SIEMENS

Data sheet

6ES7214-1BD23-0XB0

Spare part SIMATIC S7-200, CPU 224 Compact unit, AC power supply 14 DI DC/10 DO relay, 8/12 KB progr./8 KB data, PROFIBUS DP expandable



Supply voltage	
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
Load voltage L+	
Rated value (DC)	24 V
 permissible range, lower limit (DC) 	5 V
 permissible range, upper limit (DC) 	30 V
Load voltage L1	
Rated value (AC)	100 V; 100 V AC to 230 V AC
 permissible range, lower limit (AC) 	5 V
 permissible range, upper limit (AC) 	250 V
 permissible frequency range, lower limit 	47 Hz
 permissible frequency range, upper limit 	63 Hz
Input current	
Inrush current, max.	20 A; at 264 V

Encoder supply 24 V encoder supply 24 V encoder supply 24 V encoder supply 24 V es; Permissible range: 20.4V to 28.8V Short-circuit protection Output current, max. 280 mA Power loss Power loss, typ. 10 W Memory Number of memory modules (optional) 1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files Work memory integrated (for program) 2 k byte; 8 KB with active run-time edit 8 kbyte Backup Present Yes; Program: Entire program maintenance-free on integral EEPROM, programmable via CPU; data: Entire DB 1 loaded from PG/PC maintenance-free on integral EEPROM, programmable via CPU; data: Entire DB 1 loaded from PG/PC maintenance-free via high-performance capacitor; optional battery for long-term buffering Battery Backup battery Backup battery Backup time, max. 100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module CPU processing times for bit operations, max. 0.22 µs		000 4 004 400 4 (040) 004 000 4 (400) 0
Encoder supply 24 V encoder supply 24 V encoder supply 24 V yes, electronic at 280 mA 328 mA Power loss Power loss Power loss Work memory integrated (for program) integrated (for data) Backup present Yes, Program: Entire program maintenance-free on integral EEPROM, current values of DB 1 in RAM, retentive memory bill in RAM, retentive memory bill integral EEPROM, programmable via CPU; data: Entire DB 1 loaded from PG/PC maintenance-free on integral EEPROM, current values of DB 1 in RAM, retentive memory bill integral etc. maintenance-free via high-performance capacitor, optional battery for long-term buffering Backup battery Backup battery Backup battery Backup ime, max. 100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module CPU processing times for bit operations, max. 0.22 µs Counters, timers and their retentivity S7 counter Number 256 Retentivity — adjustable — lower limit — upper limit 256 Counting range — lower limit — upper limit 0 — upper limit	from supply voltage L1, max.	200 mA; 30 to 100 mA (240 V); 60 to 200 mA (120 V); output
24 V encoder supply 24 V - Short-circuit protection Short-circuit protection Output current, max. 280 mA Power loss Power loss, typ. 10 W Memory Number of memory modules (optional) EEPROM; can additionally store recipes, data logs and other files Work memory integrated (for program) It gluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files Work memory integrated (for data) 8 kbyte Backup present Yes; Program: Entire program maintenance-free on integral EEPROM, programmable via CPU; data: Entire DB 1 loaded from PG/PC maintenance-free on integral EEPROM, current values of DB 1 in RAM, retentive memory bits, timers, counters, etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering Backup battery Backup battery Backup time, max. 100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module CPU processing times for bit operations, max. 0.22 µs Counters, timers and their retentivity S7 counter Number 256 Retentivity — adjustable — lower limit — upper limit 256 Counting range — lower limit — upper limit — upper limit — u		current for expansion modules (5 v DO) 600 mA
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Power loss Power loss, typ. 10 W	Short-circuit protection	Yes; electronic at 280 mA
Power loss, typ. Memory Number of memory modules (optional) 1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files Work memory • integrated (for program) • integrated (for data) 8 kbyte Backup • present Yes; Program: Entire program maintenance-free on integral EEPROM, programmable via CPU; data: Entire DB 1 loaded from PG/PC maintenance-free via high-performance capacitor; optional battery for long-term buffering Battery Backup battery • Backup time, max. 100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module CPU processing times For bit operations, max. 0.22 µs Counters, timers and their retentivity S7 counter • Number • Number 256 Retentivity — adjustable — lower limit — upper limit 256 Counting range — lower limit — upper limit 0 32 767 S7 times • Number • Number	 Output current, max. 	280 mA
