



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"> Programming package 	STEP 7 V17 or higher
Supply voltage	
Rated value (DC)	
<ul style="list-style-type: none"> 24 V DC 	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"> Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) 	24 V 20.4 V 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 ² ·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"> 24 V 	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	12 W
Memory	
Work memory	
<ul style="list-style-type: none"> integrated expandable 	150 kbyte No
Load memory	
<ul style="list-style-type: none"> integrated Plug-in (SIMATIC Memory Card), max. 	4 Mbyte with SIMATIC memory card
Backup	
<ul style="list-style-type: none"> present maintenance-free 	Yes Yes

<ul style="list-style-type: none"> • without battery 	Yes
CPU processing times	
for bit operations, typ.	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction
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	
<ul style="list-style-type: none"> • Number, max. 	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	14 kbyte
Flag	
<ul style="list-style-type: none"> • Size, max. 	8 kbyte; Size of bit memory address area
Local data	
<ul style="list-style-type: none"> • per priority class, max. 	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
Address area	
Process image	
<ul style="list-style-type: none"> • Inputs, adjustable • Outputs, adjustable 	1 kbyte 1 kbyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
Time of day	
Clock	
<ul style="list-style-type: none"> • Hardware clock (real-time) • Backup time • Deviation per day, max. 	Yes 480 h; Typical ±60 s/month at 25 °C
Digital inputs	
Number of digital inputs	14; Integrated
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • Rated value (DC) • for signal "0" • for signal "1" 	24 V 5 V DC at 1 mA 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	
<ul style="list-style-type: none"> • shielded, max. • unshielded, max. 	500 m; 50 m for technological functions 300 m; for technological functions: No
Digital outputs	
Number of digital outputs	10
<ul style="list-style-type: none"> • 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
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.	5 µs
Switching frequency	
• of the pulse outputs, with resistive load, max.	100 kHz
Relay outputs	
• Number of relay outputs	0
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
Analog inputs	
Number of analog inputs	2
Input ranges	
• Voltage	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	≥100k ohms
Cable length	
• shielded, max.	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	2
Output ranges, current	
• 0 to 20 mA	Yes
Analog value generation for the inputs	
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
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	10 bit
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	
• RJ 45 (Ethernet)	Yes
• Number of ports	2
• integrated switch	Yes
Protocols	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes

<ul style="list-style-type: none"> • Open IE communication • Web server • Media redundancy 	<p>Yes; Optionally also encrypted</p> <p>Yes</p> <p>Yes; as MRP client</p>
PROFINET IO Controller	
<ul style="list-style-type: none"> • Transmission rate, max. 	100 Mbit/s
Services	
<ul style="list-style-type: none"> — PG/OP communication — Isochronous mode — IRT — PROFIenergy — Prioritized startup — Number of IO devices with prioritized startup, max. — Number of connectable IO Devices, max. — Number of connectable IO Devices for RT, max. — of which in line, max. — Activation/deactivation of IO Devices — Number of IO Devices that can be simultaneously activated/deactivated, max. — Updating time 	<p>Yes; encryption with TLS V1.3 pre-selected</p> <p>No</p> <p>No</p> <p>No</p> <p>Yes</p> <p>16</p> <p>16</p> <p>16</p> <p>16</p> <p>Yes</p> <p>8</p> <p>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.</p>
PROFINET IO Device	
Services	
<ul style="list-style-type: none"> — PG/OP communication — Isochronous mode — IRT — PROFIenergy — Shared device — Number of IO Controllers with shared device, max. 	<p>Yes; encryption with TLS V1.3 pre-selected</p> <p>No</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>2</p>
Protocols	
Supports protocol for PROFINET IO	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
Protocols (Ethernet)	
<ul style="list-style-type: none"> • TCP/IP • DHCP • SNMP • DCP • LLDP 	<p>Yes</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
Redundancy mode	
Media redundancy	
<ul style="list-style-type: none"> — MRP — MRPD 	<p>Yes; as MRP redundancy manager and/or MRP client</p> <p>No</p>
SIMATIC communication	
<ul style="list-style-type: none"> • S7 routing 	Yes
Open IE communication	
<ul style="list-style-type: none"> • TCP/IP <ul style="list-style-type: none"> — Data length, max. • ISO-on-TCP (RFC1006) <ul style="list-style-type: none"> — Data length, max. • UDP <ul style="list-style-type: none"> — Data length, max. 	<p>Yes</p> <p>8 kbyte</p> <p>Yes</p> <p>8 kbyte</p> <p>Yes</p> <p>1 472 byte</p>
Web server	
<ul style="list-style-type: none"> • supported • User-defined websites 	<p>Yes</p> <p>Yes</p>
OPC UA	

