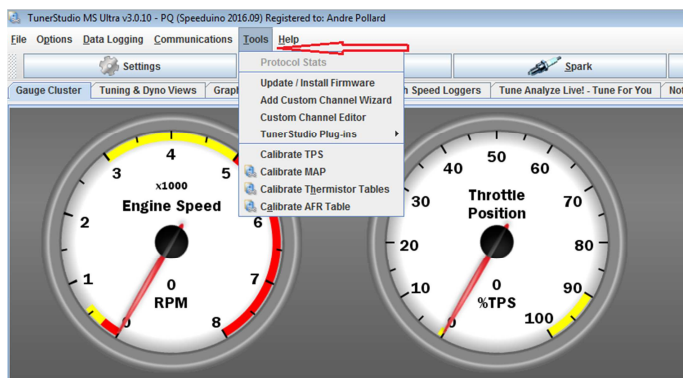# Sensor Calibration

Before your Speeduino can correctly interpret the signals from the sensors, it must know which sensors you are using. Inputting this information into TunerStudio (TS) writes the correct calibration to your Speeduino. It is necessary to perform this step before you can effectively check your Speeduino build. Note that this is not tuning your system, but only telling it how to understand the signals from the sensors.

This should be completed after completing the Settings for your engine. Your computer must be connected to your Speeduino through TS to perform the calibrations.
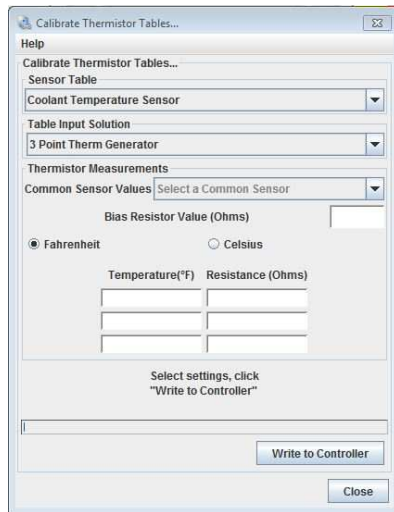
Open the Tools Menu

Select Calibrate MAP, the window below will open

Select your MAP Sensor from the drop down list. If you used the MAP snsor in the bill of materials, this will be the MPX4250A. If you are using another MAP or one from the engine manufacturer, select it from the list.
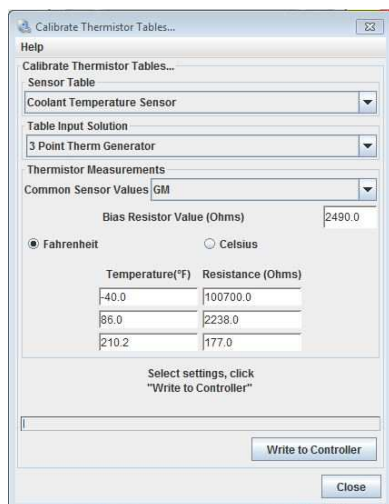
Click "Burn" to send the information to your Speeduino.

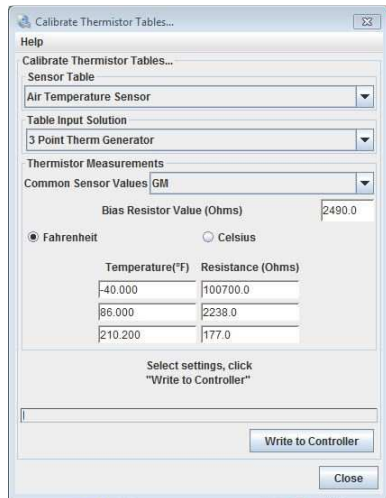Then re-open the Tools menu and select Calibrate Thermistor Tables

The sensor selected will be the Coolant Temperature Sensor. Select your sensor from the Common Sensor Values dropdown list. This will place the correct values into the temperature and resistance charts and the Bias resistor value.

Note that the standard Speeduino build is to have a 2490 ohm bias resistor, which is standard for sensors used by most manufacturers. If your sensor requires another value, you may need to change resistor R3 to the correct value for your sensor. You can try overriding the Bias Resistor Value with 2490 ohms, but check to be sure your sensor reads correctly in TS.

Click Write to Controller to send this information to your Speeduino.

Next re-open the Tools menu and select Calibrate Thermistor Tables again. Change the Sensor Table to Air Temperature Sensor.
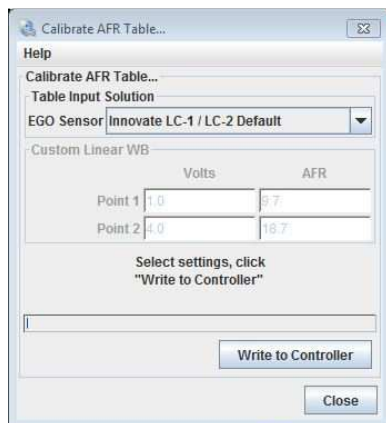
Select your sensor from the Common Sensor Values dropdown list. This will place the correct values into the temperature and resistance charts and the Bias resistor value.

Note that the standard Speeduino build is to have a 2490 ohm bias resistor, which is standard for sensors used by most manufacturers. If your sensor requires another value, you may need to change resistor R3 to the correct value for your sensor. You can try overriding the Bias Resistor Value with 2490 ohms, but check to be sure your sensor reads correctly in TS.

Click Write to Controller to send this information to your Speeduino.

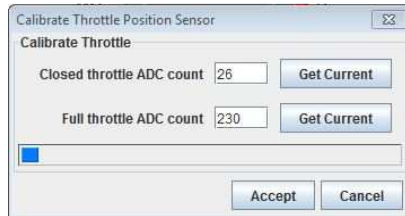Open the Tools Menu again and select Calibrate AFR Table.

Select your Oxygen Sensor sensor from the Common Sensor Values dropdown list.

Click Write to Controller to send this information to your Speeduino.

This will set up your Speeduino so that you can run simulations to check your build before installation. However, before it can work correctly with your engine, you will need to Calibrate the Throttle Position

Sensor. This must be done using the throttle body and TPS used on the engine. It is best to do this while the throttle body is installed on the engine.

Open the Tools Menu and select Calibrate TPS.

With the throttle closed, click the Get Current button beside the Closed Throttle ADC count field. The move the throttle to full open and hold it there. Then click the Get Current button beside the Full Throttle ADC count field.

Click Accept to save the information to Speeduino.