



Figure similar

SIMATIC S7-1200 G2: compact CPU 1212C DC/DC/RLY; power supply: DC 20.4-28.8 V DC; onboard I/O: 8x DI 24 V DC; 6 DO relay 2 A; memory: program 150 KB data: 500 KB, retentivity: 20 KB

| General information | |
|--|--|
| Product type designation | CPU 1212C DC/DC/Relay |
| Firmware version | V4.1 |
| <ul style="list-style-type: none"> FW update possible | Yes |
| Product function | |
| <ul style="list-style-type: none"> I&M data | Yes; I&M0 to I&M3 |
| <ul style="list-style-type: none"> Isochronous mode | Yes; For PROFINET only |
| <ul style="list-style-type: none"> SysLog | Yes |
| Engineering with | |
| <ul style="list-style-type: none"> Programming package | STEP 7 V21 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 |
| Input current | |
| Current consumption (rated value) | 185 mA; CPU only |
| Current consumption, max. | 765 mA; CPU with all expansion modules |
| Inrush current, max. | 12 A; at 28.8 V DC |
| I^2t | 0.5 A ² ·s |
| 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 | |
| <ul style="list-style-type: none"> 24 V | Yes; L+ minus 4 V DC min. |
| <ul style="list-style-type: none"> Short-circuit protection | Yes |
| <ul style="list-style-type: none"> Output current, max. | 300 mA |
| Power loss | |
| Power loss, typ. | 3 W |
| Storage | |
| Work memory | |
| <ul style="list-style-type: none"> integrated | 650 kbyte |
| <ul style="list-style-type: none"> integrated (for program) | 150 kbyte |
| <ul style="list-style-type: none"> integrated (for data) | 500 kbyte |

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| Load memory | |
| <ul style="list-style-type: none"> integrated | 8 Mbyte |
| <ul style="list-style-type: none"> Plug-in (SIMATIC Memory Card), max. | 32 Gbyte; with SIMATIC memory card |
| Backup | |
| <ul style="list-style-type: none"> present | Yes |
| <ul style="list-style-type: none"> maintenance-free | Yes |
| <ul style="list-style-type: none"> without battery | Yes |
| CPU processing times | |
| for bit operations, typ. | 37 ns; / instruction |
| for word operations, typ. | 30 ns; / instruction |
| for floating point arithmetic, typ. | 74 ns; / instruction |
| CPU-blocks | |
| Number of elements (total) | 4 000; Blocks (OB, FB, FC, DB) and UDTs |
| OB | |
| <ul style="list-style-type: none"> Number of free cycle OBs | 100 |
| <ul style="list-style-type: none"> Number of time alarm OBs | 20 |
| <ul style="list-style-type: none"> Number of delay alarm OBs | 20 |
| <ul style="list-style-type: none"> Number of cyclic interrupt OBs | 20; with minimum OB 3x cycle of 1 ms |
| <ul style="list-style-type: none"> Number of process alarm OBs | 50 |
| <ul style="list-style-type: none"> Number of DPV1 alarm OBs | 3 |
| <ul style="list-style-type: none"> Number of isochronous mode OBs | 1 |
| <ul style="list-style-type: none"> Number of startup OBs | 100 |
| <ul style="list-style-type: none"> Number of asynchronous error OBs | 4 |
| <ul style="list-style-type: none"> Number of synchronous error OBs | 2 |
| <ul style="list-style-type: none"> Number of diagnostic alarm OBs | 1 |
| Data areas and their retentivity | |
| Retentive data area (incl. timers, counters, flags), max. | 20 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. | 64 kbyte; max. 16 KB per block |
| Address area | |
| I/O address area | |
| <ul style="list-style-type: none"> Inputs | 1 kbyte; All inputs are in the process image |
| <ul style="list-style-type: none"> Outputs | 1 kbyte; All outputs are in the process image |
| 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. | 6 |
| <ul style="list-style-type: none"> number of expansion boards (SB, CB, BB) | 1 |
| <ul style="list-style-type: none"> number of signal modules (SM) | 6; depends on the number of CMs |
| <ul style="list-style-type: none"> number of communications modules (CM) | 3 |
| 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 |
| <ul style="list-style-type: none"> Deviation per day, max. | 2 s; at 25 °C |
| Clock synchronization | |
| <ul style="list-style-type: none"> on Ethernet via NTP | Yes |
| Digital inputs | |
| Number of digital inputs | 8; Integrated |
| <ul style="list-style-type: none"> of which inputs usable for technological functions | 8; HSC (High Speed Counting) |
| Sourcing/sinking input | Yes |
| Number of simultaneously controllable inputs | |
| all mounting positions | |
| — up to 40 °C, max. | 8 |
| Input voltage | |

