



## Dodge Cummins User Guide

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# Dodge Cummins User Guide

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## Prerequisites

### Intended Audience

EFILive Customers using the V8 Scan and Tune Tool software.

### Computer Knowledge

It is expected that readers have a basic understanding of:

- The Windows operating system;
- Starting and using Windows applications;
- Navigating folders using Windows Explorer.

### Tuning Knowledge

It is expected that readers have a basic understanding of:

- Electronic Fuel Injection;

On Board Diagnostics. And enough common sense to understand the following:

- Make small incremental changes;
- Only make minimal changes at a time;
- Evaluate and analyze the results of each change using the Scan Tool and/or other data logging devices before making the next change;
- Do not make changes that you do not understand;
- If you are unsure about making a particular change, ask a knowledgeable tuner first.



## Introduction

### What is EFILive?

EFILive is tuning software and hardware - it is not a tune. Together the software and hardware give users the tools to write tunes. EFILive does not provide tune files, tuning advice or support, but do provide software support and hardware support.

### Software Version Overview

This version of the Cummins Quick Start Guide migrates all processes to EFILive V8 Scan and Tune software. Functionality is still available in V7.5 software, however software support and bug fixes will cease in 2021.

FlashScan/AutoCal V3 and AutoCal V2 are not compatible with V7 software. V7 functions are only supported by FlashScan V2. The following is a brief view of the activities that are performed with the different software versions:

### V8 Software Support

The following Dodge Cummins are supported in the following ways in the V8 Scan and Tune software:

Controller	Engine	Year	V8 Software				
			Scan	OBD	Read	Flash	Edit
CM2450B (CMF)	6.7L	2019+	✓	✓	✗	✓	✓
CM2350B (CME)	6.7L	2013-2018	✓	✓	✗	✓	✓
CM2200 (CMD)	6.7L	2010-2012	✓	✓	✗	✓	✓
CM2100 (CMC)	6.7L	2007-2009	✓	✓	✓	✓	✓
CM849 (CMB)	5.9L	2006-2007	✓	✓	✓	✓	✓



## V7 Software Support

The following Dodge Cummins are supported in the following ways in the V7 Tune Tool and V7 Scan Tool software:

Controller	Engine	Year	V7 Software				
			Scan	OBD	Read	Flash	Edit
CM2450B (CMF)	6.7L	2019+	✗	✗	✗	✗	✓
CM2350B (CME)	6.7L	2013-2018	✗	✗	✗	✗	✓
CM2200 (CMD)	6.7L	2010-2012	✓	✗	✗	✗	✓
CM2100 (CMC)	6.7L	2007-2009	✓	✗	✗	✗	✓
CM849 (CMB)	5.9L	2006-2007	✓	✗	✗	✗	✓

In 2010 Cummins implemented restrictive ECM architecture which prevents CMD, CME and CMF ECMs from being read via the OBD-II Port.

Customers will need to obtain a suitable base file for editing and flashing. A selection of EFILive compatible base stock files is readily available on the internet or custom files may be purchased through organizations that have the necessary hardware and software to create personalized base files.

Because you cannot read the existing tune in the ECM it is important you select the correct base tune to suit your vehicle.

## CSP<sup>5</sup> Cummins Switchable Programming

EFILive's CSP custom operating systems for the Cummins ECMs allows customers to be able to switch 'on the fly' between multiple tunes, all stored in the ECM's flash memory.

Refer to the specific user guide for your controller for detailed instructions on how to upgrade your operating system.

## EDA Data Logging

EFILive's Enhanced Data Logging (EDA) allows customers to log 45 individual data parameters specifically chosen to complement tuning at up to 50 frames per second during pass-thru logging and Black Box Logging (BBL) using FlashScan/AutoCal V3 or FlashScan/AutoCal V2.

EDA is only accessible to customers who upgrade to EFILive's CSP<sup>5</sup> operating system. Refer to the specific user guide for your controller for detailed instructions on how to upgrade your operating system.

Limited factory logging is available on non-CSP operating systems

## RSA Digital Signature

In early 2009 Cummins ECMs were manufactured with higher levels of security consisting of an [RSA Digital Signature](#) on the calibrations. The RSA Digital Signature does not prevent the flashing of stock tunes, it ONLY prevents the

flashing of modified tunes, so to flash a modified tune the Digital Signature must be switched off.

The EFILive ECM flash process manages the removal of the Digital Signature via OBD-II flashing in the following circumstances:

Controller	Flash Method
CM2450B (CMF)	In vehicle and bench harness flashing.
CM2350B (CME)	In vehicle and bench harness flashing.
CM2200 (CMD)	Bench unlocking only (due to TIPM).
CM2100 (CMC)	Bench unlocking only (due to TIPM).
CM849 (CMB)	Not Applicable - RSA Digital Signature not implemented.

**In vehicle flashing** for CM2100 and CM2200 controllers requires the BootRSA Patch file process to remove the digital signature. Please refer to the [Cummins Boot RSA Patch User Guide](#).

NOTE: The ECM must be fully operational and not in boot mode as a result of a failed flash (error \$0340) or forced boot mode. Where the ECM is in boot mode, the unlock process is bypassed and two-step flash process is required to remove the digital signature.

1. Recover the ECM by flashing a stock tune to restore the ECM to operational mode.
2. Flash the ECM to remove the digital signature.

## Security Gateway Module

In 2018 Dodge implemented an additional anti-tuning security measure via the security gateway module. Customers will need to bypass this module by installing a Security Gateway Module bypass cable (SGM bypass cable).

The SGM bypass cable requires users to replace the two CAN wires in the factory OBD-II port and connect the bypass cable into the large white connector just above the OBD-II port in any of the available slots. This cable remains permanently in the truck and does not need to be removed after flashing.

The OBD-II port will retain all normal functionality, and only bypasses the SGM to allow flashing to the ECM.

Where the SGM module is detected and a bypass cable is not in place, the following error will be displayed when the flash is aborted.

*Aborting Flash: SGM Detected*

*Please: Wait...*

*Script exited with code \$0333: Security Access Denied (\$33).*



## Finding the Correct Base File

For controllers that support reading, EFILive recommends reading the vehicle's controller to obtain a suitable base file.

For controllers that do not support reading, the following instructions will help you to determine the base tune file that should be used for editing.

Because you cannot read the existing tune in the ECM it is important you select the correct base tune to suit your vehicle.

EFILive does not provide stock tunes or modified tunes. There are a variety of stock tunes available on the internet. Custom stock tunes can be purchased through organizations that have the necessary hardware and software to create personalized base files.

There are a number of methods to find the calibration details of the tune presently in the ECM. Customers can choose which method best suits their needs.

### ECM Label Identification

Locate the label on the ECM and document the E/C part number.

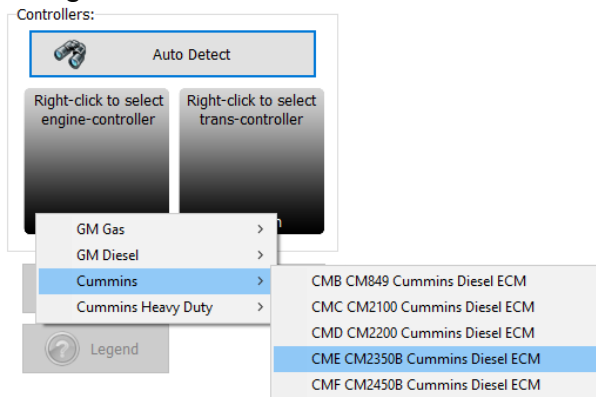


In this example, D090072 refers to the calibration configuration and .04 refers to the fourth revision.

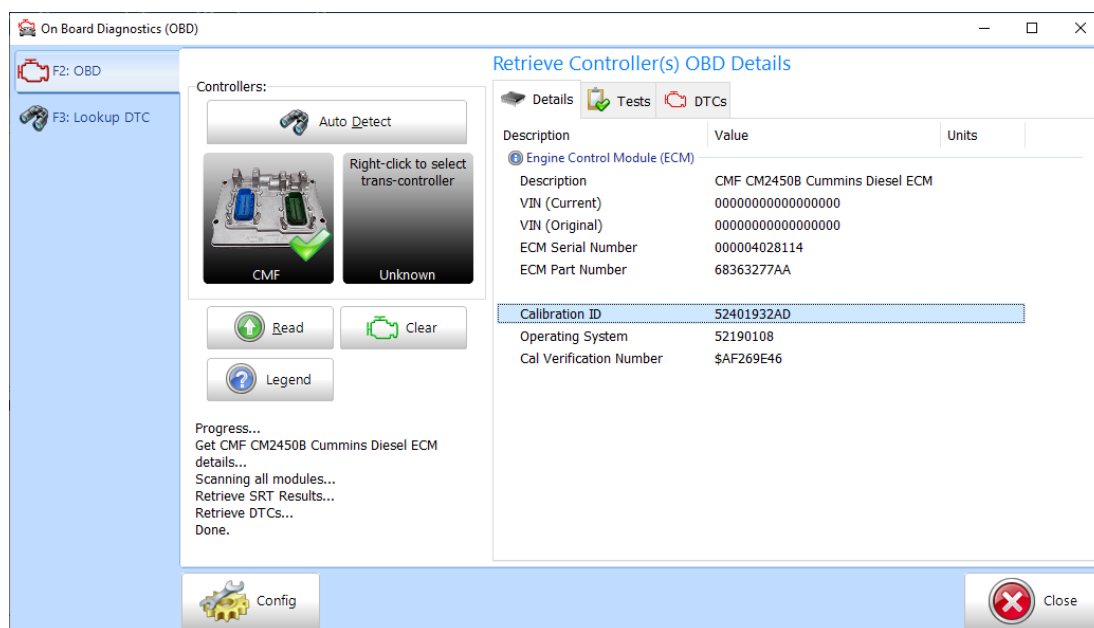
Provide this information to your tuner for correct base file identification.

## V8 Scan and Tune

1. Open the EFiLive V8 Scan and Tune software.
2. Connect your FlashScan/AutoCal device to your PC and vehicle.
3. Turn the vehicle ignition to the *On* position.
4. Navigate to the [F4: OBD] -> [F2: OBD] menu option and select the [Details] tab.
5. Select your controller(s) by using the [Auto Detect] button, or;
  - a. Hover over the Engine Controller box, and right click on the “Right-click to select engine-controller” box and manually select the ECM.
  - b. Navigate and select the correct controller.



6. Click the [Read] button to populate controller data.
7. Copy or record the Calibration ID to use in the “Match Calibration Requirements” step later in this document.



## FlashScan/AutoCal V3

1. Connect your FlashScan/AutoCal V3 device to your vehicle.
2. Turn the vehicle ignition to the *On* position.

### Option 1: Display VIN/Info

3. Navigate to the Diagnostics -> F1 Display Info -> F1: Display VIN Info menu option.
4. Select correct controller type from list of controllers.

