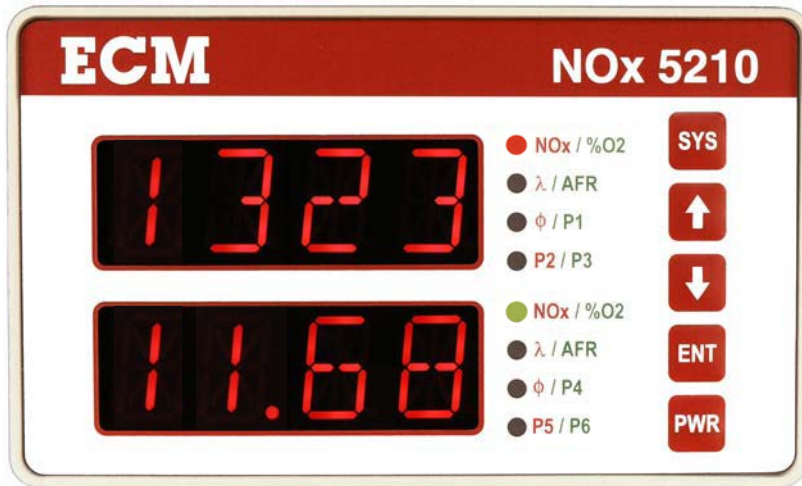# LABCELL LTD
ENGINE TEST INSTRUMENTATION

ECM NOx 5210 (Type T and Type G)

NOx Analyzer

Fast measurements of NO$_X$, Lambda, A/F Ratio, ϕ, and O^2 In Engines and Combustion Systems

For
Laboratory
and
In-Vehicle
Use

→ Analog Out

⟷ CAN

⟷ USB

⟷ RS232

Actual Size

Single/Dual Channel • Compact • Highly Integratable

Uses Direct-Insertion Ceramic NOx Sensor

(NOx, Type T Sensor Shown)

ECM NOx 5210

ECM's NOx 5210 is a versatile and highly integratable NO_X, Lambda, and O_2 analyzer for the development of engines, combustion systems, and aftertreatment systems. NO_X, Lambda, and O_2 are measured using a ceramic sensor that is mounted in the exhaust of the engine. Ease-of-use, speed, compactness, and robustness are hallmarks of this technology. No sample lines or pumps are required, simplifying installation and giving fast response. Distances of up to 100 meters between the sensor and analyzer are possible with no loss in response time or accuracy. Two NOx sensors are offered with the NOx 5210: the Type T (for general NO_X measurement and spark ignation engines), and the Type G (for lean burn systems and diesel engines). All sensors have their calibration stored in a memory chip in the sensor's connector. Calibration can be performed by the user (Zero, Span) and is written into the same memory chip. This allows sensors to be calibrated in a central location and distributed to users, ensuring consistant results throughout a large test facility.

The NOx 5210 is programmable for all fuel types (H:C, O:C, N:C, and H_2). NO_X, Lambda (λ), A/F Ratio, ϕ, and O_2 and all sensor parameters including pumping currents, cell resistance, and sensor age factor are available for display and output. A second $NO_X/\lambda/O_2$ channel can be added and displayed/output. For improved accuracy under pressure, a pressure compensation kit is available.
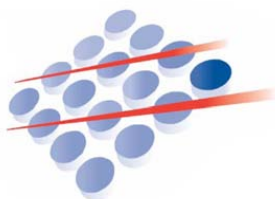
The NOx 5210 is remarkably compact and is suited for both dynamometer and in-vehicle applications. With six analog outputs, CAN, USB, and RS232 communication, the NOx 5210 can be integrated into any data acquisition system. To simplify in-vehicle use, the NOx 5210 can be turned on and off with a signal from the vehicle's ignition switch. This feature along with the analyzer's CAN communication capability make it possible to use the NOx 5210 in the loop of a real-time emissions control strategy.

NOx is of primary importance to engine, combustion system, and aftertreatment developers and legislators. The NOx 5210 makes this difficult measurement with ease and is a necessary tool for the development of modern powertrain systems.

Specifications

Ranges	**NO_X** 0 to 5000 ppm*
	λ 0.4 to 25, A/F 6 to 364, ϕ 0.04 to 2.5, **O_2** 0 to 25%
Accuracies	**NO_X (Type T)** $\pm$ 20 ppm(0 to 1000 ppm), $\pm$ 2.0% (elsewhere)
	NO_X (Type G) $\pm$ 15 ppm(0 to 1000 ppm), $\pm$ 1.5% (elsewhere)
	λ $\pm$ 0.008 (at 1 λ), $\pm$ 0.016 (at 0.8 to 1.2 λ), $\pm$ 0.018 (elsewhere)
	AFR $\pm$ 0.15 (at 14.6 AFR), $\pm$ 0.4 (at 12 to 18 AFR), $\pm$ 1.0 (elsewhere)
	$\%O_2$ $\pm$ 0.4 (0 to 2% O_2), $\pm$ 0.8 (elsewhere)
Response Time	Less than 1 s. Less than 150 ms (λ, AFR, ϕ, O_2)
Fuel Type	Programmable H:C, O:C, N:C ratios, and H_2
Analog Outputs	6 channels, 0 to 5V linearized and programmable for NO_X, λ, A/F, ϕ, O_2, etc.
CAN	Programmable communication protocol
USB, RS232	Data transfer and control
Power	11 to 28 VDC, AC/DC (optional)
Sensor	**Type T** 18mm x 1.5mm thread, **Type G** 20mm x 1.5mm thread
Size and Cable	105mm (W) x 64mm (H) x 165mm (D), 4m cable (std), up to 100m (optional)
Operating Temp.	**-**40 to +85°C electronics, 950°C (maximum continuous) NOx sensor
Options	Second NO_X / λ /AFR / ϕ / $\%O_2$ channel, Pressure Compensation Kit, Rackmount Kit (holds up to 4 analyzers/8 channels), NOx sensor simulator, Extension Cables, AC/DC Power Supply

* Type G sensors are recommended only for NOx measurement in lean (i.e. $\lambda > 1$) exhaust gases. Type T sensors are recommended for all stoichiometries.

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