SIEMENS

Data sheet

6ES7215-1HG40-0XB0

SIMATIC S7-1200, CPU 1215C, compact CPU, DC/DC/relay, 2 PROFINET ports, onboard I/O: 14 DI 24 V DC; 10 DO relay 2 A, 2 AI 0-10 V DC, 2 AO 0-20 mA DC, Power supply: DC 20.4-28.8 V DC, Program/data memory 125 KB



General information	
Product type designation	CPU 1215C DC/DC/relay
Firmware version	V4.4
Engineering with	
Programming package	STEP 7 V16 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
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 (rated value)	500 mA; CPU only
Current consumption, max.	1 500 mA; CPU with all expansion modules

Inrush current, max.	12 A; at 28.8 V DC
l²t	0.5 A²·s
Output current for backplane bus (5 V DC), max.	1 600 mA; Max. 5 V DC for SM and CM
ioi backpiane bus (5 v bc), max.	1 000 IIIA, MAX. 3 V DC IOI SIVI AIIU CIVI
Encoder supply	
24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	12 W
Marram	
Memory Work memory	
• integrated	125 kbyte
expandable	No
Load memory	
• integrated	4 Mbyte
 Plug-in (SIMATIC Memory Card), max. 	with SIMATIC memory card
Backup	
• present	Yes
maintenance-free	Yes
• without battery	Yes
·	
CPU processing times	0.00
for bit operations, typ.	0.08 µs; / instruction
for word operations, typ. for floating point arithmetic, typ.	1.7 μs; / instruction 2.3 μs; / instruction
ior iloating point antilinetic, typ.	2.3 μs, / πισιιασιίστ
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	The state of the s
• Number, max.	Limited only by RAM for code
Data areas and their retentivity	40 library
Retentive data area (incl. timers, counters, flags), max.	10 kbyte
Flag	
• Number, max.	8 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	
Address area Process image	

• Inputs, adjustable	1 kbyte
Outputs, adjustable	1 kbyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
T	
Time of day Clock	
Hardware clock (real-time)	Yes
	480 h; Typical
Backup time	±60 s/month at 25 °C
Deviation per day, max.	100 S/IIIOIIIII at 25 C
Digital inputs	
Number of digital inputs	14; Integrated
 of which inputs usable for technological 	6; HSC (High Speed Counting)
functions	
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	14
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	Yes; 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 & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 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	10; 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	

• "0" to "1", max.	10 ms; max.
• "1" to "0", max.	10 ms; max.
Relay outputs	
Number of relay outputs	10
 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
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
A - la - l	
Analog outputs Number of analog outputs	2
Output ranges, current	2
• 0 to 20 mA	Yes
0 to 20 min	100
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
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
Resolution with overrange (bit including sign),	10 bit
max.	
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes

Interface types	
**	Yes
• RJ 45 (Ethernet)	2
Number of ports	
• integrated switch	Yes
Protocols	Yes
PROFINET IO Controller	
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	Yes; as MRP client
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	Yes; as MRP client
— MRPD	No
— PROFlenergy	No
 Prioritized startup 	Yes
 Number of IO devices with prioritized startup, max. 	16
— Number of connectable IO Devices, max.	16
 Number of connectable IO Devices for RT, max. 	16
— of which in line, max.	16
 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.
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	Yes; as MRP client
— MRPD	No

— PROFlenergy	Yes
— Shared device	Yes
Number of IO Controllers with shared device, max.	2

