**Savage Speed Tuning Instructional Doc**

Installing the Software:

To begin tuning your vehicle you will need to download HP tuners softwares, VCM Scanner and VCM Editor. These software can be downloaded for free from the HP Tuners site under their "Downloads" section, or via the link below.

By clicking on the download link, you will see a VCM Suite download start, if you have certain antivirus or security software, you may need to allow the download to start. Once downloaded, click on the downloaded file from the download section of your browser, or search for it in your File Explorer, likely under the downloads.
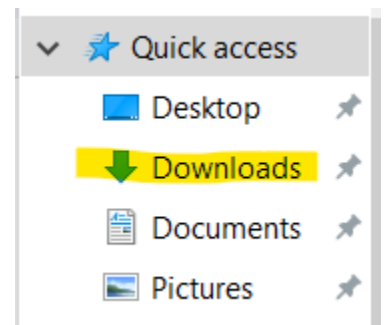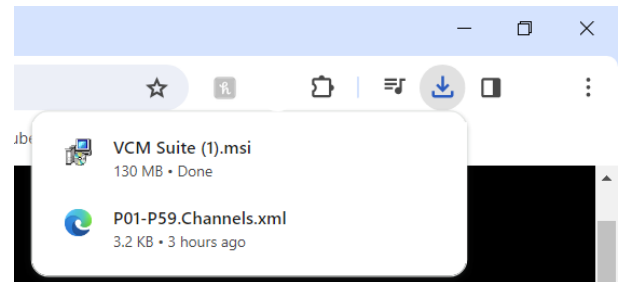

Double click on the downloaded file, you will see the setup wizard, follow the download through and install the software on your computer.

Link:
https://www.hptuners.com/downloads/

When Install has completed, the following software should be installed on your computer. The software may not default to your desktop, you can search for them in the Windows Menu at the bottom left. You can locate and launch the software from here, or you can place them on your desktop or taskbar for easy access by right clicking on them.
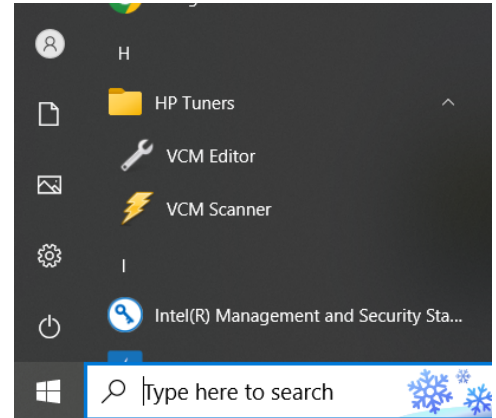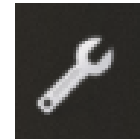
Using the Software:

When the software is install is complete, you will use these two softwares to install tunes and log data for your tuner.
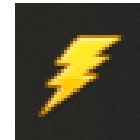
VCM Editor (Wrench):
VCM editor is used for flashing tunes to your vehicle. Open this software by double clicking on the wrench to launch.
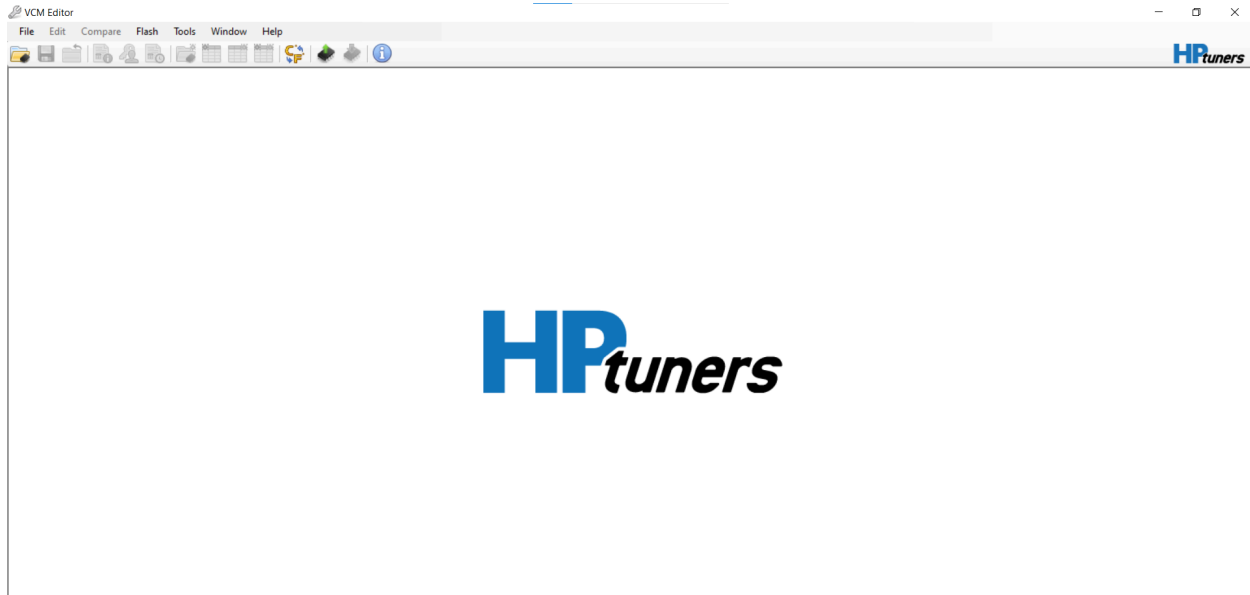
VCM Scanner (Lightning Bolt):
VCM Scanner is used for logging data in order to allow your tuner to make key adjustments to your tune and dial in all the key features.

