SIEMENS

Data sheet

6AG1214-1AG40-2XB0

SIPLUS S7-1200 CPU 1214C DC/DC/DC -40....+70°C with conformal coating based on 6ES7214-1AG40-0XB0 . 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
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
Output current	
for backplane bus (5 V DC), max.	1 600 mA; Max. 5 V DC for SM and CM

General information

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
• without battery	Yes
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 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),	10 kbyte
max.	
Flag	
Number, 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 communication modules, no signal board can be used, 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 	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", 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	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	Vac
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Physics	Ethernet
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Protocols	

PROFINET IO Device Yes POPINET IO Device Yes Open IE communication Web server Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services Number of connectable IO Devices, max. PROFINET IO Device Services Services Services Supports of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFINET OF PROFINET IO PROFIDUS AS Interface Protocols (Ethernet) TOPIP Protocols (Ethernet) TOPIP Pes ISO-on-TCP (RFC1006) Upp Yes PROFIDUS Yes Upports device, was in the protocol of the protocols of the protocols (Ethernet) Topin Iso-on-TCP (RFC1006) Upp Yes Further protocols MODBUS Communication functions Sommunication Ves Sommunication Ves Sommunication Sommunication Ves Sommunication Ves Sommunication Ves Sommunication Ves Sommunication (Incitons) Sommunication Ves Sommunication Ves Sommunication (Incitons) Sommunication Ves Sommunication Ve		
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Web server PROFINET IO Controller Transmission rate, max. Services — Number of connectable IO Devices, max. PROFINET IO Device Services — Shared device — Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS AS-Interface Protocols (Ethernet) • TCP/IP Open IE communication • TCP/IP • ISO-an-TCP (RFC1006) • UDP Web server • supported • User-defined websites Further protocols Further protocols Communication functions Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control variable • Variables Ves Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Communication functions Communication functions Counters	PROFINET IO Device	Yes
PROFINET IO Controller In Transmission rate, max. Services Number of connectable IO Devices, max. PROFINET IO Device Services Services Services Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS AS-Interface Yes Protocols (Ethernet) TCP/IP Ves Open IE communication TCP/IP Ves Ves Ves Ves Ves Ves Ves Ve	Open IE communication	Yes
Transmission rate, max. Services - Number of connectable IO Devices, max. PROFINET IO Device Services - Shared device - Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO Yes PROFIBUS AS-Interface Protocols (Ethernet) - TCP/IP Open IE communication - TCP/IP Open IE communication - TCP/IP (SiO-on-TC/RFC1006) - UDP Yes Web server - supported - User-defined websites - Yes Further protocols - MODBUS Yes Communication - supported - as server - as a client - as server - as a client - Yes Number of connections Status/control variable - Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Web server	Yes
Services - Number of connectable IO Devices, max. PROFINET IO Device Services - Shared device - Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS Yes; CM 1243-5 required AS-Interface Protocols (Ethernet) • TCP/IP • TCP/IP • ISO-on-TCP (RFC1006) • UDP Yes Web server • supported • User-defined websites Futher protocols • MODBUS Communication • supported • user-defined websites Futher protocols • MODBUS Yes Communication • supported • as server • as client • as client Number of connections • overall Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	PROFINET IO Controller	
- Number of connectable IO Devices, max. PROFINET IO Device Services - Shared device	Transmission rate, max.	100 Mbit/s
PROFINET IO Device Services — Shared device — Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS AS-Interface Protocols (Ethernet) • TCP/IP • Yes Open IE communication • TCP/IP • ISO-on-TCP (RFC1006) • UDP • Yes Web server • supported • User-defined websites Further protocols • MODBUS Formunication • Yes Communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control variable • Variables I res I yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Services	
Services	Number of connectable IO Devices, max.	16
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TCP/IP Open IE communication TCP/IP ISO-on-TCP (RFC1006) UDP Yes Web server supported User-defined websites Further protocols MODBUS Yes Tommunication supported Yes Yes Further protocols MODBUS Yes Tommunication ST communication Yes ST communication Yes Number of connections Overall Test commissioning functions Status/control Status/control Status/control Status/control variable Ves Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	AS-Interface	Yes
Open IE communication • TCP/IP • ISO-on-TCP (RFC1006) • UDP Yes Web server • supported • User-defined websites Further protocols • MODBUS Yes Communication functions S7 communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Protocols (Ethernet)	
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ISO-on-TCP (RFC1006) UDP Yes Web server Supported User-defined websites Yes Further protocols MODBUS Yes Communication functions \$7 communication Status/control Status/control Status/control Status/control Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Pes Ves Ves Yes Augustation Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Open IE communication	
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 as client Number of connections overall 16; dynamically Test commissioning functions Status/control Status/control variable Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 	• supported	Yes
Number of connections • overall 16; dynamically Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• as server	Yes
 overall Test commissioning functions Status/control Status/control variable Variables Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 	• as client	Yes
Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Number of connections	
Status/control Status/control variable Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• overall	16; dynamically
 Status/control variable Variables Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 		
 Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 		Voo
counters		
Forcing	 Variables 	
	Forcing	

Forcing	Yes
Diagnostic buffer	
• present	Yes
Traces	
Number of configurable Traces	2; Up to 512 KB of data per trace are possible
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 interface	4; With integrated DO
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	500V AC for 1 minute
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 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	
• 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

• Limit class B, for use in residential areas

Yes; Group 1

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

• IP20	Yes
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	
• min.	-40 °C
• max.	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 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request

Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-— to chemically active substances according to EN 60721-3-3 52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, * — to mechanically active substances according to EN 60721-3-3 Use on ships/at sea Yes; Class 6B2 mold and fungal spores (excluding fauna); Class to biologically active substances according to EN 60721-3-6 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-— to chemically active substances according 52 (severity degree 3); * to EN 60721-3-6 Yes; Class 6S3 incl. sand, dust; * - to mechanically active substances according to EN 60721-3-6 Remark * The supplied plug covers must remain in place over the unused - Note regarding classification of interfaces during operation! environmental conditions acc. to EN 60721 Conformal coating Yes; Class 2 for high availability Coatings for printed circuit board assemblies acc. to EN 61086 Yes; Type 1 protection • Protection against fouling acc. to EN 60664-3 Yes; Discoloration of coating possible during service life • Military testing according to MIL-I-46058C, Amendment 7 Yes; Conformal coating, Class A Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A Configuration Programming Programming language Yes - LAD — FBD Yes

— SCL	Yes
Cycle time monitoring	
adjustable	Yes
Dimensions	
Width	110 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	415 g

06/03/2019

last modified: