SIEMENS

## Data sheet 6ES7211-0AA23-0XB0




Figure similar

*** spare part *** SIMATIC S7-200, CPU 221 Compact unit, DC power supply 6 DI DC/4 DO DC 4 KB progr./2 KB data

| | |
|---|---|
| **Supply voltage** | |
| Rated value (DC) | |
| ● 24 V DC | Yes |
| 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 |
| **Power loss** | |
| Power loss, typ. | 3 W |
| **Storage** | |
| 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) | 4 kbyte |
| ● integrated (for data) | 2 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. | 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 | |
| ● Number | 256 |
| Retentivity | |
| — can be set | Yes; via high-performance capacitor or battery |


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|---|---|
| Counting range | |
| — lower limit | 0 |
| — upper limit | 32 767 |
| S7 timer | |
| ● 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** | |
| connectable programming devices/PCs | SIMATIC PG/PC, standard PC |
| **Digital inputs** | |
| Number of digital inputs | 6; Integrated |
| Sourcing/sinking 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 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 | 4; Transistor |
| Short-circuit protection | 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 | |
| ● "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 two outputs | |
| ● for uprating | Yes |
| Switching frequency | |


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|---|---|
| ● of the pulse outputs, with resistive load, max. | 20 kHz; Q0.0 to Q0.1 |
| Total current of the outputs (per group) | |
| all mounting positions | |
| — up to 40 °C, max. | 3 A |
| horizontal installation | |
| — up to 55 °C, max. | 3 A |
| Relay outputs | |
| ● Number of relay outputs | 0 |
| Cable length | |
| ● shielded, max. | 500 m |
| ● 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 |
| **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 |
| **Integrated Functions** | |
| Counter | |
| ● Number of counters | 4; 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 |
| 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 | 2 and 4 |
| Potential separation 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** | |
| 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 |


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|---|---|
| ● 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** | |
| Programming | |
| ● 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 |
| **Weights** | |
| Weight, approx. | 270 g |

**Classifications**

| | Version | Classification |
|---|---|---|
| eClass | 16 | 27-24-22-07 |
| 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 |
|---|---|---|---|---|
| Miscellaneous | | | China RoHS | FM |

**Maritime application**


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DNV



GL



LRS

NK / Nippon Kaiji Kyokai




**Maritime application**

CCS (China Classification Society)

**last modified:** 8/24/2025


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