SIEMENS

Data sheet

6ES7212-1BE40-0XB0

SIMATIC S7-1200, CPU 1212C, compact CPU, AC/DC/relay, onboard I/O: 8 DI 24 V DC; 6 DO relay 2 A; 2 AI 0-10 V DC, Power supply: AC 85-264 V AC at 47-63 Hz, Program/data memory 75 KB



General information	
Product type designation	CPU 1212C AC/DC/relay
Firmware version	V4.2
Engineering with	
Programming package	STEP 7 V14 or higher
Supply voltage	
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
permissible range, lower limit (AC)	85 V
permissible range, upper limit (AC)	264 V
Line frequency	
• permissible range, lower limit	47 Hz
 permissible range, upper limit 	63 Hz
Input current	
Current consumption (rated value)	80 mA at 120 V AC; 40 mA at 240 V AC
Current consumption, max.	240 mA at 120 V AC; 120 mA at 240 V AC
Inrush current, max.	20 A; at 264 V

Output current for backplane bus (6 V DC), max. I 1 000 mA; Max. 5 V DC for SM and CM Encoder supply 24 V encoder supply 24 V 20.4 to 28.8V Power loss Power loss, typ. I1 W Memory Work memory Integrated 2 Mbyte 2 integrated 3 F5 kbyte 3 Power loss (SIMATIC Memory Card), max. I 1 Wish SIMATIC memory card Backup I present 3 F5 kbyte 4 Plug-in (SIMATIC Memory Card), max. With SIMATIC memory card Backup I praintenance-free 3 Wes 4 without battery CPU processing times For bit operations, typ. 5 F0 F0 doperations, typ. 7 F0 F0 for word operations, typ. 7 F0 F0 for floating point arithmetic, typ. 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. Fleg Number, max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Fleg Number, max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Fleg No Kbyte: Priority class 1 (program cycle): 16 KB, priority class 2 to 28: 6 KB Address area Process image No Indivised the first of	l²t	0.8 A ² ·s
for backplane bus (5 V DC), max. Encoder supply 24 V encoder supply • 24 V 20.4 to 28.8V Power loss Power loss, typ. Integrated • expandable Load memory • integrated • Plug-in (SIMATIC Memory Card), max. Backup • present • maintenance-free • without battery Ves • without battery For bit operations, typ. for bit operations, typ. for floating point arithmetic, typ. CPU processing times For floating point arithmetic, typ. CPU-blocks Number of blocks (total) DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65335. There is no restriction, the entire working memory can be used Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 28: 6 KB Address area Process image	Output current	
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24 V encoder supply 24 V 24 V 20.4 to 28.8V Power loss Power loss, typ. 11 W Memory Work memory integrated 75 kbyte expandable No Load memory integrated 2 Mbyte eypandable No Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup integrated Yes emintenance-free Yes ewithout battery Yes CPU processing times for bit operations, typ. 0.08 µs; / instruction 1.7 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 Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag Number, max. 4 kbyte; Size of bit memory address area Local data per priority class, max. Address area Process image	Faceder supply	
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Load memory integrated Plug-in (SIMATIC Memory Card), max. Backup present present present processing times for bit operations, typ. for word operations, typ. for floating point arithmetic, typ. CPU-blocks Number of blocks (total) Number, max. Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag Number, max. Limited only by RAM for code Number, max. A kbyte; Size of bit memory address area Process image Address area Process image	• integrated	75 kbyte
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Plug-in (SIMATIC Memory Card), max. Backup • present • maintenance-free • without battery CPU processing times for bit operations, typ. for word operations, typ. for floating point arithmetic, typ. CPU-blocks Number of blocks (total) Base Number, max. Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag • Number, max. Limited only by RAM for code A kbyte; Size of bit memory address area Process image with SIMATIC memory card yes A kes Yes Yes O.08 μs; / instruction 1.7 μs; / instruction 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. 10 kbyte • Number, max. 4 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	Load memory	
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for bit operations, typ. for word operations, typ. for floating point arithmetic, typ. 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. Flag Number, max. 4 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	• without battery	Yes
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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 DB Number, max. Limited only by RAM for code Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag Number, max. 4 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	for word operations, typ.	1.7 μs; / instruction
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 Number, max. 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 	max.	
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	Flag	
per priority class, max. 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB Address area Process image		4 kbyte; Size of bit memory address area
to 26: 6 KB Address area Process image	Local data	
Process image	● per priority class, max.	
	Address area	
• Inputs, adjustable 1 kbyte		
	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)
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 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	
— 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	6; 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	
Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
Analog inputs Number of analog inputs	2
Input ranges	2
Voltage	Yes
Input ranges (rated values), voltages	163
• 0 to +10 V	Yes
	≥100k ohms
Input resistance (0 to 10 V) Cable length	2 TOOK OTHIS
• shielded, max.	100 m; twisted and shielded
Sillelded, max.	100 III, twisted and silicided
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), 	10 bit
max.	
 Integration time, parameterizable 	Yes
 Conversion time (per channel) 	625 µs
Encoder	
Connectable encoders	
• 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	No
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes

Open IE communication	Yes
Web server	Yes
	No
Media redundancy PROFINET IO Controller	NO
	100 Mbit/s
 Transmission rate, max. Services 	TOO MIDIUS
— PG/OP communication	Yes
	Yes
— S7 routing— Isochronous mode	No
	Yes
— Open IE communication — IRT	No
	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
— Prioritized startup	16
 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)	
• 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
Further protocols	
• MODBUS	Yes
Communication functions	
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	16; dynamically
515,411	
Test commissioning functions	
Status/control	
Status/control variable	Yes
 Variables 	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	
• Forcing	Yes
Diagnostic buffer	
• present	Yes
Traces	
Number of configurable Traces	2
 Memory size per trace, max. 	512 kbyte

Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Interveted Eurotions	
Integrated Functions Number of counters	4
Counting frequency (counter) max.	100 kHz
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction	Up to 4 with SB 1222
interface	SP 10 7 11111 SE 1222
PID controller	Yes
Number of alarm inputs	4
Detential congretion	
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	
	Relays
Potential separation digital outputs	No
between the channels	
 between the channels, in groups of 	2
EMC	
Interference immunity against discharge of static electric	city
 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	
• 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	Yes
Ambient conditions	
Free fall	
● Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °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. 	-20 °C
 horizontal installation, max. 	60 °C
• vertical installation, min.	-20 °C
 vertical installation, max. 	50 °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.	2 000 m
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	
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 level: Write protection	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Complete protection 	Yes
Cycle time monitoring	
● adjustable	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	425 g

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last modified: