D.I.Y. Wideband Setup Guide by Xenocron

This guide will encompass setting up your Innovate, PLX or AEM Wideband Controller/Gauge to be able to input, log and use the reading in a variety of "chip based" applications including Hondata S300, Hondata KPRO, Neptune and for standalone ECUs Haltech (Platium Series or Plug and Play) and AEM Version 2 ECUs. The focus is on Honda applications (thus what we specialize in) but you can extrapolate the info to other ECU makes, models and for other applications that use Haltech or AEM.

First, we need to understand how the budget wideband market works. There are few different models of wideband out there, but essentially they all work on the same premise. A wideband air/fuel ratio measuring device "pumps" in air from the exhaust stream across an oxygen sensor which measures OXYGEN content of that gas. It does NOT measure fuel content so when there is excess Oxygen content, a wideband will read leaner, or higher than 14.7 AFRs. Where there is less Oxygen content in the exhaust stream, the mixture will be read richer, or lower than 14.7 AFRs. 14.7 is the stoichiometric or perfect combustion reading of air to fuel ratio for standard pump gasoline. A Stoichiometric mixture can also be displayed as a "Lambda" value of 1.0. The important thing to understand here is that ALL budget wideband monitors on the market, measure oxygen content as LAMBDA, but then convert that reading to AFRs using math, and then display that calculated AFR on the screen or gauge that comes with the wideband package (if included). A lambda of 1.0 is always 1.0, even if you change fuels….however an AFR for gas, and an AFR for E85 will be different as these fuels take different amounts of fuel to achieve the same power during combustion. Here is a basic chart to show you some differences.

Lambda	Gasoline AFRs	E85 AFRs
1.1	16.17	10.83
1.05	15.44	10.25
1.0	14.7	9.76
.95	13.97	9.27
.90	13.23	8.78
.85	12.5	8.30
.80	11.76	7.80
.75	11.03	7.32
.7	10.3	6.83

As you can see by looking at this chart, you will want to target different air/fuel ratios for your goals depending what fuel you are using (hint, every fuel is different including E10 pump gas, E98, E70, methanol, Q16…etc). However, I said that all Wideband Oxygen Sensors, measure LAMBDA…and display AFRs in a Gauge so you can target for the SAME "gauge AFRs" while tuning since you will actually be targeting the same Lambda values…I hope this makes sense. Don't wrap your brain around it too much…or you might get a headache! Some gauges allow you to select which fuel you are using during setup.

Now on to the Engine Management setup….

www.xenocron.com

For any Wideband, make sure you **strictly** follow the manufacturer's instructions for installation into the vehicle…as of the time of this article, the following links work. If they do not as you are reading it, go to the manufacturers website for the most up to date versions, or just simply Google it. I can only spoon feed so much information and continually keep it up to date myself so please no emails asking me to update links.

Innovate Motorsports
www.tuneyourengine.com
Tech Help and Instructions
http://www.innovatemotorsports.com/support.php

PLX Devices
www.plxdevices.com
Tech Help and Instructions
http://www.plxdevices.com/support/productmanuals.html

AEM Widebands
www.aemelectronics.com
Product Models Available (Instructions are linked in each description for the product)
http://www.aemelectronics.com/wideband-air-fuel-systems-15/?osCsid=20vedc67fu5gnvkmir1uhrjbu1

Haltech ECU Instructions:
http://www.haltech.com/index.php/downloads-2/specsquickstartwiring

AEM Instructions:
***For any AEM Instruction sheet, if you have lost it (Hint: included with your ECU purchase), Google the search phrase "AEM INSTRUCTIONS" + whatever your ECU part # is. For example.

"AEM INSTRUCTIONS 30-6052" for an S2000 ECU
www.google.com

IMPORTANT!!!

Make CERTAIN, that you provide power and ground to the wideband at the exact SAME LOCATION that your ECU receives its own power and ground. For the Applications we are discussing, the following chart gives you these locations to use. If you find an error in this chart, please email me so I can correct it. I have proofread this carefully, multiple times…but mistakes can happen!

Honda ECU (chip based solutions) Wiring Diagrams

	Wire Color	OBD1 Honda	OBD2A Honda	OBD2B Honda
AEM (12v)	RED	A25	A11	B1
AEM Ground (-)	BLACK	A24	A10	B2
AEM Output (0-5v)	WHITE	D14	D7	C16
Innovate (12v)	RED	A25	A11	B1
Innovate Ground (-)	BLACK	A24	A10	B2
Innovate Output 1 (0-5v)	YELLOW	D14	D7	C16
Innovate Output 2 (0-1v)	BROWN	Only use for Narrowband o2 Sensor setups		
PLX (12v)	RED	A25	A11	B1
PLX Ground (-)	BLACK	A24	A10	B2
PLX Output (0-5v)	GRAY*	D14	D7	C16

*PLX has you select which output to use in their instructions, please make sure you use the 0-5v wideband output on the device when pinning it yourself as part of the setup

	Wire Color	02-04 Honda K-Series
AEM (12v)	RED	A2
AEM Ground (-)	BLACK	A4
AEM Output (0-5v)	WHITE	E15
Innovate (12v)	RED	A2
Innovate Ground (-)	BLACK	A4
Innovate Output 1 (0-5v)	YELLOW	E15
Innovate Output 2 (0-1v)	BROWN	
PLX (12v)	RED	A2
PLX Ground (-)	BLACK	A4
PLX Output (0-5v)	GRAY*	E15

*PLX has you select which output to use in their instructions, please make sure you use the 0-5v wideband output on the device when pinning it yourself as part of the setup

AEM Wiring Diagrams

	Wire Color	AEM 1000/1001/1002/6040	AEM 1020/1060	AEM 1010/1012/6050/6052
AEM (12v)	RED	A25	A11	B1
AEM Ground (-)	BLACK	A24	A10	B2
AEM Output (0-5v)	WHITE	D14	D7	C16
Innovate (12v)	RED	A25	A11	B1
Innovate Ground (-)	BLACK	A24	A10	B2
Innovate Output 1 (0-5v)	YELLOW	D14	D7	C16
Innovate Output 2 (0-1v)	BROWN	Only use for Narrowband o2 Sensor setups		
PLX (12v)	RED	A25	A11	B1
PLX Ground (-)	BLACK	A24	A10	B2
PLX Output (0-5v)	GRAY*	D14	D7	C16

