SIEMENS

Data sheet

6ES7211-1BE40-0XB0

SIMATIC S7-1200, CPU 1211C, COMPACT CPU, AC/DC/RELAY, ONBOARD I/O: 6 DI 24V DC; 4 DO RELAY 2A; 2 AI 0 - 10V DC, POWER SUPPLY: AC 85 - 264 V AC AT 47 - 63 HZ, PROGRAM/DATA MEMORY: 50 KB



General information	
Product type designation	CPU 1211C AC/DC/Relay
Firmware version	V4.1
Engineering with	
 Programming package 	STEP 7 V13 SP1 or higher
Display	
with display	No
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)	60 mA at 120 V AC; 30 mA at 240 V AC
Current consumption, max.	180 mA at 120 V AC; 90 mA at 240 V AC
Inrush current, max.	20 A; at 264 V
Output current	
for backplane bus (5 V DC), max.	750 mA; Max. 5 V DC for CM
Encoder supply	
24 V encoder supply	
• 24 V	20.4 to 28.8V
Power loss	
Power loss, typ.	10 W
Memory	
Work memory	
 integrated 	50 kbyte
• expandable	No
Load memory	
● integrated	1 Mbyte
 Plug-in (SIMATIC Memory Card), max. 	with SIMATIC memory card
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.	2.3 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	
• Number, max.	Limited only by RAM for code
Data areas and their retentivity	
retentive data area in total (incl. times, counters,	10 kbyte
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	

