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Figure similar

SIPLUS S7-1200 CPU 1212C DC/DC/relay based on 6ES7212-1HE40-0XB0 with conformal coating, -40...+70 °C, start up -25 °C, signal board: 0, compact CPU, DC/DC/relay, onboard I/O: 8 DI 24 V DC; 6 DQ relay 2 A; 2 AI 0-10 V DC, power supply: DC 20.4-28.8 V DC, program/data memory 75 KB

General information	
Product type designation	CPU 1212C DC/DC/relay
based on	6ES7212-1HE40-0XB0
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version 	see entry ID: 109746275
Supply voltage	
Rated value (DC)	
<ul style="list-style-type: none"> 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+	
<ul style="list-style-type: none"> Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) 	24 V 20.4 V 28.8 V
Input current	
Current consumption (rated value)	400 mA; CPU only
Current consumption, max.	1 200 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V
I ² t	0.8 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	
<ul style="list-style-type: none"> 24 V 	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	9 W
Storage	
Work memory	
<ul style="list-style-type: none"> integrated 	100 kbyte
Load memory	
<ul style="list-style-type: none"> integrated Plug-in (SIMATIC Memory Card), max. 	2 Mbyte with SIMATIC memory card
Backup	
<ul style="list-style-type: none"> present 	Yes

<ul style="list-style-type: none"> • maintenance-free 	Yes
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • Number, max. 	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	14 kbyte
Flag	
<ul style="list-style-type: none"> • Size, max. 	4 kbyte; Size of bit memory address area
Local data	
<ul style="list-style-type: none"> • per priority class, max. 	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
Address area	
Process image	
<ul style="list-style-type: none"> • Inputs, adjustable • Outputs, adjustable 	1 kbyte 1 kbyte
Hardware configuration	
Number of modules per system, max.	3 com. modules, no signal board can be used, 2 signal modules
<ul style="list-style-type: none"> • number of expansion boards (SB, CB, BB) • number of signal modules (SM) • number of communications modules (CM) 	0 2 3
Time of day	
Clock	
<ul style="list-style-type: none"> • Hardware clock (real-time) • Backup time • Deviation per day, max. 	Yes 480 h; Typical ±60 s/month at 25 °C
Digital inputs	
Number of digital inputs	8; Integrated
<ul style="list-style-type: none"> • of which inputs usable for technological functions 	6; HSC (High Speed Counting)
Sourcing/sinking input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	8
Input voltage	
<ul style="list-style-type: none"> • Rated value (DC) • for signal "0" • for signal "1" 	24 V 5 V DC at 1 mA 15 V DC at 2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms
— 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	
<ul style="list-style-type: none"> • shielded, max. • unshielded, max. 	500 m; 50 m for technological functions 300 m; for technological functions: No
Digital outputs	
Number of digital outputs	6; Relays
Switching capacity of the outputs	

<ul style="list-style-type: none"> with resistive load, max. on lamp load, max. 	2 A 30 W with DC, 200 W with AC
Output delay with resistive load	
<ul style="list-style-type: none"> "0" to "1", max. "1" to "0", max. 	10 ms; max. 10 ms; max.
Relay outputs	
<ul style="list-style-type: none"> Number of relay outputs Number of operating cycles, max. 	6 mechanically 10 million, at rated load voltage 100 000
Cable length	
<ul style="list-style-type: none"> shielded, max. unshielded, max. 	500 m 150 m
Analog inputs	
Number of analog inputs	2
Input ranges	
<ul style="list-style-type: none"> Voltage 	Yes
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> 0 to +10 V <ul style="list-style-type: none"> Input resistance (0 to 10 V) 	Yes ≥100k ohms
Cable length	
<ul style="list-style-type: none"> shielded, max. 	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) 	10 bit Yes 625 μs
Encoder	
Connectable encoders	
<ul style="list-style-type: none"> 2-wire sensor 	Yes
Interfaces	
Number of PROFINET interfaces	1
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	
<ul style="list-style-type: none"> RJ 45 (Ethernet) Number of ports integrated switch 	Yes 1 No
Protocols	
<ul style="list-style-type: none"> PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy 	Yes Yes Yes Yes; Optionally also encrypted Yes No
PROFINET IO Controller	
<ul style="list-style-type: none"> Transmission rate, max. 	100 Mbit/s
Services	
<ul style="list-style-type: none"> PG/OP communication Isochronous mode IRT PROFenergy Prioritized startup Number of IO devices with prioritized startup, max. Number of connectable IO Devices, max. 	Yes; encryption with TLS V1.3 pre-selected No No No Yes 16 16

— Number of connectable IO Devices for RT, max.	16
— of which in line, max.	16
— 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; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— Dynamic Frame Packing (DFP)	No
— PROFIenergy	Yes
— Prioritized startup	Yes
— Shared device	Yes
— Number of IO Controllers with shared device, max.	2
— Asset management record	Yes

