



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 125 KB

| General information  |  |
|--|--|
| Product type designation   | CPU 1215C AC/DC/relay                  |
| Firmware version   | V4.5                                   |
| Engineering with   |  |
| <ul style="list-style-type: none"> <li>Programming package</li> </ul>  | STEP 7 V17 or higher                   |
| Supply voltage   |  |
| Rated value (AC)   |  |
| <ul style="list-style-type: none"> <li>120 V AC</li> <li>230 V AC</li> </ul>   | Yes<br>Yes                             |
| permissible range, lower limit (AC)  | 85 V                                   |
| permissible range, upper limit (AC)  | 265 V                                  |
| Line frequency   |  |
| <ul style="list-style-type: none"> <li>permissible range, lower limit</li> <li>permissible range, upper limit</li> </ul> | 47 Hz<br>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                         |
| $I^2t$   | 0.8 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  |  |
| <ul style="list-style-type: none"> <li>24 V</li> </ul>   | 20.4 to 28.8V                          |
| Power loss   |  |
| Power loss, typ.   | 14 W                                   |
| Memory   |  |
| Work memory  |  |
| <ul style="list-style-type: none"> <li>integrated</li> <li>expandable</li> </ul>   | 125 kbyte<br>No                        |
| Load memory  |  |
| <ul style="list-style-type: none"> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>                | 4 Mbyte<br>with SIMATIC memory card    |
| Backup   |  |
| <ul style="list-style-type: none"> <li>present</li> <li>maintenance-free</li> <li>without battery</li> </ul>             | Yes<br>Yes<br>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>       |   |
| all mounting positions                                    |   |
| — 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>     |   |
| for standard inputs                                       |   |
| — 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   |
| for interrupt inputs                                      |   |
| — parameterizable   | Yes   |
| for technological functions                               |   |
| — 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>                                      |   |

|   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Number of relay outputs</li> <li>• Number of operating cycles, max.</li> </ul>   | 10<br>mechanically 10 million, at rated load voltage 100 000  |
| <b>Cable length</b>   |   |
| <ul style="list-style-type: none"> <li>• shielded, max.</li> <li>• unshielded, max.</li> </ul>  | 500 m<br>150 m  |
| <b>Analog inputs</b>  |   |
| Number of analog inputs   | 2   |
| <b>Input ranges</b>   |   |
| <ul style="list-style-type: none"> <li>• Voltage</li> </ul>   | Yes   |
| <b>Input ranges (rated values), voltages</b>  |   |
| <ul style="list-style-type: none"> <li>• 0 to +10 V<br/>— Input resistance (0 to 10 V)</li> </ul>   | Yes<br>≥100k ohms   |
| <b>Cable length</b>   |   |
| <ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>  | 100 m; twisted and shielded   |
| <b>Analog outputs</b>   |   |
| Number of analog outputs  | 2   |
| <b>Output ranges, current</b>   |   |
| <ul style="list-style-type: none"> <li>• 0 to 20 mA</li> </ul>  | Yes   |
| <b>Analog value generation for the inputs</b>   |   |
| <b>Integration and conversion time/resolution per channel</b>   |   |
| <ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> <li>• Integration time, parameterizable</li> <li>• Conversion time (per channel)</li> </ul>  | 10 bit<br>Yes<br>625 μs   |
| <b>Encoder</b>  |   |
| <b>Connectable encoders</b>   |   |
| <ul style="list-style-type: none"> <li>• 2-wire sensor</li> </ul>   | Yes   |
| <b>1. Interface</b>   |   |
| Interface type  | PROFINET  |
| Isolated  | Yes   |
| automatic detection of transmission rate  | Yes   |
| Autonegotiation   | Yes   |
| Autocrossing  | Yes   |
| <b>Interface types</b>  |   |
| <ul style="list-style-type: none"> <li>• RJ 45 (Ethernet)</li> <li>• Number of ports</li> <li>• integrated switch</li> </ul>  | Yes<br>2<br>Yes   |
| <b>Protocols</b>  |   |
| <ul style="list-style-type: none"> <li>• PROFINET IO Controller</li> <li>• PROFINET IO Device</li> <li>• SIMATIC communication</li> <li>• Open IE communication</li> <li>• Web server</li> <li>• Media redundancy</li> </ul>  | Yes<br>Yes<br>Yes<br>Yes; Optionally also encrypted<br>Yes<br>Yes                                       |
| <b>PROFINET IO Controller</b>   |   |
| <ul style="list-style-type: none"> <li>• Transmission rate, max.</li> </ul>   | 100 Mbit/s  |
| <b>Services</b>   |   |
| <ul style="list-style-type: none"> <li>— PG/OP communication</li> <li>— Isochronous mode</li> <li>— IRT</li> <li>— PROFinergy</li> <li>— Prioritized startup</li> <li>— Number of IO devices with prioritized startup, max.</li> <li>— Number of connectable IO Devices, max.</li> <li>— Number of connectable IO Devices for RT, max.</li> <li>— of which in line, max.</li> <li>— Activation/deactivation of IO Devices</li> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul> | Yes; encryption with TLS V1.3 pre-selected<br>No<br>No<br>No<br>Yes<br>16<br>16<br>16<br>16<br>Yes<br>8 |


— Updating time

The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.

| PROFINET IO Device   |  |
|--|--|
| <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                                 |
| <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.                | 50   |
| — Sampling interval, min.                                  | 100 ms   |
| — Publishing interval, min.                                | 200 ms   |
| — Number of server methods, max.                           | 20   |
| — Number of monitored items, max.                          | 1 000  |
| — Number of server interfaces, max.                        | 2  |
| — Number of nodes for user-defined server 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>  |  |
| <ul style="list-style-type: none"> <li>• overall</li> </ul>   | 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>   |  |
| <ul style="list-style-type: none"> <li>• Status/control variable</li> <li>• Variables</li> </ul>  | Yes<br>Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  |
| <b>Forcing</b>  |  |
| <ul style="list-style-type: none"> <li>• Forcing</li> </ul>   | Yes  |
| <b>Diagnostic buffer</b>  |  |
| <ul style="list-style-type: none"> <li>• present</li> </ul>   | Yes  |
| <b>Traces</b>   |  |
| <ul style="list-style-type: none"> <li>• Number of configurable Traces</li> <li>• Memory size per trace, max.</li> </ul>  | 2<br>512 kbyte   |
| <b>Interrupts/diagnostics/status information</b>  |  |
| <b>Diagnostics indication LED</b>   |  |
| <ul style="list-style-type: none"> <li>• RUN/STOP LED</li> <li>• ERROR LED</li> <li>• MAINT LED</li> </ul>  | Yes<br>Yes<br>Yes  |
| <b>Integrated Functions</b>   |  |
| <b>Counter</b>  |  |
| <ul style="list-style-type: none"> <li>• Number of counters</li> <li>• Counting frequency, max.</li> </ul>  | 6<br>100 kHz   |
| <b>Frequency measurement</b>  |  |
| controlled positioning  |  |
| Number of position-controlled positioning axes, max.  |  |
| Number of positioning axes via pulse-direction interface  |  |
| PID controller  |  |
| Number of alarm inputs  |  |
| 4   |  |
| <b>Potential separation</b>   |  |
| <b>Potential separation digital inputs</b>  |  |
| <ul style="list-style-type: none"> <li>• Potential separation digital inputs</li> <li>• between the channels, in groups of</li> </ul>   | 500V AC for 1 minute<br>1  |
| <b>Potential separation digital outputs</b>   |  |
| <ul style="list-style-type: none"> <li>• Potential separation digital outputs</li> <li>• between the channels</li> <li>• between the channels, in groups of</li> </ul>  | Relays<br>No<br>2  |
| <b>EMC</b>  |  |
| <b>Interference immunity against discharge of static electricity</b>  |  |
| <ul style="list-style-type: none"> <li>• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 <ul style="list-style-type: none"> <li>— Test voltage at air discharge</li> <li>— Test voltage at contact discharge</li> </ul> </li> </ul> | Yes<br>8 kV<br>6 kV  |
| <b>Interference immunity to cable-borne interference</b>  |  |
| <ul style="list-style-type: none"> <li>• Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>• Interference immunity on signal cables acc. to IEC 61000-4-4</li> </ul>   | Yes<br>Yes   |
| <b>Interference immunity against voltage surge</b>  |  |
| <ul style="list-style-type: none"> <li>• Interference immunity on supply lines acc. to IEC 61000-4-5</li> </ul>   | Yes  |
| <b>Interference immunity against conducted variable disturbance induced by high-frequency fields</b>  |  |
| <ul style="list-style-type: none"> <li>• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>  | Yes  |
| <b>Emission of radio interference acc. to EN 55 011</b>   |  |
| <ul style="list-style-type: none"> <li>• Limit class A, for use in industrial areas</li> <li>• Limit class B, for use in residential areas</li> </ul>   | Yes; Group 1<br>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  |
| <b>configuration / header</b>                                 |   |
| 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   |
| <b>last modified:</b> | 4/12/2021  |



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

| General information  |  |
|--|--|
| Product type designation   | CPU 1215C DC/DC/DC                       |
| Firmware version   | V4.5                                     |
| Engineering with   |  |
| <ul style="list-style-type: none"> <li>Programming package</li> </ul>  | STEP 7 V17 or higher                     |
| Supply voltage   |  |
| Rated value (DC)   |  |
| <ul style="list-style-type: none"> <li>24 V DC</li> </ul>  | Yes                                      |
| permissible range, lower limit (DC)  | 20.4 V                                   |
| permissible range, upper limit (DC)  | 28.8 V                                   |
| Reverse polarity protection  | Yes                                      |
| Load voltage L+  |  |
| <ul style="list-style-type: none"> <li>Rated value (DC)</li> <li>permissible range, lower limit (DC)</li> <li>permissible range, upper limit (DC)</li> </ul> | 24 V<br>20.4 V<br>28.8 V                 |
| Input current  |  |
| Current consumption (rated value)  | 500 mA; CPU only                         |
| Current consumption, max.  | 1 500 mA; CPU with all expansion modules |
| Inrush current, max.   | 12 A; at 28.8 V 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  |  |
| <ul style="list-style-type: none"> <li>24 V</li> </ul>   | L+ minus 4 V DC min.                     |
| Power loss   |  |
| Power loss, typ.   | 12 W                                     |
| Memory   |  |
| Work memory  |  |
| <ul style="list-style-type: none"> <li>integrated</li> <li>expandable</li> </ul>   | 125 kbyte<br>No                          |
| Load memory  |  |
| <ul style="list-style-type: none"> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>  | 4 Mbyte<br>with SIMATIC memory card      |
| Backup   |  |
| <ul style="list-style-type: none"> <li>present</li> <li>maintenance-free</li> <li>without battery</li> </ul>   | Yes<br>Yes<br>Yes                        |




| CPU processing times                                      |   |
|---|---|
| for bit operations, typ.                                  | 0.08 µs; / instruction  |
| for word operations, typ.                                 | 1.7 µs; / instruction   |
| for floating point arithmetic, typ.                       | 2.3 µs; / instruction   |
| CPU-blocks  |   |
| Number of blocks (total)                                  | DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used |
| OB  |   |
| • Number, max.  | Limited only by RAM for code  |
| Data areas and their retentivity                          |   |
| Retentive data area (incl. timers, counters, flags), max. | 14 kbyte  |
| Flag  |   |
| • Size, max.  | 8 kbyte; Size of bit memory address area  |
| Local data  |   |
| • per priority class, max.                                | 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB   |
| Address area  |   |
| Process image   |   |
| • Inputs, adjustable                                      | 1 kbyte   |
| • Outputs, adjustable                                     | 1 kbyte   |
| Hardware configuration                                    |   |
| Number of modules per system, max.                        | 3 comm. modules, 1 signal board, 8 signal modules   |
| Time of day   |   |
| Clock   |   |
| • Hardware clock (real-time)                              | Yes   |
| • Backup time   | 480 h; Typical  |
| • Deviation per day, max.                                 | ±60 s/month at 25 °C  |
| Digital inputs  |   |
| Number of digital inputs                                  | 14; Integrated  |
| • of which inputs usable for technological functions      | 6; HSC (High Speed Counting)  |
| Source/sink input   | Yes   |
| Number of simultaneously controllable inputs              |   |
| all mounting positions                                    |   |
| — up to 40 °C, max.                                       | 14  |
| Input voltage   |   |
| • Rated value (DC)  | 24 V  |
| • for signal "0"  | 5 V DC at 1 mA  |
| • for signal "1"  | 15 V DC at 2.5 mA   |
| Input delay (for rated value of input voltage)            |   |
| for standard inputs                                       |   |
| — parameterizable   | 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four  |
| — at "0" to "1", min.                                     | 0.2 ms  |
| — at "0" to "1", max.                                     | 12.8 ms   |
| for interrupt inputs                                      |   |
| — parameterizable   | Yes   |
| for technological functions                               |   |
| — parameterizable   | Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz   |
| Cable length  |   |
| • shielded, max.  | 500 m; 50 m for technological functions   |
| • unshielded, max.  | 300 m; for technological functions: No  |
| Digital outputs   |   |
| Number of digital outputs                                 | 10  |
| • of which high-speed outputs                             | 4; 100 kHz Pulse Train Output   |
| Limitation of inductive shutdown voltage to               | L+ (-48 V)  |
| Switching capacity of the outputs                         |   |
| • with resistive load, max.                               | 0.5 A   |
| • on lamp load, max.                                      | 5 W   |

|  |   |
|--|---|
| <b>Output voltage</b>  |   |
| <ul style="list-style-type: none"> <li>for signal "0", max.</li> <li>for signal "1", min.</li> </ul>   | 0.1 V; with 10 kOhm load<br>20 V                                  |
| <b>Output current</b>  |   |
| <ul style="list-style-type: none"> <li>for signal "1" rated value</li> <li>for signal "0" residual current, max.</li> </ul>  | 0.5 A<br>0.1 mA   |
| <b>Output delay with resistive load</b>  |   |
| <ul style="list-style-type: none"> <li>"0" to "1", max.</li> <li>"1" to "0", max.</li> </ul>   | 1 µs<br>5 µs  |
| <b>Switching frequency</b>   |   |
| <ul style="list-style-type: none"> <li>of the pulse outputs, with resistive load, max.</li> </ul>  | 100 kHz   |
| <b>Relay outputs</b>   |   |
| <ul style="list-style-type: none"> <li>Number of relay outputs</li> </ul>  | 0   |
| <b>Cable length</b>  |   |
| <ul style="list-style-type: none"> <li>shielded, max.</li> <li>unshielded, max.</li> </ul>   | 500 m<br>150 m  |
| <b>Analog inputs</b>   |   |
| Number of analog inputs  | 2   |
| <b>Input ranges</b>  |   |
| <ul style="list-style-type: none"> <li>Voltage</li> </ul>  | Yes   |
| <b>Input ranges (rated values), voltages</b>   |   |
| <ul style="list-style-type: none"> <li>0 to +10 V</li> <li>— Input resistance (0 to 10 V)</li> </ul>   | Yes<br>≥100k ohms   |
| <b>Cable length</b>  |   |
| <ul style="list-style-type: none"> <li>shielded, max.</li> </ul>   | 100 m; twisted and shielded                                       |
| <b>Analog outputs</b>  |   |
| Number of analog outputs   | 2   |
| <b>Output ranges, current</b>  |   |
| <ul style="list-style-type: none"> <li>0 to 20 mA</li> </ul>   | Yes   |
| <b>Analog value generation for the inputs</b>  |   |
| <b>Integration and conversion time/resolution per channel</b>  |   |
| <ul style="list-style-type: none"> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time, parameterizable</li> <li>Conversion time (per channel)</li> </ul>                         | 10 bit<br>Yes<br>625 µs   |
| <b>Analog value generation for the outputs</b>   |   |
| <b>Integration and conversion time/resolution per channel</b>  |   |
| <ul style="list-style-type: none"> <li>Resolution with overrange (bit including sign), max.</li> </ul>   | 10 bit  |
| <b>Encoder</b>   |   |
| <b>Connectable encoders</b>  |   |
| <ul style="list-style-type: none"> <li>2-wire sensor</li> </ul>  | Yes   |
| <b>1. Interface</b>  |   |
| Interface type   | PROFINET  |
| Isolated   | Yes   |
| automatic detection of transmission rate   | Yes   |
| Autonegotiation  | Yes   |
| Autocrossing   | Yes   |
| <b>Interface types</b>   |   |
| <ul style="list-style-type: none"> <li>RJ 45 (Ethernet)</li> <li>Number of ports</li> <li>integrated switch</li> </ul>   | Yes<br>2<br>Yes   |
| <b>Protocols</b>   |   |
| <ul style="list-style-type: none"> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>SIMATIC communication</li> <li>Open IE communication</li> <li>Web server</li> <li>Media redundancy</li> </ul> | Yes<br>Yes<br>Yes<br>Yes; Optionally also encrypted<br>Yes<br>Yes |
| <b>PROFINET IO Controller</b>  |   |
| <ul style="list-style-type: none"> <li>Transmission rate, max.</li> </ul>  | 100 Mbit/s  |

