ENGINE RPM SENSOR INSTRUCTIONS

Overview:

The *DATAMAXX* can read your engine RPM from any of the standard ignition systems as well as any magneto. Your engine rpm signal is by far the most used channel and because of that, we want to have the cleanest signal possible. To do this, please follow the instructions below for your specific type of ignition system.

Installation:

Standard MSD Ignition Systems:
If you have a standard MSD ignition box, getting your tach signal is as easy as connecting a wire from the Tach Output of the ignition box to the 'RPM ENG' terminal (id #32) in the DataMaxx main module. You may have to refer to your specific ignitions instructions to find the correct tach output terminal but most of the time MSD makes it pretty obvious with a 'Tach' or 'Tach Output'. Also, because we want the engine RPM signal to be as clean as possible, we want to make sure that the wire takes a clear path to the main module, and if possible, utilize a shielded wire.

Magneto Ignitions:
When utilizing a magneto there are a couple precautions we need to take to ensure the noisy magneto doesn't interfere with the DataMaxx. But first, we must understand what we are dealing with when it comes to magnetos. Magneto ignition systems output an amazing amount of voltage and current, and because of that, they also spread through the air what is called Electromagnetic Interference or EMI / RFI. If you can imagine your magneto as the center of a donut, and the more rpm you raise the magneto, the bigger that donut will get. Anything inside of the circle of EMI can have is voltage artificially raised and lowered through the air.

Because of this, we need to make sure you follow the best practices when utilizing a magneto ignition system. We essentially want to keep all of the noisy components centered on the source of the noise itself, the magneto. Then we need to utilize the correct spark plug wires and our Remote SD module. We have had 100% success rate with our magneto customers when following these best practices, failure to do so will ultimately end up in inconsistent recordings.

1. You must use MSD 8.5mm Super Conductor spark plug wires
2. You must utilize an MSD Mag Tach Adapter and mount the adapter as close to the magneto as possible

3. You must utilize either a relayed or air solenoid kill switch with the relay mounted as close as possible to the magneto

4. You must use the DataMaxx Remote SD Module and locate it as physically far away from the magneto as possible

We have extensively tested spark plug wires, the noise they output and how it effects our DataMaxx system. Through this exhaustive testing we have found that no other wire offers the performance and the EMI noise suppression as well as the MSD 8.5mm super conductor wires. If you were utilizing a standard ignition system, the noise would be minimal enough to not need these wires, however when using a magneto system, you must run the MSD 8.5mm Super Conductor wires.

The MSD mag tach adapter's job is to take the very noisy magneto signal, absorb and drain that noise and to output a clean tach signal. The rationale behind mounting it as close as possible to the magneto is to reduce the spread of this ignition noise. If the tach adapter box was located 5 feet from the magneto, we would then have a noisy tach signal spreading noise throughout the entire length the wire runs. By mounting it close to the magneto we are keeping all of the noise centered on the magneto. Although we have a specific channel labeled magneto, we recommend connecting the tach output wire from mag tach adapter directly into the 'RPM ENG' terminal (id #32) in the DataMaxx main module.

Many customers install their magneto with what is called a Lightning Wire kill switch, where the wire that goes from the magneto to the switch in the driver's compartment is a hot wire. The problem with this is, if the wire is running 5 feet, you have now created a 5 foot antenna that is spreading noise around the system. By utilizing a solenoid or relayed kill switch, and mounting that close to the magneto, the only thing going to the cockpit is a clean wire instead of a noisy one.

Finally you need to utilize the DataMaxx Remote SD module which was designed specifically to counteract the effects magneto's have on the system. Even if you have followed the first 3 best practices and kept the Airborne Ignition Noise centered on the magneto, we still have Line Ignition Noise to deal with. Every sensor you have on your car has an extension cable, and that cable is being bombarded with ignition noise on its way back to the DataMaxx, to the point where you can envision them as glowing with noise. When it gets to a DataMaxx module that glowing noise is then drained to ground when we connect our shields. The problem is that the magneto has produced so much noise that it is almost as if our Main Module is also glowing hot from noise, and because the SD card works on a 2.5v circuit it is easier to corrupt. To counteract this we simply mount the remote SD module at least 1 foot away from the main module and as far away from the magneto as we can get.

If you follow these best practices, you can be assured that your signals will look clean and your DataMaxx will operate flawlessly. If you do not follow these instructions with a magneto, or do not follow all 4 best practices, you will have issue with consistency.

WARNING: Connecting the magneto directly to the DataMaxx will result in a failure and void your warranty.