Protocols

Supports protocol for PROFINET IO	Yes
PROFIsafe	No
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

• PROFINET system redundancy (S2)	No
• PROFINET system redundancy (R1)	No

Media redundancy

— MRP	No
— MRP interconnection, supported	No
— MRPD	No

SIMATIC communication

• S7 routing	Yes
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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 max.	1 000
— Number of server interfaces, max.	2
— Number of nodes for user-defined server interfaces, max.	2 000

Further protocols

• MODBUS	Yes
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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)

Number of connections

• 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 / 68 max
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Test commissioning functions

Status/control

• Status/control variable	Yes
• Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters

Forcing

• Forcing	Yes
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Diagnostic buffer

• present	Yes
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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

Counter

• Number of counters	6
• Counting frequency, max.	100 kHz

Frequency measurement

Yes

controlled positioning

Yes

Number of position-controlled positioning axes, max.

8

PID controller

Yes

Number of alarm inputs

4

Potential separation

Potential separation digital inputs

• Potential separation digital inputs	500 V 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	
<ul style="list-style-type: none"> Interference immunity on supply lines acc. to IEC 61000-4-5 	Yes
Interference immunity against conducted variable disturbance induced by high-frequency fields	
<ul style="list-style-type: none"> Interference immunity against high-frequency radiation acc. to IEC 61000-4-6 	Yes
Emission of radio interference acc. to EN 55 011	
<ul style="list-style-type: none"> Limit class A, for use in industrial areas Limit class B, for use in residential areas 	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	IP20
Standards, approvals, certificates	
Siemens Eco Profile (SEP)	Siemens EcoTech
Ecological footprint	
<ul style="list-style-type: none"> environmental product declaration 	Yes; type II acc. to ISO 14021
Global warming potential	
— global warming potential, (total) [CO2 eq]	76.4 kg
— global warming potential, (during production) [CO2 eq]	13.8 kg
— global warming potential, (during operation) [CO2 eq]	63.4 kg
— global warming potential, (after end of life cycle) [CO2 eq]	-0.89 kg
Ambient conditions	
Free fall	
<ul style="list-style-type: none"> Fall height, max. 	0.3 m; five times, in product package
Ambient temperature during operation	
<ul style="list-style-type: none"> min. max. 	-40 °C; = Tmin; Startup @ -25 °C 70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 4, digital outputs 3, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 3, digital outputs 2, analog inputs 0 (no adjacent points) with horizontal mounting position
<ul style="list-style-type: none"> horizontal installation, min. horizontal installation, max. 	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C 70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 4, digital outputs 3, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 3, digital outputs 2, analog inputs 0 (no adjacent points) with horizontal mounting position
<ul style="list-style-type: none"> vertical installation, min. vertical installation, max. At cold restart, min. 	-40 °C; = Tmin 50 °C; = Tmax -25 °C
Ambient temperature during storage/transportation	
<ul style="list-style-type: none"> min. max. 	-40 °C 70 °C
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude 	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 132 V AC
Relative humidity	
<ul style="list-style-type: none"> With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Vibrations	
<ul style="list-style-type: none"> Vibration resistance during operation acc. to IEC 60068-2-6 Operation, tested according to IEC 60068-2-6 	2 g (m/s ²) wall mounting, 1 g (m/s ²) DIN rail Yes
Shock testing	
<ul style="list-style-type: none"> 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
Resistance	
Coolants and lubricants	
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air

Use in stationary industrial systems		
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	
Use on ships/at sea		
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	
Usage in industrial process technology		
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	
Remark		
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	
Conformal coating		
<ul style="list-style-type: none"> • Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A 	<p>Yes; Class 2 for high reliability</p> <p>Yes; Type 1 protection</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p>	
Configuration		
Programming		
Programming language		
— LAD	Yes	
— FBD	Yes	
— 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	
• User administration	Yes; device-wide	
• Number of users	42	
• Number of groups	14	
• Number of roles	20	
Cycle time monitoring		
• adjustable	Yes	
Dimensions		
Width	90 mm	
Height	100 mm	
Depth	75 mm	
Weights		
Weight, approx.	385 g	
Classifications		
	Version	Classification
eClass	14	27-24-22-07

eClass	12	27-24-22-07
eClass	9.1	27-24-22-07
eClass	9	27-24-22-07
eClass	8	27-24-22-07
eClass	7.1	27-24-22-07
eClass	6	27-24-22-07
ETIM	10	EC000236
ETIM	9	EC000236
ETIM	8	EC000236
ETIM	7	EC000236
IDEA	4	3565
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

[Manufacturer Declaration](#)



[China RoHS](#)



[Metrological Approval](#)

General Product Approval

EMV



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