6ES7214-1AG40-0XB0

Data sheet



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	
	ODIL 40440 PO/PO/PO
Product type designation	CPU 1214C DC/DC/DC
Engineering with	OTED 7 \/47 hinh
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	0.5 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	
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 restriction, the entire working memory can be used
OB	Charle Working Hieritery can be deed
Number, max.	Limited only by RAM for code
Data areas and their retentivity	Emilion Strip by Futuri for South
•	14 khyto
Retentive data area (incl. timers, counters, flags), max.	14 kbyte
Flag	O librator Cimo of hit manager, address area
• 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	5 55 Hoddios, 1 Signal Social, 5 Signal Hoddios
Clock	V
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)	10 V DO at 2.0 HIM
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. — at "0" to "1" max	0.2 ms
— at "0" to "1", max.	0.2 ms 12.8 ms
— at "0" to "1", max. for interrupt inputs	12.8 ms
— at "0" to "1", max. for interrupt inputs — parameterizable	
— at "0" to "1", max. for interrupt inputs — parameterizable for technological functions	12.8 ms Yes
— at "0" to "1", max. for interrupt inputs — parameterizable for technological functions — parameterizable	12.8 ms
— at "0" to "1", max. for interrupt inputs — parameterizable for technological functions — parameterizable Cable length	12.8 ms Yes Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz
— at "0" to "1", max. for interrupt inputs — parameterizable for technological functions — parameterizable	Yes Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz 500 m; 50 m for technological functions
— at "0" to "1", max. for interrupt inputs — parameterizable for technological functions — parameterizable Cable length	12.8 ms Yes Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz
 — at "0" to "1", max. for interrupt inputs — parameterizable for technological functions — parameterizable Cable length shielded, max. 	Yes Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz 500 m; 50 m for technological functions
 — at "0" to "1", max. for interrupt inputs — parameterizable for technological functions — parameterizable Cable length shielded, max. unshielded, max. 	Yes Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz 500 m; 50 m for technological functions
— at "0" to "1", max. for interrupt inputs — parameterizable for technological functions — parameterizable Cable length • shielded, max. • unshielded, max. Digital outputs Number of digital outputs	Yes Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz 500 m; 50 m for technological functions 300 m; for technological functions: No
— at "0" to "1", max. for interrupt inputs — parameterizable for technological functions — parameterizable Cable length • shielded, max. • unshielded, max. Digital outputs	Yes Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz 500 m; 50 m for technological functions 300 m; for technological functions: No

