



MicroTech LSU 4.9 Wideband AFR Kit

Congratulations on your purchase of the MicroTech LSU 4.9 Wideband Kit and thank you for making MicroTech your manufacturer of choice. With 20+ years of EFI development and racing experience, MicroTech take great pride in our customers success in various forms of motorsport and look forward to helping each and every one of our customers exceed their performance goals using our products.

Please read these instructions carefully before beginning installation. **DO NOT** attempt installation if you are unsure of anything in this instruction manual. Instead, take your vehicle to a suitably qualified MicroTech technician or contact our tech department at tech@microtechEFI.com for technical assistance.



MicroTech LSU 4.9 Wideband AFR Kit

Installation and Users Manual

- 1. Description**
- 2. Included Components**
- 3. Installation Instructions**
 - 3.1 LSU Box Mounting**
 - 3.2 Sensor Placement**
 - 3.3 Wiring Information**
 - 3.4 LTC Dash Set Up**
 - 3.5 MicroTech Handset Connection**
 - 3.6 Fault Finding and Diagnostics**

MicroTech LSU 4.9 Wideband AFR Kit

1. Description

The MicroTech LSU 4.9 Wideband Air/Fuel Ratio kit is a tuning tool which samples and transmits an engine's Air/Fuel Ratio data for viewing or logging purposes.

The unit utilises the current version Bosch 5 wire LSU 4.9 oxygen sensor (Bosch Part # 0 258 017 025) matched with a genuine Bosch self calibrating processor for accurate and repeatable AFR measurement which can be displayed in either Air/Fuel Ratio or Lambda.

The LSU 4.9 unit has 3x different outputs which can transmit Air/Fuel Ratio data to various devices.

- 1) 0-5v ECU output: For wiring directly to any "C" series MicroTech ECU Oxy sensor input.
- 2) CAN output: For connection to a MicroTech LTC dash display via the MicroTech CAN hub
- 3) Serial Port Output: For connection to the MicroTech Handset.

2. Included Components

The LSU 4.9 kit is shipped with the following components

- LSU 4.9 processor box
- Bosch LSU 4.9 oxygen sensor
- Oxygen sensor wiring loom
- ECU connection loom
- CAN connection loom
- Wiring diagram and instruction manual
- MicroTech Sticker

If any of the above components are missing please contact the place of purchase ASAP.

MicroTech LSU 4.9 Wideband AFR Kit

3. Installation Instructions

3.1 LSU Box Mounting

The LSU box should be mounted inside the cabin of the vehicle (away from excessive heat and moisture) in a position where the handset port is easily accessible and the diagnostic LED's are easily visible.

In race car applications where excessive vibration may be experienced it is recommended the box be mounted using the MicroTech anti vibration mount kit (part # VIBKIT).

3.2 Sensor Placement

The oxygen sensor must be mounted BEFORE the catalytic converter in all applications. For best results we recommend mounting the sensor directly into the exhaust down pipe using a weld on bung. For turbo applications mount the sensor approx 12"-24" from the rear of the turbo. For N/A applications mount the sensor approx 6"-12" from the head flange or in the merge collector.

It is very important the sensor be mounted as close to the top side of the exhaust pipe as possible. **NEVER** mount the sensor to the bottom of the pipe as condensation can form inside the exhaust and will permanently damage the sensor.

For cars **NOT** using a catalytic converter the sensor may be mounted into the tailpipe using the optional MicroTech tailpipe adapter (Part # TAILPIPE).



Bosch LSU 4.9 Wide band sensors are designed to work with unleaded fuel. While the sensor will accurately read leaded fuels, the lifespan of the sensor will be significantly reduced when used with leaded fuels.



When installed in the vehicle, the oxy sensor **MUST** be connected to the LSU box and powered up while ever the car is running. The oxygen sensor will be permanently damaged if the engine is run without the sensor connected to +12v



NEVER allow the oxygen sensor to warm up before starting the engine from dead cold as condensation in the exhaust can come in contact with the hot sensor causing heat shock which will permanently damage the sensor.



When using the tailpipe adapter **NEVER** drive the vehicle in rainy or wet conditions as the moisture on the sensor will cause heat shock and permanently damage the sensor.