5. Copy or record the Calibration ID to use in the "Match Calibration Requirements" step later in this document.

### Option 2: Record All Diagnostics

3. Navigate to the Diagnostics -> F4 Record All Diags menu option.
4. FlashScan/AutoCal will display the file name that is saved onto the device.
5. Retrieve the text file by connecting FlashScan/AutoCal as a USB thumb drive.
6. Open the text file and view the calibration information using Windows notepad.

## FlashScan V2

1. Configure FlashScan V2 for BBX features if not already setup.
2. Connect your FlashScan V2 device to your vehicle.
3. Turn the vehicle ignition to the *On* position.
4. Navigate to the F1: Scan Tool -> F1: Select PIDs menu option.
5. Select correct controller type from BBX configured controllers.
6. Return to the main menu.

### Option 1: Display VIN/Info

7. Navigate to the F3: Diagnostics -> F1 Display Info -> F1: Display VIN Info menu option.
8. Record the details displayed in the Cal: field to use in the match calibration requirements step.

### Option 2: Record All Diagnostics

7. Navigate to the F3: Diagnostics -> F4 Record All Diags menu option.
8. FlashScan will display the file name that is saved onto the device.
9. Retrieve the text file using EFILive Explorer. The file is stored in the scan directory. The relevant file can then be transferred to PC
10. Open the text file and view the calibration information using Windows notepad.

## AutoCal V2

1. Configure AutoCal V2 for BBX features if not already setup.
2. Connect your AutoCal V2 device to your vehicle.
3. Turn the vehicle ignition to the *On* position.
4. Navigate to [Scan Tool] -> [Select PIDs] menu
5. Select correct controller type from BBX configured controllers.
6. Return to the main menu.

### Option 1: Display VIN/Info

7. Users can navigate to a range of options using the [Next] button. The following options are available:

"Scan Tool"->"Display VIN"

"Scan Tool"->"Display OS"

"Scan Tool"->"Display SN"

"Scan Tool"->"Display Cal ID"

Where the display information exceeds 8 characters, a ">" character is displayed at the end of the data prompting the user to press [Next] to scroll the data horizontally. The "<" character indicates that the user can press the [Prev] key to scroll the data back again.

8. Record the details displayed in the **Cal ID:** field to use in the match calibration requirements step.

### Option 2: Record All Diagnostics

7. Navigate to the [Record Diags] menu to save the text file. AutoCal will display the file name that is saved to the device.
8. Retrieve the text file using EFILive Explorer. The file is stored in the scan directory. The relevant file can then be transferred to PC.
9. Open the text file and view the calibration information using Windows notepad.

## Match Calibration Requirements

1. Using one of the identification methods above, either:
  - a. Provide the Cummins ECM Code (E/C) to your tuner for correct base file identification; or
  - b. Match the calibration ID against the base \*.ctz files.

EFILive Tune Tool [CME.ctz]

Calibration Summary:

Description	Value
Controller Description	CME CM2350B Cummins Diesel ECM
Controller Code	CME
Operating System	34140100
Calibration ID	34320261AE
VIN	.
Cummins ECM Code	DO90018.06 BDC
Trans Code ID 1	C2314P08V08.0_ENGVXX.X_T45V08.0
Trans Code ID 2	11P1V03
Controller Manufacturer	Continental
Controller Hardware Specs	Qoriva MPC5674F, 4MB Flash

Segment Description

Segment Description	Part#	Checksum	Comments
Internal Flash	34320261AE	\$C1FCE957	

2. Once you find a matching tune this can now become your base file should you ever need to revert back to a stock tune.

**For CMD, CME and CMF you cannot save the tune already installed in the ECM, once you flash over it, it is gone forever, so choose your base tune wisely.**



## Licensing Requirements

To Flash a Dodge Cummins ECM, the following licensing conditions must be met:

1. The Dodge Cummins Tuning Option must be enabled.
2. A VIN License must be available (if not already licensed).

### Dodge Cummins Tuning Option Enabled

To ensure that your device is licensed to tune Dodge Cummins vehicles:

1. Connect your FlashScan or AutoCal device to your PC.
2. Open the EFILive Scan and Tune application.
3. Select the [F7: License] option in the left-hand pane.
4. Select [F2: Hardware] to display Tuning License details.

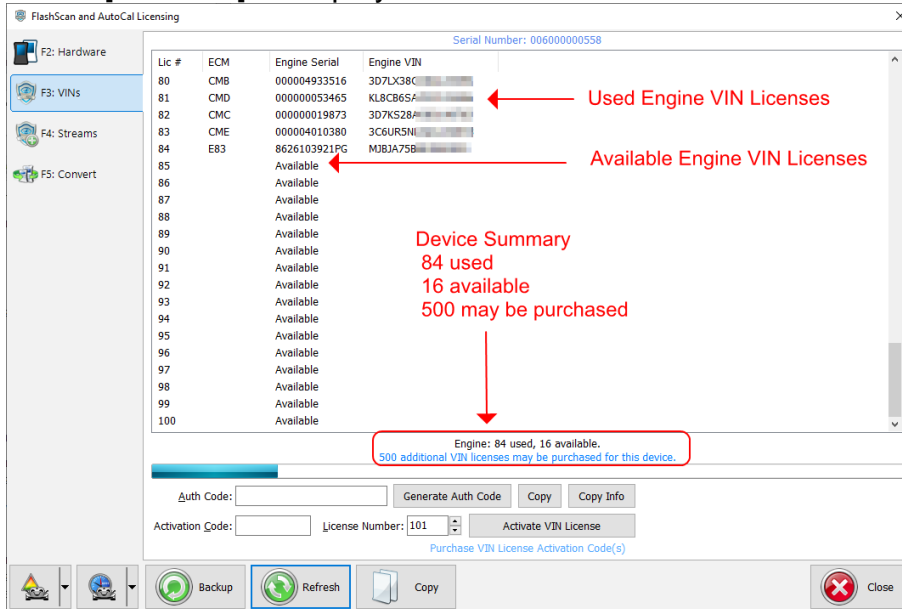
3. To purchase Tuning Options FlashScan, click on the **Purchase Tuning License Activation Code(s)** link to order products. NOTE: The Cummins Tuning Option is included on AutoCal devices, if this is not active, please contact support.
4. Enter the activation code that was emailed to you and click the Activate button.

### VIN Licensing

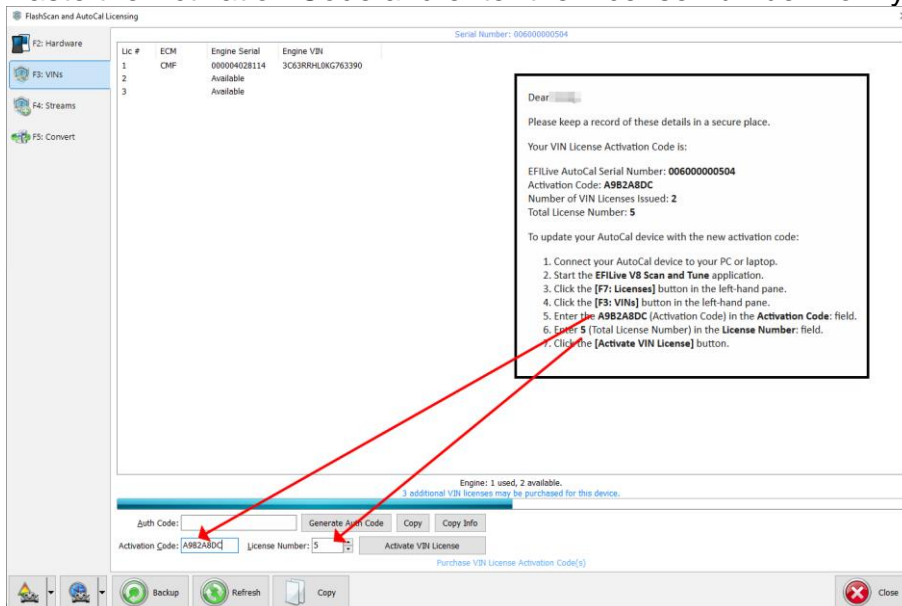
Each additional vehicle that you tune requires an available VIN license. The license is allocated during the flashing process. Reflashing the same controller multiple times using the same FlashScan/AutoCal uses the same license each time.

To check that you have an available VIN license to allocate to your vehicle, perform these steps.

1. Connect your FlashScan or AutoCal device to your PC.
2. Open the Efilive Scan and Tune application.
3. Select the [F7: License] option in the left-hand pane.
4. Select [F3: VINs] to display VIN License details.



5. To purchase additional VIN Licenses, click on the **Purchase Activation Code(s)** link to order products. NOTE: AutoCal Users should contact their Tuner before purchasing additional VIN licenses to manage the AutoCal's maximum VIN license capacity and tune file compatibility.
6. Paste the Activation Code and enter the License number from your email.





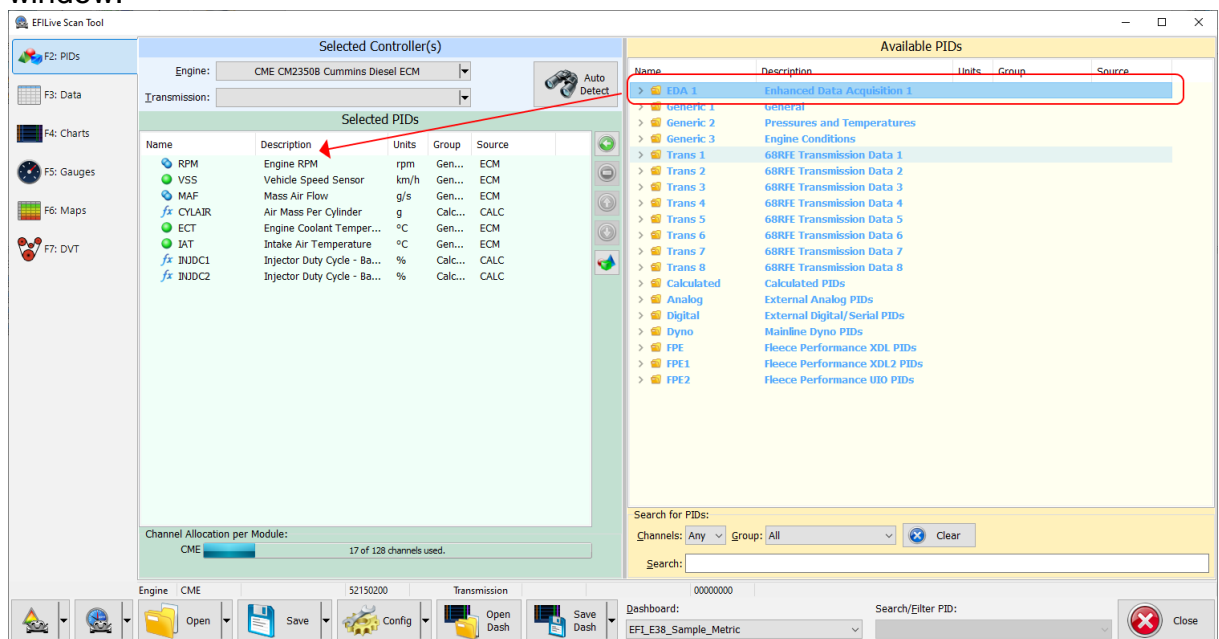


## V8 Scan and Tune Scan

### Pass-Thru Data Logging

To log data using FlashScan or AutoCal and V8 Scan and Tune software;

1. Open the Efilive V8 Scan and Tune.
2. Connect your FlashScan/AutoCal device to your PC and vehicle.
3. Turn the vehicle ignition to the *On* position.
4. Select an existing Dashboard configuration either by using the [Open Dash] button or using the Dashboard drop down, or configure your own customized dashboard after making controller and PID selections.
5. Navigate to the [F2: Scan] -> [F2: PIDs] menu option.
6. In the Engine field use the drop-down list to select the correct controller type or use Auto Detect option.
7. Drag the selected PID from Available PIDs window into the Selected PIDs window.



