

**Data sheet**  
**SM 031 (031-1CD30)**
**Technical data**

|                                                         |                                     |
|---------------------------------------------------------|-------------------------------------|
| <b>Order no.</b>                                        | <b>031-1CD30</b>                    |
| Type                                                    | SM 031                              |
| Module ID                                               | 040D 1544                           |
| <b>General information</b>                              |                                     |
| Note                                                    | -                                   |
| Features                                                | 4x AI<br>16 Bit<br>Voltage 0...10 V |
| <b>Current consumption/power loss</b>                   |                                     |
| Current consumption from backplane bus                  | 65 mA                               |
| Power loss                                              | 0.9 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) | 25 mA                               |
| Voltage inputs                                          | yes                                 |
| Min. input resistance (voltage range)                   | 200 kOhm                            |
| Input voltage ranges                                    | 0 V ... +10 V                       |
| Operational limit of voltage ranges                     | +/-0.2%                             |
| Operational limit of voltage ranges with SFU            | -                                   |
| Basic error limit voltage ranges                        | +/-0.1%                             |
| 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            | -                                   |
| Basic error limit current ranges                        | -                                   |
| Radical error limit current ranges with SFU             | -                                   |
| Destruction limit current inputs (voltage)              | -                                   |
| Destruction limit current inputs (electrical current)   | -                                   |
| 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                                           | 16                       |
| Measurement principle                                       | successive approximation |
| Basic conversion time                                       | 480 µs all channels      |
| Noise suppression for frequency                             | >80dB at 50Hz (UCM<9V)   |

#### Status information, alarms, diagnostics

|                                  |                      |
|----------------------------------|----------------------|
| Status display                   | yes                  |
| Interrupts                       | yes, parameterizable |
| Process alarm                    | yes, parameterizable |
| Diagnostic interrupt             | yes, parameterizable |
| 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 9 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         | - |

**Datasizes**

|                  |    |
|------------------|----|
| Input bytes      | 8  |
| Output bytes     | 0  |
| Parameter bytes  | 32 |
| Diagnostic bytes | 20 |

**Housing**

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

**Mechanical data**

|                              |                            |
|------------------------------|----------------------------|
| Dimensions (WxHxD)           | 12.9 mm x 109 mm x 76.5 mm |
| Net weight                   | 61 g                       |
| Weight including accessories | 61 g                       |
| Gross weight                 | 75 g                       |

**Environmental conditions**

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

**Certifications**

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