



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

<ul style="list-style-type: none"> • Thermocouple 	No
<ul style="list-style-type: none"> • Resistance thermometer 	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000
<ul style="list-style-type: none"> • Resistance 	Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> • Cu 10 <ul style="list-style-type: none"> — Input resistance (Cu 10) 	Yes 10 Ω
<ul style="list-style-type: none"> • Ni 100 <ul style="list-style-type: none"> — Input resistance (Ni 100) 	Yes 100 Ω
<ul style="list-style-type: none"> • Ni 1000 <ul style="list-style-type: none"> — Input resistance (Ni 1000) 	Yes 1 000 Ω
<ul style="list-style-type: none"> • LG-Ni 1000 <ul style="list-style-type: none"> — Input resistance (LG-Ni 1000) 	Yes 1 000 Ω
<ul style="list-style-type: none"> • Ni 120 <ul style="list-style-type: none"> — Input resistance (Ni 120) 	Yes 120 Ω
<ul style="list-style-type: none"> • Ni 200 <ul style="list-style-type: none"> — Input resistance (Ni 200) 	Yes 200 Ω
<ul style="list-style-type: none"> • Ni 500 <ul style="list-style-type: none"> — Input resistance (Ni 500) 	Yes 500 Ω
<ul style="list-style-type: none"> • Pt 100 <ul style="list-style-type: none"> — Input resistance (Pt 100) 	Yes 100 Ω
<ul style="list-style-type: none"> • Pt 1000 <ul style="list-style-type: none"> — Input resistance (Pt 1000) 	Yes 1 000 Ω
<ul style="list-style-type: none"> • Pt 200 <ul style="list-style-type: none"> — Input resistance (Pt 200) 	Yes 200 Ω
<ul style="list-style-type: none"> • Pt 500 <ul style="list-style-type: none"> — Input resistance (Pt 500) 	Yes 500 Ω
Input ranges (rated values), resistors	
<ul style="list-style-type: none"> • 0 to 150 ohms 	Yes
<ul style="list-style-type: none"> • 0 to 300 ohms 	Yes
<ul style="list-style-type: none"> • 0 to 600 ohms 	Yes
Thermocouple (TC)	
Temperature compensation	
<ul style="list-style-type: none"> — parameterizable 	No
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. 	15 bit; + sign
<ul style="list-style-type: none"> • 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
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	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	220 g
last modified:	07/10/2020