




SIMATIC ET 200SP, ANALOG INPUT MODULE, AI 4XU/I 2-WIRE STANDARD, PACKING UNIT: 10 PIECES, FITS TO BU-TYPE A0, A1, COLOR CODE CC03, MODULE DIAGNOSIS, 16BIT, +/-0,3%

| General information                                       |   |
|---|---|
| Product type designation                                  | AI 4x U/I 2-wire                                    |
| HW functional status                                      | From FS02   |
| Firmware version  |   |
| • FW update possible                                      | Yes   |
| usable BaseUnits  | BU type A0, A1                                      |
| Color code for module-specific color identification plate | CC03  |
| Product function  |   |
| • I&M data  | Yes; I&M0 to I&M3                                   |
| • Isochronous mode  | No  |
| • Measuring range scalable                                | No  |
| Engineering with  |   |
| • STEP 7 TIA Portal configurable/integrated from version  | V14 / -   |
| • STEP 7 configurable/integrated from version             | V5.6 and higher                                     |
| • 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                               | 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, max.                                 | 37 mA; without sensor supply                        |
| Encoder supply  |   |
| 24 V encoder supply                                       |   |
| • 24 V  | Yes   |
| • Short-circuit protection                                | Yes   |
| • Output current, max.                                    | 20 mA; max. 50 mA per channel for a duration < 10 s |
| Power loss  |   |
| Power loss, typ.  | 0.85 W; Without encoder supply voltage              |
| Address area  |   |

|  |  |
|--|--|
| <b>Address space per module</b>  |  |
| • Address space per module, max.   | 8 byte; + 1 byte for QI information  |
| <b>Hardware configuration</b>  |  |
| Automatic encoding   | Yes  |
| • Mechanical coding element  | Yes  |
| • Type of mechanical coding element  | Type A   |
| <b>Selection of BaseUnit for connection variants</b>                                   |  |
| • 2-wire connection  | BU type A0, A1   |
| <b>Analog inputs</b>   |  |
| Number of analog inputs  | 4; Differential inputs   |
| 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.  | Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels) |
| <b>Input ranges (rated values), voltages</b>   |  |
| • 0 to +10 V<br>— Input resistance (0 to 10 V)   | Yes; 15 bit<br>120 kΩ  |
| • 1 V to 5 V<br>— Input resistance (1 V to 5 V)  | Yes; 15 bit<br>120 kΩ  |
| • -10 V to +10 V<br>— Input resistance (-10 V to +10 V)                                | Yes; 16 bit incl. sign<br>120 kΩ   |
| • -5 V to +5 V<br>— Input resistance (-5 V to +5 V)                                    | Yes; 16 bit incl. sign<br>120 kΩ   |
| <b>Input ranges (rated values), currents</b>   |  |
| • 0 to 20 mA<br>— Input resistance (0 to 20 mA)  | Yes; 15 bit<br>100 Ω; + approx. 0.7 V diode forward voltage  |
| • 4 mA to 20 mA<br>— Input resistance (4 mA to 20 mA)                                  | Yes; 15 bit<br>100 Ω; + approx. 0.7 V diode forward voltage  |
| <b>Cable length</b>  |  |
| • shielded, max.   | 1 000 m; 200 m for voltage measurement   |
| <b>Analog value generation for the inputs</b>  |  |
| Measurement principle  | integrating (Sigma-Delta)  |
| <b>Integration and conversion time/resolution per channel</b>                          |  |
| • Resolution with overrange (bit including sign), max.                                 | 16 bit   |
| • Integration time, parameterizable  | Yes  |
| • Interference voltage suppression for interference frequency f1 in Hz                 | 16.6 / 50 / 60 Hz  |
| • Conversion time (per channel)  | 180 / 60 / 50 ms   |
| <b>Smoothing of measured values</b>  |  |
| • Number of smoothing levels   | 4; None; 4/8/16 times  |
| • parameterizable  | Yes  |
| <b>Encoder</b>   |  |
| <b>Connection of signal encoders</b>   |  |
| • for voltage measurement  | Yes  |
| • for current measurement as 2-wire transducer<br>— Burden of 2-wire transmitter, max. | Yes<br>650 Ω   |
| • for current measurement as 4-wire transducer   | No   |
| <b>Errors/accuracies</b>   |  |
| Linearity error (relative to input range), (+/-)                                       | 0.01 %   |
| Temperature error (relative to input range), (+/-)                                     | 0.005 %/K  |
| Crosstalk between the inputs, min.   | 50 dB  |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)              | 0.05 %   |
| <b>Operational error limit in overall temperature range</b>                            |  |
| • Voltage, relative to input range, (+/-)  | 0.5 %  |
| • Current, relative to input range, (+/-)  | 0.5 %  |
| <b>Basic error limit (operational limit at 25 °C)</b>                                  |  |
| • Voltage, relative to input range, (+/-)  | 0.3 %  |
| • Current, relative to input range, (+/-)  | 0.3 %  |

|   |   |
|---|---|
| <b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1</math> = interference frequency</b> |   |
| • Series mode interference (peak value of interference < rated value of input range), min.                                      | 70 dB   |
| • Common mode voltage, max.   | 10 V  |
| • Common mode interference, min.  | 90 dB   |
| <b>Interrupts/diagnostics/status information</b>  |   |
| Diagnostics function  | Yes   |
| <b>Alarms</b>   |   |
| • Diagnostic alarm  | Yes   |
| • Limit value alarm   | No  |
| <b>Diagnoses</b>  |   |
| • Monitoring the supply voltage   | Yes   |
| • Wire-break  | Yes; at 4 to 20 mA  |
| • Short-circuit   | Yes; with 1 to 5 V or 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply |
| • Group error   | Yes   |
| • Overflow/underflow  | Yes   |
| <b>Diagnostics indication LED</b>   |   |
| • Monitoring of the supply voltage (PWR-LED)  | Yes; green LED  |
| • Channel status display  | Yes; green LED  |
| • for channel diagnostics   | No  |
| • for module diagnostics  | Yes; green/red LED  |
| <b>Potential separation</b>   |   |
| <b>Potential separation channels</b>  |   |
| • between the channels  | Yes; channel group-specific between 2-wire current input group and voltage input group                                |
| • between the channels and backplane bus  | Yes   |
| • between the channels and the power supply of the electronics  | Yes; only for voltage inputs  |
| <b>Permissible potential difference</b>   |   |
| between the inputs (UCM)  | 10 V DC   |
| <b>Isolation</b>  |   |
| Isolation tested with   | 707 V DC (type test)  |
| <b>Standards, approvals, certificates</b>   |   |
| Suitable for applications according to AMS 2750   | Yes; Declaration of Conformity, see online support entry 109757262  |
| Suitable for applications according to CQI-9  | Yes   |
| <b>Ambient conditions</b>   |   |
| <b>Ambient temperature during operation</b>   |   |
| • horizontal installation, min.   | -30 °C; < 0 °C as of FS02   |
| • horizontal installation, max.   | 60 °C   |
| • vertical installation, min.   | -30 °C; < 0 °C as of FS02   |
| • vertical installation, max.   | 50 °C   |
| <b>Altitude during operation relating to sea level</b>  |   |
| • Installation altitude above sea level, max.   | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual  |
| <b>Dimensions</b>   |   |
| Width   | 15 mm   |
| Height  | 73 mm   |
| Depth   | 58 mm   |
| <b>Weights</b>  |   |
| Weight, approx.   | 31 g  |
| <b>last modified:</b>   | 2/6/2021                           |