MRP - MRP - MRP - MRP - MRP - MRP - SMATIC communication - * 57 routing - Open ILE communication - * 57 routing - Open ILE communication - * 57 routing - Open ILE communication - * 142 byte - Data length, max * 147 byte - Obat length, max * 147 byte - Obat sever - * supported - * User-defined websites - Yes - User-defined websites - Yes - Supported - * User-defined websites - Yes - Supported - * Supported - * Supported - * Suported - * Suported - * Yes - Obat length, max * 147 byte - * Obat sever - * Supported - * User-defined websites - * Yes - * Suported - * User-defined websites - * Yes - * Suported - * * Suported - * * Suported - * * Yes - * Suported - * * Yes - * Suported - * * * Yes - * * Suported - * * * * * * * * * * * * * * * * * * *	 Prioritized startup 	Yes
		16
max. — of which in line, max. — Activation/deactivation of IO Devices — Number of IO Devices that can be simultaneously activated/deactivated, max. — Updating time PROFINET IO Device Services — PG/OP communication — Isochronous mode — IRT — PROFIenergy — Shared device — Number of IO Controllers with shared device, max. PROFINET IO Device Services — PG/OP communication — Isochronous mode — IRT — PROFIenergy — Shared device — Number of IO Controllers with shared device, max. PROFIce IS Supports protocol for PROFINET IO — Yes — PCO/DE UA — Yes; CM 1243-5 (master) or CM 1242-5 (slave) required Protocols Protocols (Ethernet) — TCP/IP — Yes — DHCP — SMMP — DCP — Yes Redundancy mode Media redundancy — MRP — MRPD — MRPD — MRPD — MRPD — Data length, max. — 1472 byte Web server — supported — Suppo	 Number of connectable IO Devices, max. 	16
Activation/deactivation of IO Devices Number of IO Devices that can be simultaneously activated/deactivated, max Updating time The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data. PROFINET IO Device Services PC/OP communication Isachronous mode IRT PROFIenergy Shared device Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS OPC UA AS-Interface Yes; OPC UA Server AS-Interface Protocols (Ethernet) TCP/IP OPHCP SMMP DCP SMMP DCP SMMP DCP MRP Data length, max SI Soun-TCP (RFC1006) Data length, max Supported Supported Supported User-defined websites Ves User-defined websites Ves User-defined websites Ves User-defined websites Ves Ves Ves User-defined websites Ves Ves Ves Ves User-defined websites Ves	•	16
Number of IO Devices that can be simultaneously activated (deactivated, max. Updating time Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time devices and the quantity of configured user data. Updating time time also depends on the communication updating time update time also depends on the communication updated update	— of which in line, max.	16
simultaneously activated/deactivated, max. — Updating time The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data. PROFINET IO Device Services — PG/OP communication — Isochronous mode — IRT — No — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO — Yes PROFIBUS — OPC UA — Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA — Yes; OPC UA Server AS-Interface — Yes; CM 1243-2 required Protocols (Ethernet) • TCP/IP • No • SNMP • DCP • Yes Redundancy mode Media redundancy — MRP — MRPD — No SIMATIC communication • TCP/IP • Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • Skyper • Supported • User-defined websites Yes Feel • Supported • User-defined websites Yes Feel • User-defined websites Yes Yes Feel • User-defined websites Yes Yes Feel • Supported • User-defined websites Yes Feel • Supported • User-defined websites Yes	 Activation/deactivation of IO Devices 	Yes
communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data. PROFINET IO Device Services - PG/OP communication - Isochronous mode - IRT - No - PROFilenergy - Shared device - Number of IO Controlliers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS - Yes: CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA - Yes: OPC UA Server - AS-interface - Yes: CM 1243-2 required Protocols (Ethernet) - TCP/IP - DHCP - No - SNMP - DCP - LLDP - Yes Redundancy mode - Media redundancy - MRP - MRPD - No - ST routing - ST routing - ST routing - OPE IE communication - ST routing - OPE IE communication - ST routing - Data length, max ISO-on-TCP (RFC1008) - Data length, max UDP - Data length, max Supported - Ves - Data length, max UDP - Data length, max UDP - Data length, max Supported - Supported - Supported - Ves		8