Reading a Tune:

To pull your vehicles base file, launch the VCM editor to show the below screen.

Connect the module to your vehicles OBD2 port and plug into your laptop. Once connected at both ends, turn your vehicles ignition to ON, with the car NOT running.
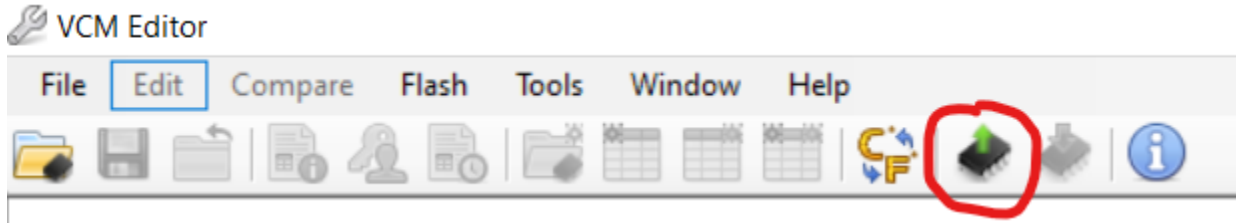
With the device plugged successfully into the laptop, a green light will display on the Status light of the module.
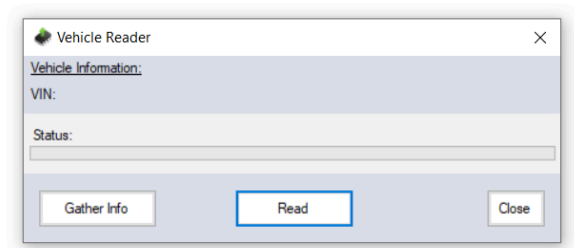

When the device is connected to the vehicle successfully and data can be transferred, a purple light will be illuminated on the device
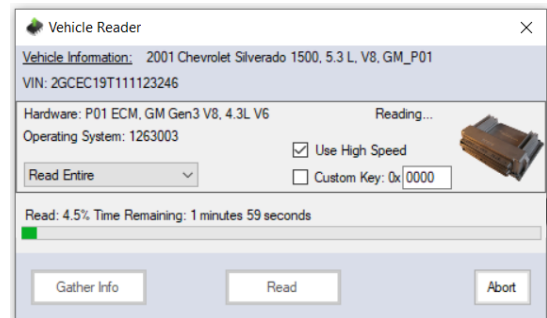
With the device connected to the vehicle and the PC, click the below button to read the vehicles base file.

Once the icon is selected, you will see the below screen. Selecting "**Read**" will read the current file in your vehicle.

Read Entire will pull all tune settings from the vehicle for your tuner to see.
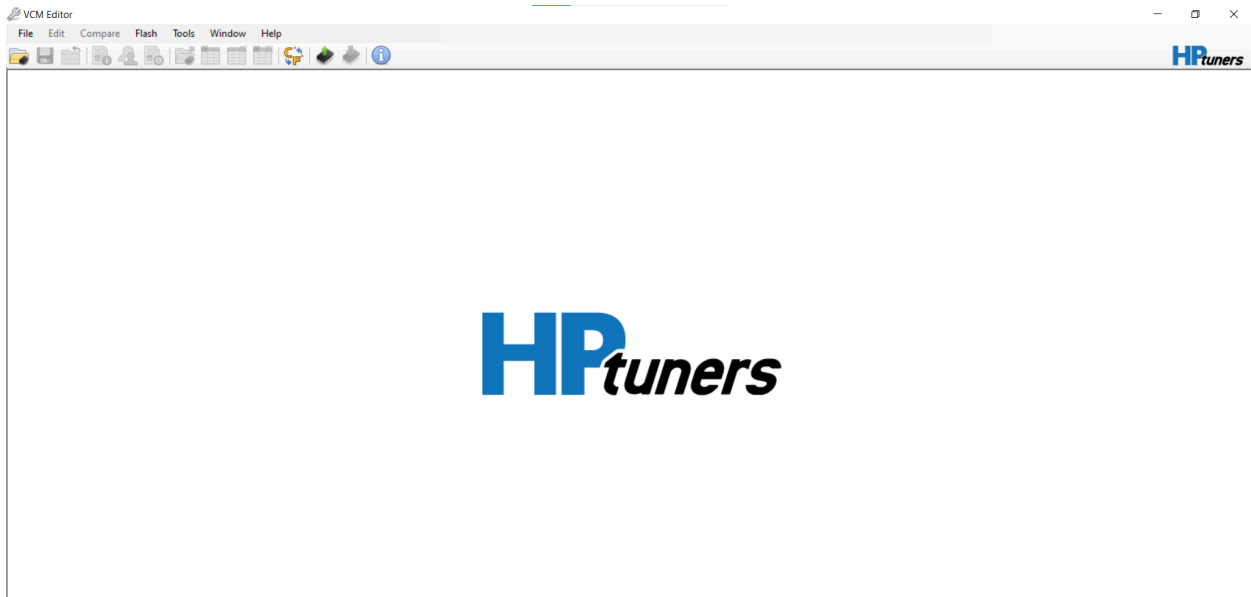

