SIEMENS

Data sheet

Conoral informati

6ES7215-1BG40-0XB0

SIMATIC S7-1200, CPU 1215C, compact CPU, AC/DC/relay, 2 PROFINET ports, onboard I/O: 14 DI 24 V DC; 10 DO relay 2 A, 2 AI 0-10 V DC, 2 AO 0-20 mA DC, Power supply: AC 85-264 V AC at 47-63 Hz, Program/data memory 125 KB



General information	
Product type designation	CPU 1215C AC/DC/relay
Firmware version	V4.4
Engineering with	
 Programming package 	STEP 7 V16 or higher
Supply voltage	
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
permissible range, lower limit (AC)	85 V
permissible range, upper limit (AC)	265 V
Line frequency	
 permissible range, lower limit 	47 Hz
• permissible range, upper limit	63 Hz
Input current	
Current consumption (rated value)	100 mA at 120 V AC; 50 mA at 240 V AC
Current consumption, max.	300 mA at 120 V AC; 150 mA at 240 V AC
Inrush current, max.	20 A; at 264 V

l²t	0.8 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	20.4 1- 20.0)/
• 24 V	20.4 to 28.8V
Power loss	
Power loss, typ.	14 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 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	
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),	10 kbyte
max.	
Flag	
• Number, 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 	6; HSC (High Speed Counting)
functions	
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	Yes; 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	
● shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	10; Relays
Switching capacity of the outputs	
 with resistive load, max. 	2 A
• on lamp load, max.	30 W with DC, 200 W with AC
Output delay with resistive load	
• "0" to "1", max.	10 ms; max.

