



SIMATIC S7-1200F, CPU 1214 FC, 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 125 KB

| General information | |
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| Product type designation | CPU 1214FC DC/DC/DC |
| Firmware version | V4.5 |
| Engineering with | |
| <ul style="list-style-type: none"> Programming package | STEP 7 V17 or higher |
| Supply voltage | |
| Rated value (DC) | |
| <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) permissible range, lower limit (DC) permissible range, upper limit (DC) | 24 V 20.4 V 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 |
| I ² t | 0.5 A ² ·s |
| 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 expandable | 125 kbyte No |
| Load memory | |
| <ul style="list-style-type: none"> integrated Plug-in (SIMATIC Memory Card), max. | 4 Mbyte with SIMATIC memory card |
| Backup | |
| <ul style="list-style-type: none"> present maintenance-free | Yes Yes |

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| <ul style="list-style-type: none"> • without battery | Yes |
| CPU processing times | |
| for bit operations, typ. | 0.08 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. | 14 kbyte |
| Flag | |
| <ul style="list-style-type: none"> • Size, 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 • Outputs, adjustable | 1 kbyte 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) |

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| Switching capacity of the outputs | |
| • with resistive load, max. | 0.5 A |
| • on lamp load, max. | 5 W |
| Output voltage | |
| • for signal "0", max. | 0.1 V; with 10 kOhm load |
| • for signal "1", min. | 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 |
| 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 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 |
| • Number of ports | 1 |
| • integrated switch | No |
| Protocols | |
| • PROFINET IO Controller | Yes |
| • PROFINET IO Device | Yes |
| • SIMATIC communication | Yes |
| • Open IE communication | Yes; Optionally also encrypted |
| • Web server | Yes |
| • Media redundancy | No |
| PROFINET IO Controller | |
| • Transmission rate, max. | 100 Mbit/s |
| Services | |
| — PG/OP communication | Yes; encryption with TLS V1.3 pre-selected |
| — Isochronous mode | No |

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| — IRT | No |
| — PROFINergy | No |
| — Prioritized startup | Yes |
| — Number of IO devices with prioritized startup, max. | 16 |
| — Number of connectable IO Devices, max. | 16 |
| — Number of connectable IO Devices for RT, max. | 16 |
| — of which in line, max. | 16 |
| — Activation/deactivation of IO Devices | Yes |
| — Number of IO Devices that can be simultaneously activated/deactivated, max. | 8 |
| — Updating time | The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data. |
| PROFINET IO Device | |
| Services | |
| — PG/OP communication | Yes; encryption with TLS V1.3 pre-selected |
| — Isochronous mode | No |
| — IRT | No |
| — PROFINergy | Yes |
| — Shared device | Yes |
| — Number of IO Controllers with shared device, max. | 2 |
| Protocols | |
| Supports protocol for PROFINET IO | Yes |
| PROFIBUS | Yes; CM 1243-5 (master) or CM 1242-5 (slave) required |
| OPC UA | Yes; OPC UA Server |
| AS-Interface | Yes; CM 1243-2 required |
| Protocols (Ethernet) | |
| • TCP/IP | Yes |
| • DHCP | No |
| • SNMP | Yes |
| • DCP | Yes |
| • LLDP | Yes |
| Open IE communication | |
| • TCP/IP | Yes |
| — Data length, max. | 8 kbyte |
| • ISO-on-TCP (RFC1006) | Yes |
| — Data length, max. | 8 kbyte |
| • UDP | Yes |
| — Data length, max. | 1 472 byte |
| Web server | |
| • supported | Yes |
| • User-defined websites | Yes |
| OPC UA | |
| • Runtime license required | Yes; "Basic" license required |
| • OPC UA Server | Yes; data access (read, write, subscribe), method call, runtime license required |
| — Application authentication | Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 |
| — User authentication | "anonymous" or by user name & password |
| — Number of sessions, max. | 10 |
| — Number of subscriptions per session, max. | 50 |
| — Sampling interval, min. | 100 ms |
| — Publishing interval, min. | 200 ms |
| — Number of server methods, max. | 20 |
| — Number of monitored items, max. | 1 000 |
| — Number of server interfaces, max. | 2 |
| — Number of nodes for user-defined server | 2 000 |