When the file is pulled, it will ask you to save a name to the file, be sure to use important characteristics like **Name**, **Vehicle**, and "**Base File**" so your tuner can designate.
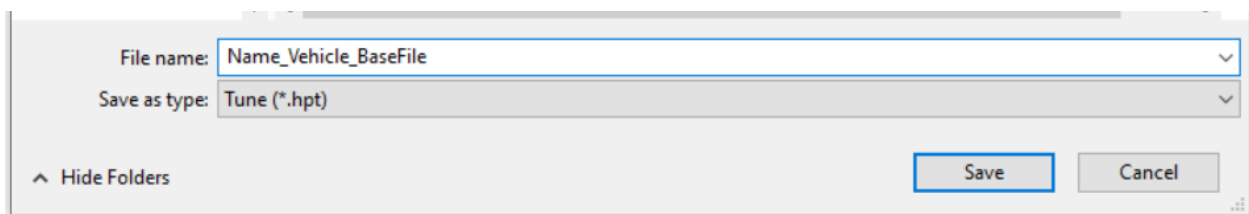
Installing a tune:

To load a tune, first make sure the tune file from your tuner is downloaded to your PC somewhere you can access it. Once it is saved to your computer, launch VCM editor to show this screen.


Using the "**File**" button at the top corner, open the tune file your tuner sent you (NOTE: If you are doing this for multiple revisions, ensure that you open the newest file and load to your vehicle)
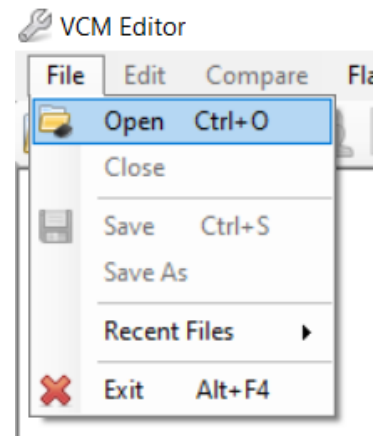

Select your desired file.
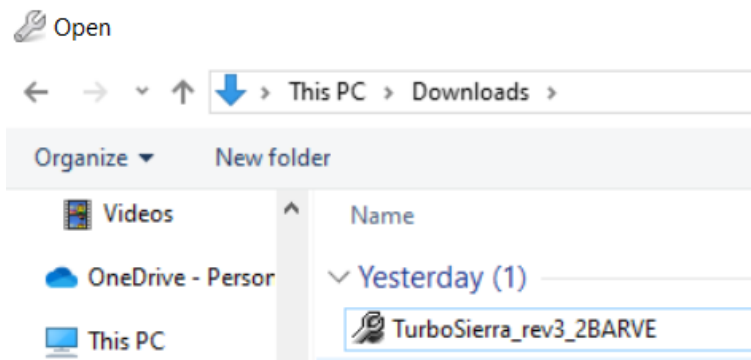
Once the file is open, the filename with revision number should appear in the header bar of the software. Connect the module to your vehicle's **OBD2** port and plug into your laptop. Once connected at both ends, turn your vehicle's **ignition to ON**, with the **car NOT running**. Click the below button to flash the tune file to your vehicle.
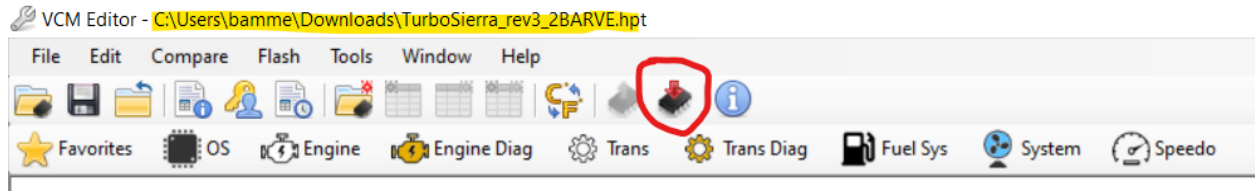
When selecting to write a file, select Write Calibration unless otherwise specified
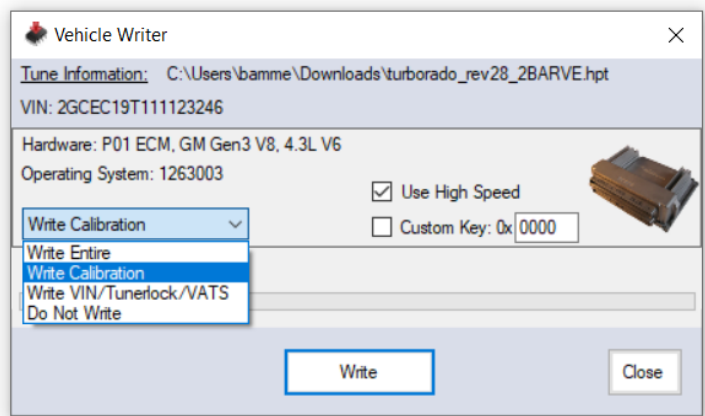
The file will install on your vehicle, **ensure your battery is charged and nothing is draining while this process is occurring. Refrain from removing battery cables, unplugging the module, or either end of the USB cable. Failure to do so CAN brick the vehicle's computer.**