• with resistive load, max.		
Colubrat vortage Foreignal "0", max. O.1 V; with 10 kOhm load	 with resistive load, max. 	0.5 A
• for signal **O*, max. Output correct • for signal **O* de value • for signal **O* read value • O*O* signal **O* read value • O*O*O*O*O*O*O*O*O*O*O*O*O*O*O*O*O*O*O*	on lamp load, max.	5 W
Copput current	Output voltage	
• for signal "1" rated value	• for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "O' residual current, max	Output current	
Cutput delay with resistave load ° ° ° to ° 1°, max, 1 μs ° ° ° to ° 1°, max, 5 μs 5 μs	for signal "1" rated value	0.5 A
• "1" to "0", max. 5 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. 150 m • shielded, max. 500 m • unshielded, max. 150 m Analog inputs Number of analog inputs 2 Input ranges (rated values), voltages • Voltage Yes Input ranges (rated values), voltages • 0 0 o + 10 V Yes — Input resistance (0 to 10 V) 2 to while the shielded of the shiel	for signal "0" residual current, max.	0.1 mA
• "1" to "0", max. Switching frequency • of the pulse outputs, with resistive load, max. Relay outputs • Number of relay outputs • shelded, max. • unshielded, max. • Unstranges • Vottage Input ranges • Vottage Input ranges • Vottage Input ranges • Uo +10 V — Input resistance (0 to 10 V) Cable length • shielded, max. • 100 m; twisted and shielded Analog outputs Number of analog outputs Number of analog outputs Number of analog outputs Number of analog outputs • Shielded, max. • 100 m; twisted and shielded Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration ime, parametrizable • Conversion time (per channel) • Pesolution with overrange (bit including sign), max. • 10 bit • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration me, parametrizable • Conversion time (per channel) • Pesolution with overrange (bit including sign), max. • 10 bit • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • 10 bit • Integration and conversion time/resolution yes • 2 wire sensor • 2 wire sensor • Yes • 1 Interface Integration of the parametrizable • Yes • 2 Autonocotable encoders • 2 wire sensor • Yes • 1 Interface types • RJ 45 (Ethernet) • No • PROFINET IO Device • PROFINET IO Device • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Controller • Transmission rate, max. • Open IE communication • Services • PGOP Communication • Hoothrous mode • No	Output delay with resistive load	
Switching frequency of the pulse outputs, with resistive load, max. Relay outputs Number of relay outputs cable length shielded, max. unshielded, max. 150 m Analog linputs Number of analog inputs 2 linput ranges • Votage • O to +10 V — Input resistance (0 to 10 V) Cable length • shielded, max. 100 m; twisted and shielded Analog value; seneration for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. In lengtain fire, parametrizable • Conversion time (per channel) Encodur Connectable encoders • 2-wire sensor 2-wire sensor 4-yes Autorogotial or transmission rate Autorogotial or Ves Interface Isolated Autorogotial or Controller • Resolution of varange (bit including sign), max. • No PROFINET IO Device • PROFINET IO Device • PROFINET IO Controller • Transmission rale, max. Io Must be server • We del are	• "0" to "1", max.	1 μs
Switching frequency of the pulse outputs, with resistive load, max. Relay outputs Number of relay outputs cable length shielded, max. unshielded, max. 150 m Analog linputs Number of analog inputs 2 linput ranges • Votage • O to +10 V — Input resistance (0 to 10 V) Cable length • shielded, max. 100 m; twisted and shielded Analog value; seneration for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. In lengtain fire, parametrizable • Conversion time (per channel) Encodur Connectable encoders • 2-wire sensor 2-wire sensor 4-yes Autorogotial or transmission rate Autorogotial or Ves Interface Isolated Autorogotial or Controller • Resolution of varange (bit including sign), max. • No PROFINET IO Device • PROFINET IO Device • PROFINET IO Controller • Transmission rale, max. Io Must be server • We del are	• "1" to "0", max.	5 µs
e of the pulse outputs, with resistive load, max. Relay outputs Number of relay outputs shelded, max. unshelded, max. 150 m Number of analog inputs Number of analog inputs voltage voltage relay voltage rel		
Relay outputs Number of relay outputs 2 shielded, max. unshielded, max. 150 m Analog inputs Number of analog inputs 150 m Analog inputs Number of analog inputs 2 input ranges • Voltage • O to +10 V — Input resistance (0 to 10 V) — Input re		100 kHz
Number of relay outputs Solom		
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• unshielded, max. 150 m Analog inputs Number of analog inputs • Voltage • Voltage • Voltage • O to +10 V — Input resistance (0 to 10 V) Cable length • shielded, max. 100 m; twisted and shielded Analog outputs Number of analog outputs • Resolution with overange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Isolated automatic detection of transmission rate Autonogolation Autonogolation Pes Autonogolation Fine day Pes Autonogolation Pes Interface types • RJ 45 (Ethernet) • Number of ports • Integrated switch Protocols • PROFINET IO Controller • Transmission rate, max. 100 Mblt/s	-	500 m
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Number of analog inputs 2		130 111
Input ranges • Voltage • Voltages • O to +10 V — Input resistance (0 to 10 V) — Input resistance (0 to 10 V) — Input resistance (0 to 10 V) • shielded, max. 100 m; twisted and shielded Analog outputs Number of analog outputs O Analog vatue 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 Isolated automatic detection of transmission rate Autonogolitation Autocrossing • RJ 45 (Ethernet) • Number of ports • Integrated switch Protocols • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • PROFINET IO Device • Yes • SiMATIC communication • Yes • Web server • Media redundancy PROFINET IO Controller • Yes • Media redundancy No PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services — PG/OP communication • Yes, encryption with TLS V1.3 pre-selected No		0
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● Media redundancy PROFINET IO Controller ● Transmission rate, max. Services — PG/OP communication — Isochronous mode No No		
PROFINET IO Controller ● Transmission rate, max. 100 Mbit/s Services — PG/OP communication Yes; encryption with TLS V1.3 pre-selected — Isochronous mode No		
 Transmission rate, max. Services — PG/OP communication — Isochronous mode 100 Mbit/s Yes; encryption with TLS V1.3 pre-selected No 		110
Services — PG/OP communication — Isochronous mode Yes; encryption with TLS V1.3 pre-selected No		100 Mhit/e
 — PG/OP communication — Isochronous mode Yes; encryption with TLS V1.3 pre-selected No 		TOO INIDIUS
— Isochronous mode No		Voc: openintian with TLS V/4.2 are colocted
— IKI		
	— IK I	INO .

