

**Data sheet**  
**SM 031 (031-1BD40)**
**Technical data**

|   |   |
|---|---|
| <b>Order no.</b>  | <b>031-1BD40</b>                        |
| Type  | SM 031                                  |
| Module ID   | 0405 15C4                               |
| <b>General information</b>                              |   |
| Note  | -                                       |
| Features  | 4x AI<br>12 Bit<br>Current 0(4)...20 mA |
| <b>Current consumption/power loss</b>                   |   |
| Current consumption from backplane bus                  | 75 mA                                   |
| Power loss  | 0.7 W                                   |
| <b>Technical data analog inputs</b>                     |   |
| Number of inputs  | 4                                       |
| Cable length, shielded                                  | 200 m                                   |
| Rated load voltage                                      | DC 24 V                                 |
| Current consumption from load voltage L+ (without load) | 15 mA                                   |
| Voltage inputs  | -                                       |
| Min. input resistance (voltage range)                   | -                                       |
| Input voltage ranges                                    | -                                       |
| 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                               | -                                       |
| Current inputs  | yes                                     |
| Max. input resistance (current range)                   | 110 Ohm                                 |
| Input current ranges                                    | 0 mA ... +20 mA<br>+4 mA ... +20 mA     |
| Operational limit of current ranges                     | +/-0.3% ... +/-0.5%                     |
| Operational limit of current ranges with SFU            | -                                       |
| Basic error limit current ranges                        | +/-0.2% ... +/-0.3%                     |
| Radical error limit current ranges with SFU             | -                                       |
| Destruction limit current inputs (voltage)              | max. 24V                                |
| Destruction limit current inputs (electrical current)   | max. 40mA                               |
| 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                                       | 4 ms all channels        |
| Noise suppression for frequency                             | >50dB at 50Hz (UCM<2V)   |

#### Status information, alarms, diagnostics

|                                  |                     |
|----------------------------------|---------------------|
| Status display                   | yes                 |
| Interrupts                       | no                  |
| Process alarm                    | no                  |
| Diagnostic interrupt             | no                  |
| Diagnostic functions             | yes                 |
| Diagnostics information read-out | possible            |
| Module state                     | green LED           |
| Module error display             | red LED             |
| 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                           | yes              |
| Max. potential difference between circuits                  | -                |
| Max. potential difference between inputs (Ucm)              | DC 2 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         |

#### Technical data encoder supply

|                              |   |
|------------------------------|---|
| Number of outputs            | - |
| Output voltage (typ)         | - |
| Output voltage (rated value) | - |
| Short-circuit protection     | - |

|                      |   |
|----------------------|---|
| Binding of potential | - |
|----------------------|---|

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**Datasizes**

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|                  |    |
|------------------|----|
| Input bytes      | 8  |
| Output bytes     | 0  |
| Parameter bytes  | 8  |
| Diagnostic bytes | 20 |

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**Housing**

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|          |                    |
|----------|--------------------|
| Material | PPE / PPE GF10     |
| Mounting | Profile rail 35 mm |

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**Mechanical data**

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|                              |                            |
|------------------------------|----------------------------|
| Dimensions (WxHxD)           | 12.9 mm x 109 mm x 76.5 mm |
| Net weight                   | 60 g                       |
| Weight including accessories | 60 g                       |
| Gross weight                 | 75 g                       |

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**Environmental conditions**

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

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**Certifications**

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|                  |     |
|------------------|-----|
| UL certification | yes |
| KC certification | yes |

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