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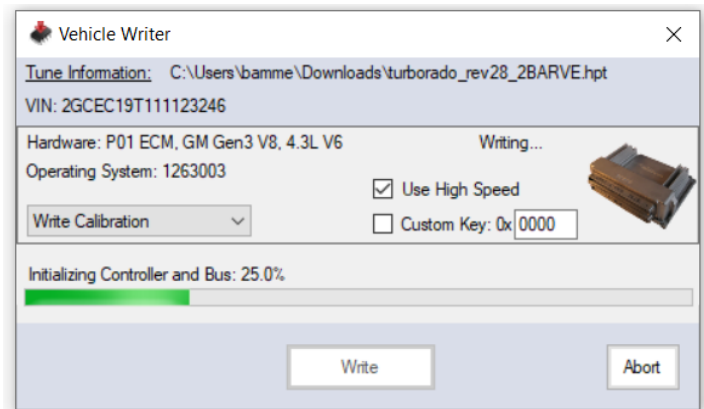
Once completed, cycle the key off then turn ignition on again. This step is not always necessary, most Dodge vehicles will specifically instruct you to do so. It is a good practice to do when tune writes are completed.
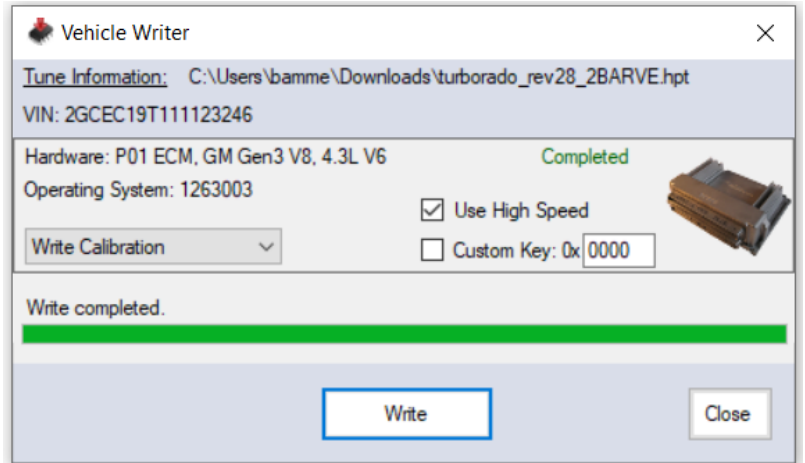
Datalogging:

Datalogging is done on the **VCM Scanner** application (Lightning bolt). Once your tune is installed, you are ready to log startup and driving. Open the VCM Scanner to show this screen. Your screen may look a bit different until you get setup with layouts and parameters.

To connect to your car, connect the module to your vehicle's OBD2 port and plug into your laptop. Once connected at both ends, turn your vehicle's ignitio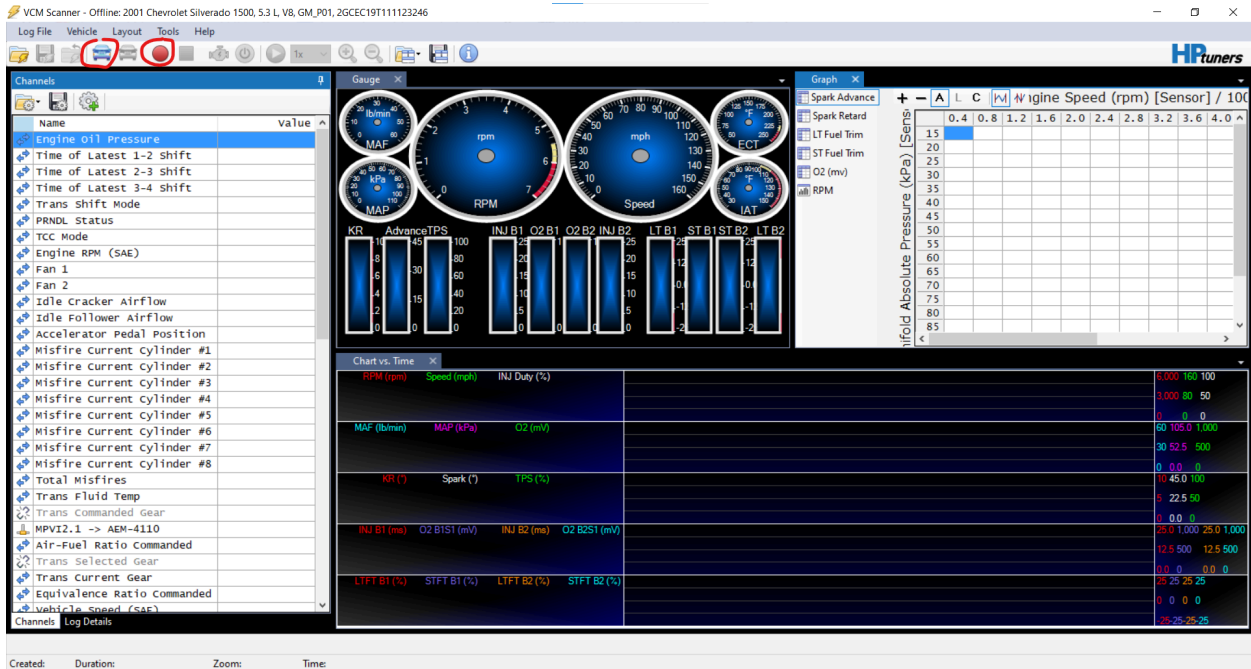n to ON, with the car NOT running. You can connect to your car by clicking the "Blue Car" circled above. This will read your vehicle and pull most critical parameters. Once the parameters are added, you can save this "Channels" file and send it to your tuner. This is useful in case you need to tune multiple vehicles with the same computer you can always change between channel files
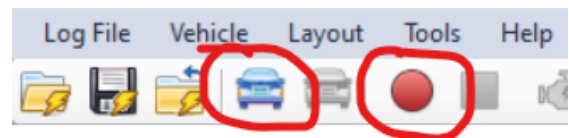
For Data Logging, once connected to your car, and all necessary parameters added, you can start a log by clicking the **RED circle**, shown in the above screenshot. Do this for a startup and driving. If your vehicle has ProLink AFR installed , ensure data is reading.