— PROFlenergy	No
 Prioritized startup 	Yes
 Number of IO devices with prioritized startup, 	16
max.	
 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
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)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Redundancy mode	
Media redundancy	
— MRP	No
— MRPD	No
SIMATIC communication	
• S7 routing	Yes
Open IE communication	103
·	Von
TCP/IP Date langth many	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.	50
— 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 	2 000
interfaces, max. Further protocols	
MODBUS	Yes
Communication functions	
S7 communication	
• supported	Yes
as server	Yes
• as client	Yes
	See online help (S7 communication, user data size)
User data per job, max. Number of connections	See Offiline Help (37 Confilmation, user data size)
overall	PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved /
● Overall	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	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
	Tes
Integrated Functions	V
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated outputs
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 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 on supply lines acc. to IEC	Yes
61000-4-4 • Interference immunity on signal cables acc. to IEC	Yes
61000-4-4	165
nterference immunity against voltage surge	
 Interference immunity on supply lines acc. to IEC 61000-4-5 	Yes
nterference immunity against conducted variable disturban	ce 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
andards, approvals, certificates	
E mark	Yes
JL approval	Yes
ULus	Yes
M approval	Yes
RCM (formerly C-TICK)	Yes
C approval	Yes
Marine approval	Yes
nbient conditions	
ree fall	
Fall height, max.	0.3 m; five times, in product package
mbient 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
sir 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.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	05.0/
Operation, max.	95 %; no condensation
/ibrations	0 - ((-2)
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	V 150 00 B 10 00 I 10 I
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
• 302 at 1(11 < 00 % without condensation	

— FBD Yes — SCL Yes Know-how protection • User program protection/password protection • Copy protection Yes • Block protection Yes Access protection • protection of confidential configuration data Yes • Protection level: Write protection Yes • Protection level: Read/write protection Yes • Protection level: Complete protection Yes • Protection level: Tomplete protection Yes • Protection level: Tomplete protection Yes • Protection level: Tomplete protection Yes Oycle time monitoring • adjustable Yes Dimensions Width 110 mm Height 100 mm Depth 75 mm Weights	— LAD	Yes
Know-how protection User program protection/password protection Copy protection Block protection Pes Access protection protection of confidential configuration data Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Protection level: Complete protection Protection level: Complete protection Protection level: Tomplete protection Protection level: Complete protection Pes Cycle time monitoring Adjustable Protection Pes Dimensions Width 110 mm Height 100 mm Depth 75 mm	— FBD	Yes
User program protection/password protection Copy protection Block protection Pyes Access protection protection of confidential configuration data Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Protection level: Complete protection Protection level: Complete protection Protection level: Complete protection Pyes Cycle time monitoring Adjustable Protection level: Tomplete protection Pyes Dimensions Width 110 mm Height 100 mm Depth 75 mm Weights	— SCL	Yes
 Copy protection Block protection Yes Access protection protection of confidential configuration data Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Protection level: Complete protection Yes Cycle time monitoring adjustable Yes Dimensions Width Height Depth 75 mm Weights 	Know-how protection	
Block protection Access protection protection of confidential configuration data Protection level: Write protection Protection level: Write protection Protection level: Read/write protection Protection level: Complete p	 User program protection/password protection 	Yes
Access protection • protection of confidential configuration data • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection • Protection level: Complete protection Cycle time monitoring • adjustable Yes Dimensions Width 110 mm Height 100 mm Depth 75 mm Weights	 Copy protection 	Yes
 protection of confidential configuration data Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Protection level: Complete protection Yes Cycle time monitoring adjustable Yes Dimensions Width Height Do mm Depth 75 mm Weights 	Block protection	Yes
 Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Cycle time monitoring adjustable Yes Dimensions Width Height Do mm Depth 75 mm Weights	Access protection	
 Protection level: Read/write protection Protection level: Complete protection Cycle time monitoring adjustable Yes Dimensions Width Height Do mm Depth 75 mm Weights Weights	 protection of confidential configuration data 	Yes
 ◆ Protection level: Complete protection Cycle time monitoring ◆ adjustable Yes Dimensions Width Height Depth 75 mm Weights 	 Protection level: Write protection 	Yes
Cycle time monitoring • adjustable	 Protection level: Read/write protection 	Yes
● adjustable Yes Dimensions Width 110 mm Height 100 mm Depth 75 mm Weights	Protection level: Complete protection	Yes
Dimensions Width 110 mm Height 100 mm Depth 75 mm Weights To me	Cycle time monitoring	
Width 110 mm Height 100 mm Depth 75 mm Weights ***	adjustable	Yes
Height 100 mm Depth 75 mm Weights	Dimensions	
Depth 75 mm Weights	Width	110 mm
Weights	Height	100 mm
	Depth	75 mm
W. H.	Weights	
vveignt, approx.	Weight, approx.	415 g

4/12/2021

last modified: