EZ-Flash

Do-it-yourself vehicle programming

User Guide v1.4

Trifecta Performance, Inc.

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First, a Warning:

Flashing (programming) vehicle control modules is generally a safe operation. However, programming errors may leave the vehicle in a non-drivable state. As such, we do not recommend programming the vehicle in a location where you would feel uncomfortable leaving the vehicle for a period of time, were a programming error to occur. While we will do everything we can to resolve a programming error issue, Trifecta Performance, Inc. will not be responsible or liable for any expenses incurred related to a programming error.

Do not attempt to program a vehicle using a calibration file intended for another vehicle. At best, the vehicle may run poorly, at worst it may permanently damage the vehicle's control modules or parts.

Introduction

Congratulations on your purchase of an EZ-Flash programming cable from Trifecta Performance! The EZ-Flash programming cable and software will enable you to reprogram your vehicle at any time using a laptop and custom tunes supplied by Trifecta Performance.

Components Included

The EZ-Flash programming cable kit will include the following components:

- Vehicle interface module
- OBD-II interface cable (depending on which cable you receive)
- USB cable
- Software (may be sent by email)

If any of the components listed above are missing, please call Trifecta Performance.

Computer Configuration

When using EZ Flash, please disable all power management features on your computer (automatic standby, etc.). If the computer shuts down in the middle of a programming sequence it will leave the vehicle in a non-operable state. If you are using a portable computer on battery power, please make sure the battery is sufficiently charged.

Do not run any other software applications or operations on your computer while using EZ Flash.

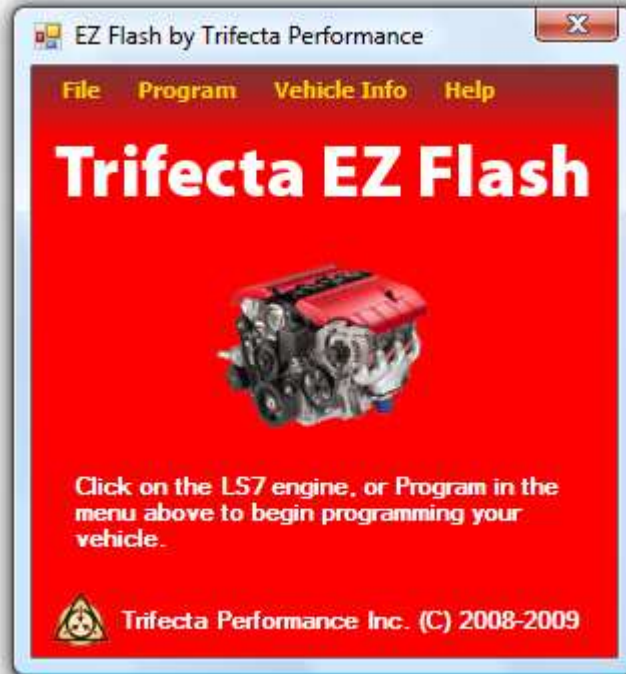## Software Installation

Device Driver Installation

1. Before plugging in the interface module for the first time, please install the device drivers for it. These drivers will be either emailed to you, or a location to download them from the internet will be provided.

2. Once driver installation is completed, attach the interface module to an available USB port on your computer system.

3. When attached, a message will pop up stating a new device was found, but the drivers will install automatically.

EZ-Flash software

EZ-Flash will be supplied as a single executable file. Please choose an appropriate folder on your computer to store the file. To start the EZ-Flash application, simply double click on it.

Using EZ-Flash

Once opened, EZ-Flash will display a main dialog box with a standard application menu across the top, labeled File, Program, and Help.

Exiting EZ-Flash

To exit EZ-Flash, simply click on the "close window" icon on the upper right corner of the application's screen. Or, you can click on File, and click on Exit.
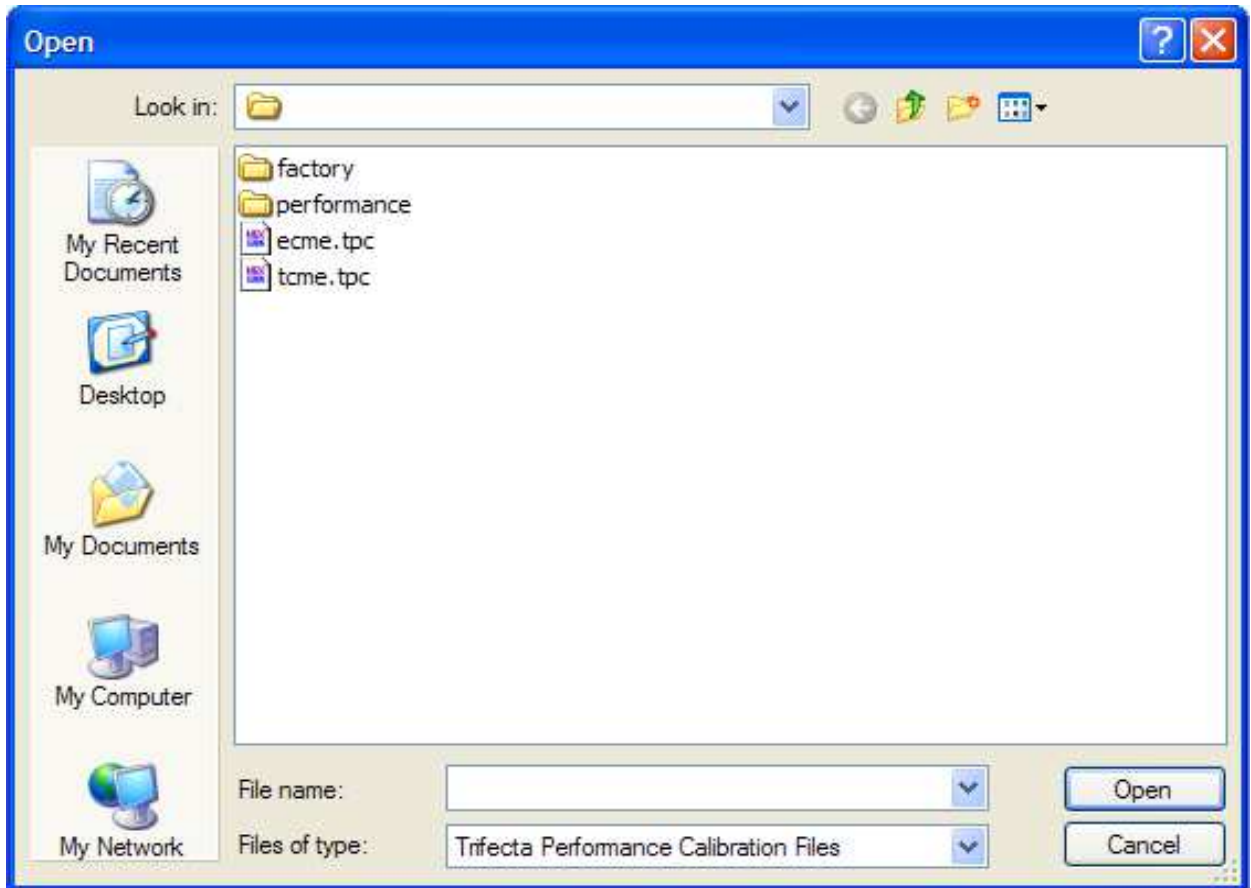
Obtaining information about EZ-Flash

During support scenarios, you may be asked to provide the version information about your copy of EZ-Flash. To obtain this information, go to Help, and click on About.

Programming your vehicle

When you are ready to program your vehicle, click on either the LS7 engine shown in the main application screen, or click on Program, and then click on Program Vehicle.
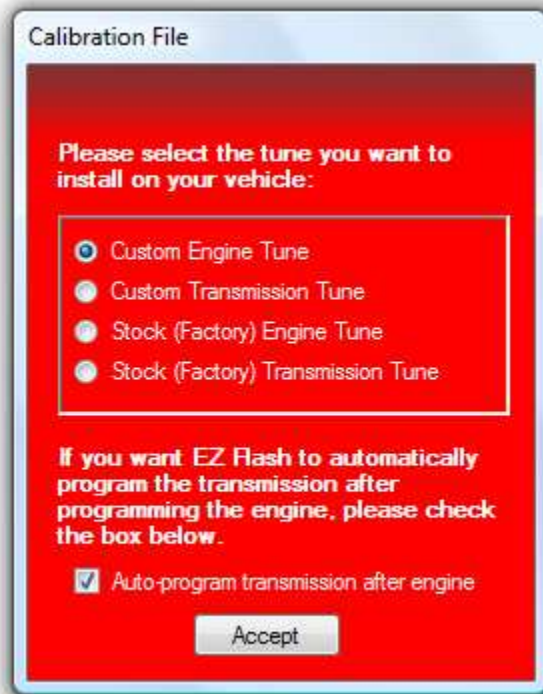
Selecting a calibration file

Next, you will be taken to a dialog box that allows to select the file you wish to program your vehicle with (called a calibration file). Trifecta Performance calibration files have the extension .TPC or .TRT.

