



Modern automotive engine management systems strive to keep the air/fuel ratio within very narrow limits in order to optimize fuel economy and, at the same time, comply with stringent emissions standards. Proper functioning of the engine management system can be verified by measuring the exhaust gas composition and computing the air/fuel ratio. The exhaust gas constituents (CO, CO₂, HC and O₂) need to be measured with high precision. In particular, the oxygen (O₂) concentration needs to be measured with a precision of $\pm 0.1\%$ O₂ absolute. Our oxygen sensor has been designed and rigorously tested, specifically to address the requirement for a highly accurate measurement of the oxygen content of automotive exhaust. This particular measurement application places stringent requirements on the O₂ sensor, including:

- a) The exhaust gas contains a very small amount of O₂, less than 1.0%, under normal vehicle operating conditions. This implies that the sensor must have very stable zero performance. There is no readily accessible source of zero (oxygen free) gas available to check low O₂ concentration measurement accuracy or to perform zero calibration. Therefore, an O₂ sensor used in this application must be very “zero stable” over its lifetime.
- b) The exhaust gas contains large concentrations of CO₂ and water, and often contains sizable concentrations of CO, unburned hydrocarbons and oxides of nitrogen. The O₂ sensor should not be poisoned or damaged in any way by these gases over its intended life.
- c) The O₂ sensor spends most of its life in normal air - containing 21% O₂ - but when analyzing exhaust gas composition, the sensor is typically measuring O₂ concentrations near 0%. It is thus desirable that the sensor have a rapid fall time when the O₂ concentration changes abruptly from 21% to 0%.
- d) It is very easy to span calibrate the sensor regularly at 21% O₂. The O₂ sensor is installed in a 4-gas analyzer which incorporates a pump used to supply the O₂ sensor with fresh air containing the “calibration” gas of 21% O₂.

The electrochemistry and mechanical construction of the oxygen sensor have been very carefully optimized to address above issues. When used in conjunction with an Andros 6000 Series Automotive Exhaust Gas Analyzer Sub-System, the O₂ sensor receives regular, periodic span calibration at 21% O₂.

We offer you two different styles of automotive oxygen sensors, depending on the subsystem which it will be used in:



electrical interface:

3pin Molex plug

sample inlet port:

M16x1 (5/8-24 UNEF)

Used for several units

**electrical interface:**

3,5mm Mono Phone Jack

sample inlet port:

M16x1 (5/8-24 UNEF)

Used for several units