




SIMATIC S7-200 SMART, CPU ST40, CPU, DC/DC/DC, onboard I/O: 24 DI 24 V DC; 16 DO 24 V DC; power supply: DC 20.4 - 28.8 V DC, program/data memory 40 KB web server support

| General information | |
|---|--|
| Product type designation | CPU ST40 DC/DC/DC |
| Engineering with | |
| <ul style="list-style-type: none"> Programming package | STEP 7 Micro/WIN SMART |
| Installation type/mounting | |
| Rail mounting | Yes; Standard - DIN rail |
| Supply voltage | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 20.4 V |
| permissible range, upper limit (DC) | 28.8 V |
| Input current | |
| Current consumption, max. | 680 mA; 24 V DC |
| Inrush current, max. | 11.7 A; at 28.8 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. | 18 W |
| Memory | |
| Type of memory | DDR |
| Flash | Yes |
| RAM | Yes |
| Memory available for user data | 16 kbyte |
| Memory size | 24 kbyte; Program memory |
| Micro Memory Card | Yes; microSDHC Card (optional) |
| Backup | |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> Inputs Outputs | 144 byte; 256 bit of digital inputs & 56 words of analog inputs 144 byte; 256 bit of digital outputs & 56 words of analog outputs |
| Time of day | |
| Clock | |
| <ul style="list-style-type: none"> Type | Hardware clock, no battery backup |

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| <ul style="list-style-type: none"> • Hardware clock (real-time) • Backup time • Deviation per day, max. | Yes 7 d 120 s; within 120s/month at 25 °C |
| Digital inputs | |
| Number of digital inputs | 24; Integrated |
| <ul style="list-style-type: none"> • of which inputs usable for technological functions | 6; HSC (High Speed Counting) |
| Source/sink input | Yes |
| Number of simultaneously controllable inputs | |
| all mounting positions | |
| — up to 40 °C, max. | 24 |
| Input voltage | |
| <ul style="list-style-type: none"> • Type of input voltage • Rated value (DC) • for signal "0" • for signal "1" | DC 24 V 10.0 to 10.3 < 1 V DC; 10.4 to 12.7 < 5 V DC 10.0 to 10.3 > 4V; 10.4 to 12.7 > 15V |
| Input current | |
| <ul style="list-style-type: none"> • for signal "0", max. (permissible quiescent current) • for signal "1", typ. | 1 mA 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 | |
| <ul style="list-style-type: none"> • shielded, max. • unshielded, max. | 500 m; 50 m for technological functions 300 m; for technological functions: No |
| Digital outputs | |
| Number of digital outputs | 16; Transistor |
| <ul style="list-style-type: none"> • of which high-speed outputs | 3; 100 kHz Pulse Train Output |
| Switching capacity of the outputs | |
| <ul style="list-style-type: none"> • with resistive load, max. • on lamp load, max. | 0.5 A 5 W |
| Output voltage | |
| <ul style="list-style-type: none"> • for signal "1", min. | 20 V DC |
| Output current | |
| <ul style="list-style-type: none"> • for signal "1" rated value • for signal "0" residual current, max. | 0.5 A 10 µA |
| Output delay with resistive load | |
| <ul style="list-style-type: none"> • "0" to "1", max. • "1" to "0", max. | 3 µs; of the standard outputs, max. 3 µs; of the pulse outputs, max. (Q a.0 to Q a.3) 1 µs 200 µs; of the standard outputs, max. 200 µs; of the pulse outputs, max. (Q a.0 to Q a.3) 50 µs |
| Switching frequency | |
| <ul style="list-style-type: none"> • of the pulse outputs, with resistive load, max. | 100 kHz |
| Relay outputs | |
| <ul style="list-style-type: none"> • Number of relay outputs | 0 |
| Cable length | |
| <ul style="list-style-type: none"> • shielded, max. • unshielded, max. | 500 m 150 m |
| Interfaces | |
| Number of industrial Ethernet interfaces | 1 |
| Number of RS 485 interfaces | 1 |
| 1. Interface | |
| Interface type | PROFINET |

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|---|---|
| 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 |
| 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 / header | |
| S7 communication | |
| • supported | Yes |
| • as server | Yes |
| • as client | Yes |
| Test commissioning functions | |
| Status/control | |
| • Status/control variable | Yes |
| 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 |
| Potential separation | |
| Potential separation digital inputs | |
| • between the channels, in groups of | 1 |
| Potential separation digital outputs | |
| • between the channels | No |
| • between the channels, in groups of | 2 |
| 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 | |

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| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> Interference immunity on supply lines acc. to IEC 61000-4-4 | Yes; 2 kV acc. to IEC 61000-4-4, burst |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> Fall height, max. | 0.3 m; five times, in product package |
| Ambient temperature during operation | |
| <ul style="list-style-type: none"> min. | -20 °C |
| <ul style="list-style-type: none"> max. | 60 °C |
| <ul style="list-style-type: none"> horizontal installation, min. | -20 °C |
| <ul style="list-style-type: none"> horizontal installation, max. | 60 °C |
| <ul style="list-style-type: none"> vertical installation, min. | -20 °C |
| <ul style="list-style-type: none"> vertical installation, max. | 50 °C |
| Ambient temperature during storage/transportation | |
| <ul style="list-style-type: none"> min. | -40 °C |
| <ul style="list-style-type: none"> max. | 70 °C |
| Air pressure acc. to IEC 60068-2-13 | |
| <ul style="list-style-type: none"> Storage/transport, min. | 660 hPa |
| <ul style="list-style-type: none"> Storage/transport, max. | 1 080 hPa |
| Altitude during operation relating to sea level | |
| <ul style="list-style-type: none"> Installation altitude, min. | -1 000 m |
| <ul style="list-style-type: none"> Installation altitude, max. | 2 000 m |
| Relative humidity | |
| <ul style="list-style-type: none"> Operation at 25 °C without condensation, max. | 95 % |
| configuration / header | |
| configuration / programming / header | |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — STL | Yes |
| Dimensions | |
| Width | 125 mm |
| Height | 100 mm |
| Depth | 81 mm |
| Weights | |
| Weight, approx. | 410.3 g |
| last modified: | 11/2/2021  |