When your data logging is complete, you can click the blue Square to stop logging shown above.
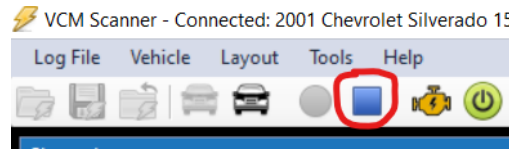
Once you stop logging, click the save icon and save the file with the Name, Car, and revision of tune you are on so it is easy to designate.
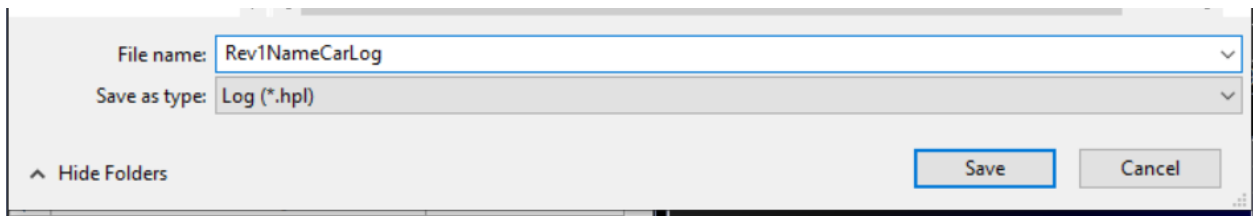
Troubleshooting: if you start logging and notice that the data in the layout is not populating, you may need to stop the log (Blue Square button), disconnect from the car (Black Car Button) and close the VCM Scanner Software.

Channel Configurations:

To open a new channel file, use the open Channel Config option to install an existing or tuner supplied Channel Config.
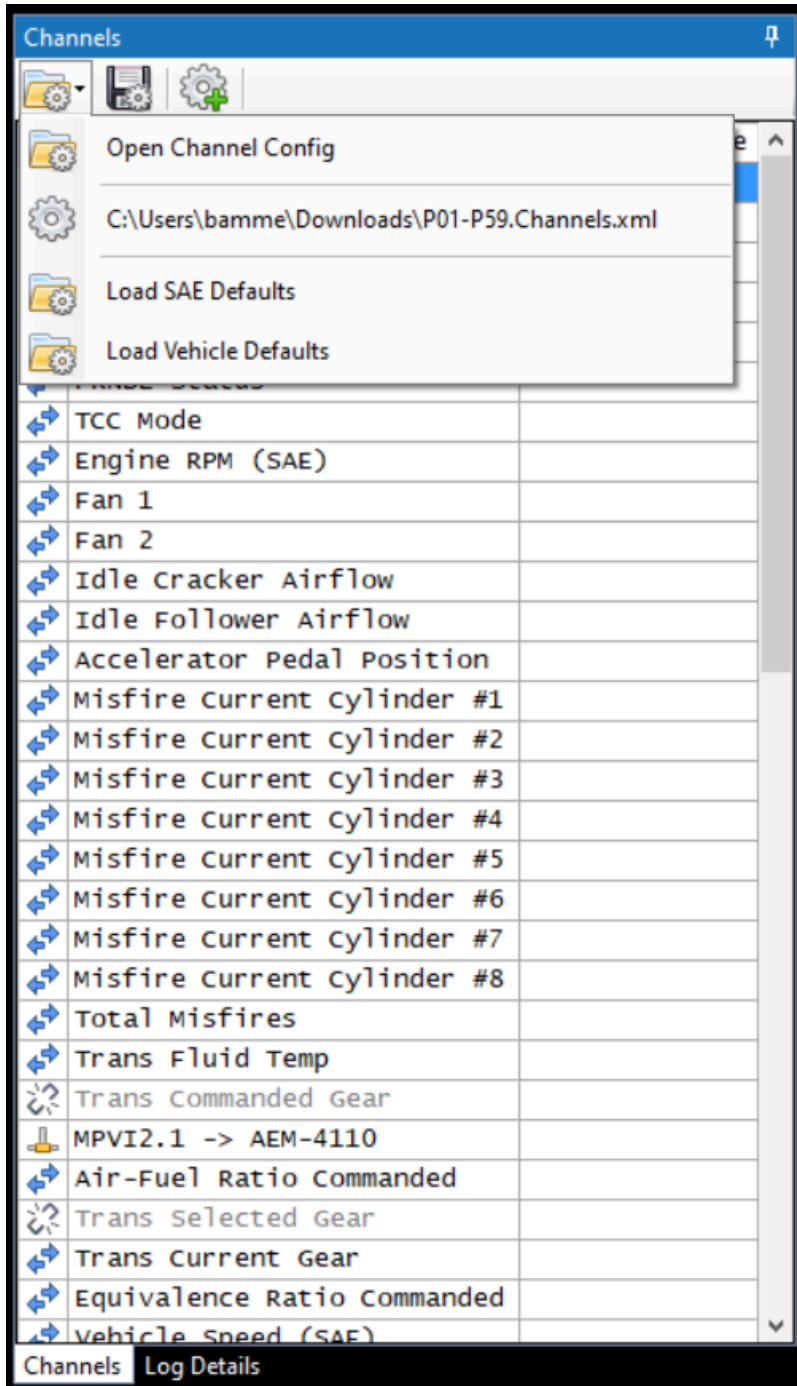
Adding Channels:

To Add new channels click the Gear icon circled below, and type the channel you desire into the area highlighted below. For example, if we wanted to add "Injector Flow Rate" we would search injector as shown below and double click on the "Injector Flow Rate" section. It will turn highlighted blue once added. You can close this window and click the Save button to the left of the gear icon so that channel is now added.

