SIEMENS

Data sheet

6ES7212-1HF40-0XB0

SIMATIC S7-1200, CPU 1212FC, COMPACT CPU, DC/DC/RLY, ONBOARD I/O: 8 DI 24V DC; 6 DO RELAY 2A; 2 AI 0 - 10V DC, POWER SUPPLY: DC 20.4 - 28.8 V DC, PROGRAM/DATA MEMORY 100 KB



General information	
Product type designation	CPU 1212FC 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
Input current	
l²t	0.5 A ² ·s
Output current	
for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM
Encoder supply	
24 V encoder supply	
• 24 V	Permissible range: 20.4V to 28.8V

Power loss		
Power loss, typ.	9 W	
Memory		
Work memory		
• integrated	100 kbyte	
• expandable	No	
Load memory		
• integrated	2 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.	2.5 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	3	
Number, max.	Limited only by RAM for code	
Data areas and their retentivity	4011.1	
retentive data area in total (incl. times, counters, flags), max.	10 kbyte	
Flag		
• Number, max.	4 kbyte; Size of bit memory address area	
Local data	1 Kayte, 6125 of all monterly address area	
• per priority class, max.	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB	
Address area		
I/O address area		
• Inputs	1 024 byte	
Outputs	1 024 byte	
Process image		
Inputs, adjustable	1 kbyte	
Outputs, adjustable	1 kbyte	
Hardware configuration		
Number of modules per system, max.	3 comm. modules, 1 signal board, 2 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	8; Integrated	
 of which inputs usable for technological functions 	4; HSC (High Speed Counting)	
integrated channels (DI)	8	
Source/sink input	Yes	
Number of simultaneously controllable inputs		
all mounting positions		
— up to 40 °C, max.	8	
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 current		
● for signal "1", typ.	1 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	
Digital outputs		
Number of digital outputs	6	
integrated channels (DO)	6	
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.	
Switching frequency		
• of the pulse outputs, with resistive load, max.	1 Hz	
Cable length		
• shielded, max.	500 m	

• unshielded, max.	150 m
Analog inputs	
Number of analog inputs	2
integrated channels (AI)	2; 0 to 10V
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 value generation	
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
<u>.</u>	· ·
Encoder	
Connectable encoders	V
• 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	
Number of ports	1
• integrated switch	Yes
Functionality	
 PROFINET IO Controller 	Yes
PROFINET IO Device	Yes
 SIMATIC communication 	Yes
Open IE communication	Yes
• Web server	Yes
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Transmission rate, max. Services	100 Mbit/s
	100 Mbit/s Yes

— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	No
 Prioritized startup 	Yes
 Number of IO devices with prioritized startup, max. 	16
 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	No
— MRPD	No
— PROFlenergy	Yes
— Shared device	Yes
 Number of IO Controllers with shared device, max. 	2
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 required
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
Protocols (Ethernet) • TCP/IP	Yes
	Yes No