*PLX has you select which output to use in their instructions, please make sure you use the 0-5v wideband output on the device when pinning it yourself as part of the setup

Quick AEM Links

30-6040 ECU (OBD1 Honda)
http://www.aemelectronics.com/Images/Products/Installation%20Instructions%2030-6040.pdf

30-6052 ECU (S2000)
http://www.aemelectronics.com/Images/Products/Installation%20Instructions%2030-6040.pdf

30-6030 ECU (K-Series)
http://www.aemelectronics.com/Images/Products/Installation%20Instructions%2030-6030.pdf

Haltech Wiring Diagrams

	Wire Color	Haltech PS	Haltech PnP	
AEM (12v)	RED	26P – Pin 11	Any 12 volt Fused (IGP 1 or 2)	
AEM Ground (-)	BLACK	26P – Pin 14/15/16	Aux Conn Pin 4	
AEM Output (0-5v)	WHITE	26P – Pin 12	Aux Conn Pin 3 "AVI2"	
Innovate (12v)	RED	26P – Pin 11	Any 12 volt Fused (IGP 1 or 2)	
Innovate Ground (-)	BLACK	26P – Pin 14/15/16	Aux Conn Pin 4	
Innovate Output 1 (0-5v)	YELLOW	26P – Pin 12	Aux Conn Pin 3 "AVI2"	
Innovate Output 2 (0-1v)	BROWN	Not USED unless you want to do narrowband control		
PLX (12v)	RED	26P – Pin 11	Any 12 volt Fused (IGP 1 or 2)	
PLX Ground (-)	BLACK	26P – Pin 14/15/16	Aux Conn Pin 4	
PLX Output (0-5v)	GRAY*	26P – Pin 12	Aux Conn Pin 3 "AVI2"	

*PLX has you select which output to use in their instructions, please make sure you use the 0-5v wideband output on the device when pinning it yourself as part of the setup

26P means "26 pin connector" for the Platinum Sport ECU (see instructions)

http://www.haltech.com/wp-content/uploads/2011/01/Pin-Allocations-and-conversion-Platinum-Sports.pdf

http://www.files.haltech.com/downloads/platinum/quick_start_guides/pro_plugin/quick_start_platinum_pro_%20Honda_EP3_V5.pdf

http://www.haltech.com/wp-content/uploads/downloads/ECU_guides_Wiring/Quick_Start_Guides/Pro_Plug%20in/quick_start_platinum_pro_%20DC5_V5.pdf

http://files.haltech.com/downloads/platinum/quick_start_guides/pro_plugin/quick_start_platinum_pro_Honda_AP1_V1.pdf

Now we will setup each ECU System independently. It is important to remember here that your GAUGE and your ECU may show slightly different readings. There are a variety of factors that can make your Gauge and your ECU "drift" from each other. In all cases, please ASSUME that your gauge is reading correctly, and your ECU is not…and using the setup parameters for each ECU, you can bring that "drift" in check to make the Gauge in your car match the Gauge in the ECU

(software). This is an important step and may take considerable time carefully making sure your readings are correct to be able to get the best information possible while datalogging.

Hondata S300 (OBD1 Honda ECU, Smanager)

1. Open whichever tuning calibration you are running. If you are beginning your tune, setup ALL tuning related features, options and setting before trying to setup the Wideband. If your car is already tuned, open the TUNED CALIBRATION from your laptop. It is advised that you do not DOWNLOAD the calibration from the ECU, as this can possibly cause the calibration to become corrupt. ALWAYS save a copy of the original file as a backup…in case you mess up something in the calibration that causes the vehicle to run differently.

2. Goto PARAMETERS →Closed Loop and scroll to the bottom of this screen.
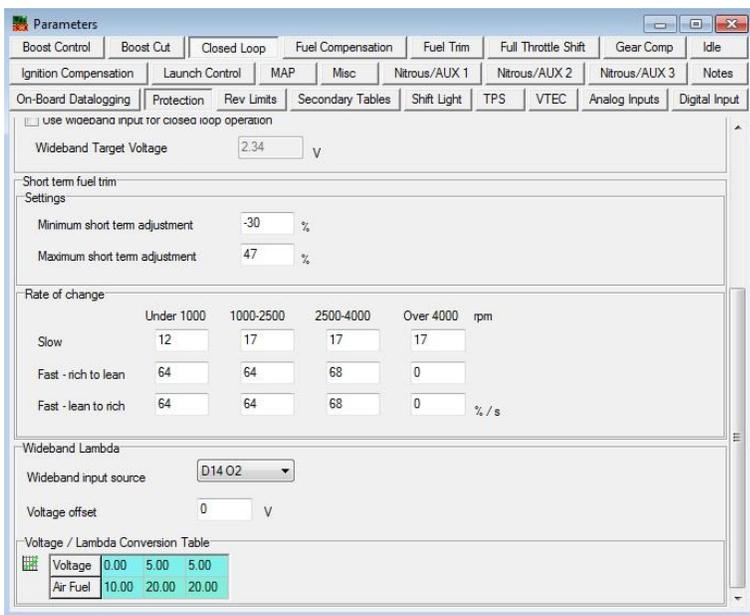
- Wideband input source should be D14 (it can be D10, if you want it to be…that is up to you when you wire it to the ECU).
- Voltage Offset should start at 0, you may need to tweak this setting to get your gauge and ECU to match readings
- Your Voltage/Lambda Conversion Table is specific to the wideband you are using. AEM and PLX will be very similar.

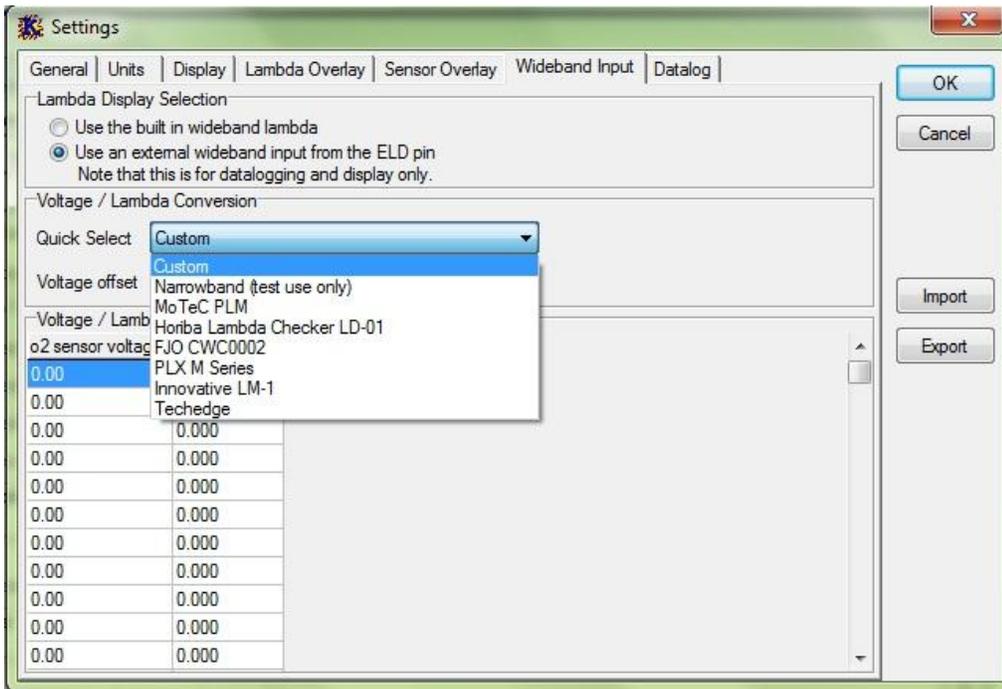| AEM Wideband | Innovate Wideband | PLX Wideband |

- Once these are input, next go to OPTIONS → SETTINGS → Units and select your Lambda Unit as AFR or Lambda, whichever you prefer.
- Then start your vehicle and let it run for at least a minute. Your wideband will take some time to warm up (it has built in heater control, and it will need to stabilize).
- Once it is running and warmed up, hit "CTRL+3" to bring up your SENSORS window and find the sensor labeled "O2" where it should be displaying some sort of Air/Fuel Ratio (or lambda if you selected this in SETTINGS.
- Hopefully the car is tuned and running well, if not adjust your air/fuel ratio (using the gauge) until the car runs and idles steady.
- Next, note any differences between your wideband GAUGE, and your "O2" reading in SMANAGER. For example, if your Gauge is reading 14.0 and your ECU (software) is reading 14.2, you have an "offset" or voltage difference which is usually caused by the differences in ground planes (search on Google if you want to understand more). Essentially here, go back into PARAMETERS → Closed Loop and adjust the Voltage Offset box up or down, until you get the gauge and ECU to match. This box is in VOLTS, not AFR…so my suggestion is to adjust the value by "0.1" + or – until you get them to match. Negative values are ok to input here.
- Next, you will want to make sure that you match everywhere in the Air/Fuel operating range or scale that the car will run in. You can do this in a variety of different ways…my method is to make the car go 10-20% richer and follow to make sure the gauge and ECU match at this rich point…next go 10-20% leaner and make sure the ECU and gauge continue to match. If they do NOT, you can adjust the rich point (voltage = zero) in the voltage / lambda conversion table as well at the lean point (voltage = 5). This is essentially using the ECU to re-curve ever so slightly any ground differences in between the Wideband and ECU.
- You should NOT have to make large changes. Any change greater than +/- .5 volts would indicate you have a large grounding issue somewhere…you may have to investigate further and the diagnosis on how to do this is out of the scope of this article. Please search or bring it to a competent electrical specialist for the best help here.
- Once your wideband and ECU match (it does NOT have to be absolutely perfect, close enough should be fine for the purposes of tuning and sending logs to your tuner remotely, within 2% is acceptable to me) you can now complete your tuning, or setup the on boarding logging so that you have complete data for seeing how your vehicle runs on the dyno, street or track with Hondata S300

Hondata KPRO (02-04 K-Series, KManager)

1. Open whichever tuning calibration you are running. If you are beginning your tune, setup ALL tuning related features, options and setting before trying to setup the Wideband. If your car is already tuned, open the TUNED CALIBRATION from your laptop. It is advised that you do not DOWNLOAD the calibration from the ECU, as this can possibly cause the calibration to become corrupt. ALWAYS save a copy of the original file as a backup…in case you mess up something in the calibration that causes the vehicle to run differently.

2. Goto OPTIONS → SETTINGS → Wideband Input

- Select "use an External Wideband" since this is what we are doing, and then select the wideband you are using (PLX or Innovate are selectable, AEM you will have to input manually so select CUSTOM for AEM). In my opinion, the built in INNOVATE settings are WRONG, so input them as well as AEM as follows.

Innovate   AEM
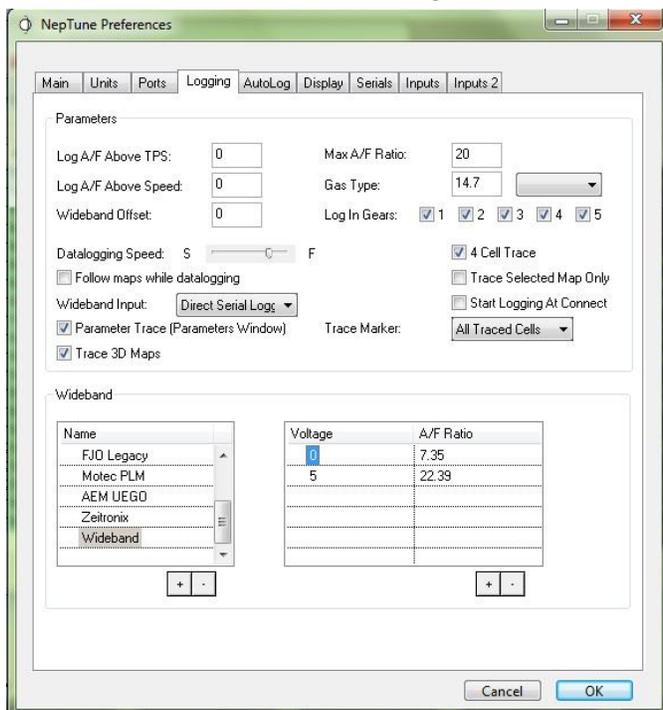
- Voltage Offset should start at 0, you may need to tweak this setting to get your gauge and ECU to match readings
- Your Voltage/Lambda Conversion Table is specific to the wideband you are using. AEM and PLX will be very similar.
- Once these are input, in the same screen go to SETTINGS → Lambda Overlay and select your Lambda Unit as AFR or Lambda, whichever you prefer.
- Then start your vehicle and let it run for at least a minute. Your wideband will take some time to warm up (it has built in heater control, and it will need to stabilize).
- Once it is running and warmed up, hit "CTRL+3" to bring up your SENSORS window and find the sensor labeled "O2" where it should be displaying some sort of Air/Fuel Ratio (or lambda if you selected this in SETTINGS.
- Hopefully the car is tuned and running well, if not adjust your air/fuel ratio (using the gauge) until the car runs and idles steady.
- Next, note any differences between your wideband GAUGE, and your "O2" reading in SMANAGER. For example, if your Gauge is reading 14.0 and your ECU (software) is reading 14.2, you have an "offset" or voltage difference which is usually caused by the differences in ground planes (search on Google if you want to understand more). Essentially here, go back into OPTIONS → SETTINGS →Wideband Input and adjust the Voltage Offset box up or down, until you get the gauge and ECU to match. This box is in VOLTS, not AFR…so my suggestion is to adjust the value by "0.1" + or – until you get them to match. Negative values are ok to input here.
- Next, you will want to make sure that you match everywhere in the Air/Fuel operating range or scale that the car will run in. You can do this in a variety of different ways…my method is to make the car go 10-20% richer and follow to make sure the gauge and ECU match at this rich point…next go 10-20% leaner and make sure the ECU and gauge continue to match. If they do NOT, you can adjust the rich point (voltage = zero) in the voltage / lambda conversion table as well at the lean point (voltage = 5). This is essentially using the ECU to re-curve ever so slightly any ground differences in between the Wideband and ECU.
- You should NOT have to make large changes. Any change greater than +/- .5 volts would indicate you have a large grounding issue somewhere…you may have to investigate further and the diagnosis on how to do this is out of the scope of this article. Please search or bring it to a competent electrical specialist for the best help here.
- Once your wideband and ECU match (it does NOT have to be absolutely perfect, close enough should be fine for the purposes of tuning and sending logs to your tuner remotely, within 2% is acceptable to me) you can now complete your tuning, or setup the on boarding logging so that you have complete data for seeing how your vehicle runs on the dyno, street or track with Hondata K-Manager

Neptune RTP Setup

1. Open whichever tuning calibration you are running. If you are beginning your tune, setup ALL tuning related features, options and setting before trying to setup the Wideband. If your car is already tuned, open the TUNED CALIBRATION from your laptop. It is advised that you do not DOWNLOAD the calibration from the ECU, as this can possibly cause the calibration to become corrupt. ALWAYS save a copy of the original file as a backup…in case you mess up something in the calibration that causes the vehicle to run differently.
2. Goto EDIT → PREFERENCES → Logging
3. If you have an AEM or PLX Wideband, all you have to do is click on that selection. At the time of this write-up, Innovate is not yet built in to select, so you will have to setup the voltage scale manually like follows. Click + under Wideband, and + twice on the voltage side and manually enter these numbers:

4. You can setup the rest of the setting like the above screen shot as well if it isn't by default.
5. Wideband Offset should start at 0, you may need to tweak this setting to get your gauge and ECU to match readings
6. You CAN set the "GAS TYPE" from one of the preset units, if you want to…but then your ECU and Gauge will not match each other. To get them to match, always select "14.7 Gasoline w/ Additives" to begin with.
7. Then start your vehicle and let it run for at least a minute. Your wideband will take some time to warm up (it has built in heater control, and it will need to stabilize).
8. Once it is running and warmed up, hit "CTRL+D" to bring up your DATA window and find the sensor labeled "A/F Ratio" where it should be displaying some sort of Air/Fuel Ratio (or lambda if you have selected this in your logging preferences.
9. Hopefully the car is tuned and running well, if not adjust your air/fuel ratio (using the gauge for feedback) until the car runs and idles steady.
10. Next, note any differences between your wideband GAUGE, and your "A/F Ratio" reading in NEPTUNE. For example, if your Gauge is reading 14.0 and your ECU (software) is reading 14.2, you have an "offset" or voltage

