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	V4.4
Engineering with	
 Programming package 	STEP 7 V16 or higher
Supply voltage	
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
Current consumption, max.	1 500 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V DC
² t	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
without battery	Yes
CPU processing times	

for hit exerctions, tup	0.09 up / instruction
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	DBs FOs FDs southers and time as The maximum number of
Number of blocks (total)	DBs, FCs, FBs, counters and timers. The maximum number of 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.	10 kbyte
Flag	
Number, max.	8 kbyte; Size of bit memory address area
Local data	
 per priority class, max. 	16 kbyte
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
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)	
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
	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	6.00.02
• 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	

e for signal "0" may	0.1 \/; with 10 kOhm load
• for signal "0", max.	0.1 V; with 10 kOhm load 20 V
• for signal "1", min. Output current	20 V
•	0.5 A
• for signal "1" rated value	
for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	4
• "0" to "1", max.	1 µs
• "1" to "0", max.	5 µs
Switching frequency	400.111
• 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	
• 0 to +10 V	Yes
 Input resistance (0 to 10 V) 	≥100k ohms
Cable length	
 shielded, max. 	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	2
Output ranges, current	
• 0 to 20 mA	Yes
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
Resolution with overrange (bit including sign), max.	10 bit
 Integration time, parameterizable 	Yes
Conversion time (per channel)	625 µs
Analog value generation for the outputs	
 Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 	10 bit
	10 bit
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	
RJ 45 (Ethernet)	Yes
Number of ports	2
 integrated switch 	Yes
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	Yes; as MRP client
PROFINET IO Controller	

Genome Ves - PGOP communication Ves - IRT No - Number of connectable IO Devices strutu. 10 mix. - Number of connectable IO Devices (RT.) 10 - Number of Connectable IO Devices (RT.) 10 - Aunther of Devices to RT. 10 - Aunther of Devices that can be simulationed advanced, max. 10 - Aunther of Devices that can be simulationed advanced, max. 10 - Updating time The minimum value of the update time also depends on the normunication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data. Services - PGOP communication Yes - IPOT Device	Transmission rate, max.	100 Mbit/s
PGOP communication Ves Rotinnous mode Ref		
→ IsoChronous mode No → IFT No → PROFInersry No → Number of IO devices with prioritized startup. 16 → Number of connectable IO Devices, max. 16 → Number of connectable IO Devices (TR). 18 → Or which in line, max. 16 → Aumber of Devices Int Can be assimultaneously addrivatioedectaviation of ID Devices Yes. 8 → Updating time 8 → Updating time 8 → Updating time 8 → DeGOP communication Yes. → INTF No → IPGOP communication Yes. → INTF No → IPGOP communication Yes. → INTF No → IPGOP communication Yes. → INTF No → Startact 2 → Number of IO Controllers with shared device, max.		Yes
- IRT No - PROFInency No - Profinitzed startup Yes - Number of Io devices with prioritized startup. 15 - Number of connectable IO Devices, max. 16 - Number of connectable IO Devices for RT, 16 - of which in line. max. 16 - Activation/deactivation of IO Devices Yes - Number of IO Devices that can be simulaneously activated/deactivated, max. 16 - Wather of IO Devices addivated/deactivated, max. 16 - Working 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. - 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 Bevice Yes - Stand device 2 - No hore to the opdate time also depends on the communication configured user data. - No hore to configured user data. 2 - PROFInergy Yes - Stand device 2 - No hore to the opdate time also depends on the communication configured user data.		
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		16
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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 — PROFO communication Yes — Sochronous mode No — IRT No — PROFIenergy Yes — Shared device Yes — Number of IO Controllers with shared device, max. Protocol for PROFINET IO Yes CM 1243-5 (master) or CM 1242-5 (slave) required As-Interface Yes CM 1243-5 (master) or CM 1242-5 (slave) required As-Interface PROFIBUS Yes CM 1243-5 (master) or CM 1242-5 (slave) required As-Interface Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required As-Interface Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required As-Interface PROFIBUS As-Interface PROFIBUS As-Interface Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required As-Interface Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required As-Interface Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required As-Interface Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required Protocols (Ethemet) Yes CM 1243-5 (master) or CM 1242-5 (slave) required Yes Subartic communication Yes Subar	 Activation/deactivation of IO Devices 	Yes
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• LLDP Yes Redundancy mode		
Redundancy mode Media redundancy MRP Yes SIMATIC communication • S7 routing Yes Open IE communication • 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 OPC UA Yes • OPC UA Server Yes; Data access (read, write, subscribe), runtime license required - Number of sessions, max. 5 - Number of subscriptions per session, max. 5		
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Number of sessions, max. 5 Number of accessible variables, max. 1 000 Number of subscriptions per session, max. 5		
— Number of accessible variables, max. 1 000 — Number of subscriptions per session, max. 5		
- Number of subscriptions per session, max. 5		
— Sampling interval, min. 100 ms		
	— Sampling interval, min.	100 ms

