Data sheet

6ES7212-1AE31-0XB0



SIMATIC S7-1200, CPU 1212C, compact CPU, DC/DC/DC, onboard I/O: 8 DI 24 V DC; 6 DO 24 V DC; 2 AI 0-10 V DC, Power supply: DC 20.4-28.8V DC, Program/data memory 50 KB

General information	
Product type designation	CPU 1212C DC/DC/DC
Engineering with	
Programming package	STEP 7 V11 SP2 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, max.	1.2 A; 24 V DC
Inrush current, max.	12 A; at 28.8 V DC
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	50 kbyte
Load memory	
• integrated	1 Mbyte
Backup	
• present	Yes; maintenance-free
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
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all mounting positions — up to 40 °C, max. Input voltage
- up to 40 °C, max. Input voltage • Rated value (DC) • for signal "0" • for signal "4" • for signal "4", typ. Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs - parameterizable - at "0" to "1", min. - at "0" to "1", max. for interrupt inputs - parameterizable Yes for technological functions - parameterizable \$\text{Single phase: 3 @ 100 kHz & 1 @ 30 kHz, differential: 3 @ 80 kHz & 1 @ 30 kHz} & 1 @ 30 kHz & 1 @ 30 m; for technological functions: \text{Oble length} • shielded, max. • unshielded, max. • unshielded, max. • unshielded, max. • of which high-speed outputs Number of digital outputs Number of digital outputs \$\text{Northorized function} \text{Northorized for technological functions: No} \text{Digital outputs} Northorized functions • \text{A in the chological functions: No} \text{Digital outputs} Northorized function • \text{A in the chological functions: No} \text{Digital outputs} \text{A in the chological functions: No} Digital
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— parameterizable Single phase: 3 @ 100 kHz & 1 @ 30 kHz, differential: 3 @ 80 kHz & 1 @ 30 kHz • shielded, max. • unshielded, max. 100 m; 50 m for technological functions 300 m; for technological functions: No Digital outputs Number of digital outputs • of which high-speed outputs Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to Single phase: 3 @ 100 kHz & 1 @ 30 kHz, differential: 3 @ 80 kHz & 1 @ 30 kHz
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Digital outputs Number of digital outputs 6 ◆ of which high-speed outputs 4; 100 kHz Pulse Train Output Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to L+ (-48 V) Switching capacity of the outputs
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Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to L+ (-48 V) Switching capacity of the outputs
Limitation of inductive shutdown voltage to L+ (-48 V) Switching capacity of the outputs
Switching capacity of the outputs
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an length lead may
• on lamp load, max. 5 W
Output voltage
• for signal "0", max. 0.1 V; with 10 kOhm load
• for signal "1", min. 20 V
Output current
• for signal "1" rated value 0.5 A
• for signal "0" residual current, max. 0.1 mA
Output delay with resistive load

• "0" to "1" may	1 110
"0" to "1", max."1" to "0", max.	1 μs 5 μs
	ο μs
Switching frequency • of the pulse outputs, with resistive load, max.	100 kHz
	100 KHZ
Relay outputs	
Number of relay outputs	0
Cable length	F00
• shielded, max.	500 m
• unshielded, max.	150 m
Analog inputs	
Number of analog inputs	2
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 outputs	
Number of analog outputs	0
Cable length	
• shielded, max.	100 m; shielded, twisted pair
Analog value generation for the inputs	
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
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
Protocols	
PROFINET IO Controller	Yes
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIsafe	No
PROFIBUS	Yes
AS-Interface	Yes
Protocols (Ethernet)	163
TCP/IP	Yes
Open IE communication	163
TCP/IP	Yes
	Yes
• ISO-on-TCP (RFC1006)	
• UDP	Yes
Web server	Von
supported Ligar defined websites	Yes
User-defined websites Firstless protected.	Yes
Further protocols	V
• MODBUS	Yes
communication functions / header	
S7 communication	
• supported	Yes
• as server	Yes

• as client	Yes
	res
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
Integrated Functions	
Counter	
 Number of counters 	4
Counting frequency, max.	100 kHz
Frequency measurement	Yes
controlled positioning	Yes
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	2
Limit frequency (pulse)	100 kHz
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	Yes
 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 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 all disordinge Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	O IV
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	
Interference immunity against voltage surge Interference immunity on supply lines acc. to IEC 61000-	Yes
4-5	100
Interference immunity against conducted variable disturbance indu	ced 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	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
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• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
 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 / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
programming / cycle time monitoring / header	
adjustable	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	370 g

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