8. Navigate to the [F3: Data], [F4: Charts], [F5: Gauges] or [F6: Maps] tab and configure your dashboard to customize data display formats.
9. Users should [Save Dash] to save their custom configurations to reduce future configuration requirements.
10. Start the vehicle.
11. Select either Record or Monitor from the [F3: Data], [F4: Charts], [F5: Gauges] or [F6: Maps] screens.
12. Select Stop to stop the data logging session.
13. Save the log.
14. To replay the data log, navigate to the [F3: Data], [F4: Charts], [F5: Gauges] or [F6: Maps] tab and select the appropriate Playback buttons.



**Important note for tuners:**

If running a CSP<sup>5</sup> tune and it does not seem to be switching as expected please check the data in the "AIRDENS\_F" PID. For CSP<sup>5</sup> to work correctly the "AIRDENS\_F" PID must be in 'Normal Mode.' If any other modes are active (e.g. Protection Mode) then the ECM will not be using normal Altitude based tables, and therefore will not be using the CSP<sup>5</sup> tables.

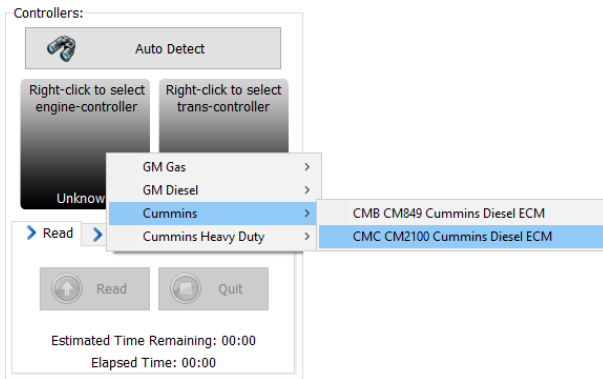
**Protection Mode is a direct result of tuning strategy or DPF regen states.**

▼ ● AIRDENS_F	Altitude Tables Active	EDA 1	ECM
> Mode7	Cranking	EDA 1	ECM
> Mode6	Base Only Mode	EDA 1	ECM
> Mode5	Normal Mode	EDA 1	ECM
> Mode4	SCR Mode	EDA 1	ECM
> Mode3	Overheating Control 2	EDA 1	ECM
> Mode2	Overheating Control 1	EDA 1	ECM
> Mode1	Flow Control	EDA 1	ECM
> Mode0	Protection	EDA 1	ECM

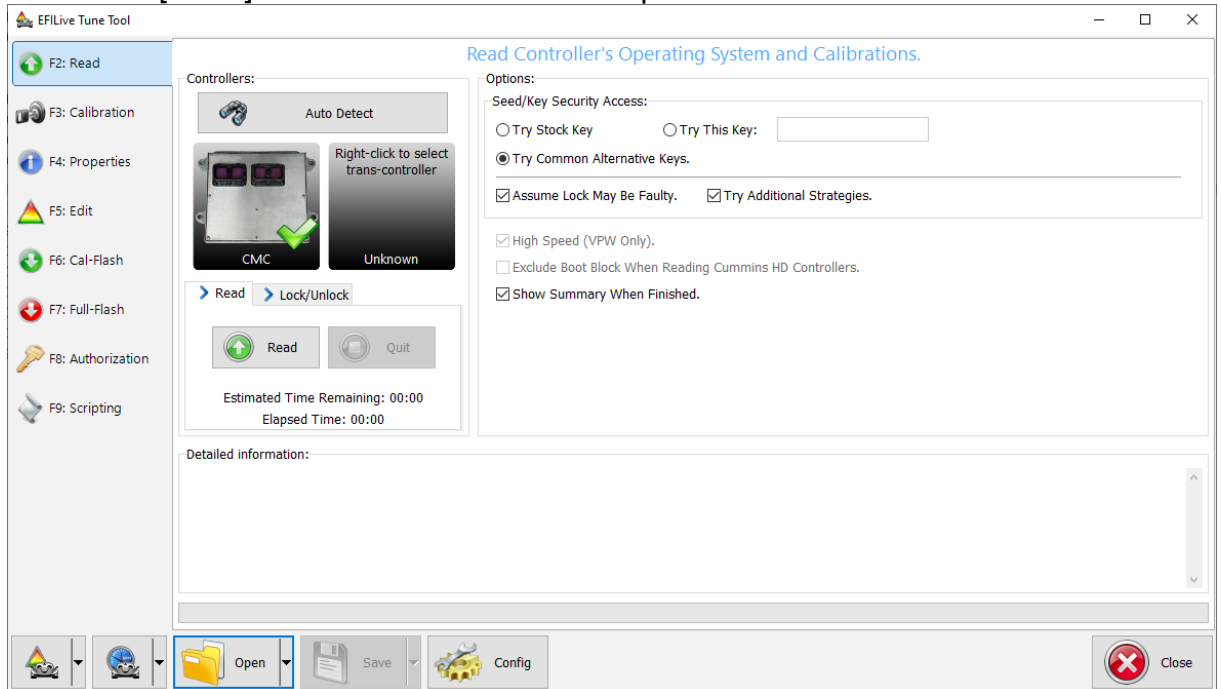
**Pass-Thru Read a Controller (CMB and CMC only)**

Follow these steps to read the selected controller.

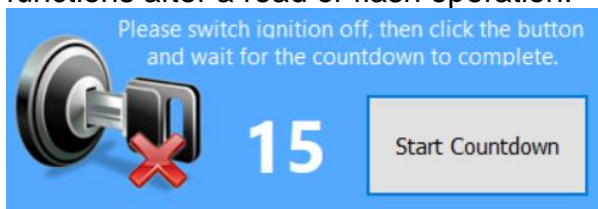
1. Connect your FlashScan/AutoCal device to your PC and vehicle.
2. Turn the vehicle ignition to the *On* position (vehicle must not be cranked/running when reading).
3. Open the EFILive V8 Scan and Tune application.
4. Select the [F3: Tune] option in the left-hand pane.
5. On the [F2: Read] menu, select your controller(s) by using the [Auto Detect] button, or;
  1. Hover over the Engine Controller box, and right click on the "Right-click to select engine-controller" box and manually select the ECM.
  2. Navigate and select the correct controller.



6. Select the [Read] button to initiate the read operation.



7. While the ECM is reading an Elapsed time indicator, an Estimated Time Remaining indicator, and a Progress bar will display tracking the Read progress.
8. When the read process is complete a countdown timer will be shown. When prompted perform the following actions:
  1. Turn the vehicle ignition off.
  2. Click on the Start Countdown button to begin the countdown timer.
  3. DO NOT turn the vehicle ignition on until the countdown timer expires. This time is critical to allow the ECM to perform internal, initialization functions after a read or flash operation.



9. On the [F3: Calibration] tab, confirm Checksums are valid. Where the checksums are invalid, users should not use the file and should source a calibration file where checksums are valid.
10. If checksums are valid, save tune file. If this is your vehicle's stock calibration, you should ensure you make a backup of this file in case you ever need to return the vehicle to stock.

## Edit a Tune File

Follow these steps to modify your ECM calibration.

1. Open the Efilive V8 Scan and Tune application.
2. Navigate to the [F3: Tune] -> [F5: Edit] menu in the left-hand pane.
3. Open your selected tune file.
4. On the [F3: Calibration] tab, confirm Checksums are valid. Where the checksums are invalid, users should not use the file and should source a calibration file where checksums are valid.
5. Navigate to the table(s) you wish to modify by using the Windows Explorer style navigation window.
6. Highlight a cell, multiple cells, columns, rows or the entire table and adjust the values using the calibrator editor icons.

The screenshot displays the Efilive Tune Tool interface. On the left, a navigation pane shows the 'F5: Edit' tab selected, with a tree view under 'Internal Flash' containing 'Main Timing, Base'. The main window features a 3D surface plot of the 'Main Timing, Base' table, with axes for Torque or Fuel (mg/stroke) and RPM. Below the plot is a data table with the following structure:

	0.0	15.0	35.0	45.0	50.0	55.0	65.0	77.0	85.0	90.0	98.0	110.0	115.0	130.0	140.0	145.0
600	2.2	2.0	2.1	1.3	0.5	-0.1	-0.6	-1.1	-2.0	-2.1	-2.3	-1.2	-0.7	0.7	2.0	3.0
700	2.2	2.0	1.6	0.3	-0.5	-1.3	-1.3	-1.7	-2.0	-2.3	-2.7	-1.7	-1.2	0.2	1.6	2.5
800	2.2	2.0	1.6	0.1	-0.8	-1.5	-2.0	-2.0	-2.0	-2.3	-2.7	-1.7	-1.2	0.2	1.6	2.5
1000	1.6	1.0	0.3	-1.1	-1.5	-1.5	-1.5	-1.0	-1.0	-1.0	0.5	1.7	2.0	3.0	4.0	4.0
1100	1.6	0.9	-0.1	-1.6	-1.5	-1.5	-1.5	0.0	0.0	0.0	2.0	4.0	4.0	4.0	4.0	4.0
1200	1.6	0.9	-0.1	-1.7	-1.5	-1.3	0.5	0.5	0.5	0.5	2.5	4.0	4.0	4.0	4.0	4.0
1400	1.9	0.9	-0.1	-1.8	-1.5	-1.0	1.0	1.0	1.0	1.0	2.5	3.0	3.0	3.0	3.0	3.0
1600	1.9	0.8	-1.1	-1.9	-1.5	-1.2	0.0	0.0	0.0	0.0	1.0	2.5	2.3	2.3	2.3	2.3
1700	1.9	0.8	-1.5	-1.9	-1.5	-1.2	-1.0	-1.0	-1.0	-1.0	0.5	1.0	2.4	2.0	2.0	2.0
1800	1.9	0.8	-1.5	-1.9	-1.5	-1.2	-1.4	-1.4	-1.2	-1.0	-0.2	0.3	1.0	1.6	2.0	2.0
1900	1.9	0.8	-1.7	-2.0	-1.5	-1.4	-1.4	-1.4	-1.4	0.0	0.5	2.0	2.0	1.6	1.5	1.5
2100	2.1	0.8	-1.9	-2.0	-1.5	-1.2	0.0	0.0	0.8	1.3	1.9	2.6	2.8	3.0	3.0	3.0
2200	2.1	0.9	-1.9	-2.0	-1.5	-1.2	0.0	0.0	0.8	1.3	1.9	2.9	3.5	5.0	5.0	5.0
2400	2.5	1.3	-1.5	-2.0	-1.5	-1.2	-0.5	0.0	2.0	3.0	3.8	5.5	7.2	7.7	7.7	7.7

7. A range of tune file security options can be applied using the options in the [F3: Tune] -> [F4: Properties] -> Security Restrictions tab.