difference which is usually caused by the differences in ground planes (search on Google if you want to understand more). Essentially here, go back into your Logging Preferences (EDIT→PREFERENCES→LOGGING and adjust the Wideband Offset box up or down, until you get the gauge and ECU to match. This box is in VOLTS, not AFR…so my suggestion is to adjust the value by "0.1" + or – until you get them to match. Negative values are ok to input here.
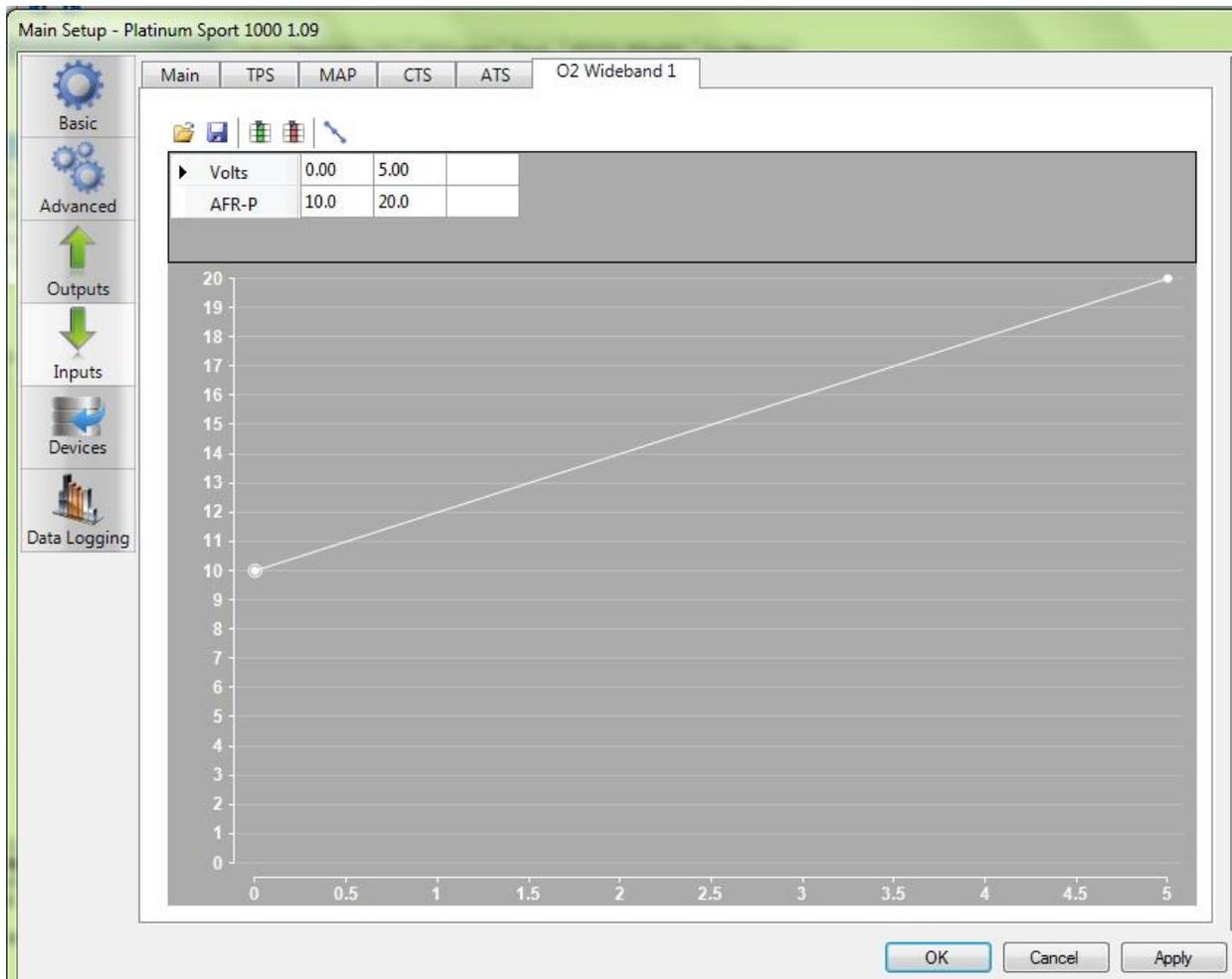
11. Next, you will want to make sure that you match everywhere in the Air/Fuel operating range or scale that the car will run in. You can do this in a variety of different ways…my method is to make the car go 10-20% richer and follow to make sure the gauge and ECU match at this rich point…next go 10-20% leaner and make sure the ECU and gauge continue to match. If they do NOT, you can adjust the rich point (voltage = zero) in the voltage / A/F Ratio conversion table as well at the lean point (voltage = 5). This is essentially using the ECU to re-curve ever so slightly any ground differences in between the Wideband and ECU. This will not work for the built-in selectable sensors, you will have to add a custom wideband setting and do this there if needed. Hopefully this is not something you have to adjust.

12. You should NOT have to make large changes. Any change greater than +/- .5 volts would indicate you have a large grounding issue somewhere…you may have to investigate further and the diagnosis on how to do this is out of the scope of this article. Please search or bring it to a competent electrical specialist for the best help here.

13. Once your wideband and ECU match (it does NOT have to be absolutely perfect, close enough should be fine for the purposes of tuning and sending logs to your tuner remotely, within 2% is acceptable to me) you can now complete your tuning, or setup the on boarding logging so that you have complete data for seeing how your vehicle runs on the dyno, street or track with Neptune RTP

Haltech Wideband Setup (Platinum Series ECU, sport 1000 or 2000)

1. Open whichever calibration you are running with Haltech. This article assumes you or your tuner already know something about setting up a calibration for your vehicle properly or that your vehicle has already been tuned. If you are beginning your tune, setup ALL tuning related features, options and setting before trying to setup the Wideband. If your car is already tuned, when you connect to the Haltech ECU, it will automatically download and open the current calibration that is running your ECU. Save a copy of this file independently BEFORE making any changes. ALWAYS save a copy of the original file as a backup…in case you mess up something in the calibration that causes the vehicle to run differently. Make all changes with the key ON

2. Hit shift + F4 to open the Main Setup Page, look on the left hand side of the screen for INPUTS, click on it.

3. In this page you will see a variety of input selection options. Click the check box next to O2 Input, to make that input active. Next choose from the drop down menu item that appears once you check that box and select "Wideband Sensor 1"

