



General information	
Product type designation	SM 1231, AI 4x16 bit RTD
Supply voltage	
Rated value (DC)	24 V
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	4; Resistance thermometer
permissible input voltage for voltage input (destruction limit), max.	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Voltage	No
• Current	No

- Thermocouple
- Resistance thermometer
- Resistance

No  
 Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000  
 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 f1 in Hz

85 dB at 50 / 60 / 400 Hz

### Errors/accuracies

Temperature error (relative to input range), (+/-) 25 °C ±0.1%, to 55 °C ±0.2% total measurement range

Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) 0.05 %

Interference voltage suppression for  $f = n \times (f1 \pm 1 \%)$ , f1 = interference frequency

• Common mode interference, min. 120 dB

### Interrupts/diagnostics/status information

Alarms Yes

Diagnostics function 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

IP degree of protection IP20

### Standards, approvals, certificates

CE mark Yes

CSA approval Yes

UL approval Yes

cULus Yes

FM approval Yes

RCM (formerly C-TICK) Yes

KC approval Yes

Marine approval 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
<b>Air pressure acc. to IEC 60068-2-13</b>	
• Operation, min.	795 hPa
• Operation, max.	1 080 hPa
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
<b>Relative humidity</b>	
• Operation at 25 °C without condensation, max.	95 %
<b>Pollutant concentrations</b>	
• SO2 at RH < 60% without condensation	SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
<b>Connection method</b>	
required front connector	Yes
<b>Mechanics/material</b>	
Enclosure material (front)	
• Plastic	Yes
<b>Dimensions</b>	
Width	45 mm
Height	100 mm
Depth	75 mm
<b>Weights</b>	
Weight, approx.	220 g
<b>last modified:</b>	12/10/2019