<ul style="list-style-type: none"> ● Runtime license required ● OPC UA Server <ul style="list-style-type: none"> — Application authentication — User authentication — Number of sessions, max. — Number of subscriptions per session, max. — Sampling interval, min. — Publishing interval, min. — Number of server methods, max. — Number of monitored items, max. — Number of server interfaces, max. — Number of nodes for user-defined server interfaces, max. 	<p>Yes; "Basic" license required</p> <p>Yes; data access (read, write, subscribe), method call, runtime license required</p> <p>Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256</p> <p>"anonymous" or by user name & password</p> <p>10</p> <p>50</p> <p>100 ms</p> <p>200 ms</p> <p>20</p> <p>1 000</p> <p>2</p> <p>2 000</p>
Further protocols	
<ul style="list-style-type: none"> ● MODBUS 	Yes
Communication functions	
S7 communication	
<ul style="list-style-type: none"> ● supported ● as server ● as client ● User data per job, max. 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>See online help (S7 communication, user data size)</p>
Number of connections	
<ul style="list-style-type: none"> ● overall 	PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max
Test commissioning functions	
Status/control	
<ul style="list-style-type: none"> ● Status/control variable ● Variables 	<p>Yes</p> <p>inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters</p>
Forcing	
<ul style="list-style-type: none"> ● Forcing 	Yes; peripheral inputs/outputs (without fail-safe)
Diagnostic buffer	
<ul style="list-style-type: none"> ● present 	Yes
Traces	
<ul style="list-style-type: none"> ● Number of configurable Traces ● Memory size per trace, max. 	<p>2</p> <p>512 kbyte</p>
Interrupts/diagnostics/status information	
Diagnostics indication LED	
<ul style="list-style-type: none"> ● RUN/STOP LED ● ERROR LED ● MAINT LED 	<p>Yes</p> <p>Yes</p> <p>Yes</p>
Integrated Functions	
Counter	
<ul style="list-style-type: none"> ● Number of counters ● Counting frequency, max. 	<p>6</p> <p>100 kHz</p>
Frequency measurement	
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	
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Potential separation	
Potential separation digital inputs	

<ul style="list-style-type: none"> • Potential separation digital inputs • between the channels, in groups of 	No 1
Potential separation digital outputs	
<ul style="list-style-type: none"> • Potential separation digital outputs • between the channels • between the channels, in groups of 	Yes No 1
EMC	
Interference immunity against discharge of static electricity	
<ul style="list-style-type: none"> • Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 <ul style="list-style-type: none"> — Test voltage at air discharge — Test voltage at contact discharge 	Yes 8 kV 6 kV
Interference immunity to cable-borne interference	
<ul style="list-style-type: none"> • Interference immunity on supply lines acc. to IEC 61000-4-4 • Interference immunity on signal cables acc. to IEC 61000-4-4 	Yes Yes
Interference immunity against voltage surge	
<ul style="list-style-type: none"> • Interference immunity on supply lines acc. to IEC 61000-4-5 	Yes
Interference immunity against conducted variable disturbance induced by high-frequency fields	
<ul style="list-style-type: none"> • Interference immunity against high-frequency radiation acc. to IEC 61000-4-6 	Yes
Emission of radio interference acc. to EN 55 011	
<ul style="list-style-type: none"> • 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
Degree and class of protection	
IP degree of protection	IP20
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
Highest safety class achievable in safety mode	
<ul style="list-style-type: none"> • Performance level according to ISO 13849-1 • SIL acc. to IEC 61508 	PLe SIL 3
Ambient conditions	
Free fall	
<ul style="list-style-type: none"> • Fall height, max. 	0.3 m; five times, in product package
Ambient temperature during operation	
<ul style="list-style-type: none"> • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. 	0 °C 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 0 °C 55 °C 0 °C 45 °C
Ambient temperature during storage/transportation	
<ul style="list-style-type: none"> • min. • max. 	-40 °C 70 °C
Air pressure acc. to IEC 60068-2-13	
<ul style="list-style-type: none"> • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, max. 	795 hPa 1 080 hPa 660 hPa 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 ²) wall mounting, 1 g (m/s ²) 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 ₂ at RH < 60% without condensation	SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free
Configuration	
Programming	
Programming language	
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— 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
Cycle time monitoring	
• adjustable	Yes
Dimensions	
Width	130 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	500 g
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