If you decide you don't want to program your vehicle, just hit Cancel to return to the main application screen.

Once you select a calibration file, depending on what type of calibration file you received, you may see a popup asking you which tune you want to apply (engine / stock, engine / custom, transmission / stock, transmission / custom):

Simply select the tune you would like to apply. "Custom" tunes are the ones written for your vehicle by Trifecta Performance, and Stock (Factory) tunes are the ones provided by the manufacturer.

Automatic transmission vehicles only

There's an optional checkbox that will appear if a tune was included for your automatic transmission. By default, the box is checked, which means if you choose to program the engine, EZ Flash will automatically program the transmission after it finishes with the engine (provided there are no errors).

It is recommended to leave this box checked, but advanced users may uncheck it if they wish to only update the engine tune.

You will then see a new popup will appear providing details about the calibration file, such as the VIN the file is for, and the OS ID. Select Accept to program this file, or Cancel to return to the main application screen.

NOTE: Most GM vehicles built after 2005, that also have an automatic transmission have two separate vehicle controllers – the ECM (Engine Control Module), and TCM (Transmission Control Module). If you received more than one "file", you would have been provided with "pairs" of calibration files for your vehicle – one ECM calibration file, and one TCM calibration file. Each of these files will be programmed separately.

Connecting the interface cable to the vehicle

Next, you will see a status screen pop up showing the steps EZ-Flash is taking to program your vehicle. At this time you will be prompted to connect your interface module to the vehicle, and turn the ignition to the ON position (but do not start the vehicle).

We recommend the following steps for connecting the interface module:

1. Attach the OBD-II cable to the interface module (if equipped)
2. Attach the USB cable to the interface module
3. Attach the OBD-II cable to the vehicle's diagnostic connector (usually under the dash, near the pedals)
4. Attach the USB cable to the computer

Once you've completed all the steps, press OK to begin the programming.

Transparency Option

Depending on your type of vehicle, you may be asked if you wish to apply the transparency option to your tune. In an effort to make our products integrate more seamlessly with the auto manufacturer's computer systems, we introduced this feature to make our product more transparent to other modules in the vehicle. This will cause our programming to appear to be a factory program to other modules in the vehicles, as well as diagnostic tools. It will otherwise have no effect on the way our product operates on the vehicle, and is an optional step. If EZ Flash is unable to apply the transparency option, the tune can still be flashed without it.
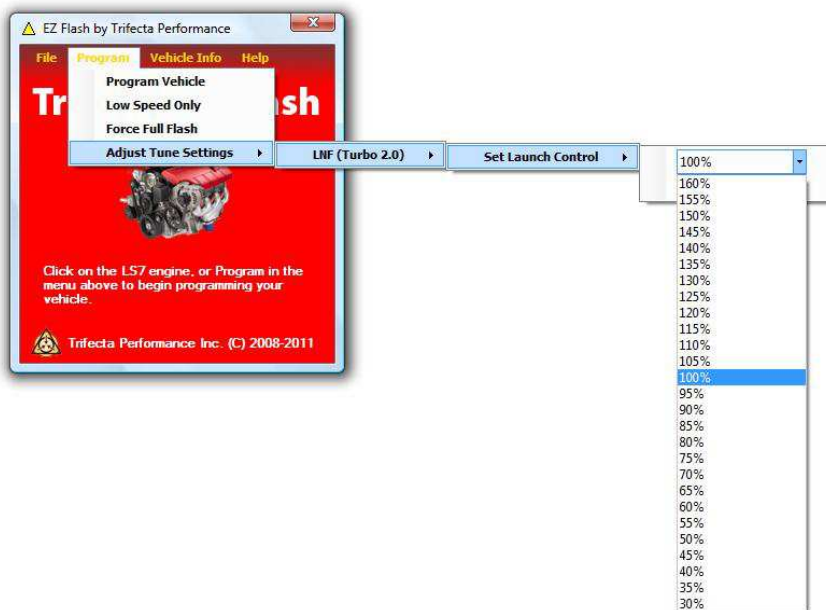
Modifying Tune Settings

Some vehicles may allow the modification of tuning parameters to allow for end user customization. Under the Program menu, select Adjust Tune Settings, your vehicle type, and the option you wish to customize. If you select an option under this menu, but your vehicle is not supported, the option selection will have no effect.

