SIEMENS

Data sheet

6ES7212-1AB22-0XB0

*** SPARE PART*** 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

	PROFIBUS DP EXTENDABLE
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	Yes; permissible range: 15.4 to 28.8 V
Short-circuit protection	Yes; electronic at 600 mA
Output current, max.	180 mA
Power loss	
Power loss, typ.	5 W
Memory	
Number of memory modules (optional)	1; pluggable memory module, content identical with integral EEPROM
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

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Backup battery

GPU processing times for bit operations, max. Counters, timers and their retentivity S7 counter Number S8 Retentivity adjustable lower limit upper limit systems Number Number S8 Retentivity adjustable lower limit upper limit upper limit upper limit systems Number Number systems Number lower limit upper limit	Backup time, max.	50 h; (min. 8 h at 40 °C); 200 days (typ.) with optional battery module
Counters, timers and their retentivity 37 counter Number Retentivity — adjustable — lower limit — upper limit — disconting ange — lower limit — upper limit — disconting ange — lower limit — upper limit — disconting ange — lower limit — upper limit —	CPU processing times	
Street	for bit operations, max.	0.37 µs
Street	Counters, timers and their retentivity	
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 65 Time range lower limit 1 1 ms lower 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 of which retentive with battery 0 to 255, via high-performance capacitor or battery, adjustable of which retentive with battery 0 to 112 in EEPROM, 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. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) Digital inputs/outputs, max. 78; max. 40 inputs and 38 outputs (CPU + EM) AS-Interface inputs/outputs, max. 31; AS-Interface slaves (CP 243-2)	Number	256
lower limit	Retentivity	
- 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 55 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 Retentivity available Yes; M 0.0 to M 31.7 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. 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 SIMATIC PG/PC, standard PC Expansion modules Analog inputs/outputs, max. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) Digital inputs/outputs, max. 78; max. 40 inputs and 38 outputs (CPU + EM) AS-Interface inputs/outputs, max. 31; AS-Interface slaves (CP 243-2)	— adjustable	Yes; via high-performance capacitor or battery
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- lower limit - upper limit - upper limit - upper limit - upper limit - very limit	— upper limit	256
- upper limit - upper limit - upper limit - adjustable - upper limit - adjustable - upper limit - upper li	Counting range	
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- adjustable - upper limit - upper limit - lower limit - upper limit - u	Number	256
- upper limit Time range - lower limit - upper limit 1 ms 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. • Retentivity available • of which retentive with battery • of which retentive without battery • of which retentive without battery 10 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. 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. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) • Digital inputs/outputs, max. 78; max. 40 inputs and 38 outputs (CPU + EM) 31; AS-Interface slaves (CP 243-2)	Retentivity	
Time range — lower limit — upper limit — upper li	— adjustable	Yes; via high-performance capacitor or battery
lower limit upper limit upp	— upper limit	65
— upper 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 • Number, max. • Retentivity available • of which retentive with battery • of which retentive without battery • of which retentive without battery • of which retentive without battery Data areas and their retentivity * Number, max. • Retentivity available • of which retentive with battery • of which retentive without battery • of which retentive without battery Data areas and their retentivity * Substance of the 31.7 * O to 255, via high-performance capacitor or battery, adjustable • of which retentive without battery O to 112 in EEPROM, adjustable * Aralymer 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. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) • Digital inputs/outputs, max. 10; max. 40 inputs and 38 outputs (CPU + EM) * AS-Interface inputs/outputs, max. 31; AS-Interface slaves (CP 243-2)	Time range	
Data areas and their retentivity Flag Number, max. Retentivity available of which retentive with battery of which retentive without battery of which retentive without battery of which retentive without battery The discrete states 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. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) Digital inputs/outputs, max. Remai. 40 inputs and 38 outputs (CPU + EM) AS-Interface inputs/outputs, max. 11; AS-Interface slaves (CP 243-2)	— lower limit	1 ms
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● of which retentive without battery ■ O to 112 in EEPROM, 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 □ SIMATIC PG/PC, standard PC □ Expansion modules ■ Analog inputs/outputs, max. □ Digital inputs/outputs, max. □ Digital inputs/outputs, max. □ AS-Interface inputs/outputs, max. □ AS-Interface slaves (CP 243-2)	 Retentivity available 	Yes; M 0.0 to M 31.7
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 SIMATIC PG/PC, standard PC Expansion modules • Analog inputs/outputs, max. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) • Digital inputs/outputs, max. 78; max. 40 inputs and 38 outputs (CPU + EM) AS-Interface inputs/outputs, max. 31; AS-Interface slaves (CP 243-2)	 of which retentive with battery 	0 to 255, via high-performance capacitor or battery, 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 SIMATIC PG/PC, standard PC Expansion modules • Analog inputs/outputs, max. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) • Digital inputs/outputs, max. 78; max. 40 inputs and 38 outputs (CPU + EM) 31; AS-Interface slaves (CP 243-2)	 of which retentive without battery 	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 SIMATIC PG/PC, standard PC Expansion modules • Analog inputs/outputs, max. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) • Digital inputs/outputs, max. 78; max. 40 inputs and 38 outputs (CPU + EM) 31; AS-Interface slaves (CP 243-2)	Hardware configuration	
 Analog inputs/outputs, max. 10; max. 8 inputs and 2 outputs (EM) or max. 0 inputs and 4 outputs (EM) Digital inputs/outputs, max. AS-Interface inputs/outputs, max. AS-Interface slaves (CP 243-2) 		to the limited output current, the use of expansion modules may
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 outputs (EM) Digital inputs/outputs, max. AS-Interface inputs/outputs, max. AS-Interface slaves (CP 243-2) 	Expansion modules	
• AS-Interface inputs/outputs, max. 31; AS-Interface slaves (CP 243-2)	Analog inputs/outputs, max.	
	 Digital inputs/outputs, max. 	78; max. 40 inputs and 38 outputs (CPU + EM)
Digital inputs	 AS-Interface inputs/outputs, max. 	31; AS-Interface slaves (CP 243-2)
	Digital inputs	

Number of digital inputs

8

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.	4 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; all
— at "0" to "1", min.	0.2 ms
— 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	Yes; (E 0.0 to E 0.5) 30 kHz
Cable length	
• shielded, max.	500 m; Standard input: 500 m, high-speed counters: 50 m
• unshielded, max.	300 m; not for high-speed signals
Digital outputs	
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.	0.75 A
● on lamp load, max.	5 W
Output voltage	
● for signal "1", min.	20 V DC
• for signal "1", min. Output current	20 V DC
	20 V DC 750 mA
Output current	
Output current • for signal "1" rated value	750 mA
Output current • for signal "1" rated value • for signal "0" residual current, max.	750 mA
Output current • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load	750 mA 10 μA 15 μs; of the standard outputs, max. (Q0.2 to Q0.5) 15 μs; of the
Output current • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load • "0" to "1", max.	750 mA 10 μ A 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 100 μ s; of the standard outputs, max. (Q0.2 to Q0.5) 100 μ s; of
Output current • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load • "0" to "1", max. • "1" to "0", max.	750 mA 10 μ A 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 100 μ s; of the standard outputs, max. (Q0.2 to Q0.5) 100 μ s; of
Output current • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load • "0" to "1", max. • "1" to "0", max. Parallel switching of two outputs	750 mA 10 μA 15 μs; of the standard outputs, max. (Q0.2 to Q0.5) 15 μs; of the pulse outputs, max. (Q0.0 to Q0.1) 2 μs 100 μs; of the standard outputs, max. (Q0.2 to Q0.5) 100 μs; of the pulse outputs, max. (Q0.0 to Q0.1) 10 μs
Output current • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load • "0" to "1", max. • "1" to "0", max. Parallel switching of two outputs • for uprating	750 mA 10 μA 15 μs; of the standard outputs, max. (Q0.2 to Q0.5) 15 μs; of the pulse outputs, max. (Q0.0 to Q0.1) 2 μs 100 μs; of the standard outputs, max. (Q0.2 to Q0.5) 100 μs; of the pulse outputs, max. (Q0.0 to Q0.1) 10 μs
Output current • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load • "0" to "1", max. • "1" to "0", max. Parallel switching of two outputs • for uprating Switching frequency	750 mA 10 μA 15 μs; of the standard outputs, max. (Q0.2 to Q0.5) 15 μs; of the pulse outputs, max. (Q0.0 to Q0.1) 2 μs 100 μs; of the standard outputs, max. (Q0.2 to Q0.5) 100 μs; of the pulse outputs, max. (Q0.0 to Q0.1) 10 μs Yes

— up to 40 °C, max.	4.5 A
horizontal installation	
— up to 55 °C, max.	4.5 A
Cable length	
• shielded, max.	150 m
• unshielded, max.	150 m
Analog inputs	1. Analog notantismator, recolution 9 hit
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	
1. Interface Interface type	Integrated RS 485 interface
Physics	RS 485
·	NO 400
Functionality	Van A-MDI days for data such as as with MDI markets (07
• 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
● PFI	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	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 pulse outputs	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
Limit inequency (pulse)	ZU NI IZ

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
	6
between the channels, in groups of	O .
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	0.00
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,
- Command Set	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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