Relay outputs 10 • Number of relay outputs mechanically 10 million, at rated load voltage 100 000 Cable length mechanically 10 million, at rated load voltage 100 000 Cable length 500 m • shielded, max. 500 m • unshielded, max. 150 m Analog inputs 2 Number of analog inputs 2 Input ranges 2 • Voltage Yes Input ranges (rated values), voltages 2 • 0 to +10 V Yes - Input resistance (0 to 10 V) ≥100k ohms Cable length 100 m; twisted and shielded Analog outputs 2 Number of analog outputs 2 0 to +10 V Yes - Input resistance (0 to 10 V) ≥100k ohms Cable length 100 m; twisted and shielded Analog outputs 2 Output ranges, current 2 • 0 to 20 mA Yes	• "1" to "0", max.	10 ms; max.
• Number of relay outputs10• Number of operating cycles, max.mechanically 10 million, at rated load voltage 100 000Cable length500 m• shielded, max.150 m• unshielded, max.150 mAnalog inputs2• Number of analog inputs2• VoltageYes• Nutages (rated values), voltages100 ohms• VoltageYes• Input resistance (0 to 10 V)YesCable length100 m; twisted and shielded• shielded, max.100 m; twisted and shieldedAnalog outputs2Number of analog outputs2Number of analog outputs2• O to 20 mAYesOutput ranges, current-• O to 20 mAYes• O to 20 mAYesAnalog value generation for the inputs• Number of analog outputs10 bit• Conversion time (per channel)625 µs• Conversion time (per channel)625 µs• Conversion time (per channel)10 bit• 2 wire sensorYes• 1 InterfaceYesInterface typePROFINETIsolatedYes• AutocrossingYes• AutocrossingYes• AutocrossingYes• AutocrossingYes• AutocrossingYes• Hiefface typesYes• Red AutocrossingYes• AutocrossingYes• AutocrossingYes• Rud AutocrossingYes• Number of ports2<		
• Number of operating cycles, max.mechanically 10 million, at rated load voltage 100 000CableConstrainedCable length500 m• unshielded, max.500 m• unshielded, max.2• Number of analog inputs2Input rangesYes• Joto + 10 VYes- Input resistance (0 to 10 V)2100k ohmsCable length7• Joto + 10 VYes- Input resistance (0 to 10 V)2100k ohmsCable length7• Joto + 10 VYes- Input resistance (0 to 10 V)2100k ohmsCable output ranges, current100 m; twisted and shielded• Joto 20 mAYesAnalog outputs2• Oto 20 mAYesPresolution with overrange (bit including sign), max.10 bit• Integration and conversion time/resolution per channel10 bit• Conversion time (per channel)Yes• Conversion time (per channel)Yes• Conversion time (per channel)Yes• Lindergation do forting insign) • Living sensorYes• Lindergation for transmission rateYes• Lindergation for transmission rateYes• Just 24 (Eternet)Yes• Just 24 (Sternet)Yes• Lindergation for transmission rateYes• Lindergation for transmission rateYes• Lindergation for transmission rateYes• Lindergation for transmission rateYes• Lindergation for ports2• Lindergate switchYes </td <td></td> <td>10</td>		10
Cable length 500 m • unshielded, max. 500 m • unshielded, max. 150 m Analog inputs 2 Number of analog inputs 2 • Voltage Yes Input ranges (rated values), voltages - • Voltage Yes • Input resistance (0 to 10 V) Yes • To + 10 V - • Input resistance (0 to 10 V) Yes • Shielded, max. 100 m; twisted and shielded Analog outputs 2 Number of analog outputs 2 Output ranges, current - • O to 20 mA Yes Analog value generation for the inputs 2 Integration and conversion time/resolution gingin, max. 10 bit • Integration time, parameterizable 625 µs Encoder Conversion time (per channel) Consectable encoders - • 2 wire sensor Yes Interface Yes Interface type PROFINET Isolated Yes Autonegotiation Yes Autoregotiation Yes <td></td> <td>mechanically 10 million, at rated load voltage 100 000</td>		mechanically 10 million, at rated load voltage 100 000
• shielded, max.500 m• unshielded, max.150 mAnalog inputs2Number of analog inputs2Input rangesYes• VoltageYes• Joing (rated values), voltages100 k ohms• O to +10 VYes• Input resistance (0 to 10 V)Yes• Input resistance (0 to 10 V)Yes• Shielded, max.100 m; twisted and shieldedAnalog outputs2Output ranges, current2• O to 20 mAYesIntegration and conversion time/resolution per channel• Resolution with overrange (bit including sign), max.10 bit• Conversion time, parameterizableYes• Conversion time (per channel)205 µsEncoderVesConversion time (per channel)YesInterface typePROFINETIsolatedYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesInterface typeFieldenenel)• Fieldenenel)Yes• AutonegotationYes• AutonegotationYes• AutonegotationYes• AutonegotationYes• AutonegotationYes• AutonegotationYes• Number of ports2• Fielded switchYes• Number of ports2• Number of ports2		
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Analog inputs 2 Input ranges Yes • Voitage Yes Input ranges (rated values), voltages > 100k ohms • 0 to +10 V Yes - Input resistance (0 to 10 V) > 2100k ohms Cable length - Input resistance (0 to 10 V) • shielded, max. 100 m; twisted and shielded Analog outputs 2 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 Encoder - Connectable encoders - • 2-wire sensor Yes automatic detection of transmission rate Yes Autorossing Yes Autorossing Yes Autorossing Yes Autores vipes - • R4 45 (Ethernet) Yes		
Number of analog inputs 2 Input ranges Voltage • Voltage (rated values), voltages Ves Input ranges (rated values), voltages >>>>>>>>>>>>>>>>>>>>>>>>>>>>		
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• Resolution with overrange (bit including sign), max.10 bit• Integration time, parameterizableYes• Conversion time (per channel)625 μs• Conversion time (per channel)Yes• Connectable encodersYes• 2-wire sensorYes• 1. InterfaceYesInterface typePROFINETIsolatedYesautomatic detection of transmission rateYesAutoregotiationYesAutoregotiationYesInterface typesYes• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYes	Analog value generation for the inputs	
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Connectable encoders Yes • 2-wire sensor Yes Interface PROFINET Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes Autonegotiation Yes Autocrossing Yes Interface types Yes • RJ 45 (Ethernet) Yes • Number of ports 2 • integrated switch Yes	 Conversion time (per channel) 	625 µs
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Interface types • RJ 45 (Ethernet) Yes • Number of ports 2 • integrated switch Yes	-	
• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYes	-	Yes
Number of ports integrated switch Yes		
• integrated switch Yes	• RJ 45 (Ethernet)	
	Number of ports	2
Protocols	 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	
 Transmission rate, max. 	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	Yes; as MRP client
— MRPD	No
— PROFlenergy	No
— Prioritized startup	Yes
 — Number of IO devices with prioritized 	16
startup, max.	
 Number of connectable IO Devices, max. 	16
 — Number of connectable IO Devices for RT, 	16
max.	
— of which in line, max.	16
 Activation/deactivation of IO Devices 	Yes
- Number of IO Devices that can be	8
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