After making a selection you will need to program your vehicle again for the setting to take effect. EZ Flash does not remember your previous setting, so if you change a setting, and use EZ Flash again later, the default setting will be shown, even though your vehicle may have the setting modified.

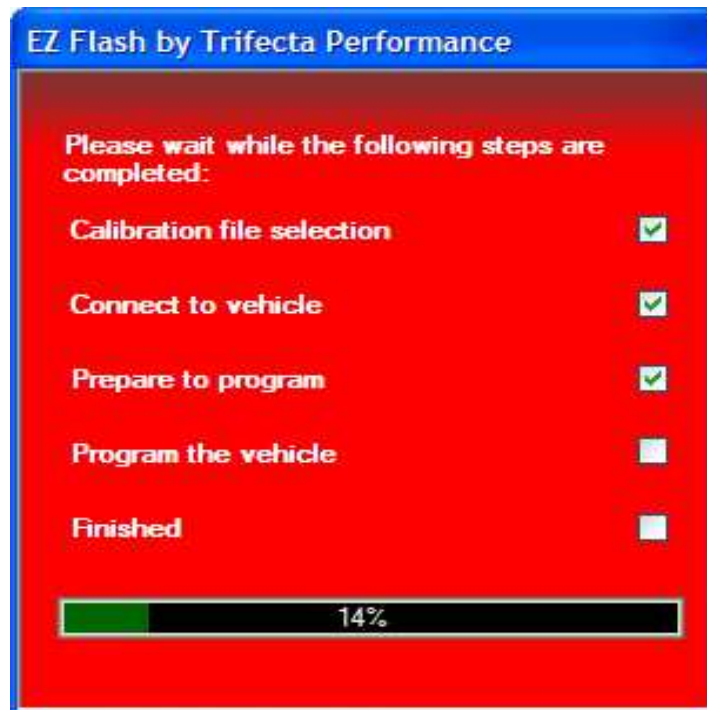OBD2 DTCs & Readiness monitors: This feature is explained in a separate section starting on page 15.

Set Launch Control (2008-2010 2.0 turbo LNF only): This option allows you to adjust the launch control RPM. The factory programs the launch control speed to somewhere between 4500 and 5100 RPM, depending on which vehicle you have. Selecting 100% uses the factory default launch control RPM. To lower the launch control RPM, select a setting less than 100%, and to raise it, select a setting higher than 100%. *Please note that your tachometer will read incorrectly while launch control mode is active, until the vehicle starts moving. This is normal, the ACTUAL engine speed will be at the selected launch control RPM.*

Module Programming

This step is fully automatic. EZ-Flash will first attempt to connect to the module for which the calibration file represents (ECM if it is an ECM calibration file, and TCM if it is a TCM calibration file). Once a connection is established, EZ-Flash will automatically program it. This step may take anywhere from 30 seconds to 10 minutes depending on how much of the module needs to be written. The status bar at the bottom of the application screen shows the progress. Note that it is normal for the bar's progress to slow or stop from time to time.

IMPORTANT: Do not interrupt the programming process. Most modern control modules will be recoverable from an interrupted programming sequence, but generally the vehicle is inoperable while the module is in a partially programmed state. Please take special care that your laptop does not enter standby mode, or shuts down (e.g. due to low battery charge state, etc) and do not disconnect any portion of the programming cable during the programming process.

Once programming is completed, press Ok to return to the main application screen. You may turn off the ignition switch, and disconnect the programming cable unless you need to program another module in your vehicle.

Module Recovery Mode

If, for some reason, there is a programming error, there will be a message displayed on the screen. If you see this message, write down the error code (e.g. W31) in case you need to provide the information to Trifecta Performance.