MicroTech LSU 4.9 Wideband AFR Kit

3.3 Wiring Information

The LSU 4.9 box has 3x separate wiring connectors which are easily identified.

8 Way Connector

The 8 way connector is used for the power supply and ground for the LSU box and the connection of the oxygen sensor to the unit. Only 2 of these wires will need to be hard wired to the vehicle.

Red Wire = Switched ignition on +12v with inline 5A fuse
(unit turns on/off via the ignition switch)

Brown Wire = LSU box ground. Ground to chassis on the vehicle.

The remaining wires which run inside the heat resistant shielding are pre terminated into a male connector which will plug directly into the matching female connector on the Oxygen sensor itself.



6 Way Connector

The 6 way connector is used when wiring the LSU box directly to the MicroTech ECU.

All MicroTech "C" series ECU's have a 0-5v Oxy sensor input standard. Once the LSU box has been wired into the ECU the Air/Fuel Ratio will automatically be displayed on the MicroTech Handset or Laptop tuning software. No extra set up in the ECU software is necessary.

Black/Red Wire = 0-5v output (Connect to Black/Red Oxy Sensor input on MicroTech ECU)

Brown Wire = Oxy Sensor Ground (Connect to Brown Oxy Sensor ground on MicroTech ECU)



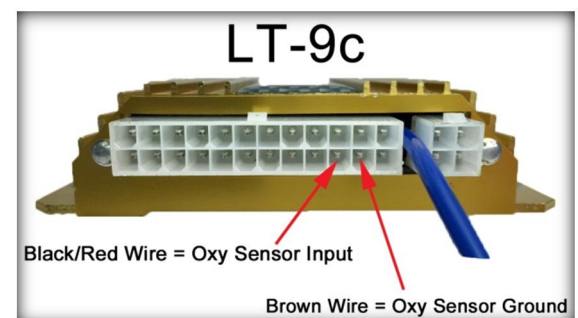
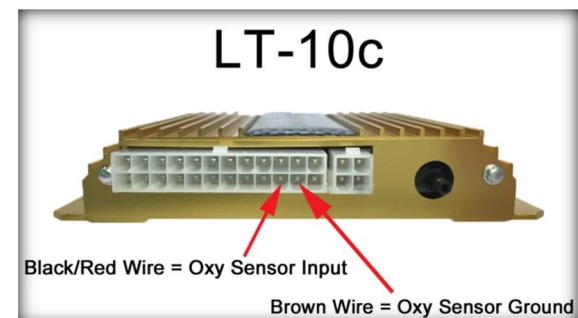
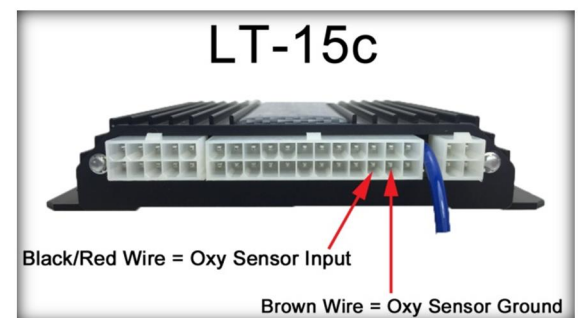
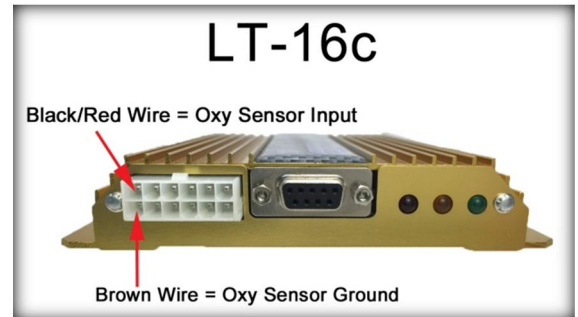
MicroTech LSU 4.9 Wideband AFR Kit

The Oxy sensor input wires and Oxy sensor ground wires can be found in the following positions on MicroTech ECU's.

