SIEMENS

Data sheet

6ES7214-1HF40-0XB0



SIMATIC S7-1200F, CPU 1214 FC, compact CPU, DC/DC/relay, onboard I/O: 14 DI 24 V DC; 10 DO relay 2 A; 2 AI 0-10 V DC, Power supply: DC 20.4-28.8V DC, Program/data memory 125 KB

General information	
Product type designation	CPU 1214FC DC/DC/Relay
Firmware version	V4.5
Engineering with	
 Programming package 	STEP 7 V17 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) 	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
l²t	0.8 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 	125 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

	0.0 ver liestruction
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.	14 kbyte
Flag	
• Size, 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	
	2 comm modulos, 1 cignal board, 8 cignal modulos
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	17
Rated value (DC)	24 V
• for signal "0"	5 V DC at 1 mA
	15 V DC at 2.5 mA
 for signal "1" Input delay (for rated value of input voltage) 	15 V DC at 2.5 IIIA
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	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
	10: Polove
Number of digital outputs	10; Relays
Switching capacity of the outputs	2 A
with resistive load, max.	
on lamp load, max.	30 W with DC, 200 W with AC
Output delay with resistive load	40
• "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

Analog inputs Dotion Number of analog inputs 2 • Valage Yes • Individings Yes • Input resistance (0 to 10 V) Yes • Individing (match values), voltages Yes • Individing (match values), voltages Yes • Individed max. 100 m; twisted and shielded Analog outputs 0 • Resolution with overange (64 including sign), max. 100 H • Resolution with overange (64 including sign), max. 100 H • Resolution with overange (64 including sign), max. Yes • Conversion line (per channe) 925 µs Encoder Yes Officitie encoders Yes • Interface Yes • Interface Yes • Resolution of transmission rate Yes • Autocropation Yes • Interface type 1 • Interface type 1	• unshielded, max.	150 m
Number of analog lipuis 2 • Votage Input masses • Uotage (rade values), votages Yes • In - Flore (rade values), votages Yes • Interfaces (rade values), votages Yes • Interfaces (rade values), votages 0 • Interfaces (rade values), votages 0 • Interfaces (rade values), votages 0 • Analog college (rade values), votages 0 • Analog value generation for the Inputs 100 m; twisted and shielded Manage value generation for the Inputs 10 bit • Resolution time, parameterizable Ves • Conversion time (ser channel) 925 µs • Conversion time (ser channel) 925 µs • Interface Yes • Number of ports 1 • Autonogolation Yes • Autonogolation Yes • Reportive Ti Dovice Yes • Reportint Ti Dov		100 111
Implit manges		2
 • Voltage Ves • Voltage • Olto +10 V · Ves · Inclupt resistance (0 to 10 V) > 4100k ohms Cable length • shielded, max. 100 m, twisted and shielded Analog value generation for the loguts • Received with everance (0 the Including sign), max. • Received max (0 the Including sign), max. • Conversion time (per channel) • Pol		2
Input resistance (0 to 10 V) Ves - Input resistance (0 to 10 V) ×100k ohms - Bread resistance (0 to 10 V) ×100k ohms - Shielded, max. 100 m; twisted and shielded Analog outputs 0 Conversion time, parameterizable Yes - Conversion time (per channet) 625 µs Conversion time (per channet) Yes Autoregotistic <		Yes
O Pic +10 V Yes		
Cable length 100 m; twisted and shielded • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 • Analog value generation for the Inputs Integration and conversion time/resolution per channel. • Resolution with overnange (bit including sign), max. 10 bit • Integration time (per channel) 6.25 µs Endoder 2.85 µs Connectable encoders Yes • Autor sensor Yes • Resolution of transmission rate Yes • Refrace types 1 • Integrated system Yes • Refrace types 1 • Integrated switch No Protocols Yes • PROFINET IO Controller		Yes
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• Web server Yes • Media redundancy No PROFINET IO Controller		
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Number of IO devices with prioritized startup, max.16 Number of connectable IO Devices, max.16 Number of connectable IO Devices for RT, max.16 of which in line, max.16 Activation/deactivation of IO DevicesYes Number of IO Devices that can be simultaneously activated/deactivated, max.8 Updating timeThe 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 DeviceYes; encryption with TLS V1.3 pre-selected IRTNo IRTNo PROFIenergyYes		
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Number of connectable IO Devices, max.16 Number of connectable IO Devices for RT, max.16 of which in line, max.16 Activation/deactivation of IO DevicesYes Number of IO Devices that can be simultaneously activated/deactivated, max.8 Updating timeThe 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 DeviceYes; encryption with TLS V1.3 pre-selected ISochronous modeNo IRTNo PROFIenergyYes		
Number of connectable IO Devices for RT, max.16 of which in line, max.16 Activation/deactivation of IO DevicesYes Number of IO Devices that can be simultaneously activated/deactivated, max.8 Updating timeThe 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 DeviceYes; encryption with TLS V1.3 pre-selected IRTNo IRTNo PROFIenergyYes		16
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Services — PG/OP communication Yes; encryption with TLS V1.3 pre-selected — Isochronous mode No — IRT No — PROFlenergy Yes		devices and the quantity of configured user data.
— PG/OP communicationYes; encryption with TLS V1.3 pre-selected— Isochronous modeNo— IRTNo— PROFlenergyYes		
— Isochronous mode No — IRT No — PROFlenergy Yes		Vac: encryption with TLS V/1.2 pro-solastad
IRT No PROFlenergy Yes		
- PROFlenergy Yes		