Once a module fails to program, it may go into a special "recovery" mode. The module can still respond to EZ-Flash but it is not in a state to operate the vehicle. If you see an error message, re-attempt the programming. When you re-attempt the programming you will see a message about the module being in "recovery" mode.

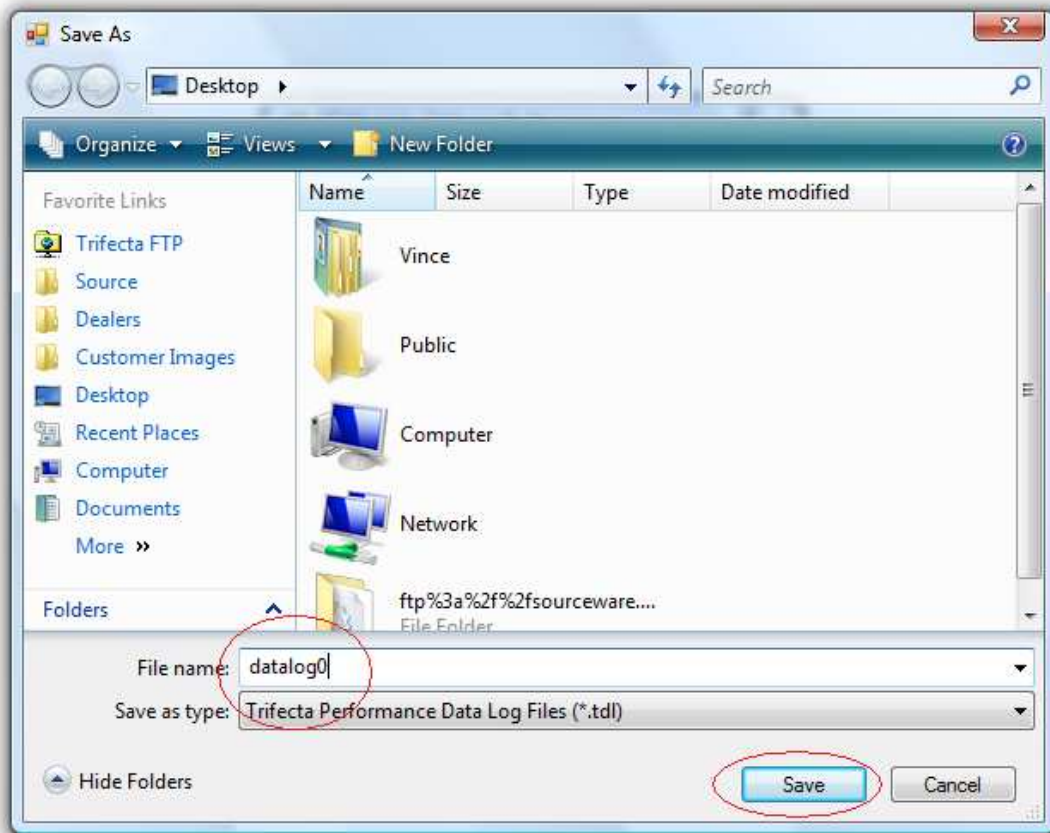Reprogramming a module in "recovery" mode will generally take more time.

If a module repeatedly fails to program, please contact Trifecta Performance for assistance.

Datalogging Procedures

EZ Flash supports the generation of "datalogs" in a format which Trifecta Performance can analyze. These logs contain real-time information about what your vehicle is doing, while you drive it.
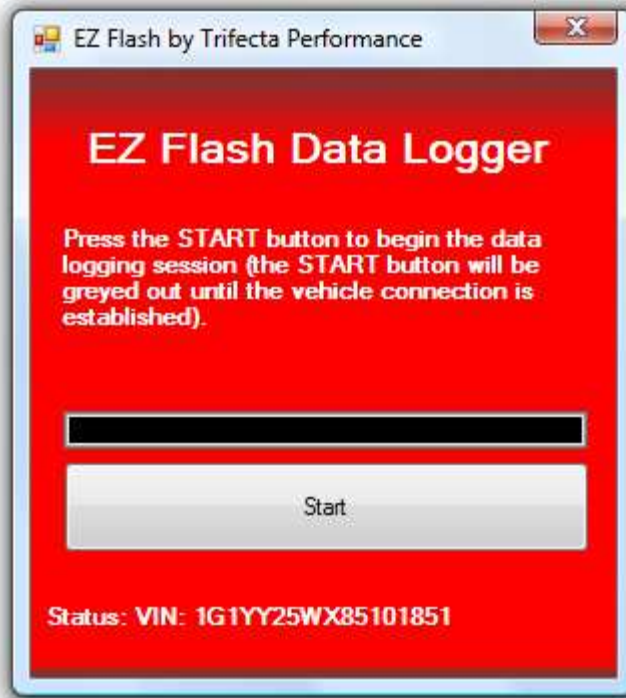
The logger is sort of like a video recorder. Once it is configured, you may start the recording whenever you like, and stop it when you are finished. The logger will allow a certain number of frames which should give you the ability to record between 5 and 10 minutes of activity per log file. You may create as many log files as you like.