• DCP

• LLDP

Yes

Yes

MODBUS Communication functions S7 communication supported	Further protocols	
### Status/control variable Yes	• MODBUS	Yes
### Status/control variable Yes	Communication functions	
* supported * as server * as client * Ves * as client * Ves * as client * Ves * as client * User data per job, max. Copen IE communication * TCP/IP * Data length, max. * ISO-on-TCP (RFC1006) * Data length, max. * ISO-on-TCP (RFC1006) * Data length, max. * UDP * Data length, max. * Ves * UDP * Data length, max. * Ves * User-defined websites Ves Test commissioning functions Status/control * Status/control variable * Variables * Variables * Vers Forcing * Forcing * Forcing * Forcing * Forcing * Number of configurable Traces * Memory size per trace, max. Indicated Functions Number of counters ### Counting frequency (counter) max. Frequency meter * Yes * Counting frequency (counter) max. ### Counting frequency (counter) max. ### Pice * Ves * Status of the Counter of position-ion gaxes via pulse-direction interface ### Pice *		
as server as client User data per job, max. See online help (S7 communication, user data size) Por le communication TCP (PC 1006) Pes Bkbyte Data length, max. Bkbyte Pes		Yes
* as client * User data per job, max. Open IE communication **TCP/IP** - Data length, max. **ISO-on-TCP (RFC1006) - Data length, max. **ISO-on-TCP (RFC1006) - Data length, max. **UDP** **User-defined websites* **Ves* **Istatus/control** **Variables* **Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters* **Forcing** **Forcing** **Forcing** **Porsent** **Present** **Prequency size per trace, max. **Industriant** **Industriant** **Industriant** **Industriant** **Prequency founder max. **Industriant** **Industriant** **Industriant** **Industriant** **Prequency (counter)** **Industriant** **Indu	• •	
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UDP Data length, max. Ves supported Supported User-defined websites Yes * User-defined websites * Yes * Status/control * Status/control variable * Variables * Variables Forcing * Forcing * Forcing * Forcing * Present * Present * Ves * Number of configurable Traces * Memory size per trace, max. * Memory size per trace, max. * 100 kHz Frequency meter Countrol (counter) * Ves Number of positioning Number of positioning Number of positioning Number of positioning Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Yes Number of pulse outputs 4	·	
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Web server • supported • User-defined websites Yes **Test commissioning functions Status/control • Status/control variable • Variables • Variables **Forcing • Forcing • Forcing • Forcing • Present **Traces • Number of configurable Traces • Memory size per trace, max. **Integrated Functions Number of counters 4 Counting frequency (counter) max. **Integrated Functions Number of controlled positioning **Yes **Number of position-controlled positioning axes, max. Number of position-controlled positioning axes via pulse-direction interface **PID controller **Ves **Yes **Yes **Yes **Yes **Integrated Functions **Integrated Functions **Ves **Integrated Functions **Integrated		
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Number of position-controlled positioning axes, max. Number of positioning axes via pulse-direction interface PID controller Number of pulse outputs 8 Up to 4 with SB 1222 Yes 4		
Number of positioning axes via pulse-direction interface PID controller Number of pulse outputs Up to 4 with SB 1222 Yes 4		8
interface PID controller Yes Number of pulse outputs 4		Up to 4 with SB 1222
Number of pulse outputs 4		
	PID controller	Yes
Potential congration	Number of pulse outputs	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 	1
Permissible potential difference	
between different circuits	500 V DC between 24 V DC and 5 V DC
EMC	
Interference immunity against discharge of static electric	•
 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	
· ·	Yes
 Interference immunity on supply lines acc. to IEC 61000-4-4 	1 65
 Interference immunity on signal cables acc. to IEC 61000-4-4 	Yes
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 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	
Degree of protection acc. to EN 60529	
● IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	
Marine approval	Yes
Highest safety class achievable in safety mode	

• Performance level according to ISO 13849-1

SIL acc. to IEC 61508

PLe SIL 3

Ambient conditions Free fall 0.3 m; five times, in product package • Fall height, max. Ambient temperature during operation -20 °C • min. 60 °C; Number of simultaneously activated inputs or outputs 7 or • max. 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical -20 °C • horizontal installation, min. • horizontal installation, max. 60 °C -20 °C • vertical installation, min. 50 °C vertical installation, max. Ambient temperature during storage/transportation -40 °C • min. 70 °C • max. Air pressure acc. to IEC 60068-2-13 660 hPa • Storage/transport, min. • Storage/transport, max. 1 080 hPa -1000 to 2000 m • permissible operating height Relative humidity 95 % • permissible range (without condensation) at 25 °C **Vibrations** 2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail Vibrations • Operation, tested according to IEC 60068-2-6 Yes Shock test Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak • tested according to IEC 60068-2-27 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 Yes; incl. failsafe - LAD Yes; incl. failsafe — FBD - SCL Yes

Know-how protection

Copy protection

User program protection

Yes

Yes

 Block protection 	Yes	
Cycle time monitoring		
adjustable	Yes	
Dimensions		
Width	90 mm	
Height	100 mm	
Depth	75 mm	
Weights		
Weight, approx.	385 g	
last modified:	11/11/2016	