

Siemens 6ES7214-1HG31-0XB0 Manual

Brand	Siemens
Product Series	Siemens
Product Type	designation CPU 1214C DC/DC/Relay

Description

6ES7214-1HG31-0XB0

SIMATIC S7-1200, CPU 1214C, COMPACT CPU, DC/DC/RELAY,
ONBOARD I/O: 14 DI 24V DC; 10 DO RELAY 2A; 2 AI 0 - 10V DC,
POWER SUPPLY: AC 20.4 - 28.8 V DC, PROGRAM/DATA
MEMORY: 75 KB

General information

Product type designation CPU 1214C DC/DC/Relay

Engineering with

- Programming package STEP 7 V11 SP2 or higher

Supply voltage

Rated value (DC)

- 24 V DC Yes

permissible range, lower limit (DC) 20.4 V

permissible range, upper limit (DC) 28.8 V

Load voltage L+

- Rated value (DC) 24 V
- permissible range, lower limit (DC) 5 V
- permissible range, upper limit (DC) 250 V

Input current

Current consumption (rated value) 500 mA; Typical

Current consumption, max. 1.2 A; 24 V DC

Inrush current, max. 12 A; at 28.8 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. 12 W

Memory

Work memory

- integrated 75 kbyte
- expandable No

Load memory

- integrated 4 Mbyte

Backup

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- 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. 2.5 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),
max.

10 kbyte

Flag

- Number, 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,

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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 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

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

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1. Interface

Interface type PROFINET

Physics Ethernet

Isolated Yes

automatic detection of transmission rate Yes

Autonegotiation Yes

Autocrossing Yes

Functionality

- PROFINET IO Controller Yes

Protocols

Supports protocol for PROFINET IO Yes

PROFIBUS Yes

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

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

Number of counters 6

Counting frequency (counter) max. 100 kHz

Frequency meter 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

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Potential separation digital outputs

- Potential separation digital outputs Relays
- between the channels No

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

- 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

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

Degree of protection acc. to EN 60529

- IP20 Yes

Standards, approvals, certificates

CE mark Yes

CSA approval Yes

UL approval Yes

cULus Yes

FM approval Yes

RCM (formerly C-TICK) Yes

Marine approval

- 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

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- 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
- permissible operating height -1000 to 2000 m

Relative humidity

- permissible range (without condensation) at 25 °C
- 95 %

- Operation, max. 95 %; no condensation

Vibrations

- Vibrations 2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
- Operation, tested according to IEC 60068-2-6 Yes

Shock test

- 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

Extended ambient conditions

Pollutant concentrations

— SO₂ at RH < 60% without condensation SO₂ < 0.5 ppm H₂S < 0.1 ppm; RH < 60% condensation-free

Configuration

Programming

Programming language

- LAD Yes
- FBD Yes
- SCL Yes

Cycle time monitoring

- adjustable Yes

Dimensions

Width 110 mm

Height 100 mm

Depth 75 mm

Weights

Weight, approx. 435 g

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