SIEMENS

Data sheet	**6ES7214-1BG40-0XB0**

SIMATIC S7-1200, CPU 1214C, COMPACT CPU, AC/DC/RLY,
ONBOARD I/O: 14 DI 24V DC; 10 DO RELAY 2A; 2 AI 0 - 10V DC,
POWER SUPPLY: AC 85 - 264 V AC AT 47 - 63 HZ,
PROGRAM/DATA MEMORY: 100 KB

General information	
Product type designation	CPU 1214C 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)	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
Current consumption, max.	300 mA at 120 V AC; 150 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	20.4 to 28.8V

Power loss

Power loss, typ.	14 W

Memory

Work memory

• integrated	100 kbyte
• expandable	No

Load memory

• 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
● 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)
integrated channels (DI)	14
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	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)	≥100k ohms
Cable length	
• shielded, max.	100 m; twisted and shielded

Analog outputs

Number of analog outputs	0

Analog value generation

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
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

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	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
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; 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 %
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	S02: < 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.	455 g
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