- LT-16c: Dedicated oxy sensor ground pin on 12 way auxiliary connector next to the handset port on the ECU
- LT-15c, LT-10c and LT-9c: Brown wire from LSU box must be spliced into the matching brown colour sensor ground wire on the ECU main harness 24 way connector.

The unit may also be wired into other brand ECU's which have a 0-5v oxy sensor input. The sensor scaling is as follows

- 0v = 10:1 AFR
- 5v = 20:1 AFR



MicroTech LSU 4.9 Wideband AFR Kit

4 Way CAN Connector

The 4 way connector is used when connecting the LSU box to the MicroTech LTC Dash using the CAN output. The CAN wiring loom supplied with the LSU kit is pre wired with a 4 pin connector on either end of the loom. One end plugs directly into the LSU box and the other end plugs into any of the 6 available ports on the MicroTech CAN hub.



Note: CAN hub (Part # CANHUB) must be purchased separately

Additional LSU boxes can be connected to the CAN hub (for example: bank to bank AFR monitoring on V8 engines). Up to 4x boxes may be connected to the CAN hub at the same time.

For detailed instructions on configuring the LTC Dash to connect multiple LSU boxes to the MicroTech CAN network contact the MicroTech tech department at tech@microtechfi.com

MicroTech LSU 4.9 Wideband AFR Kit

3.4 LTC Dash Set up

The MicroTech LTC Dash has a dedicated screen (screen #3) for displaying Air/Fuel Ratio in a large digit format.

To activate this function from the LTC Dash Data display screen:

- Select Handset mode (touch top left corner of the screen)
- Arrow down 2 clicks (using the blue arrows) to set up screen #2
- Arrow across to the right 4 clicks (using the blue arrows) to "Data 3_1"



MicroTech LSU 4.9 Wideband AFR Kit

- Press the red "Mode" button to enter program mode (screen will turn red when program mode is activated)



- Arrow up/down (using blue arrows) to function #11 which will be labelled "AFR"

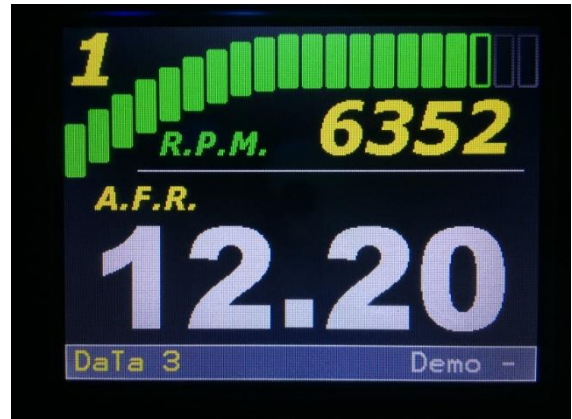


- Press the red "mode" button again to exit program mode (screen will return to blue when exiting program mode)



MicroTech LSU 4.9 Wideband AFR Kit

- Touch the “Hand” icon in the top left screen (or press the external button) to return to display mode. Screen #3 will now be set up as a large digit Air/Fuel Ratio display screen.



For further information on programming AFR warnings and limits on the LTC Dash refer to the LTC Dash manual.

3.5 MicroTech Handset Connection

The MicroTech Handset is primarily used with the LSU box for factory diagnostics and testing purposes. However, Air/Fuel Ratio can be viewed on the Handset by simply connecting the handset cable directly to the 9 pin serial port on the side of the LSU 4.9 box.

- Units will be displayed on the Data screen in both Air/Fuel Ratio or Lambda.



All other functions being displayed are for factory testing and calibration, diagnostic purposes or future upgrades and should be ignored.

MicroTech LSU 4.9 Wideband AFR Kit

3.6 Fault finding and Diagnostics

The LSU 4.9 box has 2x diagnostic LED's located on the end of the unit next to the handset port for diagnostic purposes.

