Data sheet 6AG1214-1AG40-2XB0

Siemens EcoTech



SIPLUS S7-1200 CPU 1214C DC/DC/DC based on 6ES7214-1AG40-0XB0 with conformal coating, -40...+70 °C, start up -25 °C, signal board: 0, compact CPU, DC/DC/DC, onboard I/O: 14 DI 24 V DC 10 DQ 24 V DC 2 AI 0-10 V DC, power supply: DC 20.4-28.8 V DC, program/data memory 100 KB



Figure similar

General information		
Product type designation	CPU 1214C DC/DC/DC	
based on	6ES7214-1AG40-0XB0	
Engineering with		
 STEP 7 TIA Portal configurable/integrated from version 	see entry ID: 109746275	
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 DC	
l²t	0.5 A²-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	
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	103	
	0.095 up: / instruction	
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 restriction, the entire working memory can be used	
OB		
Number, max.	Limited only by RAM for code	
Data areas and their retentivity		
Retentive data area (incl. timers, counters, flags), max.	10 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	1 Noyte	
Number of modules per system, max.	3 communication modules, no signal board can be used, 8 signal modules	
	5 communication modules, no signal board can be used, o signal modules	
Time of day		
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)		
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 technological functions		
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30	
Cabla lamada	kHz	
Cable length	FOO my FO my far tach mala mi! from - ti	
• 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 "1" min. 20 V Output current • for signal "1" rated value	● for signal "∩" may	
Color current - for signal "1" rated value - for signal "2" residual current, max. - color signal "1" rated value - "10" 1", max. - the pulse outputs, with resistive load, max. - of the pulse outputs, with resistive load, max. - of the pulse outputs, with resistive load, max. - of the pulse outputs - Number of relay outputs - Number of relay outputs - Number of relay outputs - Sheided, max. - unshielded, max. - unshielded, max. - sheided, max. - sheided, max. - of the pulse outputs - o	→ IUI SIGIIAI U , IIIAX.	0.1 V; with 10 kOhm load
	• for signal "1", min.	20 V
Output delay with resistive load **O't D'1, max.** **I' 1b '0', max.*	Output current	
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* "1" to "1", 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 • shelbed, max. 500 m • unshielded, max. 150 m Analog inputs Number of analog inputs 1 Input ranges (rated values), voltages • Ves Input ranges (rated values), voltages • 100 kn hs • 100 kn hs • 101 V Yes — Input resistance (0 to 10 V) 2100 kn hms Cable length • shelbed, 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 (thi including sign), max. 100 m; twisted and shielded Analog outputs 0 Analog rating per channel) 625 μs Encoder Connectable encoders • 2 were sensor Yes 1. Integration time, parameterizable Yes Autorogostion for the first yes • RJ 45 (Ehernet) Yes Autorogostion (Note of the pulse) 1. Integrated with No Protroids • PROFINET IO Device Yes • Media redundancy No PROFINET IO Controller • PROFINET IO Communication • Yes • Media redundancy No PROFINET IO Controller • Transmission rate, max.		0.1 110 (
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	Cable length	
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— PG/OP communication Yes	automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max.	Yes Yes Yes Yes Yes 1 No Yes Yes Yes Yes Yes Yes Yes No
	automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services	Yes Yes Yes Yes 1 No Yes Yes Yes Yes Yes Yes Yes Yes Yos Yes Yos Optionally also encrypted Yes No
— Isochronous mode No	automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services — PG/OP communication	Yes Yes Yes Yes 1 No Yes Yes Yes Yes Yes Yes Yes Yes Your or the state of the sta
— IRT No	automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services — PG/OP communication	Yes Yes Yes Yes 1 No Yes Yes Yes Yes Yes Yes Yes Yes Your or the state of the sta
— PROFlenergy No	automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services — PG/OP communication Isochronous mode	Yes Yes Yes Yes 1 No Yes Yes Yes Yes Yes Yes Yes Yes Your or one of the state of
— Prioritized startup Yes	automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services PG/OP communication Isochronous mode IRT	Yes Yes Yes Yes 1 No Yes Yes Yes Yes Yes Yes Yes Yos; Optionally also encrypted Yes No 100 Mbit/s Yes No
Number of IO devices with prioritized startup, max.	automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server • Media redundancy PROFINET IO Controller • Transmission rate, max. Services — PG/OP communication — Isochronous mode — IRT — PROFIenergy	Yes Yes Yes Yes Yes 1 No Yes Yes Yes Yes Yes Yes Yes Yos Yes Yes No 100 Mbit/s Yes No No

 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	of configured door data.	
Services		
— PG/OP communication	Yes	
— Isochronous mode	No	
— IRT	No	
— PROFlenergy	Yes	
— Shared device	Yes	
Number of IO Controllers with shared device, max.	2	
Protocols	-	
Supports protocol for PROFINET IO	Yes	
PROFIsafe	No No	
PROFIBUS PROFIBUS		
	Yes; CM 1243-5 (master) or CM 1242-5 (slave) required	
AS-Interface	Yes; CM 1243-2 required	
Protocols (Ethernet)	V	
• 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		
• 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), runtime license required	
 Application authentication 	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256	
User authentication	"anonymous" or by user name & password	
Number of sessions, max.	5	
 Number of accessible variables, max. 	1 000	
 Number of subscriptions per session, max. 	5	
— Sampling interval, min.	100 ms	
— Publishing interval, min.	200 ms	
 Number of monitored items, recommended max. 	500	
— Number of server interfaces, max.	2	
 Number of nodes for user-defined server interfaces, max. 	1 000	
Further protocols		
• MODBUS	Yes	
communication functions / header		

C7 communication		
S7 communication	Voc	
• 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		
Counter		
Number of counters	6	
Counting frequency, max.	100 kHz	
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	Yes	
Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	165	
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 disturbance indu	ced 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 A, 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	
Siemens Eco Profile (SEP)	Siemens EcoTech
Ecological footprint	Yes
environmental product declaration Global warming potential	Tes
— global warming potential, (total) [CO2 eq]	111 kg
— global warming potential, (during production) [CO2	20.1 kg
eq]	
 global warming potential, (during operation) [CO2 eq] 	91.5 kg
global warming potential, (after end of life cycle) [CO2 eq]	-0.896 kg
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1 (no adjacent points) with horizontal mounting position
At cold restart, min.	-25 °C
Ambient temperature during storage/transportation	40.00
• min.	-40 °C
max. Altitude during energtion relating to one level.	70 °C
Altitude during operation relating to sea level Installation altitude above sea level, max.	5 000 m
Ambient air temperature-barometric pressure-altitude	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax -10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m)
Relative humidity	,
With condensation, tested in accordance with IEC 60068- 2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
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
Resistance	
Coolants and lubricants	
Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
— to biologically active substances according to EN	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna);
60721-3-3 — to chemically active substances according to EN	Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity
60721-3-3 — to mechanically active substances according to EN	degree 3); * Yes; Class 3S4 incl. sand, dust, *
60721-3-3 Use on ships/at sea	
to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
Against chemically active substances acc. to EN	Yes: Class 3 (excluding trichlorethylene)

60654-4

— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04

Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)

Remark

 Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 * The supplied plug covers must remain in place over the unused interfaces during operation!

Conformal coating

 Coatings for printed circuit board assemblies acc. to EN 61086 Yes; Class 2 for high reliability

• Protection against fouling acc. to EN 60664-3

Yes; Type 1 protection

• Military testing according to MIL-I-46058C, Amendment 7

Yes; Discoloration of coating possible during service life

 Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A Yes; Conformal coating, Class A

configuration / header

configuration /	programming	/ header
corniguration /	programming	/ IICauci

rogramming	language
— LAD	

— FBD

— SCL

Yes Yes Yes

Know-how protection

User program protection/password protection

Yes

Copy protection

rotection

Yes Yes

Block protection

Access protection

• Protection level: Write protection

Yes Yes

Protection level: Read/write protectionProtection level: Complete protection

Yes

programming / cycle time monitoring / header

adjustable

Yes

Dimensions

Width
Height

110 mm 100 mm

75 mm

Depth Weights

Weight, approx.

415 g

Classifications

	Version	Classification
eClass	14	27-24-22-07
eClass	12	27-24-22-07
eClass	9.1	27-24-22-07
eClass	9	27-24-22-07
eClass	8	27-24-22-07
eClass	7.1	27-24-22-07
eClass	6	27-24-22-07
ETIM	9	EC000236
ETIM	8	EC000236
ETIM	7	EC000236
IDEA	4	3565
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

Miscellaneous



Manufacturer Declaration





Metrological Approval

EMV

For use in hazardous locations

Environment

<u>KC</u>









Siemens EcoTech



Environment



last modified:

12/8/2024