|   |   |
|---|---|
| <b>Services</b>   |   |
| — PG/OP communication   | Yes; encryption with TLS V1.3 pre-selected  |
| — Isochronous mode  | No  |
| — IRT   | No  |
| — PROFlenergy   | 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  |
| — PROFlenergy   | Yes   |
| — Shared device   | Yes   |
| — Number of IO Controllers with shared device, max.                           | 2   |
| <b>Protocols</b>  |   |
| Supports protocol for PROFINET IO   | Yes   |
| PROFlsafe   | 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.                | 50   |
| — Sampling interval, min.                                  | 100 ms   |
| — Publishing interval, min.                                | 200 ms   |
| — Number of server methods, max.                           | 20   |
| — Number of monitored items, max.                          | 1 000  |
| — Number of server interfaces, max.                        | 2  |
| — Number of nodes for user-defined server 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>                                |  |
| <b>Counter</b>   |  |
| • Number of counters                                       | 6  |
| • Counting frequency, max.                                 | 100 kHz  |
| Frequency measurement                                      | Yes  |
| controlled positioning                                     | Yes  |
| Number of position-controlled positioning axes, max.       | 8  |
| Number of positioning axes via pulse-direction interface   | 4; With integrated outputs   |
| PID controller   | Yes  |
| Number of alarm inputs                                     | 4  |
| Number of pulse outputs                                    | 4  |
| Limit frequency (pulse)                                    | 100 kHz  |
| <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>  |  |
| <ul style="list-style-type: none"> <li>• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 <ul style="list-style-type: none"> <li>— Test voltage at air discharge</li> <li>— Test voltage at contact discharge</li> </ul> </li> </ul> | <p>Yes</p> <p>8 kV</p> <p>6 kV</p>   |
| <b>Interference immunity to cable-borne interference</b>  |  |
| <ul style="list-style-type: none"> <li>• Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>• Interference immunity on signal cables acc. to IEC 61000-4-4</li> </ul>   | <p>Yes</p> <p>Yes</p>  |
| <b>Interference immunity against voltage surge</b>  |  |
| <ul style="list-style-type: none"> <li>• Interference immunity on supply lines acc. to IEC 61000-4-5</li> </ul>   | Yes  |
| <b>Interference immunity against conducted variable disturbance induced by high-frequency fields</b>  |  |
| <ul style="list-style-type: none"> <li>• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>  | Yes  |
| <b>Emission of radio interference acc. to EN 55 011</b>   |  |
| <ul style="list-style-type: none"> <li>• Limit class A, for use in industrial areas</li> <li>• Limit class B, for use in residential areas</li> </ul>   | <p>Yes; Group 1</p> <p>Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011</p>  |
| <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>   |  |
| <b>Free fall</b>  |  |
| <ul style="list-style-type: none"> <li>• Fall height, max.</li> </ul>   | 0.3 m; five times, in product package  |
| <b>Ambient temperature during operation</b>   |  |
| <ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> <li>• horizontal installation, min.</li> <li>• horizontal installation, max.</li> <li>• vertical installation, min.</li> <li>• vertical installation, max.</li> </ul>                                | <p>-20 °C</p> <p>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</p> <p>-20 °C</p> <p>60 °C</p> <p>-20 °C</p> <p>50 °C</p> |
| <b>Ambient temperature during storage/transportation</b>  |  |
| <ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> </ul>  | <p>-40 °C</p> <p>70 °C</p>   |
| <b>Air pressure acc. to IEC 60068-2-13</b>  |  |
| <ul style="list-style-type: none"> <li>• Operation, min.</li> <li>• Operation, max.</li> <li>• Storage/transport, min.</li> <li>• Storage/transport, max.</li> </ul>  | <p>795 hPa</p> <p>1 080 hPa</p> <p>660 hPa</p> <p>1 080 hPa</p>  |
| <b>Altitude during operation relating to sea level</b>  |  |
| <ul style="list-style-type: none"> <li>• Installation altitude, min.</li> <li>• Installation altitude, max.</li> </ul>  | <p>-1 000 m</p> <p>5 000 m; Restrictions for installation altitudes &gt; 2 000 m, see manual</p>   |
| <b>Relative humidity</b>  |  |
| <ul style="list-style-type: none"> <li>• Operation, max.</li> </ul>   | 95 %; no condensation  |
| <b>Vibrations</b>   |  |
| <ul style="list-style-type: none"> <li>• Vibration resistance during operation acc. to IEC 60068-2-6</li> <li>• Operation, tested according to IEC 60068-2-6</li> </ul>   | <p>2 g (m/s<sup>2</sup>) wall mounting, 1 g (m/s<sup>2</sup>) DIN rail</p> <p>Yes</p>  |
| <b>Shock testing</b>  |  |
| <ul style="list-style-type: none"> <li>• tested according to IEC 60068-2-27</li> </ul>  | Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms  |

