



## Lambda CANc

- ▶ Universally applicable, extremely compact CAN bus measurement module to connect all Bosch- and NTK-Wideband sensors for acquisition of  $\lambda$ , AFR and O<sub>2</sub>
- ▶ Plug-compatible to CSM MiniModule family
- ▶ Usage of series sensors possible
- ▶ Extended automatic sensor detection
- ▶ Fully integrated in CSM Config Tool and in ETAS INCA via CSM INCA AddOn from INCA 6.x
- ▶ Programmable fuel types
- ▶ Field recalibration for minimization of sensor aging
- ▶ Pressure compensation (optional)
- ▶ External display DashCANc (optional)
- ▶ Operating temperature / protection: -40 °C to +125 °C / IP67



LambdaCANc, connected to a CSM MiniModule

CSM OEM version LambdaCANc meets the complex demands of automotive measurement technology. In addition to providing outstanding measurement range and accuracy, LambdaCANc addresses the two principle sources of error with wideband sensor use: **sensor aging** and **pressure sensitivity**.

Particularly LambdaCANc is suited for test bench applications as well as for mobile use. Due to the extended operating temperature range from -40 °C to +125 °C and protection class IP67, LambdaCANc is applicable for use inside engine compartment and minimizes thereby set-up times, materials usage and potential sources of error.

### Lambda sensors

All current BOSCH Lambda sensors of category LSU 4.2, LSU 4.9, LSU ADV as well as NTK and Delphi wideband sensors can be connected using a corresponding adapter plug. Standard characteristic lines and customer-specific Lambda characteristic lines of these sensors can be stored in the LambdaCANc.

The CSM INCA AddOn feature “extended automatic sensor detection” allows switching between sensors of the type LSU 4.2, LSU 4.9 and LSU ADV without any further configuration.

The lambda sensors incl. memory chip (calibration data) supplied by ECM (BOSCH, NTK, DELPHI, ...) can also be connected to the sensor connector plug.

For best accuracy over the life of the sensor, calibration can be quickly performed using ambient air.

### Pressure compensation


The possibility of pressure compensation with optional pressure sensor improves accuracy at non-stoichiometric ( $\lambda \neq 1$ ) and non-atmospheric ( $P \neq 1013$  mbar) conditions.

A pressure increase of e.g. 340 mbar will cause an error of 0.58  $\lambda$  at  $\lambda = 3$ . Pressure compensation eliminates this error and enables innovative applications such as %O<sub>2</sub> measurements in intake manifolds.

### Available measurement data on CAN

Beside  $\lambda$ , AFR (Air Fuel Ratio) and O<sub>2</sub> LambdaCANc outputs pressure (by using the optional pressure compensation) and all sensor parameters like pumping current, resistance and sensor age factor.

## Technical data

	<b>LambdaCANc</b>
<b>Inputs</b>	1 x wideband sensor, 1 x pressure sensor (optional)
<b>Measurement range</b>	
Lambda	$0.40 \leq \lambda \text{ (Lambda)} \leq 32$
AFR	$6.0 \leq \text{AFR} \leq 364$
%O <sub>2</sub>	$0 \leq \% \text{ O}_2 \leq 25$
Pressure	$0 \leq P \text{ (bar)} \leq 5.17$
<b>Accuracy</b>	
Lambda	$\pm 0.005 \text{ (@}\lambda = 1) / \pm 0.008 \text{ (@}\lambda = 0.8 \text{ to } 1.2) / \pm 0.009 \text{ (@otherwise)}$
AFR	$\pm 0.1 \text{ (@AFR = 14.6)} / \pm 0.2 \text{ (@AFR = 12 to 18)} / \pm 0.5 \text{ (@otherwise)}$
%O <sub>2</sub>	$\pm 0.2 \text{ (@0 to 2\% O}_2) / \pm 0.4 \text{ (@otherwise)}$
Pressure	$\pm 0.052 \text{ bar}$
<b>Response / processing time</b>	< 150 ms
<b>Fuel types</b>	programmable H:C, O:C, N:C ratios and H <sub>2</sub>
<b>CAN interface</b>	CAN2.0A, High Speed (ISO 11898)
Configuration	via CAN-Bus with CSM ConfigTool or CSM INCA AddOn, settings and configuration data stored in the device alternatively: configuration and data transmission via CANopen protocol
<b>Power supply</b>	
Minimum	7 V DC
Maximum	35 V DC
Power consumption	max. 40 W (warm-up phase) typ. 12 W (after warm-up phase)
<b>Housing</b>	
Protection class	IP67
Dimensions (w x h x d)	approx. 145 x 120 x 40 mm (approx. 5.7 x 4.7 x 1.6 inch)
<b>Connectors</b>	
CAN	LEMO 0B, 5-pole
Voltage	LEMO 1B, 2-pole
<b>Operating conditions</b>	
Operating temperature	-40 °C to +125 °C (-40 °F to +257 °F)
Pollution degree	3
<b>Conformity</b>	

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