SIEMENS

Data sheet

6ES7214-1HG31-0XB0



SIMATIC S7-1200, CPU 1214C, compact CPU, DC/DC/relay, onboard I/O: 14 DI 24 V DC; 10 DO relay 2 A; 2 AI 0-10 V DC, Power supply: AC 20.4-28.8V DC, Program/data memory 75 KB

Product type designation Engineering with Programming package Supply voltage Rated value (DC) 24 V DC Permissible range, lower limit (DC) permissible range, upper limit (DC) permissible rang	General information	
Engineering with Programming package Supply voltage Rated value (DC) 24 V DC Permissible range, lower limit (DC) 28.8 V Load voltage L+ Rated value (DC) permissible range, upper limit (DC) 28.8 V Load voltage L+ Rated value (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, lower limit (DC) permissible range lower limi		CPU 1214C DC/DC/relav
Programming package Supply voltage Rated value (DC) • 24 V DC permissible range, lower limit (DC) • 28 8 V Load voltage L+ • Rated value (DC) • permissible range, lower limit (DC) permissible range, lower limit (DC) • permissible range, upper		
Rated value (DC) • 24 V DC permissible range, lower limit (DC) permissible range, upper limit (DC) 28.8 V Load voltage L+ • Rated value (DC) • permissible range, lower limit (DC) permissible range, upper limit (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC) • permissible range, lower limit (DC) • permissible range (DC) •		STEP 7 V11 SP2 or higher
Rated value (DC) • 24 V DC permissible range, lower limit (DC) permissible range, upper limit (DC) 28.8 V Load voltage L+ • Rated value (DC) • permissible range, lower limit (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC) • permissible range, upper limit (DC) • permissible range, upper limit (DC) 100		
e 24 V DC permissible range, lower limit (DC) permissible range, upper limit (DC) 28.8 V Load voltage L+ Rated value (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible ra		
permissible range, lower limit (DC) permissible range, upper limit (DC) Load voltage L+ Rated value (DC) permissible range, lower limit (,	Yes
permissible range, upper limit (DC) Load voltage L+ • Rated value (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC) • permissible range, upper limit (DC) • permissible range, upper limit (DC) • permissible range, upper	permissible range, lower limit (DC)	20.4 V
Load voltage L+ • Rated value (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC) • permissible range, upper limit (DC) permissible range, upper limit (DC) 250 V Input current Current consumption (rated value) Current consumption, max. 1.2 A; 24 V DC Inrush current, max. 1.2 A; at 28.8 V Output current for backplane bus (5 V DC), max. 1 600 mA; Max. 5 V DC for SM and CM Encoder supply 24 V encoder supply • 24 V Power loss Power loss, typ. 12 W Memory Work memory • integrated • expandable No Load memory • integrated • expandable No Load memory • integrated • expandable No Current • without battery CPU processing times for bit operations, typ. 1.7 µs; / instruction for word operations, typ. for floating point arithmetic, typ. 2.5 µs; / instruction		28.8 V
permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) 250 V Input current		
• permissible range, upper limit (DC) Input current Current consumption (rated value) Current consumption, max. 1.2 A; 24 V DC Inrush current, max. 12 A; at 28.8 V Output current for backplane bus (5 V DC), max. Incoder supply 24 V encoder supply 24 V encoder supply 24 V encoder supply 24 V encoder supply 12 W Memory Work memory integrated expandable Integrated for backplane du 4 Mbyte Backup experiment present experiment yes; maintenance-free without battery CPU processing times for bit operations, typ. 1.7 µs; / instruction for word operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction 1.5 NO 500 mA; Typical 600 mA	Rated value (DC)	24 V
Input current Current consumption (rated value) 500 mA; Typical	 permissible range, lower limit (DC) 	5 V
Current consumption (rated value) Current consumption, max. 1.2 A; 24 V DC Inrush current, max. 12 A; at 28.8 V Output current for backplane bus (5 V DC), max. 1 600 mA; Max. 5 V DC for SM and CM Encoder supply 24 V encoder supply 24 V encoder supply 24 V encoder supply 12 W Memory Work memory integrated expandable Load memory integrated expandable Load memory integrated expandable Ves; maintenance-free without battery CPU processing times for bit operations, typ. 1.7 µs; / instruction for word operations, typ. 1.7 µs; / instruction 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction	 permissible range, upper limit (DC) 	250 V
Current consumption, max. Inrush current, max. Output current for backplane bus (5 V DC), max. Inrush current for backplane bus (5 V DC), max. Inrush current for backplane bus (5 V DC), max. Integrated	Input current	
Inrush current, max. Output current for backplane bus (5 V DC), max. Incoder supply 24 V encoder supply 24 V encoder supply 24 V encoder supply 25 V permissible range: 20.4V to 28.8V Power loss Power loss Power loss Power losy, typ. Integrated integrated expandable No Load memory integrated present vertical expandable Backup present without battery Permissible range: 20.4V to 28.8V Power loss 4 Wbyte Permissible range: 20.4V to 28.8V Power loss Power loss Power loss 0 integrated 4 Mbyte Backup 1 Yes; maintenance-free yes Permissible range: 20.4V to 28.8V Permissible range: 20.4V to 28.8V Permissible range: 20.4V to 28.8V Power loss 0 integrated 1 Yes; maintenance-free yes Permissible range: 20.4V to 28.8V Power loss 0 integrated 1 Yes; maintenance-free yes Permissible range: 20.4V to 28.8V Power loss 0 integrated 1 Yes; maintenance-free yes Power loss Power loss 1 Yes; maintenance-free yes Power loss Power loss 1 Yes; maintenance-free yes Power loss Power loss 1 Yes; instruction	Current consumption (rated value)	500 mA; Typical
Output current for backplane bus (5 V DC), max. Encoder supply 24 V encoder supply • 24 V Permissible range: 20.4V to 28.8V Power loss Power loss, typ. 12 W Memory Work memory • integrated • expandable No Load memory • integrated 9 resent • present • without battery Encoder supply O.085 µs; / instruction for floating point arithmetic, typ. 1 600 mA; Max. 5 V DC for SM and CM Encoder SM and CM Permissible range: 20.4V to 28.8V Power loss 4 W byte 8 A Mbyte 9 CPU processing times 1 A Mbyte 1 A Mbyte	Current consumption, max.	1.2 A; 24 V DC
for backplane bus (5 V DC), max. Encoder supply 24 V encoder supply • 24 V Permissible range: 20.4V to 28.8V Power loss Power loss, typ. Memory Work memory • integrated • expandable Load memory • integrated • present • without battery Permissible range: 20.4V to 28.8V Permissible range: 20.4V to 28.8V Power loss, typ. 12 W Memory Work memory • integrated • A Mbyte Backup • present • without battery Pes; maintenance-free Yes CPU processing times for bit operations, typ. 1.7 µs; / instruction for word operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction	Inrush current, max.	12 A; at 28.8 V
Encoder supply 24 V encoder supply • 24 V Permissible range: 20.4V to 28.8V Power loss Power loss, typ. 12 W Memory Work memory • integrated • expandable Load memory • integrated 4 Mbyte Backup • present • without battery CPU processing times for bit operations, typ. for floating point arithmetic, typ. 12 W Permissible range: 20.4V to 28.8V Power loss 12 W Memory Ves For kbyte 4 Mbyte Backup 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Output current	
24 V Permissible range: 20.4V to 28.8V Power loss Power loss, typ. 12 W Memory Work memory • integrated • expandable Load memory • integrated 4 Mbyte Backup • present • without battery CPU processing times for bit operations, typ. for floating point arithmetic, typ. Permissible range: 20.4V to 28.8V Permissible range: 20.4V to 28.8V A Wbyte 12 W Memory 4 Mbyte 4 Mbyte 9 resent Yes; maintenance-free Yes 1.7 µs; / instruction	for backplane bus (5 V DC), max.	1 600 mA; Max. 5 V DC for SM and CM
• 24 V Permissible range: 20.4V to 28.8V Power loss Power loss, typ. 12 W Memory Work memory • integrated • expandable No Load memory • integrated 4 Mbyte Backup • present • without battery CPU processing times for bit operations, typ. for floating point arithmetic, typ. Permissible range: 20.4V to 28.8V A Western Selection (12 W) A Western Selecti	Encoder supply	
Power loss Power loss, typ. 12 W Memory Work memory integrated expandable No Load memory integrated fried and a second and a s	24 V encoder supply	
Power loss, typ. Memory Work memory integrated expandable No Load memory integrated fine present expressing times for bit operations, typ. for floating point arithmetic, typ. 12 W Memory 4 Mbyte 8 W 75 kbyte No No 4 Mbyte 8 W 75 kbyte No	• 24 V	Permissible range: 20.4V to 28.8V
Memory Work memory ● integrated 75 kbyte ● expandable No Load memory ● integrated 4 Mbyte 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. 2.5 μs; / instruction	Power loss	
Work memory	Power loss, typ.	12 W
 integrated expandable No Load memory integrated 4 Mbyte Backup present without battery CPU processing times for bit operations, typ. for word operations, typ. for word operations, typ. for floating point arithmetic, typ. 2.5 µs; / instruction 	Memory	
expandable Load memory • integrated	Work memory	
Load memory	• integrated	75 kbyte
integrated 4 Mbyte 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. 2.5 μs; / instruction	expandable	No
Backup	Load memory	
 present 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. 2.5 μs; / instruction 	integrated	4 Mbyte
without battery CPU processing times for bit operations, typ. for word operations, typ. 1.7 μs; / instruction for floating point arithmetic, typ. 2.5 μs; / instruction	Backup	
CPU processing times for bit operations, typ. 0.085 μs; / instruction for word operations, typ. 1.7 μs; / instruction for floating point arithmetic, typ. 2.5 μs; / instruction	present	Yes; maintenance-free
for bit operations, typ. $0.085 \mu s$; / instructionfor word operations, typ. $1.7 \mu s$; / instructionfor floating point arithmetic, typ. $2.5 \mu s$; / instruction		Yes
for word operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction	CPU processing times	
for floating point arithmetic, typ. 2.5 µs; / instruction	for bit operations, typ.	0.085 μs; / instruction
	for word operations, typ.	1.7 µs; / instruction
CPU-blocks		2.5 µs; / instruction
	CPU-blocks	

N 1 (11 1 (1 1 N	DD 50 50
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 (incl. timers, counters, flags), max.	10 kbyte
Flag	,
• Size, max.	8 kbyte; Size of bit memory address area
Address area	
I/O address area	
• Inputs	1 024 byte
Outputs	1 024 byte
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	00 0/monun ut 20 0
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	163
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 current	10 V DO 012.0 HIV
• for signal "1", typ.	1 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 technological functions	
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3
	@ 30 kHz
Cable length	F00 F0 ()
• 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
Short-circuit protection	No; to be provided externally
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 mules outmake with reciptive load many	411-
of the pulse outputs, with resistive load, max.	1 Hz
Relay outputs	40
Number of relay outputs	10
Number of operating cycles, max. Cable leasth	mechanically 10 million, at rated load voltage 100 000
Cable length	F00
• 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
Analog outputs	
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	
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	100
• RJ 45 (Ethernet)	Yes
Protocols	100
PROFINET IO Controller	Yes
Protocols	
	Yes
Supports protocol for PROFINET IO	
PROFIBUS PROFIBUS	No Yes
AS-Interface Protocols (Ethernet)	Yes
Protocols (Ethernet)	Voc
TCP/IP Onen IF communication	Yes
Open IE communication	Voo
• TCP/IP	Yes
• ISO-on-TCP (RFC1006)	Yes
• UDP	Yes
Web server	Voc
supported Hear defined websites	Yes
User-defined websites Further protected.	Yes
Further protocols	Van
• MODBUS	Yes
communication functions / header	
S7 communication	
• supported	Yes
• as server	Yes
as client	Yes
Test commissioning functions	
Status/control	

	V
Status/control variable	Yes
• Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	Van
Forcing Diagnostic buffer	Yes
Diagnostic buffer	Voc
• present	Yes
Integrated Functions	
Counter	
Number of counters Counting frequency, may	6 100 kHz
Counting frequency, max. Frequency massurement	Yes
Frequency measurement	Yes
controlled positioning PID controller	Yes
Number of alarm inputs	4
	-
Potential separation	
Potential separation digital inputs	EDOV AC for 1 minute
Potential separation digital inputs between the chappels, in groups of	500V AC for 1 minute 1
between the channels, in groups of Potential congration digital outputs	1
Potential separation digital outputs • Potential separation digital outputs	Relays
Potential separation digital outputs between the channels	No
	110
Permissible potential difference between different circuits	500 V DC between 24 V DC and 5 V DC
Detween different circuits EMC	500 V DC between 24 V DC and 5 V DC
Interference immunity against discharge of static electricity	Von
 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	V
Interference immunity on supply lines acc. to IEC 61000-4-4 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	e 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
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	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
 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 / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
programming / cycle time monitoring / header	
adjustable	Yes
Dimensions	
Width	110 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	435 g
♥ /-rr -	

3/2/2021

last modified: