SIEMENS

## Data sheet 6ES7211-1BE40-0XB0

SIMATIC S7-1200, CPU 1211C, COMPACT CPU, AC/DC/RELAY, ONBOARD I/O: 6 DI 24V DC; 4 DO RELAY 2A; 2 AI 0 - 10V DC, POWER SUPPLY: AC 85 - 264 V AC AT 47 - 63 HZ, PROGRAM/DATA MEMORY: 50 KB

| | |
|---|---|
| **General information** | |
| Product type designation | CPU 1211C AC/DC/relay |
| Firmware version | V4.2 |
| Engineering with | |
| • Programming package | STEP 7 V14 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) | 60 mA at 120 V AC; 30 mA at 240 V AC |
| Current consumption, max. | 180 mA at 120 V AC; 90 mA at 240 V AC |
| Inrush current, max. | 20 A; at 264 V |

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| $I^2t$ | 0.8 $A^2 \cdot s$ |
| **Output current** | |
| for backplane bus (5 V DC), max. | 750 mA; Max. 5 V DC for CM |
| **Encoder supply** | |
| 24 V encoder supply | |
| • 24 V | 20.4 to 28.8V |
| **Power loss** | |
| Power loss, typ. | 10 W |
| **Memory** | |
| Work memory | |
| • integrated | 50 kbyte |
| • expandable | No |
| Load memory | |
| • integrated | 1 Mbyte |
| • Plug-in (SIMATIC Memory Card), max. | with SIMATIC memory card |
| Backup | |
| • present | Yes |
| • maintenance-free | Yes |
| • without battery | Yes |
| **CPU processing times** | |
| for bit operations, typ. | 0.08 µs; / instruction |
| for word operations, typ. | 1.7 µs; / instruction |
| for floating point arithmetic, typ. | 2.3 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 |
| 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 | |
| • Number, max. | 4 kbyte; Size of bit memory address area |
| Local data | |
| • per priority class, max. | 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB |
| **Address area** | |
| Process image | |
| • Inputs, adjustable | 1 kbyte |

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|---|---|
| • Outputs, adjustable | 1 kbyte |
| **Hardware configuration** | |
| Number of modules per system, max. | 3 communication modules, 1 signal board |
| **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 | 6; Integrated |
| • of which inputs usable for technological functions | 3; HSC (High Speed Counting) |
| Source/sink input | Yes |
| Number of simultaneously controllable inputs | |
| all mounting positions | |
| — up to 40 °C, max. | 6 |
| 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. | 4 mA; nominal |
| 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 counter/technological functions | |
| — parameterizable | Single phase : 3 @ 100 kHz, differential: 3 @ 80 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 | 4; Relays |
| 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 | |

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|---|---|
| • "0" to "1", max. | 10 ms; max. |
| • "1" to "0", max. | 10 ms; max. |
| Relay outputs | |
| • 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 |
| **1. Interface** | |
| Interface type | PROFINET |
| Physics | Ethernet |
| Isolated | Yes |
| automatic detection of transmission rate | Yes |
| Autonegotiation | Yes |
| Autocrossing | Yes |
| Interface types | |
| • Number of ports | 1 |
| • integrated switch | No |
| Functionality | |
| • PROFINET IO Controller | Yes |
| • PROFINET IO Device | Yes |

| | |
|---|---|
| • SIMATIC communication | Yes |
| • Open IE communication | Yes |
| • Web server | Yes |
| • Media redundancy | No |
| PROFINET IO Controller | |
| • Transmission rate, max. | 100 Mbit/s |
| Services | |
| — PG/OP communication | Yes |
| — S7 routing | Yes |
| — Isochronous mode | No |
| — Open IE communication | Yes |
| — IRT | No |
| — MRP | No |
| — MRPD | No |
| — PROFIenergy | No |
| — Prioritized startup | Yes |
| — Number of IO devices with prioritized startup, max. | 16 |
| — Number of connectable IO Devices, max. | 16 |
| — Number of connectable IO Devices for RT, max. | 16 |
| — of which in line, max. | 16 |
| — Activation/deactivation of IO Devices | Yes |
| — Number of IO Devices that can be simultaneously activated/deactivated, max. | 8 |
| — Updating time | The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data. |
| PROFINET IO Device | |
| Services | |
| — PG/OP communication | Yes |
| — S7 routing | Yes |
| — Isochronous mode | No |
| — Open IE communication | Yes |
| — IRT | No |
| — MRP | No |
| — MRPD | No |
| — PROFIenergy | Yes |
| — Shared device | Yes |
| — Number of IO Controllers with shared device, max. | 2 |
| Protocols | |

| | |
|---|---|
| Supports protocol for PROFINET IO | Yes |
| PROFIBUS | Yes; CM 1243-5 required |
| AS-Interface | Yes; CM 1243-2 required |
| Protocols (Ethernet) | |
| • TCP/IP | Yes |
| • DHCP | No |
| • SNMP | Yes |
| • DCP | Yes |
| • LLDP | Yes |
| Open IE communication | |
| • TCP/IP | Yes |
| — Data length, max. | 8 kbyte |
| — several passive connections per port, supported | Yes |
| • ISO-on-TCP (RFC1006) | Yes |
| — Data length, max. | 8 kbyte |
| • UDP | Yes |
| — Data length, max. | 1 472 byte |
| Web server | |
| • User-defined websites | Yes |
| Further protocols | |
| • MODBUS | Yes |

| Communication functions | |
|---|---|
| S7 communication | |
| • supported | Yes |
| • as server | Yes |
| • as client | Yes |
| • User data per job, max. | See online help (S7 communication, user data size) |
| Web server | |
| • supported | Yes |
| Number of connections | |
| • overall | 16; dynamically |

| 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 |
| Traces | |

| | |
|---|---|
| • Number of configurable Traces | 2 |
| • Memory size per trace, max. | 512 kbyte |
| **Interrupts/diagnostics/status information** | |
| Diagnostics indication LED | |
| • RUN/STOP LED | Yes |
| • ERROR LED | Yes |
| • MAINT LED | Yes |
| **Integrated Functions** | |
| Number of counters | 3 |
| Counting frequency (counter) max. | 100 kHz |
| Frequency measurement | Yes |
| controlled positioning | Yes |
| Number of position-controlled positioning axes, max. | 8 |
| Number of positioning axes via pulse-direction interface | Up to 4 with SB 1222 |
| PID controller | Yes |
| Number of alarm inputs | 4 |
| **Potential separation** | |
| Potential separation digital inputs | |
| • Potential separation digital inputs | 500V 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 | 1 |
| **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 | |
| • on the 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 | |
|---|---|
| Degree of protection acc. to EN 60529 | |
| • IP20 | Yes |

| Standards, approvals, certificates | |
|---|---|
| CE mark | Yes |
| UL approval | Yes |
| cULus | Yes |
| FM approval | Yes |
| RCM (formerly C-TICK) | Yes |
| KC approval | Yes |
| Marine approval | Yes |

| Ambient conditions | |
|---|---|
| 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 |
| • 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 |
| Know-how protection | |
| • User program protection/password protection | Yes |
| • Copy protection | Yes |
| • Block protection | Yes |
| Access protection | |
| • Protection level: Write protection | Yes |
| • Protection level: Read/write protection | Yes |
| • Protection level: Complete protection | Yes |
| Cycle time monitoring | |
| • adjustable | Yes |

## Dimensions

| | |
|---|---|
| Width | 90 mm |
| Height | 100 mm |
| Depth | 75 mm |

## Weights

| | |
|---|---|
| Weight, approx. | 420 g |

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