SIEMENS

## Data sheet 6DL1133-6EW00-0PH1



SIMATIC ET 200SP HA, configurable I/O module, AI-DI16/DQ16X24VDC HART, suitable for terminal block H1, M1, color code CC00, channel diagnostics, 16-bit, +/-0.1%,

| | |
|---|---|
| **General information** | |
| Product type designation | AI-DI 16/DQ 16x24VDC HART HA |
| Firmware version | V1.0 |
| ● FW update possible | Yes |
| Color code for module-specific color identification plate | CC00 |
| Product function | |
| ● I&M data | Yes; I&M0 to I&M3 |
| Engineering with | |
| ● PCS 7 configurable/integrated from version | V9.0 |
| Operating mode | |
| ● DI | Yes |
| ● Counter | No |
| ● DQ | Yes |
| ● DQ with energy-saving function | No |
| ● PWM | No |
| ● Oversampling | No |
| ● MSI | No |
| ● MSO | No |
| Redundancy | |
| ● Redundancy capability | Yes; With TB type M1 |
| **CiR - Configuration in RUN** | |
| Reparameterization possible in RUN | Yes |
| **Supply voltage** | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 19.2 V |
| permissible range, upper limit (DC) | 28.8 V |
| Reverse polarity protection | Yes |
| **Input current** | |
| Current consumption (rated value) | 80 mA; without sensor supply |
| Current consumption, max. | 90 mA; without sensor supply |
| **Encoder supply** | |
| Number of outputs | 16 |
| Output voltage, min. | 18.2 V |
| Short-circuit protection | Yes; per channel, electronic |
| 24 V encoder supply | |
| ● 24 V | Yes |
| ● Short-circuit protection | Yes; Electronic (response threshold 0.7 A to 1.5 A) |
| ● Output current per channel, max. | 0.5 A |
| ● Output current per module, max. | 2 A |
| **Power loss** | |


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| Power loss, typ. | 4.5 W; without sensor supply |
| **Address area** | |
| Address space per module | |
| ● Address space per module, max. | 42 byte; Address space per module (analog): 42 bytes. Of which 34 bytes for outputs, 2 bytes for outputs and 6 bytes for QI information. Address space per module (digital): 26 bytes. Of which 2 bytes for inputs, 2 bytes for outputs, 18 bytes for SoE, and 4 bytes for QI information |
| ● Address space per module with HART, max. | 82 byte; 34-byte inputs, 2-byte outputs, 40 bytes for HART secondary variables, and 6 bytes for QI information |
| ● Address space per module with MultiHART, max. | 70 byte; 34-byte inputs, 2-byte outputs, 24-byte HART inputs, 4-byte HART outputs, and 6 bytes for QI information |
| **Digital inputs** | |
| Number of digital inputs | 16 |
| Digital inputs, parameterizable | Yes |
| Source/sink input | Yes; P-reading |
| Input characteristic curve in accordance with IEC 61131, type 1 | Yes |
| Input characteristic curve in accordance with IEC 61131, type 2 | No |
| Input characteristic curve in accordance with IEC 61131, type 3 | Yes |
| Pulse extension | Yes; off, 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s |
| Time stamping | Yes; Resolution 10 ms |
| Time stamp (with precision of 1 ms) | Yes; Resolution 1ms |
| Edge evaluation | Yes; rising edge, falling edge, edge change |
| Input voltage | |
| ● Rated value (DC) | 24 V |
| ● for signal "0" | -30 to +5 V |
| ● for signal "1" | +11 to +30V |
| Input current | |
| ● for signal "1", typ. | 2.5 mA |
| Input delay (for rated value of input voltage) | |
| for standard inputs | |
| — parameterizable | Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length) |
| Cable length | |
| ● shielded, max. | 1 000 m |
| ● unshielded, max. | 600 m |
| **Digital outputs** | |
| Number of digital outputs | 16 |
| Current-sinking | No |
| Current-sourcing | Yes |
| Digital outputs, parameterizable | Yes |
| Short-circuit protection | Yes; Response threshold 0.7 A to 1.3 A |
| Open-circuit detection | Yes |
| Overload protection | Yes |
| Limitation of inductive shutdown voltage to | L+ -(37 to 41V) |
| Controlling a digital input | Yes |
| Switching capacity of the outputs | |
| ● with resistive load, max. | 0.5 A |
| ● on lamp load, max. | 5 W |
| Load resistance range | |
| ● lower limit | 48 Ω |
| ● upper limit | 12 kΩ |
| Output current | |
| ● for signal "1" rated value | 0.5 A |
| ● for signal "0" residual current, max. | 0.7 mA |
| Output delay with resistive load | |
| ● "0" to "1", typ. | 50 µs |
| ● "1" to "0", typ. | 100 µs |
| Parallel switching of two outputs | |
| ● for uprating | No |
| ● for redundant control of a load | Yes |
| Switching frequency | |
| ● with resistive load, max. | 100 Hz |


