



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   | V4.2                                     |
| Engineering with   |  |
| <ul style="list-style-type: none"> <li>Programming package</li> </ul>  | STEP 7 V14 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> </ul>  | Yes<br>Yes                               |

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• without battery</li> </ul>  | Yes   |
| <b>CPU processing times</b>  |   |
| 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>  |   |
| <ul style="list-style-type: none"> <li>• Number, max.</li> </ul>   | Limited only by RAM for code  |
| <b>Data areas and their retentivity</b>  |   |
| Retentive data area (incl. timers, counters, flags), max.  | 10 kbyte  |
| <b>Flag</b>  |   |
| <ul style="list-style-type: none"> <li>• Size, max.</li> </ul>   | 8 kbyte; Size of bit memory address area  |
| <b>Local data</b>  |   |
| <ul style="list-style-type: none"> <li>• per priority class, max.</li> </ul>   | 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB   |
| <b>Address area</b>  |   |
| <b>Process image</b>   |   |
| <ul style="list-style-type: none"> <li>• Inputs, adjustable</li> <li>• Outputs, adjustable</li> </ul>                                    | 1 kbyte<br>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>   |   |
| <ul style="list-style-type: none"> <li>• Hardware clock (real-time)</li> <li>• Backup time</li> <li>• Deviation per day, max.</li> </ul> | Yes<br>480 h; Typical<br>60 s/month at 25 °C  |
| <b>Digital inputs</b>  |   |
| Number of digital inputs   | 14; Integrated  |
| <ul style="list-style-type: none"> <li>• of which inputs usable for technological functions</li> </ul>                                   | 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>   |   |
| <ul style="list-style-type: none"> <li>• Rated value (DC)</li> <li>• for signal "0"</li> <li>• for signal "1"</li> </ul>                 | 24 V<br>5 V DC at 1 mA<br>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>  |   |
| <ul style="list-style-type: none"> <li>• shielded, max.</li> <li>• unshielded, max.</li> </ul>   | 500 m; 50 m for technological functions<br>300 m; for technological functions: No   |
| <b>Digital outputs</b>   |   |
| Number of digital outputs  | 10  |
| <ul style="list-style-type: none"> <li>• of which high-speed outputs</li> </ul>  | 4; 100 kHz Pulse Train Output   |
| Limitation of inductive shutdown voltage to  | L+ (-48 V)  |

|   |                             |
|---|-----------------------------|
| <b>Switching capacity of the outputs</b>                      |                             |
| • with resistive load, max.                                   | 0.5 A                       |
| • on lamp load, max.  | 5 W                         |
| <b>Output voltage</b>   |                             |
| • for signal "0", max.  | 0.1 V; with 10 kOhm load    |
| • for signal "1", min.  | 20 V                        |
| <b>Output current</b>   |                             |
| • for signal "1" rated value                                  | 0.5 A                       |
| • for signal "0" residual current, max.                       | 0.1 mA                      |
| <b>Output delay with resistive load</b>                       |                             |
| • "0" to "1", max.  | 1 µs                        |
| • "1" to "0", max.  | 5 µs                        |
| <b>Switching frequency</b>                                    |                             |
| • of the pulse outputs, with resistive load, max.             | 100 kHz                     |
| <b>Relay outputs</b>  |                             |
| • Number of relay outputs                                     | 0                           |
| <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>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>   |                             |
| 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                         |

|   |   |
|---|---|
| • Web server  | Yes   |
| • Media redundancy  | Yes; as MRP client  |
| <b>PROFINET IO Controller</b>   |   |
| • Transmission rate, max.   | 100 Mbit/s  |
| <b>Services</b>   |   |
| — PG/OP communication   | Yes   |
| — 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   |
| — 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   |
| PROFIBUS  | Yes; CM 1243-5 (master) or CM 1242-5 (slave) required   |
| 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 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>Further protocols</b>  |   |
| • MODBUS  | Yes   |

