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## Data sheet 6ES7288-1SR20-0AA1

| | SIMATIC S7-200 SMART, CPU SR20, CPU, AC/DC/relay, onboard I/O: 12 DI 24 V DC; 8 DQ relay 2A; power supply: AC 85 - 264 V AC at 47-63 Hz, 77 to 138 V DC program/data memory 20 KB |
|---|---|
| **General information** | |
| Product type designation | CPU SR20 AC/DC/Relay |
| Engineering with | |
| ● Programming package | STEP 7 Micro/WIN SMART |
| **Installation type/mounting** | |
| Rail mounting | Yes; Standard - DIN rail |
| **Supply voltage** | |
| permissible range, lower limit (DC) | 77 V |
| permissible range, upper limit (DC) | 138 V |
| 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) | 170 mA; at 240 V AC |
| Current consumption, max. | 290 mA; At 120 V AC |
| Inrush current, max. | 9.3 A; at 264 V |
| **Output current** | |
| Current output, max. | 300 mA; 24 V DC Sensor Power |
| for backplane bus (5 V DC), max. | 1.4 A; max. 5 V DC for EM bus |
| **Power loss** | |
| Power loss, max. | 14 W |
| **Storage** | |
| Type of memory | DDR |
| Flash | Yes |
| RAM | Yes |
| Memory available for user data | 8 kbyte |
| Memory size | 12 kbyte; Program memory |
| Micro Memory Card | Yes; microSDHC Card (optional) |
| Backup | |
| ● present | Yes; Maintenance free, RTC requires 7 days. |
| **CPU processing times** | |
| for bit operations, typ. | 150 ns; / instruction |
| for word operations, typ. | 1.2 µs; / instruction |
| for floating point arithmetic, typ. | 3.6 µs; / instruction |
| **Address area** | |
| I/O address area | |
| ● Inputs | 144 byte; 256 bit of digital inputs & 56 words of analog inputs |
| ● Outputs | 144 byte; 256 bit of digital outputs & 56 words of analog outputs |
| **Time of day** | |
| Clock | |
| ● Type | Hardware clock, no battery backup |
| ● Hardware clock (real-time) | Yes |
| ● Backup time | 7 d |


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|---|---|
| ● Deviation per day, max. | 120 s; within 120s/month at 25 °C |
| **Digital inputs** | |
| Number of digital inputs | 12 |
| ● of which inputs usable for technological functions | 6; HSC (High Speed Counting) |
| Sourcing/sinking input | Yes |
| Number of simultaneously controllable inputs | |
| all mounting positions | |
| — up to 40 °C, max. | 12 |
| Input voltage | |
| ● Type of input voltage | DC |
| ● 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 "0", max. (permissible quiescent current) | 1 mA |
| ● for signal "1", typ. | 4 mA |
| Input delay (for rated value of input voltage) | |
| for standard inputs | |
| — Parameterizable | Yes; 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; 6 Single phase: 4 HSCs at 200 kHz; 2 HSCs at 30 kHz 4 A/B phase: 2 HSCs at 100 kHz; 2 HSCs at 20 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 | 8; Relays |
| Switching capacity of the outputs | |
| ● with resistive load, max. | 2 A |
| ● on lamp load, max. | 30 W; 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. |
| Switching frequency | |
| ● of the pulse outputs, with resistive load, max. | 1 Hz |
| Relay outputs | |
| ● Number of relay outputs | 8 |
| Cable length | |
| ● shielded, max. | 500 m |
| ● unshielded, max. | 150 m |
| **Interfaces** | |
| Number of industrial Ethernet interfaces | 1 |
| Number of RS 485 interfaces | 1 |
| **1. Interface** | |
| Interface type | PROFINET |
| Isolated | Yes; Transformer isolated, 1,500V AC |
| automatic detection of transmission rate | Yes; 10/100 Mbit/s |
| Autonegotiation | Yes |
| Autocrossing | Yes |
| Interface types | |
| ● RJ 45 (Ethernet) | Yes |
| Protocols | |
| ● PROFINET IO Controller | Yes; Since V2.4 |
| ● PROFINET IO device | Yes; I-Device since V2.5 |


