6ES7217-1AG40-0XB0

**Data sheet** 

SIMATIC S7-1200, CPU 1217C, compact CPU, DC/DC/DC, 2 PROFINET ports onboard I/O: 10 DI 24 V DC; 4 DI RS422/485; 6 DO 24 V DC; 0.5A; 4 DO RS422/485; 2 AI 0-10 V DC, 2 AO 0-20 mA Power supply: DC 20.4-28.8V DC, Program/data memory 150 KB



217C DC/DC/DC
7 V17 or higher
A; CPU only
mA; CPU with all expansion modules
t 28.8 V DC
S
mA; Max. 5 V DC for SM and CM
us 4 V DC min.
yte
e
MATIC memory card
יו ביי ביי ביי ביי ביי ביי ביי ביי ביי ב

CPU processing times	
for bit operations, typ.	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / Operation
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
ОВ	
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	14 kbyte
Flag	
• Size, 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	
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
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	14; Integrated
of which inputs usable for technological functions	6; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	100
all mounting positions	
— up to 40 °C, max.	14
Input voltage	17
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)	10 V DO 01 2.0 HIM
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
parameterizable	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
<ul> <li>of which high-speed outputs</li> </ul>	4; 100 kHz Pulse Train Output
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	
Output voltage	0.1 \tag{with 10 kOhm load}
• for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V
Output current	0.5.4
• 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 μs
• "1" to "0", max.	5 μs
Switching frequency	
of the pulse outputs, with resistive load, max.	100 kHz
Relay outputs	
Number of relay outputs	0
Cable length	
<ul><li>shielded, max.</li></ul>	500 m
<ul><li>unshielded, max.</li></ul>	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	- TOOK OHING
-	100 m; twisted and chiefded
shielded, max.	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	2
Output ranges, current	
• 0 to 20 mA	Yes
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul> <li>Resolution with overrange (bit including sign), max.</li> </ul>	10 bit
<ul> <li>Integration time, parameterizable</li> </ul>	Yes
<ul> <li>Conversion time (per channel)</li> </ul>	625 µs
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
Resolution with overrange (bit including sign), max.	10 bit
	10 bit
Encoder	
Connectable encoders	V
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	
RJ 45 (Ethernet)	Yes
<ul><li>RJ 45 (Ethernet)</li><li>Number of ports</li></ul>	
<ul> <li>Number of ports</li> </ul>	2
<ul><li>Number of ports</li><li>integrated switch</li></ul>	
Number of ports     integrated switch  Protocols	2 Yes
<ul> <li>Number of ports</li> <li>integrated switch</li> <li>Protocols</li> <li>PROFINET IO Controller</li> </ul>	2 Yes
<ul> <li>Number of ports</li> <li>integrated switch</li> </ul> Protocols <ul> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> </ul>	2 Yes Yes Yes
<ul> <li>Number of ports</li> <li>integrated switch</li> </ul> Protocols <ul> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>SIMATIC communication</li> </ul>	2 Yes Yes Yes Yes
<ul> <li>Number of ports</li> <li>integrated switch</li> </ul> Protocols <ul> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>SIMATIC communication</li> <li>Open IE communication</li> </ul>	2 Yes Yes Yes Yes Yes Yes Yes; Optionally also encrypted
<ul> <li>Number of ports</li> <li>integrated switch</li> </ul> Protocols <ul> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>SIMATIC communication</li> <li>Open IE communication</li> <li>Web server</li> </ul>	2 Yes  Yes Yes Yes Yes Yes; Optionally also encrypted Yes
<ul> <li>Number of ports</li> <li>integrated switch</li> </ul> Protocols <ul> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>SIMATIC communication</li> <li>Open IE communication</li> <li>Web server</li> <li>Media redundancy</li> </ul>	2 Yes Yes Yes Yes Yes Yes; Optionally also encrypted
<ul> <li>Number of ports</li> <li>integrated switch</li> </ul> Protocols <ul> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>SIMATIC communication</li> <li>Open IE communication</li> <li>Web server</li> </ul>	2 Yes  Yes  Yes  Yes  Yes  Yes  Yes; Optionally also encrypted  Yes

Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
Isochronous mode	No
— IRT	No
— PROFlenergy	No
Prioritized startup	Yes
Number of IO devices with prioritized startup,	16
max.	10
<ul> <li>Number of connectable IO Devices, max.</li> </ul>	16
Number of connectable IO Devices for RT,	16
max.	
— of which in line, max.	16
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>Number of IO Devices that can be</li> </ul>	8
simultaneously activated/deactivated, max.	
<ul><li>— Updating time</li></ul>	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	devices and the quantity of configured user data.
Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes
— Shared device	Yes
Number of IO Controllers with shared device,	2
max.	
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIsafe	No
PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) required
OPC UA	Yes; OPC UA Server
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Redundancy mode	
Redundancy mode  Media redundancy	
·	Yes; as MRP redundancy manager and/or MRP client
Media redundancy	Yes; as MRP redundancy manager and/or MRP client No
Media redundancy — MRP	
Media redundancy — MRP — MRPD	
Media redundancy  — MRP  — MRPD  SIMATIC communication	No
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing	No
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication	No Yes
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP	Yes Yes
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.	Yes Yes 8 kbyte
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)	Yes Yes 8 kbyte Yes
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.	Yes Yes 8 kbyte Yes 8 kbyte
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.	Yes Yes 8 kbyte Yes 8 kbyte Yes
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.  • UDP  — Data length, max.	Yes Yes 8 kbyte Yes 8 kbyte Yes
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.  • UDP  — Data length, max.  Web server	Yes  Yes 8 kbyte Yes 8 kbyte Yes 1 472 byte
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.  • UDP  — Data length, max.  Web server  • supported	Yes  Yes  8 kbyte Yes 8 kbyte Yes 1 472 byte
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.  • UDP  — Data length, max.  Web server  • supported  • User-defined websites	Yes  Yes  8 kbyte Yes 8 kbyte Yes 1 472 byte
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.  • UDP  — Data length, max.  Web server  • supported  • User-defined websites  OPC UA	Yes  Yes 8 kbyte Yes 8 kbyte Yes 1 472 byte  Yes Yes
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.  • UDP  — Data length, max.  Web server  • supported  • User-defined websites  OPC UA  • Runtime license required  • OPC UA Server	Yes  Yes  8 kbyte  Yes  8 kbyte  Yes  1 472 byte  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Y
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.  • UDP  — Data length, max.  Web server  • supported  • User-defined websites  OPC UA  • Runtime license required	Yes  Yes  8 kbyte  Yes  8 kbyte  Yes  1 472 byte  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Y
Media redundancy  — MRP  — MRPD  SIMATIC communication  • S7 routing  Open IE communication  • TCP/IP  — Data length, max.  • ISO-on-TCP (RFC1006)  — Data length, max.  • UDP  — Data length, max.  Web server  • supported  • User-defined websites  OPC UA  • Runtime license required  • OPC UA Server	Yes  Yes  8 kbyte  Yes  8 kbyte  Yes  1 472 byte  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Y

<ul><li>Number of sessions, max.</li></ul>	10
<ul> <li>Number of subscriptions per session, max.</li> </ul>	50
<ul><li>— Sampling interval, min.</li></ul>	100 ms
<ul><li>— Publishing interval, min.</li></ul>	200 ms
<ul> <li>Number of server methods, max.</li> </ul>	20
<ul> <li>Number of monitored items, max.</li> </ul>	1 000
<ul> <li>Number of server interfaces, max.</li> </ul>	2
<ul> <li>Number of nodes for user-defined server</li> </ul>	2 000
interfaces, max.	
Further protocols	
MODBUS	Yes
communication functions / header	
S7 communication	
<ul><li>supported</li></ul>	Yes
• as server	Yes
• as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Number of connections	
• overall	PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max
Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	inpute outpute, monter, and, also, allowed in each anterior, and increase and allowed in each anterior.
Forcing	Yes
Diagnostic buffer	100
• present	Yes
Traces	100
Number of configurable Traces	2
Memory size per trace, max.	512 kbyte
Interrupts/diagnostics/status information	o 12 mayte
Diagnostics indication LED	Voc
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Integrated Functions	
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated outputs
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	1 MHz
Potential separation	
Potential separation digital inputs	
Potential separation digital inputs	No
<ul> <li>between the channels, in groups of</li> </ul>	1
Potential separation digital outputs	
Potential separation digital outputs	Yes
between the channels	No
between the channels, in groups of	1
EMC	
Interference immunity against discharge of static electricity	
Interference immunity against discharge of static     Interference immunity against discharge of static	Yes
electricity acc. to IEC 61000-4-2	103
Test voltage at air discharge	8 kV
<u> </u>	

	• • • •
— Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	V
<ul> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> </ul>	Yes
<ul> <li>Interference immunity on signal cables acc. to IEC 61000-4-4</li> </ul>	Yes
Interference immunity against voltage surge	
Interference immunity on supply lines acc. to IEC	Yes
61000-4-5	
Interference immunity against conducted variable disturbance	e induced by high-frequency fields
<ul> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>	Yes
Emission of radio interference acc. to EN 55 011	
<ul> <li>Limit class A, for use in industrial areas</li> </ul>	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	11 20
CE mark	Yes
	Yes
UL approval	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
<ul> <li>horizontal installation, min.</li> </ul>	-20 °C
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
<ul> <li>vertical installation, min.</li> </ul>	-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	1 000 iii u
	-1 000 m
Installation altitude, min.	
Installation altitude, max.  Polative humidity	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	05 % no condensation
Operation, max.  Vibrations	95 %; no condensation
Vibrations  • Vibration registance during energical age to IEC	2 a (m/o²) wall maunting 1 a (m/o²) DIM roil
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 / header	
configuration / programming / header	

Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
<ul> <li>protection of confidential configuration data</li> </ul>	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
Protection level: Complete protection	Yes
programming / cycle time monitoring / header	
adjustable	Yes
Dimensions	
Width	150 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	530 g

4/12/2021

last modified: