SIEMENS

Data sheet

6ES7214-1AG40-0XB0

SIMATIC S7-1200, CPU 1214C, COMPACT CPU, DC/DC/DC, ONBOARD I/O: 14 DI 24V DC; 10 DO 24 V DC; 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/DC
Firmware version	V4.2
Engineering with	
Programming package	STEP 7 V14 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
	0.5 A ² ·s
Output current for backplane bus (5 V DC), max.	1 600 mA: May 5 V DC for SM and CM
ior 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
N.	
Memory Work memory	
• integrated	100 kbyte
•	No
expandable Load memory	110
• integrated	4 Mbyte
Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card
Backup	with clivia trie memory card
• present	Yes
maintenance-free	Yes
without battery	Yes
• Without battery	100
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
OD	restriction, the entire working memory can be used
OB	Limited only by DAM for eads
• Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	10 kbyte
max.	
Flag	
• Number, max.	8 kbyte; Size of bit memory address area
Local data	46 khyte. Priority along 4 (program guala), 40 k/D priority along
per priority class, max.	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
	10 20. 0 ND
Address area	
Process image	

Inputs, adjustable	1 kbyte
Outputs, adjustable	1 kbyte
Hardwara configuration	
Hardware configuration Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
Number of modules per system, max.	o comm. modules, i signal board, o 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 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
of which high-speed outputs	4; 100 kHz Pulse Train Output
Limitation of inductive shutdown voltage to	L+ (-48 V)
Switching capacity of the outputs	
• with resistive load, max.	0.5 A

• on lamp load, max.	5 W
Output voltage	
● for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V
Output current	
● for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	
• "0" to "1", max.	1 µs
• "1" to "0", max.	5 µs
Switching frequency	
• of the pulse outputs, with resistive load, max.	100 kHz
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),	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 automatic detection of transmission rate	Yes Yes

Autocrossing Yes Interface types • Number of ports • Integrated switch PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Ves • Simatric Communication • Ves • Media redundancy • Mobility PROFINET IO Controller • Transmission rate, max. PROFINET IO Communication • Yes • Media redundancy • No PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services PGOP communication Yes • Ves • Services PGOP communication Yes • No PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services PGOP communication Yes IND • PROFICE communication Yes IND • PROFIce communication PROFICE communication Yes IND • PROFIce communication PROFICE of IO devices with prioritized startup PROFICE of IO devices with prioritized startup No PROFICE of IO devices with prioritized startup No PROFICE of IO Devices with prioritized startup Number of IO Devices with prioritized startup No PROFINET IO Devices PROFINET IO Devices that can be 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 PROFINET IO Device Services PROFINET IO Device Services PROFINET IO Device with the properties of IO devices and the quantity of configured user data. PROFINET IO Device with the properties of IO devices and the quantity of configured user data.	Autonegotiation	Yes
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Services PG/OP communication Yes S7 routing Yes Isochronous mode No	— Updating time	communication component set for PROFINET IO, on the number
 — PG/OP communication — S7 routing — Isochronous mode Yes No 	PROFINET IO Device	
— S7 routing— Isochronous modeNo	Services	
— Isochronous mode No	— PG/OP communication	Yes
	— S7 routing	Yes
— Open IE communication Yes	— Isochronous mode	No
	— Open IE communication	Yes

— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
— 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; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Further protocols	
• MODBUS	Yes

● MODBO2	Tes
Communication functions	
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
 User data per job, max. 	See online help (S7 communication, user data size)
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

Test commissioning functions	
Status/control	
Status/control variable	Yes

16; dynamically

Yes

• User-defined websites

Number of connections

overall

• 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	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
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	4; With integrated outputs
interface	
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Potential separation	
Potential separation digital inputs	
 Potential separation digital inputs 	No
 between the channels, in groups of 	1
Potential separation digital outputs	
 Potential separation digital outputs 	Yes
between the channels	No
between the channels, in groups of	1
EMC	
Interference immunity against discharge of static electric	city
 Interference immunity against discharge of 	Yes
static electricity acc. to IEC 61000-4-2	
 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
KC approval	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; 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.Storage/transport, max.permissible operating height	660 hPa 1 080 hPa -1000 to 2000 m
Relative humidity	
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	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Configuration	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
Know-how protection	
 User program protection/password protection 	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
Protection level: Write protection	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Complete protection 	Yes
Cycle time monitoring	
• adjustable	Yes
Dimensions	
Width	110 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	415 g
last modified:	05/23/2017