INSTALLATION INSTRUCTIONS

2 1/16" WIDEBAND AIR/FUEL RATIO MONITOR - ANALOG

IMPORTANT
WEAR SAFETY GLASSES

Installation

1. Disconnect the negative (-) battery cable.
2. Gauge can be mounted in a 2⅛". hole with brackets supplied. Gauge can also be mounted in Auto Meter Mounting Cup, or in Auto Meter Gauge Works Pods.
3. Wire gauge as shown.

Red Wire (Power):

Connect to a fused and switched 12V positive source that is turned on and off with the ignition switch. Place a 3 amp automotive fuse (available commercially) in line with this connection to protect your gauge. It is recommended that vehicles without alternators connect this wire to a separate switch or direct to the vehicle's master cutoff switch. (See Heater Control Mode Section).

When power is applied to the gauge the pointer will move counter clockwise to the stop pin, where it will remain until voltage exceeds 12.5 v or voltage is applied to the brown wire. **Once the gauge sees 12.5 volts, it will begin heating the sensor and the pointer will move back and forth between 8.0 and 9.0 on the dial.** When the sensor is heated to the proper operating temperature the gauge will begin reading air/fuel ratio in real-time.

Black Wire (Ground):

Connect to good engine ground.

White Wire (Lighting):

Connect to dash lighting dimmer control.

Brown Wire (Heater Override for applications that provide less than 12.5 volts with engine running):

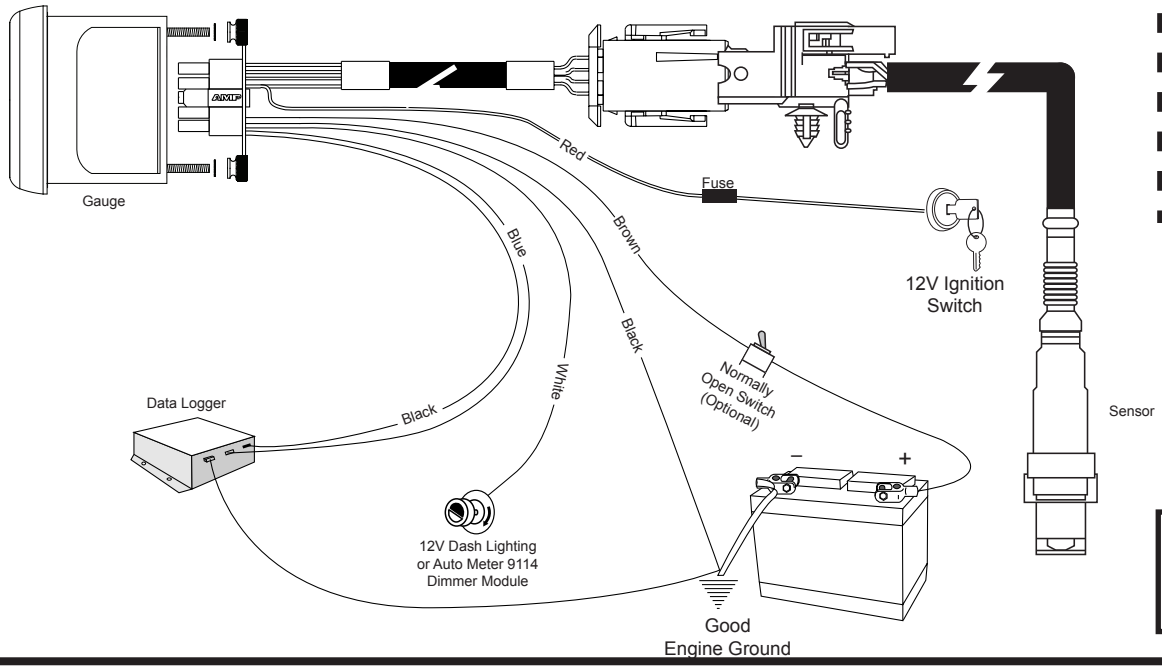
Connect to a normally open switch. Connect the other switch terminal to battery positive (+).

