

SIPLUS S7-1200 CPU 1212C AC/DC/relay for medial exposure with conformal coating based on 6ES7212-1BE40-0XB0 . compact CPU, AC/DC/relay, onboard I/O: 8 DI 24 V DC 6 DO relay 2 A 2 AI 0-10 V DC, Power supply: AC 85-264V AC @ 47-63 Hz, Program/data memory 75 KB

General information

| | |
|--------------------------|-----------------------|
| Product type designation | CPU 1212C AC/DC/relay |
|--------------------------|-----------------------|

Supply voltage

| | |
|-------------------------------------|-------|
| Rated value (AC) | |
| • 120 V AC | Yes |
| • 230 V AC | Yes |
| permissible range, lower limit (AC) | 85 V |
| permissible range, upper limit (AC) | 264 V |

Line frequency

| | |
|----------------------------------|-------|
| • permissible range, lower limit | 47 Hz |
| • permissible range, upper limit | 63 Hz |

Input current

| | |
|-----------------------------------|--|
| Current consumption (rated value) | 80 mA at 120 V AC; 40 mA at 240 V AC |
| Current consumption, max. | 240 mA at 120 V AC; 120 mA at 240 V AC |
| Inrush current, max. | 20 A; at 264 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 | 20.4 to 28.8V |

Power loss

| | |
|------------------|------|
| Power loss, typ. | 11 W |
|------------------|------|

Memory

| | |
|---------------------------------------|--------------------------|
| Work memory | |
| • integrated | 75 kbyte |
| • expandable | No |
| Load memory | |
| • integrated | 1 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; / Operation |
| for word operations, typ. | 1.7 µs; / Operation |
| for floating point arithmetic, typ. | 2.3 µs; / Operation |
| 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 |
| 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, 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 technological functions | |
| — parameterizable | Yes; Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 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 |
| 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

Isolated Yes

automatic detection of transmission rate Yes

Autonegotiation Yes

Autocrossing Yes

Interface types

- RJ 45 (Ethernet) Yes

Protocols

- PROFINET IO Controller Yes
- PROFINET IO Device Yes
- Open IE communication Yes
- Web server Yes

PROFINET IO Controller

- Transmission rate, max. 100 Mbit/s

Services

- Number of connectable IO Devices, max. 16

PROFINET IO Device

Services

- Shared device Yes
- Number of IO Controllers with shared device, max. 2

Protocols

Supports protocol for PROFINET IO Yes

PROFIBUS Yes; CM 1243-5 required

AS-Interface Yes

Protocols (Ethernet)

- TCP/IP Yes

Open IE communication

| | |
|--|--|
| • TCP/IP | Yes |
| • ISO-on-TCP (RFC1006) | Yes |
| • UDP | Yes |
| Web server | |
| • supported | Yes |
| • User-defined websites | Yes |
| Further protocols | |
| • MODBUS | Yes |
| Communication functions | |
| S7 communication | |
| • supported | Yes |
| • as server | Yes |
| • as client | Yes |
| Number of connections | |
| • overall | 16; dynamically |
| 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; Up to 512 KB of data per trace are possible |
| Integrated Functions | |
| Number of counters | 4 |
| 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 | Up to 4 with SB 1222 |
| 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
- between the channels
- between the channels, in groups of

Relays

No
2

EMC

Interference immunity against discharge of static electricity

- Interference immunity against discharge of static electricity acc. to IEC 61000-4-2
 - 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 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

Ambient conditions

Free fall

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

Ambient temperature during operation

- min. -20 °C; = Tmin; Startup @ 0 °C
- max. 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical
- horizontal installation, min. -20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
- horizontal installation, max. 60 °C; = Tmax
- vertical installation, min. -20 °C; = Tmin
- vertical installation, max. 50 °C; = Tmax
- At cold restart, min. 0 °C

Ambient temperature during storage/transportation

- min. -40 °C
- max. 70 °C

| | |
|---|--|
| Altitude during operation relating to sea level | |
| <ul style="list-style-type: none"> • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude | 2 000 m 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); above 2 000 m max. 132 V AC |
| Relative humidity | |
| <ul style="list-style-type: none"> • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation/frost (no commissioning under condensation conditions) |
| Vibrations | |
| <ul style="list-style-type: none"> • Vibration resistance during operation acc. to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-6 | 2 g (m/s ²) wall mounting, 1 g (m/s ²) DIN rail Yes |
| Shock testing | |
| <ul style="list-style-type: none"> • 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 |
| — to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| — to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * |
| 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 60654-4 | Yes; Class 3 (excluding trichlorethylene) |
| — 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
- Protection against fouling acc. to EN 60664-3
- Military testing according to MIL-I-46058C, Amendment 7
- Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A

Yes; Class 2 for high reliability

Yes; Type 1 protection

Yes; Discoloration of coating possible during service life

Yes; Conformal coating, Class A

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. | 425 g |
|-----------------|-------|

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