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Number of memory modules (optional) 1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files Work memory • integrated (for program) • integrated (for data) 8 kbyte Backup • present Yes; Program: Entire program maintenance-free on integral EEPROM, programmable via CPU; data: Entire DB 1 loaded from PG/PC maintenance-free on integral EEPROM, current values of DB 1 in RAM, retentive memory bits, timers, counters, etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering Backup battery • Backup time, max. 100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module CPU processing times for bit operations, max. 0.22 µs Counters, timers and their retentivity S7 counter • Number 256 Retentivity — adjustable — lower limit — upper limit 256 Counting range — lower limit — upper limit 0 32 767 S7 times • Number 256	Memory	
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Persent Yes; Program: Entire program maintenance-free on integral EEPROM, programmable via CPU; data: Entire DB 1 loaded from PG/PC maintenance-free on integral EEPROM, current values of DB 1 in RAM, retentive memory bits, timers, counters, etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering **Backup battery **Backup time, max.** 100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module **CPU processing times* for bit operations, max.** 0.22 μs **Counters, timers and their retentivity* **To counter of the performance capacitor or battery adjustable of the performance capacitor or battery of the performance ca	• integrated (for data)	8 kbyte
EEPROM, programmable via CPU; data: Entire DB 1 loaded from PG/PC maintenance-free on integral EEPROM, current values of DB 1 in RAM, retentive memory bits, timers, counters, etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering Backup battery Backup time, max. 100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module CPU processing times for bit operations, max. 0.22 μs Counters, timers and their retentivity S7 counter Number S66 Retentivity - adjustable - lower limit - upper limit	Backup	
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module CPU processing times for bit operations, max. 0.22 µs Counters, timers and their retentivity S7 counter • Number - Number - adjustable - lower limit - upper limit - 256 S7 times • Number	Backup battery	
For bit operations, max. Counters, timers and their retentivity S7 counter Number Number 256 Retentivity - adjustable - lower limit - upper limit 256 Counting range - lower limit - upper limit 0 - upper limit 0 - upper limit 32 767 S7 times Number Number	Backup time, max.	
For bit operations, max. Counters, timers and their retentivity S7 counter Number Number 256 Retentivity - adjustable - lower limit - upper limit 256 Counting range - lower limit - upper limit 0 - upper limit 0 - upper limit 32 767 S7 times Number Number	CPU processing times	
S7 counter ● Number 256 Retentivity — adjustable — lower limit — upper limit — 32 767 S7 times ● Number 256		0.22 µs
● Number 256 Retentivity Yes; via high-performance capacitor or battery — lower limit 1 — upper limit 256 Counting range 0 — lower limit 0 — upper limit 32 767 S7 times Number	Counters, timers and their retentivity	
Retentivity	S7 counter	
 — adjustable — lower limit — upper limit — upper limit — lower limit — lower limit — lower limit — upper limit — salar limit — upper limit — upper limit — upper limit 32 767 S7 times • Number 256 	Number	256
— lower limit 1 — upper limit 256 Counting range 0 — lower limit 32 767 S7 times Number	Retentivity	
— upper limit 256 Counting range 0 — lower limit 32 767 S7 times Number ◆ Number 256	— adjustable	Yes; via high-performance capacitor or battery
Counting range — lower limit — upper limit S7 times ● Number O 32 767 256	— lower limit	1
— lower limit 0 — upper limit 32 767 S7 times Number ◆ Number 256	— upper limit	256
— lower limit 0 — upper limit 32 767 S7 times Number ◆ Number 256	Counting range	
— upper limit 32 767 S7 times ■ Number 256		0
S7 times ● Number 256		32 767
• Number 256	· ·	
		256

— adjustable	Yes; via high-performance capacitor or battery 64
— upper limit	04
Time range	1 ms
— lower limit	
— upper limit	54 min; 4 timers: 1 ms to 30 s; 16 timers: 10 ms to 5 min; 236 timers: 100 ms to 54 min
Data areas and their retentivity	
Flag	32 byte
Number, max. Detectivity excitable.	Yes; M 0.0 to M 31.7
Retentivity available	
of which retentive with battery	0 to 255, via high-performance capacitor or battery, adjustable
of which retentive without battery	0 to 112 in EEPROM, adjustable
Hardware configuration	
Number of expansion units, max.	7; Only expansion modules of the S7-22x series can be used. Due to the limited output current, the use of expansion modules may be limited.
connectable programming devices/PCs	SIMATIC PG/PC, standard PC
Expansion modules	City, Cito i City, Standard i C
Analog inputs/outputs, max.	35; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14
7 maiog mpato/outpato, max.	outputs (EM)
Digital inputs/outputs, max.	168; max. 94 inputs and 74 outputs (CPU + EM)
 AS-Interface inputs/outputs, max. 	62; AS-Interface A/B slaves (CP 243-2)
Digital inputs	
Number of digital inputs	14
Source/sink input	Yes; optionally, per group
Input voltage	
• Rated value (DC)	24 V
● for signal "0"	0 to 5 V
• for signal "1"	min. 15 V
Input current	
● for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	
	Yes; all
— at "0" to "1", min.	Yes; all 0.2 ms
— at "0" to "1", min. — at "0" to "1", max.	
	0.2 ms
— at "0" to "1", max.	0.2 ms
— at "0" to "1", max. for interrupt inputs	0.2 ms 12.8 ms
— at "0" to "1", max. for interrupt inputs — parameterizable	0.2 ms 12.8 ms
— at "0" to "1", max. for interrupt inputs — parameterizable for technological functions	0.2 ms 12.8 ms Yes; I 0.0 to I 0.3

• unshielded, max.	300 m; not for high-speed signals
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.	200 W; 30 W with DC, 200 W with AC
Output voltage	
● for signal "1", min.	L+/L1
Output current	
● for signal "1" rated value	2 A
• for signal "0" residual current, max.	0 mA
Output delay with resistive load	
• "0" to "1", max.	10 ms; all outputs
• "1" to "0", max.	10 ms; all outputs
Parallel switching of two outputs	
• for uprating	No
Switching frequency	
• of the pulse outputs, with resistive load, max.	1 Hz
Total current of the outputs (per group)	
all mounting positions	
— up to 40 °C, max.	10 A
horizontal installation	
— up to 55 °C, max.	10 A
Relay outputs	
Number of relay outputs, integrated	10
 Number of operating cycles, max. 	10 000 000; mechanically 10 million, at rated load voltage 100 000
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
Analog inputs	
Number of analog potentiometers	2; Analog potentiometer; resolution 8 bit
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
 permissible quiescent current (2-wire 	1 mA
sensor), max.	
1. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485

500 m; Standard input: 500 m, high-speed counters: 50 m

• shielded, max.

Protocols	
• MPI	Yes; As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s
• PPI	Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s
serial data exchange	Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter
MPI	
Transmission rate, min.	19.2 kbit/s
• Transmission rate, max.	187.5 kbit/s
Integrated Functions	
Number of counters	6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.
Counting frequency (counter) max.	30 kHz
Number of alarm inputs	4; 4 rising edges and/or 4 falling edges
Potential separation	
Potential separation digital inputs	
between the channels	Yes
between the channels, in groups of	6 and 8
Potential separation digital outputs	
between the channels	Yes; Relays
• between the channels, in groups of	3 and 4
Permissible potential difference	
between different circuits	500 V DC between 24 V DC and 5 V DC; 1500 V AC between 24 V DC and 230 V AC
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	0 °C
horizontal installation, max.	55 °C
• vertical installation, min.	0 °C
• vertical installation, max.	45 °C

Air pressure acc. to IEC 60068-2-13	
 permissible range, lower limit 	860 hPa
 permissible range, upper limit 	1 080 hPa
Relative humidity	
Operation, min.	5 %
• Operation, max.	95 %; RH class 2 in accordance with IEC 1131-2
Configuration	
Programming	
● Command set	Bit logic instructions, compare instructions, timer instructions, counter instructions, clock instructions, transmissions instructions, table instructions, logic instructions, shift and rotate instructions, conversion instructions, program control instructions, interrupt and communications instructions, logic stack instructions, integer maths, floating-point math instructions, numerical functions
Program processing	free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)
 Program organization 	1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer
 Number of subroutines, max. 	64
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
Know-how protection	
User program protection/password protection	Yes; 3-stage password protection
Connection method	
Plug-in I/O terminals	Yes

Plug-in I/O terminals	Yes	Yes	
Dimensions			
Width	120.5 mm		
Height	80 mm		

120.0 11111
80 mm
62 mm

 Weight, approx.
 410 g

 last modified:
 10/12/2018