To start the logger, select "Vehicle Info" from the main menu, then "Data Log Vehicle". Next, you will be shown a "Save File" box:
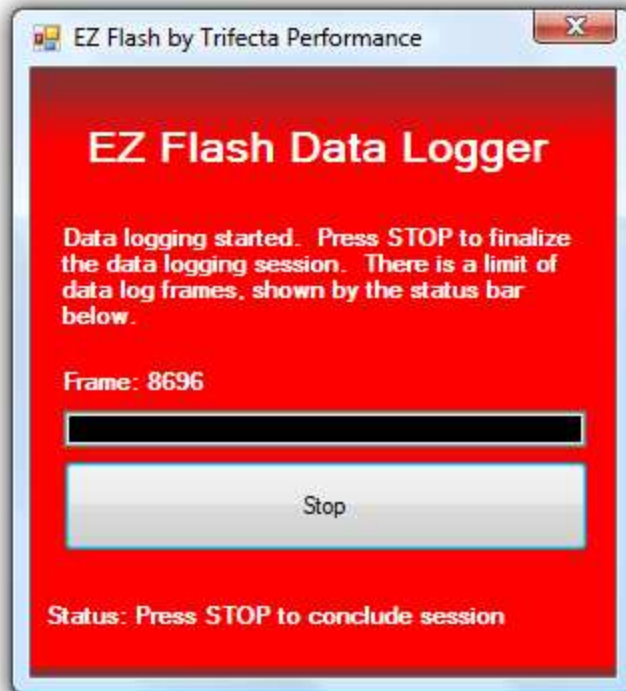

In this screen, give it the name of the file to save the "data" in. Something like datalog0, etc. Then click on the Save button.

Next, you will be instructed to connect the vehicle interface cable, turn the key on, and press OK. From this point, the engine can be either off or running when you press the OK button. Some vehicles won't start the data logger unless the engine is running. After the connection is established you will see the following screen:

When this screen appears, and your vehicle's VIN appears in the Status bar, it means the logger is "armed" and ready to record. Press Start to begin recording.

As the logger records data, you will see a frame counter increase, and a progress bar move across the screen. If the progress bar fills up, the logger will automatically stop recording and your data will be saved. Alternatively, you can press the Stop button to conclude your logging session.

Datalogging Tips

NOTE: Trifecta Performance absolutely does not recommend operating your vehicle on public streets in an unsafe manner in attempts to get useful data logs. If you choose to log while on the public streets, do NOT exceed the speed limit or violate any traffic laws while generating data logs. If you must operate your vehicle in a manner unsuitable for the public streets, we recommend generating logs either while on a chassis dynamometer or at a race track.

Also, do NOT operate EZ Flash software while operating your vehicle, bring a companion to assist with operation of the software, or pull over to the side of the road before making any changes to EZ Flash software.
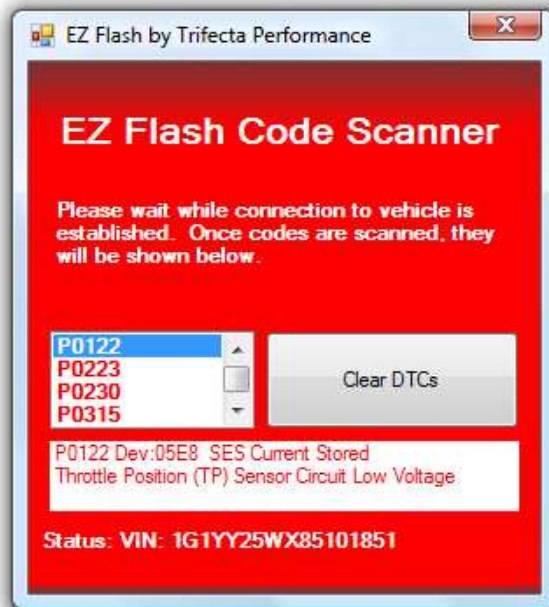
Trifecta Performance will NOT be liable for property damage or injury due to improper use of the EZ Flash software.

