



# HV TH-TBM



## Measurements on high-voltage components

HV TH-TBM belongs to the series of high-voltage measurement modules and has been specifically developed for temperature measurements in the area of e-mobility (electric and hybrid vehicles). Designed as a 19-inch slide-in unit, 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).

## Highlights



- ▶ NiCr-Ni temperature inputs (K type), galvanically isolated
- ▶ Reinforced insulation up to 846 V
- ▶ 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 challenging temperature ranges and environmental conditions
- ▶ Internal cold junction compensation per channel
- ▶ Very low power consumption
- ▶ Operating temperature range: -40 °C to +85 °C
- ▶ Robust aluminium housing (19" 3 U / 12 HP)

## 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 "CSM MiniModule Accessories".



## Technical data

Type designation	HV TH-TBM 8 /65
	
<b>Measurement inputs</b>	8 NiCr-Ni (K type)
Measurement ranges	-100 °C to +1372 °C
Internal resolution	16 bit
Internal sampling rate per channel	1 kHz
Measurement data rate per channel	1, 2, 5, 10 Hz
HW input filter	low-pass filter 150 Hz
SW input filter	FIR filter (Finite Impulse Response) threshold frequency automatically adjusted to measurement data rate
Broken sensor detection	yes
Cold junction compensation	internal reference per channel
<b>Measurement uncertainty</b>	
at 25 °C	max. $\pm(0,05 \%$ of measured value + 0,3 K)
Temperature drift	max. $\pm(10 \text{ ppm/K} + 4 \text{ mK/K})$
<b>Reinforced insulation <sup>1)</sup></b>	
Channel / channel	846 V
Channel / CAN	846 V
Channel / power supply	846 V
<b>Functional insulation</b>	
CAN / power supply	designed for 12 V and 24 V supply voltage
<b>CAN interface</b>	CAN 2.0B (active), High Speed (ISO 11898-2) 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
LED indicator	
CAN	power (green), status (red)
Measurement channels	Configuration: input open (red flashing), sensor connected (green flashing) Operation: open channel or broken sensor (red) / sensor detected (off)

<b>Type designation</b>	<b>HV TH-TBM 8 /65</b>
<b>Housing</b>	aluminium with HV designation on the front-side (RAL2003)
Protection class	IP65
Ground connection	M6 threaded hole
Mounting	19 inch
Weight	approx. 600 g
Dimensions (w x h x d)	12 HP (approx. 61 mm) 3 U (approx. 129 mm) 100 mm (+ 25 mm protective bracket)
<b>Connectors</b>	
CAN / power supply	LEMO 0B, 5-pole, code G
Signal inputs	LEMO Redel 2P, 8-pole, code B (grey) <sup>2)</sup>
<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
Pollution degree	3
Storage temperature	-40 °C to +85 °C
<b>Conformity</b>	<b>CE</b>
<b>Device safety</b>	EN 61010

<sup>1</sup> For operating the device directly in systems with operating voltages of > 60 V, e.g. high-voltage batteries of hybrid or electric vehicles, please read the CSM document "Safety Instructions HV TH-TBM".

<sup>2</sup> Optionally available with single-channel input connectors

## additional products

### HV THMM 4

The measurement module HV THMM 4 is especially designed for safe temperature measurements on high-voltage live parts and is therefore excellently suited for mobile and stationary use in the area of e-mobility (electric and hybrid vehicles).



### HV PTMM 2 and HV PT-TBM 8

The measurement modules HV PTMM 2 and HV PT-TBM 8 /65 have been designed for precise temperature measurements with PT100 and PT1000 RTD elements in high-voltage environments and are equipped with 2 or 8 measurement inputs in 4-wire-connection, respectively. The 19 inch version HV PT-TBM 8 /65 is particularly suited for measurement applications in test benches.





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