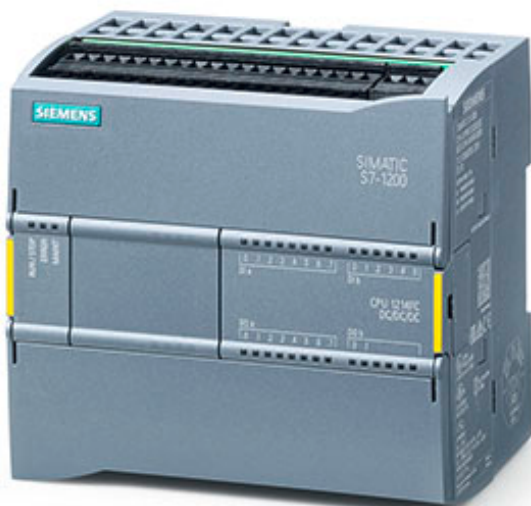


SIMATIC S7-1200F, CPU 1214 FC, COMPACT CPU, DC/DC/DC,  
ONBOARD I/O: 14 DI 24V DC; 10 DO 24 V DC; 2 AI 0 - 10V DC,  
POWER SUPPLY: DC 20.4 - 28.8 V DC, PROGRAM/DATA  
MEMORY 125 KB



| General information                   |                                               |
|---------------------------------------|-----------------------------------------------|
| Product type designation              | CPU 1214FC DC/DC                              |
| Engineering with                      |                                               |
| • Programming package                 | STEP 7 V13 SP1 or higher                      |
| Display                               |                                               |
| with display                          | No                                            |
| Supply voltage                        |                                               |
| Rated value (DC)                      | Yes                                           |
| • 24 V DC                             |                                               |
| permissible range, lower limit (DC)   | 20.4 V                                        |
| permissible range, upper limit (DC)   | 28.8 V                                        |
| Load voltage L+                       |                                               |
| • Rated value (DC)                    | 24 V                                          |
| • permissible range, lower limit (DC) | 20.4 V                                        |
| • permissible range, upper limit (DC) | 28.8 V                                        |
| Input current                         |                                               |
| Current consumption, max.             | 1 500 mA; max. with all expansion accessories |

|                                                                   |                                                      |
|-------------------------------------------------------------------|------------------------------------------------------|
| Inrush current, max.                                              | 12 A; at 28.8 V DC                                   |
| <b>Encoder supply</b>                                             |                                                      |
| 24 V encoder supply                                               |                                                      |
| • 24 V                                                            | L+ minus 4 V DC min.                                 |
| <b>Power loss</b>                                                 |                                                      |
| Power loss, typ.                                                  | 12 W                                                 |
| <b>Memory</b>                                                     |                                                      |
| Type of memory                                                    | RAM                                                  |
| <b>Work memory</b>                                                |                                                      |
| • integrated                                                      | 125 kbyte                                            |
| • expandable                                                      | No                                                   |
| <b>Load memory</b>                                                |                                                      |
| • integrated                                                      | 4 Mbyte                                              |
| • Plug-in (SIMATIC Memory Card), max.                             | with SIMATIC memory card                             |
| <b>Backup</b>                                                     |                                                      |
| • present                                                         | Yes; maintenance-free                                |
| • without battery                                                 | 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; / Operation                                  |
| <b>CPU-blocks</b>                                                 |                                                      |
| Number of blocks (total)                                          | 1 024; OBs, FBs, FCs, DBs                            |
| <b>OB</b>                                                         |                                                      |
| • Number, max.                                                    | Limited only by RAM for code                         |
| <b>Data areas and their retentivity</b>                           |                                                      |
| retentive data area in total (incl. times, counters, flags), max. | 10 kbyte                                             |
| <b>Address area</b>                                               |                                                      |
| <b>I/O address area</b>                                           |                                                      |
| • Inputs                                                          | 1 024 byte                                           |
| • Outputs                                                         | 1 024 byte                                           |
| <b>Process image</b>                                              |                                                      |
| • Inputs, adjustable                                              | 1 024 byte                                           |
| • Outputs, adjustable                                             | 1 024 byte                                           |
| <b>Hardware configuration</b>                                     |                                                      |
| Number of modules per system, max.                                | 8; 3 comm. modules, 1 signal board, 8 signal modules |
| <b>Time of day</b>                                                |                                                      |
| Clock                                                             |                                                      |

|                                    |                                       |
|------------------------------------|---------------------------------------|
| • Hardware clock (real-time clock) | Yes                                   |
| • Backup time                      | 480 h; typical; 12 days min. at 40 °C |
| • Deviation per day, max.          | ±60 s per month                       |

## Digital inputs

|                                                      |                                                                                                                                         |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Number of digital inputs                             | 14                                                                                                                                      |
| • of which inputs usable for technological functions | 6; HSC (High Speed Counting)                                                                                                            |
| integrated channels (DI)                             | 14                                                                                                                                      |
| m/p-reading                                          | Yes                                                                                                                                     |
| Number of simultaneously controllable inputs         |                                                                                                                                         |
| all mounting positions                               |                                                                                                                                         |
| — up to 40 °C, max.                                  | 14; 14 inputs at 55 °C horizontal or 45 °C vertical                                                                                     |
| Input voltage                                        |                                                                                                                                         |
| • Rated value (DC)                                   | 24 V; DC at 4 mA nominal                                                                                                                |
| • for signal "0"                                     | 5 V DC at 1 mA                                                                                                                          |
| • for signal "1"                                     | 15 VDC at 2.5 mA                                                                                                                        |
| Input current                                        |                                                                                                                                         |
| • for signal "1", typ.                               | 4 mA; nominal                                                                                                                           |
| Input delay (for rated value of input voltage)       |                                                                                                                                         |
| for standard inputs                                  |                                                                                                                                         |
| — parameterizable                                    | 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms |
| — at "0" to "1", min.                                | 0.1 µs                                                                                                                                  |
| — at "0" to "1", max.                                | 20 ms                                                                                                                                   |
| for interrupt inputs                                 |                                                                                                                                         |
| — parameterizable                                    | Yes                                                                                                                                     |
| for counter/technological functions                  |                                                                                                                                         |
| — parameterizable                                    | Yes; 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.                                   | 150 m; For technological functions: No                                                                                                  |

## Digital outputs

|                                   |                               |
|-----------------------------------|-------------------------------|
| Number of digital outputs         | 10                            |
| • of which high-speed outputs     | 4; 100 kHz Pulse Train Output |
| integrated channels (DO)          | 10                            |
| Short-circuit protection          | No; to be provided externally |
| Switching capacity of the outputs |                               |
| • with resistive load, max.       | 0.5 A                         |
| • on lamp load, max.              | 5 W                           |
| Output voltage                    |                               |
| • for signal "0", max.            | 0.1 V; with 10 kOhm load      |

|                                                        |                               |
|--------------------------------------------------------|-------------------------------|
| • for signal "1", min.                                 | 20 V                          |
| Output current                                         |                               |
| • for signal "1" rated value                           | 0.5 A                         |
| • for signal "0" residual current, max.                | 0.1 mA                        |
| Output delay with resistive load                       |                               |
| • "0" to "1", max.                                     | 1 µs                          |
| • "1" to "0", max.                                     | 3 µs                          |
| Switching frequency                                    |                               |
| • of the pulse outputs, with resistive load, max.      | 100 kHz                       |
| Cable length                                           |                               |
| • shielded, max.                                       | 500 m                         |
| • unshielded, max.                                     | 150 m                         |
| Analog inputs                                          |                               |
| Number of analog inputs                                | 2                             |
| integrated channels (AI)                               | 2; 0 to 10V                   |
| Input ranges                                           |                               |
| • Voltage                                              | Yes; 0 to 10V                 |
| Input ranges (rated values), voltages                  |                               |
| • 0 to +10 V                                           | Yes                           |
| • Input resistance (0 to 10 V)                         | ≥100k ohms                    |
| Cable length                                           |                               |
| • shielded, max.                                       | 100 m; shielded, twisted pair |
| Analog outputs                                         |                               |
| Number of analog outputs                               | 0                             |
| Cable length                                           |                               |
| • shielded, max.                                       | 100 m; shielded, twisted pair |
| Analog value generation                                |                               |
| Integration and conversion time/resolution per channel |                               |
| • Resolution with overrange (bit including sign), max. | 10 bit                        |
| • Integration time, parameterizable                    | Yes                           |
| • Conversion time (per channel)                        | 625 µs                        |
| Encoder                                                |                               |
| Connectable encoders                                   |                               |
| • 2-wire sensor                                        | Yes                           |
| 1. Interface                                           |                               |
| Interface type                                         | PROFINET                      |
| Physics                                                | Ethernet                      |
| Isolated                                               | Yes                           |
| automatic detection of transmission rate               | Yes                           |

