

SIMATIC S7-1200, CPU 1217C, compact CPU, DC/DC/DC, 2 PROFINET ports onboard I/O: 10 DI 24 V DC; 4 DI RS-422/485; 6 DO 24 V DC; 0.5 A; 4 DO RS-422/485; 2 AI 0-10 V DC, 2 AO 0-20 mA power supply: DC 20.4-28.8 V DC, program/data memory 250 KB



| General information                   |                                          |
|---------------------------------------|------------------------------------------|
| Product type designation              | CPU 1217C DC/DC/DC                       |
| Firmware version                      | V4.6                                     |
| Engineering with                      |                                          |
| • Programming package                 | STEP 7 V18 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)     | 600 mA; CPU only                         |
| Current consumption, max.             | 1 600 mA; CPU with all expansion modules |
| Inrush current, max.                  | 12 A; at 28.8 V DC                       |
| $I^2t$                                | 0.5 A <sup>2</sup> ·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                   |                                          |
| • 24 V                                | L+ minus 4 V DC min.                     |
| Power loss                            |                                          |
| Power loss, typ.                      | 12 W                                     |
| Memory                                |                                          |
| Work memory                           |                                          |
| • integrated                          | 250 kbyte                                |
| 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; / Operation                                                                                                                                                 |
| <b>CPU-blocks</b>                                         |                                                                                                                                                                     |
| 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 |
| <b>OB</b>                                                 |                                                                                                                                                                     |
| • Number, max.                                            | Limited only by RAM for code                                                                                                                                        |
| <b>Data areas and their retentivity</b>                   |                                                                                                                                                                     |
| Retentive data area (incl. timers, counters, flags), max. | 14 kbyte                                                                                                                                                            |
| <b>Flag</b>                                               |                                                                                                                                                                     |
| • Size, max.                                              | 8 kbyte; Size of bit memory address area                                                                                                                            |
| <b>Local data</b>                                         |                                                                                                                                                                     |
| • per priority class, max.                                | 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB                                                                                     |
| <b>Address area</b>                                       |                                                                                                                                                                     |
| <b>Process image</b>                                      |                                                                                                                                                                     |
| • Inputs, adjustable                                      | 1 kbyte                                                                                                                                                             |
| • Outputs, adjustable                                     | 1 kbyte                                                                                                                                                             |
| <b>Hardware configuration</b>                             |                                                                                                                                                                     |
| Number of modules per system, max.                        | 3 comm. modules, 1 signal board, 8 signal modules                                                                                                                   |
| <b>Time of day</b>                                        |                                                                                                                                                                     |
| <b>Clock</b>                                              |                                                                                                                                                                     |
| • Hardware clock (real-time)                              | Yes                                                                                                                                                                 |
| • Backup time                                             | 480 h; Typical                                                                                                                                                      |
| • Deviation per day, max.                                 | ±60 s/month at 25 °C                                                                                                                                                |
| <b>Digital inputs</b>                                     |                                                                                                                                                                     |
| Number of digital inputs                                  | 14; Integrated                                                                                                                                                      |
| • of which inputs usable for technological functions      | 6; HSC (High Speed Counting)                                                                                                                                        |
| Source/sink input                                         | Yes                                                                                                                                                                 |
| <b>Number of simultaneously controllable inputs</b>       |                                                                                                                                                                     |
| <b>all mounting positions</b>                             |                                                                                                                                                                     |
| — up to 40 °C, max.                                       | 14                                                                                                                                                                  |
| <b>Input voltage</b>                                      |                                                                                                                                                                     |
| • Rated value (DC)                                        | 24 V                                                                                                                                                                |
| • for signal "0"                                          | 5 V DC at 1 mA                                                                                                                                                      |
| • for signal "1"                                          | 15 V DC at 2.5 mA                                                                                                                                                   |
| <b>Input delay (for rated value of input voltage)</b>     |                                                                                                                                                                     |
| <b>for standard inputs</b>                                |                                                                                                                                                                     |
| — 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                                                                                                                                                             |
| <b>for interrupt inputs</b>                               |                                                                                                                                                                     |
| — parameterizable                                         | Yes                                                                                                                                                                 |
| <b>for technological functions</b>                        |                                                                                                                                                                     |
| — parameterizable                                         | Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz                                                                                       |
| <b>Cable length</b>                                       |                                                                                                                                                                     |
| • shielded, max.                                          | 500 m; 50 m for technological functions                                                                                                                             |
| • unshielded, max.                                        | 300 m; for technological functions: No                                                                                                                              |
