



SIMATIC S7-1200F, CPU 1215 FC, 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 150 KB

| General information  |  |
|--|--|
| Product type designation   | CPU 1215FC 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>   | 150 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; as MRP client |
| <b>PROFINET IO Controller</b>  |  |
| <ul style="list-style-type: none"> <li>Transmission rate, max.</li> </ul>  | 100 Mbit/s   |

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|---|---|
| <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   | Yes   |
| 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  |

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| — 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, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  |
| <b>Forcing</b>   |  |
| • Forcing  | Yes; peripheral inputs/outputs (without fail-safe)   |
| <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>   |  |

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|---|--|
| <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>   | <p>Yes</p>   |
| <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>  | <p>Yes</p>   |
| <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>Highest safety class achievable in safety mode</b>   |  |
| <ul style="list-style-type: none"> <li>• Performance level according to ISO 13849-1</li> <li>• SIL acc. to IEC 61508</li> </ul>   | <p>PLe</p> <p>SIL 3</p>  |
| <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>0 °C</p> <p>55 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical</p> <p>0 °C</p> <p>55 °C</p> <p>0 °C</p> <p>45 °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>  |

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|---|---|
| <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>   | SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free                                    |
| <b>configuration / header</b>   |   |
| configuration / programming / header  |   |
| Programming language  |   |
| — LAD   | Yes; incl. failsafe   |
| — FBD   | Yes; incl. failsafe   |
| — 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>   | 5/17/2021  |