

# **MODIFRY PRODUCTS** Test Procedure for Custom ECT Programming

**Preparation** - You will need a decent digital meter for these tests, as you will need to accurately measure voltages less than 1 volt with precision to 1 millivolt (.001 volts). Under the hood, locate your ECT sensor and verify you will be able to get the meter probes into the connector and make contact with the sensor terminals *while the cable is plugged into the sensor*. You may need to use a paper clip or other thin probe to get a good connection to the sensor wires so get that part set up before starting the tests.

**Option** - Instead of measuring at the ECT sensor, you can take these measurements at the ECU. You will need to measure between the ECT sensor wire and the ECU sensor ground, (T-tap into both of those wires). Note that the "sensor ground" is different from chassis ground or the ECU power ground. For steps 2, 5, and 6 just read the voltage on the meter. For step 3, unplug the ECT sensor before taking the reading. For step 4, re-connect the ECT sensor and then unplug the ECU connector that contains the ECT sensor wire, then measure the resistance of the sensor.

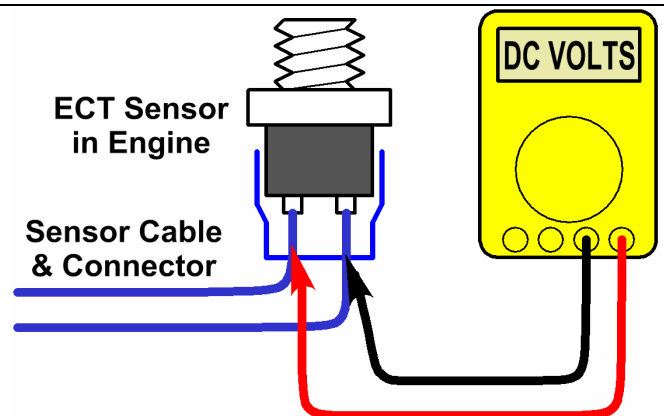
**Test Procedure** - Do these tests and send the results to bob@modifry.com. To make it really easy, copy and paste the below list into your email and just fill in the blanks:

1. Ambient Temperature -
2. Sensor voltage at ambient -
3. ECM voltage -
4. Sensor resistance at ambient -
5. Sensor voltage when radiator fan first turns on -
6. Fan cycle voltages:
  - High -
  - Low -

**1.** Make sure the car is completely cold and make note of the ambient temperature. If your car is in a garage that means I need to know the temperature in the garage, not how cold or hot it is outside. We need to be sure the engine (and coolant) has had sufficient time to cool down to ambient, usually overnight is good. (Example of what you'll send me - "Ambient temp 65°F")

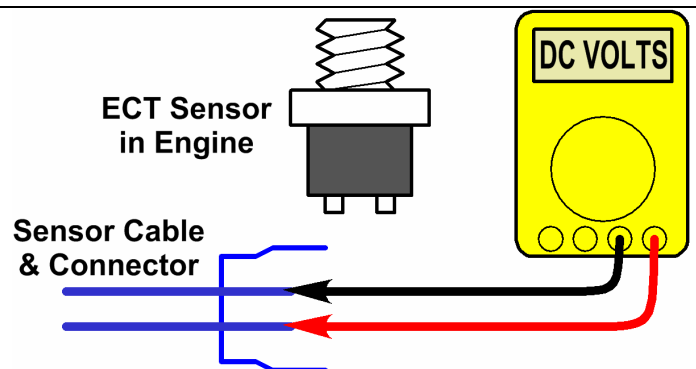
**2.** With a cold engine, turn on the ignition (do not start the engine) and measure the voltage at the ECT sensor. Leave the connector plugged into the sensor and measure the voltage across the 2 sensor wires (black meter lead on one wire and red meter lead on the other).

Record this voltage. (Example - 2.615 volts)



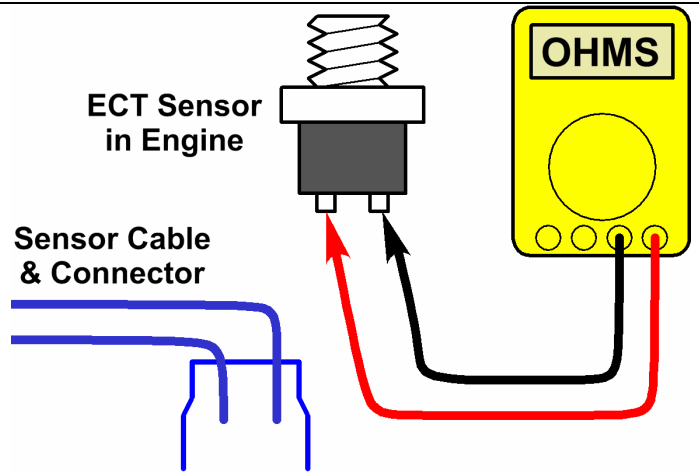
**3.** Disconnect the cable from the ECT sensor and again measure the voltage on the ECT *cable* wires (not the sensor).

Record this voltage. (Example - 5.073 volts)



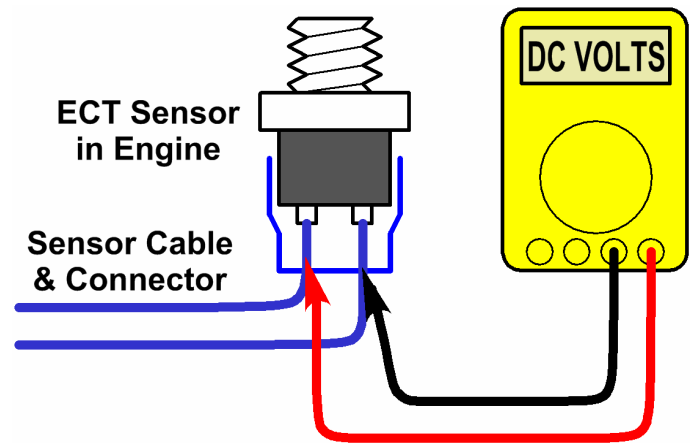
4. With the wire still disconnected from the sensor, measure the resistance (ohms) of the *sensor* (not the cable). You will need to measure across both terminals of the sensor.

Record this reading in ohms. (Example - 1328 ohms)



5. Plug the sensor cable back into the sensor, attach your meter leads to the sensor wires, and start the engine. Observe the sensor voltage and verify that it starts to drop as the engine warms up. Allow the engine to run until the radiator fan first turns on and record this voltage.

6. Continue watching the voltmeter during a complete "fan cycle" and record the highest and lowest readings. That means you watch the meter until the radiator fan turns off, then continue watching till it turns back on again. During this time, which might be 10 to 15 minutes, keep watching the meter and make note of the lowest and highest voltage readings. (Example - High 0.588 volts, Low 0.492 volts)



## Special Notes

1 - This test ASSUMES your car is operating within its normal temperature range and is not overheating. If a mechanical problem exists that causes the "fan cycle" to occur at an unusual temperature, then the meter readings you take will be incorrect. This could happen if you have a malfunctioning thermostat, fan switch, or radiator, or if these parts are not the correct ones for your vehicle. *If the ECT module is re-program based on incorrect meter readings then your temp gauge will indicate "normal" when the engine is not really in its normal temperature range.* Make sure your engine is operating normally when you take these readings.

2 - Pay close attention to the voltage as the radiator fan turns on and off. You should NEVER see the voltage change suddenly; it should always be a smooth and gradual change. If the voltage jumps when the radiator fan turns on or off, or if it changes when you turn other accessories on or off (headlights, air conditioner), then you have a ground loop problem that must be fixed before using the ECT module.