Red LED:

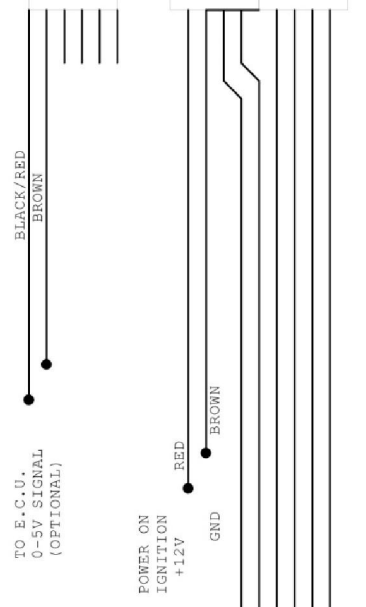
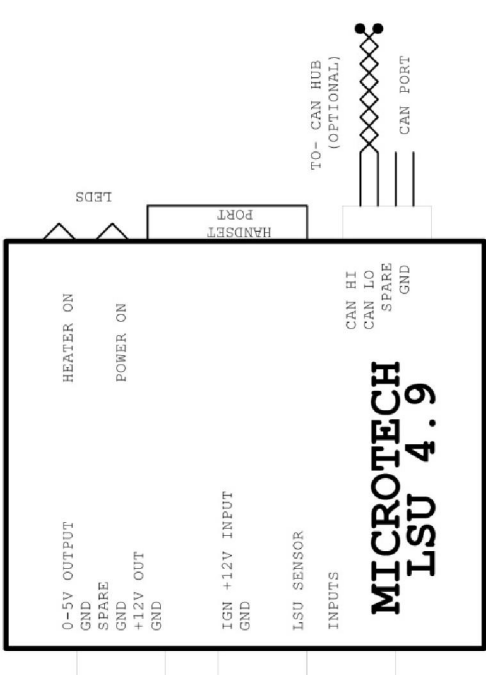
- Solid = +12v Power on to the LSU Box
- Flashing = Oxygen sensor error (wiring fault, open circuit, damaged sensor etc)

Green LED:

- Flashing = Oxygen Sensor heater is active Solid = Oxygen sensor heater is unable to function (wiring fault, sensor unplugged or damaged etc)
- Solid = Oxygen sensor heater is unable to function (wiring fault, sensor unplugged or damaged etc)



1 2 3 4



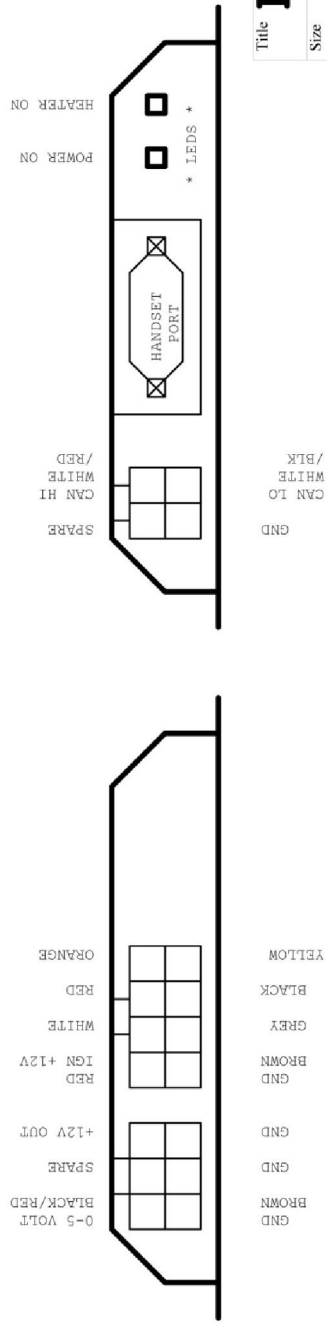
LSU 4.9 PIN-OUTS

CAN SETUP -

FORMAT = 2.0A 11 BIT
SPEED = 1M BIT

CAN ID = 01A (BOX 1)
CAN ID = 01B (BOX 2)
CAN ID = 01C (BOX 3)
CAN ID = 01D (BOX 4)

NOTE -
UNITS HAVE NO 120OHM
TERMINATING RESISTOR
INSTALLED



Title MICROTECH LSU

Size	Number	Revision
A4	LSU 4.9	1
Date:	4-Oct-2014	Sheet of 1
File:	C:\ADV\SCH\LSU49.S01	Drawn By: DOM