SIEMENS

Product data sheet 6ES7211-0AA23-0XB0



SIMATIC S7-200, CPU 221 COMPACT UNIT,
DC POWER SUPPLY 6 DI DC/4 DO DC,
4 KB CODE/2 KB DATA,

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Supply voltage	
24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
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.	450 mA ; 80 to 450 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
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Backup battery	

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Battery operation	
Backup time, max.	50 h ; (min. 8 h at 40 °C); 200 days (typ.) with optional battery module
Memory	
Number of memory modules (optional)	1 ; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files
Data and program memory	
Data memory, max.	2 kbyte
Program memory, max.	4 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
CPU processing times	
for bit operations, max.	0.22 µs
Counters, timers and their retentivity	
S7 counter	
Number	256
of which retentive with battery	
adjustable	Yes ; via high-performance capacitor or battery
lower limit	1
upper limit	256
Counting range	
lower limit	0
upper limit	32767
S7 times	
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	
Number, max.	32 byte
Retentivity available	Yes ; M 0.0 to M 31.7

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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	
Connectable programming devices/PCs	SIMATIC PG/PC, standard PC
Digital inputs	
Number/binary inputs	6 ; integrated
m/p-reading	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 ; (E0.0 to E0.5) 30 kHz
Cable length	
Cable length, shielded, max.	500 m ; Standard input: 500 m, high-speed counters: 50 m
Cable length unshielded, max.	300 m ; not for high-speed signals
Digital outputs	
Number/binary outputs	4 ; Transistor
Functionality/short-circuit strength	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.	0.1 mA
Output delay with resistive load	

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"0" to "1", max.	15 µs ; of the standard outputs, max. (Q0.2 to Q0.3) 15 µs; of the pulse outputs, max. (Q0.0 to Q0.1) 2 µs
"1" to "0", max.	130 µs ; of the standard outputs, max. (Q0.2 to Q0.3) 100 µs; of the pulse outputs, max. (Q0.0 to Q0.1) 10 µs
Parallel switching of 2 outputs	
for increased power	Yes
Switching frequency	
of the pulse outputs, with resistive load, max.	20 kHz ; Q0.0 to Q0.1
Aggregate current of outputs (per group)	
all mounting positions	
up to 40 °C, max.	3 A
horizontal installation	
up to 55 °C, max.	3 A
Relay outputs	
Max. number of relay outputs, integrated	0
Cable length	
Cable length, shielded, max.	500 m
Cable length unshielded, max.	150 m
Analog inputs	
Number of analog potentiometers	1 ; Analog potentiometer; resolution 8 bit
Encoder	
Connectable encoders	
2-wire sensor	Yes
Permissible quiescent current (2-wire sensor), max.	1 mA
1st interface	
Type of interface	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 kbit/s; the PC/PPI cable can also be used as RS232/RS485 converter
MPI	
Transmission rate, max.	187.5 kbit/s
Transmission rate, min.	19.2 kbit/s

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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.
Counter 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
Galvanic isolation	
Galvanic isolation digital inputs	
between the channels	Yes
between the channels, in groups of	2 and 4
Galvanic isolation digital outputs	
between the channels	Yes ; Optocoupler
between the channels, in groups of	4
Permissible potential difference	
between different circuits	500 V DC between 24 V DC and 5 V DC
Degree and class of protection	
IP20	Yes
Ambient conditions	
Environmental conditions	For further environmental conditions, see "Automation System S7-200, System Manual"
Operating temperature	
horizontal installation, min.	0 °C
horizontal installation, max.	55 °C
vertical installation, min.	0 °C
vertical installation, max.	45 °C
Air pressure	
permissible range, min.	860 hPa
permissible range, max.	1080 hPa
Relative humidity	
Operation, min.	5 %
Operation, max.	95 % ; RH class 2 in accordance with IEC 1131-2
Configuration	
programming	

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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
Weight	
Weight, approx.	270 g
Status	Feb 25, 2013

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