4. You will now see a new tab at the top of the screen for "O2 Wideband 1" so you should click on this.

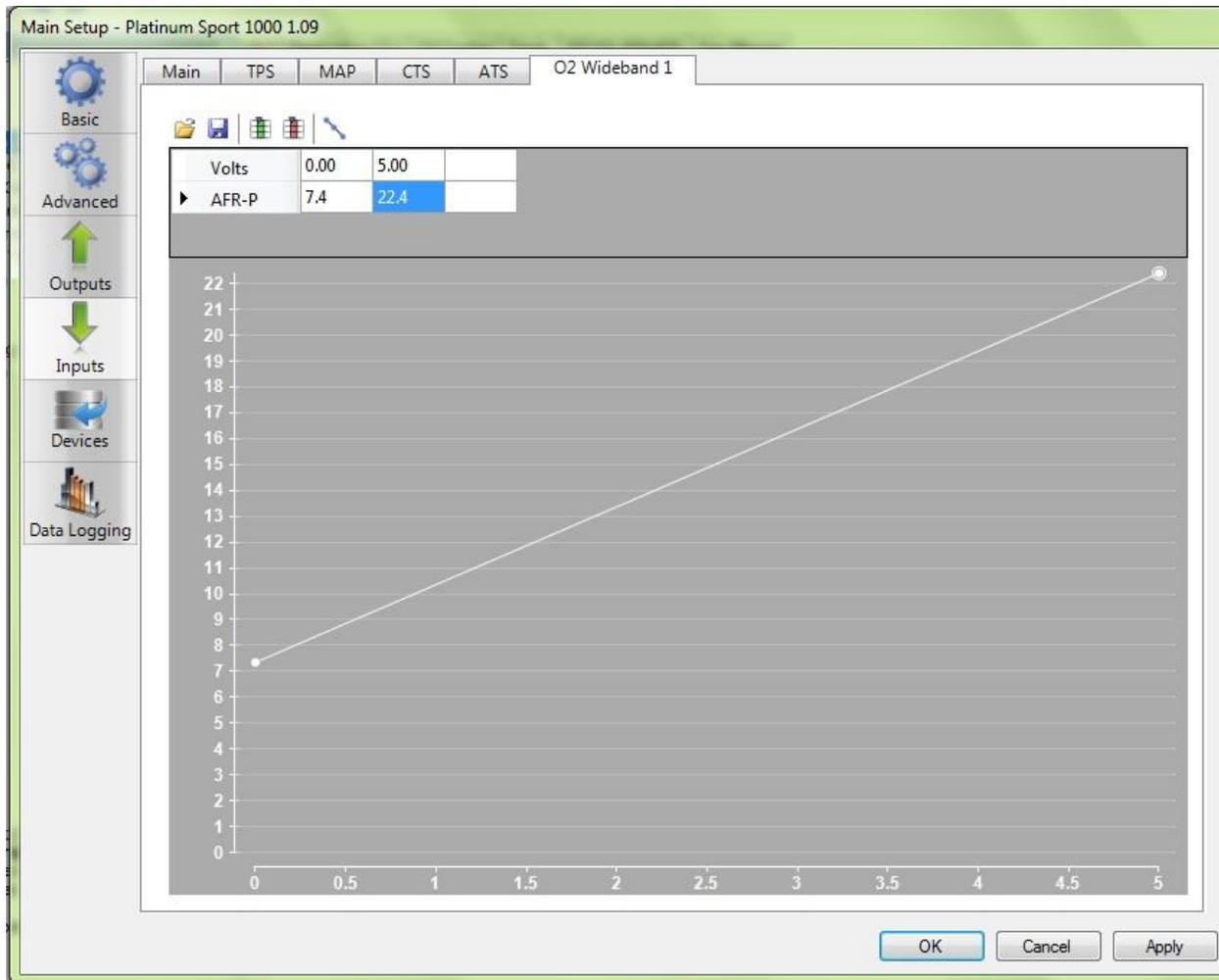5. By default this should be set to show the following:

6. This default setting will work for the Haltech Wideband, PLX and will work mostly well for an AEM Wideband on this setting. You should not have to change it if using one of these sensor kits.

7. If you are using an Innovate Wideband, set the Volts vs AFR-p to the following:
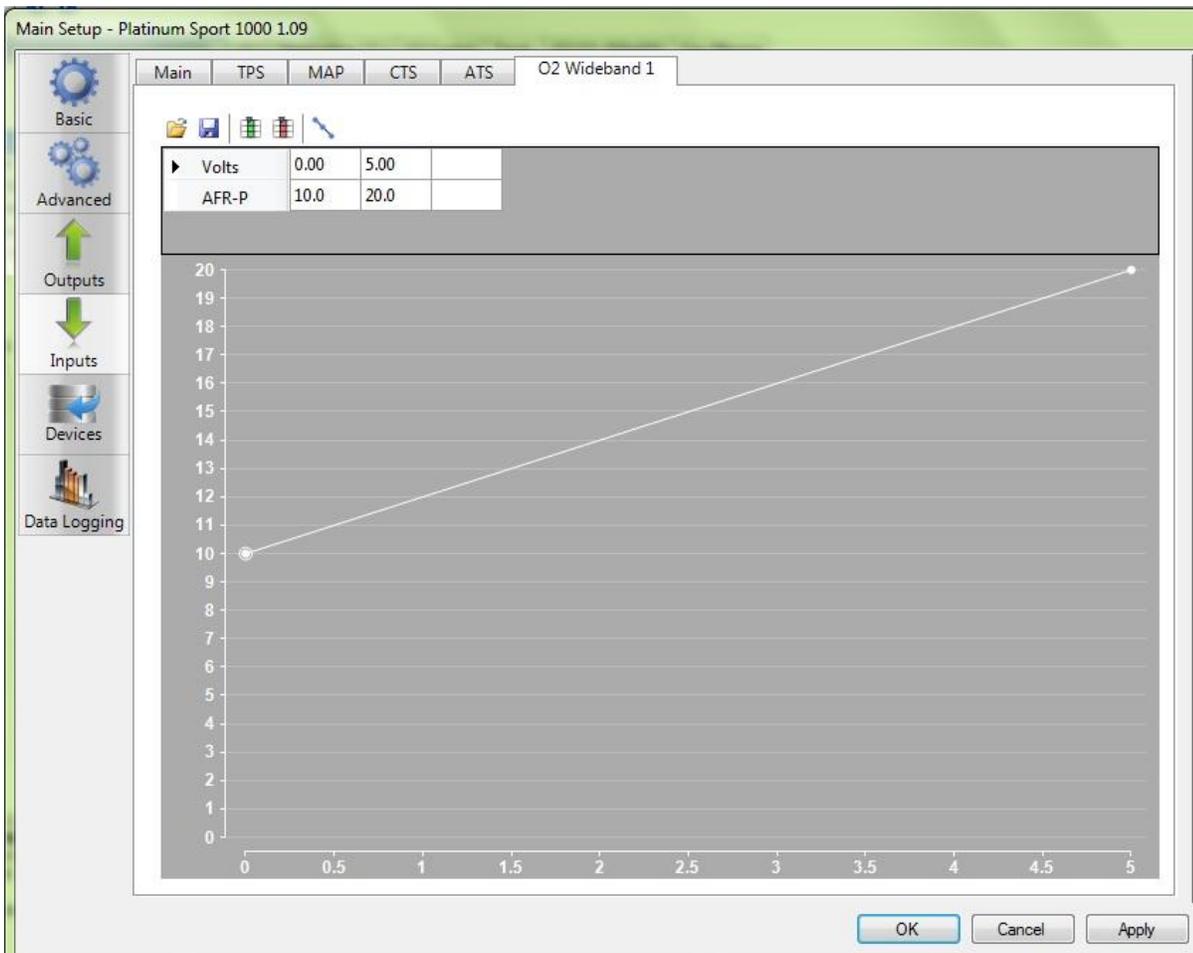

8. Click APPLY and then OK.
9. Next start your vehicle and let it run for at least a minute. Your wideband will take some time to warm up (it has built in heater control, and it will need to stabilize).
10. Once it is running and warmed up, you will want to make a gauge on one of your tuning screens to display the Air/Fuel Ratio your ECU is seeing.
11. Right click on any tuning page and select "Number Display"
12. Right click on that Number Display and chose Select Channel
13. Start typing "O2" and select the sensor labeled "O2 Wideband Sensor 1" under calibrated inputs
14. Hopefully your ECU and Gauge are matched perfectly and the ECU is reading correctly. You may have to go back into the main setup and tweak that setup curve by adjusting the numbers (Volts vs AFR-p) until you get it to match. Generally I find if you wire the power and ground correctly to the Haltech box, the ground differences are minimal or even zero. This is a solid ECU where you don't see typical "drifts" like you can on other ECUs.

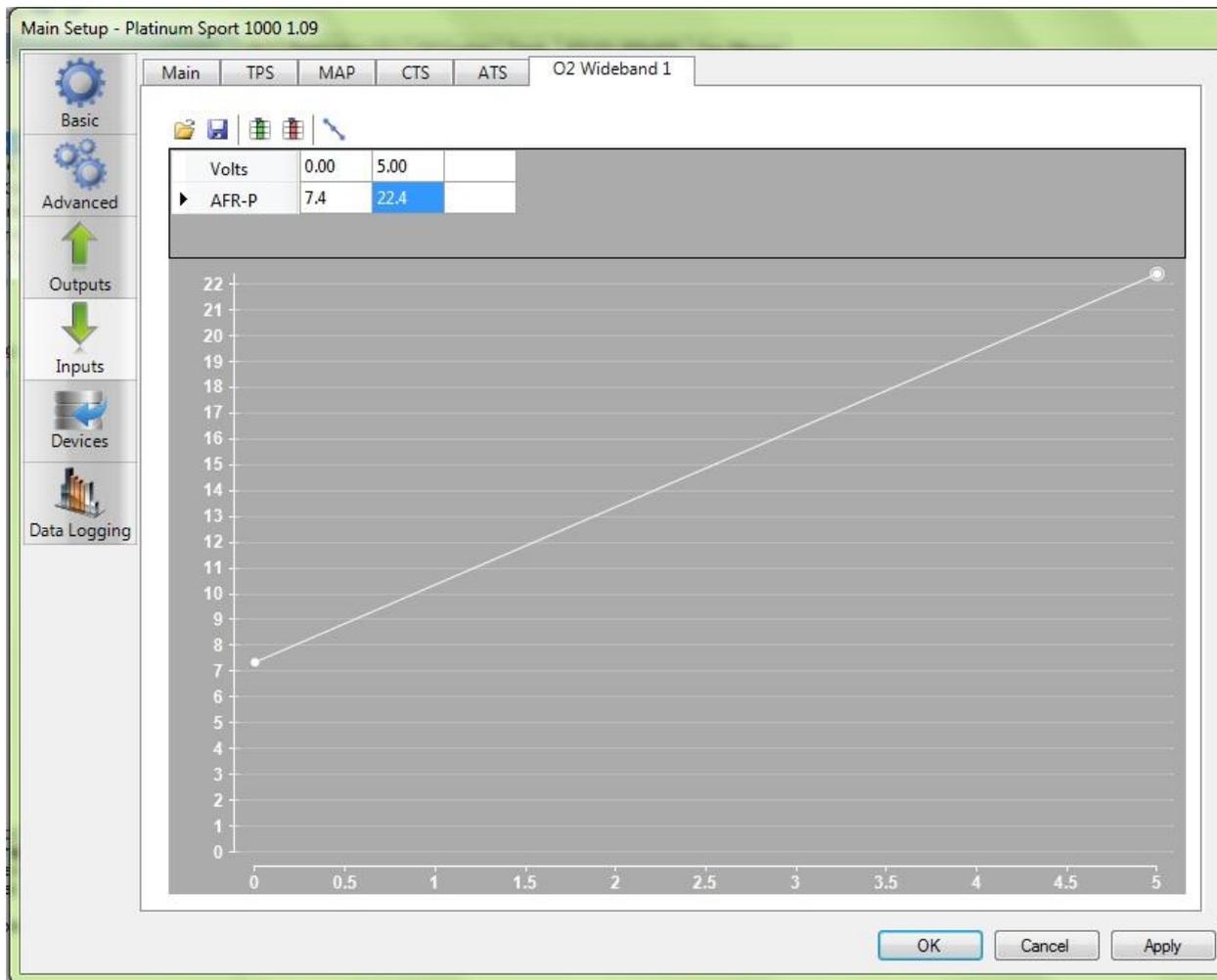Haltech Wideband Setup (Plug and Play Series ECU, K-Series EP3, DC5, S2000)

1. Open whichever calibration you are running with Haltech. This article assumes you or your tuner already know something about setting up a calibration for your vehicle properly or that your vehicle has already been tuned. If you are beginning your tune, setup ALL tuning related features, options and setting before trying to setup the Wideband. If your car is already tuned, when you connect to the Haltech ECU, it will automatically download and open the current calibration that is running your ECU. Save a copy of this file independently BEFORE making any changes. ALWAYS save a copy of the original file as a backup…in case you mess up something in the calibration that causes the vehicle to run differently. Make all changes with the key ON

2. Hit shift + F4 to open the Main Setup Page, look on the left hand side of the screen for INPUTS, click on it.

3. In this page you will see a variety of input selection options. If using a default basemap, uncheck the Factory Inputs, Narrowband Sensor 1. Click the check box next to AVI2, to make that input active. Next choose from the drop down menu item that appears once you check that box and select "Wideband Sensor 1"

4. You will now see a new tab at the top of the screen for "O2 Wideband 1" so you should click on this.

5. By default this should be set to show the following:

6. This default setting will work for the Haltech Wideband, PLX and will work mostly well for an AEM Wideband on this setting. You should not have to change it if using one of these sensor kits.

