

**ECM** EGR 5230

# Exhaust Gas Recirculation (EGR), Lambda, AFR, and O<sub>2</sub> Analyzer

The EGR Model 5230 Analyzer makes the measurement of %EGR, Lambda, AFR, and %O<sub>2</sub> in engines remarkably easy.

For  
Laboratory  
and  
In-Vehicle  
Use



→ Analog Out

↔ CAN

↔ USB

↔ RS232

actual size

**Fast Response • Compact • Non-Intrusive**



**Uses Direct-Insertion Ceramic Sensors**



actual size

Exhaust gas recirculation (EGR) is a powerful control used to suppress NOx emissions in engines. As important as EGR is to the operation of engines, in the past there has been no simple and compact way to measure it. Now there is with ECM's EGR 5230 Analyzer.

The EGR 5230 determines the %EGR by measuring the O<sub>2</sub>, oxidizable concentrations, and pressures directly in the intake and exhaust of the engine under test. Because there are no pumps drawing samples from intake and exhaust of the engine, the instrument is non-intrusive and has response times of less than one second. There is also a dramatic reduction in maintenance in comparison to other systems.

The EGR 5230 can display both volumetric and mass-based %EGR as well as Lambda, AFR (air-fuel ratio), intake %O<sub>2</sub>, exhaust %O<sub>2</sub>, intake pressure, and exhaust pressure. The analyzer can also function as a dual-channel, pressure compensated Lambda (AFR) meter if the intake sensors are relocated to the exhaust. With six analog outputs, CAN, USB, and RS232 communication, the EGR 5230 can be integrated with any data acquisition system.

Set-up of the EGR 5230 is easy: Mount the ceramic O<sub>2</sub> sensors in the intake and exhaust of the engine using 18mm x 1.5mm bosses and route pressure taps from the intake and exhaust to the EGR 5230's pressure sensors.

Calibration of the EGR 5230 is simple: Expose the O<sub>2</sub> and pressure sensors to air and press a button on the instrument's front panel.

The EGR 5230 is fast: This means the analyzer can be used to develop dynamic EGR algorithms. More can be done and tried in less time.

EGR and Lambda (AFR) are the two most important parameters influencing the emissions, fuel economy, and drivability of engines. Measure these parameters quickly, easily, in the laboratory and in vehicles with the EGR 5230.

## Specifications

<b>Ranges</b>	<b>EGR</b> 0 to 100%, <b>λ</b> 0.4 to 25, <b>AFR</b> 6 to 364, <b>Φ</b> 0.04 to 2.5, <b>O<sub>2</sub></b> 0 to 25% <b>Pressure</b> 0 to 517 kPa
<b>Accuracies</b>	<b>EGR</b> ± 0.5% (absolute) <b>Pressure</b> ± 5.2 kPa <b>λ</b> ± 0.005 (at 1 λ), ± 0.008 (at 0.8 to 1.2 λ), ± 0.009 (elsewhere) <b>AFR</b> ± 0.1 (at 14.6 AFR), ± 0.2 (at 12 to 18 AFR), ± 0.5 (elsewhere) <b>Φ</b> ± 0.005 (at 1 Φ), ± 0.008 (at 0.8 to 1.2 Φ), ± 0.009 (elsewhere) <b>%O<sub>2</sub></b> ± 0.2 (0 to 2% O <sub>2</sub> ), ± 0.4 (elsewhere)
<b>Response Time</b>	Less than 1 second (%EGR, programmable). Less than 150 ms (λ, AFR, Φ, %O <sub>2</sub> , Pressure)
<b>Fuel Type</b>	Programmable H:C, O:C, N:C ratios, and H <sub>2</sub>
<b>Analog Outputs</b>	6 channels, 0 to 5V linearized and programmable for EGR, λ, AFR, Φ, O <sub>2</sub> , pressure, etc.
<b>CAN</b>	Programmable communication protocol
<b>USB, RS232</b>	Data transfer and control
<b>Power</b>	8 to 28 VDC, AC/DC (optional)
<b>Sensor</b>	18mm x 1.5mm thread (O <sub>2</sub> ), 1/4" NPT (pressure)
<b>Size and Cable</b>	105mm (W) x 64mm (H) x 165mm (D), 4m cable (std), up to 100m (optional)
<b>Operating Temp.</b>	-40 to +85°C
<b>Options</b>	Rackmount Kit (holds up to 4 analyzers), O <sub>2</sub> sensor simulator, AC/DC Power Supply

**ECM** ENGINE CONTROL  
AND MONITORING

Los Altos • CA • 94023-0040 • USA • Tel: (408) 734-3433 • Fax: (408) 734-3432 • [www.ecm-co.com](http://www.ecm-co.com)

Specifications subject to change without notice. Copyright © 2014 ECM. Printed in USA.

Techniques protected under patents issued and pending

ECM\_EGR5230\_11-12-14.pdf