

\*\*\*Spare part\*\*\* SIMATIC S7-200, CPU 224 Compact unit, AC power supply 14 DI DC/10 DO relay, 8/12 KB progr./8 KB data, PROFIBUS DP expandable



## 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.	200 mA; 30 to 100 mA (240 V); 60 to 200 mA (120 V); output current for expansion modules (5 V DC) 600 mA
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### Encoder supply

24 V encoder supply	
• 24 V	Yes; Permissible range: 20.4V to 28.8V
• Short-circuit protection	Yes; electronic at 280 mA
• Output current, max.	280 mA

### Power loss

Power loss, typ.	10 W
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### Memory

Number of memory modules (optional)	1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files
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Work memory	
• integrated (for program)	12 kbyte; 8 KB with active run-time edit
• integrated (for data)	8 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
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### 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
<b>Time range</b>	
— 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

<b>Flag</b>	
• Number, 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
<b>Expansion modules</b>	
• Analog inputs/outputs, max.	35; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)
• Digital inputs/outputs, max.	168; max. 94 inputs and 74 outputs (CPU + EM)
• AS-Interface inputs/outputs, max.	62; AS-Interface A/B slaves (CP 243-2)

### Digital inputs

Number of digital inputs	14
Source/sink input	Yes; optionally, per group
<b>Input voltage</b>	
• Rated value (DC)	24 V
• for signal "0"	0 to 5 V
• for signal "1"	min. 15 V
<b>Input current</b>	
• for signal "1", typ.	2.5 mA
<b>Input delay (for rated value of input voltage)</b>	
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
<b>Cable length</b>	

- 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	10; 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 Hz
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, integrated	10
• 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
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## 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

Protocols	
<ul style="list-style-type: none"> <li>• MPI</li> </ul>	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
<ul style="list-style-type: none"> <li>• PPI</li> </ul>	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
<ul style="list-style-type: none"> <li>• serial data exchange</li> </ul>	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	
<ul style="list-style-type: none"> <li>• Transmission rate, min.</li> </ul>	19.2 kbit/s
<ul style="list-style-type: none"> <li>• Transmission rate, max.</li> </ul>	187.5 kbit/s
Integrated Functions	
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 (counter) max.	30 kHz
Number of alarm inputs	4; 4 rising edges and/or 4 falling edges
Potential separation	
Potential separation digital inputs	
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• between the channels, in groups of</li> </ul>	6 and 8
Potential separation digital outputs	
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	Yes; Relays
<ul style="list-style-type: none"> <li>• between the channels, in groups of</li> </ul>	3 and 4
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	
Degree of protection acc. to EN 60529	
<ul style="list-style-type: none"> <li>• IP20</li> </ul>	Yes
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> <li>• horizontal installation, min.</li> </ul>	0 °C
<ul style="list-style-type: none"> <li>• horizontal installation, max.</li> </ul>	55 °C
<ul style="list-style-type: none"> <li>• vertical installation, min.</li> </ul>	0 °C
<ul style="list-style-type: none"> <li>• vertical installation, max.</li> </ul>	45 °C

<b>Air pressure acc. to IEC 60068-2-13</b>	
• permissible range, lower limit	860 hPa
• permissible range, upper limit	1 080 hPa
<b>Relative humidity</b>	
• Operation, min.	5 %
• Operation, max.	95 %; RH class 2 in accordance with IEC 1131-2
<b>Configuration</b>	
<b>Programming</b>	
• 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
<b>Programming language</b>	
— LAD	Yes
— FBD	Yes
— STL	Yes
<b>Know-how protection</b>	
• User program protection/password protection	Yes; 3-stage password protection
<b>Connection method</b>	
Plug-in I/O terminals	Yes
<b>Dimensions</b>	
Width	120.5 mm
Height	80 mm
Depth	62 mm
<b>Weights</b>	
Weight, approx.	410 g
<b>last modified:</b>	10/12/2018