



SIMATIC S7-1200, CPU 1215C, compact CPU, AC/DC/relay, 2 PROFINET ports, onboard I/O: 14 DI 24 V DC; 10 DO relay 2 A, 2 AI 0-10 V DC, 2 AO 0-20 mA DC, power supply: AC 85-264 V AC at 47-63 Hz, program/data memory 200 KB

| General information                   |                                        |
|---------------------------------------|----------------------------------------|
| Product type designation              | CPU 1215C AC/DC/relay                  |
| Firmware version                      | V4.6                                   |
| Engineering with                      |                                        |
| • Programming package                 | STEP 7 V18 or higher                   |
| Supply voltage                        |                                        |
| Rated value (AC)                      |                                        |
| • 120 V AC                            | Yes                                    |
| • 230 V AC                            | Yes                                    |
| permissible range, lower limit (AC)   | 85 V                                   |
| permissible range, upper limit (AC)   | 265 V                                  |
| Line frequency                        |                                        |
| • permissible range, lower limit      | 47 Hz                                  |
| • permissible range, upper limit      | 63 Hz                                  |
| Input current                         |                                        |
| Current consumption (rated value)     | 100 mA at 120 V AC; 50 mA at 240 V AC  |
| Current consumption, max.             | 300 mA at 120 V AC; 150 mA at 240 V AC |
| Inrush current, max.                  | 20 A; at 264 V                         |
| I²t                                   | 0.8 A²·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                                | 20.4 to 28.8V                          |
| Power loss                            |                                        |
| Power loss, typ.                      | 14 W                                   |
| Memory                                |                                        |
| Work memory                           |                                        |
| • integrated                          | 200 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; / instruction                  |

|                                                           |                                                                                                                                                                     |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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                                         | Yes; 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; Relays                                                                                                                                                          |
| <b>Switching capacity of the outputs</b>                  |                                                                                                                                                                     |
| • with resistive load, max.                               | 2 A                                                                                                                                                                 |
| • on lamp load, max.                                      | 30 W with DC, 200 W with AC                                                                                                                                         |
| <b>Output delay with resistive load</b>                   |                                                                                                                                                                     |
| • "0" to "1", max.                                        | 10 ms; max.                                                                                                                                                         |
| • "1" to "0", max.                                        | 10 ms; max.                                                                                                                                                         |
| <b>Relay outputs</b>                                      |                                                                                                                                                                     |
| • Number of relay outputs                                 | 10                                                                                                                                                                  |
| • Number of operating cycles, max.                        | mechanically 10 million, at rated load voltage 100 000                                                                                                              |
| <b>Cable length</b>                                       |                                                                                                                                                                     |
| • shielded, max.                                          | 500 m                                                                                                                                                               |

|                                                                               |                                                                                                                                                                             |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • unshielded, max.                                                            | 150 m                                                                                                                                                                       |
| <b>Analog inputs</b>                                                          |                                                                                                                                                                             |
| Number of analog inputs                                                       | 2                                                                                                                                                                           |
| <b>Input ranges</b>                                                           |                                                                                                                                                                             |
| • Voltage                                                                     | Yes                                                                                                                                                                         |
| <b>Input ranges (rated values), voltages</b>                                  |                                                                                                                                                                             |
| • 0 to +10 V                                                                  | Yes                                                                                                                                                                         |
| — Input resistance (0 to 10 V)                                                | ≥100k ohms                                                                                                                                                                  |
| <b>Cable length</b>                                                           |                                                                                                                                                                             |
| • shielded, max.                                                              | 100 m; twisted and shielded                                                                                                                                                 |
| <b>Analog outputs</b>                                                         |                                                                                                                                                                             |
| Number of analog outputs                                                      | 2                                                                                                                                                                           |
| <b>Output ranges, current</b>                                                 |                                                                                                                                                                             |
| • 0 to 20 mA                                                                  | Yes                                                                                                                                                                         |
| <b>Analog value generation for the inputs</b>                                 |                                                                                                                                                                             |
| <b>Integration and conversion time/resolution per channel</b>                 |                                                                                                                                                                             |
| • Resolution with overrange (bit including sign), max.                        | 10 bit                                                                                                                                                                      |
| • Integration time, parameterizable                                           | Yes                                                                                                                                                                         |
| • Conversion time (per channel)                                               | 625 µs                                                                                                                                                                      |
| <b>Encoder</b>                                                                |                                                                                                                                                                             |
| <b>Connectable encoders</b>                                                   |                                                                                                                                                                             |
| • 2-wire sensor                                                               | Yes                                                                                                                                                                         |
| <b>1. Interface</b>                                                           |                                                                                                                                                                             |
| Interface type                                                                | PROFINET                                                                                                                                                                    |
| Isolated                                                                      | Yes                                                                                                                                                                         |
| automatic detection of transmission rate                                      | Yes                                                                                                                                                                         |
| Autonegotiation                                                               | Yes                                                                                                                                                                         |
| Autocrossing                                                                  | Yes                                                                                                                                                                         |
| <b>Interface types</b>                                                        |                                                                                                                                                                             |
| • RJ 45 (Ethernet)                                                            | Yes                                                                                                                                                                         |
| • Number of ports                                                             | 2                                                                                                                                                                           |
| • integrated switch                                                           | Yes                                                                                                                                                                         |
| <b>Protocols</b>                                                              |                                                                                                                                                                             |
| • PROFINET IO Controller                                                      | Yes                                                                                                                                                                         |
| • PROFINET IO Device                                                          | Yes                                                                                                                                                                         |
| • SIMATIC communication                                                       | Yes                                                                                                                                                                         |
| • Open IE communication                                                       | Yes; Optionally also encrypted                                                                                                                                              |
| • Web server                                                                  | Yes                                                                                                                                                                         |
| • Media redundancy                                                            | Yes                                                                                                                                                                         |
| <b>PROFINET IO Controller</b>                                                 |                                                                                                                                                                             |
| • Transmission rate, max.                                                     | 100 Mbit/s                                                                                                                                                                  |
| <b>Services</b>                                                               |                                                                                                                                                                             |
| — 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
- PROFIenergy
- Shared device
- Number of IO Controllers with shared device, max.

