

Precise. Rugged. Universal.

# OUT MiniModule

- ▶ Extremely compact CAN bus measurement output module with 8 completely electrically isolated channels
- ▶ 8 individual configurable output channels (Analog voltage 0 V to 10 V, current output 0 to 20 mA and 4 to 20 mA, frequency and PWM output, digital output)
- ▶ Operating temperature:
  - 40 °C to +125 °C (Automotive Version)
  - 40 °C to +85 °C (Industrial Version)
- ▶ Robust aluminum housing: IP67 (Automotive), IP50 (Industrial)
- ▶ Excellent attractive price-performance ratio



OUTMM 8

The measurement modules of the CSM MiniModule family solve extreme and combine competing demands on automotive measurement technology. Developed for use inside the 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.

- ▶ **PWM** respectively **duty cycle** output with 0 % to 100 % duty cycle and adjustable fundamental frequency in 3 ranges: 0 Hz to 100 Hz, 0 Hz to 1 kHz, 0 Hz to 10 kHz, each with adjustable output level (5 V, 8 V, 10 V, 12 V and 15 V)
- ▶ **Digital** output with adjustable output level (5 V, 8 V, 10 V, 12 V and 15 V)

## OUTMM 8

The OUTMM 8 was developed consequently for use inside the engine compartment and at the engine test stand. Beside the CSM standard communication on the CAN bus, a CANopen version (CiA DS301, DS305 and DS404) is also available.

All **8 output channels** are controlled by freely definable CAN bus messages and offers high accuracy in every operating mode.

Each channel can be configured individually. Operational modes are available as follows:

- ▶ **Analog** output 0 V to 10 V
- ▶ **Current** output 0 mA to 20 mA, 4 mA to 20 mA
- ▶ **Frequency** output in 4 ranges: 0 Hz to 100 Hz, 0 Hz to 1 kHz, 0 Hz to 10 kHz and 0 Hz to 100 kHz, each with adjustable duty cycle (0 % to 100 %) and output level (5 V, 8 V, 10 V, 12 V and 15 V)

## Accessories

Cables for CAN and power supply, Adapter cables CAN, Signal cables for sensor plug, CAN termination plug and mechanical mounting parts please see data sheet "**Accessories for CSM MiniModules**".

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# Spezifikation OUT MiniModule

Technical data	OUTMM 8
<b>Number of outputs</b>	<b>8 multifunction outputs</b>
Output operating modes	Individually adjustable for each channel: Analog voltage, current output, frequency output, PWM respectively duty cycle output, digital output
<b>Analog voltage output</b> Output range Output repetition rate Resolution Accuracy 3dB threshold frequency Output current	0 V to 10 V 1 kHz approx. 14 Bit 0.1 % of upper range value 200 Hz 20 mA
<b>Current output</b> Output ranges Output repetition rate Resolution Accuracy 3dB threshold frequency Valid working resistance	0 mA to 20 mA / 4 mA to 20 mA 1 kHz approx. 14 bit 0.1 % of upper range value 200 Hz 0 Ohm up to max. 500 Ohm
<b>Frequency output</b> Output ranges Output repetition rate Level Duty cycle Resolution	0 Hz – 100 Hz / 0 Hz – 1 kHz / 0 Hz – 10 kHz / 0 Hz – 100 kHz 1 kHz Low = 0 V / High adjustable 5 V, 8 V, 10 V, 12 V, 15 V adjustable: 0 % < duty cycle $t_{\text{Impuls}}/T < 100$ % 0.1 Hz @ 100 Hz, 1 Hz @ 1 kHz, 10 Hz @ 10 kHz, 100 Hz @ 100 kHz
<b>PWM-/duty cycle output</b> Output ranges Output repetition rate Level Fundamental frequency Resolution	0 % – 100 % 1 kHz Low = 0 V / High adjustable 5 V, 8 V, 10 V, 12 V, 15 V adjustable: 0 – 100 Hz / 0 – 1 kHz / 0 – 10 kHz 0.001 % @ 100 Hz, 0.01 % @ 1 kHz, 0,1 % @ 10 kHz
<b>Digital output</b> Level Output repetition rate Output current	Low = 0 V / High adjustable 5 V, 8 V, 10 V, 12 V, 15 V 1 kHz max. 20 mA
<b>Galvanic Isolation</b> Channel / Channel CAN / Channel CAN / Power Supply	500 V DC 500 V DC 500 V DC

<b>CAN Interface</b>	CAN2.0B (active), High Speed (ISO 11898) 125 kBit/s up to max. 1 MBit/s, data transfer is free running via CAN-Bus with CSM ConfigTool
Configuration	all settings and configuration data are stored within module alternative: Configuration and data transfer using CANopen protocol <sup>1)</sup>
<b>LED Power / Status</b>	LED: Power (green) / Status (red)
<b>Power supply</b>	<b>approx. 5 V to 60 V DC</b>
Power consumption	typical 1.6 W (without output working resistance)
<b>Dimensions (W x H x D)</b> Weight	approx. <b>200 x 35 x 50 mm</b> approx. 500 g
<b>Operating temperature</b> <b>Protection</b>	<b>Automotive Version: -40 °C to +125 °C / IP67</b> <b>Industrial Version: -40 °C to +85 °C / IP50</b>
Storage temperature Relative Humidity	-55 °C to +150 °C 5 % to 95 %
<b>Connector CAN / Voltage</b>	<b>LEMO 0B 5-pole</b>
<b>Connectors signal outputs / sensor excitation</b>	<b>LEMO 1B 2-pole</b>
<b>Housing</b>	Aluminum – Automotive Version: gold anodized Industrial Version: blue anodized
<b>Conformity</b>	<b>CE</b>

<sup>1)</sup> CANopen according to CiA DS301, DS305 and DS404: see separate data sheet

**Shipping content:** CAN bus MiniModule, CSM ConfigTool, Documentation, Calibration certificate

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