|   |  |
|---|--|
| <b>Pollutant concentrations</b>   |  |
| <ul style="list-style-type: none"> <li>• SO2 at RH &lt; 60% without condensation</li> </ul>   | S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free                                   |
| <b>configuration / header</b>   |  |
| configuration / programming / header  |  |
| Programming language  |  |
| — LAD   | Yes  |
| — FBD   | Yes  |
| — SCL   | Yes  |
| <b>Know-how protection</b>  |  |
| <ul style="list-style-type: none"> <li>• User program protection/password protection</li> <li>• Copy protection</li> <li>• Block protection</li> </ul>  | Yes<br>Yes<br>Yes  |
| <b>Access protection</b>  |  |
| <ul style="list-style-type: none"> <li>• protection of confidential configuration data</li> <li>• Protection level: Write protection</li> <li>• Protection level: Read/write protection</li> <li>• Protection level: Complete protection</li> </ul> | Yes<br>Yes<br>Yes<br>Yes   |
| programming / cycle time monitoring / header  |  |
| <ul style="list-style-type: none"> <li>• adjustable</li> </ul>  | Yes  |
| <b>Dimensions</b>   |  |
| Width   | 130 mm   |
| Height  | 100 mm   |
| Depth   | 75 mm  |
| <b>Weights</b>  |  |
| Weight, approx.   | 500 g  |
| <b>last modified:</b>   | 4/12/2021  |



SIMATIC S7-1200, CPU 1215C, compact CPU, DC/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: DC 20.4-28.8 V DC, Program/data memory 125 KB

| General information  |  |
|--|--|
| Product type designation   | CPU 1215C DC/DC/relay                    |
| Firmware version   | V4.5                                     |
| Engineering with   |  |
| <ul style="list-style-type: none"> <li>Programming package</li> </ul>  | STEP 7 V17 or higher                     |
| Supply voltage   |  |
| Rated value (DC)   |  |
| <ul style="list-style-type: none"> <li>24 V DC</li> </ul>  | Yes                                      |
| permissible range, lower limit (DC)  | 20.4 V                                   |
| permissible range, upper limit (DC)  | 28.8 V                                   |
| Reverse polarity protection  | Yes                                      |
| Load voltage L+  |  |
| <ul style="list-style-type: none"> <li>Rated value (DC)</li> <li>permissible range, lower limit (DC)</li> <li>permissible range, upper limit (DC)</li> </ul> | 24 V<br>20.4 V<br>28.8 V                 |
| Input current  |  |
| Current consumption (rated value)  | 500 mA; CPU only                         |
| Current consumption, max.  | 1 500 mA; CPU with all expansion modules |
| Inrush current, max.   | 12 A; at 28.8 V DC                       |
| $I^2t$   | 0.8 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  |  |
| <ul style="list-style-type: none"> <li>24 V</li> </ul>   | L+ minus 4 V DC min.                     |
| Power loss   |  |
| Power loss, typ.   | 12 W                                     |
| Memory   |  |
| Work memory  |  |
| <ul style="list-style-type: none"> <li>integrated</li> <li>expandable</li> </ul>   | 125 kbyte<br>No                          |
| Load memory  |  |
| <ul style="list-style-type: none"> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>  | 4 Mbyte<br>with SIMATIC memory card      |
| Backup   |  |
| <ul style="list-style-type: none"> <li>present</li> <li>maintenance-free</li> <li>without battery</li> </ul>   | Yes<br>Yes<br>Yes                        |

