

SIPLUS S7-1200 CPU 1214FC DC/DC/DC -25...+55°C with conformal coating based on 6ES7214-1AF40-0XB0 . 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" 20.4-28.8 V DC Program/data memory 125 KB



General information

| | |
|--------------------------|---------------------|
| Product type designation | CPU 1214FC DC/DC/DC |
|--------------------------|---------------------|

Supply voltage

| | |
|---|--------|
| Rated value (DC) | Yes |
| <ul style="list-style-type: none"> • 24 V DC | |
| permissible range, lower limit (DC) | 20.4 V |
| permissible range, upper limit (DC) | 28.8 V |

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, max. | 1 500 mA; max. with all expansion accessories |
| Inrush current, max. | 12 A; at 28.8 V DC |

Encoder supply

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|--|----------------------|
| 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 | 125 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. | 0.08 μ s; / instruction |
| for word operations, typ. | 1.7 μ s; / instruction |
| for floating point arithmetic, typ. | 2.3 μ s; / Operation |
| CPU-blocks | |
| Number of blocks (total) | 1 024; OBs, FBs, FCs, DBs |
| 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 |
| Address area | |
| I/O address area | |
| <ul style="list-style-type: none"> Inputs | 1 024 byte |
| <ul style="list-style-type: none"> Outputs | 1 024 byte |
| Process image | |
| <ul style="list-style-type: none"> Inputs, adjustable | 1 024 byte |
| <ul style="list-style-type: none"> Outputs, adjustable | 1 024 byte |
| Hardware configuration | |
| Number of modules per system, max. | 8; 3 comm. modules, 1 signal board, 8 signal modules |
| Time of day | |
| Clock | |
| <ul style="list-style-type: none"> Hardware clock (real-time) | Yes |
| <ul style="list-style-type: none"> Backup time | 480 h; typical; 12 days min. at 40 °C |
| <ul style="list-style-type: none"> Deviation per day, max. | \pm 60 s per month |
| Digital inputs | |
| Number of digital inputs | 14 |

| | |
|---|---|
| <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; 14 inputs at 55 °C horizontal or 45 °C vertical |
| Input voltage | |
| <ul style="list-style-type: none"> • Rated value (DC) • for signal "0" • for signal "1" | 24 V; DC at 4 mA nominal 5 V DC at 1 mA 15 V DC at 2.5 mA |
| Input current | |
| <ul style="list-style-type: none"> • for signal "1", typ. | 4 mA; nominal |
| Input delay (for rated value of input voltage) | |
| for standard inputs | |
| — parameterizable | 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms |
| — at "0" to "1", min. | 0.1 µs |
| — at "0" to "1", max. | 20 ms |
| for interrupt inputs | |
| — parameterizable | Yes |
| for technological functions | |
| — parameterizable | Yes; 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 150 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 |
| Short-circuit protection | No; to be provided externally |
| 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 | |
| <ul style="list-style-type: none"> • for signal "1" rated value • for signal "0" residual current, max. | 0.5 A 0.1 mA |
| Output delay with resistive load | |
| <ul style="list-style-type: none"> • "0" to "1", max. • "1" to "0", max. | 1 µs 3 µs |

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| 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; 0 to 10V |
| Input ranges (rated values), voltages | |
| • 0 to +10 V | Yes |
| — Input resistance (0 to 10 V) | ≥100k ohms |
| Cable length | |
| • shielded, max. | 100 m; shielded, twisted pair |
| Analog outputs | |
| Number of analog outputs | 0 |
| Cable length | |
| • shielded, max. | 100 m; shielded, twisted pair |
| 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 | |
| • PROFINET IO Controller | Yes |
| • PROFINET IO Device | Yes |
| PROFINET IO Controller | |

| | |
|---|----|
| Services | |
| — Number of IO devices with prioritized startup, max. | 16 |

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 |
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Communication functions

S7 communication

| | |
|-------------|-----|
| • supported | Yes |
| • as server | Yes |
| • as client | Yes |

Test commissioning functions

Status/control

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|---------------------------|--|
| • Status/control variable | Yes |
| • Variables | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters |

Forcing

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| • Forcing | Yes |
|-----------|-----|

Diagnostic buffer

| | |
|-----------|-----|
| • present | Yes |
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Traces

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|---------------------------------|--|
| • Number of configurable Traces | 2; Up to 512 KB of data per trace are possible |
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Integrated Functions

| | |
|-----------------------------------|---------|
| Number of counters | 6 |
| Counting frequency (counter) max. | 100 kHz |
| Frequency measurement | Yes |
| controlled positioning | Yes |
| PID controller | Yes |
| Number of alarm inputs | 4 |

| | |
|---|---|
| Number of pulse outputs | 4 |
| Limit frequency (pulse) | 100 kHz |
| Potential separation | |
| Potential separation digital inputs | |
| <ul style="list-style-type: none"> Potential separation digital inputs | Functional isolation (Optocoupler) |
| 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 | |
| <ul style="list-style-type: none"> Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 <ul style="list-style-type: none"> — Test voltage at air discharge — Test voltage at contact discharge | <p>Yes</p> <p>8 kV</p> <p>6 kV</p> |
| Interference immunity to cable-borne interference | |
| <ul style="list-style-type: none"> Interference immunity on supply lines acc. to IEC 61000-4-4 Interference immunity on signal cables acc. to IEC 61000-4-4 | <p>Yes</p> <p>Yes</p> |
| Interference immunity against voltage surge | |
| <ul style="list-style-type: none"> Interference immunity on supply lines acc. to IEC 61000-4-5 | Yes |
| Interference immunity against conducted variable disturbance induced by high-frequency fields | |
| <ul style="list-style-type: none"> 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 | |
| IP degree of protection | IP20 |
| Standards, approvals, certificates | |
| Marine approval | Yes |
| Highest safety class achievable in safety mode | |
| <ul style="list-style-type: none"> Performance level according to ISO 13849-1 SIL acc. to IEC 61508 | <p>PLe</p> <p>SIL 3</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"> min. max. | <p>-25 °C; = Tmin</p> <p>55 °C; = Tmax</p> |

| | |
|---|--|
| • horizontal installation, min. | -25 °C |
| • horizontal installation, max. | 55 °C |
| • vertical installation, min. | -25 °C |
| • vertical installation, max. | 45 °C |
| Ambient temperature during storage/transportation | |
| • min. | -40 °C |
| • max. | 70 °C |
| Air pressure acc. to IEC 60068-2-13 | |
| • Operation, min. | 795 hPa |
| • Operation, max. | 1 080 hPa |
| Altitude during operation relating to sea level | |
| • Installation altitude above sea level, max. | 2 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 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/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 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
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04

Yes; Class 3 (excluding trichlorethylene)

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
- FBD
- SCL

Yes; incl. failsafe

Yes; incl. failsafe

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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