7. If you are using an Innovate Wideband, set the Volts vs AFR-p to the following:

8. Click APPLY and then OK.
9. Next start your vehicle and let it run for at least a minute. Your wideband will take some time to warm up (it has built in heater control, and it will need to stabilize).
10. Once it is running and warmed up, you will want to make a gauge on one of your tuning screens to display the Air/Fuel Ratio your ECU is seeing.
11. Right click on any tuning page and select "Number Display"
12. Right click on that Number Display and chose Select Channel
13. Start typing "O2" and select the sensor labeled "O2 Wideband Sensor 1" under calibrated inputs
14. Hopefully your ECU and Gauge are matched perfectly and the ECU is reading correctly. You may have to go back into the main setup and tweak that setup curve by adjusting the numbers (Volts vs AFR-p) until you get it to match. Generally I find if you wire the power and ground correctly to the Haltech box, the ground differences are minimal or even zero. This is a solid ECU where you don't see typical "drifts" like you can on other ECUs.

AEM Series 2 ECU Wideband Setup

1. Open whichever calibration you are running with the AEM. This article assumes you or your tuner already know something about setting up a calibration for your vehicle properly or that your vehicle has already been tuned. If

you are beginning your tune from scratch, setup ALL tuning related features, options and settings before trying to setup the Wideband. If your car is already tuned, when you connect to the AEM ECU, it will automatically download and open the current calibration that is running your ECU. Save a copy of this file independently BEFORE making any changes. ALWAYS save a copy of the original file as a backup…in case you mess up something in the calibration that causes the vehicle to run differently. Make all changes with the key ON so they update as you make them.

2. AEM is nice because they make the setup very easy. Go to WIZARDS → SETUP WIZARD (at the top of the screen).

3. Under wizard types, select "Sensor: O2 #1 (AFR)" and look at the listing of various widebands they have available for setup. All variations of AEM wideband are available, along with the Innovate and PLX brand wideband as well. All you need to do is Double Click on the sensor of your choice and the wizard does the work for you. Once selected, you will see "MATCHED" next to the sensor you have chosen.
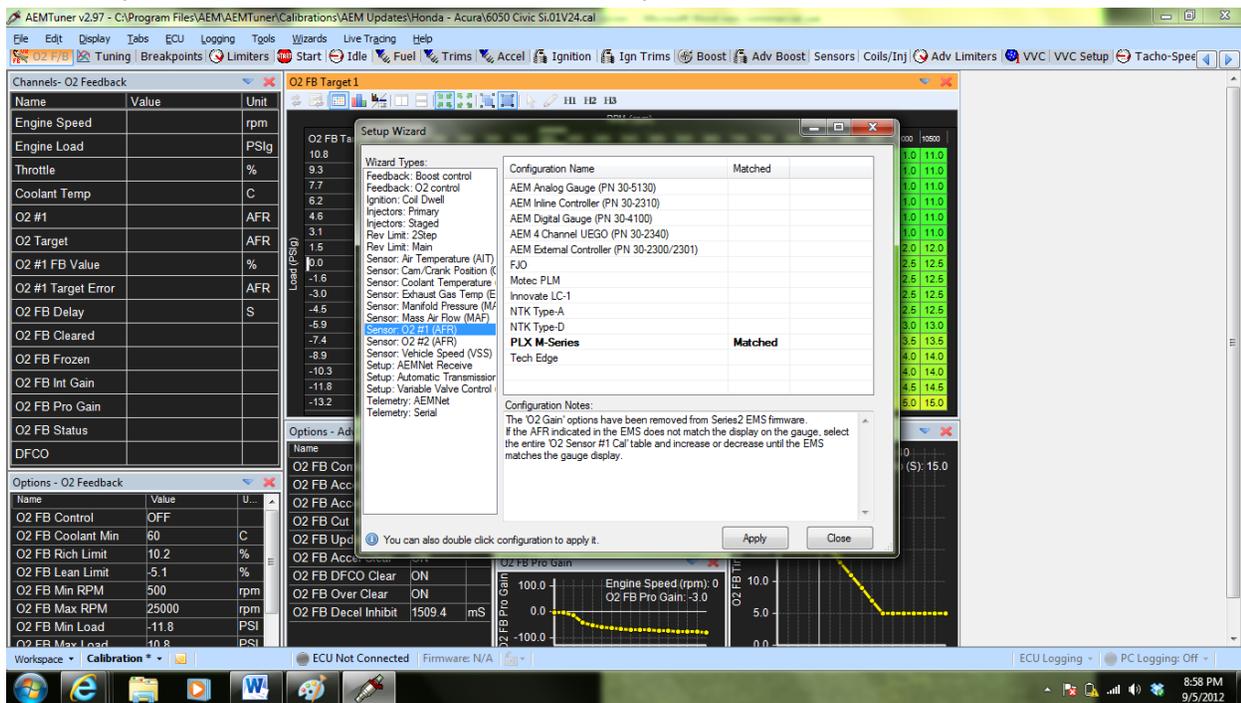
4. Click APPLY and then CLOSE

5. Next start your vehicle and let it run for at least a minute. Your wideband will take some time to warm up (it has built in heater control, and it will need to stabilize).

6. Now you just need to monitor O2 #1 in any CHANNEL window. Easiest place to find it if you don't have any Tabs Open or Created is to go to TABS→O2 F/B (which stands for O2 Feedback) where it will be displayed in the Channels Window in this tab.

7. IF, you need to tweak or adjust the reading here (if your ECU and Gauge do not match) you will have to go to TABS→Sensors

8. Look for the graph labeled O2 Sensor #1 Cal and watch where in that "curve" the sensor is showing. If the readings between your ECU and gauge are off, click on any data point in that graph and then select all (ctrl+a). Once all points are selected, use your "+" and "-" shortcut keys to move those points higher or lower until your ECU and gauge match. Now this will only make your ECU and gauge match at ONE Air/Fuel Ratio point…you may have to do this at various points along this curve to get everything reading perfectly depending on the wiring in your vehicle.

LINKS

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