

Siemens 6ES7214-1BG31-0XB0 Manual

Brand	Siemens
Product Series	Siemens
Product Type	designation CPU 1214C AC/DC/relay

Description

6ES7214-1BG31-0XB0

SIMATIC S7-1200, CPU 1214C, compact CPU, AC/DC/relay, onboard I/O:
14 DI 24 V DC; 10 DO relay 2 A; 2 AI 0-10 V DC, Power supply: AC 85-264
V AC at 47-63 Hz, Program/data memory 75 KB

General information

Product type designation CPU 1214C AC/DC/relay

Engineering with

- Programming package STEP 7 V11 SP2 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) 264 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

Inrush current, max. 20 A; at 264 V

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 Permissible range: 20.4V to 28.8V

Power loss

Power loss, typ. 14 W

Memory

Work memory

- integrated 75 kbyte
- expandable No

Load memory

- integrated 4 Mbyte

Backup

- present Yes; maintenance-free
- without battery Yes

CPU processing times

www.AutoDCSTech.com

for bit operations, typ. 0.085 µs; / instruction

for word operations, typ. 1.7 µs; / instruction

for floating point arithmetic, typ. 2.5 µs; / instruction

CPU-blocks

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

- Size, max. 8 kbyte; Size of bit memory address area

Address area

I/O address area

- Inputs 1 024 byte
- Outputs 1 024 byte

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 current

- for signal "1", typ. 1 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 Yes; Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz

www.AutoDCSTech.com

& 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

Short-circuit protection No; to be provided externally

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

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 0

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

1. Interface

Interface type PROFINET

Isolated Yes

automatic detection of transmission rate Yes

Autonegotiation Yes

Autocrossing Yes

Interface types

- RJ 45 (Ethernet) Yes

Protocols

- PROFINET IO Controller Yes

Protocols

www.AutoDCSTech.com

Supports protocol for PROFINET IO Yes

PROFIsafe No

PROFIBUS Yes

AS-Interface Yes

Protocols (Ethernet)

- TCP/IP Yes

Open IE communication

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

Web server

- supported Yes
- User-defined websites Yes

Further protocols

- MODBUS Yes

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

Integrated Functions

www.AutoDCSTech.com

Frequency measurement Yes

controlled positioning Yes

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

Permissible potential difference

between different circuits 500 V DC between 24 V DC and 5 V DC

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

Degree and class of protection

IP degree of protection IP20

Standards, approvals, certificates

CE mark Yes

CSA approval Yes

UL approval Yes

cULus Yes

FM approval Yes

RCM (formerly C-TICK) 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

- 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

www.AutoDCSTech.com

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 SO₂: < 0.5 ppm; H₂S: < 0.1 ppm; RH < 60% condensation-free

Dimensions

Width 110 mm

Height 100 mm

Depth 75 mm

Weights

Weight, approx. 455 g

www.AutoDCSTech.com