SIEMENS

Data sheet

6ES7212-1AB23-0XB0

SIMATIC S7-200, CPU 222 COMPACT UNIT, DC POWER SUPPLY 8 DI DC/6 DO DC 4 KB CODE/2 KB DATA, PROFIBUS DP EXTENDABLE



Figure similar

Supply voltage	
Rated value (DC)	
• 24 V DC	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	
Inrush current, max.	10 A; at 28.8 V
from supply voltage L+, max.	500 mA; 85 mA to 500 mA, output current for expansion modules
	(5 V DC) 340 mA

Encoder supply 24 V encoder supply • 24 V • Short-circuit protection • Output current, max. Short-circuit protection • Output current, max. Symptotic protection Yes; permissible range: 15.4 to 28.8 V Yes; electronic at 600 mA

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)	4 kbyte
• integrated (for data)	2 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
Battery	
Backup battery	
Backup time, max.	50 h; (min. 8 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	Yes; via high-performance capacitor or battery
— lower limit	1
— upper limit	256
Counting range	
— lower limit	0
— upper limit	32 767
S7 times	
Number	256
Retentivity	
— adjustable	Yes; via high-performance capacitor or battery
— upper limit	64
Time range	
— lower limit	1 ms
— 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	
Number, max.	32 byte
Retentivity available	Yes; M 0.0 to M 31.7

