AD8 pro 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.

Shipping content
- Measurement module AD8 pro MD2
- Configuration software CSMconfig
- Documentation
- Calibration certificate in accordance with DIN EN ISO/IEC 17025

Key features
- 8 differential voltage inputs, galvanically isolated
- Measurement inputs adjustable per channel from ±10 mV to ±60 V
- High-precision bipolar, galvanically isolated sensor excitation, adjustable per channel
- Sensor linearization with axis points

Maintenance
- Calibration every 12 months recommended

Accessories
- See datasheet "CAN Accessories"
## Technical data

<table>
<thead>
<tr>
<th>Type designation</th>
<th>AD8 pro MD2</th>
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<tbody>
<tr>
<td>Technical data valid as of revision</td>
<td>G400</td>
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</table>

### Measurement inputs
- **8 analog 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

### Input filters
- **HW input filter:** low-pass filter 3rd order, approx. 500 Hz
- **SW input filter:** switchable 6th order Butterworth filter, range: 0.1 Hz to 500 Hz, automatically adjusted to measurement data rate, alternatively: threshold frequency adjustable per channel

### Axis points
- **8 tables, each with up to 32 axis points**

### Input protection
1. **Operational safety**
   - ±60 V permanent
   - ±100 V permanent, additional ESD protection
2. **Device safety**
   - ±60 V permanent
   - ±100 V permanent, additional ESD protection

### Gain error
- **at 25 °C:** max. ±0.05 % of measured value
- **Temperature drift:** max. ±10 ppm/K

### Sensor excitation
- **Voltage:** ±5, ±8, ±10, ±12, ±15 V DC, therefore also 10, 16, 20, 24, 30 V DC
- **Current:** max. ±30 mA per channel, max. ±240 mA per module

### Galvanic isolation
- **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 CSMcan Interface, data transfer free running
- **Configuration:** via CAN bus using CSMconfig or CSM INCA AddOn, settings and configurations stored in the module

### Power supply
- **Minimum:** 6 V DC (-10 %)
- **Maximum:** 45 V DC (+10 %)
- **Power consumption:** typ. 1.8 W (without sensor excitation)

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<table>
<thead>
<tr>
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<tr>
<td>LED indicators</td>
<td></td>
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<tr>
<td>CAN</td>
<td>power / status</td>
</tr>
<tr>
<td>Measurement channels</td>
<td>configuration / operation / sensor excitation</td>
</tr>
<tr>
<td>Housing 5)</td>
<td>aluminium, gold anodized</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP67</td>
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<tr>
<td>Weight</td>
<td>approx. 500 g</td>
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<tr>
<td>Dimensions (w × h × d)</td>
<td>approx. 200 × 35 × 50 mm, approx. 200 × 40 × 50 mm (Slide Case)</td>
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<tr>
<td>Connectors</td>
<td></td>
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<tr>
<td>CAN / power supply</td>
<td>LEMO 0B, 5-pole, code G</td>
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<tr>
<td>Signal inputs</td>
<td>LEMO 0B, 6-pole, code A</td>
</tr>
<tr>
<td>Operating and storage conditions</td>
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</tr>
<tr>
<td>Operating temperature range</td>
<td>-40 °C to +125 °C</td>
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<tr>
<td>Relative humidity</td>
<td>5 % to 95 %</td>
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<td>Pollution degree</td>
<td>3</td>
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<tr>
<td>Storage temperature</td>
<td>-55 °C to +150 °C</td>
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**Conformity**

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 “Tech Note”.
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

### additional products

**AD4 pro MC10**

AD pro measurement modules cover an extremely wide range of applications. They can be used for voltage measurement, high-precision current measurement (via shunts), measurement of very low voltages (such as strain gauge based sensors measuring at mV levels), and the acquisition of higher frequency signals with measurement data rates up to 10 kHz.

**AD4 OG10**

AD4 OG10 provides the means to perform measurements with measurement data rates up to 10 kHz per channel at a high Ethernet bandwidth. EtherCAT® time synchronizations are fully supported. AD4 OG10 is either operated by using an EtherCAT® master via CANopen over EtherCAT® (CoE) or by using the Ethernet/EtherCAT® protocol converter XCP-Gateway in combination with an XCP-compatible data acquisition software.