



### General information

|                          |                          |
|--------------------------|--------------------------|
| Product type designation | SM 1231, AI 8x16 bit RTD |
|--------------------------|--------------------------|

### Supply voltage

|                  |     |
|------------------|-----|
| Rated value (DC) |     |
| • 24 V DC        | Yes |

### Input current

|                                 |       |
|---------------------------------|-------|
| Current consumption, typ.       | 40 mA |
| from backplane bus 5 V DC, typ. | 80 mA |

### Power loss

|                  |       |
|------------------|-------|
| Power loss, typ. | 1.5 W |
|------------------|-------|

### Analog inputs

|                                                                       |                                    |
|-----------------------------------------------------------------------|------------------------------------|
| Number of analog inputs                                               | 8; Resistance thermometer          |
| permissible input voltage for current input (destruction limit), max. | $\pm 35$ V                         |
| Technical unit for temperature measurement adjustable                 | Degrees Celsius/degrees Fahrenheit |

### Input ranges

|           |    |
|-----------|----|
| • Voltage | No |
|-----------|----|

|                                                        |                                                                                                                                             |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| • Current                                              | No                                                                                                                                          |
| • Thermocouple                                         | No                                                                                                                                          |
| • Resistance thermometer                               | Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000 |
| • Resistance                                           | Yes; 150 Ω, 300 Ω, 600 Ω                                                                                                                    |
| Input ranges (rated values), resistance thermometer    |                                                                                                                                             |
| • Cu 10                                                | Yes                                                                                                                                         |
| • Input resistance (Cu 10)                             | 10 Ω                                                                                                                                        |
| • Ni 100                                               | Yes                                                                                                                                         |
| • Input resistance (Ni 100)                            | 100 Ω                                                                                                                                       |
| • Ni 1000                                              | Yes                                                                                                                                         |
| • Input resistance (Ni 1000)                           | 1 000 Ω                                                                                                                                     |
| • LG-Ni 1000                                           | Yes                                                                                                                                         |
| • Input resistance (LG-Ni 1000)                        | 1 000 Ω                                                                                                                                     |
| • Ni 120                                               | Yes                                                                                                                                         |
| • Input resistance (Ni 120)                            | 120 Ω                                                                                                                                       |
| • Ni 200                                               | Yes                                                                                                                                         |
| • Input resistance (Ni 200)                            | 200 Ω                                                                                                                                       |
| • Ni 500                                               | Yes                                                                                                                                         |
| • Input resistance (Ni 500)                            | 500 Ω                                                                                                                                       |
| • Pt 100                                               | Yes                                                                                                                                         |
| • Input resistance (Pt 100)                            | 100 Ω                                                                                                                                       |
| • Pt 1000                                              | Yes                                                                                                                                         |
| • Input resistance (Pt 1000)                           | 1 000 Ω                                                                                                                                     |
| • Pt 200                                               | Yes                                                                                                                                         |
| • Input resistance (Pt 200)                            | 200 Ω                                                                                                                                       |
| • Pt 500                                               | Yes                                                                                                                                         |
| • Input resistance (Pt 500)                            | 500 Ω                                                                                                                                       |
| Input ranges (rated values), resistors                 |                                                                                                                                             |
| • 0 to 150 ohms                                        | Yes                                                                                                                                         |
| • 0 to 300 ohms                                        | Yes                                                                                                                                         |
| • 0 to 600 ohms                                        | Yes                                                                                                                                         |
| Thermocouple (TC)                                      |                                                                                                                                             |
| Temperature compensation                               |                                                                                                                                             |
| — parameterizable                                      | No                                                                                                                                          |
| Analog value generation for the inputs                 |                                                                                                                                             |
| Measurement principle                                  | integrating                                                                                                                                 |
| Integration and conversion time/resolution per channel |                                                                                                                                             |
| • Resolution with overrange (bit including sign), max. | 15 bit; + sign                                                                                                                              |
| • Integration time, parameterizable                    | No                                                                                                                                          |

- Interference voltage suppression for interference frequency  $f_1$  in Hz

85 dB at 50 / 60 / 400 Hz

#### Errors/accuracies

|                                                                                                     |                                                                  |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Temperature error (relative to input range), (+/-)                                                  | 25 °C $\pm 0.1\%$ , to 55 °C $\pm 0.2\%$ total measurement range |
| Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)                          | 0.05 %                                                           |
| Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$ , $f_1$ = interference frequency |                                                                  |
| • Common mode interference, min.                                                                    | 120 dB                                                           |

#### Interrupts/diagnostics/status information

|                                 |                      |
|---------------------------------|----------------------|
| Alarms                          | Yes                  |
| Diagnostic functions            | Yes; Can be read out |
| Alarms                          |                      |
| • Diagnostic alarm              | Yes                  |
| Diagnostic messages             |                      |
| • Monitoring the supply voltage | Yes                  |
| • Wire-break                    | Yes                  |
| Diagnostics indication LED      |                      |
| • for status of the inputs      | Yes                  |
| • for maintenance               | Yes                  |

#### Degree and class of protection

|                                       |     |
|---------------------------------------|-----|
| Degree of protection acc. to EN 60529 |     |
| • IP20                                | Yes |

#### Standards, approvals, certificates

|                       |     |
|-----------------------|-----|
| CE mark               | Yes |
| CSA approval          | Yes |
| FM approval           | Yes |
| RCM (formerly C-TICK) | Yes |

#### Ambient conditions

|                                                   |                                       |
|---------------------------------------------------|---------------------------------------|
| Free fall                                         |                                       |
| • Fall height, max.                               | 0.3 m; five times, in product package |
| Ambient temperature during operation              |                                       |
| • min.                                            | -20 °C                                |
| • max.                                            | 60 °C                                 |
| • horizontal installation, min.                   | -20 °C                                |
| • horizontal installation, max.                   | 60 °C                                 |
| • vertical installation, min.                     | -20 °C                                |
| • vertical installation, max.                     | 50 °C                                 |
| Ambient temperature during storage/transportation |                                       |
| • min.                                            | -40 °C                                |
| • max.                                            | 70 °C                                 |
| Air pressure acc. to IEC 60068-2-13               |                                       |

|                                                 |                                                            |
|-------------------------------------------------|------------------------------------------------------------|
| • Operation, min.                               | 795 hPa                                                    |
| • Operation, max.                               | 1 080 hPa                                                  |
| • Storage/transport, min.                       | 660 hPa                                                    |
| • Storage/transport, max.                       | 1 080 hPa                                                  |
| Relative humidity                               |                                                            |
| • Operation at 25 °C without condensation, max. | 95 %                                                       |
| Pollutant concentrations                        |                                                            |
| • SO2 at RH < 60% without condensation          | SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free |
| Connection method                               |                                                            |
| required front connector                        | Yes                                                        |
| Mechanics/material                              |                                                            |
| Enclosure material (front)                      |                                                            |
| • Plastic                                       | Yes                                                        |
| Dimensions                                      |                                                            |
| Width                                           | 70 mm                                                      |
| Height                                          | 100 mm                                                     |
| Depth                                           | 75 mm                                                      |
| Weights                                         |                                                            |
| Weight, approx.                                 | 220 g                                                      |
| last modified:                                  | 05/18/2018                                                 |