SIEMENS

Data sheet

6ES7214-1AG40-0XB0

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



General information	
Product type designation	CPU 1214C DC/DC/DC
Firmware version	V4.4
Engineering with	
Programming package	STEP 7 V16 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

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Inrush current, max.	12 A; at 28.8 V
Pt	0.5 A ² ·s
	0.0 / 3
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.
Davida	
Power loss Power loss, typ.	12 W
Tower 1033, typ.	12 **
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	Yes
without battery	Yes
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
OP	restriction, the entire working memory can be used
OB	Limited only by RAM for code
• Number, max.	Elithited Only by KAM 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	40H + B: 1/4 1 1 1 1 1 1 1 1 1
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
Fime 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	

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Digital inputs	
Number of digital inputs	14; Integrated
 of which inputs usable for technological 	6; HSC (High Speed Counting)
functions	
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", min.	U.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

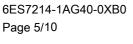
Digital outputs	
Number of digital outputs	10
of which high-speed outputs	4; 100 kHz Pulse Train Output
Limitation of inductive shutdown voltage to	L+ (-48 V)
Switching capacity of the outputs	
• with resistive load, max.	0.5 A

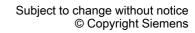


• on lamp load, max.	5 W
Output voltage	
• for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V
Output current	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	
• "0" to "1", max.	1 μs
• "1" to "0", max.	5 µs
Switching frequency	
• of the pulse outputs, with resistive load, max.	100 kHz
Relay outputs	
Number of relay outputs	0
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	
ramas or analog carpato	0
Analog value generation for the inputs	0
Analog value generation for the inputs Integration and conversion time/resolution per channel	
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign),	0 10 bit
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max.	10 bit
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable	10 bit Yes
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max.	10 bit
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder	10 bit Yes
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder Connectable encoders	10 bit Yes 625 μs
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder	10 bit Yes
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder Connectable encoders • 2-wire sensor 1. Interface	10 bit Yes 625 μs Yes
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder Connectable encoders • 2-wire sensor	10 bit Yes 625 μs



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	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	No
 Prioritized startup 	Yes
 Number of IO devices with prioritized startup, max. 	16
— Number of connectable IO Devices, max.	16
 Number of connectable IO Devices for RT, max. 	16
— of which in line, max.	16
 Activation/deactivation of IO Devices 	Yes
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
— 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
	Yes
— S7 routing	163



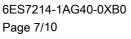


— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
— Shared device	Yes
— Number of IO Controllers with shared	2
device, max.	

Yes; CM 1243-5 (master) or CM 1242-5 (slave) required Yes; CM 1243-2 required Yes No Yes Yes
Yes; CM 1243-5 (master) or CM 1242-5 (slave) required Yes; CM 1243-2 required Yes No Yes
Yes; CM 1243-2 required Yes No Yes
Yes No Yes
No Yes
No Yes
Yes
Yes
Yes
Yes
8 kbyte
Yes
8 kbyte
Yes
1 472 byte
Yes
Yes
Yes; "Basic" license required
Yes; Data access (read, write, subscribe), runtime license required
Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
"anonymous" or by user name & password
5
1 000
5
100 ms
200 ms
500
2



Number of rades for user defined server	1 000
 Number of nodes for user-defined server interfaces, max. 	1 000
Further protocols	
• MODBUS	Yes
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)
Number of connections	
• overall	8 connections for open user communication (active or passive): TSEND_C, TRCV_C, TCON, TDISCON, TSEND and TRCV, 8 CPU/CPU connections (Client or Server) for GET/PUT data, 6 connections for dynamic assignment to GET/PUT or open user communication
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	
RUN/STOP LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes
Integrated Functions	
Number of counters	6
Counting frequency (counter) max.	100 kHz
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction	4; With integrated outputs
intenfere	



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	Na		
Potential separation digital inputs	No		
between the channels, in groups of	1		
Potential separation digital outputs	V		
 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 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			
 Interference immunity on 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			
IP degree of protection	IP20		
Standards, approvals, certificates	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.	660 hPa
• Storage/transport, max.	1 080 hPa
Altitude during operation relating to sea level	
Installation altitude, min.	-1 000 m
 Installation altitude, max. 	2 000 m
Relative humidity	
Operation, max.	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 value), duration 11 ms
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
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