



Figure similar

SIMATIC ET 200SP, Analog input module, AI 4xRTD/TC High Feature, Pack quantity: 10 units, suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.1%, 2-/3-/4-wire

| General information | |
|---|--|
| Product type designation | AI 4xRTD/TC 2-/3-/4-wire HF |
| HW functional status | From FS08 |
| Firmware version | |
| • FW update possible | Yes |
| usable BaseUnits | BU type A0, A1 |
| Color code for module-specific color identification plate | CC00 |
| Product function | |
| • I&M data | Yes; I&M0 to I&M3 |
| • Isochronous mode | No |
| • Adjustment of measuring range | Yes |
| Engineering with | |
| • STEP 7 TIA Portal configurable/integrated from version | V14 |
| • STEP 7 configurable/integrated from version | V5.6 |
| • PCS 7 configurable/integrated from version | V8.1 SP1 |
| • PROFIBUS from GSD version/GSD revision | One GSD file each, Revision 3 and 5 and higher |
| • PROFINET from GSD version/GSD revision | GSDML V2.3 |
| Operating mode | |
| • Oversampling | No |
| • MSI | No |
| CiR - Configuration in RUN | |
| Reparameterization possible in RUN | Yes |
| Calibration 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, max. | 35 mA |
| Power loss | |
| Power loss, typ. | 0.75 W |
| Address area | |
| Address space per module | |
| • Address space per module, max. | 8 byte; + 1 byte for QI information |
| Hardware configuration | |
| Automatic encoding | Yes |
| • Mechanical coding element | Yes |
| • Type of mechanical coding element | Type A |

| Selection of BaseUnit for connection variants | |
|--|--|
| <ul style="list-style-type: none"> • 2-wire connection | BU type A0, A1 |
| <ul style="list-style-type: none"> • 3-wire connection | BU type A0, A1 |
| Analog inputs | |
| Number of analog inputs | 4 |
| permissible input voltage for voltage input (destruction limit), max. | 30 V |
| Constant measurement current for resistance-type transmitter, typ. | 0.7 mA; 1.7 mA for Cu10 sensors |
| Cycle time (all channels), min. | Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels); for line compensation in case of a three-wire connection, an additional cycle is necessary |
| Technical unit for temperature measurement adjustable | Yes; °C/°F/K |
| Input ranges (rated values), voltages | |
| <ul style="list-style-type: none"> • -1 V to +1 V <ul style="list-style-type: none"> — Input resistance (-1 V to +1 V) • -250 mV to +250 mV <ul style="list-style-type: none"> — Input resistance (-250 mV to +250 mV) • -50 mV to +50 mV <ul style="list-style-type: none"> — Input resistance (-50 mV to +50 mV) • -80 mV to +80 mV <ul style="list-style-type: none"> — Input resistance (-80 mV to +80 mV) | Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ |
| Input ranges (rated values), thermocouples | |
| <ul style="list-style-type: none"> • Type B <ul style="list-style-type: none"> — Input resistance (Type B) • Type C <ul style="list-style-type: none"> — Input resistance (Type C) • Type E <ul style="list-style-type: none"> — Input resistance (Type E) • Type J <ul style="list-style-type: none"> — Input resistance (type J) • Type K <ul style="list-style-type: none"> — Input resistance (Type K) • Type L <ul style="list-style-type: none"> — Input resistance (Type L) • Type N <ul style="list-style-type: none"> — Input resistance (Type N) • Type R <ul style="list-style-type: none"> — Input resistance (Type R) • Type S <ul style="list-style-type: none"> — Input resistance (Type S) • Type T <ul style="list-style-type: none"> — Input resistance (Type T) • Type U <ul style="list-style-type: none"> — Input resistance (Type U) • Type TXK/TXK(L) to GOST <ul style="list-style-type: none"> — Input resistance (Type TXK/TXK(L) to GOST) | Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ |
| Input ranges (rated values), resistance thermometer | |
| <ul style="list-style-type: none"> • Cu 10 <ul style="list-style-type: none"> — Input resistance (Cu 10) • Ni 100 <ul style="list-style-type: none"> — Input resistance (Ni 100) • Ni 1000 <ul style="list-style-type: none"> — Input resistance (Ni 1000) • LG-Ni 1000 <ul style="list-style-type: none"> — Input resistance (LG-Ni 1000) • Ni 120 <ul style="list-style-type: none"> — Input resistance (Ni 120) • Ni 200 <ul style="list-style-type: none"> — Input resistance (Ni 200) • Ni 500 <ul style="list-style-type: none"> — Input resistance (Ni 500) | Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ |

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|--|---|
| <ul style="list-style-type: none"> • Pt 100 <ul style="list-style-type: none"> — Input resistance (Pt 100) • Pt 1000 <ul style="list-style-type: none"> — Input resistance (Pt 1000) • Pt 200 <ul style="list-style-type: none"> — Input resistance (Pt 200) • Pt 500 <ul style="list-style-type: none"> — Input resistance (Pt 500) | <p>Yes; 16 bit incl. sign 1 MΩ</p> <p>Yes; 16 bit incl. sign 1 MΩ</p> <p>Yes; 16 bit incl. sign 1 MΩ</p> <p>Yes; 16 bit incl. sign 1 MΩ</p> |
| Input ranges (rated values), resistors | |
| <ul style="list-style-type: none"> • 0 to 150 ohms <ul style="list-style-type: none"> — Input resistance (0 to 150 ohms) • 0 to 300 ohms <ul style="list-style-type: none"> — Input resistance (0 to 300 ohms) • 0 to 600 ohms <ul style="list-style-type: none"> — Input resistance (0 to 600 ohms) • 0 to 3000 ohms <ul style="list-style-type: none"> — Input resistance (0 to 3000 ohms) • 0 to 6000 ohms <ul style="list-style-type: none"> — Input resistance (0 to 6000 ohms) • PTC <ul style="list-style-type: none"> — Input resistance (PTC) | <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> |
| Thermocouple (TC) | |
| Temperature compensation | |
| <ul style="list-style-type: none"> — parameterizable — Reference channel of the module — internal comparison point — Reference channel of the group — Number of reference channel groups — fixed reference temperature | <p>Yes</p> <p>Yes</p> <p>Yes; with BaseUnit type A1</p> <p>Yes</p> <p>4; Group 0 to 3</p> <p>Yes</p> |
| Cable length | |
| <ul style="list-style-type: none"> • shielded, max. | 200 m; 50 m with thermocouples |
| Analog value generation for the inputs | |
| Measurement principle | integrating (Sigma-Delta) |
| Integration and conversion time/resolution per channel | |
| <ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Basic conversion time, including integration time (ms) <ul style="list-style-type: none"> — additional processing time for wire-break check — additional power line wire-break check • Interference voltage suppression for interference frequency f1 in Hz • Conversion time (per channel) | <p>16 bit</p> <p>Yes</p> <p>2 ms; In the ranges resistance thermometers, resistors and thermocouples 2 ms; for 3/4 wire transducer (resistance thermometer and resistor)</p> <p>16.6 / 50 / 60 Hz</p> <p>180 / 60 / 50 ms</p> |
| Smoothing of measured values | |
| <ul style="list-style-type: none"> • Number of smoothing levels • parameterizable | <p>4; None; 4/8/16 times</p> <p>Yes</p> |
| Encoder | |
| Connection of signal encoders | |
| <ul style="list-style-type: none"> • for voltage measurement • for resistance measurement with two-wire connection • for resistance measurement with three-wire connection • for resistance measurement with four-wire connection | <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> |
| Errors/accuracies | |
| Linearity error (relative to input range), (+/-) | 0.01 %; ± 0.1 % for resistance thermometers and resistance |
| Temperature error (relative to input range), (+/-) | 0.0009 %/K; ± 0.005 % / K at thermocouple |
| Crosstalk between the inputs, min. | -50 dB |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) | 0.05 % |
| Operational error limit in overall temperature range | |
| <ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) • Resistance, relative to input range, (+/-) | <p>0.1 %</p> <p>0.1 %</p> |
| Basic error limit (operational limit at 25 °C) | |

| | |
|---|--|
| <ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) | 0.05 % |
| <ul style="list-style-type: none"> • Resistance, relative to input range, (+/-) | 0.05 % |
| Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, $f1 =$ interference frequency | |
| <ul style="list-style-type: none"> • Series mode interference (peak value of interference < rated value of input range), min. | 70 dB |
| <ul style="list-style-type: none"> • Common mode voltage, max. | 10 V |
| <ul style="list-style-type: none"> • Common mode interference, min. | 90 dB |
| Interrupts/diagnostics/status information | |
| Diagnostics function | Yes |
| Alarms | |
| <ul style="list-style-type: none"> • Diagnostic alarm | Yes |
| <ul style="list-style-type: none"> • Limit value alarm | Yes; two upper and two lower limit values in each case |
| Diagnoses | |
| <ul style="list-style-type: none"> • Monitoring the supply voltage | Yes |
| <ul style="list-style-type: none"> • Wire-break | Yes; channel by channel |
| <ul style="list-style-type: none"> • Group error | Yes |
| <ul style="list-style-type: none"> • Overflow/underflow | Yes; channel by channel |
| Diagnostics indication LED | |
| <ul style="list-style-type: none"> • Monitoring of the supply voltage (PWR-LED) | Yes; green PWR LED |
| <ul style="list-style-type: none"> • Channel status display | Yes; green LED |
| <ul style="list-style-type: none"> • for channel diagnostics | Yes; red LED |
| <ul style="list-style-type: none"> • for module diagnostics | Yes; green/red DIAG LED |
| Potential separation | |
| Potential separation channels | |
| <ul style="list-style-type: none"> • between the channels | No |
| <ul style="list-style-type: none"> • between the channels and backplane bus | Yes |
| <ul style="list-style-type: none"> • between the channels and the power supply of the electronics | Yes |
| Permissible potential difference | |
| between the inputs (UCM) | 10 V DC |
| Isolation | |
| Isolation tested with | 707 V DC (type test) |
| Ambient conditions | |
| Ambient temperature during operation | |
| <ul style="list-style-type: none"> • horizontal installation, min. | -30 °C; < 0 °C as of FS08 |
| <ul style="list-style-type: none"> • horizontal installation, max. | 60 °C |
| <ul style="list-style-type: none"> • vertical installation, min. | -30 °C; < 0 °C as of FS08 |
| <ul style="list-style-type: none"> • vertical installation, max. | 50 °C |
| Altitude during operation relating to sea level | |
| <ul style="list-style-type: none"> • Installation altitude above sea level, max. | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual |
| Dimensions | |
| Width | 15 mm |
| Height | 73 mm |
| Depth | 58 mm |

last modified:

9/7/2023 