+ of which retentive without battery Hardware configuration Number of expansion units, max. 2; 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 Expansion modules • Analog inputs/outputs, max. • Analog inputs/outputs, max. • Digital inputs/outputs, max. • As Interface inputs/outputs, max. • As Interface inputs/outputs, max. • As Interface inputs/outputs, max. • Re max. 40 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) • Digital inputs Number of digital inputs 8 Source/sink input Yes; optionally, per group Input voltage • Rated value (DC) • for signal "1" min. 15 V Input delay (for rated value of input voltage) for standard inputs — parameterizable — at "0" to "1", max. for interrupt inputs — parameterizable — yes; Il 0.0 to 10.3 for counter/technological functions — parameterizable — parameterizable • shelled, max. • unshielded, max. • unshielded, max. • solom, is glatal outputs Short-circuit protection Not to be provided externally Limitation of inductive shuldown voltage to Switching capacity of the outputs • vith resistive load, max. • on lamp load, max. OUtput voltage	of which retentive with battery	0 to 255, via high-performance capacitor or battery, adjustable
Hardware configuration Number of expansion units, max. 2; 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 Expansion modules • Analog inputs/outputs, max. • Analog inputs/outputs, max. • Digital inputs/outputs, max. • Simbartian inputs/out		0 to 112 in EEPROM, adjustable
Number of expansion units, max. 2; 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 Expansion modules • Analog inputs/outputs, max. • As-Interface inputs/outputs, max. • Digital inputs/outputs, max. • As-Interface inputs/outputs, max. • As-Interface inputs/outputs, max. • As-Interface inputs/outputs, max. • As-Interface A/B slaves (CP 243-2) Digital inputs Number of digital inputs Source/sink input Yes; optionally, per group Input voltage • Rated value (DC) • for signal "0" • for signal "1"	·	
to the limited output current, the use of expansion modules may be limited. connectable programming devices/PCs Expansion modules • Analog inputs/outputs, max. • Digital inputs/outputs, max. • AS-Interface A/B slaves (CP 243-2) Digital inputs 8 Source/sink input Input voltage • Rated value (DC) • for signal "1" • for signal "1" • for signal "1" • for signal "1" • for signal "1", typ. 2.5 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable — at "0" to "1", max. for interrupt inputs — parameterizable		2) Only averaging modules of the C7 22v agrice and he wood Disc
Expansion modules • Analog inputs/outputs, max. • Digital inputs/outputs, max. • AS-Interface inputs/outputs, max. • CE; AS-Interface A/B slaves (CP 243-2) Digital inputs Number of digital inputs 8 Source/sink input Input voltage • Rated value (DC) • for signal "0" • Input delay (for rated value of input voltage) for standard inputs — parameterizable — at "0" to "1", min. — at "0" to "1", min. — at "0" to "1", max. For interrupt inputs — parameterizable — parameterizable — parameterizable — yes; I 0.0 to I 0.3 for counter/technological functions — parameterizable • shielded, max. • shielded, max. • unshielded, max. • shielded, max. • shielded, max. • on inmp load, max. • on lamp load, max. • On max. Binputs and 2 outputs (EM) outputs and 4 outputs outputs and 38 outputs (CPU + EM) 50; Transistor 5 W	Number of expansion units, max.	to the limited output current, the use of expansion modules may
Analog inputs/outputs, max. Digital inputs/outputs, max. AS-Interface inputs/outputs, max. AS-Interface inputs/outputs, max. AS-Interface inputs/outputs, max. AS-Interface inputs/outputs, max. BSOurce/sink input Input voltage Rated value (DC) for signal "0" for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — at "0" to "1", max. for interrupt inputs — parameterizable — at "0" to "4", max. for counter/technological functions — parameterizable — parameterizabl	connectable programming devices/PCs	SIMATIC PG/PC, standard PC
Outputs (EM) Obligital inputs/outputs, max. AS-Interface inputs/outputs, max. AS-Interface inputs/outputs, max. C2; AS-Interface A/B slaves (CP 243-2) Digital inputs Number of digital inputs Source/sink input Yes; optionally, per group Input voltage Rated value (DC) for signal "0" 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 - at "0" to "1", min. - at "0" to "1", max. for interrupt inputs - parameterizable yes; 10.0 to 1 0.3 for counter/technological functions - parameterizable yes; (E 0.0 to E 0.5) 30 kHz Cable length Short-circuit protection No; to be provided externally Limitation of inductive shudown voltage to with resistive load, max. ou half of the outputs with resistive load, max. outputs Number of digital outputs with resistive load, max. outputs Vexithing capacity of the outputs with resistive load, max. outputs Vexithing capacity of the outputs with resistive load, max. O.75 A outputs Vexithing capacity of the outputs with resistive load, max. O.75 A outputs Vexithing capacity of the outputs with resistive load, max. O.75 A outputs Vexithing capacity of the outputs with resistive load, max. O.75 A outputs Vexithing capacity of the outputs with resistive load, max. O.75 A	Expansion modules	
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Number of digital inputs Source/sink input Yes; optionally, per group	 Digital inputs/outputs, max. 	78; max. 40 inputs and 38 outputs (CPU + EM)
Number of digital inputs Source/sink input Yes; optionally, per group Input voltage Rated value (DC) for signal "0" for signal "1" Input current for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs - parameterizable - at "0" to "1", min. - at "0" to "1", max. for interrupt inputs - parameterizable Yes; 10.0 to 1 0.3 for counter/technological functions - parameterizable * Yes; (E 0.0 to E 0.5) 30 kHz Cable length * shielded, max. * unshielded, ma	 AS-Interface inputs/outputs, max. 	62; AS-Interface A/B slaves (CP 243-2)
Number of digital inputs Source/sink input Yes; optionally, per group Input voltage Rated value (DC) for signal "0" for signal "1" Input current for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs - parameterizable - at "0" to "1", min. - at "0" to "1", max. for interrupt inputs - parameterizable Yes; 10.0 to 1 0.3 for counter/technological functions - parameterizable * Yes; (E 0.0 to E 0.5) 30 kHz Cable length * shielded, max. * unshielded, ma	Digital inputs	
Input voltage Rated value (DC) for signal "0" for signal "1" Input current for signal "1", typ. Sama Sam		8
Rated value (DC) for signal "0" for signal "1" Input current for signal "1", typ. 2.5 mA Input delay (for rated value of input voltage) for standard inputs parameterizable at "0" to "1", min. at "0" to "1", max. for interrupt inputs parameterizable yes; I 0.0 to I 0.3 for counter/technological functions parameterizable yes; (E 0.0 to E 0.5) 30 kHz Cable length shielded, max. unshielded, max. for max. sour max. for my Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals Digital outputs Number of digital outputs Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to with resistive load, max. on lamp load, max. 0.75 A with resistive load, max. on lamp load, max. 500	Source/sink input	Yes; optionally, per group
