

6ES7215-1HF40-0XB0

CPU 1215 FC, DC/DC/RLY,14DI/10DO/2AI/2AO

Technical data



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

General information	
Product type designation	CPU 1215FC DC/DC/relay
Firmware version	V4.2
Engineering with	
• Programming package	STEP 7 V14 or higher
Supply voltage	
Rated value (DC)	
• 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+	
• 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 (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 ² t	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	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	12 W
Memory	
Work memory	
• integrated	150 kbyte
• expandable	No
Load memory	
• integrated	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card
Backup	
• present	Yes
• maintenance-free	Yes
• 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	
• Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	10 kbyte
Flag	
• Number, 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.
Relay outputs	
• Number of relay outputs	10
• Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000
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	
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes

Autocrossing	Yes
Interface types	
<ul style="list-style-type: none"> ● RJ 45 (Ethernet) 	Yes
<ul style="list-style-type: none"> ● Number of ports 	2
<ul style="list-style-type: none"> ● integrated switch 	Yes
Protocols	
<ul style="list-style-type: none"> ● PROFINET IO Controller 	Yes
<ul style="list-style-type: none"> ● PROFINET IO Device 	Yes
<ul style="list-style-type: none"> ● SIMATIC communication 	Yes
<ul style="list-style-type: none"> ● Open IE communication 	Yes
<ul style="list-style-type: none"> ● Web server 	Yes
<ul style="list-style-type: none"> ● Media redundancy 	Yes; as MRP client
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 	Yes
<ul style="list-style-type: none"> — Isochronous mode 	No
<ul style="list-style-type: none"> — IRT 	No
<ul style="list-style-type: none"> — PROFlenergy 	No
<ul style="list-style-type: none"> — Prioritized startup 	Yes
<ul style="list-style-type: none"> — Number of IO devices with prioritized startup, max. 	16
<ul style="list-style-type: none"> — Number of connectable IO Devices, max. 	16
<ul style="list-style-type: none"> — Number of connectable IO Devices for RT, max. 	16
<ul style="list-style-type: none"> — of which in line, max. 	16
<ul style="list-style-type: none"> — Activation/deactivation of IO Devices 	Yes
<ul style="list-style-type: none"> — Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
<ul style="list-style-type: none"> — 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	
Services	
<ul style="list-style-type: none"> — PG/OP communication 	Yes
<ul style="list-style-type: none"> — Isochronous mode 	No
<ul style="list-style-type: none"> — IRT 	No
<ul style="list-style-type: none"> — PROFlenergy 	Yes
<ul style="list-style-type: none"> — Shared device 	Yes
<ul style="list-style-type: none"> — Number of IO Controllers with shared device, max. 	2
Protocols	
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
Protocols (Ethernet)	
<ul style="list-style-type: none"> ● TCP/IP 	Yes
<ul style="list-style-type: none"> ● DHCP 	No
<ul style="list-style-type: none"> ● SNMP 	Yes
<ul style="list-style-type: none"> ● DCP 	Yes
<ul style="list-style-type: none"> ● LLDP 	Yes
Redundancy mode	
Media redundancy	
<ul style="list-style-type: none"> — MRP 	Yes; as MRP client
<ul style="list-style-type: none"> — MRPD 	No
SIMATIC communication	
<ul style="list-style-type: none"> ● S7 routing 	Yes
Open IE communication	
<ul style="list-style-type: none"> ● TCP/IP 	Yes
<ul style="list-style-type: none"> — Data length, max. 	8 kbyte
<ul style="list-style-type: none"> ● ISO-on-TCP (RFC1006) 	Yes
<ul style="list-style-type: none"> — Data length, max. 	8 kbyte
<ul style="list-style-type: none"> ● UDP 	Yes
<ul style="list-style-type: none"> — Data length, max. 	1 472 byte
Web server	
<ul style="list-style-type: none"> ● supported 	Yes
<ul style="list-style-type: none"> ● User-defined websites 	Yes
Further protocols	
<ul style="list-style-type: none"> ● MODBUS 	Yes
Communication functions	
S7 communication	
<ul style="list-style-type: none"> ● supported 	Yes
<ul style="list-style-type: none"> ● as server 	Yes
<ul style="list-style-type: none"> ● as client 	Yes
<ul style="list-style-type: none"> ● User data per job, max. 	See online help (S7 communication, user data size)
Number of connections	
<ul style="list-style-type: none"> ● overall 	16; dynamically
Test commissioning functions	
Status/control	
<ul style="list-style-type: none"> ● Status/control variable 	Yes
<ul style="list-style-type: none"> ● 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	
Number of counters	6
Counting frequency (counter) 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	Up to 4 with SB 1222
PID controller	Yes
Number of alarm inputs	4
Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	500V AC for 1 minute
• between the channels, in groups of	1
Potential separation digital outputs	
• Potential separation digital outputs	Relays
• between the channels	No
• between the channels, in groups of	2
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	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
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	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product 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
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 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.	585 g
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