— Number of IO Controllers with shared device, max.

max.	
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)	res, ow r2+0-2 required
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
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
OPC UA	
Runtime license required	Yes; "Basic" license required
• OPC UA Server	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 monitored items, recommended 	1 000
max.	
- Number of server interfaces, max.	2
 — Number of nodes for user-defined server interfaces, max. 	2 000
Further protocols	
MODBUS	Yes
	163
communication functions / header	
S7 communication	
• supported	Yes
supportedas server	Yes
supportedas serveras client	Yes Yes
 supported as server as client User data per job, max. 	Yes
 supported as server as client User data per job, max. Number of connections 	Yes Yes See online help (S7 communication, user data size)
 supported as server as client User data per job, max. 	Yes Yes See online help (S7 communication, user data size) PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved /
 supported as server as client User data per job, max. Number of connections 	Yes Yes See online help (S7 communication, user data size) PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections:
 supported as server as client User data per job, max. Number of connections 	Yes Yes See online help (S7 communication, user data size) PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved /
 supported as server as client User data per job, max. Number of connections 	Yes Yes See online help (S7 communication, user data size) 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
 supported as server as client User data per job, max. Number of connections 	Yes Yes See online help (S7 communication, user data size) 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
 supported as server as client User data per job, max. Number of connections overall 	Yes Yes See online help (S7 communication, user data size) 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
 supported as server as client User data per job, max. Number of connections overall Test commissioning functions	Yes Yes See online help (S7 communication, user data size) 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
 supported as server as client User data per job, max. Number of connections overall Test commissioning functions Status/control 	Yes Yes See online help (S7 communication, user data size) 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
 supported as server as client User data per job, max. Number of connections overall Test commissioning functions Status/control Status/control variable 	Yes Yes See online help (S7 communication, user data size) 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 Yes
 supported as server as client User data per job, max. Number of connections overall Test commissioning functions Status/control Status/control variable 	Yes Yes See online help (S7 communication, user data size) 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 Yes inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe),
 supported as server as client User data per job, max. Number of connections overall Test commissioning functions Status/control Status/control variable Variables 	Yes Yes See online help (S7 communication, user data size) 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 Yes inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe),
 supported as server as client User data per job, max. Number of connections overall Test commissioning functions Status/control Status/control variable Variables Forcing 	Yes Yes See online help (S7 communication, user data size) 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 Yes inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
 supported as server as client User data per job, max. Number of connections overall Test commissioning functions status/control Status/control variable Variables Forcing Forcing Forcing 	Yes Yes See online help (S7 communication, user data size) 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 Yes inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters

2

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 4
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	N
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	N.
 Interference immunity on supply lines acc. to IEC 61000-4-5 	Yes
Interference immunity against conducted variable disturbance	
 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.	0°0
• max.	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. 	D° O
• 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	110 mm
Height	100 mm
Depth	75 mm
Weights	
	425 a
Weight, approx.	435 g

last modified:

7/19/2022 🖸