| Communication functions   |  |
|---|--|
| S7 communication  |  |
| • supported   | Yes  |
| • as server   | Yes  |
| • as client   | Yes  |
| • User data per job, max.   | See online help (S7 communication, user data size)                   |
| Number of connections   |  |
| • overall   | 16; dynamically  |
| Test commissioning functions  |  |
| Status/control  |  |
| • Status/control variable   | Yes  |
| • Variables   | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters |
| Forcing   |  |
| • Forcing   | Yes  |
| Diagnostic buffer   |  |
| • present   | Yes  |
| Traces  |  |
| • Number of configurable Traces   | 2  |
| • Memory size per trace, max.   | 512 kbyte  |
| Interrupts/diagnostics/status information   |  |
| Diagnostics indication LED  |  |
| • RUN/STOP LED  | Yes  |
| • ERROR LED   | Yes  |
| • MAINT LED   | Yes  |
| Integrated Functions  |  |
| Frequency measurement   | Yes  |
| controlled positioning  | Yes  |
| Number of position-controlled positioning axes, max.  | 8  |
| Number of positioning axes via pulse-direction interface                                      | 4; With integrated outputs   |
| PID controller  | Yes  |
| Number of alarm inputs  | 4  |
| Number of pulse outputs   | 4  |
| Limit frequency (pulse)   | 100 kHz  |
| Potential separation  |  |
| Potential separation digital inputs   |  |
| • Potential separation digital inputs   | No   |
| • between the channels, in groups of  | 1  |
| Potential separation digital outputs  |  |
| • Potential separation digital outputs  | Yes  |
| • between the channels  | No   |
| • between the channels, in groups of  | 1  |
| EMC   |  |
| Interference immunity against discharge of static electricity                                 |  |
| • Interference immunity against discharge of static electricity acc. to IEC 61000-4-2         | Yes  |
| — Test voltage at air discharge   | 8 kV   |
| — Test voltage at contact discharge   | 6 kV   |
| Interference immunity to cable-borne interference   |  |
| • Interference immunity on supply lines acc. to IEC 61000-4-4                                 | Yes  |
| • Interference immunity on signal cables acc. to IEC 61000-4-4                                | Yes  |
| Interference immunity against voltage surge   |  |
| • Interference immunity on supply lines acc. to IEC 61000-4-5                                 | Yes  |
| Interference immunity against conducted variable disturbance induced by high-frequency fields |  |
| • Interference immunity against high-frequency radiation acc. to IEC 61000-4-6                | Yes  |
| Emission of radio interference acc. to EN 55 011  |  |

- Limit class A, for use in industrial areas
- Limit class B, for use in residential areas

Yes; Group 1

Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011

### Standards, approvals, certificates


|   |       |
|---|-------|
| CE mark   | Yes   |
| UL approval   | Yes   |
| cULus   | Yes   |
| FM approval   | Yes   |
| RCM (formerly C-TICK)                                 | Yes   |
| KC approval   | Yes   |
| Marine approval                                       | Yes   |
| <b>Highest safety class achievable in safety mode</b> |       |
| • Performance level according to ISO 13849-1          | PLe   |
| • SIL acc. to IEC 61508                               | SIL 3 |

### Ambient conditions

|   |   |
|---|---|
| <b>Free fall</b>  |   |
| • Fall height, max.   | 0.3 m; five times, in product package   |
| <b>Ambient temperature during operation</b>                   |   |
| • min.  | 0 °C  |
| • max.  | 55 °C   |
| • horizontal installation, min.                               | 0 °C  |
| • horizontal installation, max.                               | 55 °C   |
| • vertical installation, min.                                 | 0 °C  |
| • vertical installation, max.                                 | 45 °C   |
| <b>Ambient temperature during storage/transportation</b>      |   |
| • min.  | -40 °C  |
| • max.  | 70 °C   |
| <b>Air pressure acc. to IEC 60068-2-13</b>                    |   |
| • Operation, min.   | 795 hPa   |
| • Operation, max.   | 1 080 hPa   |
| • Storage/transport, min.                                     | 660 hPa   |
| • Storage/transport, max.                                     | 1 080 hPa   |
| <b>Relative humidity</b>                                      |   |
| • Operation, max.   | 95 %; no condensation   |
| <b>Vibrations</b>   |   |
| • 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   |
| <b>Shock testing</b>  |   |
| • 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 |
| <b>Pollutant concentrations</b>                               |   |
| • 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

|   |                     |
|---|---------------------|
| <b>Programming</b>                            |                     |
| Programming language                          |                     |
| — LAD   | Yes; incl. failsafe |
| — FBD   | Yes; incl. failsafe |
| — SCL   | Yes                 |
| <b>Know-how protection</b>                    |                     |
| • User program protection/password protection | Yes                 |
| • Copy protection                             | Yes                 |
| • Block protection                            | Yes                 |
| <b>Access protection</b>                      |                     |
| • Protection level: Write protection          | Yes                 |
| • Protection level: Read/write protection     | Yes                 |
| • Protection level: Complete protection       | Yes                 |
| <b>Cycle time monitoring</b>                  |                     |
| • adjustable                                  | Yes                 |

| Dimensions            |  |
|-----------------------|--|
| Width                 | 130 mm   |
| Height                | 100 mm   |
| Depth                 | 75 mm  |
| Weights               |  |
| Weight, approx.       | 585 g  |
| <b>last modified:</b> | 3/2/2021  |