

**Data sheet**  
**SM 231 (231-1BD53)**
**Technical data**

<b>Order no.</b>	<b>231-1BD53</b>
Type	SM 231
<b>General information</b>	
Note	-
Features	4x AI 16 Bit Voltage, current Resistance thermometer, thermocouple Parameterizable
<b>Current consumption/power loss</b>	
Current consumption from backplane bus	280 mA
Power loss	1.4 W
<b>Technical data analog inputs</b>	
Number of inputs	4
Cable length, shielded	200 m
Rated load voltage	-
Current consumption from load voltage L+ (without load)	-
Voltage inputs	yes
Min. input resistance (voltage range)	20 MOhm
Input voltage ranges	-50 mV ... +50 mV -400 mV ... +400 mV -4 V ... +4 V -10 V ... +10 V
Operational limit of voltage ranges	+/-0.3% ... +/-0.6%
Operational limit of voltage ranges with SFU	-
Basic error limit voltage ranges	+/-0.2% ... +/-0.4%
Basic error limit voltage ranges with SFU	-
Destruction limit voltage	max. 15V
Current inputs	yes
Max. input resistance (current range)	85 Ohm
Input current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	+/-0.3% ... +/-0.8%
Operational limit of current ranges with SFU	-
Grundfehlergrenze Strombereiche	+/-0.2% ... +/-0.5%
Radical error limit current ranges with SFU	-
Destruction limit current inputs (electrical current)	max. 30mA
Destruction limit current inputs (voltage)	-
Resistance inputs	yes
Resistance ranges	0 ... 60 Ohm 0 ... 600 Ohm 0 ... 3000 Ohm 0 ... 6000 Ohm
Operational limit of resistor ranges	+/-0.4% ... +/-0.8%
Operational limit of resistor ranges with SFU	-
Basic error limit	+/-0.2% ... +/-0.4%

Basic error limit with SFU	-
Destruction limit resistance inputs	max. 15V
Resistance thermometer inputs	yes
Resistance thermometer ranges	Pt100, Pt1000 KTY81-152 Ni100, Ni1000 Cu50 KTY81-110 KTY81-120 KTY81-121 KTY81-122 KTY81-150 KTY81-151
Operational limit of resistance thermometer ranges	+/-0.4% ... +/-1.4%
Operational limit of resistance thermometer ranges with SFU	-
Basic error limit thermoresistor ranges	+/-0.2% ... +/-0.7%
Basic error limit thermoresistor ranges with SFU	-
Destruction limit resistance thermometer inputs	max. 15V
Thermocouple inputs	yes
Thermocouple ranges	type J type K type N type R type S type E type T
Operational limit of thermocouple ranges	+/-1.5%
Operational limit of thermocouple ranges with SFU	-
Basic error limit thermoelement ranges	+/-1.0%
Basic error limit thermoelement ranges with SFU	-
Destruction limit thermocouple inputs	max. 15V
Programmable temperature compensation	yes
External temperature compensation	yes
Internal temperature compensation	yes
Temperature error internal compensation	5 K
Technical unit of temperature measurement	°C
Resolution in bit	16
Measurement principle	Sigma-Delta
Basic conversion time	7 ms ... 272 ms
Noise suppression for frequency	none
Initial data size	8 Byte

### Status information, alarms, diagnostics

Status display	none
Interrupts	yes
Process alarm	no
Diagnostic interrupt	yes, parameterizable
Diagnostic functions	yes
Diagnostics information read-out	possible
Supply voltage display	none
Group error display	none
Channel error display	red LED per channel

### Isolation

Between channels	-
Between channels of groups to	-

Between channels and backplane bus	yes
Between channels and power supply	-
Max. potential difference between circuits	-
Max. potential difference between inputs (Ucm)	DC 4 V
Max. potential difference between Mana and Mintern (Uiso)	-
Max. potential difference between inputs and Mana (Ucm)	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 50 V
Max. potential difference between Mintern and outputs	-
Insulation tested with	DC 500 V

### Datasizes

Input bytes	8
Output bytes	0
Parameter bytes	12
Diagnostic bytes	12

### Housing

Material	PPE / PA 6.6
Mounting	Profile rail 35 mm

### Mechanical data

Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm
Net weight	100 g
Weight including accessories	-
Gross weight	-

### Environmental conditions

Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C

### Certifications

UL certification	yes
KC certification	-