No  
Yes  
Yes  
2

## Protocols

|                                   |                                                       |
|-----------------------------------|-------------------------------------------------------|
| 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                               |

|                      |     |
|----------------------|-----|
| Protocols (Ethernet) |     |
| • TCP/IP             | Yes |
| • DHCP               | No  |
| • SNMP               | Yes |
| • DCP                | Yes |
| • LLDP               | Yes |

|                  |                                                  |
|------------------|--------------------------------------------------|
| Redundancy mode  |                                                  |
| Media redundancy |                                                  |
| — MRP            | Yes; as MRP redundancy manager and/or MRP client |

|                        |            |
|------------------------|------------|
| Open IE communication  |            |
| • TCP/IP               | Yes        |
| — Data length, max.    | 8 kbyte    |
| • ISO-on-TCP (RFC1006) | Yes        |
| — Data length, max.    | 8 kbyte    |
| • UDP                  | Yes        |
| — Data length, max.    | 1 472 byte |

|                         |     |
|-------------------------|-----|
| Web server              |     |
| • supported             | Yes |
| • User-defined websites | Yes |

|                                                            |                                                                                  |
|------------------------------------------------------------|----------------------------------------------------------------------------------|
| OPC UA                                                     |                                                                                  |
| • Runtime license required                                 | Yes; "Basic" license required                                                    |
| • OPC UA Server                                            | Yes; data access (read, write, subscribe), method call, runtime license required |
| — Application authentication                               | Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256  |
| — User authentication                                      | "anonymous" or by user name & password                                           |
| — Number of sessions, max.                                 | 10                                                                               |
| — Number of subscriptions per session, max.                | 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 |

## communication functions / header

|                           |                                                    |
|---------------------------|----------------------------------------------------|
| S7 communication          |                                                    |
| • supported               | Yes                                                |
| • as server               | Yes                                                |
| • as client               | Yes                                                |
| • User data per job, max. | See online help (S7 communication, user data size) |

|                       |                                                                                                                                                                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of connections |                                                                                                                                                                                                                                                                                    |
| • overall             | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max |

## Test commissioning functions

|                           |                                                                      |
|---------------------------|----------------------------------------------------------------------|
| Status/control            |                                                                      |
| • Status/control variable | Yes                                                                  |
| • Variables               | Inputs/outputs, 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                                                                                                      |
| <b>Interrupts/diagnostics/status information</b>                                              |                                                                                                                |
| Diagnostics indication LED                                                                    |                                                                                                                |
| • RUN/STOP LED                                                                                | Yes                                                                                                            |
| • ERROR LED                                                                                   | Yes                                                                                                            |
| • MAINT LED                                                                                   | Yes                                                                                                            |
| <b>Integrated Functions</b>                                                                   |                                                                                                                |
| Counter                                                                                       |                                                                                                                |
| • Number of counters                                                                          | 6                                                                                                              |
| • Counting frequency, max.                                                                    | 100 kHz                                                                                                        |
| Frequency measurement                                                                         | Yes                                                                                                            |
| controlled positioning                                                                        | Yes                                                                                                            |
| Number of position-controlled positioning axes, max.                                          | 8                                                                                                              |
| Number of positioning axes via pulse-direction interface                                      | Up to 4 with SB 1222                                                                                           |
| PID controller                                                                                | Yes                                                                                                            |
| Number of alarm inputs                                                                        | 4                                                                                                              |
| <b>Potential separation</b>                                                                   |                                                                                                                |
| Potential separation digital inputs                                                           |                                                                                                                |
| • Potential separation digital inputs                                                         | 500V AC for 1 minute                                                                                           |
| • between the channels, in groups of                                                          | 1                                                                                                              |
| Potential separation digital outputs                                                          |                                                                                                                |
| • Potential separation digital outputs                                                        | Relays                                                                                                         |
| • between the channels                                                                        | No                                                                                                             |
| • between the channels, in groups of                                                          | 2                                                                                                              |
| <b>EMC</b>                                                                                    |                                                                                                                |
| 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 |
| <b>Degree and class of protection</b>                                                         |                                                                                                                |
| IP degree of protection                                                                       | IP20                                                                                                           |
| <b>Standards, approvals, certificates</b>                                                     |                                                                                                                |
| CE mark                                                                                       | Yes                                                                                                            |
| UL approval                                                                                   | Yes                                                                                                            |
| cULus                                                                                         | Yes                                                                                                            |
| FM approval                                                                                   | Yes                                                                                                            |
| RCM (formerly C-TICK)                                                                         | Yes                                                                                                            |
| KC approval                                                                                   | Yes                                                                                                            |
| Marine approval                                                                               | Yes                                                                                                            |
| <b>Ambient conditions</b>                                                                     |                                                                                                                |
| 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                                                                                                                                                                           |
| Dimensions                                                    |                                                                                                                                                                               |
| Width                                                         | 130 mm                                                                                                                                                                        |
| Height                                                        | 100 mm                                                                                                                                                                        |
| Depth                                                         | 75 mm                                                                                                                                                                         |
| Weights                                                       |                                                                                                                                                                               |
| Weight, approx.                                               | 550 g                                                                                                                                                                         |

last modified:

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