# AD pro CAN MM Series

## Type MD2



## Product description

The **AD8 pro MD2** measurement module is especially designed for the use of ratiometric sensors and sensors with a power supply voltage up to 30 V DC. With its high-precision, galvanically isolated sensor excitation it is not only suitable for a wide range of active sensors but also for sensors with ground-referenced signal inputs.

## Key features

▶ 8 differential voltage inputs, galvanically isolated

▶ Measurement inputs adjustable per channel from ±10 mV to ±60 V

▶ High-precision bipolar sensor excitation, per channel adjustable and galvanically isolated

▶ Sensor linearization with interpolation points

## Scope of delivery

▶ Measurement module AD8 pro MD2

▶ Configuration software CSMconfig

▶ Documentation

▶ Calibration certificate in accordance with DIN EN ISO/IEC 17025

## Maintenance

▶ Calibration every 12 months recommended

## Accessories

▶ See datasheet "CAN Accessories"

# Technical data

| | |
|---|---|
| **Type designation** | **AD8 pro MD2** |
| **Technical data valid as of revision** | K400 |
| |  |
| **Measurement inputs** | 8 voltage inputs |
| Measurement ranges | ±10, ±20, ±50, ±100, ±200, ±500 mV and ±1, ±2, ±5, ±10, ±20, ±60 V |
| Internal resolution | 16 bit |
| Internal sampling rate per ch. | 2 kHz |
| Measurement data rate/ sending rate per channel | 1, 2, 5, 10, 20, 50, 100, 200, 500 Hz and 1 kHz, 2 kHz adjustable per module or per channel via configurable CAN identifier |
| HW input filter | low-pass filter 3rd order, approx. 500 Hz |
| SW filter options per channel | ▶ Off<br><br>▶ 6th order Butterworth filter, range: 0.1 Hz to 500 Hz:<br>　▶　automatically adjusted based on sending rate or<br>　▶　user-selectable cutoff frequency<br>▶ Average value per sending interval<br>▶ Moving average |
| Channel-specific comments | free text consisting of up to 100 characters per channel |
| Interpolation tables | 8 tables, each with up to 32 interpolation points |
| Input protection [1]<br>　Operational safety<br>　Device safety | ±60 V permanent<br>±100 V permanent, additional ESD protection |
| **Gain error [2]** | |
| at 25 °C | max. ±0.05 % of measured value |
| Temperature drift | max. ±10 ppm/K |
| **Sensor excitation** | switchable, galvanically isolated and adjustable per channel [3] |
| Voltage | ±5, ±8, ±10, ±12, ±15 V DC, therefore also 10, 16, 20, 24, 30 V DC |
| Current | max. ±30 mA per channel |
| **Galvanic isolation [4]** | no safety isolation in terms of high-voltage applications |
| Channel/channel | 500 V |
| CAN/channel | 500 V |
| CAN/power supply | 500 V |
| Power supply/ sensor excitation | 500 V |
| **CAN interface** | CAN 2.0B (active), High Speed (ISO 11898-2:2016), 125 kbit/s to max. 1 Mbit/s, up to 2 Mbit/s with suitable CAN interface, data transfer free running |
| Configuration | via CAN bus using CSMconfig or CSM INCA AddOn, settings and configurations stored in the module |

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| **Power supply** | |
| Minimum[3] | 6 V DC (-10 %) |
| Maximum | 45 V DC (+10 %) |
| Power consumption | typ. 1.75 W (without sensor excitation) |
| **LED indicators** | |
| CAN | power/status |
| Measurement channels | configuration/operation/sensor excitation |
| **Housing** | aluminum, gold anodized |
| Protection class | IP67 |
| Weight (device) | approx. 500 g |
| Dimensions (w × h × d) | approx. 200 × 35 × 50 mm, approx. 200 × 40 × 50 mm (Slide Case) |
| **Connectors [5]** | |
| CAN/power supply | LEMO 0B, 5-pole, code G |
| Signal inputs | LEMO 0B, 6-pole, code A |
| **Operating and storage conditions** | |
| Operating temperature range | -40 °C to +125 °C |
| Relative humidity | 5 % to 95 % |
| Pollution degree | 3 |
| Storage temperature | -55 °C to +150 °C |
| **Conformity** | C€ |

[1] Observe information regarding the intended use. See CSM document "Safety Instructions MiniModule".

[2] Further information can be found in the Technical Information document on the subject of "Deviation of Measurement".

[3] In case of a typ. load of 4.6 W a power supply > 9 V is required, see Technical information „Sensor Excitation of AD CAN MM Series".

[4] These MiniModules are designed for measurements in vehicles with 12 V, 24 V, or 48 V on-board power supply systems. The maximum operating voltage at the measurement inputs is 60 V. Do not connect directly to systems with higher operating voltages, e.g. high-voltage batteries of hybrid or electric vehicles.

[5] Optionally available in other variants

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