6ES7214-1HG40-0XB0

Data sheet



SIMATIC S7-1200, CPU 1214C, compact CPU, DC/DC/relay, onboard I/O: 14 DI 24 V DC; 10 DO relay 2 A; 2 AI 0-10 V DC, power supply: DC 20.4-28.8 V DC, program/data memory 100 KB

Product type designation	CPU 1214C DC/DC/relay
Firmware version	V4.5
Engineering with	
 Programming package 	STEP 7 V17 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
Reverse polarity protection	Yes
Load voltage L+	
 Rated value (DC) 	24 V
 permissible range, lower limit (DC) 	20.4 V
 permissible range, upper limit (DC) 	28.8 V
Input current	
Current consumption (rated value)	500 mA; CPU only
Current consumption, max.	1 500 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V
l²t	0.8 A ² ·s
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	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	12 W
Memory	
Memory Work memory	
	100 kbyte
Work memory	100 kbyte No
Work memory • integrated	
Work memory • integrated • expandable	
Work memory • integrated • expandable Load memory	No
Work memory • integrated • expandable Load memory • integrated	No 4 Mbyte
Work memory • integrated • expandable Load memory • integrated • Plug-in (SIMATIC Memory Card), max.	No 4 Mbyte
Work memory • integrated • expandable Load memory • integrated • Plug-in (SIMATIC Memory Card), max. Backup	A Mbyte with SIMATIC memory card

CPU processing times	
for bit operations, typ.	0.08 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
ОВ	
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	14 kbyte
Flag	
• Size, 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)
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	$0.2\ \text{ms}, 0.4\ \text{ms}, 0.8\ \text{ms}, 1.6\ \text{ms}, 3.2\ \text{ms}, 6.4\ \text{ms}$ and $12.8\ \text{ms}, \text{selectable}$ 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	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
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.
	TO HIS, HIAX.
Relay outputs • Number of relay outputs	10
Number of relay outputs 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)	≥100k 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
 Number of ports 	1
integrated switch	No
Protocols	
 PROFINET IO Controller 	Yes
 PROFINET IO Device 	Yes
 SIMATIC communication 	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	W 7101// 2
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No No
— IRT	No No
— PROFlenergy	No Voc
Prioritized startup Number of IO devices with prioritized startup.	Yes 16
 Number of IO devices with prioritized startup, max. 	10
Number of connectable IO Devices, max.	16
Number of connectable IO Devices for RT,	16
max.	
— of which in line, max.	16
 Activation/deactivation of IO Devices 	Yes
Number of IO Devices that can be	8
simultaneously activated/deactivated, max.	

— Updating time	The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.
PROFINET IO Device	
Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes
— Shared device	Yes
 Number of IO Controllers with shared device. 	2
max.	
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIsafe	No
PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) required
OPC UA	Yes; OPC UA Server
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	100, 0m 1210 2 10quilou
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Redundancy mode	100
Media redundancy	No
— MRP	No No
— MRPD	No
SIMATIC communication	v
• S7 routing	Yes
Open IE communication	
• TCP/IP	Yes
— Data length, max.	8 kbyte
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	8 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
Web server	
supported	Yes
User-defined websites	Yes
OPC UA	
 Runtime license required 	Yes; "Basic" license required
OPC UA Server	Yes; data access (read, write, subscribe), method call, runtime license required
 Application authentication 	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
User authentication	"anonymous" or by user name & password
Number of sessions, max.	10
 Number of subscriptions per session, max. 	5
— Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
Number of server methods, max.	20
 Number of monitored items, max. 	1 000
 Number of server interfaces, max. 	2
 Number of nodes for user-defined server interfaces, max. 	2 000
Further protocols	
• MODBUS	Yes
communication functions / header	
S7 communication	
supported	Yes
• anhhorran	160

• as server	Yes
• as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Number of connections ● overall	PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max
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
Memory size per trace, max.	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	V
RUN/STOP LED	Yes
ERROR LED MAINT LED	Yes Yes
	res
Integrated Functions	Vec
Frequency measurement controlled positioning	Yes 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	Yes
• Interference immunity on signal cables acc. to IEC • Interference immunity on signal cables acc. to IEC	Yes
61000-4-4 Interference immunity against voltage surge	
Interference immunity against voltage surge Interference immunity on supply lines acc. to IEC	Yes
61000-4-5	
Interference immunity against conducted variable disturbance	e 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
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
	res
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	
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	1 000 HF a
Installation altitude, min.	-1 000 m
	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Installation altitude, max. Poletica hyperidity	5 000 m, Restrictions for installation attitudes > 2 000 m, see manual
Relative humidity	
Operation, max. Non-times	95 %; no condensation
Vibrations	
 Vibration resistance during operation acc. to IEC 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
Dellistent concentrati	value), duration 11 ms
Pollutant concentrations	000 +0.5
SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— ГВО	165
— SCL	Yes
— SCL	
— SCL Know-how protection	Yes
 — SCL Know-how protection User program protection/password protection Copy protection 	Yes Yes Yes
— SCL Know-how protection • User program protection/password protection • Copy protection • Block protection	Yes
— SCL Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection	Yes Yes Yes Yes Yes
— SCL Know-how protection User program protection/password protection Copy protection Block protection Access protection protection of confidential configuration data	Yes Yes Yes Yes Yes
— SCL Know-how protection User program protection/password protection Copy protection Block protection Access protection protection of confidential configuration data Protection level: Write protection	Yes Yes Yes Yes Yes Yes
— SCL Know-how protection User program protection/password protection Copy protection Block protection Access protection protection of confidential configuration data Protection level: Write protection Protection level: Read/write protection	Yes Yes Yes Yes Yes Yes Yes Yes
— SCL Know-how protection User program protection/password protection Copy protection Block protection Access protection protection of confidential configuration data Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection	Yes Yes Yes Yes Yes Yes
— SCL Know-how protection User program protection/password protection Copy protection Block protection Access protection protection of confidential configuration data Protection level: Write protection Protection level: Read/write protection	Yes Yes Yes Yes Yes Yes Yes Yes

Dimensions	
Width	110 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	435 g

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