SIEMENS

Product data sheet 6ES7212-1HE31-0XB0

SIMATIC S7-1200, CPU 1212C,
COMPACT CPU, DC/DC/RLY,
ONBOARD I/O: 8 DI 24V DC;
6 DO RELAY 2A;
2 AI 0 - 10V DC,
POWER SUPPLY: AC 20.4 - 28.8 V DC,
PROGRAM/DATA MEMORY: 50 KB

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General information	
Engineering with	
Programming package	STEP 7 V11 SP2 or higher
Supply voltage	
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)	5 V
permissible range, upper limit (DC)	250 V
Input current	
Current consumption (rated value)	175 mA ; Typical
Current consumption, max.	1.2 A ; 24 V DC
Inrush current, max.	12 A ; at 28.8 V
Encoder supply	
24 V encoder supply	
24 V	Permissible range: 20.4V to 28.8V

Output current	
Current output to backplane bus (5 V DC), max.	1000 mA ; Max. 5 V DC for SM and CM
Power loss	
Power loss, typ.	9 W
Memory	
Type of memory	EEPROM
Usable memory for user data	50 kbyte
Work memory	
integrated	50 kbyte
expandable	No
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
OB	
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
retentive data area in total (incl. times, counters, flags), max.	10 kbyte
Flag	
Number, max.	4 kbyte ; Size of bit memory address area
Address area	
I/O address area	
I/O address area, overall	1024 bytes for inputs / 1024 bytes for outputs
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 clock)	Yes
Deviation per day, max.	60 s/month at 25 °C
Backup time	480 h ; Typical
Digital inputs	
Number of digital inputs	8 ; Integrated
of which inputs usable for technological functions	4 ; HSC (High Speed Counting)
integrated channels (DI)	8
m/p-reading	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 VDC 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
for counter/technological functions	
parameterizable	Single phase: 3 @ 100 kHz & 1 @ 30 kHz, differential: 3 @ 80 kHz & 1 @ 30 kHz
Cable length	
Cable length, shielded, max.	500 m ; 50 m for technological functions
Cable length unshielded, max.	300 m ; For technological functions: No
Digital outputs	
Number of digital outputs	6 ; Relays
integrated channels (DO)	6
Short-circuit protection	No ; to be provided externally
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
Relay outputs	
Max. number of relay outputs, integrated	6
Number of relay outputs	6
Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100,000
Cable length	
Cable length, shielded, max.	500 m
Cable length unshielded, max.	150 m
Analog inputs	
integrated channels (AI)	2 ; 0 to 10 V
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	
Cable length, shielded, max.	100 m ; twisted and shielded
Analog outputs	
Number of analog outputs	0
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
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
Functionality	
PROFINET IO Controller	Yes
Communication functions	
S7 communication	
supported	Yes
as server	Yes
as client	Yes
Open IE communication	
TCP/IP	Yes
ISO-on-TCP (RFC1006)	Yes
UDP	Yes
Web server	
supported	Yes
User-defined websites	Yes
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	
Number of counters	4
Counting frequency (counter) max.	100 kHz
Frequency meter	Yes
controlled positioning	Yes
PID controller	Yes
Number of alarm inputs	4
Galvanic isolation	
Galvanic isolation digital inputs	
Galvanic isolation digital inputs	500V AC for 1 minute
between the channels, in groups of	1
Galvanic isolation digital outputs	
Galvanic isolation digital outputs	Relays
between the channels	No
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 contact discharge	6 kV
Interference immunity to cable-borne interference	
on the 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 disturbance 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	
Emission of radio interference acc. to EN 55 011 (limit class A)	Yes ; Group 1
Emission of radio interference acc. to EN 55 011 (limit class B)	Yes ; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011
Degree and class of protection	
IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
RCM (former C-TICK)	Yes
FM approval	Yes
Marine approval	
Marine approval	Yes
Ambient conditions	
Operating temperature	
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
Storage/transport temperature	

min.	-40 °C
max.	70 °C
Air pressure	
Operation, min.	795 hPa
Operation, max.	1080 hPa
Storage/transport, min.	660 hPa
Storage/transport, max.	1080 hPa
Relative humidity	
Operation, max.	95 % ; no condensation
Vibrations	
Vibrations	2G wall mounting, 1G DIN rail
Operation, tested according to IEC 60068-2-6	Yes
Shock test	
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
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
Free fall	
Drop height, max. (in packaging)	0.3 m ; five times, in dispatch package
Temperature	
permissible temperature range	-40 °C to +70 °C
Relative humidity	
permissible range (without condensation) at 25 °C	95 %
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
Temperature	
min.	-20 °C
max.	60 °C
Air pressure acc. to IEC 60068-2-13	
permissible air pressure	1080 to 795 hPa
permissible operating height	-1000 to 2000 m
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
Cycle time monitoring	
adjustable	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	385 g
Status	Jul 8, 2014