Blue Wire (Optional Data Logger Signal Output):

Connect to signal input(+) or Engine Management System or Data Acquisition unit.

Black Wire (Optional Data Logger Signal Ground):

Connect to signal input(-) on Engine Management system or Data Acquisition Unit.



The white wire on LED lit instruments can also be wired into a 12V key on ignition, like the red wire, for an "always on" illumination. Some styles, like Chrono Series, were designed with an "always on" illumination for the best results. The 9114 Dimmer Module can also be used with either configuration.

WARNING
Sender Will Get Very Hot During Operation.

Mounting Sensor

The heated oxygen sensor comes with a stainless steel weld-in bung, plug, and wiring harness. The oxygen sensor should be installed as close to the cylinder head as is reasonably possible so that the sensor reaches operating temperature quickly. If long tube headers are used, the oxygen sensor should be installed in the collector. If cast iron manifold(s) or shorty headers are used, install the sensor in the pipe just below the manifold. In multi-bank applications mounting in the left or right side is acceptable. Turbocharged applications should have sensor installed 4-5" after turbo on the down pipe.

The Air/Fuel Ratio Monitor is intended for use with **unleaded gasoline only**.

NOTE: OK for use with Nitrous Oxide.

NOTE: Stoichiometric Air / Fuel Ratio is the chemically correct ratio where theoretically all of the oxygen and all of the fuel are consumed. The mixture is neither rich or lean.

Auto Meter recommends welding supplied stainless steel bung with a TIG welder.

1. The exhaust pipe in front of the sensor should not contain any pockets, projections, protrusions, edges, flex-tubes etc. to avoid accumulation of condensation. A downwards slope of the pipe is recommended. If the exhaust pipe is parallel to the ground, the sensor must be installed in the top half of the pipe to avoid damage to due to condensation
2. Tightening torque: 30-44 ft lbs.
3. Avoid excessive heating of the sensor cable. Route sensor cable away from exhaust pipe.
4. The maximum temperature of the sensor on the outside of the exhaust fitting should not exceed 900° F.

Sensor Control Mode:

All O2 sensors must be heated before an accurate signal is produced. The sensor can be potentially damaged if the gauge begins to heat the sensor before the engine is running due to condensation that forms on the sensor tip and in the exhaust. To accommodate this, an internal trigger within the gauge will automatically begin heating the sensor when 12.5 volts or higher is seen on the Red wire ("Normal" operating mode). While the gauge does not require 12.5 volts to operate (12 volts will suffice), this voltage is used to indicate to the gauge that the engine is running, as most regulated charging systems will maintain 14 volts or higher. **Once the gauge sees 12.5 volts, it will begin heating the sensor and the pointer will move back and forth between 8.0 and 9.0 on the dial.** When the sensor is heated to the proper operating temperature the gauge will begin reading air/fuel ratio in real-time.

Warning:

Fouling and/or permanent damage to the oxygen sensor over time will result if used with any of the following:

- **Leaded gasoline and fuel additives containing lead**
- **2 cycle gasoline (gas/oil mix)**
- **Diesel Fuel**
- **Nitromethane**
- **Excessively rich mixtures**

If the Air/Fuel Ratio Monitor responds sluggish, the oxygen sensor is probably partially fouled and should be replaced.

Use replacement sensor, Auto Meter model # 2243 only.

Note: Due to the limitations of the sensor, the indicated Air/Fuel Ratio will never go below 10.00 on the dial when used with gasoline.

Data Logger Output Range:

The Auto Meter Air/Fuel gauge has a signal output for supplying information to a Data Logger or engine management system. The signal provided is a linear 0-4 volts output. 0 volts out equals 10.0 Air/Fuel Ratio, 4 volts out equals 18.0 Air/Fuel Ratio.

Volts = 0.5 (AFR - 10) or AFR = 2 (Volts) + 10