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| <ul style="list-style-type: none"> Rated value (DC) for signal "0" for signal "1" | 24 V 5 V DC or 0.5 mA 15 V DC at 2.5 mA |
| 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 µs |
| for interrupt inputs | |
| — Parameterizable | Yes |
| for technological functions | |
| — parameterizable | single phase: 6 HSCs @ 100 kHz & 2 standard @ 30 kHz, quadrature phase: 6 HSCs @ 80 kHz & 2 standard @ 20 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 | 6; Relays |
| Switching capacity of the outputs | |
| <ul style="list-style-type: none"> with resistive load, max. on lamp load, max. | 2 A 30 W with DC, 200 W with AC |
| Output delay with resistive load | |
| <ul style="list-style-type: none"> "0" to "1", max. "1" to "0", max. | 10 ms; max. 10 ms; max. |
| Switching frequency | |
| <ul style="list-style-type: none"> of the pulse outputs, with resistive load, max. | Not recommended |
| Relay outputs | |
| <ul style="list-style-type: none"> Number of relay outputs Number of operating cycles, max. | 6 mechanically 10 million, at rated load voltage 100 000 |
| Cable length | |
| <ul style="list-style-type: none"> shielded, max. unshielded, max. | 500 m 150 m |
| Analog inputs | |
| Number of analog inputs | 0 |
| Analog outputs | |
| Number of analog outputs | 0 |
| Encoder | |
| Connectable encoders | |
| <ul style="list-style-type: none"> 2-wire sensor | Yes |
| Interfaces | |
| Number of PROFINET interfaces | 1 |
| 1. Interface | |
| Interface type | PROFINET |
| Isolated | Yes |
| automatic detection of transmission rate | Yes |
| Autonegotiation | Yes |
| Autocrossing | Yes |
| Interface types | |
| <ul style="list-style-type: none"> RJ 45 (Ethernet) <ul style="list-style-type: none"> Transmission rate, max. Number of ports integrated switch | Yes; X1 100 Mbit/s 2 Yes |
| Protocols | |
| <ul style="list-style-type: none"> IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication | Yes; IPv4 Yes Yes Yes Yes; Optionally also encrypted |

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|---|---|
| • Web server | Yes |
| • Media redundancy | Yes |
| PROFINET IO Controller | |
| • Transmission rate, max. | 100 Mbit/s |
| Services | |
| — PG/OP communication | Yes; encryption with TLS V1.3 pre-selected |
| — Isochronous mode | Yes |
| — IRT | Yes |
| — Dynamic Frame Packing (DFP) | Yes |
| — PROFlenergy | Yes; per user program |
| — Prioritized startup | Yes |
| — Number of IO devices with prioritized startup, max. | 16 |
| — Number of connectable IO Devices, max. | 31 |
| — Of which IO devices with IRT, max. | 31 |
| — Number of connectable IO Devices for RT, max. | 31 |
| — of which in line, max. | 31 |
| — 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. |
| Update time for IRT | |
| — for send cycle of 1 ms | 1 ms to 16 ms |
| — for send cycle of 2 ms | 2 ms to 32 ms |
| — for send cycle of 4 ms | 4 ms to 64 ms |
| Update time for RT | |
| — for send cycle of 1 ms | 1 ms to 512 ms |
| — for send cycle of 2 ms | 2 ms to 512 ms |
| — for send cycle of 4 ms | 4 ms to 512 ms |
| PROFINET IO Device | |
| Services | |
| — PG/OP communication | Yes; encryption with TLS V1.3 pre-selected |
| — Isochronous mode | No |
| — IRT | Yes |
| — Dynamic Frame Packing (DFP) | No |
| — PROFlenergy | Yes; per user program |
| — Prioritized startup | Yes |
| — Shared device | Yes |
| — Number of IO Controllers with shared device, max. | 2 |
| — Asset management record | Yes |
| Protocols | |
| Supports protocol for PROFINET IO | Yes |
| PROFIsafe | No |
| PROFIBUS | No |
| OPC UA | Yes; OPC UA Server |
| AS-Interface | No |
| Protocols (Ethernet) | |
| • TCP/IP | Yes |
| • DHCP | Yes |
| • SNMP | Yes |
| • DCP | Yes |
| • LLDP | Yes |
| Number of connections | |
| • Number of connections, max. | 128; via integrated interfaces of the CPU and connected CPs / CMs |
| • Number of connections reserved for ES/HMI/web | 10 |
| • Number of connections via integrated interfaces | 88 |
| • Number of S7 routing paths | 16 |
| Redundancy mode | |
| • PROFINET system redundancy (S2) | No |
| • PROFINET system redundancy (R1) | No |

