




SIMATIC ET 200SP, Analog input module, AI 2x U/I 2-/4-wire High Speed, suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.3%

| General information | |
|---|---|
| Product type designation | AI 2xU/I 2-/4-wire HS |
| HW functional status | From FS07 |
| 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 | Yes |
| • Measuring range scalable | No |
| • Scalable measured values | No |
| • Adjustment of measuring range | No |
| Engineering with | |
| • STEP 7 TIA Portal configurable/integrated from version | V13 SP1 |
| • STEP 7 configurable/integrated from version | V5.5 SP3 / - |
| • 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 | Yes; 2 channels per module |
| • MSI | No |
| CiR - Configuration in RUN | |
| Reparameterization possible in RUN | Yes |
| Calibration possible in RUN | No |
| 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) | 39 mA; without sensor supply |
| Encoder supply | |
| 24 V encoder supply | |
| • 24 V | Yes; For current measurement |
| • Short-circuit protection | Yes |
| • Output current, max. | 20 mA; max. 50 mA per channel for a duration < 10 s |
| Power loss | |
| Power loss, typ. | 0.95 W; without sensor supply |

| Address area | |
|---|--|
| Address space per module | |
| <ul style="list-style-type: none"> Address space per module, max. | 4 byte; + 1 byte for QI information (32 bytes in the oversampling operating mode) |
| Hardware configuration | |
| Automatic encoding | |
| <ul style="list-style-type: none"> Mechanical coding element Type of mechanical coding element | Yes Yes Type A |
| Selection of BaseUnit for connection variants | |
| <ul style="list-style-type: none"> 2-wire connection 4-wire connection | BU type A0, A1 BU type A0, A1 |
| Analog inputs | |
| Number of analog inputs | |
| <ul style="list-style-type: none"> For current measurement For voltage measurement | 2; Differential inputs 2 2 |
| permissible input voltage for voltage input (destruction limit), max. | 30 V |
| permissible input current for current input (destruction limit), max. | 50 mA |
| Cycle time (all channels), min. | 125 μ s |
| Analog input with oversampling | |
| <ul style="list-style-type: none"> Values per cycle, max. Resolution, min. | Yes 16 50 μ s |
| Input ranges (rated values), voltages | |
| <ul style="list-style-type: none"> 0 to +10 V <ul style="list-style-type: none"> — Input resistance (0 to 10 V) 1 V to 5 V <ul style="list-style-type: none"> — Input resistance (1 V to 5 V) -10 V to +10 V <ul style="list-style-type: none"> — Input resistance (-10 V to +10 V) -5 V to +5 V <ul style="list-style-type: none"> — Input resistance (-5 V to +5 V) | Yes; 15 bit 75 k Ω Yes; 13 bit 75 k Ω Yes; 16 bit incl. sign 75 k Ω Yes; 15 bit incl. sign 75 k Ω |
| Input ranges (rated values), currents | |
| <ul style="list-style-type: none"> 0 to 20 mA <ul style="list-style-type: none"> — Input resistance (0 to 20 mA) -20 mA to +20 mA <ul style="list-style-type: none"> — Input resistance (-20 mA to +20 mA) 4 mA to 20 mA <ul style="list-style-type: none"> — Input resistance (4 mA to 20 mA) | Yes; 15 bit 130 Ω Yes; 16 bit incl. sign 130 Ω Yes; 14 bit 130 Ω |
| Cable length | |
| <ul style="list-style-type: none"> shielded, max. | 1 000 m; 200 m for voltage measurement |
| Analog value generation for the inputs | |
| Measurement principle | Actual value encryption (successive approximation) |
| Integration and conversion time/resolution per channel | |
| <ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Interference voltage suppression for interference frequency f1 in Hz Conversion time (per channel) | 16 bit No 10 μ s |
| Smoothing of measured values | |
| <ul style="list-style-type: none"> Number of smoothing levels parameterizable | 7; none; 2-/4-/8-/16-/32-/64-fold Yes |
| Encoder | |
| Connection of signal encoders | |
| <ul style="list-style-type: none"> for voltage measurement for current measurement as 2-wire transducer <ul style="list-style-type: none"> — Burden of 2-wire transmitter, max. for current measurement as 4-wire transducer | Yes Yes 650 Ω Yes |
| Errors/accuracies | |
| Linearity error (relative to input range), (+/-) | 0.03 % |
| Temperature error (relative to input range), (+/-) | 0.01 %/K |

| | |
|---|--|
| Crosstalk between the inputs, min. | -50 dB |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) | 0.1 % |
| Operational error limit in overall temperature range | |
| • Voltage, relative to input range, (+/-) | 0.3 % |
| • Current, relative to input range, (+/-) | 0.3 % |
| Basic error limit (operational limit at 25 °C) | |
| • Voltage, relative to input range, (+/-) | 0.2 % |
| • Current, relative to input range, (+/-) | 0.2 % |
| Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency | |
| • Common mode voltage, max. | 35 V |
| • Common mode interference, min. | 90 dB |
| Isochronous mode | |
| Filtering and processing time (TCI), min. | 80 μ s |
| Bus cycle time (TDP), min. | 125 μ s; Starting from firmware Version V2.0.1 |
| Interrupts/diagnostics/status information | |
| Alarms | |
| • Diagnostic alarm | Yes |
| • Limit value alarm | Yes; two upper and two lower limit values in each case |
| Diagnoses | |
| • Wire-break | Yes; channel-by-channel, at 4 to 20 mA only |
| • Short-circuit | Yes; channel-by-channel, at 1 to 5 V or for current measuring ranges short-circuit in encoder supply |
| • Group error | Yes |
| • Overflow/underflow | Yes |
| Diagnostics indication LED | |
| • Monitoring of the supply voltage (PWR-LED) | Yes; green PWR LED |
| • Channel status display | Yes; green LED |
| • for channel diagnostics | Yes; red LED |
| • for module diagnostics | Yes; green/red DIAG LED |
| Potential separation | |
| Potential separation channels | |
| • between the channels | Yes |
| • between the channels and backplane bus | Yes |
| • between the channels and the power supply of the electronics | Yes |
| Isolation | |
| Isolation tested with | 707 V DC (type test) |
| Ambient conditions | |
| Ambient temperature during operation | |
| • horizontal installation, min. | -30 °C |
| • horizontal installation, max. | 60 °C |
| • vertical installation, min. | -30 °C |
| • vertical installation, max. | 50 °C |
| Altitude during operation relating to sea level | |
| • 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 |
| Weights | |
| Weight, approx. | 32 g |
| last modified: | 1/24/2021  |