



# HV PTMM 2



## Product description

CSM's HV PTMM 2 measurement module features two measurement inputs in 4-wire-connection for PT100 and PT1000 sensors and has been especially designed for precise temperature measurements in high-voltage environments.

HV PTMM 2 is excellently suited for measuring the temperature of individual battery cells and battery packs in high-voltage batteries. Due to the thin-film design of special foil PT sensors, it is possible to precisely monitor the temperature of battery cells, even under very limited space conditions.

## Shipping content

- ▶ Measurement module HV PTMM 2
- ▶ Configuration software CSMconfig
- ▶ Documentation
- ▶ Calibration certificate
- ▶ HV isolation test certificate

## Key features



- ▶ *2 inputs in 4-wire connection for PT100 and PT1000 sensors with reinforced insulation*
- ▶ *Individual PT coefficients can be entered for best possible sensor adjustment*
- ▶ *Type approval test according to safety standard EN 61010 by an accredited test laboratory*
- ▶ *Routine test according to safety standard EN 61010*
- ▶ *Low power consumption typ. 1 W*


## Maintenance

- ▶ HV isolation test at least every 12 months, see EN 61010 for scope of testing
- ▶ Calibration every 12 months recommended

## Accessories

- ▶ See datasheet "CAN Accessories"

## Technical data

<b>Type designation</b>	<b>HV PTMM 2</b>
	
<b>Measurement inputs</b>	2 inputs in 4-wire connection for PT100 and PT1000 sensors, configurable via software
Measurement ranges	-50 °C to +100 °C and -100 °C to +500 °C
Internal resolution	16 bit
Internal sampling rate per ch.	8 kHz
Measurement data rate / sending rate per channel	1, 2, 5, 10, 20, 50, 100 Hz adjustable per module or per channel via configurable CAN identifier
HW input filter	4th order Butterworth filter (threshold frequency approx. 2.5 kHz <sup>1)</sup> )
SW input filter	FIR filter (Finite Impulse Response) threshold frequency automatically adjusted to measurement data rate
Channel-specific comments	free text consisting of up to 100 characters per channel
Linearization	via individual PT coefficients R0, A, B and C
Measurement current	PT100: 500 µA, PT1000: 400 µA
<b>Measurement deviation<sup>2)</sup></b>	
Gain error at 25 °C	max. ±0.1 % of measured value
Offset and scaling error	max. ±0.25 K (PT100) / ±0.175 K (PT1000)
Gain drift	max. ±10 ppm/K of measured value
Zero drift	max. ±3 mK/K
<b>Fields of application<sup>3)</sup></b>	for measurements in HV environments <sup>4)</sup>  For details see document: "Technical Information: Fields of Application for CSM HV Measurement Modules".
Working voltages <sup>4)</sup>	up to 846 V DC
<b>Isolation test<sup>3)</sup></b>	
Type approval test	by external accredited test laboratory <sup>4)</sup>
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

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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 rate 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. 1 W
LED indicator	power / status
<b>Housing <sup>5)</sup></b>	
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)
<b>Connectors</b>	
CAN / power supply <sup>5)</sup>	LEMO 0B, 5-pole, code G
Signal inputs	LEMO Redel 2P, 8-pole, code C (grey)
<b>Operating and storage conditions</b>	
Operating temperature range	-40 °C to +100 °C
Relative humidity	5 % to 95 % (non-condensing)
Operating altitude	max. 5,000 m above sea level
Pollution degree	4
Storage temperature	-40 °C to +100 °C
<b>Conformity <sup>6)</sup></b>	
	<b>CE</b>
<b>Device safety</b>	EN 61010-1:2010
<b>Part numbers</b>	
Standard	ART1290500
Slide Case	ART1290501

<sup>1</sup> As of hardware revision A003. For older hardware revisions, a frequency of 5 kHz applies.

<sup>2</sup> Further information can be found in the Technical Information document on the subject of "Deviation of Measurement".  
In interference-polluted environments, additional measurement errors can occur.

<sup>3</sup> Please read the CSM document "Safety Instructions HV PTMM 2"

<sup>4</sup> According to EN 61010-1:2010

<sup>5</sup> Optionally available in other variants

<sup>6</sup> The measurement modules are designed for cable lengths < 3 m.



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