| CPU processing times                                      |   |
|---|---|
| for bit operations, typ.                                  | 0.08 µs; / instruction  |
| for word operations, typ.                                 | 1.7 µs; / instruction   |
| for floating point arithmetic, typ.                       | 2.3 µs; / instruction   |
| CPU-blocks  |   |
| Number of blocks (total)                                  | DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used |
| OB  |   |
| • Number, max.  | Limited only by RAM for code  |
| Data areas and their retentivity                          |   |
| Retentive data area (incl. timers, counters, flags), max. | 14 kbyte  |
| Flag  |   |
| • Size, max.  | 8 kbyte; Size of bit memory address area  |
| Local data  |   |
| • per priority class, max.                                | 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB   |
| Address area  |   |
| Process image   |   |
| • Inputs, adjustable                                      | 1 kbyte   |
| • Outputs, adjustable                                     | 1 kbyte   |
| Hardware configuration                                    |   |
| Number of modules per system, max.                        | 3 comm. modules, 1 signal board, 8 signal modules   |
| Time of day   |   |
| Clock   |   |
| • Hardware clock (real-time)                              | Yes   |
| • Backup time   | 480 h; Typical  |
| • Deviation per day, max.                                 | ±60 s/month at 25 °C  |
| Digital inputs  |   |
| Number of digital inputs                                  | 14; Integrated  |
| • of which inputs usable for technological functions      | 6; HSC (High Speed Counting)  |
| Source/sink input   | Yes   |
| Number of simultaneously controllable inputs              |   |
| all mounting positions                                    |   |
| — up to 40 °C, max.                                       | 14  |
| Input voltage   |   |
| • Rated value (DC)  | 24 V  |
| • for signal "0"  | 5 V DC at 1 mA  |
| • for signal "1"  | 15 V DC at 2.5 mA   |
| Input delay (for rated value of input voltage)            |   |
| for standard inputs                                       |   |
| — parameterizable   | 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   |
| for interrupt inputs                                      |   |
| — parameterizable   | Yes   |
| for technological functions                               |   |
| — parameterizable   | Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz   |
| Cable length  |   |
| • shielded, max.  | 500 m; 50 m for technological functions   |
| • unshielded, max.  | 300 m; for technological functions: No  |
| Digital outputs   |   |
| Number of digital outputs                                 | 10; Relays  |
| Switching capacity of the outputs                         |   |
| • with resistive load, max.                               | 2 A   |
| • on lamp load, max.                                      | 30 W with DC, 200 W with AC   |
| Output delay with resistive load                          |   |
| • "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<br>— Input resistance (0 to 10 V)                | Yes<br>≥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>Analog value generation for the outputs</b>                |  |
| <b>Integration and conversion time/resolution per channel</b> |  |
| • Resolution with overrange (bit including sign), max.        | 10 bit   |
| <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   | 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  |
| <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.                                   | 50  |
| — Sampling interval, min.   | 100 ms  |
| — Publishing interval, min.   | 200 ms  |
| — Number of server methods, max.  | 20  |
| — Number of monitored items, max.   | 1 000   |
| — Number of server interfaces, max.   | 2   |
| — Number of nodes for user-defined server interfaces, max.                    | 2 000   |
| <b>Further protocols</b>  |   |
| • MODBUS  | Yes   |
| <b>communication functions / header</b>                                       |   |

|   |  |
|---|--|
| <b>S7 communication</b>   |  |
| <ul style="list-style-type: none"> <li>supported</li> <li>as server</li> <li>as client</li> <li>User data per job, max.</li> </ul>  | <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>See online help (S7 communication, user data size)</p>   |
| <b>Number of connections</b>  |  |
| <ul style="list-style-type: none"> <li>overall</li> </ul>   | 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>   |  |
| <ul style="list-style-type: none"> <li>Status/control variable</li> <li>Variables</li> </ul>  | <p>Yes</p> <p>Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters</p>   |
| <b>Forcing</b>  |  |
| <ul style="list-style-type: none"> <li>Forcing</li> </ul>   | Yes  |
| <b>Diagnostic buffer</b>  |  |
| <ul style="list-style-type: none"> <li>present</li> </ul>   | Yes  |
| <b>Traces</b>   |  |
| <ul style="list-style-type: none"> <li>Number of configurable Traces</li> <li>Memory size per trace, max.</li> </ul>  | <p>2</p> <p>512 kbyte</p>  |
| <b>Interrupts/diagnostics/status information</b>  |  |
| <b>Diagnostics indication LED</b>   |  |
| <ul style="list-style-type: none"> <li>RUN/STOP LED</li> <li>ERROR LED</li> <li>MAINT LED</li> </ul>  | <p>Yes</p> <p>Yes</p> <p>Yes</p>   |
| <b>Integrated Functions</b>   |  |
| <b>Counter</b>  |  |
| <ul style="list-style-type: none"> <li>Number of counters</li> <li>Counting frequency, max.</li> </ul>  | <p>6</p> <p>100 kHz</p>  |
| <b>Frequency measurement</b>  |  |
| 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   |
| <b>PID controller</b>   |  |
| Number of alarm inputs  | 4  |
| <b>Potential separation</b>   |  |
| <b>Potential separation digital inputs</b>  |  |
| <ul style="list-style-type: none"> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> </ul>   | <p>500V AC for 1 minute</p> <p>1</p>   |
| <b>Potential separation digital outputs</b>   |  |
| <ul style="list-style-type: none"> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> </ul>  | <p>Relays</p> <p>No</p> <p>2</p>   |
| <b>EMC</b>  |  |
| <b>Interference immunity against discharge of static electricity</b>  |  |
| <ul style="list-style-type: none"> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 <ul style="list-style-type: none"> <li>Test voltage at air discharge</li> <li>Test voltage at contact discharge</li> </ul> </li> </ul> | <p>Yes</p> <p>8 kV</p> <p>6 kV</p>   |
| <b>Interference immunity to cable-borne interference</b>  |  |
| <ul style="list-style-type: none"> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity on signal cables acc. to IEC 61000-4-4</li> </ul>   | <p>Yes</p> <p>Yes</p>  |
| <b>Interference immunity against voltage surge</b>  |  |
| <ul style="list-style-type: none"> <li>Interference immunity on supply lines acc. to IEC 61000-4-5</li> </ul>   | Yes  |
| <b>Interference immunity against conducted variable disturbance induced by high-frequency fields</b>  |  |
| <ul style="list-style-type: none"> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>  | Yes  |

