**Key features**

- 8 inputs in 4-wire connection for PT100 and PT1000 sensors with reinforced insulation
- Individual PT coefficients can be entered for best possible sensor adjustment
- Type approval test according to safety standard EN 61010 by an accredited test laboratory
- Routine test according to safety standard EN 61010

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**Product description**

CSM's **HV PT-TBM 8** measurement module features eight measurement inputs in 4-wire-connection for PT100 and PT1000 sensors, and has been especially designed for precise temperature measurements in high-voltage environments. The 19-inch version has been specifically designed for test bench applications.

**HV PT-TBM 8** 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 specific foil PT sensors, it is possible to precisely monitor the temperature of battery cells, even under very limited space conditions.

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**Shipping content**

- Measurement module HV PT-TBM 8
- Configuration software CSMconfig
- Documentation
- Calibration certificate
- HV isolation test certificate

**Maintenance**

- HV isolation test at least every 12 months, see EN 61010 for scope of testing
- Calibration every 12 months recommended

**Accessories**

- See datasheet “CAN Accessories”
Technical data

<table>
<thead>
<tr>
<th>Type designation</th>
<th>HV PT-TBM 8</th>
</tr>
</thead>
</table>

### Measurement inputs
- 8 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 / sending rate per channel
- 1, 2, 5, 10, 20, 50, 100 Hz
- adjustable per module or per channel via configurable CAN identifier

### HW input filter
- 4th order Butterworth filter (threshold frequency approx. 2.5 kHz)

### SW input filter
- FIR filter (Finite Impulse Response)

### Channel-specific comments
- free text consisting of up to 100 characters per channel

### Linearization
- via individual PT coefficients R0, A, B and C

### Measurement current
- PT100: 500 µA, PT1000: 400 µA

### Measurement deviation

1. **Gain error at 25 °C**
   - max. ±0.1 % of measured value
2. **Offset and scaling error**
   - max. ±0.25 K (PT100) / ±0.175 K (PT1000)
3. **Gain drift**
   - max. ±10 ppm/K of measured value
4. **Zero drift**
   - max. ±3 mK/K

### Fields of application
- for measurements in HV environments

For details see document:
“Technical Information: Fields of Application for CSM HV Measurement Modules”.

### Working voltages
- up to 846 V DC

### Isolation test
- by external accredited test laboratory

### Routine test
- test voltage 3,100 V DC
- isolation test is to be performed at least every 12 months

### Reinforced insulation
- 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 or CSM INCA AddOn, settings and configurations stored in the device
<table>
<thead>
<tr>
<th>Type designation</th>
<th>HV PT-TBM 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>6 V DC (-10 %)</td>
</tr>
<tr>
<td>Maximum</td>
<td>30 V DC (+10 %)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>typ. 3 W</td>
</tr>
<tr>
<td>LED indicator</td>
<td></td>
</tr>
<tr>
<td>CAN</td>
<td>power / status</td>
</tr>
<tr>
<td>Measurement channels</td>
<td>configuration / operation</td>
</tr>
<tr>
<td>Housing</td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65</td>
</tr>
<tr>
<td>Ground connection</td>
<td>M6 threaded hole</td>
</tr>
<tr>
<td>Mounting</td>
<td>19 inch</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 735 g</td>
</tr>
<tr>
<td>Dimensions (w × h × d)</td>
<td>19 HP (approx. 96 mm)</td>
</tr>
<tr>
<td></td>
<td>3 U (approx. 129 mm)</td>
</tr>
<tr>
<td></td>
<td>100 mm (+ 25 mm protective bracket)</td>
</tr>
<tr>
<td>Connectors</td>
<td></td>
</tr>
<tr>
<td>CAN / power supply</td>
<td>LEMO 0B, 5-pole, code G</td>
</tr>
<tr>
<td>Signal inputs</td>
<td>LEMO Redel 2P, 8-pole, code C (grey)</td>
</tr>
<tr>
<td>Operating and storage conditions</td>
<td></td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-40 °C to +85 °C</td>
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<tr>
<td>Relative humidity</td>
<td>5 % to 95 % (non-condensing)</td>
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<tr>
<td>Operating altitude</td>
<td>max. 5,000 m above sea level</td>
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<tr>
<td>Pollution degree</td>
<td>3</td>
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<tr>
<td>Storage temperature</td>
<td>-40 °C to +85 °C</td>
</tr>
<tr>
<td>Conformity</td>
<td></td>
</tr>
<tr>
<td>Device safety</td>
<td>EN 61010-1:2010</td>
</tr>
</tbody>
</table>

1 As of hardware revision A003. For older hardware revisions, a frequency of 5 kHz applies.
2 In interference-polluted environments, additional measurement errors can occur.
Further information can be found in the Technical Information document on the subject of "Deviation of Measurement".
3 Please read the CSM document “Safety Instructions HV PT-TBM”!
4 According to EN 61010-1:2010
5 Optionally available in other variants
6 The measurement modules are designed for cable lengths < 3 m

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**additional products**

**HV PTMM 2**

HV PTMM 2 MiniModule is equipped with two measurement inputs in 4-wire connection for PT100 and PT1000 sensors and is especially designed for precise temperature measurements in high-voltage environments. Due to its compact size the HV PTMM 2 is very well suited for measurement applications used when space is limited.