

# Siemens 6ES7215-1BG40-0XB0 Manual

|                |                                   |
|----------------|-----------------------------------|
| Brand          | Siemens                           |
| Product Series | Siemens                           |
| Product Type   | designation CPU 1215C AC/DC/Relay |

## Description

6ES7215-1BG40-0XB0

SIMATIC S7-1200, CPU 1215C, COMPACT CPU, AC/DC/RELAY, 2

PROFINET PORT, ONBOARD I/O: 14 DI 24V DC; 10 DO RELAY

2A, 2 AI 0-10V DC, 2 AO 0-20MA 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 V4.1

Engineering with

- Programming package STEP 7 V13 SP1 or higher

Display

with display No

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

Encoder supply

24 V encoder supply

- 24 V 20.4 to 28.8V

Power loss

Power loss, typ. 12 W

Memory

Type of memory RAM

Work memory

- integrated 125 kbyte
- expandable No

Load memory

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- integrated 4 Mbyte
- Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card

## Backup

- present Yes; maintenance-free
- without battery Yes

## CPU processing times

for bit operations, typ. 0.085 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 in total (incl. times, counters, flags), max.

10 kbyte

## 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

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- 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 clock) 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)

integrated channels (DI) 14

m/p-reading 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 VDC 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 counter/technological functions

— parameterizable Yes; Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 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

integrated channels (DO) 10

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.

Switching frequency

- of the pulse outputs, with resistive load, max. 1 Hz

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

Analog inputs

Number of analog inputs 2

integrated channels (AI) 2; 0 to 10V

Input ranges

- Voltage Yes

Input ranges (rated values), voltages

- 0 to +10 V Yes
- Input resistance (0 to 10 V)  $\geq 100\text{k ohms}$

Cable length

- shielded, max. 100 m; twisted and shielded

Analog outputs

Number of analog outputs 2

integrated channels (AO) 2; 0 to 20 mA

Output ranges, current

- 0 to 20 mA Yes

Analog value generation

Integration and conversion time/resolution per channel

- Resolution with overrange (bit including sign), max.

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10 bit

- Integration time, parameterizable Yes
- Conversion time (per channel) 625 µs

Encoder

Connectable encoders

- 2-wire sensor Yes

1. Interface

Interface type PROFINET

Physics Ethernet

Isolated Yes

automatic detection of transmission rate Yes

Autonegotiation Yes

Autocrossing Yes

Functionality

- PROFINET IO Controller Yes
- PROFINET IO Device Yes
- Open IE communication Yes
- Web server Yes

PROFINET IO Controller

- Transmission rate, max. 100 Mbit/s

Services

— Number of connectable IO Devices, max. 16

PROFINET IO Device

Services

— Shared device Yes

— Number of IO Controllers with shared device, max.

2

Protocols

Supports protocol for PROFINET IO Yes

PROFIBUS Yes; CM 1243-5 required

AS-Interface Yes

Protocols (Ethernet)

- TCP/IP Yes

Further protocols

- MODBUS Yes

Communication functions

S7 communication

- supported Yes
- as server Yes
- as client Yes

Open IE communication

- TCP/IP Yes
- ISO-on-TCP (RFC1006) Yes
- UDP Yes

Web server

- supported Yes
- User-defined websites Yes

Number of connections

- overall 16; dynamically

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## 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; Up to 512 KB of data per trace are possible

## Integrated Functions

## Number of counters 6

## Counting frequency (counter) max. 100 kHz

## Frequency meter 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

- on the 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

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Yes

Ambient conditions

Free fall

- Drop height, max. (in packaging) 0.3 m; five times, in dispatch 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

- Storage/transport, min. 660 hPa

- Storage/transport, max. 1 080 hPa

- permissible operating height -1000 to 2000 m

Relative humidity

- permissible range (without condensation) at 25

°C

95 %

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Vibrations

- Vibrations 2G wall mounting, 1G DIN rail

- Operation, tested according to IEC 60068-2-6 Yes

Dimensions

Width 130 mm

Height 100 mm

Depth 75 mm

Weights

Weight, approx. 550 g