|  |   |
|--|---|
| <b>Emission of radio interference acc. to EN 55 011</b>  |   |
| <ul style="list-style-type: none"> <li>• Limit class A, for use in industrial areas</li> <li>• Limit class B, for use in residential areas</li> </ul>  | <p>Yes; Group 1</p> <p>Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011</p>   |
| <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>  |   |
| <b>Free fall</b>   |   |
| <ul style="list-style-type: none"> <li>• Fall height, max.</li> </ul>  | 0.3 m; five times, in product package   |
| <b>Ambient temperature during operation</b>  |   |
| <ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> </ul>   | -20 °C<br>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 |
| <ul style="list-style-type: none"> <li>• horizontal installation, min.</li> <li>• horizontal installation, max.</li> <li>• vertical installation, min.</li> <li>• vertical installation, max.</li> </ul> | -20 °C<br>60 °C<br>-20 °C<br>50 °C  |
| <b>Ambient temperature during storage/transportation</b>   |   |
| <ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> </ul>   | -40 °C<br>70 °C   |
| <b>Air pressure acc. to IEC 60068-2-13</b>   |   |
| <ul style="list-style-type: none"> <li>• Operation, min.</li> <li>• Operation, max.</li> <li>• Storage/transport, min.</li> <li>• Storage/transport, max.</li> </ul>                                     | 795 hPa<br>1 080 hPa<br>660 hPa<br>1 080 hPa  |
| <b>Altitude during operation relating to sea level</b>   |   |
| <ul style="list-style-type: none"> <li>• Installation altitude, min.</li> <li>• Installation altitude, max.</li> </ul>   | -1 000 m<br>5 000 m; Restrictions for installation altitudes > 2 000 m, see manual  |
| <b>Relative humidity</b>   |   |
| <ul style="list-style-type: none"> <li>• Operation, max.</li> </ul>  | 95 %; no condensation   |
| <b>Vibrations</b>  |   |
| <ul style="list-style-type: none"> <li>• Vibration resistance during operation acc. to IEC 60068-2-6</li> <li>• Operation, tested according to IEC 60068-2-6</li> </ul>                                  | 2 g (m/s <sup>2</sup> ) wall mounting, 1 g (m/s <sup>2</sup> ) DIN rail<br>Yes  |
| <b>Shock testing</b>   |   |
| <ul style="list-style-type: none"> <li>• tested according to IEC 60068-2-27</li> </ul>   | Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms   |
| <b>Pollutant concentrations</b>  |   |
| <ul style="list-style-type: none"> <li>• SO<sub>2</sub> at RH &lt; 60% without condensation</li> </ul>   | SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60% condensation-free  |
| <b>configuration / header</b>  |   |
| <b>configuration / programming / header</b>  |   |
| <b>Programming language</b>  |   |
| — LAD  | Yes   |
| — FBD  | Yes   |
| — SCL  | Yes   |
| <b>Know-how protection</b>   |   |
| <ul style="list-style-type: none"> <li>• User program protection/password protection</li> <li>• Copy protection</li> <li>• Block protection</li> </ul>   | Yes<br>Yes<br>Yes   |
| <b>Access protection</b>   |   |
| <ul style="list-style-type: none"> <li>• protection of confidential configuration data</li> <li>• Protection level: Write protection</li> </ul>  | Yes<br>Yes  |

|  |   |
|--|---|
| • Protection level: Read/write protection    | Yes   |
| • Protection level: Complete protection      | Yes   |
| programming / cycle time monitoring / header |   |
| • adjustable                                 | Yes   |
| <b>Dimensions</b>                            |   |
| Width  | 130 mm  |
| Height                                       | 100 mm  |
| Depth  | 75 mm   |
| <b>Weights</b>                               |   |
| Weight, approx.                              | 585 g   |
| <b>last modified:</b>                        | 4/12/2021  |