The screenshot shows the 'Security Restrictions' tab in the Efilive Tune Tool. It contains several sections for configuring security settings:

- Master FlashScan License:** 0. Includes a 'Clear All Security Restrictions' button.
- Security settings only become permanent once the file has been saved, closed and re-opened.**
- Calibration Privacy:**
  - Can be Viewed and Modified
  - Can Only be Viewed
  - Cannot be Viewed or Modified
- Encryption:**
  - Securely Encrypt File (Requires a FlashScan V3 device to be connected.)
  - For Use With V2 and/or V3 Devices
  - For Use With V3 Devices Only
- Reflash Security:**
  - Can be Calibration-Flashed or Full-Flashed
  - Can Only be Calibration-Flashed
  - Can Only be Full-Flashed
  - Auto-Lock Controller During Flashing
- Device and Controller Restrictions:**
  - Device License: 0. Only FlashScan/AutoCal devices with this license number can flash this file.
  - Device Serial: 0. Only FlashScan/AutoCal devices with this serial number can flash this file.
  - Controller Serial: 0. Only controllers with this serial number can be flashed with this file.
  - Controller VIN: 0. Only controllers that have a matching VIN can be flashed with this file.
  - Target OS: 0. Override OS compatibility restrictions. (Requires a FlashScan device with a Pro Tuning License to be connected before opening the tune file.)

8. Save changes to the tune file by using the Save tuning file, Save tuning file as, or Save tuning file for AutoCal options.

If using the Save option, ensure you have a copy of your stock tune saved elsewhere.

Save tuning file as, and Save tuning file for AutoCal options automatically appends a sequence number to the filename to make it unique giving users a history of sequentially numbered files with each saved change made. A FlashScan device must be connected to save security and/or AutoCal options.

### Cummins Fuel Timing Calculator

To open the CFTC, click this icon in the tool bar:



The icon is only enabled when one of the fuel timing tables is displayed for editing.

When you open the CFTC window, the table is pre-populated with the correct percentages that are required to calculate the currently displayed timing table values. That allows you to evaluate the existing injection pulse timing. After you have made any changes to the CFTC table, click the [Apply] button. Applying the changes will update the underlying fuel timing table so that the injection pulses are delivered at the timing selected in the CFTC window.

#### Minimum %

It is sometimes required that the minimum timing does not fall below a certain percentage. In that case, check the Minimum % check box in the lower left corner of the calculator window. And set the minimum percentage value.

Setting that value will not change any values displayed in the timing calculator, instead it will simply force the calculator to compute timing values that are never less than the percentage value specified when the [Apply] button is clicked.

For example, setting the Minimum % to 5 will force the calculator to treat all cells' values that are less than 5% as if they were 5% when computing the fuel timing.

Minimum %:

#### How does it work

When fuel is injected, the injection pulse width is some number of micro seconds. Some tuners would like to set the fuel timing so that the injection pulse will start at a given crankshaft position relative to top dead center (TDC) of the piston.

The CFTC allows you to specify the percentage of the injection pulse width that will occur before top dead center (positive values), exactly at top dead center (0) or after top dead center (negative values).

For example, assuming the injection pulse width for a particular cell is calibrated at 500us (500 micro seconds), then the following percentages in the fuel timing calculator will result in the injection pulse starting at various crank shaft degrees for 1000rpm and 2000 rpm:

Fuel Timing %	Injection Start us	Degrees @1000rpm	Degrees @2000rpm	Relative to TDC
200%	1000	6.0	12.0	Before TDC
100%	500	3.0	6.0	Before TDC
50%	250	1.5	3.0	Before TDC
0	0	0.0	0.0	At TDC
-50%	-250	-1.5	-3.0	After TDC
-100%	-500	-3.0	-6.0	After TDC
-200%	-1000	-6.0	-12.0	After TDC

Looking at the second row, a percentage of 100% means that the injection pulse starts 100% of the pulse width before TDC. Since the pulse width is 500us, the injection start time should be 500us (100% of 500us) before TDC. At 1000rpm that would be 6 degrees before TDC, at 2000rpm that would be at 12 degrees before TDC.

Looking at the fifth row, a percentage of -50% means that the injection pulse starts 50% of the pulse width after TDC. Since the pulse width is 500us, the injection start time should be 250us (50% of 500us) after TDC. At 1000rpm that would be 3 degrees after TDC, at 2000rpm that would be at 6 degrees after TDC.

### Related Tables

The CFTC uses values from two other related tables. Those tables will usually be different for each timing table. The names of the related tables are shown in the CFTC window's description pane. If the values in those related tables are not accurate then the calculator may not produce accurate results. For example, if you were working with the timing table E2503, the related tables are: {D0508} "Injection Pulse Conversion" and {D0782} "Fuel Pressure, Base". The first column of data in {D0508} may be calibrated to be all zeros which will cause this calculator to set the corresponding first column of data in {E2503} to be all zeros.

You may prevent the calculator from adjusting any cells by selecting only those cells in this table that you want updated before clicking on the [Apply] button. If no cells (or all cells) are selected in this table, then the entire table will be updated.

### Technical details

The CFTC computes the fuel timing percentages from the fuel timing degrees using the following equation:

$$\% = t / (us * rpm * 0.00000006)$$

The CFTC computes the fuel timing degrees from the fuel timing percentages using the following equation:

$$t = \% * (us * rpm * 0.00000006)$$

Where:

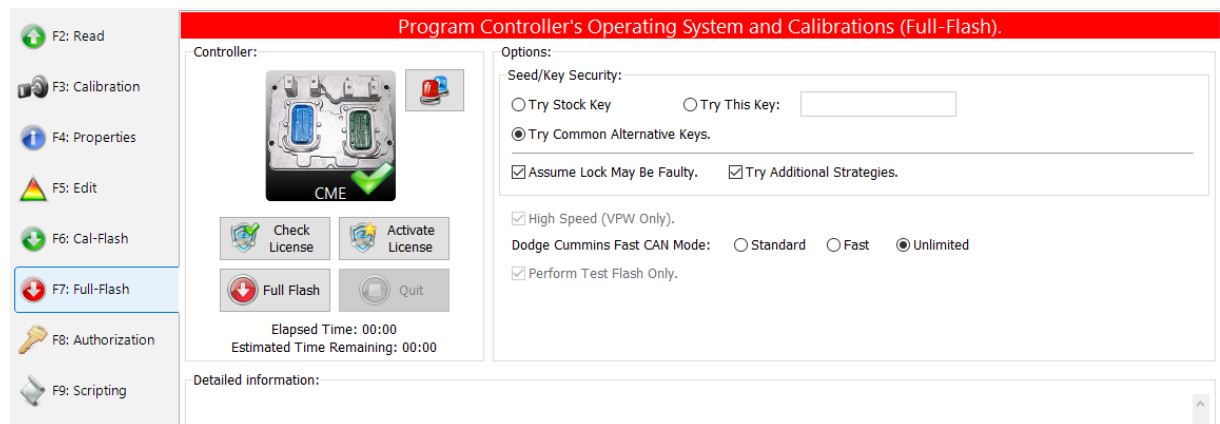
- **t** is the injection timing in degrees of crankshaft rotation.
- **us** is the injection pulse width in microseconds.
- **rpm** is the engine speed.

## Pass-Thru Licence and Flash a Controller

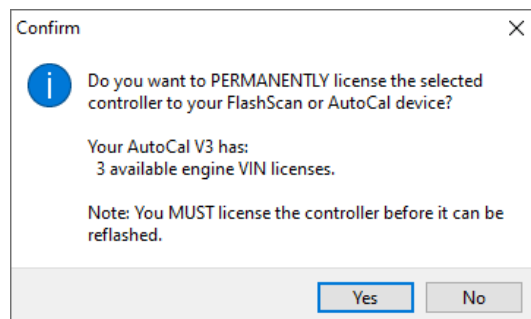
Follow these steps to license and flash the selected controller.

1. Open the EFILive Scan and Tune application.
2. Connect your FlashScan/AutoCal to your PC and your vehicle.
3. Turn the vehicle ignition to the *On* position, (not the Accessory position. Vehicle must not be cranked/running when flashing).
4. Select the [F3: Tune] option in the left-hand pane.
5. Click on the Open button and select the calibration file for the controller you wish to flash or license.
6. If tune file security has been applied to the tune file, review and accept the Security Warning.
7. Click on the [F7: Full Flash] options in the left-hand pane.
8. Adjust Dodge Cummins Fast CAN Mode settings where necessary;
  - a. Unlimited Fast CAN delivers the fastest possible flash time and is approx. 50% faster than standard flash routines.
  - b. Fast CAN is a little faster than standard, but more robust than Unlimited.

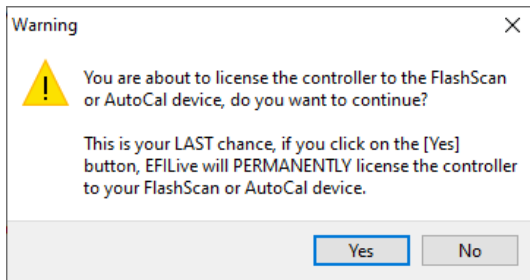
If you experience flash failures when using Unlimited Fast Can or Fast CAN, try unchecking that option and retry the flash.



9. Click on the Check License button. This will indicate if the controller is already licensed or needs to be licensed.
10. Where the controller is NOT licensed, select Activate License to license the controller.
11. Select Yes to license the controller or No to close this window without licensing the controller.



12. Select Yes to license the controller or No to close this window without licensing the controller.



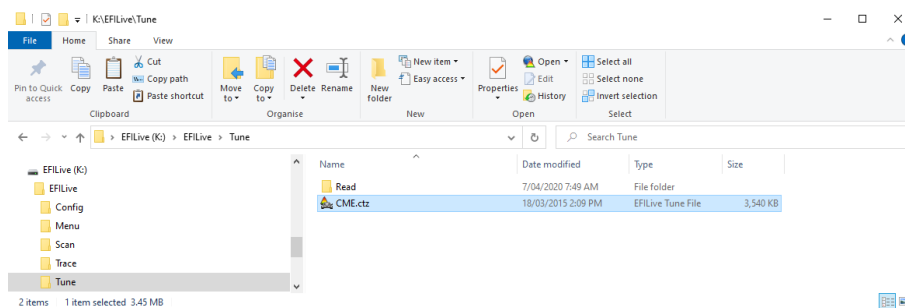
13. Select the Full Flash button to commence the flash.
14. While the ECM is flashing an Elapsed time indicator, an Estimated Time Remaining indicator, and a Progress bar will display tracking the Flash progress.
15. When the flash process is complete a countdown timer will be shown. When prompted perform the following actions:
  - a. Turn the vehicle ignition Off.
  - b. Click on the Start button to begin the countdown timer.
  - c. DO NOT turn the vehicle ignition on until the countdown timer expires. This time is critical to allow the ECM to perform internal, initialization functions after a read/flash operation.

