**Product description**

Measurement module HV PTMM 2 features two measurement inputs in 4-wire-connection for PT100 and PT1000 sensors and has been especially designed for precise temperature measurements in high-voltage environments. **HV PTMM 2** is excellently suited for measuring the temperature of individual battery cells and battery packs in high-voltage batteries. Due to the thin-film design of special foil PT sensors, it is possible to precisely monitor the temperature of battery cells, even under very limited space conditions.

**Key features**

- 2 inputs in 4-wire connection for PT100 and PT1000 sensors
- Individual PT coefficients can be entered for best possible sensor adjustment
- Reinforced insulation up to 846 V
- Type approval test according to safety standard DIN EN 61010 by an accredited test laboratory
- Routine test according to safety standard DIN EN 61010
- Low power consumption typ. 1 W

**Shipping content**

- Measurement module HV PTMM 2
- Configuration software CSMconfig
- Documentation
- Calibration certificate
- HV isolation test certificate

**Maintenance**

- HV isolation test according to DIN EN 61010 at least every 12 months
- Calibration every 12 months recommended

**Accessories**

- See datasheet “CAN Accessories”
## Technical data

<table>
<thead>
<tr>
<th><strong>Type designation</strong></th>
<th>HV PTMM 2</th>
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### Measurement inputs
- 2 inputs in 4-wire connection for PT100 and PT1000 sensors, configurable via software
- **Measurement ranges**: -50 °C to +100 °C and -100 °C to +500 °C
- **Internal resolution**: 16 bit
- **Internal sampling rate per ch.**: 8 kHz
- **Measurement data rate per ch.**: 1, 2, 5, 10, 20, 50, 100 Hz
- **HW input filter**: 4th order Butterworth filter (threshold frequency approx. 5 kHz)
- **SW input filter**: FIR filter (Finite Impulse Response) threshold frequency automatically adjusted to measurement data rate
- **Linearization**: via individual PT coefficients R0, A, B and C
- **Measurement current**: PT100: 500 µA, PT1000: 400 µA

### Measurement uncertainty 1)
- **Gain error at 25 °C**: max. ±0.1 % of measured value
- **Offset and scaling error**: max. ±0.1 K
- **Gain drift**: max. ±10 ppm/K of measured value
- **Zero drift**: max. ±3 mK/K

### Reinforced insulation 2)
- **Channel / channel**: 846 V
- **Channel / CAN**: 846 V
- **Channel / power supply**: 846 V

### Functional insulation
- **CAN / power supply**: designed for supply voltages 12 V and 24 V

### CAN interface
- **CAN 2.0B (active), High Speed (ISO 11898-2:2016)**
- **125 kbit/s to 1 Mbit/s, up to 2 Mbit/s with CSMcan interface**, data transfer rate free running
- **Configuration**: via CAN bus with CSMconfig, settings and configuration date are stored in the device

### Power supply
- **Minimum**: 6 V DC (-10 %)
- **Maximum**: 30 V DC (+10 %)
- **Power consumption**: typ. 1 W
- **LED indicator**: power (green), status (red)

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<table>
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<tr>
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<tbody>
<tr>
<td><strong>Housing</strong> 3)</td>
<td>aluminium with HV designation on the front-side (RAL 2003)</td>
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<tr>
<td><strong>Protection class</strong></td>
<td>IP67</td>
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<tr>
<td><strong>Ground connection</strong></td>
<td>M6 threaded hole</td>
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<tr>
<td><strong>Weight</strong></td>
<td>approx. 350 g</td>
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<tr>
<td><strong>Dimensions (w × h × d)</strong></td>
<td>approx. 130 × 33 × 75 mm / approx. 130 × 38 × 75 mm (Slide Case)</td>
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<th><strong>Connectors</strong></th>
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<tr>
<td><strong>CAN / power supply</strong> 3)</td>
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<td><strong>Signal inputs</strong></td>
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<tr>
<th><strong>Operating and storage conditions</strong></th>
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<tbody>
<tr>
<td><strong>Operating temperature range</strong></td>
</tr>
<tr>
<td><strong>Relative humidity</strong></td>
</tr>
<tr>
<td><strong>Operating altitude</strong></td>
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<tr>
<td><strong>Pollution degree</strong></td>
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<tr>
<td><strong>Storage temperature</strong></td>
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<th><strong>Conformity</strong> 4)</th>
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<tr>
<td><strong>Device safety</strong></td>
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1. In interference-polluted environments, additional measurement errors can occur.
2. For operating the device directly in systems with operation voltages of > 60 V, e.g. high-voltage batteries of hybrid or electric vehicles. Please read the CSM document “Safety Instructions HV PTMM 2”!
3. Optionally available in other variants
4. The measurement modules are designed for cable lengths < 3 m.

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**addional products**

**HV THMM**
Measurement module HV TH4 is especially designed for safe temperature measurements with type K sensors on high-voltage live parts and is therefore excellently suited for mobile and stationary use in the fields of e-mobility (electric and hybrid vehicles).

**PTMM 4 evo**
Measurement module PTMM 4 evo features four measurement inputs for PT100 and PT1000 RTD elements used in non-high-voltage environments. The module is available in different housings.

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Innovative Measurement and Data Technology