



# OUTMM



## Product description

MiniModules **OUTMM** feature four or eight electrically isolated output channels which are controlled via freely definable CAN bus messages. These modules are developed for use in engine compartments, i.e. they feature compact housings and are designed for extreme operating temperatures. Each output channel can be individually set for the operating mode "Voltage", "Current", "Frequency", "PWM / duty cycle" or "Digital signal", respectively.

## Shipping content

- ▶ MiniModule OUTMM
- ▶ Configuration software CSMconfig
- ▶ Documentation
- ▶ Test protocol

## Key features

CAN

- ▶ *Output channels galvanically isolated*
- ▶ *4 or 8 individually configurable output channels for*
  - ▶ *Voltage (0 V - 10 V)*
  - ▶ *Current (0 mA - 20 mA or 4 mA - 20 mA)*
  - ▶ *Frequency*
  - ▶ *PWM / duty cycle*
  - ▶ *Digital signal*



## Maintenance

- ▶ Inspection every 12 months recommended.

## Accessories

- ▶ See datasheet "CAN Accessories".

## Technical data

Type designation	OUTMM 4 <sup>1)</sup>	OUTMM 8
		
Outputs	4	8
Refresh rate	1 kHz	
Output operating mode	individually adjustable for each channel: voltage, current, frequency, PWM / duty cycle, digital signal	
Voltage		
Output range	0 V to 10 V	
Resolution	approx. 14 bit	
Accuracy <sup>2)</sup>	0.1 % of final value of output range	
3 dB threshold frequency	200 Hz	
Output current	max. 20 mA	
Current		
Output ranges	0 mA to 20 mA / 4 mA to 20 mA	
Resolution	approx. 14 bit	
Accuracy <sup>2)</sup>	0.1 % of final value of output range	
3 dB threshold frequency	200 Hz	
Valid working resistance	0 Ω to max. 500 Ω	
Frequency		
Output ranges	0 Hz - 100 Hz / 0 Hz - 1 kHz / 0 Hz - 10 kHz / 0 Hz - 100 kHz	
Level	Low = 0 V / High adjustable: 5 V, 8 V, 10 V, 12 V, 15 V	
Duty cycle	adjustable: 0 % < duty cycle $t_{pulse}/T$ < 100 % in 1 % steps	
Resolution	0.1 Hz @ 100 Hz, 0.1 Hz @ 1 kHz, 1 Hz @ 10 kHz, 10 Hz @ 100 kHz	
PWM / duty cycle		
Output ranges	0 % - 100 %	
Level	Low = 0 V / High adjustable: 5 V, 8 V, 10 V, 12 V, 15 V	
Fundamental frequency	1 Hz to 100 Hz in 0.1 Hz steps 1 Hz to 1 kHz in 0.1 Hz steps 1 Hz to 10 kHz in 1 Hz steps	
Resolution	0.002 % @ 100 Hz 0.01 % @ 1 kHz 0.1 % @ 10 kHz	
Digital signal		
Level	Low = 0 V / High adjustable: 5 V, 8 V, 10 V, 12 V, 15 V	
Output current	max. 20 mA	
Galvanic isolation <sup>3)</sup>	no safety isolation in terms of high-voltage applications	
Channel / channel	500 V	
CAN / channel	500 V	
CAN / power supply	500 V	

Type designation	OUTMM 4	OUTMM 8
CAN interface	CAN 2.0B (active), High Speed (ISO 11898-2:2003) 125 kbit/s to max. 1 Mbit/s, data transfer free running	
Configuration	via CAN bus with CSMconfig settings and configurations stored in the device	
<b>Power supply</b>		
Minimum	7.5 V DC (-10 %)	
Maximum	50 V DC (+10 %)	
Power consumption <sup>4)</sup>	max. 3.75 W	max. 7.5 W
LED indicator	power (green), status (red)	
<b>Housing <sup>5)</sup></b>		
	aluminium, gold anodized	
Protection class	IP67	
Weight	approx. 500 g	
Dimensions (w × h × d)	approx. 200 × 35 × 50 mm, approx. 200 × 40 × 50 mm (Slide Case)	
<b>Connectors</b>		
CAN / power supply <sup>5)</sup>	LEMO 0B, 5-pole, code G	
Signal outputs	LEMO 1B, 2-pole, code A	
<b>Operating and storage conditions</b>		
Operating temperature range	-40 °C to +110 °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> The image shows an OUTMM 4 as of hardware revision B.

<sup>2</sup> At operating temperatures above +85 °C, additional deviations can occur.

<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 voltage potential at the signal outputs must not exceed 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> Power consumption dependent on operating mode and load (see manual). The values specified for max. power consumption are valid as of hardware revision B. For previous hardware revisions, the following applies: max. 4.5 W (OUTMM 4) and max. 8 W (OUTMM 8)

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



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