Frequency MAP/MAF Installation Instructions

These are the instructions are for our new Frequency MAP/MAF Enhancer, or "MAPe" (MAP enhancer) for short. Our Frequency type MAP will also work on voltage type devices. But you still need to determine which type you have. Please ee Siring Diagrams Below.

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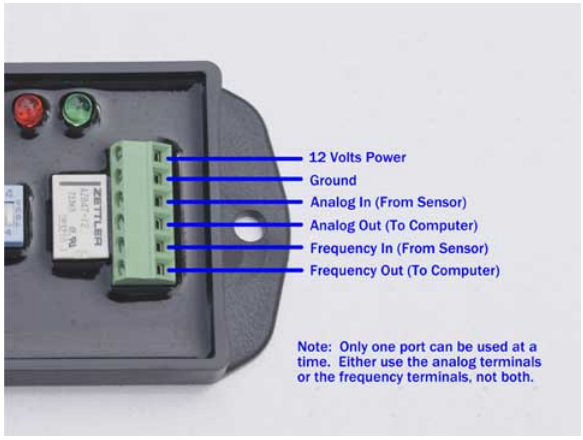
Once you have your signal wire, its very important to know if you have a frequency or voltage based signal wire. By measuring for DC volts, you can't really eliminate a frequency device. A DC meter will still show a DC voltage on an A/C signal. It kind of averages the voltages out. Usually it will even show you changes to the "DC" voltage when you goose the engine. So the bottom line is that the best way to find out if its a frequency type device is with a frequency function on your meter. If you have not yet purchased our frequency MAPe, then it would be a good idea to buy or borrow a meter with the frequency function, and test your signal wire. You may be able to use a cheaper, voltage based MAPe.

If you don't have a frequency function on your meter, but have already purchased our MAPe, you can also set it up for frequency usage, then hook it up. The green LED will only light up if its a frequency type device. It will light up almost instantly. If its voltage type, the green LED won't light up. Don't worry, it won't hurt the device to test it in this way. If the green LED doesn't light up, then you can hook it up as a voltage type device and it will work.

Once you have found the signal wire, then you will cut it, and run the 2 ends into the MAP. The diagram below will show which terminal to use for the sensor wire, and which to use for the computer wire. Note that there are different terminals for frequency type or analog type signal wires. You must use the correct terminals for the type of signal you are trying to handle. Note that the MAPe can only be used for one device. It can't be used for both a frequency MAP and an analog MAF at the same time. Only one set of terminals will work, and that is based on the positions of the switches (see below).



Setting the Switches

The image above shows the switch that is used to configure the Frequency MAP/MAF Enhancer. The list below shows the functions:

1. 1. Used to switch between different types of voltage signals - see below for details.
2. 2. On for voltage type signals, off for frequency type signals.
3. 3. Not used.
4. 4. Not used.

For frequency applications, all 4 switches should be in the "off" position..

For analog applications, switch position 2 must be on. That is vital. In nearly all applications switch position 1 will be off. However there is a relatively rare circumstance where switch position 1 will need to be on.

Switch position 1: Most analog voltage applications require that the output voltage be lowered in order to lean the mix. In that case switch position 1 should be "Off". Rarely, some analog voltage MAP/MAF devices work in the opposite way. In these cases you need to add voltage, rather then subtract voltage. It is very rare. But to work with these devices, put switch position 1 into the "On" position. This will cause the voltages to be higher when the pot positions are increased, rather than lower. I've never personally seen one of these types of device. But I have seen the documentation on them.

Setting the MAPe

Frequency Mode: When setting the MAPe in frequency mode, start with Pot B at zero (all the way counter-clockwise). Make your adjustments using Pot A only. The more you go clockwise, the more frequency adjustment there will be. If you turn Pot A all the way to maximum and still need more adjustment, then use Pot B. Leave Pot A at maximum and start adjusting Pot B.

Analog Voltage Mode: Set pot B at its midpoint. Get a rough adjustment using Pot A. You can do that by ear. After you have gotten roughly the correct adjustment, use Pot B for fine tuning your adjustment. Pot B is 10 times more sensitive than Pot A, and is used for fine tuning only. Anytime you are going to change the position of Pot A, I recommend putting Pot B at it's center position so you will have maximum flexibility for fine tuning the new adjustment.

