SIEMENS

Data sheet

6ES7211-1BE40-0XB0

SIMATIC S7-1200, CPU 1211C, compact CPU, AC/DC/relay, onboard I/O: 6 DI 24 V DC; 4 DO relay 2A; 2 AI 0-10 V 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	V4.2
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)	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

	0.8 A ^{2.} s
Output ourrest	
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	Yes
 without battery 	Yes
CPU processing times	
for bit operations, typ. for word operations, typ.	0.08 μs; / instruction 1.7 μs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction
	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	restriction, the entire working memory sur be deed
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	10 kbyte
max. Flag	
	4 kbyte; Size of bit memory address area
Number, max. Local data	
 per priority class, max. 	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2
- אפו אווטווגי טומסס, ווומג.	to 26: 6 KB
Address area	
Process image	1 khyto
 Inputs, adjustable 	1 kbyte

• 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
Digital inputs	
Number of digital inputs	6; Integrated
 of which inputs usable for technological functions 	6; HSC (High Speed Counting)
Source/sink input	Yes
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 current	
● for signal "1", typ.	4 mA; nominal
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, differential: 3 @ 80 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	4; 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	

Number of analog inputs 2 Input ranges Yes Input ranges (rated values), voltages Yes • 0 to +10 V Yes — Input resistance (0 to 10 V) ≥100k ohms Cable length 100 m; twisted and shielded • shielded, max. 100 m; twisted and shielded		
Relay outputs 4 • Number of relay outputs 4 • Number of operating cycles, max. bechanically 10 million, at rated load voltage 100 000 Cable length 500 m • unshielded, max. 500 m • unshielded, max. 150 m Analog inputs 2 Input ranges (rated values), voltages 9 • Voltage Yes Input ranges (rated values), voltages 100 m: twisted and shielded • to to +10 V Yes - Input resistance (0 to 10 V) 2100k ohms Cable length 100 m: twisted and shielded • shielded, max. 100 m: twisted and shielded Analog outputs 0 Number of analog outputs 0 Resolution with overrange (bit including sign), max. 10 bit • lengration firme/resolution ger channel 625 µs Encoder 2 Connectable encoders 625 µs • Londer channel Yes • Londer	• "0" to "1", max.	10 ms; max.
• Number of relay outputs 4 • Number of operating cycles, max. mechanically 10 million, at rated load voltage 100 000 Cable length 500 m • shielded, max. 150 m • unschielded, max. 150 m Analog inputs 2 Number of analog inputs 2 • Voltage Yes • Voltage (rated values), voltages - • O to +10 V Yes - Input resistance (0 to 10 V) 2100k ohms Cable length - • shielded, max. 100 m: twisted and shielded Analog outputs 0 Cable length - • shielded, max. 100 m: twisted and shielded Analog outputs 0 Analog outputs 0 Analog outputs 0 • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Encoder - Contectable encoders - • 2. wire sensor Yes Interface - Interface type PROFINET Physics Ethemet Isolatid Yes automatic detection of transmission rate	• "1" to "0", max.	10 ms; max.
Number of operating cycles, max, mechanically 10 million, at rated load voltage 100 000 Cable length 500 m • shielded, max, 500 m • unshielded, max, 150 m Analog inputs 2 Input ranges (rated values), voltages 2 • Voltage Yes Input ranges (rated values), voltages 2 • Voltage (rated values), voltages 2 • Input resistance (0 to 10 V) Yes Cable length 2 • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 10 bit neaz, 10 bit neax, 10 bit • Resolution with overrange (bit including sign), max, 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) Yes Interface Yes Interface type PROFINET Physics <	Relay outputs	
Cable length 500 m • shielded, max. 500 m • unshielded, max. 150 m Number of analog inputs 2 Number of analog inputs 2 Input ranges voltage • Voltage Yes Input ranges (rated values), voltages voltage • Voltage Yes - Input resistance (0 to 10 V) Yes Cable length - • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog outputs 0 Integration and conversion time/resolution per channel - • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) Yes Encoder - Connectable encoders - • 2.wire sensor Yes Interface - Interface - Interface type PROFINET Physics Etherm	 Number of relay outputs 	4
• shielded, max.500 m• unshielded, max.150 mAnalog inputs2Input ranges2• VoltageYes• Voltage (rated values), voltages100 m• O to +10 VYes- Input resistance (0 to 10 V)2100k ohmsCable length100 m; twisted and shielded• shielded, max.0Analog outputs0Number of analog outputs0Integration and conversion time/resolution per channel10 bit• Resolution with overrange (bit including sign), max.10 bit• Integration time, parameterizable625 µs• Conversion time (per channel)10 bit• 2-wire sensorYesInterfaceVesunderd detection of transmission rateYesautomatic detection of transmission rateYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationYesAutonegotationNoProtocols1• Number of ports1• Interface typeNo• Interface typeYes• Number of ports1• Interface typesNo• Number of ports1• Interface types1• Number of ports1• Interface types <t< td=""><td> Number of operating cycles, max. </td><td>mechanically 10 million, at rated load voltage 100 000</td></t<>	 Number of operating cycles, max. 	mechanically 10 million, at rated load voltage 100 000
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Number of analog inputs 2 Input ranges Ves Input ranges (rated values), voltages Ves 0 to +10 V Yes - Input resistance (0 to 10 V) ≥100k ohms Cable length • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation for the inputs 100 m; twisted and shielded Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Encoder Yes 2. wire sensor Yes 1. Interface PROFINET Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autoregotiation Yes Autoregotiation Yes Mumber of ports 1 • integrated switch No	• unshielded, max.	150 m
