

Precise. Rugged. Universal.

# LambdaCANc

- ▶ 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
- ▶ Automatic sensor detection
- ▶ Fully integrated 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
- ▶ Outstanding price/performance ratio



LambdaCANc, connected to a CSM MiniModule

The **CSM OEM version LambdaCANc** solves the **complex measurement 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. Because of the extreme 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, 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 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 the 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.

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# Specifications LambdaCANc

Technical data	LambdaCANc
<b>Inputs</b>	1 x Wideband sensor, 1 x Pressure sensor (optional)
<b>Measurement ranges</b> Lambda AFR %O <sub>2</sub> Pressure	$0.40 \leq \lambda \text{ (Lambda)} \leq 25$ $6.0 \leq \text{AFR} \leq 364$ $0 \leq \%O_2 \leq 25$ $0 \leq P \text{ (bar)} \leq 5.17$
<b>Accuracies</b> Lambda AFR %O <sub>2</sub> Pressure	$\pm 0.005$ (@ $\lambda = 1$ ) / $\pm 0.008$ (@ $\lambda = 0.8$ to $1.2$ ) / $\pm 0.009$ (@elsewhere) $\pm 0.1$ (@AFR = 14.6) / $\pm 0.2$ (@AFR = 12 to 18) / $\pm 0.5$ (@elsewhere) $\pm 0.2$ (@0 to 2% O <sub>2</sub> ) / $\pm 0.4$ (@elsewhere) $\pm 0.052$ 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> Configuration	CAN2.0B, High Speed (ISO 11898) via CAN bus with ECM Config Tool or CSM INCA AddOn all settings and configuration data are stored within module  alternatively: Configuration and data transmission with CANopen protocol
<b>Power Supply</b>	<b>7 to 35 V DC</b>
<b>Power Consumption</b> inclusive sensor heating in warm-up phase after warm-up phase	max. 40 W typ. 12 W
<b>Dimensions (W x H x D)</b>	approx. <b>145 x 120 x 40 mm</b> (approx. 5.7 x 4.7 x 1.6 inch)
<b>Operating temperature</b> <b>Protection</b>	<b>-40 °C to +125 °C</b> (-40 °F to +257 °F) <b>IP67</b>
<b>Connectors</b> CAN Voltage	<b>LEMO 0B 5-pole</b> <b>LEMO 1B 2-pole</b>
<b>Conformity</b>	<b>CE</b>