



HV THMM



Product description

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).

Thanks to the compact and robust design and a very wide operating temperature range, **HV THMM 4** can be installed and operated directly in the engine compartment and other constrained spaces, e. g. close to the high-voltage battery and power electronics. **HV THMM 4** features a high degree of measurement accuracy over the entire operating temperature range.

Shipping content

- ▶ Measurement module HV THMM 4
- ▶ Configuration software CSMconfig
- ▶ Documentation
- ▶ Calibration certificate in accordance with DIN EN ISO/IEC 17025
- ▶ HV isolation test certificate

Key features



- ▶ *NiCr-Ni temperature inputs (K type), with reinforced insulation*
- ▶ *Type approval test according to safety standard DIN EN 61010 by accredited testing laboratory*
- ▶ *Routine test according to safety standard DIN EN 61010*
- ▶ *Very good measurement accuracy for all temperature ranges and environmental conditions*
- ▶ *Operating temperature range: -40 °C to +100 °C*


Maintenance

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

Accessories

- ▶ See datasheet "CAN Accessories" for details.

Technical data

Type designation	HV THMM 4
	
Inputs	4 NiCr-Ni (K type)
Measurement range	-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
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 cold junction per channel
Measurement uncertainty	
Gain error at 25 °C	max. ±0.05 % of measured value
Offset and scaling error	max. ±0.3 K
Gain drift	max. ±10 ppm/K of measured value
Zero drift	max. ±4 mK/K
Fields of application ¹⁾	for measurements in HV environments according to DIN EN 61010-1:2010
Battery voltages	up to 1,000 V (DC)
Isolation test ¹⁾	
Type approval test	test voltage 3,510 V (AC) according to DIN EN 61010-1:2010
Routine test	test voltage 3,100 V (DC) according to DIN EN 61010-1:2010, isolation test is to be performed at least every 12 months
Reinforced insulation ¹⁾	
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
Measurement categories	
CAT 0	846V
CAT II ²⁾	600V
CAT III ²⁾	300V
CAN interface	CAN 2.0B (active), High Speed (ISO 11898-2:2016), 125 kbit/s to 1 Mbit/s, up to 2 Mbit/s ³⁾ with CSMcan interface, data transfer is “free running”
Configuration	via CAN bus with CSMconfig or CSM INCA AddOn settings and configurations stored in the device

Type designation	HV THMM 4
Power supply	
Minimum	6 V DC (-10 %)
Maximum	30 V DC (+10 %)
Power consumption	typ. 1 W
LED indicator	power (green), status (red)
Housing	aluminium with HV designation on the front-side (RAL 2003)
Protection class	IP67
Ground connection	M6 threaded hole
Weight	approx. 350 g
Dimensions (w × h × d)	approx. 130 × 33 × 75 mm / approx. 130 × 38 × 75 mm (Slide Case)
Connectors	
CAN / power supply	LEMO 0B, 5-pole, code G
Signal inputs	LEMO Redel 2P, 8-pole, code B (grey)
Operating and storage conditions	
Operating temperature range	-40 °C to +100 °C
Relative humidity	5 % to 95 % (non-condensing)
Altitude	max. 5,000 m above sea level (CAT 0) max. 3,000 m above sea level (CAT II and CAT III)
Pollution degree	4
Storage temperature	-40 °C to +100 °C
Conformity	CE
Device safety	DIN EN 61010:2010

¹ For details see document "Technical Information: Fields of Application for CSM HV Measurement Modules".
Please read the CSM document "Safety Instructions HV THMM" additionally!

² Measurement categories are valid as of hardware revision Boo2.

³ 2 Mbit/s as of hardware revision B000.

additional products

HV TH-TBM

The 19 inch slide-in module HV TH-TBM 8 /65 is equipped with 8 measurement channels and like HV THMM modules, it has been specifically designed for safe temperature measurements in high-voltage environments. Due to its housing design, this measurement module is particularly suited for measurement applications in test benches.



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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