

SIPLUS S7-1200 CPU 1214C DC/DC/DC T1 RAIL -25 ... +55 °C T1 with 70°C for 10 min 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: 20.4-28.8V DC, Program/data memory 75 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 | |
| <ul style="list-style-type: none"> • 24 V | L+ minus 4 V DC min. |
| Power loss | |
| Power loss, typ. | 12 W |
| Memory | |
| Work memory | |
| <ul style="list-style-type: none"> • integrated | 100 kbyte |
| <ul style="list-style-type: none"> • expandable | No |
| Load memory | |
| <ul style="list-style-type: none"> • integrated | 4 Mbyte |
| <ul style="list-style-type: none"> • Plug-in (SIMATIC Memory Card), max. | with SIMATIC memory card |
| Backup | |
| <ul style="list-style-type: none"> • present | Yes; maintenance-free |
| <ul style="list-style-type: none"> • 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 | |
| <ul style="list-style-type: none"> • Number, max. | Limited only by RAM for code |
| Data areas and their retentivity | |
| Retentive data area (incl. timers, counters, flags), max. | 10 kbyte |
| Flag | |
| <ul style="list-style-type: none"> • Number, max. | 8 kbyte; Size of bit memory address area |
| Local data | |
| <ul style="list-style-type: none"> • per priority class, max. | 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB |
| Address area | |
| Process image | |
| <ul style="list-style-type: none"> • Inputs, adjustable | 1 kbyte |
| <ul style="list-style-type: none"> • 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 counter/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 | |

| | |
|---|-----------------------------|
| • 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 |
| 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 |
| • 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 | |
| • User-defined websites | Yes |
| Further protocols | |
| • MODBUS | Yes |
| Communication functions | |
| S7 communication | |
| • supported | Yes |
| • as server | Yes |
| • as client | Yes |
| Web server | |
| • supported | 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 |

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| 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 |
| Isolation | |
| Isolation tested with | According to EN 50155 (routine test) |
| 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 | |
| <ul style="list-style-type: none"> • Limit class A, for use in industrial areas • Limit class B, for use in residential areas | <p>Yes; Group 1</p> <p>Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011</p> |
| Degree and class of protection | |
| Degree of protection acc. to EN 60529 | |
| <ul style="list-style-type: none"> • IP20 | Yes |
| Standards, approvals, certificates | |
| Railway application | |
| <ul style="list-style-type: none"> • EN 50121-3-2 • EN 50121-4 • EN 50124-1 • EN 50125-1 • EN 50125-2 • EN 50125-3 • EN 50155 • EN 61373 • Fire protection acc. to EN 45545-2 | <p>Yes; EMC for rail vehicles</p> <p>Yes; EMC for signal and telecommunications systems</p> <p>Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC</p> <p>Yes; Rail vehicles - see ambient conditions</p> <p>Yes; Stationary electrical equipment - see ambient conditions</p> <p>Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)</p> <p>Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2</p> <p>Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B</p> <p>Yes; Rail vehicles - verification on request</p> |
| Ambient conditions | |
| Free fall | |
| <ul style="list-style-type: none"> • Fall height, max. | 0.3 m; five times, in product package |
| Ambient temperature during operation | |
| <ul style="list-style-type: none"> • horizontal installation, min. • horizontal installation, max. | <p>-25 °C; = Tmin; Startup @ -25 °C</p> <p>60 °C; Number of simultaneously activated inputs or outputs: 7 or 5 (no adjacent points) at 60 °C horizontal, 14 or 10 at 55 °C horizontal; 70 °C for 10 minutes (T1 acc. to EN 50155)</p> |
| Ambient temperature during storage/transportation | |
| <ul style="list-style-type: none"> • min. • max. | <p>-40 °C</p> <p>70 °C</p> |
| 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 | <p>2 000 m</p> <p>Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)</p> |
| 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 | 2 g (m/s ²) wall mounting, 1 g (m/s ²) 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 |
| 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 land craft, rail vehicles and special-purpose vehicles | |
| — to biologically active substances according to EN 60721-3-5 | Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request |
| — to chemically active substances according to EN 60721-3-5 | Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * |
| — to mechanically active substances according to EN 60721-3-5 | Yes; Class 5S3 incl. sand, dust; * |
| from supply voltage 1L+ | |
| — Note regarding classification of environmental conditions acc. to EN 60721 | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| 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 |
| Other | |

Note:

For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

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