## Move Tune and Log files from FlashScan/AutoCal to your PC

### FlashScan/AutoCal V3

#### Connect FlashScan/AutoCal V3 as a USB Thumb Drive to Windows Explorer

1. To move tune files and log files from FlashScan V3 onto your PC;
2. Connect FlashScan V3 to your PC.
3. On FlashScan V3 navigate to Options -> File System -> USB Thumb Drive.
4. Using Windows Explorer, locate the files you wish to copy in the correct folder of your FlashScan V3 and copy or drag the files into the desired folder on your PC.



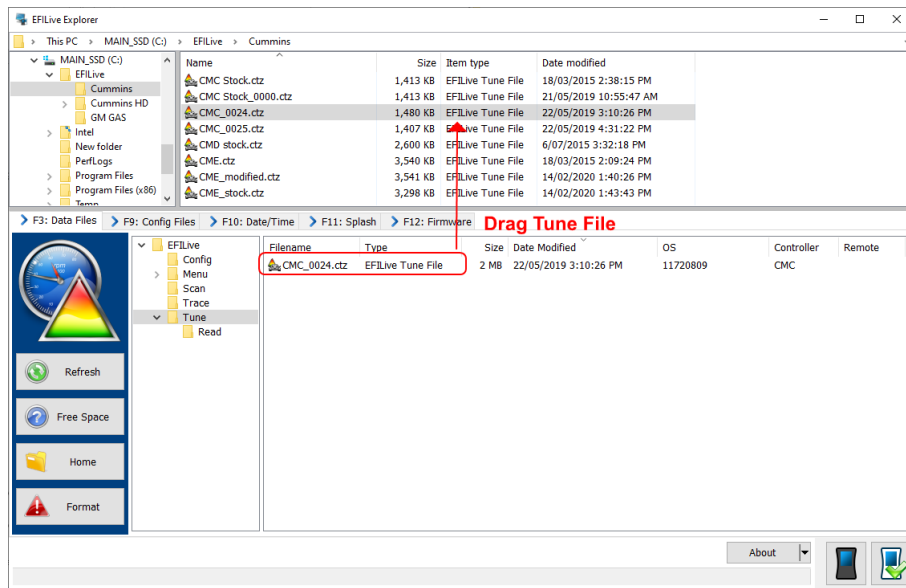
### EFILive Explorer

To move tune files and log files from FlashScan/AutoCal V3 to your PC;

1. Connect FlashScan/AutoCal V3 to your PC.
2. Open EFILive Explorer.
3. Navigate to the directory on your PC where you wish to save the file.
4. Navigate to: [F3: Data Files].



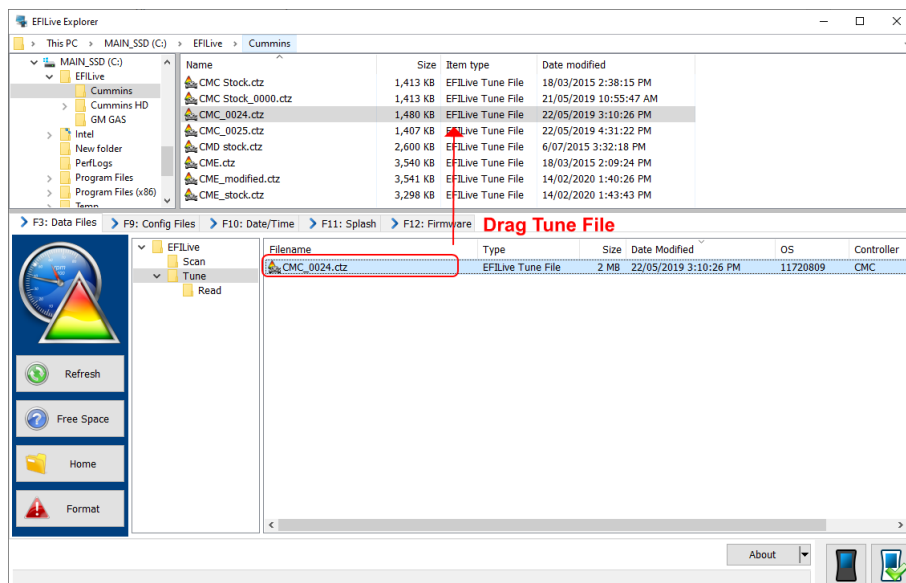
5. Select appropriate folder on your FlashScan device and drag the selected file to your PC.



## FlashScan/AutoCal V2

To move tune files and log files from FlashScan/AutoCal V2 to your PC;

1. Connect FlashScan/AutoCal V2 to your PC.
2. Open EFILive Explorer.
3. Navigate to the directory on your PC where you wish to save the file.
4. Navigate to: [F3: Data Files].
5. Select appropriate folder on your FlashScan device and drag the selected file to your PC.



Once tune and log files are copied from your FlashScan/AutoCal to your PC, they can be opened/viewed using EFILive Scan and Tune.



## Configure FlashScan/AutoCal for BBX

There are a range of configuration files that must be installed on FlashScan and AutoCal devices before the device can be used in standalone mode (BBX).

Follow these instructions to configure your FlashScan or AutoCal for BBX.

1. Connect your FlashScan or AutoCal to your PC.
2. Open the EFiLive V8 Scan and Tune application.
3. Select the [F5: BBX] option in the left-hand pane.

### EDA Data Logging

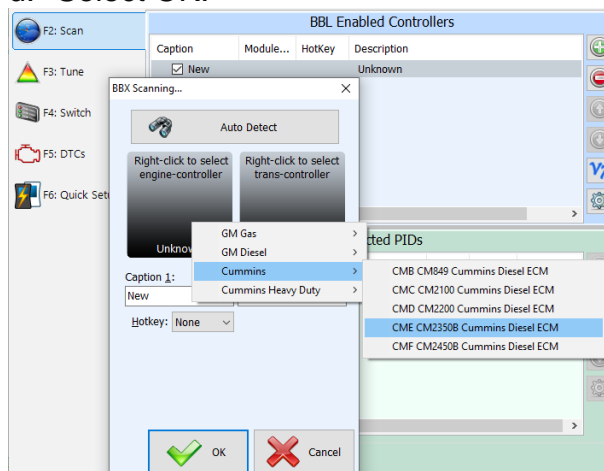
The EDA PID group aims to simplify the task of information sharing between users as every individual data parameter has been selected with tuning feedback in mind. If you choose to log additional data streams alongside the EDA stream it may slow the data logging rate down by as much as 70%.

For FlashScan V2 and AutoCal V2, BBL is only supported where CSP<sup>5</sup> and EDA are installed.

For FlashScan V3 and AutoCal V3, BBL is supported regardless of whether CSP<sup>5</sup> is installed.

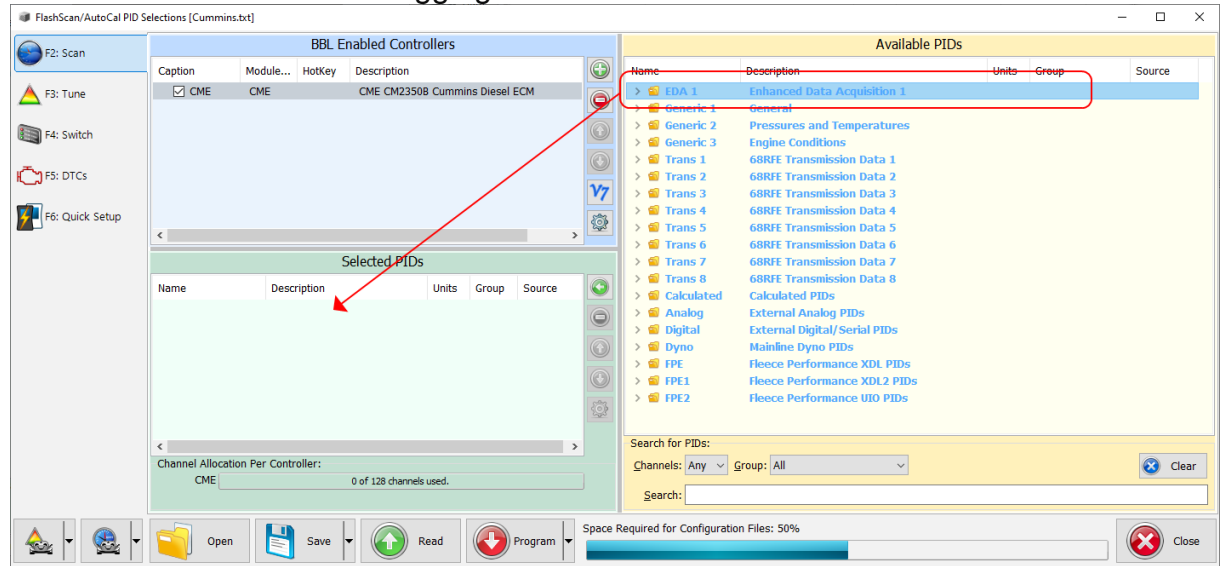
To configure data logging;

1. Select the [F2: Scan] option in the left-hand pane.
2. Remove any unnecessary controller configurations to ensure capacity restrictions are not exceeded.
3. Add your chosen controller(s) to your list;
  - a. Press the green '+' icon.
  - b. Right click on the Engine Controller box.
  - c. Navigate to Select the correct controller.
  - d. Select OK.



