



# PTMM evo



## Product description

PTMM evo is a further development of the PTMM series and available in two versions with four or eight measurement channels.

Another prominent feature is the extended operating temperature range of  $-40\text{ °C}$  to  $+125\text{ °C}$ . Last but not least, the modules' power consumption could be further reduced. Thanks to a measurement data rate of 100 Hz per channel, PTMM evo is a perfect choice for measurement applications using sensors with short response times.

To achieve best possible accuracy results, PTMM evo modules can be parameterized by means of individual PT coefficients (R0, A, B and C). This allows the use of low-accuracy PT sensors if required.

## Shipping content

- ▶ Measurement module PTMM 4 evo or PTMM 8 evo
- ▶ Configuration software CSMconfig
- ▶ Documentation
- ▶ Calibration certificate

## Key features



- ▶ 4 or 8 inputs for PT100 and PT1000 sensors
- ▶ High measurement data rate of 100 Hz for the acquisition of fast temperature gradients
- ▶ Individual PT coefficients can be entered for best possible sensor adjustment
- ▶ TEDS ready: Prepared for TEDS-capable PT sensors
- ▶ Operating temperature range from  $-40\text{ °C}$  to  $+125\text{ °C}$
- ▶ Low power consumption, typ. 0.9 W (PTMM 4 evo)

## Maintenance

- ▶ Calibration every 12 months recommended

## Accessories

- ▶ See datasheet "CAN Accessories"

## Technical data

Type designation	PTMM 4 evo	PTMM 8 evo
		
Measurement inputs	4	8
	for PT100 / PT1000 sensors, configurable via CSMconfig	
Measurement range	-50 °C to +500 °C	
Internal resolution	16 bit	
Internal sampling rate per ch.	10 kHz	5 kHz
Measurement data rate / sending rate per ch.	1, 2, 5, 10, 20, 50, 100 Hz	
HW input filter	low-pass filter, 3rd order, approx. 2.5 kHz	low-pass filter, 3rd order, approx. 500 Hz
SW input filter	FIR filter (Finite Impulse Response) threshold frequency automatically adjusted to measurement data rate	
Linearization	via individual PT coefficients R0, A, B and C	
TEDS support <sup>1)</sup>	according to standard IEEE 1451.4 (Class 2)	
Broken sensor detection	yes	
Measurement current	PT100: 1 mA, PT1000: 100 µA	
<b>Measurement deviation <sup>2)</sup></b>		
Gain error at 25 °C	max. ±0.1 % of measured value	
Offset and scaling error	max. ±0.2 K	
Gain drift	max. ±10 ppm/K of measured value	
Zero drift	max. ±5 mK/K	
<b>Galvanic isolation <sup>3)</sup></b>	no safety isolation in terms of high-voltage applications	
CAN / channel	500 V	
CAN / power supply	500 V	
<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 is free running	
Configuration	via CAN bus with CSMconfig settings and configuration data stored in the device alternatively: configuration and data transfer via CANopen protocol <sup>4)</sup>	
<b>Power supply</b>		
Minimum	6 V DC (-10 %)	
Maximum	50 V DC (+10 %)	
Power consumption	typ. 0.9 W	typ. 1.3 W
LED indicator	power / status	

Type designation	PTMM 4 evo	PTMM 8 evo
Housing <sup>5)</sup>	aluminium, gold anodized	
Protection class	IP67	
Weight	approx. 300 g	approx. 500 g
Dimensions (w × h × d)	approx. 120 × 32 × 50 mm approx. 120 × 37 × 50 mm (Slide Case)	approx. 200 × 35 × 50 mm approx. 200 × 40 × 50 mm (Slide Case)
<b>Sockets <sup>5)</sup></b>		
CAN / power supply	LEMO 0B, 5-pole, code G	
Signal inputs	LEMO 0B, 6-pole, code A	
<b>Operating and storage conditions</b>		
Operating temperature range	-40 °C to +125 °C	
Relative humidity	5 % to 95 % (non-condensing)	
Pollution degree	3	
Storage temperature	-55 °C to +150 °C	
<b>Conformity</b>	<b>CE</b>	

<sup>1</sup> Hardware prepared for TEDS support. In order to make use of TEDS sensors, the measurement module has to be equipped with 6-pole measurement inputs.

<sup>2</sup> In interference-polluted environments or at operating temperatures above +110 °C, additional measurement errors can occur. Further information can be found in the Technical Information document on the subject of "Deviation of Measurement".

<sup>3</sup> These MiniModules are designed for measurements in vehicles with 12 V, 24 V, or 48 V on-board power supply systems. The maximum operating voltage at the measurement inputs is 60 V. Not suitable to be directly connected to systems with higher operating voltages, e.g. high-voltage batteries of hybrid or electric vehicles.

<sup>4</sup> The only CANopen version currently available is PTMM 4 evo.

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

## additional products

### HV PTMM 2

Measurement module HV PTMM 2 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 specific foil PT sensors, it is possible to precisely monitor the temperature of battery cells, even under very confined conditions.



### HV PT-TBM 8

Like the HV PTMM 2, measurement module HV PT-TBM 8 /65 has been designed for precise temperature measurements with PT100/PT1000 sensors in high-voltage environments. This device is equipped with eight measurement inputs and, as a 19 inch measurement module, it is particularly suited for measurement applications in test benches.





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