With regard to fine-tuning, generally speaking, the most useful data is to see what the vehicle is doing while it is at full throttle. This data helps us adjust the tune for your vehicle, with your modifications, in your location.

Depending on the type of tuning project may require different types of data logging. You may be asked to generate a log of the car just idling. Or you may be asked to drive the car "normally" and generate a log.

Code Scanning

EZ Flash also has a built-in code scanner feature that allows to read and clear any diagnostic trouble codes (DTCs). To scan for codes, select "Vehicle Info" from the main menu, then "Code Scanner". Next, you will be instructed to connect your programming cable and turn the ignition on. The following screen will appear after a short period of time:

This screen will show all current diagnostic trouble codes in the left section (P0122, P0223, etc.), and will give a description of the selected trouble code in the lower pane (if EZ Flash knows what it is). You may select different codes, and scroll the window down to view each code. When you are finished viewing the codes, you may optionally clear the codes by pressing the "Clear DTCs" button. When you are finished with the code scanner, close the window to return to the main EZ Flash screen.

Performing CASE (Crankshaft Angle Sensor Error) Learn Procedure

NOTE: It is not recommended you perform this procedure unless you are either asked to by Trifecta Performance or you have the presence of the P1336 or P0315 trouble code.

In some cases, when the ECM is reprogrammed (usually when the operating system is updated), the ECM may set the P1336/P0315 trouble code which means the module believes it needs to have the CASE information updated. The CASE information is used by the ECM to ensure it has proper injection and ignition timing. In other cases, this code may appear during normal wear of the engine.

EZ Flash does not support performing a CASE learn on all vehicles. If an attempt is made to perform a CASE learn on an unsupported vehicle, you will see an error message.

If you select "Perform CASE Learn" from the "Vehicle Info" menu, you will see the following screen:

Simply follow the on-screen instructions, and when you are ready to begin, press Start. It will then instruct you to gently rev the engine to about 4000 RPM where the ECM will cut the fuel off itself. When this happens, release the accelerator pedal.

Module Information

There may be times that you will need to access information about the engine controller, or transmission controller in your vehicle. You may access this feature from the Vehicle Info menu item (select ECM to show the information about the engine controller, and TCM to show the information about your transmission controller). Once you select it, EZ Flash will attempt to connect to the selected controller. Once the Start button is available, press it, and EZ Flash will display the information about the selected controller on the screen (example below):

This top portion of the information screen shows the module being communicated with (Engine Control Module), the VIN programmed into the module, the factory's serial number for the module. Below this is the information on the segments in the module. The factory assigned part number and the "CVN" or calibration verification number is shown for each segment.

