

**Data sheet**  
**SM 231 (231-1BD70)**
**Technical data**

|                                                         |                                                                        |
|---------------------------------------------------------|------------------------------------------------------------------------|
| <b>Order no.</b>                                        | <b>231-1BD70</b>                                                       |
| Type                                                    | SM 231                                                                 |
| <b>General information</b>                              |                                                                        |
| Note                                                    | -                                                                      |
| Features                                                | 4x AI<br>12 Bit<br>Voltage +/- 10 V<br>Potential separated per channel |
| <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)                   | 83 kOhm                                                                |
| Input voltage ranges                                    | -10 V ... +10 V                                                        |
| Operational limit of voltage ranges                     | -                                                                      |
| Operational limit of voltage ranges with SFU            | -                                                                      |
| Basic error limit voltage ranges                        | -                                                                      |
| Basic error limit voltage ranges with SFU               | -                                                                      |
| Destruction limit voltage                               | max. 30V                                                               |
| Current inputs                                          | -                                                                      |
| Max. input resistance (current range)                   | -                                                                      |
| Input current ranges                                    | -                                                                      |
| Operational limit of current ranges                     | -                                                                      |
| Operational limit of current ranges with SFU            | -                                                                      |
| Grundfehlergrenze Strombereiche                         | -                                                                      |
| Radical error limit current ranges with SFU             | -                                                                      |
| Destruction limit current inputs (electrical current)   | -                                                                      |
| Destruction limit current inputs (voltage)              | -                                                                      |
| Resistance inputs                                       | -                                                                      |
| Resistance ranges                                       | -                                                                      |
| Operational limit of resistor ranges                    | -                                                                      |
| Operational limit of resistor ranges with SFU           | -                                                                      |
| Basic error limit                                       | -                                                                      |
| Basic error limit with SFU                              | -                                                                      |
| Destruction limit resistance inputs                     | -                                                                      |
| Resistance thermometer inputs                           | -                                                                      |
| Resistance thermometer ranges                           | -                                                                      |
| Operational limit of resistance thermometer ranges      | -                                                                      |

|                                                             |                          |
|-------------------------------------------------------------|--------------------------|
| Operational limit of resistance thermometer ranges with SFU | -                        |
| Basic error limit thermoresistor ranges                     | -                        |
| Basic error limit thermoresistor ranges with SFU            | -                        |
| Destruction limit resistance thermometer inputs             | -                        |
| Thermocouple inputs                                         | -                        |
| Thermocouple ranges                                         | -                        |
| Operational limit of thermocouple ranges                    | -                        |
| Operational limit of thermocouple ranges with SFU           | -                        |
| Basic error limit thermoelement ranges                      | -                        |
| Basic error limit thermoelement ranges with SFU             | -                        |
| Destruction limit thermocouple inputs                       | -                        |
| Programmable temperature compensation                       | -                        |
| External temperature compensation                           | -                        |
| Internal temperature compensation                           | -                        |
| Temperature error internal compensation                     | -                        |
| Technical unit of temperature measurement                   | -                        |
| Resolution in bit                                           | 12                       |
| Measurement principle                                       | successive approximation |
| Basic conversion time                                       | -                        |
| Noise suppression for frequency                             | -                        |
| Initial data size                                           | 8 Byte                   |

#### Status information, alarms, diagnostics

|                                  |      |
|----------------------------------|------|
| Status display                   | none |
| Interrupts                       | no   |
| Process alarm                    | no   |
| Diagnostic interrupt             | no   |
| Diagnostic functions             | no   |
| Diagnostics information read-out | none |
| Supply voltage display           | none |
| Group error display              | none |
| Channel error display            | none |

#### Isolation

|                                                             |                  |
|-------------------------------------------------------------|------------------|
| Between channels                                            | yes              |
| Between channels of groups to                               | 1                |
| Between channels and backplane bus                          | yes              |
| Between channels and power supply                           | yes              |
| Max. potential difference between circuits                  | DC 75 V/ AC 50 V |
| Max. potential difference between inputs (Ucm)              | DC 75 V/ AC 50 V |
| Max. potential difference between Mana and Mintern (Uiso)   | DC 75 V/ AC 50 V |
| 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 | 3 |

|                                 |                         |
|---------------------------------|-------------------------|
| Diagnostic bytes                | 0                       |
| <b>Housing</b>                  |                         |
| Material                        | PPE / PA 6.6            |
| Mounting                        | Profile rail 35 mm      |
| <b>Mechanical data</b>          |                         |
| Dimensions (WxHxD)              | 25.4 mm x 76 mm x 88 mm |
| Net weight                      | 90 g                    |
| Weight including accessories    | -                       |
| Gross weight                    | -                       |
| <b>Environmental conditions</b> |                         |
| Operating temperature           | 0 °C to 60 °C           |
| Storage temperature             | -25 °C to 70 °C         |
| <b>Certifications</b>           |                         |
| UL certification                | yes                     |
| KC certification                | -                       |