HV TH4 evo CAN MM Series

Product description

CSM's **HV TH4 evo** measurement module is especially designed for safe temperature measurements on live high-voltage parts and is therefore excellently suited for mobile and stationary use in e-mobility applications (electric and hybrid vehicles).

Thanks to their compact and robust design and a very wide operating temperature range, **HV TH4 evo** measurement modules 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 TH4 evo** features a high degree of measurement accuracy over the entire operating temperature range.

Key features

- NiCr-Ni temperature inputs (K type), with reinforced insulation up to 1,000 V DC
- Excellent measurement accuracy for all temperature ranges and environmental conditions
- Operating temperature range: -40 °C to +125 °C
- Type approval test and routine test according to safety standard EN 61010

Scope of delivery

- Measurement module HV TH4 evo
- 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

Type designation	**HV TH4 evo**
	
Technical data valid as of revision	B104
Inputs	4 NiCr-Ni (K type)
Measurement range	-270 °C to +1,372 °C
Internal resolution	16 bit
Internal sampling rate per ch.	1 kHz
Measurement data rate per ch.	1, 2, 5, 10, 20, 50, 100, 200 Hz adjustable per module or per channel via configurable CAN identifier
HW input filter	low-pass filter 150 Hz
SW input filter	FIR-Filter (Finite Impulse Response), averaging automatically adjusted to measurement data rate median11 filter, single or double internal clock rate
Channel-specific comments	free text consisting of up to 100 characters per channel
Broken sensor detection	yes
Cold junction compensation	internal cold junction per channel
Measurement deviation [1]	
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
Fields of application [2]	for measurements in HV environments [3]
nominal voltage [3]	up to 1,000 V DC
Isolation test [2]	
Routine test	test voltage [3] 3,100 V DC
Reinforced insulation [2, 3]	
Channel/channel	1,000 V DC
Channel/CAN	1,000 V DC
Channel/power supply	1,000 V DC
Functional insulation	
CAN/power supply	designed for supply voltages 12 V and 24 V

Type designation	HV TH4 evo
Measurement categories [4]	
CAT 0	1,000 V
CAT II	600 V
CAT III	300 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 suitable CAN interface, data transfer is “free running”
Configuration	via CAN bus with CSMconfig or CSM INCA AddOn settings and configurations stored in the device
Power supply	
Minimum	6 V DC (-10 %)
Maximum	30 V DC (+10 %)
Power consumption	typ. 650 mW
LED indicator	power (green), status (red)
Housing	aluminum with HV designation on the front-side (RAL 2003)
Protection class	IP67
Ground connection	M6 threaded hole
Weight (device)	approx. 350 g
Dimensions (w × h × d)	approx. 130 × 33 × 75 mm/approx. 130 × 38 × 75 mm (Slide Case)
Connectors	
CAN/power supply [5]	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 +125 °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 +125 °C
Conformity	CE
Device safety	EN 61010-1:2020+COR1:2022, +COR2:2023 EN 61010-2-030:2022

[1] Further information can be found in the Technical Information document on the subject of "Deviation of Measurement".

[2] Please also read the CSM document “Safety Instructions HV TH4 evo CAN MM”

[3] According to EN 61010-1:2020+COR1:2022, +COR2:2023, EN 61010-2-030:2022

[4] Further information can be found in the Technical Information document "Measurement Categories for CSM HV Measurement Modules".

[5] Optionally available in other variants

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