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| Media redundancy | |
| — MRP | Yes; as MRP redundancy manager and/or MRP client |
| — MRP interconnection, supported | Yes |
| — MRPD | Yes; Requirement: IRT |
| — Number of stations in the ring, max. | 50 |
| SIMATIC communication | |
| • PG/OP communication | Yes; encryption with TLS V1.3 pre-selected |
| • S7 routing | Yes |
| • S7 communication, as server | Yes |
| • S7 communication, as client | Yes; only PUT/GET |
| • User data per job, max. | See online help (S7 communication, user data size) |
| Open IE communication | |
| • TCP/IP | Yes |
| — Data length, max. | 64 kbyte |
| — several passive connections per port, supported | Yes |
| • ISO-on-TCP (RFC1006) | Yes |
| — Data length, max. | 64 kbyte |
| • UDP | Yes |
| — Data length, max. | 2 kbyte; 1 472 bytes for UDP broadcast |
| • DHCP | Yes |
| • DNS | Yes |
| • SNMP | Yes |
| • DCP | Yes |
| • LLDP | Yes |
| • encryption | Yes; Optional |
| Web server | |
| • supported | Yes |
| • HTTPS | Yes |
| • web API | Yes |
| — Number of sessions, max. | 30 |
| — HTTP request body, max. | 131 072 byte |
| • 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 | Yes |
| — Security policies | available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss |
| — User authentication | "anonymous" or by user name & password |
| — Number of sessions, max. | 10 |
| — Number of subscriptions per session, max. | 5 |
| — Sampling interval, min. | 100 ms |
| — Publishing interval, min. | 200 ms |
| — Number of server methods, max. | 20 |
| — Number of monitored items, recommended max. | 1 000 |
| — Number of server interfaces, max. | 2 |
| — Number of nodes for user-defined server interfaces, max. | 2 000 |
| Further protocols | |
| • MODBUS | Yes; MODBUS RTU/TCP |
| 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; HMI Connections: 4 reserved / 82 max; S7 Connections: 78 max; Open User Connections: 78 max; Web Connections: 2 reserved / 80 max; Total Connections: 10 reserved / 88 max |

S7 message functions

| | |
|--|-------|
| Number of login stations for message functions, max. | 32 |
| number of subscriptions, max. | 250 |
| number of tags/attributes for subscriptions, max. | 2 000 |
| Program alarms | Yes |
| Number of configurable program messages, max. | 5 000 |
| Number of loadable program messages in RUN, max. | 2 500 |
| Number of simultaneously active program alarms | |
| • Number of program alarms | 600 |
| • Number of alarms for system diagnostics | 100 |
| • Number of alarms for motion technology objects | 160 |

Test commissioning functions

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|--------------|--|
| Status block | Yes; Up to 8 simultaneously (in total across all ES clients) |
| Single step | No |
| Profiling | Yes |

Status/control

| | |
|------------------------------------|--|
| • Status/control variable | Yes |
| • Variables | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters |
| • Number of variables, max. | |
| — of which status variables, max. | 200; per job |
| — of which control variables, max. | 200; per job |

Forcing

| | |
|-----------------------------|---------------------------|
| • Forcing | Yes |
| • Forcing, variables | Peripheral inputs/outputs |
| • Number of variables, max. | 200 |

Diagnostic buffer

| | |
|----------------------------|-----|
| • present | Yes |
| • Number of entries, max. | 500 |
| — of which powerfail-proof | 100 |

Traces

| | |
|---------------------------------|-----------|
| • Number of configurable Traces | 4 |
| • Memory size per trace, max. | 512 kbyte |

Interrupts/diagnostics/status information**Diagnostics indication LED**

| | |
|----------------|-----|
| • RUN/STOP LED | Yes |
| • ERROR LED | Yes |
| • MAINT LED | Yes |

Supported technology objects

| | |
|--|-----|
| Motion Control | Yes |
| • Number of available Motion Control resources for technology objects | 800 |
| • Required Motion Control resources | |
| — per speed-controlled axis | 40 |
| — per positioning axis | 80 |
| — per synchronous axis | 160 |
| — per external encoder | 80 |
| — per output cam | 20 |
| — per cam track | 160 |
| — per probe | 40 |
| • Number of available Extended Motion Control resources for technology objects | 40 |
| • Required Extended Motion Control resources | |
| — per cam (1 000 points and 50 segments) | 2 |
| — for each set of kinematics | 30 |
| • kinematics functions | |
| — kinematics with up to 4 interpolating axes | Yes |
| — kinematics with 5 or more interpolating axes | No |
| — user-defined kinematics | No |
| — SIMATIC Safe Kinematics | No |

