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
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	
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	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	0. 1 1 0 0 40 11 0 0 0 0 0 0 0 0 0 0 0 0 0
— 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. Relay outputs	10 ms; max.

Number of voley outputs	10
Number of relay outputs	10
Number of operating cycles, max. Cable length	mechanically 10 million, at rated load voltage 100 000
Cable length • shielded, max.	500 m
unshielded, max. unshielded, max.	150 m
·	150 111
Analog inputs	0
Number of analog inputs	2
Input ranges	V
Voltage	Yes
Input ranges (rated values), voltages • 0 to +10 V	Von
	Yes ≥100k ohms
— Input resistance (0 to 10 V)	2100K OHITIS
Cable length • shielded, max.	100 m; twisted and shielded
Analog outputs	100 m, twisted and silleded
	0
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	40 1:4
 Resolution with overrange (bit including sign), max. 	10 bit
Integration time, parameterizable Conversion time (parameterizable)	Yes
Conversion time (per channel)	625 μs
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	1
integrated switch	No
Protocols	V
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy PROFINET IO Controller	No
PROFINET IO Controller	100 Mbit/s
Transmission rate, max. Services	TOO INIDIDS
— PG/OP communication	Ves: encryption with TLS V1.3 pro-selected
PG/OP communication Isochronous mode	Yes; encryption with TLS V1.3 pre-selected
— ISOCITIONOUS Mode — IRT	No No
	No
PROFlenergy Prioritized startup	Yes
•	16
 Number of IO devices with prioritized startup, max. 	10
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
simultaneously activated/deactivated, max. — Updating time	

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,	2
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)	
• 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. ● UDP	8 kbyte
	Yes
— Data length, max.	1 472 byte
Web server	Ves
• supported	Yes
User-defined websites	Yes
OPC UA	Vac IIDacial license required
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. 	50
— 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, max.	1 000
Number of monitored items, max. Number of server interfaces, max.	2
Number of server interfaces, max. Number of nodes for user-defined server	2 000
interfaces, max.	2 000
Further protocols	
• MODBUS	Yes
communication functions / header	
communication functions / header S7 communication	Yes
S7 communication • supported	Yes Yes
sommunication functions / header S7 communication • supported • as server	Yes
communication functions / header S7 communication • supported • as server • as client	Yes Yes
communication functions / header S7 communication • supported • as server • as client • User data per job, max.	Yes
communication functions / header S7 communication • supported • as server • as client • User data per job, max. Number of connections	Yes Yes See online help (S7 communication, user data size)
communication functions / header S7 communication • supported • as server • as client • User data per job, max.	Yes Yes

Status/control	
	Yes
	nputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe),
	imes, counters
Forcing	
	Yes; peripheral inputs/outputs (without fail-safe)
Diagnostic buffer	,
	Yes
Traces	
Number of configurable Traces Magnetic first particles may	
	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	,
	Yes
	Yes
	Yes
Integrated Functions	,
	Yes
	Yes
Number of position-controlled positioning axes, max.	
	Jp to 4 with SB 1222
	Yes
Number of alarm inputs 4	•
Potential separation	
Potential separation digital inputs	EDDV AC for 1 minute
3	500V AC for 1 minute
between the channels, in groups of	
Potential separation digital outputs	Dalaya
	Relays
	No
 between the channels, in groups of 	
Interference immunity against discharge of static electricity	Van
 Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 	Yes
Test voltage at air discharge	3 kV
	3 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	
61000-4-5	Yes
Interference immunity against conducted variable disturbance in	nduced by high-frequency fields
radiation acc. to IEC 61000-4-6	Yes
Emission of radio interference acc. to EN 55 011	
	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	P20
Standards, approvals, certificates	
	,
	Yes
CE mark Y	Yes Yes
CE mark Y UL approval Y	
CE mark UL approval CULus Y	Yes
CE mark UL approval CULus FM approval Y	Yes 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
mbient conditions	
Free fall	
Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	o.o m, mo umoo, m product pastage
• min.	0°C
• 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. 	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	o ooo iii, i toodii ole ii oo iii daadaa aa
Operation, max.	95 %; no condensation
Vibrations	33 70, 110 condensation
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
onfiguration / 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
	Yes
Block protection Access protection	163
Access protection	Von
protection of confidential configuration data Description level: Write protection	Yes
Protection level: Write protection	Yes
Protection level: Read/write protection	Yes
Protection level: Complete protection	Yes
programming / cycle time monitoring / header	
adjustable	Yes
imensions	
Width	110 mm
Height	100 mm
Depth	75 mm
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Weight, approx.	435 g

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