

SIMATIC S7-200, CPU 224XP COMPACT UNIT, DC POWER SUPPLY 14 DI DC/10 DO DC, 2 AI, 1 AO 12/16 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.

12 A; at 28.8 V

from supply voltage L+, max.

900 mA; 120 to 900 mA, output current for expansion modules (DC 5 V) 660 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 280 mA

280 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) | 16 kbyte; 12 KB with active run-time edit |
| <ul style="list-style-type: none"> integrated (for data) | 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 µs |
| Counters, timers and their retentivity | |
| S7 counter | |
| <ul style="list-style-type: none"> Number | 256 |
| of which retentive with battery | |
| <ul style="list-style-type: none"> can be set | Yes; via high-performance capacitor or battery |
| <ul style="list-style-type: none"> lower limit | 1 |
| <ul style="list-style-type: none"> upper limit | 256 |
| Counting range | |
| <ul style="list-style-type: none"> lower limit | 0 |
| <ul style="list-style-type: none"> upper limit | 32 767 |
| S7 times | |
| <ul style="list-style-type: none"> Number | 256 |
| of which retentive with battery | |
| <ul style="list-style-type: none"> can be set | Yes; via high-performance capacitor or battery |
| <ul style="list-style-type: none"> upper limit | 64 |
| Time range | |
| <ul style="list-style-type: none"> lower limit | 1 ms |
| <ul style="list-style-type: none"> 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. | 32 byte |
| <ul style="list-style-type: none"> Retentivity available | Yes; M 0.0 to M 31.7 |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> • Analog inputs/outputs, max. | 38; 2 onboard inputs and 1 output, also max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM) |
| <ul style="list-style-type: none"> • Digital inputs/outputs, max. | 168; max. 94 inputs and 74 outputs (CPU + EM) |
| <ul style="list-style-type: none"> • AS-Interface inputs/outputs, max. | 62; AS-Interface A/B slaves (CP 243-2) |

Digital inputs

| | |
|--|---|
| Number of digital inputs | 14 |
| m/p-reading | Yes; optionally, per group |
| Input voltage | |
| <ul style="list-style-type: none"> • for signal "0" | 0V to 5V; 0V to 1V (I0.3 to I0.5) |
| <ul style="list-style-type: none"> • for signal "1" | min. 15 V; min. 4 V (I 0.3 to I 0.5) |
| Input current | |
| <ul style="list-style-type: none"> • for signal "1", typ. | 2.5 mA; 8 mA for I0.3 to I0.5 |
| 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) up to 200 kHz |
| Cable length | |
| <ul style="list-style-type: none"> • shielded, max. | 500 m; Standard input: 500 m, high-speed counters: 50 m |
| <ul style="list-style-type: none"> • unshielded, max. | 300 m; not for high-speed signals |

Digital outputs

| | |
|---|---|
| Number of digital outputs | 10; Transistor |
| Short-circuit protection | No; to be provided externally |
| Limitation of inductive shutdown voltage to | 1 W |
| Switching capacity of the outputs | |
| <ul style="list-style-type: none"> • with resistive load, max. | 0.75 A |
| <ul style="list-style-type: none"> • on lamp load, max. | 5 W |
| Output voltage | |
| <ul style="list-style-type: none"> • for signal "1", min. | L+ (-0.4 V (5 V / 20.4 V for A 0.0 to A 0.4; 20.4 V A 0.5 to A1.1)) |
| Output current | |

| | |
|---|---|
| • for signal "1" rated value | 750 mA |
| • for signal "0" residual current, max. | 10 µA |
| Output delay with resistive load | |
| • "0" to "1", max. | 15 µs; of the standard outputs, max. (Q 0.2 to Q 1.1) 15 µs; of the pulse outputs, max. (Q 0.0 to Q 0.1) 0.5 µs |
| • "1" to "0", max. | 130 µs; of the standard outputs, max. (Q 0.2 to Q 1.1) 130 µs; of the pulse outputs, max. (Q 0.0 to Q 0.1) 1.5 µs |
| Parallel switching of 2 outputs | |
| • for uprating | Yes |
| Switching frequency | |
| • of the pulse outputs, with resistive load, max. | 100 kHz; Q0.0 to Q0.1 |
| Total current of the outputs (per group) | |
| all mounting positions | |
| — up to 40 °C, max. | 3.75 A |
| horizontal installation | |
| — up to 55 °C, max. | 3.75 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 kbit/s; the PC/PPI cable can also be used as RS232/RS485 converter |

| MPI | |
|---------------------------|--------------|
| • Transmission rate, min. | 19.2 kbit/s |
| • Transmission rate, max. | 187.5 kbit/s |

2. 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 |
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| MPI | |
|---------------------------|--------------|
| • Transmission rate, min. | 19.2 kbit/s |
| • Transmission rate, max. | 187.5 kbit/s |

Integrated Functions

| | |
|-----------------------------------|---|
| Number of counters | 6; High-speed counters (2 to 200 kHz and 4 to 30 kHz), 32 bits (incl. sign), can be used as up/down counters or for connecting incremental encoders with 2 pulse trains offset by 90° (max. 1 to 100 kHz and 3 to 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. | 200 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 | Yes |
| • between the channels, in groups of | 6 and 8 |
| Potential separation digital outputs | |
| • between the channels | Yes; Optocoupler |
| • between the channels, in groups of | 5 |

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 | |
| <ul style="list-style-type: none"> • IP20 | Yes |
| Ambient conditions | |
| Environmental conditions | For further environmental conditions, see "Automation System S7-200, System Manual" |
| Ambient temperature during operation | |
| <ul style="list-style-type: none"> • 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 | |
| <ul style="list-style-type: none"> • permissible range, min. • permissible range, max. | 860 hPa 1 080 hPa |
| Relative humidity | |
| <ul style="list-style-type: none"> • Operation, min. • Operation, max. | 5 % 95 %; RH class 2 in accordance with IEC 1131-2 |
| Configuration | |
| Programming | |
| <ul style="list-style-type: none"> • 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 | |
| <ul style="list-style-type: none"> — LAD — FBD — STL | Yes Yes Yes |
| Know-how protection | |
| <ul style="list-style-type: none"> • User program protection/password protection | Yes; 3-stage password protection |
| Connection method | |
| Plug-in I/O terminals | Yes |
| Dimensions | |
| Width | 140 mm |
| Height | 80 mm |
| Depth | 62 mm |

Weights

Weight, approx.

390 g

last modified:

31.07.2015