• for signal "0" • for signal "1" Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — at "0" to "1", min. — at "0" to "1", max. 12.8 ms for interrupt inputs — parameterizable — yes; I 0.0 to I 0.3 for counter/technological functions — parameterizable • shielded, max. • unshielded, max. Digital outputs Number of digital outputs Short-circuit protection Limitation of inductive shutdown voltage to • with resistive load, max. • unamp load, max. • unamp load, max. • unamp load, max. • on lamp load, max. • on lamp load, max. • 0 to 5 V min. 15 V min. 16	Input voltage	
for signal "1" min. 15 V	• Rated value (DC)	24 V
Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — at "0" to "1", min. — at "0" to "1", max. for interrupt inputs — parameterizable Yes; I 0.0 to I 0.3 for counter/technological functions — parameterizable • shielded, max. • unshielded, max. Digital outputs Number of digital outputs Short-circuit protection Limitation of inductive shutdown voltage to • with resistive load, max. • unampload, max. • unampload, max. O.75 A • on lamp load, max. 5 Uses; I 0.0 to E 0.5) A 1 W 2.5 mA 2.5 mB 2.5 mA 2.5 mA 2.5 mB 2.5 m	• for signal "0"	0 to 5 V
for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — at "0" to "1", min. — at "0" to "1", max. for interrupt inputs — parameterizable Yes; I 0.0 to I 0.3 for counter/technological functions — parameterizable Yes; (E 0.0 to E 0.5) 30 kHz Cable length • shielded, max. • unshielded, max. • unshielded, max. 100 m; Standard input: 500 m, high-speed counters: 50 m Input to the parameter of digital outputs Number of digital outputs Short-circuit protection Input to the provided externally Itimitation of inductive shutdown voltage to With resistive load, max. • on lamp load, max. • on lamp load, max. 5 W	• for signal "1"	min. 15 V
Input delay (for rated value of input voltage) for standard inputs — parameterizable — at "0" to "1", min. — at "0" to "1", max. for interrupt inputs — parameterizable Yes; I 0.0 to I 0.3 for counter/technological functions — parameterizable Yes; (E 0.0 to E 0.5) 30 kHz Cable length • shielded, max. • unshielded, max. Digital outputs Number of digital outputs Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to • with resistive load, max. • on lamp load, max. • on lamp load, max. Yes; all 0.2 ms 12.8 ms Yes; 10.0 to I 0.3 Yes; (E 0.0 to E 0.5) 30 kHz Cable length For Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals 1 W Switching capacity of the outputs • with resistive load, max. • on lamp load, max. • on lamp load, max.	Input current	
for standard inputs — parameterizable — at "0" to "1", min. — at "0" to "1", max. 12.8 ms for interrupt inputs — parameterizable — parameterizable — parameterizable — parameterizable — parameterizable — parameterizable — yes; (E 0.0 to E 0.5) 30 kHz Cable length • shielded, max. • unshielded, max. 100 m; Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals Digital outputs Number of digital outputs No; to be provided externally Limitation of inductive shutdown voltage to Switching capacity of the outputs • with resistive load, max. • on lamp load, max. 5 W	• for signal "1", typ.	2.5 mA
parameterizable at "0" to "1", min at "0" to "1", max. 12.8 ms for interrupt inputs parameterizable yes; (E 0.0 to E 0.5) 30 kHz parameterizable parameterizable parameterizable parameterizable parameterizable yes; (E 0.0 to E 0.5) 30 kHz shielded, max s	Input delay (for rated value of input voltage)	
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- at "0" to "1", max. - at "0" to "1", max. for interrupt inputs - parameterizable Yes; I 0.0 to I 0.3 for counter/technological functions - parameterizable Yes; (E 0.0 to E 0.5) 30 kHz Cable length • shielded, max. • unshielded, max. • unshielded, max. Digital outputs Number of digital outputs Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to Switching capacity of the outputs • with resistive load, max. • un lamp load, max. 12.8 ms 10.0 to I 0.3 Keys; (E 0.0 to E 0.5) 30 kHz 500 m; Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals 1 W Switching capacity of the outputs • with resistive load, max. 10.75 A 10.0 to I 0.3 10.0 to I 0.5 10.0 to I 0.	— parameterizable	Yes; all
for interrupt inputs — parameterizable for counter/technological functions — parameterizable Yes; (E 0.0 to E 0.5) 30 kHz Cable length • shielded, max. • unshielded, max. 100 m; Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals Digital outputs Number of digital outputs Short-circuit protection Limitation of inductive shutdown voltage to Switching capacity of the outputs • with resistive load, max. • on lamp load, max. 500 m; Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals 6; Transistor No; to be provided externally 1 W Switching capacity of the outputs • with resistive load, max. 5 W	— at "0" to "1", min.	0.2 ms
— parameterizable Yes; 1 0.0 to 1 0.3 for counter/technological functions — parameterizable Yes; (E 0.0 to E 0.5) 30 kHz Cable length • shielded, max. • unshielded, max. 100 m; Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals Digital outputs Number of digital outputs Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to Switching capacity of the outputs • with resistive load, max. • on lamp load, max. • on lamp load, max. 500 m; Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals 1 W Switching capacity of department of the provided externally 1 W Switching capacity of the outputs • with resistive load, max. • on lamp load, max.	— at "0" to "1", max.	12.8 ms
for counter/technological functions — parameterizable Yes; (E 0.0 to E 0.5) 30 kHz Cable length • shielded, max. • unshielded, max. Digital outputs Number of digital outputs Short-circuit protection Limitation of inductive shutdown voltage to Switching capacity of the outputs • with resistive load, max. • on lamp load, max. Yes; (E 0.0 to E 0.5) 30 kHz Yes; (E 0.0 to E 0.5) 30 kHz Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals 6; Transistor No; to be provided externally 1 W Switching capacity of the outputs • with resistive load, max. 0.75 A 5 W	for interrupt inputs	
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Cable length ● shielded, max. • unshielded, max. Digital outputs Number of digital outputs Short-circuit protection Limitation of inductive shutdown voltage to Switching capacity of the outputs ● with resistive load, max. • on lamp load, max. 500 m; Standard input: 500 m, high-speed counters: 50 m 300 m; not for high-speed signals 6; Transistor No; to be provided externally 1 W Switching capacity of the outputs • with resistive load, max. 5 W	for counter/technological functions	
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Number of digital outputs 6; Transistor Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to 1 W Switching capacity of the outputs • with resistive load, max. • on lamp load, max. 5 W	• unshielded, max.	300 m; not for high-speed signals
Number of digital outputs 6; Transistor Short-circuit protection No; to be provided externally Limitation of inductive shutdown voltage to 1 W Switching capacity of the outputs • with resistive load, max. • on lamp load, max. 5 W	Digital outputs	
Limitation of inductive shutdown voltage to 1 W Switching capacity of the outputs • with resistive load, max. • on lamp load, max. 5 W		6; Transistor
Switching capacity of the outputs • with resistive load, max. • on lamp load, max. 5 W	Short-circuit protection	No; to be provided externally
 with resistive load, max. on lamp load, max. 5 W 	Limitation of inductive shutdown voltage to	1 W
• on lamp load, max. 5 W	Switching capacity of the outputs	
	• with resistive load, max.	0.75 A
Output voltage	• on lamp load, max.	5 W
	Output voltage	

• for signal "1", min.	20 V DC
Output current	
• for signal "1" rated value	750 mA
• for signal "0" residual current, max.	10 μΑ
Output delay with resistive load	
"0" to "1", max."1" to "0", max.	15 μ s; of the standard outputs, max. (Q0.2 to Q0.5) 15 μ s; of the pulse outputs, max. (Q0.0 to Q0.1) 2 μ s 130 μ s; of the standard outputs, max. (Q0.2 to Q0.5) 100 μ s; of the pulse outputs, max. (Q0.0 to Q0.1) 10 μ s
Parallel switching of two outputs	(30.2.2.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.
• for uprating	Yes
Switching frequency	
• of the pulse outputs, with resistive load, max.	20 kHz; Q0.0 to Q0.1
Total current of the outputs (per group)	
all mounting positions	
— up to 40 °C, max.	4.5 A
horizontal installation	
— up to 55 °C, max.	4.5 A
Relay outputs	
Number of relay outputs, integrated	0
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
unomorasa, max.	
Analog inputs	
Number of analog potentiometers	1; 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
Functionality	
• MPI • PPI	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 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	4; High-speed counters (30 kHz each), 32 bits (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
Number of pulse outputs	2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option
Limit frequency (pulse)	20 kHz
Potential separation	
Potential separation digital inputs	
• between the channels	Yes
• between the channels, in groups of	4
Potential separation digital outputs	
• between the channels	Yes; Optocoupler
• between the channels, in groups of	6
Permissible potential difference	
between different circuits	500 V DC between 24 V DC and 5 V DC
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 %

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	No
Dimensions	
Width	90 mm
Height	80 mm
Depth	62 mm
Weights	
Weight, approx.	270 g
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