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| ● on lamp load, max. | 10 Hz |
| Total current of the outputs | |
| ● Current per channel, max. | 0.5 A |
| ● Current per module, max. | 2 A |
| Cable length | |
| ● shielded, max. | 1 000 m |
| ● unshielded, max. | 600 m |
| **Analog inputs** | |
| Number of analog inputs | 16 |
| permissible input current for current input (destruction limit), max. | 30 mA |
| Input ranges | |
| ● Current | Yes; 0 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 4 ... 20 mA HART |
| Input ranges (rated values), currents | |
| ● 0 to 20 mA | Yes; 16 bit incl. sign |
| — Input resistance (0 to 20 mA) | 250 Ω |
| ● 4 mA to 20 mA | Yes; 16 bit incl. sign |
| — Input resistance (4 mA to 20 mA) | 250 Ω |
| Cable length | |
| ● shielded, max. | 800 m; with unshielded cables up to 800 m, remember that (external) EMC loads can cause incorrect measured values |
| **Analog value generation for the inputs** | |
| Measurement principle | integrating (Sigma-Delta) |
| Integration and conversion time/resolution per channel | |
| ● Resolution with overrange (bit including sign), max. | 16 bit; 15 bit at 0 ... 10 mA and 60 Hz interference suppression |
| ● Integration time, parameterizable | Yes; channel by channel |
| Smoothing of measured values | |
| ● parameterizable | Yes; none, weak, medium, strong, channel-by-channel |
| **Encoder** | |
| Connection of signal encoders | |
| ● for current measurement as 2-wire transducer | Yes |
| Connectable encoders | |
| ● 2-wire sensor | Yes |
| — permissible quiescent current (2-wire sensor), max. | 1.5 mA |
| **Errors/accuracies** | |
| Linearity error (relative to input range), (+/-) | 0.01 % |
| Temperature error (relative to input range), (+/-) | 0.005 %/K |
| Crosstalk between the inputs, min. | 60 dB |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) | 0.05 % |
| Operational error limit in overall temperature range | |
| ● Current, relative to input range, (+/-) | 0.5 % |
| Basic error limit (operational limit at 25 °C) | |
| ● Current, relative to input range, (+/-) | 0.1 % |
| **Interrupts/diagnostics/status information** | |
| Diagnostics function | Yes |
| Substitute values connectable | Yes |
| Alarms | |
| ● Diagnostic alarm | Yes |
| ● Limit value alarm | Yes; two upper and two lower limit values in each case |
| Diagnoses | |
| ● Monitoring the supply voltage | Yes |
| ● Wire-break | Yes; channel by channel |
| ● Short-circuit to M | Yes; Encoder supply to M, channel by channel |
| ● Group error | Yes |
| ● Overflow/underflow | Yes; channel by channel |
| Diagnostics indication LED | |
| ● MAINT LED | Yes; Yellow LED |
| ● Monitoring of the supply voltage (PWR-LED) | Yes; green PWR LED |
| ● Channel status display | No |
| ● for channel diagnostics | No |


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| ● for module diagnostics | Yes; green/red DIAG LED |
| **Potential separation** | |
| Potential separation channels | |
| ● between the channels | No |
| ● between the channels and backplane bus | Yes |
| ● Between the channels and load voltage L+ | No |
| **Isolation** | |
| Isolation tested with | 1 500 V DC/1 min, type test |
| **Ambient conditions** | |
| Ambient temperature during operation | |
| ● horizontal installation, min. | -40 °C |
| ● horizontal installation, max. | 70 °C; Observe derating |
| ● vertical installation, min. | -40 °C |
| ● vertical installation, max. | 60 °C; Observe derating |
| **Dimensions** | |
| Width | 22.5 mm |
| Height | 115 mm |
| Depth | 138 mm |
| **Weights** | |
| Weight, approx. | 150 g |

**Classifications**

| | Version | Classification |
|---|---|---|
| eClass | 14 | 27-23-01-90 |
| eClass | 12 | 27-23-01-90 |
| eClass | 9.1 | 27-23-01-90 |
| eClass | 9 | 27-23-01-90 |
| eClass | 8 | 27-23-01-90 |
| eClass | 7.1 | 27-23-01-90 |
| eClass | 6 | 27-23-01-90 |
| ETIM | 10 | EC000236 |
| ETIM | 9 | EC000236 |
| ETIM | 8 | EC000236 |
| ETIM | 7 | EC000236 |

**Approvals / Certificates**

**General Product Approval**

Miscellaneous | China RoHS | KC

**General Product Approval** | **For use in hazardous locations**

Declaration of Conformity

**For use in hazardous locations** | **Maritime application**

Miscellaneous

**Maritime application** | **Environment**


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CCS (China Classification Society)

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| **last modified:** | 10/23/2025 |


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