



SIEMENS

Data sheet

6ES7216-2AD23-0XB0

SIMATIC S7-200, CPU 226 COMPACT UNIT, DC POWER SUPPLY
24 DI DC/16 DO DC, 16/24 KB CODE/10 KB DATA, 2
PPI/FREEPORT PORTS



Figure similar

Supply voltage

Rated value (DC)

- 24 V DC

Yes

Load voltage L+

- Rated value (DC)
- permissible range, lower limit (DC)
- permissible range, upper limit (DC)

24 V

20.4 V

28.8 V

Input current

Inrush current, max.

10 A; at 28.8 V

from supply voltage L+, max.

1 050 mA; 150 mA to 1 050 mA output current for expansion modules (5 V DC) 1 000 mA

Encoder supply

24 V encoder supply

- 24 V
- Short-circuit protection
- Output current, max.

Yes; permissible range: 15.4 to 28.8 V

Yes; electronic at 400 mA

400 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	
<ul style="list-style-type: none"> integrated (for program) integrated (for data) 	24 kbyte; 16 KB with active run-time edit 10 kbyte
Backup	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> 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 μ s
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Counters, timers and their retentivity

S7 counter	
<ul style="list-style-type: none"> Number 	256
of which retentive with battery	
— can be set	Yes; via high-performance capacitor or battery
— lower limit	1
— upper limit	256
Counting range	
— lower limit	0
— upper limit	32 767
S7 times	
<ul style="list-style-type: none"> Number 	256
of which retentive with battery	
— 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	
<ul style="list-style-type: none"> Number, max. Retentivity available 	32 byte Yes; M 0.0 to M 31.7



- of which retentive with battery
- of which retentive without battery

0 to 255, via high-performance capacitor or battery, adjustable
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	
• Analog inputs/outputs, max.	35; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)
• Digital inputs/outputs, max.	148; max. 128 inputs and 120 outputs (CPU+EM)
• AS-Interface inputs/outputs, max.	62; AS-Interface A/B slaves (CP 243-2)

Digital inputs

Number of digital inputs	24
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.	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 1.5) 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	16; 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
Output current	
• for signal "1" rated value	750 mA
• for signal "0" residual current, max.	10 μ A
Output delay with resistive load	
• "0" to "1", max.	15 μ s; of the standard outputs, max. (Q 0.2 to Q 1.1) 2 μ s; of the pulse outputs, max. (Q 0.0 to Q 0.1) 2 μ s
• "1" to "0", max.	130 μ s; of the standard outputs, max. (Q 0.2 to Q 1.1) 10 μ s; of the pulse outputs, max. (Q 0.0 to Q 0.1) 10 μ s
Parallel switching of two outputs	
• 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.	6 A
horizontal installation	
— up to 55 °C, max.	6 A
Relay outputs	
• Number of relay outputs, integrated	0
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 sensor), max.	1 mA
1. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485
Functionality	
• 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.
- Transmission rate, max.

19.2 kbit/s
187.5 kbit/s

2. Interface

Interface type

Integrated RS 485 interface

Physics

RS 485

Functionality

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Integrated Functions

Number of counters

6; 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
- between the channels, in groups of

Yes
13 and 11

Potential separation digital outputs

- between the channels
- between the channels, in groups of

Yes; Optocoupler
8 and 8

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

Environmental conditions

For further environmental conditions, see "Automation System S7-200, System Manual"

Ambient temperature during operation

- horizontal installation, min.
- horizontal installation, max.
- vertical installation, min.
- vertical installation, max.

0 °C

55 °C

0 °C

45 °C

Air pressure acc. to IEC 60068-2-13

- permissible range, lower limit
- permissible range, upper limit

860 hPa

1 080 hPa

Relative humidity

- Operation, min.
- Operation, max.

5 %

95 %; RH class 2 in accordance with IEC 1131-2

Configuration

Programming

- Command set
- Program processing
- Program organization
- Number of subroutines, max.

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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)

1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer

64

Programming language

- LAD
- FBD
- STL

Yes

Yes

Yes

Know-how protection

- User program protection/password protection

Yes; 3-stage password protection

Connection method

Plug-in I/O terminals

Yes

Dimensions

Width

196 mm

Height

80 mm

Depth

62 mm



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Weights

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last modified:

03/07/2017 