Dublishing interval min	200 mg
— Publishing interval, min.	200 ms
— Number of monitored items, max.	500
— Number of server interfaces, max.	2
 Number of nodes for user-defined server interfaces, max. 	1 000
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	8 connections for open user communication (active or passive):
• overall	TSEND_C, TRCV_C, TCON, TDISCON, TSEND and TRCV, 8 CPU/CPU connections (Client or Server) for GET/PUT data, 6 connections for dynamic assignment to GET/PUT or open user communication
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
Interrunts/diagnostics/status information	
Interrupts/diagnostics/status information	
Diagnostics indication LED	Ves
Diagnostics indication LED • RUN/STOP LED	Yes
Diagnostics indication LED • RUN/STOP LED • ERROR LED	Yes
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED	
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions	Yes Yes
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters	Yes Yes 6
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max.	Yes Yes 6 100 kHz
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement	Yes Yes 6 100 kHz Yes
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning	Yes Yes 6 100 kHz Yes Yes
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max.	Yes Yes 6 100 kHz Yes Yes 8
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface	Yes 6 100 kHz Yes Yes 8 4; With integrated outputs
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of alarm inputs	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of pulse outputs	Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of pulse outputs Limit frequency (pulse)	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of pulse outputs Limit frequency (pulse) Potential separation	Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4 4 100 kHz
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of alarm inputs Number of pulse outputs Limit frequency (pulse) Potential separation digital inputs • Potential separation digital inputs	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4 4 100 kHz
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of alarm inputs Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs • Potential separation digital inputs • between the channels, in groups of	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4 4 100 kHz
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs • Potential separation digital inputs • between the channels, in groups of Potential separation digital outputs	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4 4 100 kHz
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of position-controlled positioning axes, max. Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs • Potential separation digital inputs • between the channels, in groups of Potential separation digital outputs • Potential separation digital outputs	Yes Yes 6 100 kHz Yes Yes 8 4 4; With integrated outputs Yes 4 4 100 kHz No 1
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of alarm inputs Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs • Potential separation digital outputs • between the channels, in groups of Potential separation digital outputs • Dotential separation digital outputs • between the channels	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4 100 kHz No 1
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of alarm inputs Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs • Potential separation digital outputs • between the channels, in groups of Potential separation digital outputs • between the channels • between the channels	Yes Yes 6 100 kHz Yes Yes 8 4 4; With integrated outputs Yes 4 4 4 100 kHz No 1
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs • Potential separation digital inputs • between the channels, in groups of Potential separation digital outputs • between the channels • between the channels • between the channels, in groups of	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4 100 kHz No 1
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of alarm inputs Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs • between the channels, in groups of Potential separation digital outputs • between the channels	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4 4 100 kHz No 1 Yes No 1
Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED Integrated Functions Number of counters Counting frequency (counter) max. Frequency measurement controlled positioning Number of position-controlled positioning axes, max. Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs • Potential separation digital inputs • between the channels, in groups of Potential separation digital outputs • between the channels • between the channels • between the channels, in groups of	Yes Yes 6 100 kHz Yes Yes 8 4; With integrated outputs Yes 4 4 100 kHz No 1

Tost voltage at contact discharge	6 kV
— Test voltage at contact discharge Interference immunity to cable-borne interference	
 Interference immunity on supply lines acc. to IEC 	Yes
61000-4-4Interference immunity on signal cables acc. to IEC	Yes
61000-4-4	
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
KC approval	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m
Ambient temperature during operation	0.0 11
• 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. 	2 000 m
Relative humidity	
Operation, max.	95 %; no condensation
Vibrations	
• Vibration resistance during operation acc. to IEC 60068-2-6	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
 Operation, tested according to IEC 60068-2-6 	Yes
Shock testing	
 tested according to IEC 60068-2-27 	Yes
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 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
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