



SIMATIC ET 200SP, ANALOG INPUT MODULE, AI 4X1 2-/4-WIRE STANDARD, PACKING UNIT: 1 PIECE, FITS TO BU-TYPE A0, A1, COLOR CODE CC03, MODULE DIAGNOSIS, 16BIT, +/-0,3%

| General information                                      |   |
|--|---|
| Product type designation                                 | AI 4x1 2-/4-wire ST                                 |
| HW functional status                                     | From FS02   |
| Firmware version   |   |
| • FW update possible                                     | Yes   |
| usable BaseUnits   | BU type A0, A1                                      |
| Color code for module-specific color-coded label         | 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   |   |
| Address space per module                                 |   |

|   |  |
|---|--|
| • 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   |
| • 4-wire connection   | BU type A0, A1   |
| <b>Analog inputs</b>  |  |
| Number of analog inputs   | 4; Differential inputs   |
| 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), currents</b>  |  |
| • 0 to 20 mA<br>— Input resistance (0 to 20 mA)   | Yes; 16 bit incl. sign<br>100 Ω; + approx. 0.7 V diode forward voltage in 2-wire operation                                   |
| • -20 mA to +20 mA<br>— Input resistance (-20 mA to +20 mA)   | Yes<br>100 Ω   |
| • 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 in 2-wire operation  |
| <b>Cable length</b>   |  |
| • shielded, max.  | 1 000 m  |
| <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 $f_1$ 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   | No   |
| • 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  | Yes  |
| <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; Applies to up to ±5 V overvoltage in other channels   |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)   | 0.05 %   |
| <b>Operational error limit in overall temperature range</b>   |  |
| • Current, relative to input range, (+/-)   | 0.5 %  |
| <b>Basic error limit (operational limit at 25 °C)</b>   |  |
| • 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   |

| Diagnoses  |  |                |                       |
|--|--|----------------|-----------------------|
| • Monitoring the supply voltage                                | Yes  |                |                       |
| • Wire-break   | Yes; at 4 to 20 mA   |                |                       |
| • Short-circuit  | Yes; 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  |                |                       |
| Diagnostics indication LED                                     |  |                |                       |
| • 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   |                |                       |
| Potential separation   |  |                |                       |
| Potential separation channels                                  |  |                |                       |
| • between the channels   | Yes; channel group-specific between 2-wire current input group and 4-wire voltage input group        |                |                       |
| • between the channels and backplane bus                       | Yes  |                |                       |
| • between the channels and the power supply of the electronics | Yes; only for 4-wire transducer  |                |                       |
| Permissible potential difference                               |  |                |                       |
| between the inputs (UCM)                                       | 10 V DC  |                |                       |
| Isolation  |  |                |                       |
| Isolation tested with  | 707 V DC (type test)   |                |                       |
| Standards, approvals, certificates                             |  |                |                       |
| Ecological footprint   |  |                |                       |
| • environmental product declaration                            | Yes  |                |                       |
| Global warming potential                                       |  |                |                       |
| — global warming potential, (total) [CO2 eq]                   | 9.32 kg  |                |                       |
| — global warming potential, (during production) [CO2 eq]       | 4.97 kg  |                |                       |
| — global warming potential, (during operation) [CO2 eq]        | 4.79 kg  |                |                       |
| — global warming potential, (after end of life cycle) [CO2 eq] | -0.449 kg  |                |                       |
| Ambient conditions   |  |                |                       |
| Ambient temperature during operation                           |  |                |                       |
| • 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  |                |                       |
| 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                               |                |                       |
| Absolute humidity  |  |                |                       |
| • dew point, min.  | -60 °C; suitable for dry room applications   |                |                       |
| Dimensions   |  |                |                       |
| Width  | 15 mm  |                |                       |
| Height   | 73 mm  |                |                       |
| Depth  | 58 mm  |                |                       |
| Weights  |  |                |                       |
| Weight, approx.  | 31 g   |                |                       |
| Classifications  |  |                |                       |
|  |  | <b>Version</b> | <b>Classification</b> |
|  | eClass   | 14             | 27-24-26-01           |
|  | eClass   | 12             | 27-24-26-01           |
|  | eClass   | 9.1            | 27-24-26-01           |
|  | eClass   | 9              | 27-24-26-01           |
|  | eClass   | 8              | 27-24-26-01           |
|  | eClass   | 7.1            | 27-24-26-01           |
|  | eClass   | 6              | 27-24-26-01           |

|        |    |             |
|--------|----|-------------|
| ETIM   | 10 | EC001596    |
| ETIM   | 9  | EC001596    |
| ETIM   | 8  | EC001596    |
| ETIM   | 7  | EC001596    |
| IDEA   | 4  | 3562        |
| UNSPSC | 15 | 32-15-17-05 |

**Approvals / Certificates**

**General Product Approval**



[Confirmation](#)



**General Product Approval**

[Miscellaneous](#)



[Miscellaneous](#)



**EMV**

**Test Certificates**

**Maritime application**



[Special Test Certificate](#)



**Maritime application**

**other**

**Environment**



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