



HV AD-TBM 4+



Product description

HV AD-TBM 4+ belongs to the series of CSM's high-voltage measurement modules, developed for safe measurements on high-voltage components. **HV AD-TBM 4+** is especially designed for the measurement of analog voltages in high-voltage environments. Designed as a 19-inch slide-in unit, this module is excellently suited for test bench applications. **HV AD-TBM 4+** is also applicable for mobile use in all types of vehicles and can, for example, be mounted in the trunk of a car.

HV TH-TBM 4+ features four analog inputs with sensor excitation. If combined with special sensor cables, standard sensors, which are typically used in the field of low-voltage applications, can be safely operated even in a high-voltage environment.

Key features

CAN



- ▶ 4 analog inputs with reinforced insulation up to 846 V
- ▶ Measurement data rate up to 20 kHz via CAN
- ▶ Galvanically isolated sensor excitation with reinforced insulation up to 846 V, adjustable per channel
- ▶ Use of standard sensors in high-voltage environments
- ▶ Very low power consumption
- ▶ Type approval test according to safety standard EN 61010 by an accredited test laboratory
- ▶ Routine test according to safety standard EN 61010
- ▶ Consistently high measurement accuracy over the entire operating temperature range from -40 °C to +85 °C
- ▶ Robust aluminium housing (19" 3 U / 12 HP)

Shipping content

- ▶ Measurement module HV AD-TBM 4+
- ▶ 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

- ▶ Cables for CAN and power supply
- ▶ CAN connection cable
- ▶ Signal cables for high-voltage sensor connection
- ▶ CAN bus termination and mechanical mountings
- ▶ See datasheet "CSM MiniModule Accessories"



Technical data

Type designation	HV AD-TBM 4+
	
Measurement inputs	4 analog inputs
Internal resolution	16 bit
Internal sampling rate per ch.	80 kHz
HW input filter	4th order Butterworth filter (threshold frequency approx. 5 kHz)
Measurement ranges	± 1, ±2, ±5, ±10, ±20 V
Measurement data rate per ch. ¹⁾	1, 2, 5, 10, 20, 50, 100, 200, 500 Hz, 1, 2, 5, 10, 20 kHz
SW input filter ²⁾	6th order Butterworth filter
Measurement uncertainty	
Gain error at 25 °C	max. ±0.04 % of measured value
Offset and scaling error	max. ±0.02 % of final value
Gain drift	max. ±10 ppm/K of measured value
Zero drift	max. ±10 ppm/K of final value
Sensor excitation	galvanically isolated, adjustable per channel
Voltage	10, 12, 15 V DC
max. power output	150 mW
Tolerance	max. ±5 %
Reinforced insulation ^{3), 4)}	
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) 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 settings and configurations stored in the device
Power supply	
Minimum	6 V DC (-10 %)
Maximum	30 V DC (+10 %)
Power consumption	typ. 1.8 W (without sensor excitation)
LED indicator	
CAN	power (green), status (red)
Measurement channels	Configuration: active channel selected (green flashing) deactivated channel selected (red flashing) Operation: valid measurement value (green)
Sensor excitation	Sensor excitation on (green), sensor excitation overload (red)

Type designation	HV AD-TBM 4+
Housing	aluminium with HV designation on the front-side (RAL2003)
Protection class	IP65
Ground connection	M6 threaded hole
Weight	approx. 530 g
Mounting	19 inch
Dimensions (w x h x d)	12 HP (approx. 61 mm) 3 U (approx. 129 mm) 100 mm (+ 25 mm protective bracket)
Connectors	
CAN / power supply ⁵⁾	LEMO 0B, 5-pole, code G
Signal inputs	LEMO Redel 2P, 8-pole, code C (black)
Operating and storage conditions	
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
Conformity	CE
Device safety	EN 61010

¹ 5 kHz: 2 channels @ 500 kbit/s CAN, 4 channels @ 1 Mbit/s CAN; 10 kHz: 2 channels @ 1 Mbit/s CAN, 4 channels @ 2 Mbit/s CAN; 20 kHz: 2 channels @ 2 Mbit/s CAN

² Selectable per channel; threshold frequency is automatically adjusted to measurement data rate.

³ For operating the device directly in systems with operation voltages of > 60 V, e.g. high-voltage batteries of hybrid or electric vehicles. Please read the CSM document "Safety Instructions HV AD-TBM"!

⁴ One channel consists of one measurement input plus sensor excitation

⁵ Optionally available in other variants

additional products

HV AD-TBM 8LI

HV AD-TBM 8LI is especially designed for the measurement of analog voltages in high-voltage environments and features eight analog inputs with measurement ranges up to ± 90 V per channel.



HV ADMM 2+ / HV ADMM 4LI

HV ADMM measurement modules provide two or four measurement inputs for analog voltage measurements in high-voltage environments. Module version "2+" features two measurement channels with sensor excitation, HV ADMM 4LI is equipped with eight measurement inputs without sensor excitation. Thanks to their compact size and the wide operating temperature range, both module versions are suitable for mobile use under challenging environmental conditions.





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