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| Product Name: | PE Wideband O2 Kit |
| Product Part Number: | 50070102-01 |
| Document Number: | 60000706-00 |

MANUAL REVISIONS

| Revision | Date | Description |
|----------|------------|------------------|
| -00 | 11/26/2019 | Document release |
| | | |

⚠ WARNING! ⚠

The PE Wideband O2 is intended for off-road use only. Proper care must be taken as this device is **NOT** waterproof.

The oxygen sensor in this kit will get hot when powered and **MUST** be connected to the powered O2 module when installed in a running engine. Failure to do so can quickly damage the sensor. Fuels containing lead will degrade the sensor as will 2-stroke oil in the fuel.

Performance Electronics, LTD assumes no responsibility for any damage that results from incorrect installation or misuse of this product. It is up to the end user to verify the correct setup and determine the suitability for his or her specific application.

⚠ WARNING:
Cancer and Reproductive Harm
www.P65Warnings.ca.gov

INTRODUCTION AND OVERVIEW

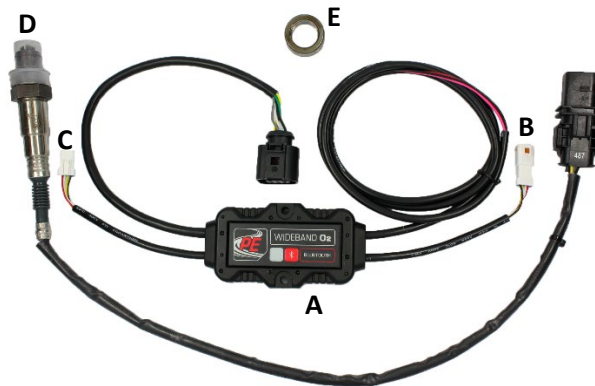
The PE Wideband O2 is a single channel air/fuel ratio (AFR) meter, featuring Bluetooth connectivity to be used with iOS or Android smartphones. A dedicated 0-5 Volt analog output connection is provided for use with data loggers or aftermarket standalone engine control units.

Features

- Wireless Bluetooth connection up to 30 ft
- Available iOS and Android mobile apps
- Fast connection times
- Adjustable history graph with 'Play' and 'Pause'
- Display AFR or lambda (λ)
- Customizable color gradient
- Output for ECU or logger (0-5 Volt)
- Bosch LSU 4.9 sensor included
- No free air calibration required
- Available CAN connection
- Optional 6' sensor extension cable (PN: 99005001-01)

PART IDENTIFICATION

| Kit Contents | |
|--------------|-------------------------|
| A | O2 Conditioning Module |
| B | CAN Input Pigtail |
| C | CAN Output Pigtail |
| D | Bosch LSU 4.9 Sensor |
| E | Mild Steel Weld in Bung |



INSTALLATION

Mounting the Conditioning Module

- Mount in a location away from direct contact with water and away from extreme heat.
- Mount using the provided holes and 10-32 or M5 equivalent screws (NOT provided).



Wiring the Conditioning Module

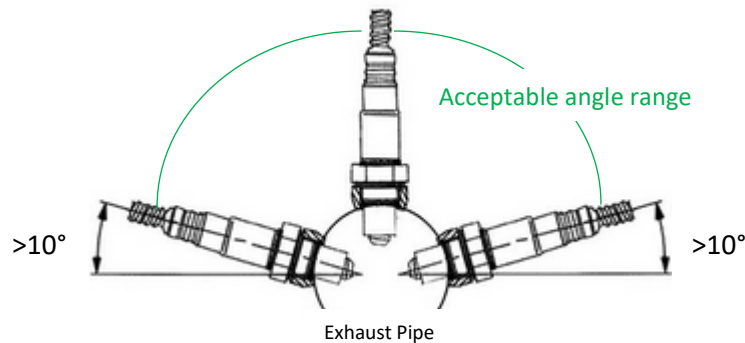
| Wire Color | Wired Connection |
|--------------|------------------------|
| Red (20ga) | Switched +12V |
| Black (20ga) | Ground |
| Pink (20ga) | 0-5V output (Optional) |

Installing the Oxygen Sensor

- Using the provided mild steel weld-in bung, install the Bosch LSU 4.9 sensor on the exhaust pipe approximately 6 inches after the collector. Install 24 inches after a turbocharger.

- The O2 sensor tip must be facing downward to avoid accumulation of condensation (see figure below).
- Connect the sensor to the conditioning module.

