SIEMENS

## Data sheet 6ES7212-1BE31-0XB0



SIMATIC S7-1200, CPU 1212C, compact CPU, AC/DC/relay, onboard I/O: 8 DI 24 V DC; 6 DO relay 2 A; 2 AI 0-10 V DC, Power supply: AC 85-264 V AC at 47-63 Hz, Program/data memory 50 KB

| | |
|---|---|
| **General information** | |
| Product type designation | CPU 1212C AC/DC/relay |
| Engineering with | |
| ● Programming package | STEP 7 V11 SP2 or higher |
| **Supply voltage** | |
| Rated value (AC) | |
| ● 120 V AC | Yes |
| ● 230 V AC | Yes |
| permissible range, lower limit (AC) | 85 V |
| permissible range, upper limit (AC) | 264 V |
| Line frequency | |
| ● permissible range, lower limit | 47 Hz |
| ● permissible range, upper limit | 63 Hz |
| **Input current** | |
| Current consumption (rated value) | 80 mA at 120 V AC; 40 mA at 240 V AC |
| Inrush current, max. | 20 A; at 264 V |
| **Output current** | |
| for backplane bus (5 V DC), max. | 1 000 mA; Max. 5 V DC for SM and CM |
| **Encoder supply** | |
| 24 V encoder supply | |
| ● 24 V | Permissible range: 20.4V to 28.8V |
| **Power loss** | |
| Power loss, typ. | 11 W |
| **Storage** | |
| Work memory | |
| ● integrated | 50 kbyte |
| Load memory | |
| ● integrated | 1 Mbyte |
| Backup | |
| ● present | Yes; maintenance-free |
| ● without battery | Yes |
| **CPU processing times** | |
| for bit operations, typ. | 0.085 µs; / instruction |
| for word operations, typ. | 1.7 µs; / instruction |
| for floating point arithmetic, typ. | 2.5 µs; / instruction |
| **CPU-blocks** | |
| Number of blocks (total) | DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used |


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| OB | |
| ● Number, max. | Limited only by RAM for code |
| **Data areas and their retentivity** | |
| Retentive data area (incl. timers, counters, flags), max. | 10 kbyte |
| Flag | |
| ● Size, max. | 4 kbyte; Size of bit memory address area |
| **Address area** | |
| I/O address area | |
| ● Inputs | 1 024 byte |
| ● Outputs | 1 024 byte |
| Process image | |
| ● Inputs, adjustable | 1 kbyte |
| ● Outputs, adjustable | 1 kbyte |
| **Hardware configuration** | |
| Number of modules per system, max. | 3 comm. modules, 1 signal board, 2 signal modules |
| ● number of expansion boards (SB, CB, BB) | 1 |
| ● number of signal modules (SM) | 2 |
| ● number of communications modules (CM) | 3 |
| **Time of day** | |
| Clock | |
| ● Hardware clock (real-time) | Yes |
| ● Backup time | 480 h; Typical |
| ● Deviation per day, max. | 60 s/month at 25 °C |
| **Digital inputs** | |
| Number of digital inputs | 8; Integrated |
| ● of which inputs usable for technological functions | 4; HSC (High Speed Counting) |
| Sourcing/sinking input | Yes |
| Number of simultaneously controllable inputs | |
| all mounting positions | |
| — up to 40 °C, max. | 8 |
| Input voltage | |
| ● Rated value (DC) | 24 V |
| ● for signal "0" | 5 V DC at 1 mA |
| ● for signal "1" | 15 V DC at 2.5 mA |
| Input current | |
| ● for signal "1", typ. | 1 mA |
| Input delay (for rated value of input voltage) | |
| for standard inputs | |
| — parameterizable | 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four |
| — at "0" to "1", min. | 0.2 ms |
| — at "0" to "1", max. | 12.8 ms |
| for interrupt inputs | |
| — Parameterizable | Yes |
| for technological functions | |
| — parameterizable | Yes; Single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz |
| Cable length | |
| ● shielded, max. | 500 m; 50 m for technological functions |
| ● unshielded, max. | 300 m; for technological functions: No |
| **Digital outputs** | |
| Number of digital outputs | 6; Relays |
| Short-circuit protection | No; to be provided externally |
| Switching capacity of the outputs | |
| ● with resistive load, max. | 2 A |
| ● on lamp load, max. | 30 W with DC, 200 W with AC |
| Output delay with resistive load | |
| ● "0" to "1", max. | 10 ms; max. |
| ● "1" to "0", max. | 10 ms; max. |


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| Switching frequency | |
| ● of the pulse outputs, with resistive load, max. | 1 Hz |
| Relay outputs | |
| ● Number of relay outputs | 6 |
| ● Number of operating cycles, max. | mechanically 10 million, at rated load voltage 100 000 |
| Cable length | |
| ● shielded, max. | 500 m |
| ● unshielded, max. | 150 m |
| **Analog inputs** | |
| Number of analog inputs | 2 |
| Input ranges | |
| ● Voltage | Yes |
| Input ranges (rated values), voltages | |
| ● 0 to +10 V | Yes |
| — Input resistance (0 to 10 V) | ≥100k ohms |
| Cable length | |
| ● shielded, max. | 100 m; twisted and shielded |
| **Analog outputs** | |
| Number of analog outputs | 0 |
| **Analog value generation for the inputs** | |
| Integration and conversion time/resolution per channel | |
| ● Resolution with overrange (bit including sign), max. | 10 bit |
| ● Integration time, parameterizable | Yes |
| ● Conversion time (per channel) | 625 µs |
| **Encoder** | |
| Connectable encoders | |
| ● 2-wire sensor | Yes |
| **Interfaces** | |
| Number of PROFINET interfaces | 1 |
| **1. Interface** | |
| Interface type | PROFINET |
| Isolated | Yes |
| automatic detection of transmission rate | Yes |
| Autonegotiation | Yes |
| Autocrossing | Yes |
| Interface types | |
| ● RJ 45 (Ethernet) | Yes |
| Protocols | |
| ● PROFINET IO Controller | Yes |
| **Protocols** | |
| Supports protocol for PROFINET IO | Yes |
| PROFIsafe | No |
| PROFIBUS | Yes |
| AS-Interface | Yes |
| Protocols (Ethernet) | |
| ● TCP/IP | Yes |
| Open IE communication | |
| ● TCP/IP | Yes |
| ● ISO-on-TCP (RFC1006) | Yes |
| ● UDP | Yes |
| Web server | |
| ● supported | Yes |
| ● User-defined websites | Yes |
| Further protocols | |
| ● MODBUS | Yes |
| **Communication functions** | |
| S7 communication | |
| ● supported | Yes |