Protocols Supports protocol for PROFINET IO PROFIBUS Yes, CM 1243-5 (master) or CM 1242-5 (slave) required AS-Interface Protocols (Ethernet) • TCP/IP • OHCP • No • SNMP • DCP • LLDP Open Ecommunication • TCP/IP — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • Ves • Supported • User-defined websites OPC UA • Runtime license required • OPC UA Server — Application authentication — Number of secsions, max. — Number of secsions, max. — Number of secsions per session, max. — Sampling interval, min. — Publishing interval, min. — Number of server interfaces, max. — Number of nodes for user-defined server interfaces, max. Further protocols • MODBUS Yes Yes Yes 1243-3 (master) or CM 1242-5 (slave) required Yes Yes 1243-5 (master) or CM 1242-5 (slave) required Yes Yes 1243-5 (master) or CM 1242-5 (slave) required Yes Yes Yes 4 1243-5 (master) or CM 1242-5 (slave) required Yes Yes Yes 4 1243-5 (master) or CM 1242-5 (slave) required Yes Yes Yes 4 244-5 (slave) required Yes Yes Yes Yes Yes Yes Yes Y		
PROFIBUS AS-Interface Yes; CM 1243-5 (master) or CM 1242-5 (slave) required Protocols (Ethernet) • TCP/IP • DNCP • DNCP • SNMP • DCP • LLDP Oper IE communication • TCP/IP — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • UPP — Data length was. • Supported • User-defined websites OPC UA • Runtime license required • OPC UA Server — Application authentication — Number of sessions, max. — Number of sever interfaces, max. — Number of server interfaces, max. — Number of server interfaces, max. — Number of server interfaces, max. — Number of onodes for user-defined server interfaces, max. — Number of nodes for user-defined server interfaces, max. — Number of nodes for user-defined server interfaces, max. — Number of nodes for user-defined server interfaces, max. — Number of nodes for user-defined server interfaces, max. — Number of nodes for user-defined server interfaces, max. Further protocols	Protocols Supports gratecal for PROFINITIO	Vac
AS-Interface Protocols (Ethernet) • TCP/IP • DHCP • DHCP • DHCP • SNMIP • DCP • LLDP Popen IE communication • TCP/IP — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • UDP — Data length was. • USP-defined websites Poper UA • Runtime license required • OPC UA Server — Application authentication — Number of sessions, max. — Number of sessions, max. — Number of sessions per session, max. — Sampling interval, min. — Publishing interval, min. — Number of nordes for user-defined server interfaces, max. — Number of nordes for user-defined server interfaces, max. — Number of nordes for user-defined server interfaces, max. — Number of sover interfaces, max. — Number of nordes for user-defined server interfaces, max. — Number of nordes for user-defined server interfaces, max. — Number of nordes for user-defined server interfaces, max. — Number of nordes for user-defined server interfaces, max. Further protocols		
Protocols (Ethernet) TCP/IP TCP/IP TCP/IP PTCP PT		
TCP/IP DHCP DHCP DHCP SNMP DCP LLDP Yes DCP LLDP Yes Open IE communication TCP/IP Data length, max. Skbyte UDP Data length, max. Skbyte UDP Data length, max. Type Data length, max. Yes UDP Data length, max. Yes Supported User-defined websites Yes OPC UA Runtime license required OPC UA Server Application authentication Number of sessions, max. Number of accessible variables, max. Number of monitored items, max. Number of monitored items, max. Number of monitored items, max. Number of nodes for user-defined server interfaces, max. Further protocols		Yes; CM 1243-2 required
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- Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • Ves — Data length, max. 1 472 byte Web server • supported • User-defined websites OPC UA • Runtime license required • OPC UA Server — Application authentication — Application authentication — Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Rsa15, Basic256Sha256 — User authentication — Number of sessions, max. — Number of subscriptions per session, max. — Number of subscriptions per session, max. — Sampling interval, min. — Publishing interval, min. — Number of server interfaces, max. — Number of nodes for user-defined server interfaces, max. — Number of nodes for user-defined server interfaces, max. Further protocols	Open IE communication	
Iso-on-TCP (RFC1006) Data length, max. Item Part length, max. Isolate length, max. Item Part lengt	• TCP/IP	Yes
Data length, max. UDP	— Data length, max.	8 kbyte
UDP Data length, max. Web server supported User-defined websites PCU UA Runtime license required OPC UA Server Application authentication Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 User authentication Number of sessions, max. Number of subscriptions per session, max. Sampling interval, min. Publishing interval, min. Number of server interfaces, max. Number of nodes for user-defined server interfaces, max. Number of nodes for user-defined server interfaces, max. Number of nodes for user-defined server interfaces, max. Further protocols	• ISO-on-TCP (RFC1006)	Yes
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Web server ● supported Yes ● User-defined websites Yes OPC UA ● Runtime license required Yes; "Basic" license required ● OPC UA Server Yes; Data access (read, write, subscribe), runtime license required — Application authentication Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Rsa15	• UDP	Yes
Supported User-defined websites Yes OPC UA Runtime license required OPC UA Server Yes; "Basic" license required Yes; "Basic" license required OPC UA Server Yes; Data access (read, write, subscribe), runtime license required Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Rsa15, Basic256Sha256 — User authentication — Number of sessions, max. — Number of accessible variables, max. — Number of subscriptions per session, max. — Sampling interval, min. — Publishing interval, min. — Publishing interval, min. — Number of monitored items, max. — Number of server interfaces, max. — Number of nodes for user-defined server interfaces, max. Further protocols	— Data length, max.	1 472 byte
User-defined websites Per User-defined websites Yes; "Basic" license required Per Runtime license required Per CUA Server Per Spata access (read, write, subscribe), runtime license required Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 User authentication Number of sessions, max. Number of accessible variables, max. Number of subscriptions per session, max. Sampling interval, min. Publishing interval, min. Publishing interval, min. Number of monitored items, max. Number of server interfaces, max. Number of nodes for user-defined server interfaces, max. Further protocols	Web server	
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● OPC UA Server Yes; Data access (read, write, subscribe), runtime license required Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 — User authentication — Number of sessions, max. — Number of accessible variables, max. — Number of subscriptions per session, max. — Sampling interval, min. — Publishing interval, min. — Number of monitored items, max. — Number of server interfaces, max. — Number of nodes for user-defined server interfaces, max. Further protocols	OPC UA	
required Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Rsa15, Basic256Rsa15, Basic256Sha256 — User authentication "anonymous" or by user name & password — Number of sessions, max. 5 — Number of accessible variables, max. 1 000 — Number of subscriptions per session, max. 5 — Sampling interval, min. 100 ms — Publishing interval, min. 200 ms — Number of monitored items, max. 500 — Number of server interfaces, max. 2 — Number of nodes for user-defined server interfaces, max.	Runtime license required	Yes; "Basic" license required
Basic256Rsa15, Basic256Sha256 — User authentication "anonymous" or by user name & password — Number of sessions, max. 5 — Number of accessible variables, max. 1 000 — Number of subscriptions per session, max. 5 — Sampling interval, min. 100 ms — Publishing interval, min. 200 ms — Number of monitored items, max. 5 — Number of server interfaces, max. 2 — Number of nodes for user-defined server interfaces, max. 1 000 Further protocols	OPC UA Server	
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 — Sampling interval, min. — Publishing interval, min. — Number of monitored items, max. — Number of server interfaces, max. — Number of nodes for user-defined server interfaces, max. Further protocols 1000 ms 500 2 1000	 Number of accessible variables, max. 	1 000
— Publishing interval, min. — Number of monitored items, max. — Number of server interfaces, max. — Number of nodes for user-defined server interfaces, max. Further protocols 200 ms 500 1 000	 Number of subscriptions per session, max. 	5
 Number of monitored items, max. Number of server interfaces, max. Number of nodes for user-defined server interfaces, max. Further protocols 500 2 1 000	— Sampling interval, min.	100 ms
 Number of server interfaces, max. Number of nodes for user-defined server interfaces, max. Further protocols 	— Publishing interval, min.	200 ms
— Number of nodes for user-defined server interfaces, max. Further protocols	 Number of monitored items, max. 	500
interfaces, max. Further protocols	— Number of server interfaces, max.	2
		1 000
		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	8 connections for open user communication (active or passive): TSEND_C, TRCV_C, TCON, TDISCON, TSEND and TRCV, 8 CPU/CPU connections (Client or Server) for GET/PUT data, 6 connections for dynamic assignment to GET/PUT or open user communication
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	6
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	2	
EMC		
Interference immunity against discharge of static electric	city	
 Interference immunity against discharge of 	Yes	
static electricity acc. to IEC 61000-4-2		
 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		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	
Ambient temperature during operation		
• min.	-20 °C	

• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or
	5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or
	10 at 55 °C horizontal or 45 °C vertical
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	130 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	585 g
last modified:	10/07/2020