SIEMENS

Data sheet

6ES7214-1HG40-0XB0

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: DC 20.4 - 28.8 V DC, PROGRAM/DATA MEMORY: 100 KB



General information	
Product type designation	CPU 1214C DC/DC/Relay
Firmware version	V4.1
Engineering with	
 Programming package 	STEP 7 V13 SP1 or higher
Display	
with display	No
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
Reverse polarity protection	Yes
Load voltage L+	
 Rated value (DC) 	24 V
 permissible range, lower limit (DC) 	5 V
• permissible range, upper limit (DC)	250 V

Current consumption (rated value) 500 mX; CPU only Current consumption, max. 1500 mA; CPU with all expansion modules Inrush current, max. 12 A; at 28.8 V Output current 1600 mA; CPU with all expansion modules for backplane bus (5 V DC), max. 1600 mA; Max. 5 V DC for SM and CM Encoder supply 24 V 24 V encoder supply • + minus 4 V DC min. Power loss Power loss Power loss 100 kbyte • expandable No Load memory • • integrated 100 kbyte • expandable No Load memory • • integrated 4 Mbyte • present Yes; maintenance-free • without battery Yes CPU processing times 0.085 µs; / instruction for bit operations, typ. 1.7 µs; / instruction for dealing point arithmetic, typ. 2.3 µs; / instruction for dealing point arithmetic, typ. 2.3 µs; / instruction for dealing point arithmetic, typ. 2.3 µs; / instruction for dealing point arithmetic, typ. 2.3 µs; / instruction for dealing point arithmetic	Input current	
Invah 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 L* minus 4 V DC min. Power loss Power loss, typ. 12 W Power loss, typ. 12 W Memory • integrated 100 kbyte No Lad memory • Integrated No Lad memory 4 Mbyte Integrated • Integrated 4 Mbyte Integrated • Poresent Yes; maintenance-free Integrated • present Yes; maintenance-free Integrated • present Ves; maintenance-free Integrated • without battery Yes Yes CPU processing times Integration in tribmetic, typ. 1.7 µs; / instruction for bit operations, typ. 0.085 µs; / instruction Integrated • without battery Yes Yes Polocks 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 OB Inteled only by RAM for code Polentegrad	Current consumption (rated value)	500 mA; CPU only
Output current for backplane bus (6 V DC), max. 1 600 mA; Max. 5 V DC for SM and CM Encoder supply 24 V 24 V L+ minus 4 V DC min. Power loss. Power loss, typ. Power loss, typ. 1 2 W Memory V Work memory 1 000 kbyte • integrated 100 kbyte • integrated 100 kbyte • prograted No Load memory 4 Mbyte • integrated 100 kbyte • prograted 4 Mbyte • prograted 4 Mbyte • prograted 4 Mbyte • prosent Yes; maintenance-free • without battery Yes CPU processing times 0.085 µs; / instruction for bit operations, typ. 1.7 µs; / instruction for foating point antimetic, typ. 2.3 µs; / instruction for word operations, typ. 1.7 µs; / instruction for bit operations, typ. 1.7 µs; / instruction for blocks (total) DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65353. There is no restriction, the entire working memory can be used OB Eimited only by RAM for code Data areas and their retentivity 10 kbyte retentive data area in total (incl. times,	Current consumption, max.	1 500 mA; CPU with all expansion modules
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• 24 V L+ minus 4 V DC min. Power loss 12 W Power loss, typ. 12 W Memory • • integrated 100 kbyte • expandable No Load memory • • integrated 4 Mbyte • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card • bring-in (SIMATIC Memory Card), max. with SIMATIC memory card • present Yes; maintenance-free • without battery Yes CPU processing times 17 µs; / instruction for bit operations, typ. 0.085 µs; / instruction for floating point arithmetic, typ. 2.3 µs; / instruction for door operations, typ. 0.085 µs; / instruction for floating point arithmetic, typ. 2.3 µs; / instruction for ord operations, typ. 0.085 µs; / instruction for 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 10 kbyte • Number, max. <	Encoder supply	
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Work memory integrated 100 kbyte • expandable No Load memory • integrated 4 Mbyte • integrated 4 Mbyte • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup • present Yes; maintenance-free • without battery Yes CPU processing times 0.085 µs; / instruction for bit operations, typ. 0.085 µs; / instruction for doperations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.3 µs; / instruction CPU-blocks 2.3 µs; / instruction 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 10 kbyte 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	Power loss, typ.	12 W
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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 0.085 µs; / instruction for bit operations, typ. 0.085 µs; / instruction for floating point arithmetic, typ. 2.3 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 10 kbyte • Number, max. 8 kbyte; Size of bit memory address area Local data • per priority class, max. • per priority class, max. 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB	• expandable	No
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• per priority class, max. 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB		8 kbyte; Size of bit memory address area
to 26: 6 KB		
Address area	 per priority class, max. 	
	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	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
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), 	10 bit
max.	
 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	2
device, max.	
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	counters
Forcing	Yes
Diagnostic buffer	
• present	Yes
Traces	
Number of configurable Traces	2; Up to 512 KB of data per trace are possible
ntegrated 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	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 electric	city
 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 distur	bance 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 %
X (1) (1)	
Vibrations	
Vibrations Vibrations	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail Yes

• 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

- 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	Dimensions	
Width	110 mm	
Height	100 mm	
Depth	75 mm	
Weights		
Weight, approx.	435 g	
last modified:	07/25/2016	