

SIMATIC DP, ELECT. SUBMODULE FOR ET200ISP, 4 AI, TC, FOR CONNECTION OF THERMOELEMENS (VOLTAGE MEASUREMENT)



Figure similar

|                                                       |                                                                                                                                                                                        |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input current                                         |                                                                                                                                                                                        |
| from supply voltage L+, max.                          | 30 mA                                                                                                                                                                                  |
| Power loss                                            |                                                                                                                                                                                        |
| Power loss, typ.                                      | 0.4 W                                                                                                                                                                                  |
| Analog inputs                                         |                                                                                                                                                                                        |
| Number of analog inputs                               | 4                                                                                                                                                                                      |
| Cycle time (all channels) max.                        | 320 ms; 66 ms basic conversion time x 4 channels with interference frequency suppression 60 Hz, 80 ms basic conversion time x 4 channels with interference frequency suppression 50 Hz |
| Technical unit for temperature measurement adjustable | Yes                                                                                                                                                                                    |
| Input ranges                                          |                                                                                                                                                                                        |
| • Voltage                                             | Yes                                                                                                                                                                                    |
| • Current                                             | No                                                                                                                                                                                     |
| • Thermocouple                                        | Yes                                                                                                                                                                                    |
| • Resistance thermometer                              | No                                                                                                                                                                                     |