Dip Switch Setting:

N/A
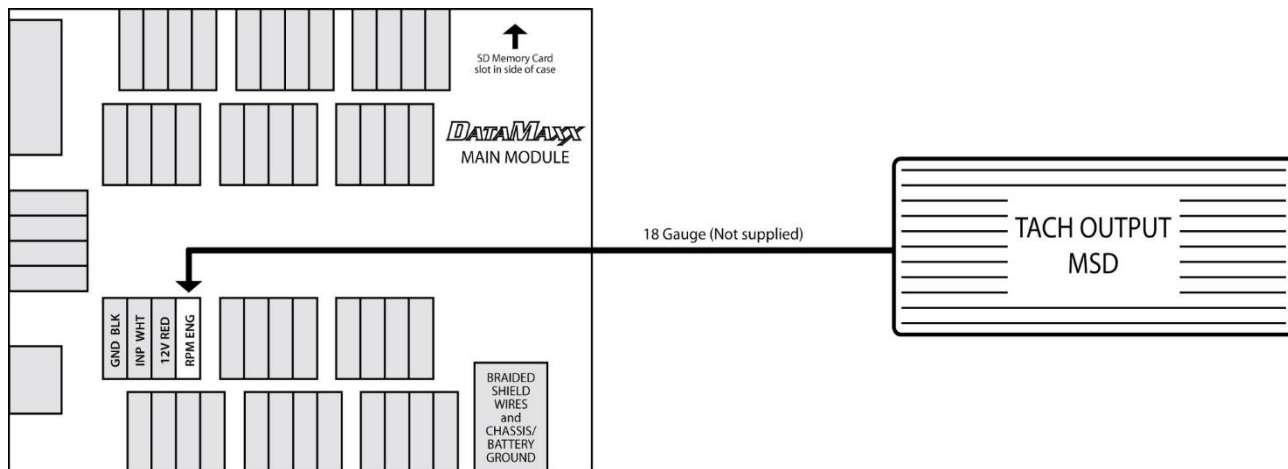
Calibration:

The *DATAMAXX* engine RPM channel is pre-configured to an 8 cylinder, four stroke engine, for both normal engine RPM and magneto. You can, however, change the number of cylinders and switch between four and two stroke engines.

To Calibrate:
- Follow the Initial Calibration instructions in the Software section, OR:
- Record a short 5 second test log file, and download the log file correctly using the SD button.
- Select Edit, then Properties. You are now in the Channel Properties area.

- Find the Engine RPM line, follow it to the right, and click on the finger pushing a red button.
- Change the "Type of Sensor" and "Channel Name" to what you want.
  ◦ Note that changing the channel name to anything besides "Engine" will disable your calculated channels.
- When you are done, select OK, and then "Send Config to DataMaxx".

Testing:

To test your RPM signal, crank the engine and let it idle. If you have an LCD module, the display should indicate the correct RPM. Your graph should be smooth in general, but keep in mind that many race ignition systems generate a great deal of radio frequency interference, and that the ignition noise can cause erratic RPM readings. If you believe you are a victim of this interference noise, then make sure that all *DATAMAXX* components, including wires, are as far away from ignition components as possible. Also, refer to Avoiding RFI Noise in the Additional Information section.

Troubleshooting:

- Tap Test: If you are not getting any Engine RPM, the first step is to make sure that the channel on the Main Module is working correctly. To do this we need to perform a "Tap Test". Please refer to "Testing RPM Channels" in the Troubleshooting section on instructions on how to do the Tap test properly. If the tap test fails, please call Computech Tech Support for more information. If you get a signal from the Tap test then that tells us that the Module and sensor channel are working correctly and the issue is the source of the Engine RPM.

- Tach Output Test: After we have confirmed that the DataMaxx is functioning properly, we need to examine your tach output line. Typically this line should come from an MSD ignition box, and be a specific colored wire, or labeled terminal. For the 7AL series, there should be a dedicated terminal for you to connect to, labeled either "Tach" or "T". If you have determined that you are tapping into the correct wire, try running a temporary wire from the tach output to the DataMaxx to ensure that we are getting the correct signal. If you get no signal, move on to the "Analog Gauge Test". For the MSD Digital, Programmable and Power Grid ignition systems, the tach output wire should be the gray wire. If the wire is not extended and connected directly to the DataMaxx, then move on to the "Analog Gauge Test". If it is extended, double check your extension job and if satisfactory move on to the "Analog Gauge Test".

- Analog Gauge Test: If you still do not have an Engine RPM registering in the DataMaxx, the final step is to hook your tach output wire to a normal analog style tachometer. If the analog tach shows the RPM correctly, contact Computech Customer Support for more information. If the analog tach does not register an RPM, contact MSD Tech Support for more information.

TESTING RPM CHANNELS

If you need to test one of your RPM Channels (Engine, Drivshf, Inpshf, Mag, Switch 1 or Switch 2) then follow the instructions below.

1. Remove the wire in question from the terminal.

2. Create a jumper wire by stripping both ends of an 8" wire.

3. Screw one end of the jumper wire into the terminal in question.

4. Power up the DataMaxx system, place the SD card into the main module and begin recording.

5. Quickly tap the other end of the jumper wire to one of the 4 ground posts for approximately 15 seconds.

6. Stop the recording, correctly download the log file, and go to a view that will show you the RPM channel in question.

At this point, if you see any type of jump in signal then the channel itself and the DataMaxx are working correctly. If you do not see any signal, send a "Factory Reset" to the system and repeat the test. If the test fails after a Factory Reset, please call Computech Tech Support.