# SIEMENS

## Data sheet

SIMATIC S7-1200, CPU 1215C, compact CPU, DC/DC/DC, 2 PROFINET ports, onboard I/O: 14 DI 24 V DC; 10 DO 24 V DC; 0.5A; 2 AI 0-10 V DC, 2 AO 0-20 mA DC, Power supply: DC 20.4-28.8V DC, Program/data memory 125 KB

| General information | |
|---|---|
| Product type designation | CPU 1215C DC/DC/DC |
| Firmware version | V4.4 |
| Engineering with | |
| ● Programming package | STEP 7 V16 or higher |

| Supply voltage | |
|---|---|
| Rated value (DC) | |
| ● 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+ | |
| ● Rated value (DC) | 24 V |
| ● permissible range, lower limit (DC) | 20.4 V |
| ● 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 |

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| | |
|---|---|
| Inrush current, max. | 12 A; at 28.8 V DC |
| I²t | 0.5 A²·s |

## Output current

| | |
|---|---|
| for backplane bus (5 V DC), max. | 1 600 mA; Max. 5 V DC for SM and CM |

## Encoder supply

| 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 | 125 kbyte |
| • expandable | No |
| Load memory | |
| • integrated | 4 Mbyte |
| • Plug-in (SIMATIC Memory Card), max. | with SIMATIC memory card |
| Backup | |
| • present | Yes |
| • maintenance-free | Yes |
| • 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 | |
| • 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

| | |
|---|---|
| ● Hardware clock (real-time) | Yes |
| ● Backup time | 480 h; Typical |
| ● Deviation per day, max. | ±60 s/month at 25 °C |

## Digital inputs

| | |
|---|---|
| Number of digital inputs | 14; Integrated |
| ● 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

| | |
|---|---|
| ● Rated value (DC) | 24 V |
| ● for signal "0" | 5 V DC at 1 mA |
| ● for signal "1" | 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

| | |
|---|---|
| ● shielded, max. | 500 m; 50 m for technological functions |
| ● unshielded, max. | 300 m; for technological functions: No |

## Digital outputs

| | |
|---|---|
| Number of digital outputs | 10 |
| ● 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

| | |
|---|---|
| ● with resistive load, max. | 0.5 A |

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| | |
|---|---|
| • 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 outputs | |
|---|---|
| Number of analog outputs | 2 |
| **Output ranges, current** | |
| • 0 to 20 mA | Yes |

| 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 |

| Analog value generation for the outputs | |
|---|---|
| **Integration and conversion time/resolution per channel** | |
| • Resolution with overrange (bit including sign), max. | 10 bit |

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| 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 | 2 |
| • integrated switch | Yes |
| **Protocols** | |
| • PROFINET IO Controller | Yes |
| • PROFINET IO Device | Yes |
| • SIMATIC communication | Yes |
| • Open IE communication | Yes; Optionally also encrypted |
| • Web server | Yes |
| • Media redundancy | Yes; as MRP client |
| **PROFINET IO Controller** | |
| • Transmission rate, max. | 100 Mbit/s |
| **Services** | |
| — PG/OP communication | Yes |
| — S7 routing | Yes |
| — Isochronous mode | No |
| — IRT | No |
| — MRP | Yes; as MRP client |
| — MRPD | No |
| — PROFIenergy | 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 |

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| | |
|---|---|
| — 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 |
| — S7 routing | Yes |
| — Isochronous mode | No |
| — IRT | No |
| — MRP | Yes; as MRP client |
| — MRPD | No |
| — PROFIenergy | 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 |
| 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), runtime license required |
| — Application authentication | Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 |
| — User authentication | "anonymous" or by user name & password |

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| | |
|---|---|
| — Number of sessions, max. | 5 |
| — Number of accessible variables, max. | 1 000 |
| — Number of subscriptions per session, max. | 5 |
| — Sampling interval, min. | 100 ms |
| — Publishing interval, min. | 200 ms |
| — Number of monitored items, max. | 500 |
| — Number of server interfaces, max. | 2 |
| — Number of nodes for user-defined server interfaces, max. | 1 000 |

| 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) |

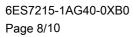| Number of connections | |
|---|---|
| • overall | 8 connections for open user communication (active or passive): TSEND_C, TRCV_C, TCON, TDISCON, TSEND and TRCV, 8 CPU/CPU connections (Client or Server) for GET/PUT data, 6 connections for dynamic assignment to GET/PUT or open user communication |

## 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 | |
|---|---|
| • 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
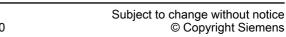
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| | |
|---|---|
| Number of counters | 6 |
| Counting frequency (counter) max. | 100 kHz |
| Frequency measurement | Yes |
| controlled positioning | Yes |
| Number of position-controlled positioning axes, max. | 8 |
| Number of positioning axes via pulse-direction interface | 4; With integrated 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

| | |
|---|---|
| • 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 |

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| 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 |

| Ambient conditions | |
|---|---|
| **Free fall** | |
| • Fall height, max. | 0.3 m; five times, in product package |
| **Ambient temperature during operation** | |
| • min. | -20 °C |
| • max. | 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical |
| • horizontal installation, min. | -20 °C |
| • horizontal installation, max. | 60 °C |
| • vertical installation, min. | -20 °C |
| • vertical installation, max. | 50 °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 |
| • Storage/transport, min. | 660 hPa |
| • Storage/transport, max. | 1 080 hPa |
| **Altitude during operation relating to sea level** | |
| • Installation altitude, min. | -1 000 m |
| • Installation altitude, max. | 2 000 m |
| **Relative humidity** | |
| • Operation, max. | 95 %; no condensation |
| **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 |
| **Pollutant concentrations** | |
| • SO2 at RH < 60% without condensation | S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free |

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| Configuration | |
|---|---|
| **Programming** | |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — SCL | Yes |
| **Know-how protection** | |
| • User program protection/password protection | Yes |
| • Copy protection | Yes |
| • Block protection | Yes |
| **Access protection** | |
| • Protection level: Write protection | Yes |
| • Protection level: Read/write protection | Yes |
| • Protection level: Complete protection | Yes |
| **Cycle time monitoring** | |
| • adjustable | Yes |

| Dimensions | |
|---|---|
| Width | 130 mm |
| Height | 100 mm |
| Depth | 75 mm |

| Weights | |
|---|---|
| Weight, approx. | 500 g |
| **last modified:** | 10/13/2020 |

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