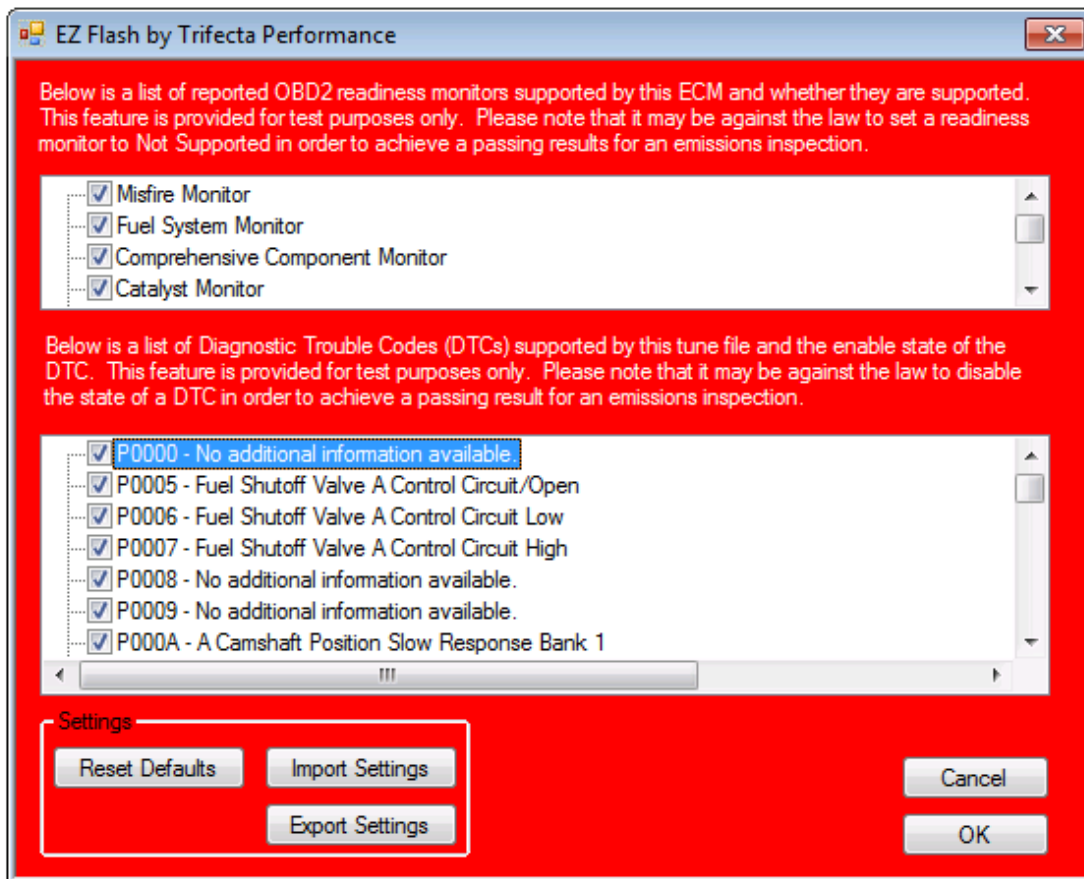*OBD2 DTCs & Readiness Monitors Settings*

Onboard Diagnostics 2 (OBD2) defines two concepts that all auto manufacturers must follow pertaining to the vehicle's ability to self-test for malfunctions: Diagnostic Trouble Codes (DTCs) and OBD Readiness Monitors.

DTCs are pre-defined trouble codes that are set by any ECU in the vehicle when a diagnostic failure is detected. In some cases it will cause the Malfunction Indicator Light (MIL), or "check engine" light to come on.

Readiness monitors are used by automotive diagnosticians, state emission test stations and any other entity that needs to determine whether the vehicle has been able to perform emissions-related self-tests.

Trifecta Performance does not modify either emission control diagnostic trouble codes (DTCs) or whether a vehicle reports various OBD Readiness Monitors are supported or not, but the user may choose to modify these settings if they wish. **NOTE: It may be a violation of emission control laws to modify DTC and/or Monitor settings in order to achieve a passing result at an emissions test station when emission control devices have been removed and/or disabled. Trifecta Performance is not responsible for usage of this feature by end users in a manner that violates any law.**

Below is a screenshot from EZ Flash showing the feature:

By default, all boxes are checked, which means the DTC and Monitor settings will be inherited by the tune file. Note that if the box is checked, it doesn't necessarily mean the DTC or Monitor is supported by the underlying tune file.

To disable a DTC, simply find the DTC you wish to disable and uncheck the box next to it. To set a Monitor to report "Not Supported", simply uncheck the box next to that monitor.

If you want to restore to default settings, press the "Reset Defaults" button, which will automatically check all the boxes again.

When finished with the settings, click OK to accept them, or Cancel to discard them.

NOTE: If changes are made to the DTC and/or Monitor settings, the vehicle must be programmed with the custom tune file in order for the changes to take effect.

Importing and Exporting DTC and Monitor Settings

The import/export feature allows a user to essentially load or save settings. Saving the settings (and then later loading them) may be useful if EZ Flash is being used numerous times with non-default settings. Settings files can also be shared between EZ Flash users.

To save the settings, click the "Export Settings" button. A file dialog will then pop-up. Provide the name and location to save the settings, and click OK.

To load the settings, click the "Import Settings" button. A file dialog will then pop-up asking which settings file should be loaded.