

## 6ES7215-1BG40-0XB0

CPU 1215C, AC/DC/RLY, 14DI/10DO/2AI/2AO

### Technical data



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	<ul style="list-style-type: none"> <li>Programming package</li> </ul>
	STEP 7 V16 or higher
Supply voltage	
Rated value (AC)	
<ul style="list-style-type: none"> <li>120 V AC</li> <li>230 V AC</li> </ul>	<ul style="list-style-type: none"> <li>Yes</li> <li>Yes</li> </ul>
permissible range, lower limit (AC)	85 V
permissible range, upper limit (AC)	265 V
Line frequency	
<ul style="list-style-type: none"> <li>permissible range, lower limit</li> <li>permissible range, upper limit</li> </ul>	<ul style="list-style-type: none"> <li>47 Hz</li> <li>63 Hz</li> </ul>
Input current	
Current consumption, max.	300 mA at 120 V AC; 150 mA at 240 V AC
Inrush current, max.	20 A; at 264 V
I <sup>2</sup> t	0.8 A <sup>2</sup> ·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	
<ul style="list-style-type: none"> <li>24 V</li> </ul>	20.4 to 28.8V
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
<ul style="list-style-type: none"> <li>integrated</li> <li>expandable</li> </ul>	<ul style="list-style-type: none"> <li>125 kbyte</li> <li>No</li> </ul>
Load memory	
<ul style="list-style-type: none"> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	<ul style="list-style-type: none"> <li>4 Mbyte</li> <li>with SIMATIC memory card</li> </ul>
Backup	
<ul style="list-style-type: none"> <li>present</li> <li>maintenance-free</li> <li>without battery</li> </ul>	<ul style="list-style-type: none"> <li>Yes</li> <li>Yes</li> <li>Yes</li> </ul>
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	
<ul style="list-style-type: none"> <li>Number, max.</li> </ul>	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	10 kbyte
Flag	
<ul style="list-style-type: none"> <li>Number, max.</li> </ul>	8 kbyte; Size of bit memory address area
Local data	
<ul style="list-style-type: none"> <li>per priority class, max.</li> </ul>	16 kbyte
Address area	
Process image	
<ul style="list-style-type: none"> <li>Inputs, adjustable</li> </ul>	1 kbyte

• Outputs, adjustable	1 kbyte
<b>Hardware configuration</b>	
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
<b>Time of day</b>	
Clock	
• Hardware clock (real-time)	Yes
• Backup time	480 h; Typical
<b>Digital inputs</b>	
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	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
<b>Digital outputs</b>	
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.
• "1" to "0", max.	10 ms; max.
Relay outputs	
• Number of relay outputs	10
• Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
<b>Analog inputs</b>	
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
<b>Analog outputs</b>	
Number of analog outputs	2
Output ranges, current	
• 0 to 20 mA	Yes
<b>Analog value generation for the inputs</b>	
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
<b>Encoder</b>	
Connectable encoders	
• 2-wire sensor	Yes
<b>1. Interface</b>	
Isolated	
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

