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# OEM Temperature Sensor Instructions

## MS2-Extra, MS3 and PnP

Instructions for setting up your Temperature sensors for use with MegaTune or Tuner Studio and the Megasquirt ECU.

**If you're using the standard MegaSquirt Sensors that I have supplied or that you have bought elsewhere then don't bother with any of the following!**

### Stage 1: Measuring the resistance of the sensors

You will need 2 pairs of wires, an accurate thermometer and an ohmmeter (multimeter)  
Connect the wires to the 2 terminals on your temperature sensors so you can measure the resistance of them without moving them or touching them.

We need to tell the software what the resistance is at 3 temperatures over the operating range of the sensors. MegaTune or Tuner Studio will then generate 3 files (\*.inc files) for the Megasquirt ECU and download them into the MS ECU.

First temperature around Zero deg C -

Pop your sensors in the fridge with the thermometer and leave them for around 1/2hr to stabilize.

Read the temp on the thermometer and then the resistance of both sensors. Make a note of each resistance and the temperature from the thermometer.

Next pop them both under your arm, let them warm up first if they have just come from the fridge :-). Your body is around 36 deg C, so let them warm up and measure the resistance again of both sensors. Make a note of the resistance of both.

Next hold them so the sensor area is in some boiling water or just off boiling (you can hold them using some thick gauge wire or pliers, etc). Being carefull, measure the resistance and temperature of the water with the thermometer, I use a coffee machine's water for this as its usually around 88C, obviously the temp needs to be checked but a temperature of around 80-100 deg C is fine.

You now have 3 resistances for each sensor and 3 temperatures.

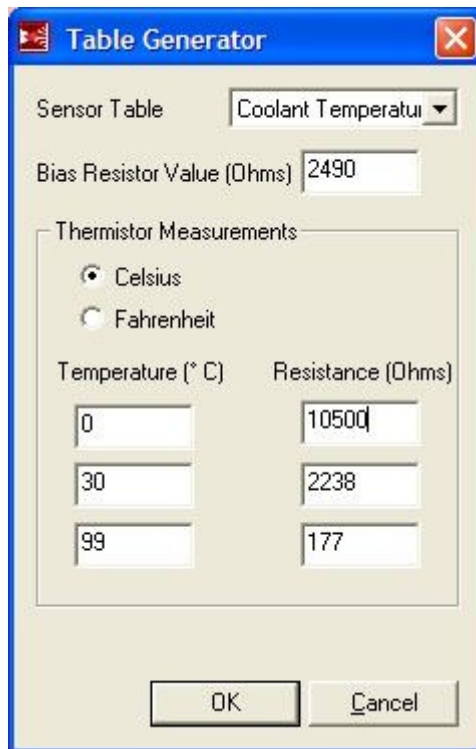
## Stage 2: Generate the files

With the MS2 ECU powered up and the tuning software running, connected to it go into Tools - Calibrate Thermistor Tables

Ensure the **Bias Resistor Value = 2490**.

Select the sensor you are doing at the top and if your measurements are in **Celcius or Fahrenheit**.

Next enter your temps and values into the feilds, ensure the lowest temperature is at the **TOP!**



Temperature (°C)	Resistance (Ohms)
0	10500
30	2238
99	177

Click OK and it will send the values over to the ECU. Do the same for both sensors and now the ECU is programmed for your temp sensors.