

# SIEMENS

## Product data sheet

**6ES7212-1AD30-0XB0**


SIMATIC S7-1200, CPU 1212C,  
 COMPACT CPU, DC/DC/DC,  
 ONBOARD I/O: 8 DI 24V DC;  
 6 DO 24 V DC;  
 2 AI 0 - 10V DC,  
 POWER SUPPLY: DC 20.4 - 28.8 V DC,  
 PROGRAM/DATA MEMORY: 25 KB

General information	
Engineering with	
Programming package	STEP 7 V10.5 or higher
Display	
integrated	No
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)	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
<b>Encoder supply</b>	
<b>24 V encoder supply</b>	
24 V	Permissible range: 20.4 to 28.8 V
<b>Output current</b>	
Current output to backplane bus (DC 5 V), max.	1000 mA ; Max. 5 V DC for SM and CM
<b>Power losses</b>	
Power loss, typ.	9 W
<b>Memory</b>	
Usable memory for user data	25 kbyte
<b>Work memory</b>	
integrated	25 kbyte
expandable	No
<b>Load memory</b>	
integrated	1 Mbyte
expandable, max.	24 Mbyte ; with SIMATIC memory card
<b>Backup</b>	
present	Yes ; Entire project maintenance-free in the integral EEPROM
without battery	Yes
<b>CPU processing times</b>	
for bit operations, min.	0.1 $\mu$ s ; / Operation
for word operations, min.	12 $\mu$ s ; / Operation
for floating point arithmetic, min.	18 $\mu$ s ; / Operation
<b>CPU-blocks</b>	
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
<b>OB</b>	
Number, max.	Limited only by RAM for code
<b>Data areas and their retentivity</b>	
retentive data area in total (incl. times, counters, flags), max.	2048 byte
<b>Flag</b>	

Number, max.	4 kbyte ; Size of bit memory address area
<b>Address area</b>	
<b>I/O address area</b>	
I/O address area, overall	1024 bytes for inputs / 1024 bytes for outputs
Inputs	1024 byte
Outputs	1024 byte
<b>Process image</b>	
Inputs, adjustable	1 kbyte
Outputs, adjustable	1 kbyte
<b>Hardware configuration</b>	
Number of modules per system, max.	3 comm. modules, 1 signal board, 2 signal modules
<b>Time of day</b>	
<b>Clock</b>	
Hardware clock (real-time clock)	Yes
Deviation per day, max.	+/- 60 s/month at 25 °C
Backup time	240 h ; Typical
<b>Digital inputs</b>	
Number/binary inputs	8 ; integrated
of which, inputs usable for technological functions	4 ; HSC (High Speed Counting)
integrated channels (DI)	8
m/p-reading	Yes
<b>Input voltage</b>	
Rated value, DC	24 V
for signal "0"	5 V DC at 1 mA.
for signal "1"	15 VDC at 2.5 mA.
<b>Input current</b>	
for signal "1", typ.	1 mA
<b>Input delay (for rated value of input voltage)</b>	
<b>for standard inputs</b>	
Parameterizable	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, 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
<b>for interrupt inputs</b>	

Parameterizable	Yes
for counter/technological functions	
Parameterizable	Single phase: 3 at 100 kHz & 1 at 30 kHz, differential: 3 at 80 kHz & 1 at 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/binary outputs	6
of which high-speed outputs	2 ; 100 kHz Pulse Train Output
integrated channels (DO)	6
Functionality/short-circuit strength	No ; to be provided externally
Limitation of inductive shutdown voltage to	L+ (-48 V)
Switching capacity of the outputs	
with resistive load, max.	0.5 A
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", max.	1 $\mu$ s
"1" to "0", max.	5 $\mu$ s
Switching frequency	
of the pulse outputs, with resistive load, max.	100 kHz
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	
Cable length	
Cable length, shielded, max.	100 m ; Shielded, twisted wire pair
Analog value creation	
Integrations 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
1st interface	
Type of interface	PROFINET
Physics	Ethernet
Isolated	Yes
Automatic detection of transmission speed	Yes
Autonegotiation	Yes
Autocrossing	Yes
Functionality	
PROFINET IO Controller	Yes
Communication functions	
S7 communication	
supported	Yes
as server	Yes
Open IE communication	
TCP/IP	Yes
ISO-on-TCP (RFC1006)	Yes