Note: Once new channels are added you may need to disconnect and close the software in order for it to begin reading.
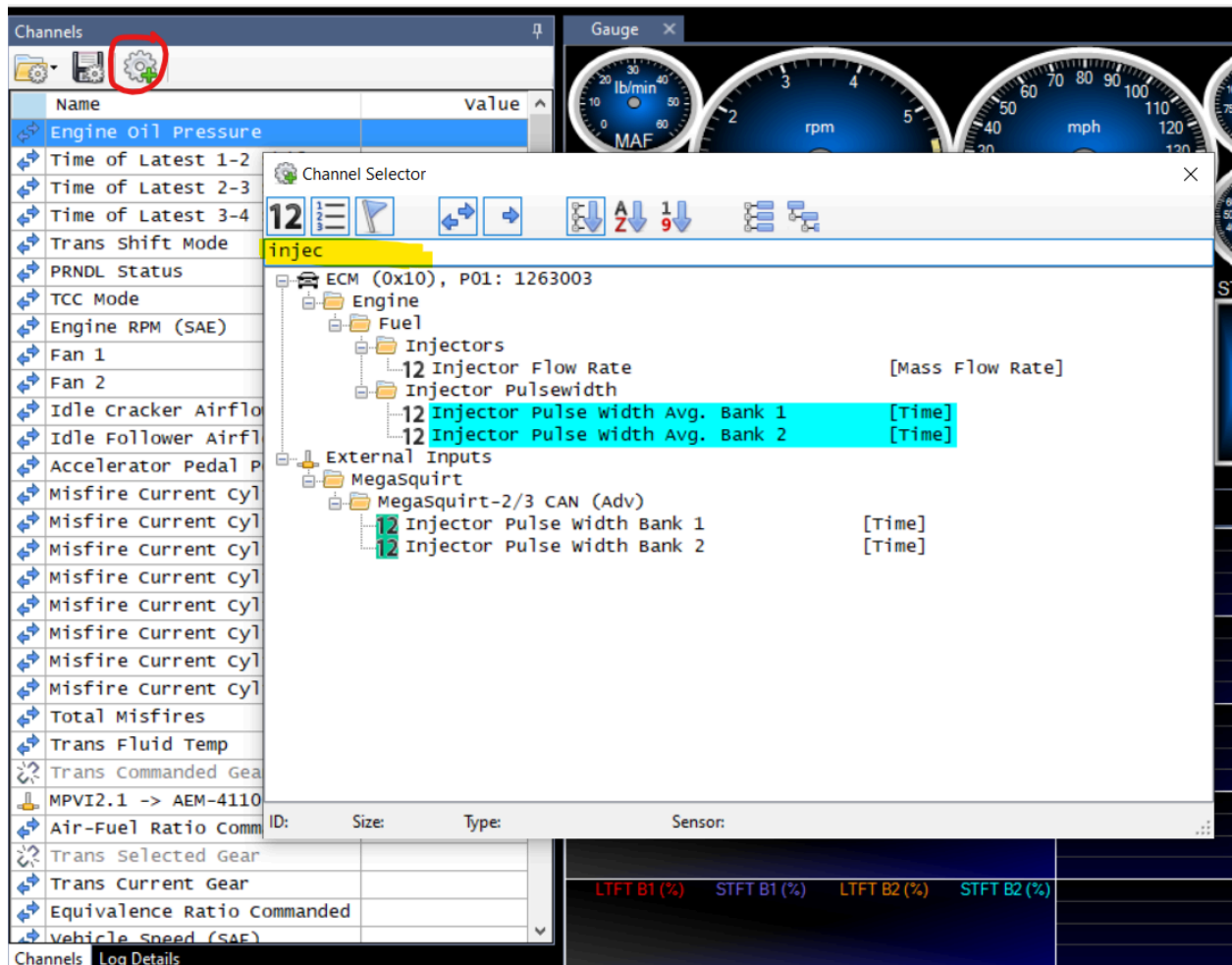
Adding a new Layout:

To add a new layout, select the Layout dropdown and select a existing or tuner supplied layout.
Note: Layouts are usually only used for reading data and are not always necessary/
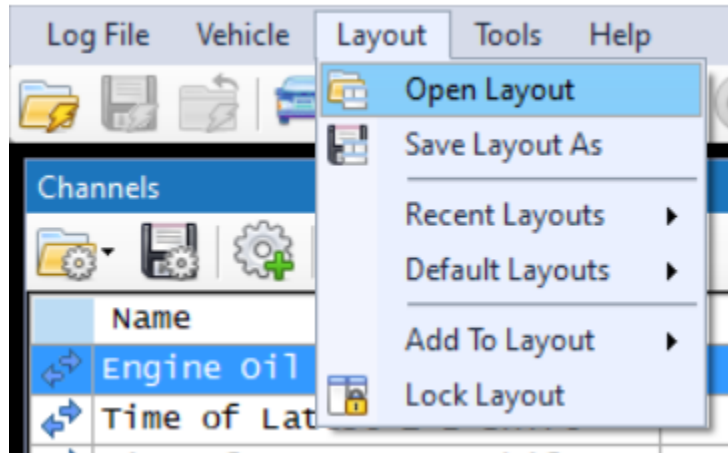
Adding credits:

If your tuner purchased credits to send to your module, or you purchased credits on the HP Tuners site, you will need to Resync the module so it can receive these credits. This process must be done while connected to an internet connection.