|                                     |                                                                      |
|-------------------------------------|----------------------------------------------------------------------|
| Autonegotiation                     | Yes                                                                  |
| Autocrossing                        | Yes                                                                  |
| <b>Functionality</b>                |                                                                      |
| • PROFINET IO Controller            | Yes                                                                  |
| • PROFINET IO Device                | Yes                                                                  |
| <b>PROFINET IO Controller</b>       |                                                                      |
| • Prioritized startup               |                                                                      |
| — Number of IO Devices, max.        | 16                                                                   |
| <b>Protocols</b>                    |                                                                      |
| Supports protocol for PROFINET IO   | Yes                                                                  |
| PROFIBUS                            | Yes; CM 1243-5 required                                              |
| AS-Interface                        | Yes                                                                  |
| <b>Protocols (Ethernet)</b>         |                                                                      |
| • TCP/IP                            | Yes                                                                  |
| <b>Further protocols</b>            |                                                                      |
| • MODBUS                            | Yes                                                                  |
| <b>Communication functions</b>      |                                                                      |
| <b>S7 communication</b>             |                                                                      |
| • supported                         | Yes                                                                  |
| • as server                         | Yes                                                                  |
| • as client                         | Yes                                                                  |
| <b>Open IE communication</b>        |                                                                      |
| • TCP/IP                            | Yes                                                                  |
| • ISO-on-TCP (RFC1006)              | Yes                                                                  |
| • UDP                               | Yes                                                                  |
| <b>Web server</b>                   |                                                                      |
| • supported                         | Yes                                                                  |
| • User-defined websites             | Yes                                                                  |
| <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; Up to 512 KB of data per trace are possible                       |
| <b>Integrated Functions</b>         |                                                                      |
| Number of counters                  | 6                                                                    |

|                                   |         |
|-----------------------------------|---------|
| Counting frequency (counter) max. | 100 kHz |
| Frequency meter                   | Yes     |
| controlled positioning            | Yes     |
| 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
- Functional isolation (Optocoupler)

#### Permissible potential difference

between different circuits 500 V DC between 24 V DC and 5 V DC

#### EMC

##### Interference immunity against discharge of static electricity

- Interference immunity against discharge of static electricity acc. to IEC 61000-4-2
  - 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

- on the supply lines acc. to IEC 61000-4-5 Yes

##### Interference immunity against conducted variable disturbance induced by high-frequency fields

- Interference immunity against high-frequency radiation acc. to IEC 61000-4-6 Yes

##### Emission of radio interference acc. to EN 55 011

- Limit class A, for use in industrial areas Yes; Group 1
- Limit class B, for use in residential areas Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011

#### Degree and class of protection

##### Degree of protection acc. to EN 60529

- IP20 Yes

#### Standards, approvals, certificates

|                       |     |
|-----------------------|-----|
| CE mark               | Yes |
| UL approval           | Yes |
| cULus                 | Yes |
| FM approval           | Yes |
| RCM (formerly C-TICK) | Yes |

|                                                     |                                                                                           |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------|
| Marine approval                                     |                                                                                           |
| • Marine approval                                   | Yes                                                                                       |
| Ambient conditions                                  |                                                                                           |
| Free fall                                           |                                                                                           |
| • Drop height, max. (in packaging)                  | 0.3 m; five times, in dispatch package                                                    |
| Ambient temperature during operation                |                                                                                           |
| • 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                                                                                     |
| 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                                                                                 |
| Relative humidity                                   |                                                                                           |
| • Operation, max.                                   | 95 %; no condensation                                                                     |
| • permissible range (without condensation) at 25 °C | 95 %                                                                                      |
| Vibrations                                          |                                                                                           |
| • Vibrations                                        | 2G wall mounting, 1G DIN rail                                                             |
| • Operation, tested according to IEC 60068-2-6      | Yes                                                                                       |
| Shock test                                          |                                                                                           |
| • 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 |
| Extended ambient conditions                         |                                                                                           |
| Pollutant concentrations                            |                                                                                           |
| — SO <sub>2</sub> at RH < 60% without condensation  | SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60% condensation-free      |
| Configuration                                       |                                                                                           |
| Programming                                         |                                                                                           |
| Programming language                                |                                                                                           |
| — LAD                                               | Yes; incl. failsafe                                                                       |
| — FBD                                               | Yes; incl. failsafe                                                                       |
| — SCL                                               | Yes                                                                                       |
| Cycle time monitoring                               |                                                                                           |
| • adjustable                                        | Yes                                                                                       |

| Dimensions            |            |
|-----------------------|------------|
| Width                 | 110 mm     |
| Height                | 100 mm     |
| Depth                 | 75 mm      |
| Weights               |            |
| Weight, approx.       | 415 g      |
| <b>last modified:</b> | 27.10.2015 |