We are assuming you are using some type of combustion enhancement technology, such as an HHO system. There are many types of these including fuel warmers, fuel vaporizers, water mist injections systems, gas cracking chemical additives, systems that improve the respiration of the engine, etc. Any of these technologies may need an electronic enhancer to get the full mileage gains that the technology can provide. However, we

don't recommend using this device, or any other type of electronic enhancer by itself. It will cause the engine to run out of spec, and this can be detrimental to the environment and to the health of your vehicle. But coupled with a valid and working combustion enhancement technology, you can reap rich rewards in reduced fuel costs and a reduced environmental impact of your vehicle.

With that in mine, as with any electronic enhancement, you will be going for the best fuel mileage. That's how you'll determine the final setting for your new MAPe. Do a rough setting as described above, and then drive for a tankful. Keep track of the amount of gas used to till the tank, and the mileage driven on the odometer. Note whether you mileage improved or got worse. If it improves keep adjusting in the same direction. If it gets worse, adjust back in the opposite direction. After you've tweaked it a few times, you will find the sweet spot that gives you the best fuel mileage.

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Finding the Signal Wire

Of course the easiest way to find the signal wire is to get a wiring diagram for your vehicle. This can tell you the exact wire, and it's color code, and save you some time. For resources on getting wiring diagrams for your vehicle. But if you don't have a wiring diagram, you can still find your signal wire by measuring it.

A MAP or a MAF will have 3 wires. One will by 5 volts, which powers the device and is supplied by the ECU. One will be ground, or 0 volts. So if you measure the 3 wires, just eliminate the 5 volt wire and the 0 volt wire, and the remaining wire is the signal wire.

This is slightly complicated by the fact that many MAF sensors today also include an Intake Air Temperature sensor in the same housing. In this case you'll have 5 wires going to the sensor. But it's OK, it's easy to find the correct wires you need. The temp sensor will have a ground wire and a signal wire. The signal wire will be up near 5 volts when the sensor is cold, but as it heats up that voltage gets lower. But a temp sensor's voltage will not change when you goose the engine, and that's how you can tell the difference. Also, if you unplug the sensor, and measure the signal wire on the computer side, it will read 5 volts.

Now, how do you make sure your MAP is a voltage type, and not a frequency type? You will need to watch the voltage as you make changes to the engine's RPMs. The best way is to goose the engine. The voltage will change dramatically on either a MAP or a MAF if it is voltage type. You will see a small change in DC voltage for a frequency type device too, but the changes will be slight, like tenths of a volt. Whereas the changes on a voltage type will be much more dramatic. Changes of over a volt indicate a voltage type MAP or MAF.

Tip: You can steal a straight pin from your wife's sewing box and push it through the insulation of the wire you want to test. Make sure you get into the conductor (wire) inside. This will be much easier than scraping away the insulation to test the wire.

Even if you find your signal wire using a diagram, you should still test it before proceeding. You must make sure that you see a voltage change when you rev the engine, and that the voltage drops back down when the engine slows back down again. If you see this phenomena, you can proceed to install the circuit. If you don't see this phenomena, then you have the wrong wire, or an incompatible sensor type. Do not try to use this circuit unless you find a signal wire that matches this phenomena. The biggest single cause of failure for any sensor modification project is to mis-identify the signal wire. So it's best to be absolutely sure.

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AutoZone

Next, see if you can find your diagrams for free at AutoZone. AutoZone posts wiring diagrams for many cars and trucks for free. It also has a vast amount of repair information, including diagrams of part locations, detailed instructions, etc. If you don't have a repair manual for your car, you can just about get by with this all by itself. However, not all cars are covered by this service. You'll just have to look and see if yours is.

To see what they have for your vehicle, go to AutoZone.com. Then select your year and make/model of car. I went ahead and registered, but I think you get all of the same resources without registering. However, by registering, I have saved my car's information, so when I login again, I can just select my car without having to re-navigate the car selection.

I had a hard time finding the wiring diagrams, so to specifically find those, do the following:

- Locate your car, year, make and model.
- Select "Repair Info" at the left side of the screen.
- Then select, "Vehicle Repair Guides" -> Chassis Electrical -> Wiring Diagrams

I was able to locate my ECU diagram, my oxygen sensor signal wires, all of my other sensors etc. Also, I was able to look up my MAP (Manifold Absolute Pressure) sensor. It told me which kind I had (DC voltage or frequency type), and even told me what resistances = what pressure in the ECU. The same goes for it's entry on the CTS (Coolant Temperature Sensor). It told me what temperature = what resistance from the sensor. This will help you enormously if you need to do adjustments to any other sensors.