| <b>Digital outputs</b>                                    |                                                                                                                                                                     |
| 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)                                                                                                                                                          |
| <b>Switching capacity of the outputs</b>                  |                                                                                                                                                                     |
| • with resistive load, max.                               | 0.5 A                                                                                                                                                               |
| • on lamp load, max.                                      | 5 W                                                                                                                                                                 |
| <b>Output voltage</b>                                     |                                                                                                                                                                     |
| • for signal "0", max.                                    | 0.1 V; with 10 kOhm load                                                                                                                                            |
| • for signal "1", min.                                    | 20 V                                                                                                                                                                |
| <b>Output current</b>                                     |                                                                                                                                                                     |
| • 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                                     |
| 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                                        |
| PROFINET IO Controller                                 |                                            |
| • Transmission rate, max.                              | 100 Mbit/s                                 |
| Services                                               |                                            |
| — PG/OP communication                                  | Yes; encryption with TLS V1.3 pre-selected |
| — Isochronous mode                                     | No                                         |
| — IRT                                                  | 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                                                                                                                                                                           |
| — 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. |
| <b>PROFINET IO Device</b>                                                     |                                                                                                                                                                             |
| <b>Services</b>                                                               |                                                                                                                                                                             |
| — PG/OP communication                                                         | Yes; encryption with TLS V1.3 pre-selected                                                                                                                                  |
| — Isochronous mode                                                            | No                                                                                                                                                                          |
| — IRT                                                                         | No                                                                                                                                                                          |
| — PROFIenergy                                                                 | Yes                                                                                                                                                                         |
| — Shared device                                                               | Yes                                                                                                                                                                         |
| — Number of IO Controllers with shared device, max.                           | 2                                                                                                                                                                           |
| <b>Protocols</b>                                                              |                                                                                                                                                                             |
| Supports protocol for PROFINET IO                                             | Yes                                                                                                                                                                         |
| PROFIsafe                                                                     | No                                                                                                                                                                          |
| 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                                                                                                                                                     |
| <b>Protocols (Ethernet)</b>                                                   |                                                                                                                                                                             |
| • TCP/IP                                                                      | Yes                                                                                                                                                                         |
| • DHCP                                                                        | No                                                                                                                                                                          |
| • SNMP                                                                        | Yes                                                                                                                                                                         |
| • DCP                                                                         | Yes                                                                                                                                                                         |
| • LLDP                                                                        | Yes                                                                                                                                                                         |
| <b>Redundancy mode</b>                                                        |                                                                                                                                                                             |
| <b>Media redundancy</b>                                                       |                                                                                                                                                                             |
| — MRP                                                                         | Yes; as MRP redundancy manager and/or MRP client                                                                                                                            |
| — MRPD                                                                        | No                                                                                                                                                                          |
| <b>SIMATIC communication</b>                                                  |                                                                                                                                                                             |
| • S7 routing                                                                  | Yes                                                                                                                                                                         |
| <b>Open IE communication</b>                                                  |                                                                                                                                                                             |
| • 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                                                                                                                                                                  |
| <b>Web server</b>                                                             |                                                                                                                                                                             |
| • supported                                                                   | Yes                                                                                                                                                                         |
| • User-defined websites                                                       | Yes                                                                                                                                                                         |
| <b>OPC UA</b>                                                                 |                                                                                                                                                                             |
| • 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.                                   | 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                                                                                                                                                                       |
| <b>Further protocols</b>                                                      |                                                                                                                                                                             |