 Outputs, adjustable 1 kbyte Hardware configuration Number of modules per system, max. 3 communication modules, 1 signal board Time of day Clock Hardware clock (real-time) Yes Backup time 480 h; Typical Deviation per day, max. +/- 60 s/month at 25 °C Optical inputs of which inputs usable for technological functions integrated channels (DI) 6 Source/sink input Yes Number of simultaneously controllable inputs all mounting positions - up to 40 °C, max. 6 Input voltage Rated value (DCC) 24 V for signal °C* 5 V DC at 1 mA for signal °C* of a value of inputs of a value of input voltage) for standard inputs - parameterizable - at °C* to ~1*, max. 28 ms for interrupt inputs - parameterizable Yes Ves Ves Source sink input Yes Source sink input Yes Source sink input Yes The at °C* to ~1*, max. So CD cat 2.5 mA Input delay (for rated value of input voltage) for interce pringent *1 So VD Cat 2.5 mA Input delay (for rated value of input voltage) for interce pringent *1 So VD Cat 2.5 mA Input delay (for at 2.5 ms.) at so White 3.3 at 30 kHz, differential: 3 at so White 3.3 at 30 kHz. Source interval inputs - parameterizable Yes Single phase : 3 at 100 kHz & 3 at 30 kHz. Source inputs - parameterizable So The technological	 Inputs, adjustable 	1 kbyte
Number of modules per system, max. 3 communication modules, 1 signal board Time of day Clock • • Hardware clock (real-lime) Yes • Backup time 480 h; Typical • Deviation per day, max. +/- 60 s/month at 25 °C Digital inputs 6: Integrated • of which inputs usable for technological functions 3: HSC (High Speed Counting) • integrated channels (DI) 6 Source/sink input Yes Number of singular 0° 6 - up to 40 °C, max. 6 Input voltage • - up to 40 °C, max. 6 Input voltage • • 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) 6.2 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 - 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 - parameterizable Yes for	 Outputs, adjustable 	1 kbyte
Number of modules per system, max. 3 communication modules, 1 signal board Time of day Clock • • Hardware clock (real-lime) Yes • Backup time 480 h; Typical • Deviation per day, max. +/- 60 s/month at 25 °C Digital inputs 6: Integrated • of which inputs usable for technological functions 3: HSC (High Speed Counting) • integrated channels (DI) 6 Source/sink input Yes Number of singular 0° 6 - up to 40 °C, max. 6 Input voltage • - up to 40 °C, max. 6 Input voltage • • 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) 6.2 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 - 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 - parameterizable Yes for	Lloudurers configuration	
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 6: Integrated • of which inputs usable for technological functions 9: HSC (High Speed Counting) Integrated channels (DI) 6 Source/sink input Yes Number of digital neously controllable inputs 6 all mounting positions - - up to 40 °C, max. 6 Input voltage 9 • Rated value (DC) 24 V • for signal °C 5 V DC at 1 mA • for signal °C 5 V DC at 2.5 mA Input voltage - for signal °C 5 V DC at 2.5 mA Input voltage - - 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 - parameterizable Ves for counter/technological functions - - parameterizable Yes for counter/technological functions - - parameterizable Yes: Single phase : 3 at 100 kHz & 3 at 30 kHz, differential:		3 communication modules, 1 signal board
Clock Yes • Hardware clock (real-time) Yes • Backup time 480 h; Typical • Deviation per day, max. +/. 60 s/month at 25 °C Digital inputs 6; Integrated • of which inputs usable for technological functions 6; Integrated • of which inputs usable for technological functions 6 Source/sink input Yes Number of simultaneously controllable inputs 6 all mounting positions – up to 40 °C, max. - up to 40 °C, max. 6 Input voltage 9 • Rated value (DC) 24 V • for signal °0" 5 V DC at 1 mA • for signal °0" 5 V DC at 2.5 mA Input voltage 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 - 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", max. 12.8 ms for interrupt inputs – parameterizable - parameterizable Yes for counter/technological functions 3 at 30 kHz; differential: 3 at 30		
• Hardware clock (real-time) Yes • Backup time 480 h; Typical • Deviation per day, max. +/- 60 s/month at 25 °C Digital inputs • of which inputs usable for technological functions integrated channels (DI) 6 Source/sink input Yes Number of simultaneously controllable inputs 6 all mounting positions - - up to 40 °C, max. 6 Input voltage - • of signal °C 24 V • for signal °C 5 V DC at 1 mA • for signal °C 5 V DC at 2.5 mA Input voltage 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 - 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 °C * to ****, max. 12.8 ms for interrupt inputs - - parameterizable Yes interrupt inputs - - parameterizable Yes for counter/technological functions at 80 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz Cable length • shielded, max. 50		
• Backup time 480 h; Typical • Deviation par day, max. +/- 60 s/month at 25 °C Digital inputs 6; Integrated Number of digital inputs 6; Integrated • of which inputs usable for technological functions 3; HSC (High Speed Counting) Integrated channels (DI) 6 Source/sink input Yes Number of simultaneously controllable inputs 6 all mounting positions 6 — up to 40 °C, max. 6 Input votage 9 • Rated value (DC) 24 V • for signal °C 5 V DC at 1 mA • for signal °T 15 V DC at 2.5 mA Input delay (for rated value of input voltage) 6 for standard inputs 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 — parameterizable 0.2 ms — at "0" to "1", max. 12.8 ms for interrupt inputs - — parameterizable Yes for counter/technological functions 12.8 ms for interrupt inputs - — parameterizable Yes for counter/technological functions 3 at 30 kHz		
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Number of digital inputs 6; Integrated • of which inputs usable for technological functions 3; HSC (High Speed Counting) integrated channels (DI) 6 Source/sink input Yes Number of simultaneously controllable inputs 6 all mounting positions	 Deviation per day, max. 	+/- 60 s/month at 25 °C
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Source/sink input Yes Number of simultaneously controllable inputs all mounting positions		3; HSC (High Speed Counting)
Number of simultaneously controllable inputs all mounting positions -up to 40 °C, max. 6 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 counter/technological functions - - parameterizable Yes Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz Cable length 500 m; 50 m for technological functions • unshielded, max. 300 m; For technological functions: No Digital outputs 4; Relays integrated channels (DO) 4	integrated channels (DI)	6
all mounting positions 6 -up to 40 °C, max. 6 Input voltage 5 • 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) 6 for standard inputs 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 - parameterizable 0.2 ms - 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 Yes; Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz Cable length So0 m; 50 m for technological functions • unshielded, max. 500 m; 50 m for technological functions • unshielded, max. 300 m; For technological functions • unshielded, max. 500 m; 50 m for technological functions Number of digital outputs 4; Relays integrated channels (DO) 4	Source/sink input	Yes
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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 _ at "0" to "1", min. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 2 ms _ at "0" to "1", max. _ 12.8 ms for counter/technological functions parameterizable Yes; Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz Cable length _ shielded, max. S00 m; 50 m for technological functions unshielded, max. 300 m; For technological functions: No Digital outputs Number of digital outputs A; Relays integrated channels (DO) 4 Switching capacity of the outputs	Input voltage	
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for standard inputs 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 Yes; Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz Cable length 500 m; 50 m for technological functions • unshielded, max. 300 m; For technological functions: No Digital outputs 4; Relays integrated channels (DO) 4 Switching capacity of the outputs 4; Relays	● for signal "1"	15 V DC at 2.5 mA
— parameterizable0.2 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 msfor interrupt inputs	Input delay (for rated value of input voltage)	
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for interrupt inputs	— at "0" to "1", min.	0.2 ms
— parameterizable Yes for counter/technological functions	— at "0" to "1", max.	12.8 ms
for counter/technological functions — parameterizable Yes; Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz Cable length • shielded, max. • shielded, max. 500 m; 50 m for technological functions • unshielded, max. 300 m; For technological functions: No Digital outputs 4; Relays integrated channels (DO) 4 Switching capacity of the outputs —	for interrupt inputs	
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 unshielded, max. 300 m; For technological functions: No Digital outputs Number of digital outputs 4; Relays integrated channels (DO) 4 Switching capacity of the outputs 	Cable length	
Digital outputs Number of digital outputs 4; Relays integrated channels (DO) 4 Switching capacity of the outputs 4	• shielded, max.	500 m; 50 m for technological functions
Number of digital outputs 4; Relays integrated channels (DO) 4 Switching capacity of the outputs 4	• unshielded, max.	300 m; For technological functions: No
Number of digital outputs 4; Relays integrated channels (DO) 4 Switching capacity of the outputs 4	Digital outputs	
Switching capacity of the outputs		4; Relays
	integrated channels (DO)	4
• with resistive load, max. 2 A	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	
Number of relay outputs	4
 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
integrated channels (AI)	2; 0 to 10V
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
Analog value generation	
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