4. Click on the selected controller in the "BBL Enabled Controllers" window.
5. Highlight the EDA 1 folder in the "Available PIDs" window and drag into the "Selected PIDs" window. \*NOTE: For FlashScan/AutoCal V2 BBL is only supported for Cummins Controllers that have CSP5 and EDA installed. Users

**MUST** select the entire EDA PID Group and flash a CSP5 operating system into the ECM for effective data logging.



## Configure Tuning

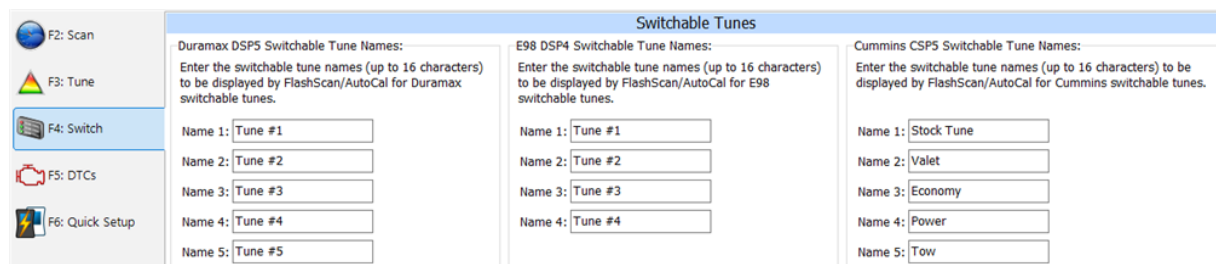
To configure flashing for your chosen controller on your FlashScan/AutoCal;

1. Select the [F3: Tune] option in the left-hand pane.
2. Remove any unnecessary controller configurations to ensure capacity restrictions are not exceeded.
3. Add your chosen controller(s) to your list;
  - a. Press the green '+' icon.
  - b. Right click on the Engine Controller box.
  - c. Navigate to select the correct controller.
  - d. Select OK.

## Tune File Switching

To configure the switching of CSP<sup>5</sup> tune positions on your FlashScan/AutoCal device;

1. Select the [F4: Switch] option in the left-hand pane.
2. Enter switchable tune names as appropriate.



## Configure DTCs

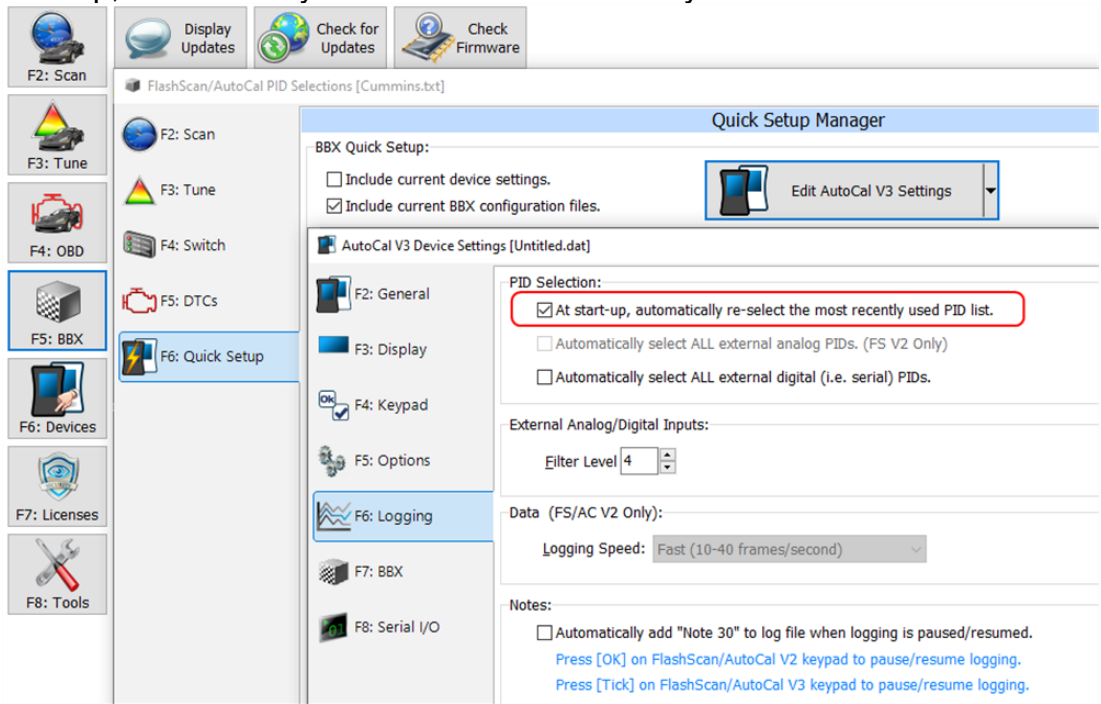
To configure the display of trouble codes and descriptions onto FlashScan;

1. Select the [F5: DTC's] option in the left-hand pane.
2. Select appropriate DTC options.

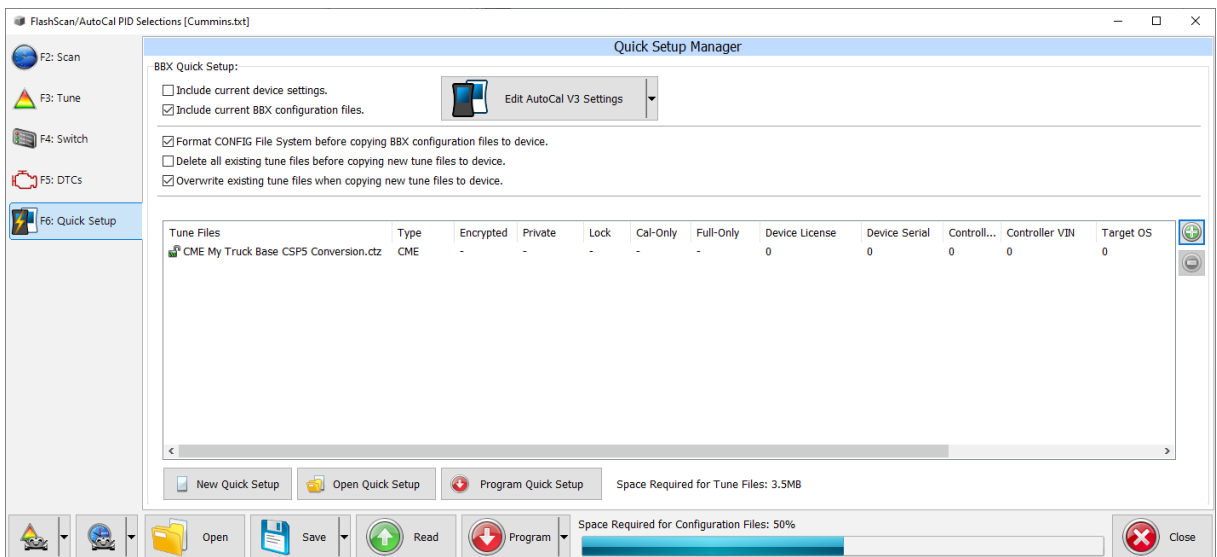
## Quick Setup

To configure BBX settings, device settings, and configure tune files for BBX;

1. Select the [F6: Quick Setup] option in the left-hand pane.
2. Select appropriate BBX configuration options.
3. Edit device settings as necessary. To automatically select the most recently used controller and PID selection when FlashScan/AutoCal powers up:
  - a. Selecting the correct hardware on the [F6: Quick Setup] -> [Edit AutoCal V3 Settings] button.
  - b. In the Device Settings window, navigate to [F6: Logging] and tick the “At start-up, automatically re-select the most recently used PID list.”



4. Add tune files to the **Quick Setup** using the green '+' icon.



5. Write this configuration to FlashScan or AutoCal using the [Program Quick Setup] function. The [Program Quick Setup] programs all selected Scan, Tune, Switch, and DTC options, as well as selected device settings, BBX Quick Setup selections and tune files. Once the device is programmed, FlashScan or AutoCal is configured for BBX functions.

Each option can be programmed individually using the [Program] button on each tab, or collectively using the [Program Quick Setup] option.



## FlashScan/AutoCal Menu Navigation

### FlashScan/AutoCal V3

FlashScan/AutoCal V3 supports two menu structures; the EFiLive standard menu and the user defined menu. Where a used defined menu is not installed, the EFiLive standard menu will be displayed.

#### Data Logging

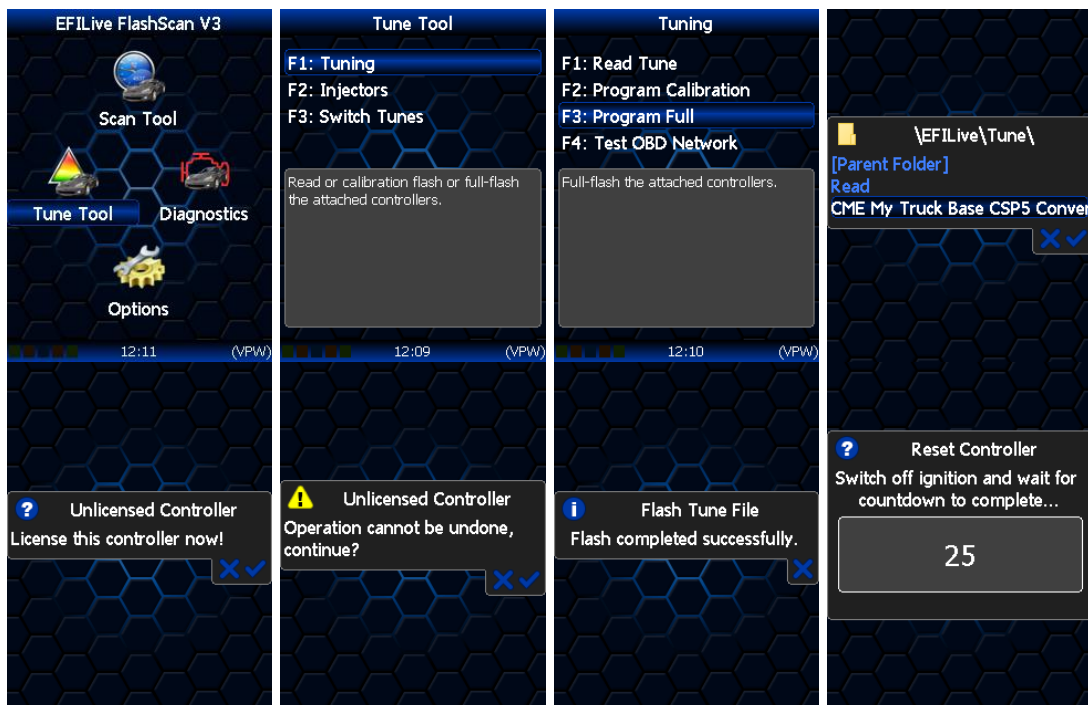
1. Configure FlashScan/AutoCal V3 for BBX features if not already setup.
2. Connect your FlashScan/AutoCal V3 device to your vehicle.
3. Turn the vehicle ignition to the *On* position.
4. Navigate to the Scan Tool -> F1 Select PIDs menu option.
5. Select correct controller type from BBX configured controllers.
6. Navigate to the F1 Scan Tool -> F2 Data Logging menu option.
7. Select F1: Record Data to commence the logging session.
8. The LCD will display recording status, elapsed time, frame count and the selected PIDs.
9. A range of options are available while the Log is recording:
  1. Select ✓ to pause/resume the log.
  2. Select the up and down arrows to navigate through selected PIDs.
  3. Select X, to stop data logging and save the logged data.
10. Start the vehicle and drive to record actual performance. Do not attempt to operate a FlashScan/AutoCal device while your vehicle is in motion.
11. Select X on FlashScan/AutoCal V3 to stop data logging and save the log file.

