



SIMATIC S7-1200 G2: compact CPU 1212C DC/DC/DC; power supply: DC 20.4-28.8 V DC; onboard I/O: 8x DI 24 V DC; 6x DO 24 V DC; memory: program 150 KB data: 500 KB, retentivity: 20 KB

Figure similar

### General information

Product type designation	CPU 1212C DC/DC/DC
Firmware version	V1.0
• FW update possible	Yes
Engineering with	

- Programming package STEP 7 V20 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
Reverse polarity protection	Yes

### Input current

Current consumption (rated value)	125 mA; CPU only
Current consumption, max.	700 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V DC
$I^2t$	0.5 A <sup>2</sup> ·s

### Output current

for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM
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### Encoder supply

24 V encoder supply	
• 24 V	Yes; L+ minus 4 V DC min.
• Short-circuit protection	Yes
• Output current, max.	300 mA

### Power loss

Power loss, typ.	3 W
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### Memory

Work memory	
• integrated	650 kbyte
• integrated (for program)	150 kbyte
• integrated (for data)	500 kbyte
Load memory	
• integrated	8 Mbyte
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte; with SIMATIC memory card
Backup	

• present	Yes
• maintenance-free	Yes
• without battery	Yes
<b>CPU processing times</b>	
for bit operations, typ.	37 ns; / instruction
for word operations, typ.	30 ns; / instruction
for floating point arithmetic, typ.	74 ns; / instruction
<b>CPU-blocks</b>	
Number of elements (total)	4 000; Blocks (OB, FB, FC, DB) and UDTs
<b>OB</b>	
• Number of free cycle OBs	100
• Number of time alarm OBs	20
• Number of delay alarm OBs	20
• Number of cyclic interrupt OBs	20; with minimum OB 3x cycle of 1 ms
• Number of process alarm OBs	50
• Number of DPV1 alarm OBs	3
• Number of isochronous mode OBs	1
• Number of startup OBs	100
• Number of asynchronous error OBs	4
• Number of synchronous error OBs	2
• Number of diagnostic alarm OBs	1
<b>Data areas and their retentivity</b>	
Retentive data area (incl. timers, counters, flags), max.	20 kbyte
<b>Flag</b>	
• Size, max.	8 kbyte; Size of bit memory address area
<b>Local data</b>	
• per priority class, max.	64 kbyte; max. 16 KB per block
<b>Address area</b>	
<b>Process image</b>	
• Inputs, adjustable	1 kbyte
• Outputs, adjustable	1 kbyte
<b>Hardware configuration</b>	
Number of modules per system, max.	6
<b>Time of day</b>	
<b>Clock</b>	
• Hardware clock (real-time)	Yes
• Backup time	480 h; Typical
• Deviation per day, max.	2 s; at 25 °C
<b>Digital inputs</b>	
Number of digital inputs	8; Integrated
• of which inputs usable for technological functions	8; HSC (High Speed Counting)
Source/sink input	Yes
<b>Number of simultaneously controllable inputs</b>	
all mounting positions	
— up to 40 °C, max.	8
<b>Input voltage</b>	
• Rated value (DC)	24 V
• for signal "0"	5 V DC or 0.5 mA
• for signal "1"	15 V DC at 2.5 mA
<b>Input delay (for rated value of input voltage)</b>	
for standard inputs	
— parameterizable	0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms
— at "0" to "1", min.	0.1 µs
— at "0" to "1", max.	20 ms
for interrupt inputs	
— parameterizable	Yes
for technological functions	
— parameterizable	single phase: 6 HSCs @ 100 kHz & 2 standard @ 30 kHz, quadrature phase: 6