<b>Web server</b>	
supported	Yes
User-defined websites	Yes
<b>Number of connections</b>	
overall	15 ; dynamically
<b>Test commissioning functions</b>	
<b>Status/control</b>	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
<b>Forcing</b>	
Forcing	Yes
<b>Integrated Functions</b>	
Number of counters	4
Counter frequency (counter) max.	100 kHz
Frequency meter	Yes
controlled positioning	Yes
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	2
Limit frequency (pulse)	100 kHz
<b>Galvanic isolation</b>	
<b>Galvanic isolation digital inputs</b>	
Galvanic isolation digital inputs	No
between the channels, in groups of	1
<b>Galvanic isolation digital outputs</b>	
Galvanic isolation digital outputs	Yes
between the channels	No
between the channels, in groups of	2
<b>Permissible potential difference</b>	
between different circuits	500 V DC between 24 V DC and 5 V DC
<b>EMC</b>	
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
<b>Interference immunity to cable-borne interference</b>	
on the supply lines acc. to IEC 61000-4-4	Yes
Interference immunity on signal lines acc. to IEC 61000-4-4	Yes
<b>Surge immunity</b>	
on the supply lines acc. to IEC 61000-4-5	Yes
<b>Immunity against conducted interference induced by high-frequency fields</b>	
Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes
<b>Emission of radio interference acc. to EN 55 011</b>	
Emission of radio interferences 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
<b>Degree and class of protection</b>	
IP20	Yes
<b>Standards, approvals, certificates</b>	
CE mark	Yes
cULus	Yes
C-TICK	Yes
FM approval	Yes
<b>Ambient conditions</b>	
<b>Operating temperature</b>	
Min.	0 °C
max.	55 °C
vertical installation, min.	0 °C
vertical installation, max.	45 °C
horizontal installation, min.	0 °C
horizontal installation, max.	55 °C
<b>Storage/transport temperature</b>	

Min.	-40 °C
max.	70 °C
<b>Air pressure</b>	
Operation, min.	795 hPa
Operation, max.	1080 hPa
Storage/transport, min.	660 hPa
Storage/transport, max.	1080 hPa
<b>Relative humidity</b>	
Operation, max.	95 % ; no condensation
<b>Vibrations</b>	
Vibrations	2G wall mounting, 1G DIN rail
Operation, checked according to IEC 60068-2-6	Yes
<b>Shock test</b>	
checked 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
<b>Climatic and mechanical conditions for storage and transport</b>	
<b>Climatic conditions for storage and transport</b>	
<b>Free fall</b>	
Drop height, max. (in packaging)	0.3 m ; five times, in dispatch package
<b>Temperature</b>	
Permissible temperature range	-40 °C to +70 °C
<b>Mechanical and climatic conditions during operation</b>	
<b>Climatic conditions in operation</b>	
<b>Temperature</b>	
Permissible temperature range	0 °C to 55 °C horizontal installation 0 °C to 45 °C vertical installation
Permissible temperature change	5°C to 55°C, 3°C / minute
<b>Air pressure acc. to IEC 60068-2-13</b>	
Permissible air pressure	1080 to 795 hPa
Permissible operating height	-1000 to 2000 m
<b>Pollutant concentrations</b>	
SO <sub>2</sub> at RH < 60% without condensation	SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60% condensation-free
<b>Configuration</b>	



programming	
Programming language	
LAD	Yes
FBD	Yes
SCL	Yes
Cycle time monitoring	
adjustable	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weight	
Weight, approx.	370 g
Status	Jul 17, 2012