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|---|---|
| ● as server | Yes |
| ● as client | Yes |
| **Test commissioning functions** | |
| Status/control | |
| ● Status/control variable | Yes |
| ● Variables | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters |
| Forcing | |
| ● Forcing | Yes |
| Diagnostic buffer | |
| ● present | Yes |
| **Integrated Functions** | |
| Counter | |
| ● Number of counters | 4 |
| ● Counting frequency, max. | 100 kHz |
| Frequency measurement | Yes |
| controlled positioning | Yes |
| PID controller | Yes |
| Number of alarm inputs | 4 |
| **Potential separation** | |
| Potential separation digital inputs | |
| ● Potential separation digital inputs | 500 V AC for 1 minute |
| ● between the channels, in groups of | 1 |
| Potential separation digital outputs | |
| ● Potential separation digital outputs | Relays |
| ● between the channels | No |
| ● between the channels, in groups of | 2 |
| **Permissible potential difference** | |
| between different circuits | 500 V DC between 24 V DC and 5 V DC |
| **EMC** | |
| Interference immunity against discharge of static electricity | |
| ● Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 | Yes |
| — Test voltage at air discharge | 8 kV |
| — Test voltage at contact discharge | 6 kV |
| Interference immunity to cable-borne interference | |
| ● Interference immunity on supply lines acc. to IEC 61000-4-4 | Yes |
| ● Interference immunity on signal cables acc. to IEC 61000-4-4 | Yes |
| Interference immunity against voltage surge | |
| ● Interference immunity on supply lines acc. to IEC 61000-4-5 | Yes |
| Interference immunity against conducted variable disturbance induced by high-frequency fields | |
| ● Interference immunity against high-frequency radiation acc. to IEC 61000-4-6 | Yes |
| Emission of radio interference acc. to EN 55 011 | |
| ● Limit class A, for use in industrial areas | Yes; Group 1 |
| ● Limit class B, for use in residential areas | Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011 |
| **Degree and class of protection** | |
| IP degree of protection | IP20 |
| **Standards, approvals, certificates** | |
| CE mark | Yes |
| CSA approval | Yes |
| UL approval | Yes |
| cULus | Yes |
| FM approval | Yes |
| RCM (formerly C-TICK) | Yes |
| Marine approval | Yes |
| **Ambient conditions** | |


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|---|---|
| Free fall | |
| ● Fall height, max. | 0.3 m; five times, in product package |
| Ambient temperature during operation | |
| ● min. | -20 °C |
| ● max. | 60 °C |
| ● horizontal installation, min. | -20 °C |
| ● horizontal installation, max. | 60 °C |
| ● vertical installation, min. | -20 °C |
| ● vertical installation, max. | 50 °C |
| Ambient temperature during storage/transportation | |
| ● min. | -40 °C |
| ● max. | 70 °C |
| Air pressure acc. to IEC 60068-2-13 | |
| ● Operation, min. | 795 hPa |
| ● Operation, max. | 1 080 hPa |
| ● Storage/transport, min. | 660 hPa |
| ● Storage/transport, max. | 1 080 hPa |
| Altitude during operation relating to sea level | |
| ● Installation altitude, min. | -1 000 m |
| ● Installation altitude, max. | 2 000 m |
| Relative humidity | |
| ● Operation, max. | 95 %; no condensation |
| Vibrations | |
| ● Vibration resistance during operation acc. to IEC 60068-2-6 | 2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail |
| ● Operation, tested according to IEC 60068-2-6 | Yes |
| Shock testing | |
| ● tested according to IEC 60068-2-27 | Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms |
| Pollutant concentrations | |
| ● SO2 at RH < 60% without condensation | S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60 % condensation-free |
| **Configuration** | |
| Programming | |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — SCL | Yes |
| Cycle time monitoring | |
| ● adjustable | Yes |
| **Dimensions** | |
| Width | 90 mm |
| Height | 100 mm |
| Depth | 75 mm |
| **Weights** | |
| Weight, approx. | 425 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 |


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| | | |
|---|---|---|
| ETIM | 8 | EC000236 |
| ETIM | 7 | EC000236 |
| IDEA | 4 | 3565 |
| UNSPSC | 15 | 32-15-17-05 |

## Approvals / Certificates

### General Product Approval

Miscellaneous | Manufacturer Declaration | Metrological Approval

### General Product Approval

China RoHS | Manufacturer Declaration

### EMV

### For use in hazardous locations

FM

### Maritime application

NK / Nippon Kaiji Kyokai | KR (Korean Register of Shipping)

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