SIEMENS

Data sheet

6ES7215-1AF40-0XB0

SIMATIC S7-1200F, CPU 1215 FC, COMPACT CPU, DC/DC/DC, 2 PROFINET PORT, ONBOARD I/O: 14 DI 24VDC; 10 DO 24V DC 0.5A; 2 AI 0-10V DC, 2 AO 0-20MA DC, POWER SUPPLY: DC 20.4 - 28.8 V DC, PROGRAM/DATA MEMORY 150 KB



General information	
Product type designation	CPU 1215FC DC/DC/DC
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
Load voltage L+	
Rated value (DC)	24 V
 permissible range, lower limit (DC) 	5 V
• permissible range, upper limit (DC)	250 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

	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 cumply	
Encoder supply 24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Dower less	
Power loss Power loss, typ.	12 W
Memory	
Work memory	45011.4
• 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.	0.085 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
ОВ	
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	10 kbyte
max.	
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 counter/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 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	V
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), 	10 bit
max.	
 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), 	10 bit
max.	
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
Interface types	

	0
Number of ports	2
• integrated switch	Yes
Functionality	V.
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes
Web server	Yes
Media redundancy	Yes; as MRP client
PROFINET IO Controller	
 Transmission rate, max. 	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	Yes; as MRP client
— MRPD	No
— PROFlenergy	No
— Prioritized startup	Yes
 Number of IO devices with prioritized 	16
startup, max.	
— Number of connectable IO Devices, max.	16
 Number of connectable IO Devices for RT, 	16
max.	
— 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.
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	Yes; as MRP client
— MRPD	No

— PROFlenergy	Yes
— Shared device	Yes
— Number of IO Controllers with shared	2
device, max.	

Protocols	
Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 required
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Further protocols	
• MODBUS	Yes
0 : " " "	

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)	
Open IE communication		
• 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	
Web server		
• supported	Yes	
 User-defined websites 	Yes	
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
Integrated Functions	
Number of counters	6
Counting frequency (counter) max.	100 kHz
Frequency meter	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction	Up to 4 with SB 1222
interface	Op 10 1 Will OB 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 electric	city
Interference immunity against discharge of	Yes
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	Yes
IEC 61000-4-4	
• Interference immunity on signal cables acc. to	Yes
IEC 61000-4-4	
Interference immunity against voltage surge	
• on the supply lines acc. to IEC 61000-4-5	Yes
Interference immunity against conducted variable distur	bance induced by high-frequency fields
Interference immunity against high-frequency	Yes
radiation acc. to IEC 61000-4-6	
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 of protection acc. to EN 60529 IP20 Yes Standards, approvals, certificates CE mark Ves UL approval Yes CULus Yes FM approval Yes RCM (formerly C-TICK) KC approval Yes Marine approval Highest safety class achievable in safety mode Performance level according to ISO 13849-1 SIL acc. to IEC 61508 Yes Yes Yes Yes Yes SIL 3			
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 vertical installation, max. Ambient temperature during storage/transportation min. -40 °C max. 70 °C Air pressure acc. to IEC 60068-2-13 Storage/transport, min. Storage/transport, max. permissible operating height 1 139 hPa permissible operating height 1000 to 2000 m Relative humidity Operation, max. 95 %; no condensation Vibrations Vibrations Vibration, tested according to IEC 60068-2-6 Yes Yes Yes	horizontal installation, max.	60 °C	
Ambient temperature during storage/transportation • min. • max. 70 °C Air pressure acc. to IEC 60068-2-13 • Storage/transport, min. • Storage/transport, max. • Storage/transport, max. 1 139 hPa • permissible operating height -1000 to 2000 m Relative humidity • Operation, max. 95 %; no condensation Vibrations • Vibrations • Vibrations • Operation, tested according to IEC 60068-2-6 Yes	 vertical installation, min. 	-20 °C	
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Air pressure acc. to IEC 60068-2-13 Storage/transport, min. Storage/transport, max. 1 139 hPa permissible operating height -1000 to 2000 m Relative humidity Operation, max. 95 %; no condensation Vibrations Vibrations 2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail Yes	• max.	70 °C	
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Pelative humidity		-1000 to 2000 m	
Vibrations			
Vibrations 2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail ● Operation, tested according to IEC 60068-2-6 Yes	Operation, max.	95 %; no condensation	
Operation, tested according to IEC 60068-2-6 Yes			
,	Vibrations	2 g (m/s²) wall mounting, 1 g (m/s²) 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	
— SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 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

05/24/2017

last modified: