

TE-1.1/1.5 Calibration Guide

This document describes how to adjust (or check) the setting of your version 1.1 or 1.5 wideband unit. Adjustment of a pre-built unit is usually not necessary, except perhaps the simulated narrowband output described on page 2.

Items Required :

- Digital multimeter with high impedance input.
- 12-15 volt DC power supply or battery.
- Small flat-bladed screwdriver (insulated handle preferred).

It is also recommended to use a set of clip-on hooks (or IC test clips) for your multimeter.

The WB unit needs power for all the following steps. Connect the WB unit to a 12 to 15 volt power supply, with **nothing else connected** (ie. no sensor, no 5301, no D/A cable). Note : the positive battery connection is identified by a red heatshrink flash on one lead.

Basic Tests and 2.50 SET

The **GREEN** Power LED should come **ON** immediately. The **RED** Heater LED should remain **OFF**. This is normal behaviour **without** an NTK sensor connector. We'll now check that the internal power supply voltages are correct, and set the 2.50v reference voltage.

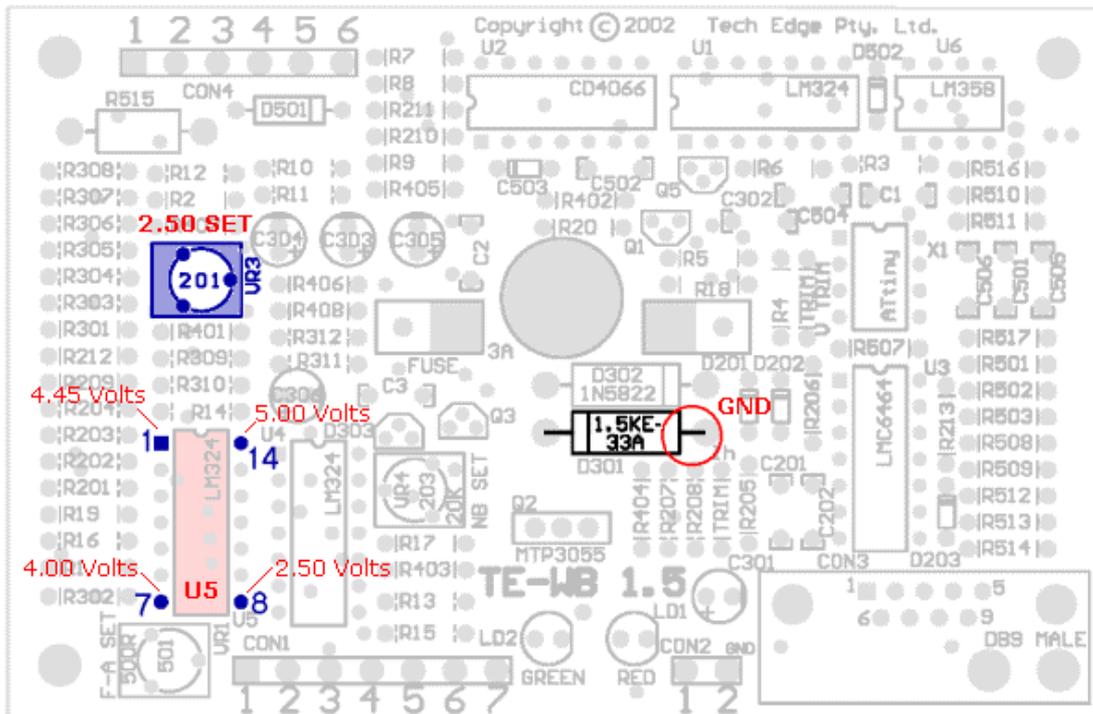


Figure 1.

1. Attach the multimeter's ground lead (preferably using an IC test clip) to a convenient ground (GND) point. The right-hand leg of the 1.5KE-33A Diode is a good point. (RED circle in Fig 1. above)
1. Attach the multimeter's positive lead to **pin 8** of **U5** and adjust the **2.50 SET** pot until **pin 8** of **U5** is exactly **2.50v**.
2. Attach the test lead to **pin 1** of **U5**, It should be at **4.45v** ($\pm 0.02v$)
3. Attach the test lead to **pin 7** of **U5**, It should be at **4.00v** ($\pm 0.02v$)
4. Attach the test lead to **pin 14** of **U5**, It should be at **5.00v** ($\pm 0.1v$)

Once the 2.50 volt level is set then all the other voltages should be as expected. If differences are found then consider that there is a wiring error on your board.

NB-SET - Simulated NarrowBand Output

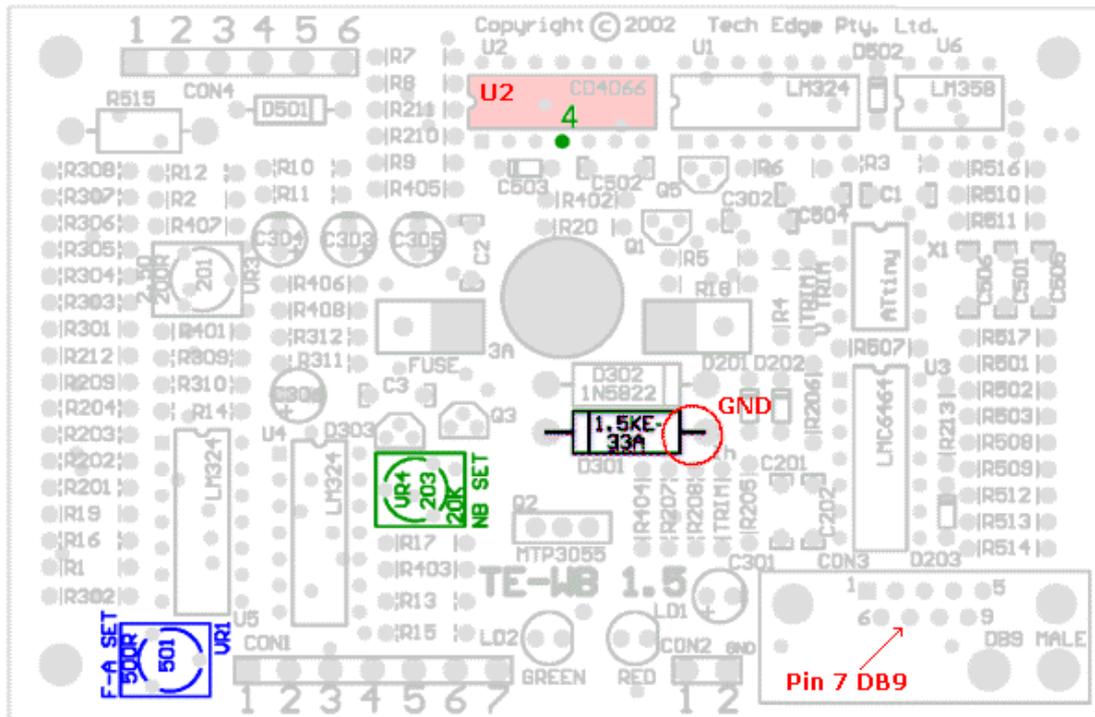


Figure 2.

1. Attach the multimeter ground lead to the right-hand leg of the 1.5KE-33A as before.
2. Attach the Positive multimeter lead to **pin 4** of **U2** (the CD4066 IC).
3. Now adjust the **NB SET** Pot (Green in Fig 2 above) until the meter reads **0.45v** ($\pm 0.05v$). This will take a steady hand, as the adjustment is quite sensitive. (This is the 0-1v transition point for the Narrowband, and simulates a normal O2 sensor)

It is **recommended** that you test your **narrowband output** before attaching the unit to an ECU (vehicle computer) as the narrowband output is capable of being set a large number of AFR points from the fixed AFR value (14.7) obtained from a normal narrowband sensor.

*** WARNING ***

Inadvertently or deliberately fooling your ECU into running your engine either richer, or leaner than normal can cause **serious engine damage**. Please note that you utilise the Simulated Narrowband output **AT YOUR OWN RISK!**

A simple way to test the Narrowband setting on the bench is to squirt Butane from a common cigarette lighter into the end of the sensor whilst on the bench. Observe the AFR on the 5301 display, and the narrowband output on a multimeter where it should have a sharp transition from 0-1v at the 14.7 AFR point.

FA-SET Free Air Sensor Calibration

The Free-Air Sensor calibration can ONLY be adjusted with your sensor connected. The aim is to get as close to a **4.00v** output from **in free air**, The adjustment has a fairly narrow range, and is provided for slight compensation only, some individual sensors may not be able to be adjusted to **4.00v** exactly.

Attach your sensor to the WB Unit, and let the Heater warm up for at least 2 minutes **after** the RED heater LED comes on (vehicle should **NOT** be running). With the positive lead of the multimeter on **pin 7** of the **DB9** connector (or **pin 14** of **U4**) adjust the **F-A SET** pot (blue in fig 2 above) to attain a voltage as close to **4.00v** as possible.