Functionality	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
Open IE communication	Yes
Web server	Yes
PROFINET IO Controller	
• Transmission rate, max.	100 Mbit/s
Services	
— Number of connectable IO Devices, max.	16
PROFINET IO Device	
Services	
— Shared device	Yes
— Number of IO Controllers with shared	2
device, max.	
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 required
AS-Interface	Yes
Protocols (Ethernet)	
• TCP/IP	Yes
Further protocols	
• MODBUS	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
Number of connections	
• overall	16; dynamically
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; Up to 512 KB of data per trace are possible
Integrated Functions	
Number of counters	3
Counting frequency (counter) max.	100 kHz
Frequency meter	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	
PID controller	Yes
Number of alarm inputs	4
Potential separation	
Potential separation digital inputs	500/407 4 1 1
 Potential separation digital inputs 	500V 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	1
EMC	
Interference immunity against discharge of static electri	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

egree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
tandards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Marine approval	
Marine approval	Yes
mbient conditions	
Free fall	
 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	
Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
 permissible operating height 	-1000 to 2000 m
Relative humidity	
 permissible range (without condensation) at 25 °C 	95 %
Vibrations	
Vibrations	2 g (m/s²) wall mounting, 1 g (m/s²) 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 (pea value), duration 11 ms
Extended ambient conditions	
Pollutant concentrations	

- SO2 at RH < 60% without condensation

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.	420 g