|                                                               |                                                                                        |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------|
| • Resistance                                                  | No                                                                                     |
| Input ranges (rated values), voltages                         |                                                                                        |
| • -80 mV to +80 mV                                            | Yes                                                                                    |
| • Input resistance (-80 mV to +80 mV)                         | 1 000 kΩ                                                                               |
| Input ranges (rated values), thermocouples                    |                                                                                        |
| • Type B                                                      | Yes                                                                                    |
| • Input resistance (Type B)                                   | 1 000 kΩ                                                                               |
| • Type C                                                      | Yes                                                                                    |
| • Input resistance (Type C)                                   | 1 000 kΩ                                                                               |
| • Type E                                                      | Yes                                                                                    |
| • Input resistance (Type E)                                   | 1 000 kΩ                                                                               |
| • Type J                                                      | Yes                                                                                    |
| • Input resistance (type J)                                   | 1 000 kΩ                                                                               |
| • Type K                                                      | Yes                                                                                    |
| • Input resistance (Type K)                                   | 1 000 kΩ                                                                               |
| • Type L                                                      | Yes                                                                                    |
| • Input resistance (Type L)                                   | 1 000 kΩ                                                                               |
| • Type N                                                      | Yes                                                                                    |
| • Input resistance (Type N)                                   | 1 000 kΩ                                                                               |
| • Type R                                                      | Yes                                                                                    |
| • Input resistance (Type R)                                   | 1 000 kΩ                                                                               |
| • Type S                                                      | Yes                                                                                    |
| • Input resistance (Type S)                                   | 1 000 kΩ                                                                               |
| • Type T                                                      | Yes                                                                                    |
| • Input resistance (Type T)                                   | 1 000 kΩ                                                                               |
| • Type U                                                      | Yes                                                                                    |
| • Input resistance (Type U)                                   | 1 000 kΩ                                                                               |
| Thermocouple (TC)                                             |                                                                                        |
| Temperature compensation                                      |                                                                                        |
| — internal temperature compensation                           | Yes; via supplied TC sensor module                                                     |
| — external temperature compensation with compensations socket | Yes; via temperature value, acquired by an analog module of the same ET 200iSP station |
| Characteristic linearization                                  |                                                                                        |
| • parameterizable                                             | Yes                                                                                    |
| — for thermocouples                                           | Yes                                                                                    |
| Cable length                                                  |                                                                                        |
| • shielded, max.                                              | 50 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> </ul>                                                                                                             | 16 bit                                     |
| <ul style="list-style-type: none"> <li>• Integration time, parameterizable</li> </ul>                                                                                                                                | Yes                                        |
| <ul style="list-style-type: none"> <li>• Basic conversion time, including integration time (ms) <ul style="list-style-type: none"> <li>— additional conversion time for wire-break monitoring</li> </ul> </li> </ul> | 80 ms at 50 Hz; 66 ms at 60 Hz<br><br>5 ms |
| <ul style="list-style-type: none"> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> </ul>                                                                                             | 50 / 60 Hz                                 |
| <b>Smoothing of measured values</b>                                                                                                                                                                                  |                                            |
| <ul style="list-style-type: none"> <li>• parameterizable</li> </ul>                                                                                                                                                  | Yes; in 4 stages                           |
| <ul style="list-style-type: none"> <li>• Step: None</li> </ul>                                                                                                                                                       | Yes; 1 x cycle time                        |
| <ul style="list-style-type: none"> <li>• Step: low</li> </ul>                                                                                                                                                        | Yes; 4 x cycle time                        |
| <ul style="list-style-type: none"> <li>• Step: Medium</li> </ul>                                                                                                                                                     | Yes; 32 x cycle time                       |
| <ul style="list-style-type: none"> <li>• Step: High</li> </ul>                                                                                                                                                       | Yes; 64 x cycle time                       |
| <b>Errors/accuracies</b>                                                                                                                                                                                             |                                            |
| Linearity error (relative to input range), (+/-)                                                                                                                                                                     | 0.015 %                                    |
| Temperature error (relative to input range), (+/-)                                                                                                                                                                   | 0.02 %/K                                   |
| Crosstalk between the inputs, min.                                                                                                                                                                                   | -50 dB                                     |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)                                                                                                                                            | 0.01 %                                     |
| <b>Operational error limit in overall temperature range</b>                                                                                                                                                          |                                            |
| <ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>                                                                                                                          | 0.15 %                                     |
| <b>Basic error limit (operational limit at 25 °C)</b>                                                                                                                                                                |                                            |
| <ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>                                                                                                                          | 0.1 %                                      |
| <b>Interference voltage suppression for <math>f = n \times (f1 \pm 1 \%)</math>, f1 = interference frequency</b>                                                                                                     |                                            |
| <ul style="list-style-type: none"> <li>• Series mode interference (peak value of interference &lt; rated value of input range), min.</li> </ul>                                                                      | 70 dB                                      |
| <ul style="list-style-type: none"> <li>• Common mode interference, min.</li> </ul>                                                                                                                                   | 90 dB                                      |
| <b>Interrupts/diagnostics/status information</b>                                                                                                                                                                     |                                            |
| <b>Alarms</b>                                                                                                                                                                                                        |                                            |
| <ul style="list-style-type: none"> <li>• Diagnostic alarm</li> </ul>                                                                                                                                                 | Yes; Parameterizable                       |
| <ul style="list-style-type: none"> <li>• Limit value alarm</li> </ul>                                                                                                                                                | Yes; Parameterizable                       |
| <b>Diagnostic messages</b>                                                                                                                                                                                           |                                            |
| <ul style="list-style-type: none"> <li>• Diagnostic information readable</li> </ul>                                                                                                                                  | Yes                                        |
| <b>Diagnostics indication LED</b>                                                                                                                                                                                    |                                            |
| <ul style="list-style-type: none"> <li>• Group error SF (red)</li> </ul>                                                                                                                                             | Yes                                        |
| <b>Potential separation</b>                                                                                                                                                                                          |                                            |
| <b>Potential separation analog inputs</b>                                                                                                                                                                            |                                            |
| <ul style="list-style-type: none"> <li>• between the channels</li> </ul>                                                                                                                                             | Yes                                        |
| <ul style="list-style-type: none"> <li>• between the channels and backplane bus</li> </ul>                                                                                                                           | Yes                                        |

### Standards, approvals, certificates

|         |     |
|---------|-----|
| CE mark | Yes |
|---------|-----|

### Highest safety class achievable in safety mode

- |                                              |      |
|----------------------------------------------|------|
| • Performance level according to ISO 13849-1 | none |
| • SIL acc. to IEC 61508                      | No   |

### Use in hazardous areas

- |                                                 |                                                    |
|-------------------------------------------------|----------------------------------------------------|
| • Type of protection acc. to EN 50020 (CENELEC) | II2 G (1) GD Ex ib[ia] IIC T4 and I M2 Ex ib[ia] I |
| • Type of protection acc. to KEMA               | 04 ATEX 1246                                       |

### Dimensions

|        |          |
|--------|----------|
| Width  | 30 mm    |
| Height | 129 mm   |
| Depth  | 136.5 mm |

### Weights

|                 |       |
|-----------------|-------|
| Weight, approx. | 230 g |
|-----------------|-------|

**last modified:** 03/09/2017 