Input ranges Yes Input ranges (rated values), voltages Yes 0 to +10 V Yes - Input resistance (0 to 10 V) Yes Cabble length 0 - Input resistance (0 to 10 V) 100 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog outputs 0 Analog outputs 0 Integration and conversion time/resolution per channel Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Connectable encoders 25 µs • 2-wire sensor Yes 1 Interface PROFINET Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autocrossing Yes Autocrossing 1 • Interface types Yes • Number of ports 1 • Interface types No	Analog inputs	
• Voltage Yes Input ranges (rated values), voltages Yes • 0 to +10 V ≥100k ohms Cable length ≥100k ohms Cable length 100 m; twisted and shielded • shielded, max. 100 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog value generation for the inputs 0 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 2 Interface Yes • Literface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autoregotiation Yes Interface types Yes • Number of ports 1 • Number of ports 1 • integrated switch No	Number of analog inputs	2
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• 0 to +10 V Yes — Input resistance (0 to 10 V) ≥100k ohms Cable length 100 m; twisted and shielded • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation for the inputs 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 μs Encoder Ves • 2-wire sensor Yes Interface type PROFINET Physics Ethermet Isolated Yes automatic detection of transmission rate Yes Autorcosting Yes Interface types Yes Physics Ethermet Isolated Yes Autorcosting Yes Interface types Yes • Number of ports 1 • Interface types Yes Interface types Yes • Number of ports 1 <td< td=""><td>Voltage</td><td>Yes</td></td<>	Voltage	Yes
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• shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 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 Encoder Connectable encoders Yes • 2-wire sensor Yes 1 Interface Yes Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autocrossing Yes Autocrossing Yes Number of ports 1 • Number of ports 1 • integrated switch No	— Input resistance (0 to 10 V)	≥100k ohms
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• Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 μs Encoder Ethernet • 2-wire sensor Yes • 1nterface Yes Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autoregotiation Yes Autoressing Yes Interface types Yes Autoressing Yes Interface types Yes Physics in generation Yes Autoressing Yes Interface types Yes • Number of ports 1 • Number of ports No • integrated switch No	Analog value generation for the inputs	
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• Conversion time (per channel) 625 μs Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Ethernet Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autoregotiation Yes Autoressing Yes Interface types Yes • Number of ports 1 • integrated switch No		N .
Encoder Connectable encoders • 2-wire sensor Interface Interface Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Autonegotiation Yes Autorossing Ves Interface types • Number of ports • integrated switch Protocols		
Connectable encoders Yes • 2-wire sensor Yes Interface PROFINET Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autonegotiation Yes Interface types Yes • Number of ports 1 • integrated switch No	 Conversion time (per channel) 	625 μs
• 2-wire sensor Yes 1. Interface PROFINET Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autonegotiation Yes Autocrossing Yes Interface types Yes • Number of ports 1 • integrated switch No	Encoder	
Interface Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autonegotiation Yes Autocrossing Yes Interface types Yes • Number of ports 1 • integrated switch No	Connectable encoders	
Interface type PROFINET Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autonegotiation Yes Autocrossing Yes Interface types Yes • Number of ports 1 • integrated switch No	• 2-wire sensor	Yes
Physics Ethernet Isolated Yes automatic detection of transmission rate Yes Autonegotiation Yes Autocrossing Yes Interface types Yes • Number of ports 1 • integrated switch No	1. Interface	
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AutonegotiationYesAutocrossingYesInterface typesYes• Number of ports1• integrated switchNoProtocolsYes	Isolated	Yes
Autocrossing Yes Interface types 1 • Number of ports 1 • integrated switch No Protocols 1	automatic detection of transmission rate	Yes
Interface types • Number of ports • integrated switch Protocols	Autonegotiation	Yes
• Number of ports 1 • integrated switch No Protocols I	Autocrossing	Yes
integrated switch No Protocols	Interface types	
Protocols	Number of ports	1
	 integrated switch 	No
PROFINET IO Controller Yes	Protocols	
	PROFINET IO Controller	Yes

PROFINET IO Device	Yes
 SIMATIC communication 	Yes
Open IE communication	Yes
• Web server	Yes
Media redundancy	No
PROFINET IO Controller	
 Transmission rate, max. 	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	No
— Prioritized startup	Yes
 — Number of IO devices with prioritized 	16
startup, max.	
 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	8
simultaneously activated/deactivated, max.	
— 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	2
device, max.	

Protocols	
Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) 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
— several passive connections per port,	Yes
supported	
 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	
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
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
Interrupts/diagnostics/status information	
Diagnostics indication LED	
• RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Integrated Functions	
Number of counters	3
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 interface	Up to 4 with SB 1222
PID controller	Yes
Number of alarm inputs	4
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 	Relays
 between the channels 	No
 between the channels, in groups of 	1
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	
 Interference immunity on 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	
IP degree of protection	IP20
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		
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	
 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.	420 g	

last modified:

02/24/2020