SIEMENS

Data sheet   **6AG1212-1HE31-2XB0**

SIPLUS S7-1200 CPU 1212C DC/DC/RLY -40 ... +70 DEGREES C WITH CONFORMAL COATING BASED ON 6ES7212-1HE31-0XB0 . COMPACT CPU, DC/DC/RLY, ONBOARD I/O: 8 DI 24V DC 6 DO RELAY 2A 2 AI 0 - 10V DC POWER SUPPLY: 20,4 -28,8 V DC PROGRAM/DATA MEMORY: 50 KB

Figure similar

General information	
Product type designation	CPU 1212C AC/DC/Relay
Engineering with	
• Programming package	STEP 7 V11 SP2 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
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	5 V
• permissible range, upper limit (DC)	250 V
Input current	
Current consumption (rated value)	175 mA; Typical
Current consumption, max.	1.2 A; 24 V DC

Inrush current, max.	12 A; at 28.8 V

Output current
for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM

Encoder supply
24 V encoder supply	
• 24 V	Permissible range: 20.4V to 28.8V

Power loss
Power loss, typ.	9 W

Memory
Work memory	
• integrated	50 kbyte
• expandable	No
Load memory	
• integrated	1 Mbyte
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.	2.5 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	
• Number, max.	4 kbyte; Size of bit memory address area

Address area
I/O address area	
• Inputs	1 024 byte
• Outputs	1 024 byte
Process image	
• Inputs, adjustable	1 kbyte
• Outputs, adjustable	1 kbyte

Hardware configuration

Number of modules per system, max.	3 com. modules, no signal board can be used, 2 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	8; Integrated
● of which inputs usable for technological functions	4; HSC (High Speed Counting)
Source/sink input	Yes

Number of simultaneously controllable inputs

all mounting positions

— up to 40 °C, max.	8

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 current

● for signal "1", typ.	1 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 & 1 @ 30 kHz, differential: 3 @ 80 kHz & 1 @ 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	6; Relays
Short-circuit protection	No; to be provided externally

Switching capacity of the outputs

● with resistive load, max.	2 A
● on lamp load, max.	30 W with DC, 200 W with AC

Output delay with resistive load	
• "0" to "1", max.	10 ms; max.
• "1" to "0", max.	10 ms; max.
Switching frequency	
• of the pulse outputs, with resistive load, max.	1 Hz
Relay outputs	
• Number of relay outputs	6
• Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000
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), max.	10 bit
• 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	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Functionality	
• PROFINET IO Controller	Yes

Protocols

Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes
AS-Interface	Yes

Protocols (Ethernet)

• TCP/IP	Yes

Further protocols

• MODBUS	Yes

Communication functions

S7 communication

• supported	Yes
• as server	Yes
• as client	Yes

Open IE communication

• TCP/IP	Yes
• ISO-on-TCP (RFC1006)	Yes
• UDP	Yes

Web server

• supported	Yes
• User-defined websites	Yes

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

Integrated Functions

Number of counters	4
Counting frequency (counter) max.	100 kHz
Frequency meter	Yes
controlled positioning	Yes
PID controller	Yes
Number of alarm inputs	4

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	Relays
• between the channels	No

Permissible potential difference

between different circuits	500 V DC between 24 V DC and 5 V DC

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 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 disturbance 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

Ambient conditions

Free fall

• Fall height, max.	0.3 m; five times, in product package

Ambient temperature during operation

• min.	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C

• horizontal installation, max.	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
• vertical installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	50 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
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	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	-25 °C
Relative humidity	
— With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
— against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
— against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Configuration

Programming

Programming language

— LAD	Yes
— FBD	Yes
— SCL	Yes
Cycle time monitoring	
• adjustable	Yes

Dimensions

Width	90 mm
Height	100 mm
Depth	75 mm

Weights

Weight, approx.	385 g
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