SIEMENS

Data sheet 6ES7216-2BD23-0XB0

Spare part SIMATIC S7-200, CPU 226 Compact unit, AC power supply 24 DI DC/16 DO relay 16/24 KB progr./10 KB data, 2 PPI/user-programmable interface

Figure similar

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
from supply voltage L1, max.	320 mA; 40 to 160 mA (240 V); 80 to 320 mA (120 V); output current for expansion modules (5 V DC) 1 000 mA
Encoder supply	
24 V encoder supply	
● 24 V	Yes; Permissible range: 20.4V to 28.8V
● Short-circuit protection	Yes; electronic at 400 mA
● Output current, max.	400 mA
Power loss	
Power loss, typ.	17 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)	24 kbyte; 16 KB with active run-time edit
● integrated (for data)	10 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.	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	Yes; via high-performance capacitor or battery
Counting range	
— lower limit	0
— upper limit	32 767
S7 times	
● Number	256
Retentivity	
— adjustable	Yes; via high-performance capacitor or battery
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	
● Size, max.	32 byte
● 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.	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 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; 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 kHz
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	16
● 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 sensor), max.	1 mA
1. Interface	
Interface type	Integrated RS 485 interface
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
2. Interface	
Interface type	Integrated RS 485 interface
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
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Integrated Functions	
Counter	
● 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, 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; Optocoupler
● between the channels, in groups of	13 and 11
Potential separation digital outputs	
● between the channels	Yes; Relays
● between the channels, in groups of	4, 5 and 7
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	
IP degree of protection	IP20
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 / header	
configuration / programming / header	
● 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
Dimensions	
Width	196 mm
Height	80 mm
Depth	62 mm
Weights	
Weight, approx.	660 g

Classifications

	Version	Classification
eClass	14	27-24-22-07
eClass	12	27-24-22-07
eClass	9.1	27-24-22-07
eClass	9	27-24-22-07
eClass	8	27-24-22-07
eClass	7.1	27-24-22-07
eClass	6	27-24-22-07
ETIM	10	EC000236
ETIM	9	EC000236

ETIM	8	EC000236
ETIM	7	EC000236
IDEA	4	3565
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval		For use in hazardous locations	Maritime application		
CE EG-Konf.	Miscellaneous	FM	BUREAU VERITAS	DNV	GL

Maritime application			
Lloyd's Register LRS	NK / Nippon Kaiji Kyokai	RMRS	CCS (China Classification Society)

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