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Thank you for purchasing this instrument from Intellitronix. We value our customers!



Digital Air Fuel Ratio Gauge

Part Number: B7008



Always disconnect the battery *before* attempting any electrical work on your vehicle.*

GENERAL INFORMATION

The Intellitronix Air/Fuel Ratio gauge is a measuring device which provides a more accurate, real-time method of determining the actual ratio of fuel to air in an engine's combustion chamber by measuring the oxygen content in the exhaust.

To operate properly, the Air/Fuel Ratio gauge requires voltage input from an industry standard narrow-band oxygen sensor. On the gauge face, each LED light bar represents 0.1 Volts input from the sensor. When two red, two yellow, and one green LED are displayed on the gauge, there is approximately a 14.7:1 air-to-fuel mixture. This is the stoichiometric (STOICH) air/fuel ratio, which is the chemically correct ratio and the point of lowest emissions. It is at this position that all of the oxygen and fuel in your engine has been consumed.

When all light bars are displayed, the vehicle is running full rich. When only one or two red bars are displayed, the vehicle is running lean. The combustion is never perfect in the real world and oxygen sensor output changes with temperature and wear, so it is impossible to indicate the exact richness or leanness with a standard narrow-band oxygen sensor.

The figures shown on the gauge should only be used as a reference point for tuning and evaluation. If your vehicle is computer equipped, you will find that the Air/Fuel Ratio will continually fluctuate at idle and cruising speeds as the computer is rapidly adjusting the air-fuel ratio to reach and sustain the point of lowest emissions.

Also, depending on the type of oxygen sensor you are using, there may be a short lag in time before the gauge begins functioning as some sensors need a moment to reach operating temperature; heated sensors do not rely on exhaust gasses to bring them to operating temperature and will react much quicker. If your vehicle's performance decreases and the gauge becomes sluggish, it is possible that your oxygen sensor is not working properly.

WIRING INSTRUCTIONS

Note: *Automotive circuit connectors are the preferred method of connecting wires. However, you may solder if you prefer.*

Ground – Black--This is the main ground for the display system. A wire should be run from this board to the vehicle engine block for the best ground. Use 18 AWG or larger wire to ensure sufficient grounding. Proper vehicle grounding is extremely important for any gauges (or electronics) to operate correctly. The engine block should have heavy ground cables to the battery, frame, and firewall. Failure to properly ground the engine block, senders, or digital dash can cause incorrect or erratic operation.

Power - Red--Connect the power terminal to accessory +12V power from the fuse panel or vehicle wiring harness. Using a 5-amp fuse or an inline 5-amp fuse holder This terminal should have power when the key is on or in accessory position. Use 18 AWG wire to ensure the system receives a sufficient power feed.

Oxygen - Blue Connect this wire to the output wire on the oxygen sensor. You can determine the correct wire by testing with a voltmeter with a milli-volt scale, or you can contact the manufacturer of the sensor. With the engine running, the sensing wire should put out a fluctuating 0-1V signal.

TUNING TIPS

While it is generally accepted that maximum horsepower is achieved in a rich condition, it is not totally true that the more fuel you feed an engine, the higher its output. Actually, an engine makes the most power when there is a sufficient amount of fuel to burn all of the oxygen in the combustion chamber. If there is more fuel than oxygen to support it, or if the flame extinguishes prematurely, leaving residual oxygen (generally due to an inadequate ignition system), the output of the engine diminishes. Also, the engine requires the most fuel at peak torque and then needs to be leaned out at peak horsepower. The volumetric efficiency of the engine is the highest at peak torque, since the combustion chamber contains the fullest charge, thus it requires the greatest amount of fuel.

Historically, most engines like an air/fuel ratio of 12.7:1 to 12.9:1 at peak torque, then lean out to 12.9:1 to 13.1:1 at the Wide-Open Throttle (WOT) power peak. Of course, the severe consequences of detonation due to running an engine too lean under load are well documented. Fuel can also act as a coolant, quenching the cylinder and warding off detonation.

In many instances, you may choose to run the mixture slightly rich, giving away a small amount of power, but initiating a more aggressive spark advance curve due to the cooler combustion chamber. This logic often leads to a positive power gain. There are numerous factors to consider when tuning an engine, including horsepower, vehicle weight, altitude, and anticipated usage.

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Technical Support

Monday – Friday

9am to 5 pm EST

(440) 359 7200

support@intellitronix.com

CHECK OUT THE **SUPPORT** PAGE AT

www.intellitronix.com

FOR QUICK ANSWERS (**Q&A**) TO YOUR QUESTIONS



This product carries a limited Lifetime Warranty.

This warranty is limited to replacement or repair of the unit at the discretion of Intellitronix.

RETURN POLICY PROCEDURES

Return Policy Instructions

1. Download the Intellitronix Return/Repair Form and fill in the information on the form about the product.
2. Place the product being returned in the original packaging that it came in and include a copy of the completed Intellitronix Return/Repair Form.
3. All packages must be accompanied with an RMA Number.

Please call Technical Support at +1 440-359-7200 to receive an RMA Number.

4. Mail the product being returned with the completed Return/Repair Form and a copy of the original sales invoice.

Request for Product Refund

1. All returns for a refund must have a completed Intellitronix Return/Repair Form included in the package with the returned product.
2. If the return is for a product that is not defective a 20% restocking fee will be charged. The product must be in the same pristine condition that it was sent to you.
3. Proof of purchase is required. Please include a copy of the original sales order with the returned product.
4. All product must be returned undamaged and in working order in the original packaging including plexiglass, sending units, mounting hardware, or you will be subject to additional charges for product and accessories not returned.
5. All refunds will be reviewed by the Accounting Office.

