

SIPLUS S7-1200 CPU 1214C DC/DC/DC -40...+60°C with conformal coating based on 6ES7214-1AG40-0XB0 signal board usable.
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) | Yes |
| <ul style="list-style-type: none"> • 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+

| | |
|---|--------|
| <ul style="list-style-type: none"> • Rated value (DC) | 24 V |
| <ul style="list-style-type: none"> • permissible range, lower limit (DC) | 20.4 V |
| <ul style="list-style-type: none"> • 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 |
|----------------------------------|-------------------------------------|

| 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), max. | 10 kbyte |
| 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 comm. modules, 1 signal board, 8 signal modules |

| Time of day | |
|--|--|
| Clock | |
| <ul style="list-style-type: none"> • Hardware clock (real-time) • Backup time • Deviation per day, max. | Yes 480 h; Typical 60 s/month at 25 °C |
| Digital inputs | |
| Number of digital inputs | 14; Integrated |
| <ul style="list-style-type: none"> • 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 | |
| <ul style="list-style-type: none"> • Rated value (DC) • for signal "0" • for signal "1" | 24 V 5 V DC at 1 mA 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 | |
| <ul style="list-style-type: none"> • shielded, max. • unshielded, max. | 500 m; 50 m for technological functions 300 m; for technological functions: No |
| Digital outputs | |
| Number of digital outputs | 10 |
| <ul style="list-style-type: none"> • 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 | |
| <ul style="list-style-type: none"> • with resistive load, max. • on lamp load, max. | 0.5 A 5 W |
| Output voltage | |
| <ul style="list-style-type: none"> • for signal "0", max. • for signal "1", min. | 0.1 V; with 10 kOhm load 20 V |
| Output current | |

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|---|-----------------------------|
| • 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), 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 |
| Protocols | |

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|---|--|
| • PROFINET IO Controller | Yes |
| • PROFINET IO Device | 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 | |

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| • 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 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 | |
| • 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. -40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
- max. 60 °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
- 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
- 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! |

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|---|--|
| 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

Programming

| | |
|-----------------------------|-----|
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — SCL | Yes |

| | |
|------------------------------|-----|
| Cycle time monitoring | |
| • adjustable | Yes |

Dimensions

| | |
|--------|--------|
| Width | 110 mm |
| Height | 100 mm |
| Depth | 75 mm |

Weights

| | |
|-----------------|-------|
| Weight, approx. | 415 g |
|-----------------|-------|

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