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| interfaces, max. | |
| Further protocols | |
| • MODBUS | Yes |
| Communication functions | |
| S7 communication | |
| • supported | Yes |
| • as server | Yes |
| • as client | Yes |
| • User data per job, max. | See online help (S7 communication, user data size) |
| Number of connections | |
| • overall | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max |
| Test commissioning functions | |
| Status/control | |
| • Status/control variable | Yes |
| • Variables | inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters |
| Forcing | |
| • Forcing | Yes; peripheral inputs/outputs (without fail-safe) |
| Diagnostic buffer | |
| • present | Yes |
| Traces | |
| • Number of configurable Traces | 2 |
| • Memory size per trace, max. | 512 kbyte |
| Interrupts/diagnostics/status information | |
| Diagnostics indication LED | |
| • RUN/STOP LED | Yes |
| • ERROR LED | Yes |
| • MAINT LED | Yes |
| Integrated Functions | |
| Counter | |
| • Number of counters | 6 |
| • Counting frequency, 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 outputs |
| 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 | No |
| • 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 | |

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| <ul style="list-style-type: none"> • Interference immunity on supply lines acc. to IEC 61000-4-4 | Yes |
| <ul style="list-style-type: none"> • Interference immunity on signal cables acc. to IEC 61000-4-4 | Yes |
| 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 | Yes; Group 1 |
| <ul style="list-style-type: none"> • 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 |
| Standards, approvals, certificates | |
| CE mark | Yes |
| UL approval | Yes |
| cULus | Yes |
| FM approval | Yes |
| RCM (formerly C-TICK) | Yes |
| KC approval | Yes |
| Marine approval | Yes |
| Highest safety class achievable in safety mode | |
| <ul style="list-style-type: none"> • Performance level according to ISO 13849-1 | PLe |
| <ul style="list-style-type: none"> • SIL acc. to IEC 61508 | SIL 3 |
| 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. | 0 °C |
| <ul style="list-style-type: none"> • max. | 55 °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 |
| <ul style="list-style-type: none"> • horizontal installation, min. | 0 °C |
| <ul style="list-style-type: none"> • horizontal installation, max. | 55 °C |
| <ul style="list-style-type: none"> • vertical installation, min. | 0 °C |
| <ul style="list-style-type: none"> • vertical installation, max. | 45 °C |
| Ambient temperature during storage/transportation | |
| <ul style="list-style-type: none"> • min. | -40 °C |
| <ul style="list-style-type: none"> • max. | 70 °C |
| Air pressure acc. to IEC 60068-2-13 | |
| <ul style="list-style-type: none"> • Operation, min. | 795 hPa |
| <ul style="list-style-type: none"> • Operation, max. | 1 080 hPa |
| <ul style="list-style-type: none"> • Storage/transport, min. | 660 hPa |
| <ul style="list-style-type: none"> • Storage/transport, max. | 1 080 hPa |
| Altitude during operation relating to sea level | |
| <ul style="list-style-type: none"> • Installation altitude, min. | -1 000 m |
| <ul style="list-style-type: none"> • Installation altitude, max. | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual |
| Relative humidity | |
| <ul style="list-style-type: none"> • Operation, max. | 95 %; no condensation |
| 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 |
| <ul style="list-style-type: none"> • Operation, tested according to IEC 60068-2-6 | 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 |
| Pollutant concentrations | |

- SO2 at RH < 60% without condensation

S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free

Configuration

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|---|---------------------|
| Programming | |
| Programming language | |
| — LAD | Yes; incl. failsafe |
| — FBD | Yes; incl. failsafe |
| — SCL | Yes |
| Know-how protection | |
| • User program protection/password protection | Yes |
| • Copy protection | Yes |
| • Block protection | Yes |
| Access protection | |
| • protection of confidential configuration data | Yes |
| • Protection level: Write protection | Yes |
| • Protection level: Read/write protection | Yes |
| • Protection level: Complete protection | Yes |
| Cycle time monitoring | |
| • adjustable | Yes |
| Dimensions | |
| Width | 110 mm |
| Height | 100 mm |
| Depth | 75 mm |
| Weights | |
| Weight, approx. | 415 g |

last modified:

5/17/2021 