|                                                                                                      |                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • MODBUS                                                                                             | Yes                                                                                                                                                                                                                                                                                |
| <b>communication functions / header</b>                                                              |                                                                                                                                                                                                                                                                                    |
| <b>S7 communication</b>                                                                              |                                                                                                                                                                                                                                                                                    |
| • supported                                                                                          | Yes                                                                                                                                                                                                                                                                                |
| • as server                                                                                          | Yes                                                                                                                                                                                                                                                                                |
| • as client                                                                                          | Yes                                                                                                                                                                                                                                                                                |
| • User data per job, max.                                                                            | See online help (S7 communication, user data size)                                                                                                                                                                                                                                 |
| <b>Number of connections</b>                                                                         |                                                                                                                                                                                                                                                                                    |
| • 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 |
| <b>Test commissioning functions</b>                                                                  |                                                                                                                                                                                                                                                                                    |
| <b>Status/control</b>                                                                                |                                                                                                                                                                                                                                                                                    |
| • Status/control variable                                                                            | Yes                                                                                                                                                                                                                                                                                |
| • Variables                                                                                          | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters                                                                                                                                                                                                               |
| <b>Forcing</b>                                                                                       |                                                                                                                                                                                                                                                                                    |
| • Forcing                                                                                            | Yes                                                                                                                                                                                                                                                                                |
| <b>Diagnostic buffer</b>                                                                             |                                                                                                                                                                                                                                                                                    |
| • present                                                                                            | Yes                                                                                                                                                                                                                                                                                |
| <b>Traces</b>                                                                                        |                                                                                                                                                                                                                                                                                    |
| • Number of configurable Traces                                                                      | 2                                                                                                                                                                                                                                                                                  |
| • Memory size per trace, max.                                                                        | 512 kbyte                                                                                                                                                                                                                                                                          |
| <b>Interrupts/diagnostics/status information</b>                                                     |                                                                                                                                                                                                                                                                                    |
| <b>Diagnostics indication LED</b>                                                                    |                                                                                                                                                                                                                                                                                    |
| • RUN/STOP LED                                                                                       | Yes                                                                                                                                                                                                                                                                                |
| • ERROR LED                                                                                          | Yes                                                                                                                                                                                                                                                                                |
| • MAINT LED                                                                                          | Yes                                                                                                                                                                                                                                                                                |
| <b>Integrated Functions</b>                                                                          |                                                                                                                                                                                                                                                                                    |
| 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)                                                                              | 1 MHz                                                                                                                                                                                                                                                                              |
| <b>Potential separation</b>                                                                          |                                                                                                                                                                                                                                                                                    |
| <b>Potential separation digital inputs</b>                                                           |                                                                                                                                                                                                                                                                                    |
| • Potential separation digital inputs                                                                | No                                                                                                                                                                                                                                                                                 |
| • between the channels, in groups of                                                                 | 1                                                                                                                                                                                                                                                                                  |
| <b>Potential separation digital outputs</b>                                                          |                                                                                                                                                                                                                                                                                    |
| • Potential separation digital outputs                                                               | Yes                                                                                                                                                                                                                                                                                |
| • between the channels                                                                               | No                                                                                                                                                                                                                                                                                 |
| • between the channels, in groups of                                                                 | 1                                                                                                                                                                                                                                                                                  |
| <b>EMC</b>                                                                                           |                                                                                                                                                                                                                                                                                    |
| <b>Interference immunity against discharge of static electricity</b>                                 |                                                                                                                                                                                                                                                                                    |
| • 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                                                                                                                                                                                                                                                                               |
| <b>Interference immunity to cable-borne interference</b>                                             |                                                                                                                                                                                                                                                                                    |
| • Interference immunity on supply lines acc. to IEC 61000-4-4                                        | Yes                                                                                                                                                                                                                                                                                |
| • Interference immunity on signal cables acc. to IEC 61000-4-4                                       | Yes                                                                                                                                                                                                                                                                                |
| <b>Interference immunity against voltage surge</b>                                                   |                                                                                                                                                                                                                                                                                    |
| • Interference immunity on supply lines acc. to IEC 61000-4-5                                        | Yes                                                                                                                                                                                                                                                                                |
| <b>Interference immunity against conducted variable disturbance induced by high-frequency fields</b> |                                                                                                                                                                                                                                                                                    |
| • Interference immunity against high-frequency radiation acc. to IEC 61000-4-6                       | Yes                                                                                                                                                                                                                                                                                |
| <b>Emission of radio interference acc. to EN 55 011</b>                                              |                                                                                                                                                                                                                                                                                    |

- 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

|                       |     |
|-----------------------|-----|
| 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. 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 2 g (m/s<sup>2</sup>) wall mounting, 1 g (m/s<sup>2</sup>) 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

- SO<sub>2</sub> at RH < 60% without condensation SO<sub>2</sub>: < 0.5 ppm; H<sub>2</sub>S: < 0.1 ppm; RH < 60% condensation-free

#### configuration / header

##### configuration / programming / header

##### 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 of confidential configuration data Yes
- Protection level: Write protection Yes
- Protection level: Read/write protection Yes
- Protection level: Complete protection Yes

|                                              |        |
|----------------------------------------------|--------|
| programming / cycle time monitoring / header |        |
| • adjustable                                 | Yes    |
| <b>Dimensions</b>                            |        |
| Width                                        | 150 mm |
| Height                                       | 100 mm |
| Depth                                        | 75 mm  |
| <b>Weights</b>                               |        |
| Weight, approx.                              | 530 g  |

last modified: 