#### Read a Controller (CMB and CMC only)

1. Configure FlashScan/AutoCal V3 for BBX features if not already setup.
2. Connect your FlashScan/AutoCal V3 device to your vehicle.
3. Turn the vehicle ignition to the *On* position. (Vehicle must not be cranked/running when reading).
4. Navigate to the Tune Tool -> F1 Tuning -> F1 Read Tune menu option.
5. Select correct controller type from BBX configured controllers.
6. Click the ✓ button to initiate the read operation.
7. While the ECM is reading a Progress bar will display for the user to visually track the read.
8. When the read process is complete, the saved file name will display. Select **X** to close this message.
9. The **Reset Controller** notification will be shown, and the controller reset process will begin.
  1. Turn the vehicle ignition off.
  2. Click on the Start button to begin the countdown timer.
  3. **DO NOT** turn the vehicle ignition on until the countdown timer expires. This time is critical to allow the ECM to perform internal, initialization functions after a read or flash operation.

## License and Flash a Controller

1. Configure FlashScan/AutoCal V3 for BBX features if not already setup.
2. Copy selected tune file(s) from your PC to FlashScan/AutoCal V3 if not already copied via Quick Setup during step 1.
3. Connect your FlashScan/AutoCal V3 device to your vehicle.
4. Turn the vehicle ignition to the *On* position, (not the *Accessory* position. Vehicle must not be cranked/running when flashing).
5. Navigate to the Tune Tool menu and select F1: Tuning -> F3 Program Full menu option.
6. Navigate to the folder your tune file is located in and select ✓ to commence the flash.
7. If the controller has not been licensed by this device previously, you will be presented with an “Unlicensed Controller” message. Select ✓ to proceed with licensing the controller, or X to exit without licensing the controller.
8. Select ✓ to confirm licensing the controller and commence the flash, or X to exit without licensing the controller.
9. When the flash process is complete, select X to close the flash completed message.
10. The Reset Controller notification will be shown, and the controller reset process will begin.
  1. Turn the vehicle ignition Off.
  2. Click on the Start button to begin the countdown timer.
  3. DO NOT turn the vehicle ignition on until the countdown timer expires. This time is critical to allow the ECM to perform internal, initialization functions after a read or flash operation.



## Switch Tunes using FlashScan/AutoCal V3

1. Connect your FlashScan/AutoCal V3 device to your vehicle.
2. Turn the vehicle ignition to the *On* position.
3. Navigate to the **Tune Tool** menu and select **F3 Switch Tunes -> F1 Switch CSP5** menu option.

4. Use the arrows to navigate between tunes.
5. Press ✓ to make a tune selection.
6. You do not need to reselect the tune once the engine is shut down; the ECM 'remembers' which tune you previously selected.

## FlashScan V2

### Data Logging

1. Configure FlashScan V2 for BBX features if not already setup.
2. Connect your FlashScan V2 device to your vehicle.
3. Turn the vehicle ignition to the *On* position.
4. Navigate to the F1 Scan Tool - F1 Select PIDs menu option.
5. Select correct controller type from BBX configured controllers.
6. Navigate to the F1 Scan Tool - F2 Data Logging menu option.
7. Select F1: Record Data to commence the logging session.
8. The LCD will display the elapsed time, frame count and the selected PIDs.
9. A range of options are available while the Log is recording:
  1. Select OK to pause/resume the log.
  2. Select F1..F4 or Ctrl+F1..Ctrl+F4 to add "user notes" 1 thru 8 to the log.
  3. Select Enter to toggle between Metric and US Customary units.
  4. Select the up and down arrows to navigate through selected PIDs.
  5. Select Cancel, to stop data logging and save the logged data.
10. Start the vehicle and drive to record actual performance. Do not attempt to operate a FlashScan/AutoCal device while your vehicle is in motion.
11. Select Cancel on FlashScan V2 to stop data logging and save the log file.

NOTE: When data logging is activated you cannot return to the menu until logging is stopped.

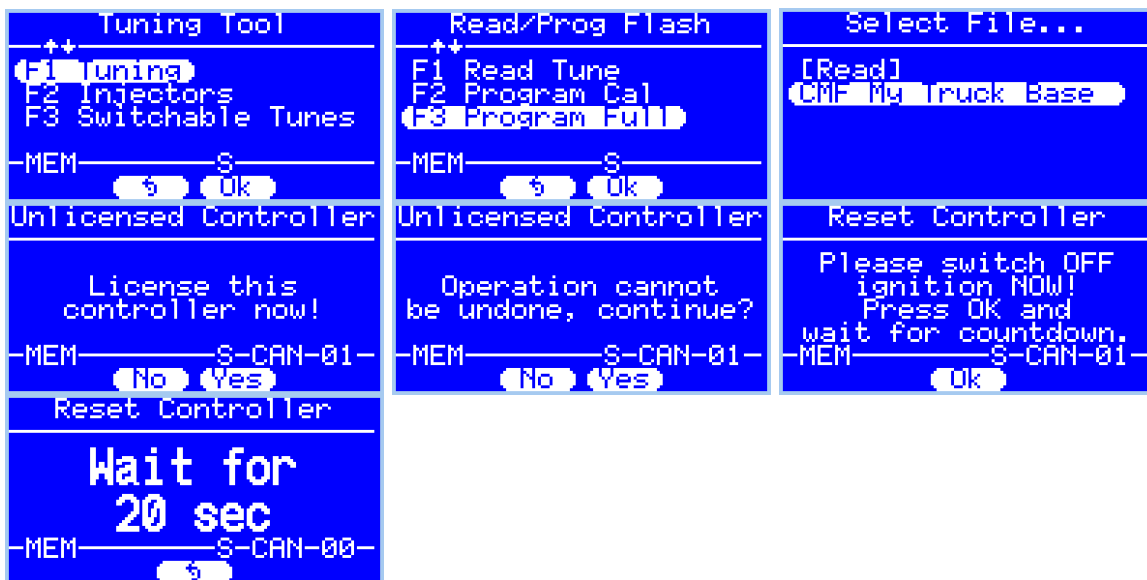
### Read a Controller (CMB and CMC only)

1. Configure FlashScan V2 for BBX features if not already setup.
2. Connect your FlashScan V2 device to your vehicle.
3. Turn the vehicle ignition to the *On* position. (Vehicle must not be cranked/running when reading).
4. Navigate to the F2 Tune Tool -> F1 Tuning -> F1 Read Tune menu option.
5. Select correct controller type from BBX configured controllers.
6. Click the OK button to initiate the read operation.
7. While the ECM is reading a Progress bar will display for the user to visually track the read.
8. When the read process is complete, the saved file name will display. Select OK to close this message.
9. The Reset Controller notification will be shown, and the controller reset process will begin.
  - a. Turn the vehicle ignition Off.
  - b. Click on the Start button to begin the countdown timer.
  - c. DO NOT turn the vehicle ignition on until the countdown timer expires. This time is critical to allow the ECM to perform internal, initialization functions after a read or flash operation.

### License and Flash a Controller

1. Configure FlashScan V2 for BBX features if not already setup.

2. Copy selected tune file(s) from your PC to FlashScan V2 if not already copied via Quick Setup in step 1.
3. Connect your FlashScan V2 device to your vehicle.
4. Turn the vehicle ignition to the *On* position (not the Accessory position. Vehicle must not be cranked/running when flashing).
5. Navigate to the F2 Tune Tool -> F1 Tuning and select F3 Program Full menu option.
6. Using the arrow keys, navigate to the correct tune file and select OK.
7. If the controller has not been licensed by this device previously, you will be presented with the License this controller now? message. Select Yes to license the controller or No to exit without licensing the controller.
8. Select Yes to confirm licensing the controller and commence the flash, or No to exit without licensing the controller.
9. When the flash process is complete the Reset Controller notification will be shown. When prompted perform the following actions:
  - a. Turn the vehicle ignition Off.
  - b. Click on the Start button to begin the countdown timer.
  - c. DO NOT turn the vehicle ignition on until the countdown timer expires. This time is critical to allow the ECM to perform internal functions after a read/flash operation.



### Switch Tunes using FlashScan V2

1. Connect your FlashScan V2 device to your vehicle.
2. Turn the vehicle ignition to the *On* position.
3. Navigate to the F2 Tune Tool -> F3 Switchable Tunes menu option
4. Select PIDs
5. Use the arrows to navigate between tunes.
6. Press OK to make a tune selection.
7. You do not need to reselect the tune once the engine is shut down; the ECM 'remembers' which tune you previously selected.





## AutoCal V2

### Data Logging

1. Configure AutoCal for BBX features if not already setup.
2. Connect your AutoCal device to your vehicle.
3. Turn the vehicle ignition to the *On* position.
4. Navigate to the Select PIDs menu option and select OK.
5. Select the correct controller type from BBX configured controllers and make a selection using the OK button. Where only one controller is in the BBX, executing the Select PIDs option will make that selection and return to the menu.
6. Navigate to the Record Data option and select OK to commence the logging session. AutoCal will display the following to commence the logging session;
  - a. Creating Log File.
  - b. Starting Scanner.
7. The Time indicator will increment to indicate recording has commenced.
8. Start the vehicle and drive to record actual performance.
9. Stop the vehicle and turn the ignition off prior to saving the log on AutoCal.
10. A range of options are available while the log is recording.
  - a. Select OK to pause/resume the log.
  - b. Select Next to scroll forward through the list of PIDs.
  - c. Select Prev to scroll backwards through the list of PIDs. Scrolling back to the very first entry displays "Exit", when "Exit" is displayed, click OK to stop data logging and save the log.

### Read a Controller (CMB and CMC only)

1. Configure AutoCal V2 for BBX features if not already setup.
2. Copy selected tune file(s) from your PC to AutoCal if not already copied via Quick Setup in step 1.
3. Connect your AutoCal device to your vehicle.
4. Turn the vehicle ignition to the *On* position (not the Accessory position. Vehicle must not be cranked/running when flashing).
5. Navigate using the arrow keys to the Read menu option.
6. Select the correct controller type from the previously configured BBX controllers in the Read 1-5 options. (NOTE: Unused Read options are hidden on the AutoCal Simple Menu).
7. Click the OK button to initiate the read operation.
8. When the read process is complete the following messages will be displayed.
  - a. Saving Wait
  - b. Checking
  - c. Saved as with file name displayed on the screen.

9. The Ignition Off NOW! notification will be shown, and the controller reset process will begin.
  - a. Turn the vehicle ignition Off.
  - b. Click on the Start button to begin the countdown timer.
  - c. DO NOT turn the vehicle ignition on until the countdown timer expires. This time is critical to allow the ECM to perform internal, initialization functions after a read or flash operation.