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| <ul style="list-style-type: none"> Positioning axis <ul style="list-style-type: none"> Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 8 ms (typical value) | 10 |
| 10 | |
| Integrated Functions | |
| Counter | Yes |
| <ul style="list-style-type: none"> Number of counters Counting frequency, max. | 8 100 kHz; Ia.0 to Ia.5: 100 kHz (80 kHz in quadrature mode), Ia.6 to Ia.7: 30 kHz (20 kHz in quadrature mode) |
| 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 pulse outputs | 8; individually assigned to CPU and Signal Board |
| Limit frequency (pulse) | 100 kHz |
| Potential separation | |
| Potential separation digital inputs | |
| <ul style="list-style-type: none"> Potential separation digital inputs between the channels Number of potential groups | Yes; field side to logic: 707 V DC (type test) No 1 |
| Potential separation digital outputs | |
| <ul style="list-style-type: none"> Potential separation digital outputs between the channels Number of potential groups | Relays No 1 |
| 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 | Yes 8 kV 6 kV |
| 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 | Yes 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 Limit class B, for use in residential areas | Yes; Group 1 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 | |
| Siemens Eco Profile (SEP) | Siemens EcoTech |
| CE mark | Yes |
| UL approval | Yes |
| cULus | Yes |
| FM approval | No |
| RCM (formerly C-TICK) | Yes |
| KC approval | Yes |
| Marine approval | Yes |
| Ecological footprint | |
| <ul style="list-style-type: none"> environmental product declaration | Yes; type 2 acc. to ISO 14021 |
| Global warming potential | |

| | |
|--|----------|
| — global warming potential, (total) [CO2 eq] | 61.1 kg |
| — global warming potential, (during production) [CO2 eq] | 12.4 kg |
| — global warming potential, (during operation) [CO2 eq] | 49.2 kg |
| — global warming potential, (after end of life cycle) [CO2 eq] | -0.63 kg |

Security

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|-------------------------|-----|
| PROFINET Security Class | 1 |
| signed firmware update | Yes |
| Secure Boot | Yes |

Ambient conditions

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|---|---|
| Free fall | |
| • Fall height, max. | 0.3 m; five times, in product package |
| Ambient temperature during operation | |
| • min. | -20 °C; No condensation |
| • max. | 40 °C; 40 °C horizontal or 30 °C vertical at max. voltages and max. specifications |
| • horizontal installation, min. | -20 °C; No condensation |
| • horizontal installation, max. | 60 °C; at rated voltages, 50 % of max. specification and alternate IO active |
| • vertical installation, min. | -20 °C; No condensation |
| • vertical installation, max. | 50 °C; at rated voltages, 50 % of max. specification and alternate IO active |
| Ambient temperature during storage/transportation | |
| • min. | -40 °C |
| • max. | 70 °C |
| Air pressure acc. to IEC 60068-2-13 | |
| • Operation, min. | 540 hPa |
| • Operation, max. | 1 140 hPa |
| • Storage/transport, min. | 540 hPa |
| • Storage/transport, max. | 1 140 hPa |
| Altitude during operation relating to sea level | |
| • Installation altitude, min. | -1 000 m |
| • Installation altitude, max. | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual |
| Relative humidity | |
| • Operation, max. | 95 %; no condensation |
| Vibrations | |
| • Vibration resistance during operation acc. to IEC 60068-2-6 | 3.5 mm from 5 - 8.4 Hz, 1g from 8.4 - 150 Hz |
| • 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 |
| Pollutant concentrations | |
| • SO2 at RH < 60% without condensation | SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60 % condensation-free |
| Configuration | |
| Programming | |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — SCL | Yes |
| Know-how protection | |
| • User program protection/password protection | Yes |
| • Copy protection | No |
| • 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 |
| • User administration | Yes; device-wide and centralized |

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|------------------------------|-----|
| • Number of users | 100 |
| • Number of groups | 100 |
| • Number of roles | 50 |
| Cycle time monitoring | |
| • adjustable | Yes |

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| Dimensions | |
| Width | 70 mm |
| Height | 125 mm |
| Depth | 100 mm |

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| Weights | |
| Weight, approx. | 333 g |

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|------------------------|--------|----------------|-----------------------|
| Classifications | | | |
| | | Version | Classification |
| | eClass | 14 | 27-24-22-07 |
| | eClass | 12 | 27-24-22-07 |
| | eClass | 9.1 | 27-24-22-07 |
| | eClass | 9 | 27-24-22-07 |
| | eClass | 8 | 27-24-22-07 |
| | eClass | 7.1 | 27-24-22-07 |
| | eClass | 6 | 27-24-22-07 |
| | ETIM | 10 | EC000236 |
| | ETIM | 9 | EC000236 |
| | ETIM | 8 | EC000236 |
| | ETIM | 7 | EC000236 |
| | IDEA | 4 | 3565 |
| | UNSPSC | 15 | 32-15-17-05 |

Approvals / Certificates

General Product Approval



General Product Approval



EMV For use in hazardous locations



Test Certificates Maritime application



Maritime application **Environment** **Industrial Communication**



[KR \(Korean Register of Shipping\)](#)



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