Services - PG/OP communication	— Updating time	communication component set for PROFINET IO, on the number of IO
— PG/OP communication Yes; encryption with TLS V1.3 pre-selected — IsRT No — PROFlenergy Yes — Shared device Yes — Number of IO Controllers with shared device, max. 2 Protocols Supports protocol for PROFINET IO Yes PROFIBUS Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes; CM 1243-2 required AS-Interface Yes; CM 1243-2 required Protocols (Ethernet) Yes • TCP/IP Yes • DHCP No • SNMP Yes • DCP Yes • LLDP Yes Redundancy mode Media redundancy Media redundancy Yes; as MRP redundancy manager and/or MRP client • MRPD No SIMATIc communication Yes • S7 routing Yes Open IE communication Yes • TCP/IP Yes — Data length, max. 8 kbyte • USP — Data length, max. 8 kbyte • Usp-rdefi	PROFINET IO Device	
Isochronous mode	Services	
— IRT No — PROFlenergy Yes — Shared device Yes — Number of IO Controllers with shared device, max. 2 Protocols Supports protocol for PROFINET IO Yes PROFIBUS Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes; OPC UA Server AS-Interface Yes; CM 1243-2 required Protocols (Ethernet) Yes • TCP/IP Yes • DHCP No • SNMP Yes • DCP Yes • LLDP Yes Redundancy mode Media redundancy Media redundancy Yes; as MRP redundancy manager and/or MRP client No SIMATIC communication • S7 routing Yes Open IE communication Yes • TCP/IP Yes — Data length, max. 8 kbyte • ISO-on-TCP (RFC1006) Yes — Data length, max. 1 472 byte Web server • Supported Yes • User	— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— PROFlenergy Yes — Shared device Yes — Number of IO Controllers with shared device, max. 2 Protocols Supports protocol for PROFINET IO Yes PPROFIBUS Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes; CM 1243-2 required Protocols (Ethernet) Yes • TCP/IP Yes • DHCP No • SNMP Yes • DCP Yes • LLDP Yes Redundancy mode Media redundancy Media redundancy Yes; as MRP redundancy manager and/or MRP client — MRP No SIMATIC communication Yes • ST routing Yes Open IE communication Yes • TCP/IP Yes — Data length, max. 8 kbyte • ISO-on-TCP (RFC1006) Yes — Data length, max. 8 kbyte — Data length, max. 1 472 byte • supported Yes — User-defined websites Yes <td> Isochronous mode </td> <td>No</td>	 Isochronous mode 	No
Shared device Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS OPC UA Sey: CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Sey: CM 1243-2 required Protocols (Ethernet) TCP/IP SIMMP SIMMP SIMP OPC HERP No SIMP Wes Bedundancy mode Media redundancy Media redundancy MRPD No SIMATIC communication S7 routing Open IE communication TCP/IP Data length, max. Sey: Sey: Sey: Sey: Sey: Sey: Sey: Sey:	— IRT	No
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max. Protocols Supports protocol for PROFINET IO PROFIBUS OPC UA Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA AS-Interface Protocols (Ethernet) • TCP/IP • DHCP • No • SNMP • DCP • LLDP Redundancy mode Media redundancy — MRP — MRPD SIMATIC communication • 57 routing Open IE communication • TCP/IP • TCP/IP Yes Open IE communication • TCP/IP • TCP/IP — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • Supported • Supported • Supported • Ves • Supported • User-defined websites Yes • User-defined websites	— Shared device	Yes
Protocols Supports protocol for PROFINET IO PROFIBUS OPC UA Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes; OPC UA Server AS-Interface Protocols (Ethernet) • TCP/IP • DHCP • DHCP • DCP • LLDP Redundancy mode Media redundancy — MRP — MRP — MRPD SIMATIC communication • \$7 routing Yes Open IE communication • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • Supported • Supported • Suported • Suported • Yes • Supported • User-defined websites	·	2
Supports protocol for PROFINET IO		