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|---|---|
| PROFINET IO Controller | |
| ● Transmission rate, max. | 100 Mbit/s |
| Services | |
| — Number of connectable IO Devices, max. | 8 |
| — Updating time | 4 ms; 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. |
| Address area | |
| — Inputs, max. | 128 byte; Per device |
| — Outputs, max. | 128 byte; Per device |
| **2. Interface** | |
| Interface type | RS 485 (max. 187.5 kbps) |
| Interface types | |
| ● RS 485 | Yes |
| PROFIBUS DP master | |
| Services | |
| — S7 communication | Yes |
| **Protocols** | |
| Supports protocol for PROFINET IO | Yes; RT Controller (since FW V2.4) & I-Device (since FW V2.5) |
| PROFIBUS | Yes; Via CM DP module |
| Protocols (Ethernet) | |
| ● TCP/IP | Yes |
| **Communication functions** | |
| S7 communication | |
| ● supported | Yes |
| ● as server | Yes |
| ● As client | Yes |
| **Test commissioning functions** | |
| Forcing | |
| ● Forcing | Yes |
| **Integrated Functions** | |
| Counter | |
| ● Number of counters | 6 |
| PID controller | Yes; PID closed-loop control function: Continuous controller outputs, binary controller outputs, automatic/manual mode, max. 8 loops |
| Number of pulse outputs | 3 |
| **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 | 4 kV |
| Interference immunity against high-frequency electromagnetic fields | |
| ● Interference immunity against high-frequency radiation acc. to IEC 61000-4-3 | Yes; 10 V/m, 80 to 1 000 MHz (to IEC 61000-4-3); 10 V/m, 900 MHz, 1.89 GHz, 50% ED (to IEC 61000-4-3) |
| Interference immunity to cable-borne interference | |
| ● Interference immunity on supply lines acc. to IEC 61000-4-4 | Yes; 2 kV acc. to IEC 61000-4-4, burst |
| ● Interference immunity on signal cables acc. to IEC 61000-4-4 | Yes; ±2 kV acc. to IEC 61000-4-4, Burst |
| Interference immunity against conducted variable disturbance induced by high-frequency fields | |
| ● Interference immunity against high frequency current feed acc. to IEC 61000-4-6 | Yes; 10 V, 150 kHz to 80 MHz (to IEC 61000-4-6) |
| Emission of radio interference acc. to EN 55 011 | |
| ● Limit class A, for use in industrial areas | Yes; EN 61000-6-4, interference emission: Intended for use in industrial areas. |
| Emission of conducted and non-conducted interference | |
| ● Interference emission via line/AC current cables | EN 61000-6-4, interference emission: Intended for use in industrial areas. |
| **Standards, approvals, certificates** | |
| CE mark | Yes |
| **Ambient conditions** | |
| Free fall | |


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|---|---|
| ● Fall height, max. | 0.3 m; five times, in product package |
| Ambient temperature during operation | |
| ● min. | -20 °C |
| ● max. | 60 °C |
| ● horizontal installation, min. | 0 °C |
| ● horizontal installation, max. | 55 °C |
| ● vertical installation, min. | 0 °C |
| ● vertical installation, max. | 45 °C |
| Ambient temperature during storage/transportation | |
| ● min. | -40 °C |
| ● max. | 70 °C |
| Air pressure acc. to IEC 60068-2-13 | |
| ● 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 at 25 °C without condensation, max. | 95 % |
| **Configuration** | |
| Programming | |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — STL | Yes |
| **Dimensions** | |
| Width | 90 mm |
| Height | 100 mm |
| Depth | 81 mm |
| **Weights** | |
| Weight, approx. | 367.3 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**

China RoHS

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