

SIMATIC S7-200, CPU 222 COMPACT UNIT, AC POWER SUPPLY  
8 DI DC/6 DO RELAY 4 KB CODE/2 KB DATA, PROFIBUS DP  
EXTENDABLE



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. | 140 mA; 20 to 70 mA (240 V); 40 to 140 mA (120 V); output current for expansion modules (5 V DC) 340 mA |

Encoder supply	
24 V encoder supply	
<ul style="list-style-type: none"> <li>• 24 V</li> <li>• Short-circuit protection</li> <li>• Output current, max.</li> </ul>	<p>Yes; Permissible range: 20.4V to 28.8V</p> <p>Yes; electronic at 600 mA</p> <p>180 mA</p>
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"> <li>• integrated (for program)</li> <li>• integrated (for data)</li> </ul>	<p>4 kbyte</p> <p>2 kbyte</p>
Backup	
<ul style="list-style-type: none"> <li>• present</li> </ul>	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"> <li>• Backup time, max.</li> </ul>	50 h; (min. 8 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	
<ul style="list-style-type: none"> <li>• Number</li> </ul>	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"> <li>• Number</li> </ul>	256
of which retentive with battery	
— can be set	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
• 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.	62; AS-Interface A/B slaves (CP 243-2)

## Digital inputs

Number of digital inputs	8
m/p-reading	Yes; optionally, per group
Input voltage	
• 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 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; Relays
Short-circuit protection	No; to be provided externally

<b>Switching capacity of the outputs</b>	
• with resistive load, max.	2 A
• on lamp load, max.	30 W with DC, 200 W with AC
<b>Output voltage</b>	
• for signal "1", min.	L+/L1
<b>Output current</b>	
• for signal "1" rated value	2 A
• for signal "0" residual current, max.	0 mA
<b>Output delay with resistive load</b>	
• "0" to "1", max.	10 ms; all outputs
• "1" to "0", max.	10 ms; all outputs
<b>Parallel switching of 2 outputs</b>	
• for uprating	No
<b>Total current of the outputs (per group)</b>	
all mounting positions	
— up to 40 °C, max.	6 A
horizontal installation	
— up to 55 °C, max.	6 A
<b>Relay outputs</b>	
• Number of relay outputs, integrated	6
• Number of operating cycles, max.	10 000 000; mechanically 10 million, at rated load voltage 100,000
<b>Cable length</b>	
• shielded, max.	500 m
• unshielded, max.	150 m
<b>Analog inputs</b>	
Number of analog potentiometers	1; Analog potentiometer; resolution 8 bit
<b>Encoder</b>	
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1 mA
<b>1. Interface</b>	
Interface type	Integrated RS 485 interface
Physics	RS 485
<b>Functionality</b>	
• 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

<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 kbit/s; the PC/PPI cable can also be used as RS232/RS485 converter
<b>MPI</b>	
<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
<b>Integrated Functions</b>	
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 alarm inputs	4; 4 rising edges and/or 4 falling edges
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
<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>	4
<b>Potential separation digital outputs</b>	
<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
<b>Permissible potential difference</b>	
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
<b>Degree and class of protection</b>	
Degree of protection acc. to EN 60529	
<ul style="list-style-type: none"> <li>IP20</li> </ul>	Yes
<b>Ambient conditions</b>	
Environmental conditions	For further environmental conditions, see "Automation System S7-200, System Manual"
<b>Ambient temperature during operation</b>	
<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>	
<ul style="list-style-type: none"> <li>permissible range, min.</li> </ul>	860 hPa
<ul style="list-style-type: none"> <li>permissible range, max.</li> </ul>	1 080 hPa
<b>Relative humidity</b>	
<ul style="list-style-type: none"> <li>Operation, min.</li> </ul>	5 %

- Operation, max.

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

## Configuration

### Programming

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Command set</li> </ul>                 | 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 |
| <ul style="list-style-type: none"> <li>• Program processing</li> </ul>          | free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  |
| <ul style="list-style-type: none"> <li>• Program organization</li> </ul>        | 1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer   |
| <ul style="list-style-type: none"> <li>• Number of subroutines, max.</li> </ul> | 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. | 310 g |
|-----------------|-------|

**last modified:** 31.07.2015