PROFIBUS Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes; OPC UA Server AS-Interface Yes; CM 1243-2 required Protocols (Ethernet) Yes • DHCP No • SNMP Yes • DCP Yes • LLDP Yes Redundancy mode Media redundancy — MRP Yes; as MRP redundancy manager and/or MRP client — MRPD No SIMATIC communication Yes • S7 routing Yes Open IE communication Yes • TCP/IP Yes — Data length, max. 8 kbyte • ISO-on-TCP (RFC1006) Yes — Data length, max. 4 kbyte • UDP Yes — Data length, max. 1 472 byte Web server • supported Yes • User-defined websites Yes		V
OPC UA Yes; OPC UA Server AS-Interface Yes; CM 1243-2 required Protocols (Ethernet) Yes ● TCP/IP Yes ● DHCP No ● SNMP Yes ● DCP Yes ● LLDP Yes Redundancy mode Media redundancy — MRP Yes; as MRP redundancy manager and/or MRP client — MRPD No SIMATIC communication Yes ● S7 routing Yes Open IE communication Yes ● TCP/IP Yes — Data length, max. 8 kbyte • ISO-on-TCP (RFC1006) Yes — Data length, max. 8 kbyte • UDP Yes — Data length, max. 1472 byte Web server • supported Yes • User-defined websites Yes		
AS-Interface Yes; CM 1243-2 required		
Protocols (Ethernet) • TCP/IP • DHCP No • SNMP Yes • DCP Yes • LLDP Yes Redundancy mode Yes; as MRP redundancy manager and/or MRP client Media redundancy No SIMATIC communication Yes • S7 routing Yes Open IE communication Yes • TCP/IP Yes — Data length, max. 8 kbyte • ISO-on-TCP (RFC1006) Yes — Data length, max. 8 kbyte • UDP Yes — Data length, max. 1 472 byte Web server • supported Yes • User-defined websites Yes		
■ TCP/IP ■ DHCP ■ No ■ SNMP ■ Yes ■ DCP ■ Yes ■ LLDP ■ Yes ■ LLDP Redundancy mode Media redundancy ■ MRP ■ MRP ■ MRP ■ No SIMATIC communication ■ S7 routing ■ Yes Open IE communication ■ TCP/IP ■ Data length, max. ■ ISO-on-TCP (RFC1006) ■ Data length, max. ■ UDP ■ Data length, max. ■ UDP ■ Data length, max. ■ Ves ■ Data length, max. ■ Skbyte ■ USP- Data length, max. ■ USP- Skbyte ■ Skbyte ■ Data length, max. ■ Ves ■ Skbyte ■ USP- Skbyte ■ User-defined websites ■ Ves ■ User-defined websites ■ Ves		res, CM 1243-2 required
		Vee
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DCP LLDP Yes Redundancy mode Media redundancy — MRP MRPD No SIMATIC communication S7 routing Open IE communication TCP/IP — Data length, max. ISO-on-TCP (RFC1006) — Data length, max. UDP — System — Data length, max. UDP — System — Data length, max. UDP — System — System UDP — System UDP — System User-defined websites Yes		
Redundancy mode Media redundancy — MRP — MRP — MRPD No SIMATIC communication • S7 routing Open IE communication • TCP/IP — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Sk kbyte — Data length, max. • Ves — User-defined websites Yes		
Redundancy mode Media redundancy		
Media redundancy		100
MRP Yes; as MRP redundancy manager and/or MRP client No SIMATIC communication		
— MRPD No SIMATIC communication ● S7 routing Yes Open IE communication Yes ● TCP/IP Yes — Data length, max. 8 kbyte ● ISO-on-TCP (RFC1006) Yes — Data length, max. 8 kbyte ● UDP Yes — Data length, max. 1 472 byte Web server Yes ● supported Yes ● User-defined websites Yes	-	Ves: as MRP redundancy manager and/or MPP client
SIMATIC communication S7 routing Open IE communication TCP/IP Data length, max. ISO-on-TCP (RFC1006) Data length, max. UDP Data length, max. Idea of the server supported User-defined websites Yes Yes Yes Yes Yes 1 472 byte		
● S7 routing Open IE communication ● TCP/IP — Data length, max. ● ISO-on-TCP (RFC1006) — Data length, max. ● UDP — Data length, max. ● UDP — Data length, max. 1 472 byte Web server ● supported ● Supported ● User-defined websites Yes		
Open IE communication TCP/IP Data length, max. ISO-on-TCP (RFC1006) Data length, max. Ves Data length, max. Ves HUDP Data length, max. Ves Data length, max. 1 472 byte Web server Supported User-defined websites Yes		Yes
■ TCP/IP — Data length, max. ■ ISO-on-TCP (RFC1006) — Data length, max. ■ UDP — Data length, max. ■ UDP — Data length, max. 1 472 byte Web server ■ supported ■ User-defined websites Yes		
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 — Data length, max. ● UDP — Data length, max. 1 472 byte Web server ● supported ● User-defined websites Yes 	_	
 ◆ UDP Yes — Data length, max. 1 472 byte Web server • supported Yes • User-defined websites Yes 		