First ensure the module is connected to your computer via the supplied cable. Open the VCM Editor Application and go to the help section. Select "Resync Interface" and allow the module to receive any credits that were send to your modules SN.
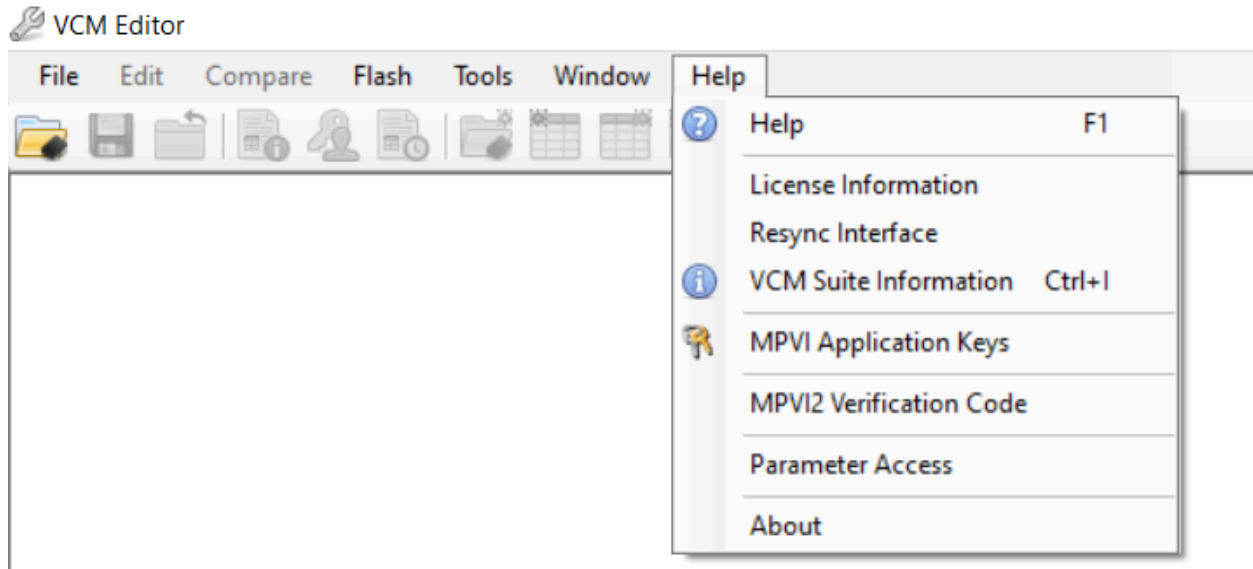
Once you click Resync Interface, the module should connect and automatically sync as shown below. If credits have been added, it will say it below the green bar once completed.
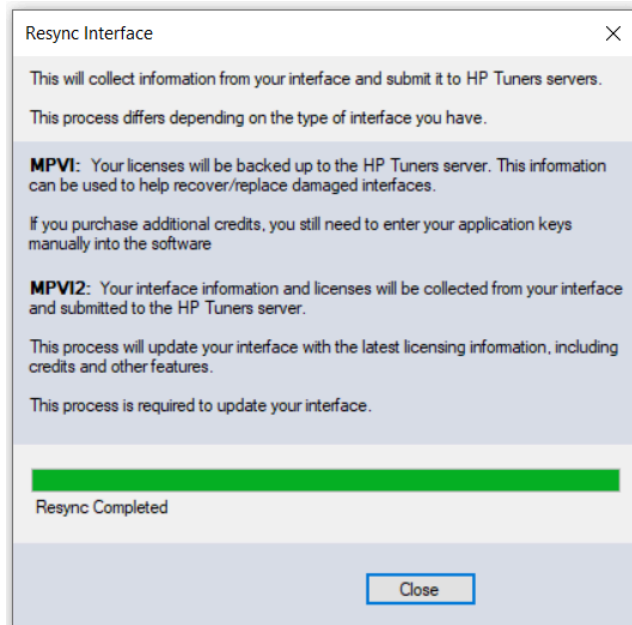
Reading Codes:

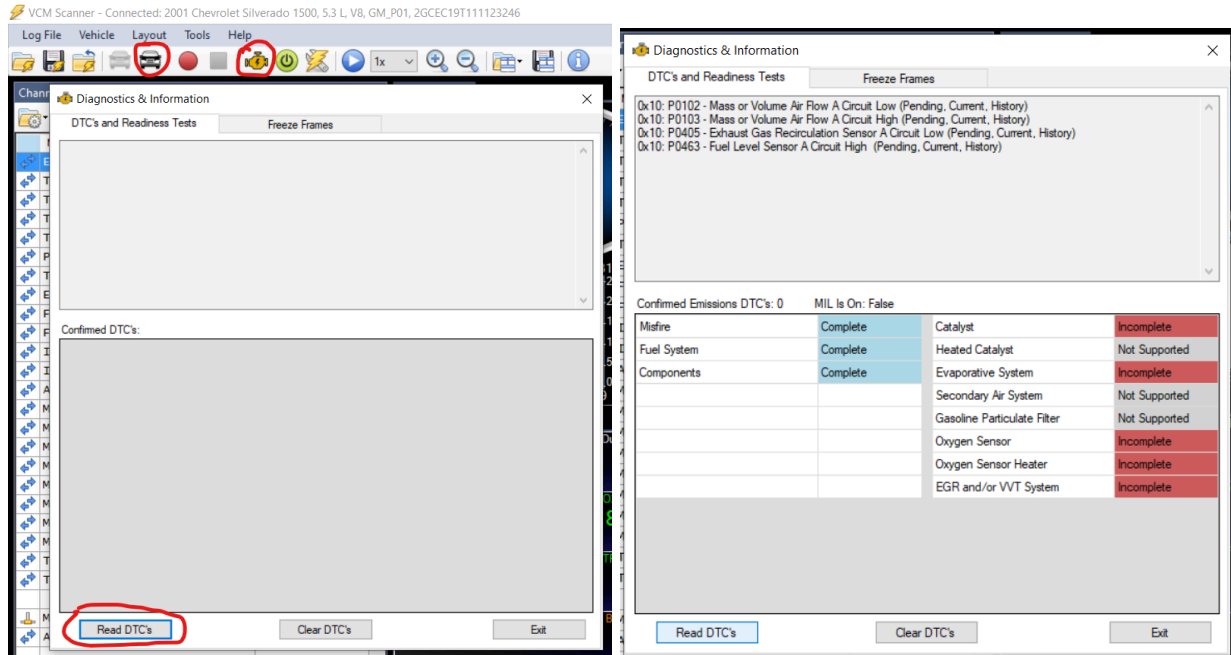VCM Scanner also allows you to read codes. With the ignition on and car not running, connect to the vehicle and use the button circled in red. Once open, click on Read DTCs to read any codes the car may have.

Prolink Cable:

The Prolink cable allows your HP Tuners device to log AFR or other Analog inputs into VCM Scanner to allow for a more refined tune. You will need to solder or connect this device to your AFR sensors output wires. For example to add an AFR reference to VCM Scanner from your Innovate LC-2 AFR sensor. You would need to ground the black wire, and connect RED (Analog 1) on the PROLINK cable, to your YELLOW (Analog Output) wire on the LC-2 (See below wiring diagram for LC-2)

Note: Analog wire color may change depending on WHICH AFR SETUP you are running, it cannot be assumed that a different model Innovate or AEM sensor will have the same color outputs.

Notes

- Measure 0 – 5V

- Measure two separate voltages

- 100 Hz sampling rate
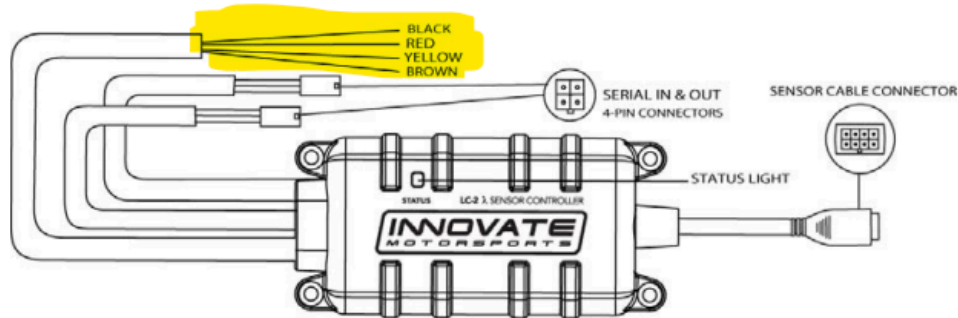
- CAN input 500kpbs support only

Pinout

- **Black** – GND
- **Red** – Analog 1
- **Blue** – Analog 2
- **Orange** – CAN High
- **Yellow** – CAN Low

1 LC-2

The LC-2 is a controller that controls a wideband O2 lambda sensor to measure O2 content in exhaust gasses. In this section we will spend a moment getting familiar with the LC-2 lambda controller.

1. **Status Light** – The LC-2 status light indicates the controller's operational status. When the controller is powered, the status light will light up green for 2 seconds indicating controller initialization.

   After the initialization, the status light will light will blink or light up constant up to indicate one of the following operational status conditions:

Light Status	Definition
No Light	No power to the LC-2
GREEN, flashing twice a second	Sensor Warm-up
GREEN, series of quick flashes	Sensor Calibration
GREEN, solid	LC-2 operational, taking readings.
RED, series of flashes followed by a pause	The number of flashes indicates an error condition. See Appendix for error code details.

2. **Sensor Cable Connector** – Mates the sensor cable to the O2 sensor.

3. **Wiring** – The LC-2's wiring is very straight forward. All that is needed for basic installation is power (red) and ground (black). The two configurable analog output wires (one yellow and one brown) can be used to feed external Standalone ECUs, 3rd party data loggers, and AFR display gauges.

HP Tuners Prolink Instructions Link:
https://www.hptuners.com/pub/Pro_Link_v1.pdf
Innovate LC-2 Instructions Link:
https://www.innovatemotorsports.com/wp/content/uploads/2022/05/LC-2_Manual.pdf