<b>Cable length</b>	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
<b>Digital outputs</b>	
Number of digital outputs	6; 20 kHz or 100 kHz
• of which high-speed outputs	4; 100 kHz (Qa.0 - Qa.3)
Limitation of inductive shutdown voltage to	L+ (-40 V)
<b>Switching capacity of the outputs</b>	
• with resistive load, max.	0.5 A
• on lamp load, max.	5 W
<b>Output voltage</b>	
• for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V
<b>Output current</b>	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	10 µA
<b>Output delay with resistive load</b>	
• "0" to "1", max.	1 µs; of the pulse outputs (Q a.0 to Q a.3), max. 1.0 µs; of the standard outputs (Qa.4 to Qa.5), max. 50 µs;
• "1" to "0", max.	3 µs; of the pulse outputs (Q a.0 to Q a.3), max. 3.0 µs; of the standard outputs (Qa.4 to Qa.5), max. 200 µs;
<b>Switching frequency</b>	
• of the pulse outputs, with resistive load, max.	100 kHz; 100 kHz max. (Qa.0 - Qa.3), 20 kHz max. (Qa.4 - Qa.5)
<b>Relay outputs</b>	
• Number of relay outputs	0
<b>Cable length</b>	
• shielded, max.	500 m
• unshielded, max.	150 m
<b>Analog inputs</b>	
Number of analog inputs	0
<b>Analog outputs</b>	
Number of analog outputs	0
<b>Encoder</b>	
Connectable encoders	
• 2-wire sensor	Yes
<b>1. Interface</b>	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
<b>Interface types</b>	
• RJ 45 (Ethernet)	Yes
• Number of ports	2
• integrated switch	Yes
<b>Protocols</b>	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes
<b>PROFINET IO Controller</b>	
• Transmission rate, max.	100 Mbit/s
<b>Services</b>	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	Yes

— IRT	Yes
— PROFlenergy	Yes; per user program
— Prioritized startup	Yes
— Number of IO devices with prioritized startup, max.	16
— Number of connectable IO Devices, max.	31
— Of which IO devices with IRT, max.	31
— Number of connectable IO Devices for RT, max.	31
— of which in line, max.	31
— Activation/deactivation of IO Devices	Yes
— Number of IO Devices that can be simultaneously activated/deactivated, max.	8
— 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.
<b>Update time for IRT</b>	
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
<b>Update time for RT</b>	
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
<b>PROFINET IO Device</b>	
<b>Services</b>	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; per user program
— Shared device	Yes
— Number of IO Controllers with shared device, max.	2
<b>Protocols</b>	
Supports protocol for PROFINET IO	Yes
PROFIsafe	No
PROFIBUS	No
OPC UA	No
AS-Interface	No
<b>Protocols (Ethernet)</b>	
• TCP/IP	Yes
• DHCP	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
<b>Number of connections</b>	
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs
• Number of connections reserved for ES/HMI/web	10
• Number of connections via integrated interfaces	88
<b>Redundancy mode</b>	
<b>Media redundancy</b>	
— MRP	Yes; as MRP redundancy manager and/or MRP client
— MRPD	Yes
<b>SIMATIC communication</b>	
• S7 routing	No
• S7 communication, as server	Yes
• S7 communication, as client	Yes
<b>Open IE communication</b>	
• TCP/IP	Yes
— Data length, max.	8 kbyte
— several passive connections per port, supported	Yes
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	8 kbyte

• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
• Encryption	Yes; Optional
<b>Web server</b>	
• supported	Yes
• HTTPS	Yes
• web API	Yes
— Number of sessions, max.	30
• User-defined websites	Yes
<b>Further protocols</b>	
• MODBUS	Yes
<b>Communication functions</b>	
<b>S7 communication</b>	
• supported	Yes
• as server	Yes
• as client	Yes
• User data per job, max.	See online help (S7 communication, user data size)
<b>Number of connections</b>	
• overall	PG Connections: 4 reserved; HMI Connections: 4 reserved / 82 max; S7 Connections: 78 max; Open User Connections: 78 max; Web Connections: 2 reserved / 80 max; Total Connections: 10 reserved / 88 max
<b>S7 message functions</b>	
Number of login stations for message functions, max.	32
Program alarms	Yes
Number of configurable program messages, max.	5 000
Number of loadable program messages in RUN, max.	2 500
Number of simultaneously active program alarms	
• Number of program alarms	600
• Number of alarms for system diagnostics	100
• Number of alarms for motion technology objects	160
<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>Diagnostic buffer</b>	
• present	Yes
<b>Traces</b>	
• Number of configurable Traces	4
• Memory size per trace, max.	512 kbyte
<b>Interrupts/diagnostics/status information</b>	
<b>Diagnostics indication LED</b>	
• RUN/STOP LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes
<b>Supported technology objects</b>	
Motion Control	Yes
• Number of available Motion Control resources for technology objects	800
• Required Motion Control resources	
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160

— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
• Number of available Extended Motion Control resources for technology objects	40
• Required Extended Motion Control resources	
— per cam (1 000 points and 50 segments)	2; 1000 points and 1 segment
— for each set of kinematics	30
• kinematics functions	
— kinematics with up to 4 interpolating axes	Yes
— kinematics with 5 or more interpolating axes	No
— user-defined kinematics	No
— SIMATIC Safe Kinematics	No
• Positioning axis	
— Number of positioning axes at motion control cycle of 4 ms (typical value)	10
— Number of positioning axes at motion control cycle of 8 ms (typical value)	10

#### Integrated Functions

Counter	Yes
• Number of counters	8
• Counting frequency, max.	100 kHz; Ia.0 to Ia.5: 100 kHz (80 kHz in quadrature mode), Ia.6 to Ia.7: 30 kHz (20 kHz in quadrature mode)
Frequency measurement	Yes
PID controller	Yes
Number of pulse outputs	8; individually assigned to CPU and Signal Board
Limit frequency (pulse)	100 kHz

#### Potential separation

Potential separation digital inputs	
• Potential separation digital inputs	Yes; field side to logic: 707 V DC (type test)
• between the channels	No
• Number of potential groups	1
Potential separation digital outputs	
• Potential separation digital outputs	Yes
• between the channels	No
• Number of potential groups	1

#### 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	
• 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 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	
• 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
<b>Standards, approvals, certificates</b>	
Siemens Eco Profile (SEP)	Siemens EcoTech

CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	No
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	No
Ecological footprint	
• environmental product declaration	Yes; type 2 acc. to ISO 14021
Global warming potential	
— global warming potential, (total) [CO <sub>2</sub> eq]	61.1 kg
— global warming potential, (during production) [CO <sub>2</sub> eq]	12.4 kg
— global warming potential, (during operation) [CO <sub>2</sub> eq]	49.2 kg
— global warming potential, (after end of life cycle) [CO <sub>2</sub> eq]	-0.635 kg
Security	
signed firmware update	Yes
Secure Boot	Yes
safely removing data	No
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C; No condensation
• max.	40 °C; at max. voltages and max. specifications
• horizontal installation, min.	-20 °C; No condensation
• horizontal installation, max.	60 °C; at rated voltages, 50 % of max. specification and alternate IO active
• vertical installation, min.	-20 °C; No condensation
• vertical installation, max.	50 °C; at rated voltages, 50 % of max. specification and alternate IO active
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Operation, min.	540 hPa
• Operation, max.	1 140 hPa
• Storage/transport, min.	540 hPa
• Storage/transport, max.	1 140 hPa
Altitude during operation relating to sea level	
• Installation altitude, min.	-1 000 m
• Installation altitude, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	
• Operation, max.	95 %; no condensation
Vibrations	
• Vibration resistance during operation acc. to IEC 60068-2-6	3.5 mm from 5 - 8.4 Hz, 1g from 8.4 - 150 Hz
• 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	
• 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
Configuration	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
Know-how protection	

• User program protection/password protection	Yes		
<b>Access protection</b>			
• protection of confidential configuration data	Yes		
• Protection level: Write protection	Yes		
• Protection level: Read/write protection	Yes		
• Protection level: Complete protection	Yes		
• User administration	Yes; device-wide		
• Number of users	100		
• Number of groups	100		
• Number of roles	50		
<b>Cycle time monitoring</b>			
• adjustable	Yes		
<b>Dimensions</b>			
Width	70 mm		
Height	125 mm		
Depth	100 mm		
<b>Weights</b>			
Weight, approx.	319 g		
<b>Classifications</b>			
		Version	Classification
	eClass	14	27-24-22-07
	eClass	12	27-24-22-07
	eClass	9.1	27-24-22-07
	eClass	9	27-24-22-07
	eClass	8	27-24-22-07
	eClass	7.1	27-24-22-07
	eClass	6	27-24-22-07
	ETIM	10	EC000236
	ETIM	9	EC000236
	ETIM	8	EC000236
	ETIM	7	EC000236
	IDEA	4	3565
	UNSPSC	15	32-15-17-05

#### Approvals / Certificates

##### General Product Approval


[KC](#)
[Miscellaneous](#)
[Manufacturer Declaration](#)
[China RoHS](#)

##### General Product Approval

[EMV](#)
[For use in hazardous locations](#)

[TUEV](#)
[KC](#)


##### For use in hazardous locations

##### Test Certificates

##### Maritime application

##### Environment

[CCC-Ex](#)
[Type Test Certificates/Test Report](#)

[Siemens EcoTech](#)


#### Industrial Communication

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