— Data length, max. 1 472 byte Web server ● supported ● User-defined websites 1 472 byte Yes Yes	_	
Web server		
 supported User-defined websites Yes 		
• User-defined websites Yes		Yes
	OPC UA	

 Runtime license required 	Yes; "Basic" license required
OPC UA Server	Yes; data access (read, write, subscribe), method call, runtime license required
 Application authentication 	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 User authentication 	"anonymous" or by user name & password
 Number of sessions, max. 	10
 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 monitored items, max. 	1 000
 Number of server interfaces, max. 	2
 Number of nodes for user-defined server interfaces, max. 	2 000
Further protocols	
MODBUS	Yes
Communication functions	
S7 communication	
• supported	Yes
• as server	Yes
as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Number of connections	
• overall	PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max
Test commissioning functions	
Status/control	
Status/control variable	Yes
 Variables 	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	
Forcing	Yes
Diagnostic buffer	
present	Yes
Traces	
 Number of configurable Traces 	2
 Memory size per trace, max. 	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Integrated Functions	
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated outputs
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Potential separation	
Potential separation Potential separation digital inputs	
Potential separation digital inputs Potential separation digital inputs	No
between the channels, in groups of	1
Potential separation digital outputs	
Potential senaration didital outputs	

- Detential congration digital outputs	Voc
Potential separation digital outputs	Yes
between the channels between the channels in groups of	No 4
between the channels, in groups of	1
EMC	
Interference immunity against discharge of static electricity	
 Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 	Yes
 Test voltage at air discharge 	8 kV
Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	
 Interference immunity on supply lines acc. to IEC 61000-4-4 	Yes
 Interference immunity on signal cables acc. to IEC 61000-4-4 	Yes
Interference immunity against voltage surge	
 Interference immunity on supply lines acc. to IEC 61000-4-5 	Yes
Interference immunity against conducted variable disturbance	e induced by high-frequency fields
 Interference immunity against high-frequency radiation acc. to IEC 61000-4-6 	Yes
Emission of radio interference acc. to EN 55 011	
Limit class A, for use in industrial areas	Yes; Group 1
• Limit class B, for use in residential areas	Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	0.5 m, me times, in product package
• min.	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical
 horizontal installation, min. 	-20 °C
 horizontal installation, max. 	60 °C
 vertical installation, min. 	-20 °C
vertical installation, max.	50 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
Operation, min.	795 hPa
 Operation, max. 	1 080 hPa
 Storage/transport, min. 	660 hPa
Storage/transport, max.	1 080 hPa
Altitude during operation relating to sea level	
 Installation altitude, min. 	-1 000 m
Installation altitude, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	
Operation, max.	95 %; no condensation
Vibrations	

Vibration resistance during operation acc. to IEC	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
60068-2-6	
Operation, tested according to IEC 60068-2-6	Yes
Shock testing	
tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Pollutant concentrations	
 SO2 at RH < 60% without condensation 	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Configuration	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
SCL	Yes
Know-how protection	
 User program protection/password protection 	Yes
 Copy protection 	Yes
Block protection	Yes
Access protection	
 protection of confidential configuration data 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
Protection level: Complete protection	Yes
Cycle time monitoring	
adjustable	Yes
Dimensions	
Width	130 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	500 g
last modified:	4/12/2021 C