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To: All
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Date: 2-23-2010

Subject: FAST Air Fuel Products Cheat Sheet (ver.B)

Air fuel modules:

All air fuel modules, with the exception of the one that only comes included in the Wideband Air Fuel Gauge kit, outputs a voltage equal to Lambda. The output voltage is actually 1.43 to .62 volts. 1.43 is as lean as it can read and .61 is as rich as it can read.

Calibration Methods:

1. If the application can enter a calculation, you would just enter the (**voltage output x Stoich**). Stoich or Stoichiometric is a value or multiplier for each type of fuel. Here are those values:

FUEL	MULTIPLIER
Gasoline	14.7
Methanol (Alcohol)	6.4
E85	10
E98	9
Diesel	14.5

2. If the application requires a 2 point calibration you would first, take the leanest voltage output and multiply it by your fuel Stoichiometric value for the fuel being used. (1.43 volts x 14.7 for gas) This would be your 1st calibration point 1.43 volts = 21 a/f ratio. Then, take the richest voltage output and multiply it by your Stoichiometric value for the fuel you are using. (.62 x 14.7 for gas) This would be your 2nd calibration point .61 volts = 9.1 a/f ratio.

Simply: 1st calibration point (1.43 x Stoich), 2nd calibration point (.61 x Stoich).

Air Fuel Meters:

All of the Air Fuel Meters can output 2 different analog signals. The first is a Low Resolution (Simple Mode) and the second is a High Resolution (High Res Mode). The following are all of the different air fuel meter's ranges:

Fuel	A/F Range
Gasoline	21 - 9.5
Methanol	9 - 4
E85	14.3 – 6.4
E98	12.87 – 5.7
Diesel	21 – 9.5

Simple Mode:

This mode outputs what ever the air fuel ratio that is on the screen divided by 10. For example, a 14.7 air fuel ratio would be 1.47 volts. This is a simple way to output a voltage to a data acquisition system that can enter a calculation. The calculation would be (**voltage input x 10 = air fuel ratio**). Since the meters are categorized by the type of fuels they are calibrated for, you don't need to do anything with Stoichiometric values. The meter takes care of that.

High Res Mode:

This mode outputs a 0 to 4.096 volt high resolution output for serious data logging. To do a 2 point calibration you would look up what meter and fuel you have selected and then note the range of that mode. Next, the 1st calibration point would be (**the lowest air fuel ratio = 0 volts, and the highest air fuel ratio = 4.096 volts**). **(For gasoline: 9.6 = 0 volts and 21 = 4.096 volts)**

Diagnostics and Testing Feature:

There is a very handy feature for testing the output voltage of the any of the air fuel products we sell. This can be used to test that the calculation you entered is correct and that the unit is working correctly. When the unit is powered up and reading air fuel ratio, unplug the 02 sensor. This puts all of the air fuel products in diagnostic mode and they will output a voltage that is Lambda (1.0 volt for the Air fuel modules) or for the Air Fuel Meters, the Stoichiometric value of what ever fuel type you are using. For example, if you are using the Gasoline air fuel meter it will output a voltage that is equal to 14.7 in whatever mode you have it in (low res would output 1.47 volts) Now, you can look at what ever you are connected to for data acquisition and it should be reading 14.7 if your calculation is correctly setup.