### License and Flash a Controller

1. Configure AutoCal for BBX features if not already setup.
2. Copy selected tune file(s) from your PC to AutoCal if not already copied via Quick Setup in step 1.
3. Connect your AutoCal device to your vehicle.
4. Turn the vehicle ignition to the *On* position (not the Accessory position. Vehicle must not be cranked/running when flashing).
5. Navigate using the arrow keys to Full 1-5 option. (NOTE: Unused Prog/Full options are hidden on the AutoCal Simple Menu).
6. Select the correct tune file from those listed and select OK.
7. If the controller has not been licensed by this device previously, you will be presented with the License controller message.
8. Select OK or Prev to exit without licensing the controller.
9. Select OK to license the controller and initiate the flash operation or Prev to exit without licensing the controller.
10. When the flash process is complete the Ignition Off NOW! notification will be shown. When prompted perform the following actions:
  - a. Turn the vehicle ignition off.
  - b. Click on the OK button to begin the countdown timer.
  - c. DO NOT turn the vehicle ignition on until the countdown timer expires. This time is critical to allow the ECM to perform internal, initialization functions after a read or flash operation.

### Switch Tunes using AutoCal V2

1. Connect your AutoCal V2 device to your vehicle.
2. Turn the vehicle ignition to the *On* position.
3. Navigate to the Switch Tunes menu option
4. Select PIDs
5. Use the arrows to navigate between tunes.
6. Press OK to make a tune selection.
7. You do not need to reselect the tune once the engine is shut down; the ECM 'remembers' which tune you previously selected.



## Support

### Trouble Shooting

Should users encounter problems with the EFILive software, FlashScan or AutoCal hardware they should:

1. Confirm software, firmware and boot block versions are up to date.
2. Check the fitment of the SGM Bypass cable (required for 2018+ vehicles).
3. Check RSA Digital Signature has been removed (required for all 2009+ vehicles).
4. Check that checksums are valid.
5. Check the base file matches the calibration for your vehicle.
6. Check Dodge Cummins Fast CAN Mode settings.
7. Only CMB and CMC stock files can be read from the ECM.
8. CSP<sup>5</sup> tune files cannot be read from the ECM.
9. Remove/isolate all after-market devices including mobile phone adapters, after-market equipment (audio systems, security, remote start etc.) and any devices wired into the OBD port that may interfere with vehicle communications.
10. DO NOT operate any vehicle feature that may communicate on the data bus. This includes opening or closing of hood, doors, windows, as well as changing settings on radio, HVAC, connecting/removing charging devices etc.

### Error Codes

If an error occurs while using AutoCal, users can look up the error code description in the EFILive V8 Scan and Tune software.

The [F8: Tools] -> [F8: Error Codes] menu item provides an error code lookup function, and the "EFILive Error Codes.pdf" document accessed by selecting the Windows Start Icon and navigating to Program Files->EFILive->V8->Documents->EFILive Error Codes.pdf is also available. Both options provide error code descriptions, causes and actions.

Should the issue not be resolved after reviewing the Error code list, end users should contact their Tuner for support.

### Checksums

Checksums perform a vital role in ensuring the integrity of the data in the tune file. There are two main reasons that checksums display as invalid:

1. The data in the file is corrupt and MUST NOT be flashed into a controller.
2. The data in the file has been modified with a software package that did not update the checksums – such as a hex editor.

Do not correct the checksums unless you know the tune file was modified outside of the EFILive software and that the modifications are correct and accurate.

If you correct the checksums of a file with corrupt data you are merely masking corruption. If you flash a corrupt file into a controller, you risk damaging the controller and/or causing the vehicle to operate incorrectly.

## Dodge Cummins Fast CAN Mode – CMD, CME, CMF

Three flash speeds exist for Dodge Cummins controllers;

1. **Unlimited Fast CAN** delivers the fastest possible flash time and is approx. 50% faster than standard flash routines.
2. **Fast CAN** is a little faster than standard, but more robust than Unlimited.
3. **Standard** can be used if you experience flash failures when using Unlimited Fast Can or Fast CAN, try unchecking that option and retry the flash.

Cummins Fast CAN Mode can be adjusted the following ways:

1. During Pass-Thru flashing by adjusting the options on the [F3: Tune] -> [F7: Full Flash] tab.
2. For BBF by adjusting the options on;
  - a. [F6:Devices] -> [F5: Options] tab and programming the device.
  - b. Via FlashScan and AutoCal hardware by editing the device options.

## Cummins 5.9L ECM VIN Issues

The VIN in the .ctz tune file should always match the VIN in the vehicle prior to flashing the ECM.

As part of the normal re-flash process for the 5.9L CM849B Cummins ECM, a section of the flash memory is written that contains vehicle specific values, including VIN and SKIM code. This part of the ECM is flashed every time the ECM is programmed.

Flashing a tune from a different vehicle will cause a no start condition until the VIN in the ECM is corrected to match the vehicle. If an attempt is made to start the vehicle prior to correcting the VIN, other modules on the truck will detect the non-matching VIN details setting C2206 "Vehicle Configuration Mismatch" DTC in several modules. **Once set, EFiLive is UNABLE to correct this code and MIL, resulting in a dealer visit.**

To change the VIN in the .ctz tune file open the tune file and:

1. Navigate to [F4: Properties] -> [Controller Information] tab.
2. Enter the VIN.
3. Save the file prior to programming the ECM.

## Failed Flash Recovery Methods

In the event that an ECM fails during the flashing process, recovery methods exist to restore the ECM.

### Flash Base with without tune file security restrictions.

In most instances, simply retrying the flash process will return the ECM to working order.

In the instance where tuners apply security restrictions to a tune file, including locking to the controller serial number, and the flash fails, you must try to recover the ECM with a file that has no security restrictions in place (e.g. stock tune) before attempting to reflash a file with security restrictions.

### ROM Boot Recovery

In some flash failure instances the ECM may stop responding and cannot be recovered to normal operation by simply retrying the flash.

Such situations may occur if the ECM was flashed with a non-compatible operating system, or where the failed flash occurred right at the end of the process but the ECM thinks it completed.

In these situations the ECM is usually only recoverable by forcing the ECM into ROM Boot Recovery mode. Specialized bench programming equipment, such as the BenchForce PowerBlock IV with ROM Boot Switch is required to perform this task.

Tips to recover the ECM using this equipment includes:

1. The ECM must be powered down. (IGN switch off but battery power connected.)
2. Hold the ROM Boot switch on.
3. Power the ECM and bench equipment.
4. Attempt to flash the ECM with your recovery file.
5. Once the flash is under way you can turn off the ROM Boot switch.

## Test for Rogue Modules

For Customers with FlashScan/AutoCal V3 a range of test modes to check the network for rogue modules that may cause read or flash operations to abort are available.

Navigate to the Tune Tool -> F1: Tuning -> F4: Test OBD Network menu.

Select the Test CAN J1979 option for CAN based controllers.

## Trace Files

### V8 Scan and Tune \*.htx files

When V8 Scan and Tune software reads or flashes a controller the details of the read/flash process may be saved in trace files for diagnostic purposes.

In addition, users can manually save trace files where options do not perform the desired outcome.

To manually generate a trace file, generate the error in V8 software, then open the EFILive Control Panel and navigate to [F8: Trace] and select [Save Trace]. Users can set the trace file and save location during this process.

Automatically generated trace files are created on your PC or laptop in the folder: \\Documents\\EFILive\\V8\\Trace and are named using the following naming convention:

YYYYMMDD\_HHNNSS\_T\_CCC.htx, where:

- YYYYMMDD: is the year, month and day that the trace was recorded.
- HHNNSS: is the hour, minute and second that the trace was recorded.
- T: is the mode and is one of **R**=Read **F**=Full-Flash **W**=Cal-Flash.
- CCC: Is the controller type
- htx: is the file extension.

### FlashScan/AutoCal V3 \*.xalm files

Trace files are automatically saved where an error message is presented using the device in BBX mode. Users can manually save trace files where options do not perform the desired outcome, including for pass-thru functions.

To manually generate a trace file on FlashScan/AutoCal V3 navigate to Scan Tool -> F3: Scan Options -> F1: Save Trace.

FlashScan/AutoCal V3 maintains an internal buffer of the most recent messages sent to and received from the vehicle. That buffer is stored in RAM memory and is wiped clean each time the device is powered off or rebooted. Therefore you **MUST** save the trace file before powering off or rebooting the device.

Trace files are located in the EFILive -> Trace folder on FlashScan/AutoCal V3. Trace files are named using the following naming convention:

yyyymmdd\_hhnnss\_<desc>.xalm, where:

- yyyymmdd: is the year, month and day that the trace was recorded.
- hhnnss: is the hour, minute and second that the trace was recorded.
- <desc>: is the description where;
  - "User" means user generated trace files
  - "xxx\_x\_\$xxx" identifies the 3 character controller ID, the communication process upload/download, and the 4 digit error code.
- xalm: is the file extension.

### FlashScan V2 Trace Files

Trace files are automatically saved where an error message is presented using the device in BBX mode. Users can manually save trace files where options do not perform the desired outcome.

To manually generate a trace file on FlashScan V2 navigate to F1 Scan Tool -> F3 Scan Options -> F1 Save Trace File.

FlashScan V2 maintains an internal buffer of the most recent messages sent to and received from the vehicle. That buffer is stored in RAM memory and is wiped clean each time the device is powered off or rebooted. Therefore you **MUST** save the trace file before powering off or rebooting the device.

Trace files are located in the Scan folder on FlashScan V2. It will be named USR\_xxxx.efx, where xxx is the unique file counter number.

### AutoCal V2 Trace Files

Provided enough space exists in the [Data] file system of AutoCal V2 trace files are automatically saved where an error message is presented using the device in BBX mode. Users can manually save trace files where options do not perform the desired outcome.

To manually generate a trace file on AutoCal V2 navigate to:

1. AutoCal (standard menu): Save Trace File
2. AutoCal (advanced menu): Scan Tool -> Save Trace File

AutoCal V2 maintains an internal buffer of the most recent messages sent to and received from the vehicle. That buffer is stored in RAM memory and is wiped clean each time the device is powered off or rebooted. Therefore you **MUST** save the trace file before powering off or rebooting the device.

The trace file will be saved in the Scan folder on the device. It will be named USR\_xxxx.efx, where xxx is the unique file counter number.

## Knowledgebase

The [EFILive Knowledgebase](#) provides a detailed resource on how to configure and use your EFILive software and hardware.

## EFILive Authorized Dealer

If after reviewing this guide further assistance is required please contact the EFILive Authorised Dealer from whom you purchased your product. They are your first point of contact for EFILive support related inquiries.

## How to Tune?

EFILive is tuning software and hardware - it is not a tune. Together the software and hardware give users the tools to write tunes. EFILive does not provide tune files, tuning advice or support, but do provide software support and hardware support.

If your question is in relation to the actual tuning of your vehicle (e.g. how to gain performance, economy etc.) then please ask these questions on the EFILive Forum (<http://forum.efilive.com/>).

## EFILive Service Desk

Should you require additional assistance after using this support guide, please start a ticket on the [EFILive Service Desk](#). Please include the following information:

1. Dealer Name.
2. Device type.
3. Serial Number and Auth Code.
4. Your computer operating system.
5. Software and firmware versions.
6. Trace files.
7. Detailed information about your issue.