SIEMENS

Data sheet

6ES7215-1HF40-0XB0

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 250 KB



Figure similar

General information	
Product type designation	CPU 1215FC DC/DC/relay
Firmware version	V4.6
Engineering with	
Programming package	STEP 7 V18 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
l²t	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	250 kbyte
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	2.5 μ3, / ποι ασιστί
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.	14 kbyte
Flag	
• Size, max.	8 kbyte; Size of bit memory address area
Local data	4011 1 7 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
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	iv mo, max.
	10
Number of relay outputs Number of energing evalue, may	
 Number of operating cycles, max. 	mechanically 10 million, at rated load voltage 100 000

cable length		
Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration with overrange (bit including sign), max. Integration with overrange (bit including sign), max. Interface Connectable encoders - 2-wire sensor Yes Ves Ves Ves Ves Ves Ves Ves	-	F00
Analog inputs Number of analog inputs Ves Ves Input ranges Voltage Ves Input ranges Ves Ves Input ranges (rated values), voltages Ves Ves Input ranges (rated values), voltages Ves Ves Input resistance (0 to 10 V) Analog outputs Ves Ves Ves Ves Ves Ves Ves V		
Number of analog inputs Input ranges Yes		150 m
Input ranges • Voltage • Voltages • O to +10 V — Input resistance (0 to 10 V) 2 t000k ohms Cable length • shielded, max. Number of analog outputs O to 20 mA Analog outputs • O to 20 mA Analog value generation for the Inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration ince, parameterizable • Conversion time (per channel) • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integ		
• Voltage Yes		2
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- 0 to +10 V Yes — Input resistance (0 to 10 V) ≥100k ohms Cable length • shielded, max.	The state of the s	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 overange (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 overange (bit including sign), max. 10 bit • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit • Integration and conversion time/resolution per channel • Pesolution with overrange (bit including sign), max. 10 bit • Integration and conversion time/resolution per channel • Pesolution with overrange (bit including sign), max. 10 bit • Integration and conversion time/resolution per channel • Pesolution with overrange (bit including sign), max. 10 bit • Integrate via sensor Yes 1. Interface Autoriace type PROFINET Yes 2.		
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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 PROFINET IO Controller Yes • SIMATIC communication Yes • Open IE communication Yes • Media redundancy Yes PROFINET IO Controller • Transmission rate, max. 100 Mbit/s		Yes
Isolated automatic detection of transmission rate Autonegotiation Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server • Media redundancy PROFINET IO Controller • Transmission rate, max. Yes Yes Yes Yes Yes 100 Mbit/s	. Interface	
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Interface types RJ 45 (Ethernet) Number of ports Integrated switch Yes Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Yes Open IE communication Yes Media redundancy Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s	Autonegotiation	Yes
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Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes Yes Yes PROFINET IO Controller 100 Mbit/s	 Number of ports 	2
 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. 	integrated switch	Yes
 PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes 100 Mbit/s	Protocols	
 SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes 100 Mbit/s	PROFINET IO Controller	Yes
 Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes; Optionally also encrypted Yes 100 Mbit/s 	PROFINET IO Device	Yes
 Web server Media redundancy PROFINET IO Controller Transmission rate, max. 100 Mbit/s 		
 Media redundancy PROFINET IO Controller Transmission rate, max. 100 Mbit/s 	Open IE communication	Yes; Optionally also encrypted
PROFINET IO Controller • Transmission rate, max. 100 Mbit/s		
• Transmission rate, max. 100 Mbit/s	,	Yes
Conviona	Transmission rate, max.	100 Mbit/s
	Services	
— PG/OP communication Yes; encryption with TLS V1.3 pre-selected		
— Isochronous mode No		
— IRT No		
— PROFlenergy No		
— Prioritized startup Yes		Yes
— Number of IO devices with prioritized startup, max.		
— Number of connectable IO Devices, max.		
— Number of connectable IO Devices for RT, max.	 Number of connectable IO Devices for RT, max. 	16
— of which in line, max.	— of which in line, max.	16
— Activation/deactivation of IO Devices Yes		Yes
— Number of IO Devices that can be simultaneously	 Activation/deactivation of IO Devices 	
	— Number of IO Devices that can be simultaneously	8
Undating time		8 The minimum value of the update time also depends on the communication

	of configured user data.
PROFINET IO Device	or comiguitat acon taxa.
Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes
— Shared device	Yes
Number of IO Controllers with shared device, max.	2
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIsafe	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)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Redundancy mode	
Media redundancy	
— MRP	Yes; as MRP redundancy manager and/or MRP client
— MRPD	No
SIMATIC communication	110
• S7 routing	Yes
Open IE communication	163
• 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
— Data length, max. Web server	1 472 Dyle
	Yes
supportedUser-defined websites	Yes
OPC UA	res
	Voc. "Desia" license required
Runtime license required OPC LIA Server.	Yes; "Basic" license required Ves: data access (read, write, subscribe), method call, runtime license required.
OPC UA Server Application authoritiestics	Yes; data access (read, write, subscribe), method call, runtime license required
Application authentication	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
User authentication	"anonymous" or by user name & password
Number of sessions, max.	10
Number of subscriptions per session, max.	5
Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
Number of server methods, max.	20
Number of server methods, max. Number of monitored items, recommended max.	1 000
Number of monitored items, recommended max. Number of server interfaces, max.	2
Number of server interfaces, max. Number of nodes for user-defined server interfaces,	2 000
max.	
Further protocols	
• MODBUS	Yes
communication functions / header	
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	222 State Holp (2. Common found on a data on a
Trumbol of confidencial	

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	
Status/control variable	Yes
• Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
Forcing	
Forcing	Yes; peripheral inputs/outputs (without fail-safe)
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	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 indu	
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	
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	
 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.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
 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
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/s²) wall mounting, 1 g (m/s²) 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	
SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
configuration / header	
configuration / programming / header	
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
programming / cycle time monitoring / header	
adjustable	Yes
Dimensions	
Width	130 mm
Height	100 mm
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Weights		
Weight, approx.	585 g	
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