



# HV TH-TBM



## Product description

**HV TH-TBM** from CSM's range of high-voltage measurement modules has been specifically developed for temperature measurements of e-mobility applications (electric and hybrid vehicles). Designed as a slide-in unit for 19-inch racks, it is excellently suited for test bench applications and it is also suitable for mobile use in all types of vehicles (e. g. to be mounted in the trunk of a car).

## Key features

CAN



- ▶ *NiCr-Ni temperature inputs (K type), with reinforced insulation*
- ▶ *Type approval test according to safety standard EN 61010 by an accredited test laboratory*
- ▶ *Routine test according to safety standard EN 61010*
- ▶ *Very good measurement accuracy under all temperature ranges and environmental conditions*
- ▶ *Operating temperature range: -40 °C to +85 °C*

## Shipping content

- ▶ Measurement module HV TH-TBM
- ▶ Configuration software CSMconfig
- ▶ Documentation
- ▶ Calibration certificate in accordance with DIN EN ISO/IEC 17025
- ▶ HV isolation test certificate

## Maintenance


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

## Accessories

- ▶ See datasheet "CAN Accessories"



## Technical data

<b>Type designation</b>	<b>HV TH-TBM 8</b>
	
<b>Measurement inputs</b>	8 NiCr-Ni (K type)
Measurement ranges	-100 °C to +1372 °C
Internal resolution	16 bit
Internal sampling rate per ch.	1 kHz
Measurement data rate per ch.	1, 2, 5, 10 Hz adjustable per module or per channel via configurable CAN identifier <sup>1)</sup>
HW input filter	low-pass filter 150 Hz
SW input filter	FIR filter (Finite Impulse Response), averaging automatically adjusted to measurement data rate
Channel-specific comments	free text consisting of up to 100 characters per channel
Broken sensor detection	yes
Cold junction compensation	internal reference per channel
<b>Measurement deviation <sup>2)</sup></b>	
Gain error at 25 °C	max. ±0.05 % of measured value
Offset and scaling error	typ. ±0.15 K max. ±0.3 K ±12 µV
Gain drift	max. ±10 ppm/K of measured value
Zero drift	max. ±4 mK/K
<b>Fields of application <sup>3)</sup></b>	for measurements in HV environments <sup>4)</sup>  For details see the following document that is also applicable: “Technical Information: Fields of Application for CSM HV Measurement Modules”.
Working voltages	up to 1,000 V DC <sup>4)</sup>
<b>Isolation test <sup>3)</sup></b>	
Type approval test	test voltage <sup>4)</sup> 3,510 V AC
Routine test	test voltage <sup>4)</sup> 3,100 V DC isolation test is to be performed at least every 12 months
<b>Reinforced insulation <sup>3), 4)</sup></b>	
Channel / channel	846 V
Channel / CAN	846 V
Channel / power supply	846 V
<b>Functional insulation</b>	
CAN / power supply	designed for supply voltages 12 V and 24 V
<b>Measurement categories</b>	
CAT 0	846V
CAT II <sup>5)</sup>	600V
CAT III <sup>5)</sup>	300V

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<b>CAN interface</b>	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 free running
Configuration	via CAN bus with CSMconfig or CSM INCA AddOn, settings and configurations stored in the device
<b>Power supply</b>	
Minimum	6 V DC (-10 %)
Maximum	30 V DC (+10 %)
Power consumption	typ. 2.0 W
<b>LED indicator</b>	
CAN	power / status
Measurement channels	configuration / operation
<b>Housing</b>	
Protection class	IP65
Ground connection	M6 threaded hole
Mounting	19 inch
Weight	approx. 600 g
Dimensions (w × h × d)	12 HP (approx. 61 mm) 3U (approx. 129 mm) 100 mm (+ 25 mm protective bracket)
<b>Connectors</b>	
CAN / power supply <sup>6)</sup>	LEMO 0B, 5-pole, code G
Signal inputs	LEMO Redel 2P, 8-pole, code B (grey)
<b>Operating and storage conditions</b>	
Operating temperature range	-40 °C to +85 °C
Relative humidity	5 % to 95 % (non-condensing)
Operating altitude	max. 5,000 m above sea level (CAT 0) max. 3,000 m above sea level (CAT II and CAT III)
Pollution degree	3
Storage temperature	-40 °C to +85 °C
<b>Conformity</b>	<b>CE</b>
<b>Device safety</b>	EN 61010-1:2010

<sup>1</sup> Configuration per channel as of hardware revision B

<sup>2</sup> Further information can be found in the Technical Information document on the subject of "Deviation of Measurement".

<sup>3</sup> Please also read the CSM document "Safety Instructions HV TH-TBM"

<sup>4</sup> According to EN61010-1:2010

<sup>5</sup> Measurement categories are valid as of hardware revision B003. Further information can be found in the Technical Information document "Measurement Categories for CSM HV Measurement Modules".

<sup>6</sup> Optionally available in other variants.



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