PROFINET IO Device

Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	Yes; as MRP client
— MRPD	No
— PROFlenergy	Yes
— Shared device	Yes
 Number of IO Controllers with shared device, max. 	2

of IO devices and the quantity of configured user data.

Protocols

Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) required
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	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	
supported	Yes
 User-defined websites 	Yes
OPC UA	
 Runtime license required 	Yes; "Basic" license required
OPC UA Server	Yes; Data access (read, write, subscribe), runtime license required
 Application authentication 	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
— Number of sessions, max.	5
- Number of accessible variables, max.	1 000
 — Number of subscriptions per session, max. 	5
— Sampling interval, min.	100 ms
— 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): 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
nterrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes
ntegrated Functions	
Number of counters	6
Counting frequency (counter) max.	100 kHz
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222
PID controller	Yes
Number of alarm inputs	4
Potential separation	
Potential separation digital inputs	
 Potential separation digital inputs 	500V AC for 1 minute
 between the channels, in groups of 	1
Potential separation digital outputs	
 Potential separation digital outputs 	Relays
• between the channels	No



EMC	
Interference immunity against discharge of static electri	city
 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 distur	bance 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	
otandarus, approvais, certificates	
CE mark	Yes
	Yes Yes
CE mark	
CE mark UL approval	Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK)	Yes Yes Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval	Yes Yes Yes Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK)	Yes Yes Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval	Yes Yes Yes Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval Marine approval	Yes Yes Yes Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval Marine approval Ambient conditions	Yes Yes Yes Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval Marine approval Ambient conditions Free fall	Yes Yes Yes Yes Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval Marine approval Ambient conditions Free fall • Fall height, max.	Yes Yes Yes Yes Yes
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval Marine approval Ambient conditions Free fall • Fall height, max. Ambient temperature during operation	Yes Yes Yes Yes Yes O.3 m; five times, in product package
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval Marine approval Ambient conditions Free fall • Fall height, max. Ambient temperature during operation • min.	Yes Yes Yes Yes Yes Yes 0.3 m; five times, in product package -20 °C 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
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval Marine approval Ambient conditions Free fall • Fall height, max. Ambient temperature during operation • min. • max.	Yes Yes Yes Yes Yes Yes O.3 m; five times, in product package -20 °C 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
CE mark UL approval cULus FM approval RCM (formerly C-TICK) KC approval Marine approval Ambient conditions Free fall • Fall height, max. Ambient temperature during operation • min. • max. • horizontal installation, min.	Yes Yes Yes Yes Yes O.3 m; five times, in product package -20 °C 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 -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	10 0
Operation, min.	795 hPa
Operation, max.	1 080 hPa
•	660 hPa
Storage/transport, min.	1 080 hPa
Storage/transport, max.	1 000 11Fa
Altitude during operation relating to sea level	1 000 m
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; 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 level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Complete protection 	Yes
Cycle time monitoring	
• adjustable	Yes
Dimensions	

Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	550 g
last modified:	10/13/2020

