

Precise. Rugged. Universal.

Thermo-Scan MiniModules

- ▶ Extremely compact CAN bus measurement modules
- ▶ 8 or 16 NiCr-Ni temperature inputs (Type K), completely electrically isolated
- ▶ Internal cold junction compensation per channel
- ▶ Very good measurement precision under all temperature and environmental conditions
- ▶ Unrivaled low power consumption
- ▶ Operating temperature:
-40 °C to +125 °C (Automotive Version)
-40 °C to +85 °C (Industrial Version)
- ▶ Robust aluminum housing:
IP65 / IP67 (Automotive), IP50 (Industrial)
- ▶ Attractive price-performance ratio

The measurement modules of the CSM MiniModule family solve extreme and combine competing demands on automotive measurement technology. Developed for use inside engine compartment, they are designed for extreme temperature and environmental conditions and are very compact. All CSM MiniModules have excellent specifications and a very good price-performance ratio.

Customer driven, only for temperature measurement with thermocouples, 3 different housings are available, which can be combined in any way. Important for handling: All connectors are placed at the front side.

Thermo-Scan 8 (THMM 8)

8-channel module with **8 NiCr-Ni Mini Thermo Connectors**. A proper solution for many applications. Cost-efficient, easy and flexible to use.

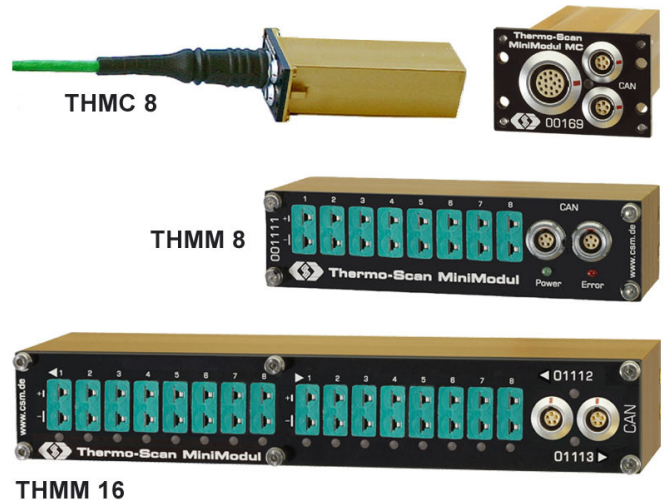
THMM 8 is used mainly as Automotive Version inside engine compartment. For applications with lower environmental demands it is also available as Industrial Version.

Thermo-Scan MC 8 (THMC 8)

8-channel module with **1 NiCr-Ni Multi-Connector**. This module can be installed in very small gaps. The signal cable consist of thermocouple wires with teflon cover. The pins of the Multi-Connector are made of NiCr-Ni material, which is very important for measurement accuracy.

This solution is preferred if modules often have to be changed quickly.

THMC 8 is available as Automotive Version only.



Thermo-Scan 16 (THMM 16)

16-channel module with **16 NiCr-Ni Mini Thermo Connectors** and a **two-colour status LED per channel**. This module has a measurement data rate up to **200 Hz** and is particularly suitable for multi channel applications. In configuration THMM 16 is handled as two THMM 8.

The THMM 16 is available as Automotive and Industrial Version.

On request THMM 16 is also available as THMC 16 with 2 NiCr-Ni Multi-Connectors.

Accessories

Interface cables for CAN and power supply, Connection cables CAN, Adapter cables CAN, Signal cable for THMC, Termination plug and mechanical mounting parts please see data sheet "**Accessories for CSM MiniModules**".

Shipping Content: CAN-Bus MiniModules, CSM ConfigTool, documentation, Calibration certificate according to DIN EN ISO/IEC 17025.

We recommend a calibration interval of 1 year. For further technical information and references please ask our technical sales and distribution.


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Specifications Thermo-Scan MiniModules

Technical Data	THMM 8 und THMC 8	THMC 16	THMM 16
Inputs Measurement ranges Internal resolution Internal sampling rate per channel Measurement data rates per channel Input protection HW Input filter SW Input filter Broken sensor detection Cold junction compensation	8 NiCr-Ni (Type K)¹⁾ 16 NiCr-Ni (Type K)¹⁾ -100 °C to +1372 °C 16 bit 1000 Hz 1, 2, 5, 10 Hz 1, 2, 5, 10, 20, 50, 100, 200 Hz ±60 V permanent, additional ESD protection low-pass filter 15 Hz low-pass filter 250 Hz FIR-Filter (Finite Impulse Response) . Threshold frequency automatically adjusted to measurement data rate Yes internal reference per channel		
Galvanically Isolation Channel / Channel CAN / Channel CAN / Power Supply	500 V DC 500 V DC 500 V DC		
CAN Interface Configuration	CAN2.0B (active), High-Speed CAN (ISO 11898) 125 kBit/s up to 1 MBit/s, data transfer is free running via CAN bus with CSM Config Tool or CSM INCA AddOn all settings and configuration data stored in module alternatively: Configuration and data transfer using CANopen protocol ²⁾		
LED Power / Status	LED: Power (green), Status (red)		
LED per input channel	–		configuration: open channel (green blinking), plugged sensor (red blinking) measurement operation: open channel or broken sensor (red) / sensor detected (out)
Power Supply	approx. 5 V to 60 V DC		
Power consumption	typ. 1.0 W	typ. 2.0 W	
Dimensions (W x H x D)	THMM 8: approx. 120 x 30 x 50 mm THMC 8: Front approx. 50 x 31 x 6 mm Housing approx. 35 x 28 x 100 mm		approx. 200 x 35 x 50 mm
Weight	THMM 8: approx. 300 g THMC 8: approx. 200 g		approx. 500 g
Operating temperature Storage temperature Relative Humidity Protection	Automotive Version: -40 °C to +125 °C Industrial Version: -40 °C to +85 °C -55 °C to +150 °C 5 % to 95 % Automotive Version: THMM 8 / THMM 16: IP65 , THMC 8 / THMC 16: IP67 Industrial Version: IP50		
Connector CAN / Voltage Connectors signal inputs	LEMO 0B 5-pole THMM 8 and THMM 16: Miniature Thermo Connectors THMC 8 and THMC 16: 1 or 2 LEMO 2B NiCr-Ni Multi-Connectors		
Housing	Aluminum - Automotive Version: gold anodized; Industrial Version: blue anodized		
Conformity			

1) Other types on request 2) CANopen: see separate data sheet