Acceptable Sensor Installation Angle



SETUP AND CONFIGURATION

Pairing the O2 Module to a Smart Device

- Download the PE Wideband O2 app from the iOS App Store or Google Play Store. Search for 'PE Wideband'.
- Power the conditioning module by applying switched +12V to the red wire.
- Look for the indicator light to blink red rapidly, indicating the module has power and the sensor is heating.
- Once the LED status indicator slows to a once-per-second blink pattern, open the app and select **Next**, you should see the available sensor module **Lambda** in the list.
- Press and hold the Bluetooth pairing button until the indicator light turns blue, then release.
- While the indicator light is flashing blue, select **Lambda** in the list.
- Once communication is established, the LED indicator will blink blue once per second indicating the module is paired with the mobile device. The app will now redirect to the main display screen.

Changing the Fuel Type

- Press the **Menu** button.
- Select **Sensor Settings**.
- Select the appropriate fuel type. The default is gasoline (14.7:1).

Naming the O2 Sensor Module

- Press the **Menu** button.
- Select **Sensor Settings**.
- Change the **Sensor Name**.

Note: The default name of the sensor module from the factory is 'Lambda'.

General Settings

- Press the **Menu** button.
- Select **General Settings**.
- If desired, adjust AFR/ λ range, gradient and length of history plots.

Enabling Auto Connect

Enabling this feature will automatically connect to the default sensor at launch of app.

- Press the **Menu** button.
- Select **Connection Settings**.
- Enable **Auto Connect**.
- Select **Set As Default**.

Identify Connected Sensor

Use this feature to identify the specific sensor module that is connected via Bluetooth. This is especially useful if multiple modules are used on the same engine.

- Press the **Menu** button.
- Select **About**.
- Select **Identify Connected Sensor**. The LED indicator will flash a quick Red/Blue pattern.

0-5V Output Calibration

Below is the linear relationship between output voltage from the module to Lambda. This can be used to calibrate the output of the module in a separate data logger or controller.

| Lambda = 0.14 x Vout + 0.58 | |
|------------------------------------|----------------|
| Lambda at 0.0 (V) | 0.58 λ |
| Lambda at 0.5 (V) | 0.65 λ |
| Lambda at 4.5 (V) | 1.21 λ |
| Lambda at 5.0 (V) | 1.28 λ |

CAN Connection

- Used to connect to engine control units or other CAN enabled devices using pre-terminated input and output cables.
- CAN speed (500 kbit/sec).





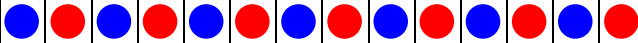


CAN Compatible ECUs

- Performance Electronics
- AEM

Optional Accessories and Replacement Parts

- PN: 99005001-01, 6' Wideband Lambda Sensor Extension Cable
- PN: 50070008, Replacement Wideband Lambda Sensor

MODULE STATUS AND ERRORS

| LED Blink Pattern | Module Status | App Message | Description |
|---|-------------------|-------------|--|
|  | Sensor Heating | 'Heating' | During the first 20 seconds of operation, the sensor must heat up to function. |
|  | Normal Operation | --None-- | Normal operation with no errors. No active Bluetooth communication. |
|  | Bluetooth Pairing | --None-- | Module is ready to pair to a mobile device. This is initiated by holding the pair button. |
|  | Bluetooth Active | --None-- | Normal operation with no errors and active Bluetooth communication. |
|  | Device Identify | --None-- | Rapid color sequence to identify the connected device. Initiated from the app. |
|  | Error | 'Error' | No sensor or bad sensor. Check the connection between the sensor and module. |
|  | Error | 'Over Temp' | The module itself is too hot. If hotter than 176°F (80°C), Bluetooth may stop functioning. |

SPECIFICATIONS

| PE Wideband Technical Specifications | |
|--------------------------------------|--|
| Parameter | Specification |
| Size | 3.75" x 2.00" x 0.75" (95mm x 51mm x 19mm) |
| Environmental Sealing | IP50. Protected from dust ingress. Not Protected from liquids. |
| Operating Temperature | Typical -22°F to 167°F (-30°C to 75°C) ambient operating temperature |
| Communication | CAN Bus, 500 kbit/sec. No on-board termination resistor. Bluetooth, BLE v4.2 |
| Operating Voltage | 8-16 VDC |

WARRANTY

Unless noted otherwise, Performance Electronics, LTD Products are warrantied against workmanship or material defects for 1 year after purchase date. Electronic components cannot be exchanged or returned for a refund after purchase. Proof of purchase in the form of original invoice or receipt, which indicates product is within warranty period, will be needed to receive warranty service. There is no warranty on units with moisture damage. O2 sensors are excluded from any warranty.

For questions or assistance please call (513) 777-5233 or email support@pe-ltd.com.