<ul style="list-style-type: none"> <li>● PROFINET IO Device</li> <li>● SIMATIC communication</li> <li>● Open IE communication</li> <li>● Web server</li> <li>● Media redundancy</li> </ul>	<p>Yes</p> <p>Yes</p> <p>Yes; Optionally also encrypted</p> <p>Yes</p> <p>Yes; as MRP client</p>
<b>PROFINET IO Controller</b>	
<ul style="list-style-type: none"> <li>● Transmission rate, max.</li> </ul>	100 Mbit/s
<b>Services</b>	
<ul style="list-style-type: none"> <li>— PG/OP communication</li> <li>— Isochronous mode</li> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Prioritized startup</li> <li>— Number of IO devices with prioritized startup, max.</li> <li>— Number of connectable IO Devices, max.</li> <li>— Number of connectable IO Devices for RT, max.</li> <li>— of which in line, max.</li> <li>— Activation/deactivation of IO Devices</li> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> <li>— Updating time</li> </ul>	<p>Yes</p> <p>No</p> <p>No</p> <p>No</p> <p>Yes</p> <p>16</p> <p>16</p> <p>16</p> <p>16</p> <p>Yes</p> <p>8</p> <p>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.</p>
<b>PROFINET IO Device</b>	
<b>Services</b>	
<ul style="list-style-type: none"> <li>— PG/OP communication</li> <li>— Isochronous mode</li> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul>	<p>Yes</p> <p>No</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>2</p>
<b>Protocols</b>	
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
<b>Protocols (Ethernet)</b>	
<ul style="list-style-type: none"> <li>● TCP/IP</li> <li>● DHCP</li> <li>● SNMP</li> <li>● DCP</li> <li>● LLDP</li> </ul>	<p>Yes</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
<b>Redundancy mode</b>	
<b>Media redundancy</b>	
<ul style="list-style-type: none"> <li>— MRP</li> <li>— MRPD</li> </ul>	<p>Yes; as MRP client</p> <p>No</p>
<b>SIMATIC communication</b>	
<ul style="list-style-type: none"> <li>● S7 routing</li> </ul>	Yes
<b>Open IE communication</b>	
<ul style="list-style-type: none"> <li>● TCP/IP <ul style="list-style-type: none"> <li>— Data length, max.</li> </ul> </li> <li>● ISO-on-TCP (RFC1006) <ul style="list-style-type: none"> <li>— Data length, max.</li> </ul> </li> <li>● UDP <ul style="list-style-type: none"> <li>— Data length, max.</li> </ul> </li> </ul>	<p>Yes</p> <p>8 kbyte</p> <p>Yes</p> <p>8 kbyte</p> <p>Yes</p> <p>1 472 byte</p>
<b>Web server</b>	
<ul style="list-style-type: none"> <li>● supported</li> <li>● User-defined websites</li> </ul>	<p>Yes</p> <p>Yes</p>
<b>OPC UA</b>	
<ul style="list-style-type: none"> <li>● Runtime license required</li> <li>● OPC UA Server <ul style="list-style-type: none"> <li>— Number of sessions, max.</li> <li>— Number of accessible variables, max.</li> <li>— Number of subscriptions per session, max.</li> <li>— Sampling interval, min.</li> <li>— Publishing interval, min.</li> <li>— Number of monitored items, max.</li> <li>— Number of server interfaces, max.</li> <li>— Number of nodes for user-defined server interfaces, max.</li> </ul> </li> </ul>	<p>Yes</p> <p>Yes; Data access (read, write, subscribe), runtime license required</p> <p>5</p> <p>1 000</p> <p>5</p> <p>100 ms</p> <p>200 ms</p> <p>500</p> <p>2</p> <p>1 000</p>
<b>Further protocols</b>	
<ul style="list-style-type: none"> <li>● MODBUS</li> </ul>	Yes
<b>Communication functions</b>	
<b>S7 communication</b>	
<ul style="list-style-type: none"> <li>● supported</li> <li>● as server</li> <li>● as client</li> <li>● User data per job, max.</li> </ul>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>See online help (S7 communication, user data size)</p>
<b>Number of connections</b>	
<ul style="list-style-type: none"> <li>● overall</li> </ul>	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

## Interrupts/diagnostics/status information

Diagnostics indication LED	
• RUN/STOP LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes

## Integrated 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
• between the channels, in groups of	2

## 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 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

## 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	
• 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
<b>Altitude during operation relating to sea level</b>	
• Installation altitude, min.	-1 000 m
• Installation altitude, max.	2 000 m
<b>Relative humidity</b>	
• Operation, max.	95 %; no condensation
<b>Vibrations</b>	
• Vibration resistance during operation acc. to IEC 60068-2-6	2 g (m/s <sup>2</sup> ) wall mounting, 1 g (m/s <sup>2</sup> ) DIN rail
• Operation, tested according to IEC 60068-2-6	Yes
<b>Shock testing</b>	
• tested according to IEC 60068-2-27	Yes
<b>Configuration</b>	
<b>Programming</b>	
Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
<b>Know-how protection</b>	
• User program protection/password protection	Yes
• Copy protection	Yes
• Block protection	Yes
<b>Access protection</b>	
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
<b>Cycle time monitoring</b>	
• adjustable	Yes
<b>Dimensions</b>	
Width	130 mm
Height	100 mm
Depth	75 mm
<b>Weights</b>	
Weight, approx.	550 g
<b>last modified:</b>	2/5/2021

**Last changes: 02/08/2021**