



SIMATIC ET 200SP, ANALOG INPUT MODULE, AI 4xI 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 4xI 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 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  |   |
| Address space per module                                  |   |
| • Address space per module, max.                          | 8 byte; + 1 byte for QI information                 |

| Hardware configuration  |   |
|---|---|
| Automatic encoding  | Yes   |
| <ul style="list-style-type: none"> <li>• Mechanical coding element</li> <li>• Type of mechanical coding element</li> </ul>  | Yes<br>Type A   |
| Selection of BaseUnit for connection variants   |   |
| <ul style="list-style-type: none"> <li>• 2-wire connection</li> <li>• 4-wire connection</li> </ul>  | BU type A0, A1<br>BU type A0, A1  |
| Analog inputs   |   |
| 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)  |
| Input ranges (rated values), currents   |   |
| <ul style="list-style-type: none"> <li>• 0 to 20 mA <ul style="list-style-type: none"> <li>— Input resistance (0 to 20 mA)</li> </ul> </li> <li>• -20 mA to +20 mA <ul style="list-style-type: none"> <li>— Input resistance (-20 mA to +20 mA)</li> </ul> </li> <li>• 4 mA to 20 mA <ul style="list-style-type: none"> <li>— Input resistance (4 mA to 20 mA)</li> </ul> </li> </ul> | Yes; 16 bit incl. sign<br>100 Ω; + approx. 0.7 V diode forward voltage in 2-wire operation<br>Yes<br>100 Ω<br>Yes; 15 bit<br>100 Ω; + approx. 0.7 V diode forward voltage in 2-wire operation |
| Cable length  |   |
| <ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>  | 1 000 m   |
| Analog value generation for the inputs  |   |
| Measurement principle   | integrating (Sigma-Delta)   |
| Integration and conversion time/resolution per channel  |   |
| <ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> <li>• Integration time, parameterizable</li> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> <li>• Conversion time (per channel)</li> </ul>  | 16 bit<br>Yes<br>16.6 / 50 / 60 Hz<br>180 / 60 / 50 ms  |
| Smoothing of measured values  |   |
| <ul style="list-style-type: none"> <li>• Number of smoothing levels</li> <li>• parameterizable</li> </ul>   | 4; None; 4/8/16 times<br>Yes  |
| Encoder   |   |
| Connection of signal encoders   |   |
| <ul style="list-style-type: none"> <li>• for voltage measurement</li> <li>• for current measurement as 2-wire transducer <ul style="list-style-type: none"> <li>— Burden of 2-wire transmitter, max.</li> </ul> </li> <li>• for current measurement as 4-wire transducer</li> </ul>   | No<br>Yes<br>650 Ω<br>Yes   |
| Errors/accuracies   |   |
| 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 %  |
| Operational error limit in overall temperature range  |   |
| <ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>   | 0.5 %   |
| Basic error limit (operational limit at 25 °C)  |   |
| <ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>   | 0.3 %   |
| Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$ , f1 = interference frequency   |   |
| <ul style="list-style-type: none"> <li>• Series mode interference (peak value of interference &lt; rated value of input range), min.</li> <li>• Common mode voltage, max.</li> <li>• Common mode interference, min.</li> </ul>  | 70 dB<br>10 V<br>90 dB  |
| Interrupts/diagnostics/status information   |   |
| Diagnostics function  | Yes   |
| Alarms  |   |
| <ul style="list-style-type: none"> <li>• Diagnostic alarm</li> <li>• Limit value alarm</li> </ul>   | Yes<br>No   |
| Diagnoses   |   |
| <ul style="list-style-type: none"> <li>• Monitoring the supply voltage</li> <li>• Wire-break</li> </ul>   | Yes<br>Yes; at 4 to 20 mA   |

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Short-circuit</li> </ul>  | Yes; 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply |
| <ul style="list-style-type: none"> <li>• Group error</li> </ul>  | Yes  |
| <ul style="list-style-type: none"> <li>• Overflow/underflow</li> </ul>   | Yes  |
| <b>Diagnostics indication LED</b>  |  |
| <ul style="list-style-type: none"> <li>• Monitoring of the supply voltage (PWR-LED)</li> </ul>                   | Yes; green LED   |
| <ul style="list-style-type: none"> <li>• Channel status display</li> </ul>                                       | Yes; green LED   |
| <ul style="list-style-type: none"> <li>• for channel diagnostics</li> </ul>                                      | No   |
| <ul style="list-style-type: none"> <li>• for module diagnostics</li> </ul>                                       | Yes; green/red LED   |
| <b>Potential separation</b>  |  |
| <b>Potential separation channels</b>   |  |
| <ul style="list-style-type: none"> <li>• between the channels</li> </ul>   | Yes; channel group-specific between 2-wire current input group and 4-wire voltage input group        |
| <ul style="list-style-type: none"> <li>• between the channels and backplane bus</li> </ul>                       | Yes  |
| <ul style="list-style-type: none"> <li>• between the channels and the power supply of the electronics</li> </ul> | Yes; only for 4-wire transducer  |
| <b>Permissible potential difference</b>  |  |
| between the inputs (UCM)   | 10 V DC  |
| <b>Isolation</b>   |  |
| Isolation tested with  | 707 V DC (type test)   |
| <b>Ambient conditions</b>  |  |
| <b>Ambient temperature during operation</b>  |  |
| <ul style="list-style-type: none"> <li>• horizontal installation, min.</li> </ul>                                | -30 °C; < 0 °C as of FS02  |
| <ul style="list-style-type: none"> <li>• horizontal installation, max.</li> </ul>                                | 60 °C  |
| <ul style="list-style-type: none"> <li>• vertical installation, min.</li> </ul>                                  | -30 °C; < 0 °C as of FS02  |
| <ul style="list-style-type: none"> <li>• vertical installation, max.</li> </ul>                                  | 50 °C  |
| <b>Altitude during operation relating to sea level</b>   |  |
| <ul style="list-style-type: none"> <li>• Installation altitude above sea level, max.</li> </ul>                  | 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   |

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