Cummins 6.7L CM2200 CSP^5 User Guide

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Introduction

This document is intended to assist EFILive customers with the basic operations and steps necessary to setup EFILive's CSP^5 custom operating systems for the Cummins CM2200 ECM.

Additional Support Resources

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

If your question is in relation to the actual tuning of your vehicle (i.e. how to gain performance, economy etc.) then please ask these questions on the EFILive Forum (http://forum.efilive.com/). EFILive does not provide support or assistance for the actual tuning of any supported vehicles.

Software Version Overview

EFILive presently has two major software versions (V8 and V7) that service different parts of the tuning and scanning process. The V8 software is undergoing significant development and will eventually supersede V7 entirely for FlashScan V2 customers. For the moment, however, both versions are required.

The following is a brief view of the activities that are performed with the different software versions:

Software Version	Purpose
V8	- Reads and Flashes the Dodge Cummins ECM - Maintaining the bootblock and firmware versions on the EFILive FlashScan V2 and AutoCal devices. - Configuration of FlashScan V2 and AutoCal devices for CSP^5 tune switching and EDA data loggiing. - Standalone logging to FlashScan V2 / Autocal.
V7	- Modifications to the ECM calibration are made using the V7 Tune Tool application. The modified calibration is then flashed into the ECM (again using V8). - Logging of real time data from the vehicle is done using the V7 Scan Tool application.

What is EFILive CSP^5?

EFILive's CSP^5 custom operating systems for Cummins controllers allows customers to be able to switch 'on the fly' between multiple tunes, all stored in the ECM's flash memory. Historically, Cummins Switchable Programming had 5 tune positions; however as supported Cummins platforms have expanded this no longer holds true. ECM memory now defines the number of tunes that are available for switching for each ECM type as per the table below.

CSP Controller Matrix			
CM849	2006-2007 5.9L	CSP^5	5 tunes accessible through CAN bus switching, and a 6th tune that is switched using an input on one of the ECM connectors.
CM2100A	2007-2009 6.7L	CSP^5	
CM2200	2010-2012 6.7L – P/U	CSP^5	5 Tunes accessible through CAN bus switching.
	2011-2012 6.7L – C&C	CSP^2	2 tunes accessible through CAN bus switching.
CM2350B	2013-2015 6.7L	CSP^4	4 tunes accessible through CAN bus switching.

Whilst different controllers contain different numbers of tunes, collectively this feature is still referred to as CSP^5.

Having multiple tunes instantly accessible means changing tunes to suit different driving conditions no longer requires the ECM to be reflashed each time you choose to run a different tune. (e.g. racing, towing, or power limiting.) Simply build multiple tunes to fill the CSP^5 slots, flash the ECM once and then select your desired tune through your EFILive hardware (or other approved switching devices) at any time.

CSP^5 delivers scanning enhancements to customers via Enhanced Data Acquisition (EDA). EDA, EFILive's custom scanning mode is the first of its kind and aims to simplify the task of information sharing between users as every individual data parameter has been selected with tuning feedback in mind. EDA allows customers to log 45 individual data parameters specifically chosen to complement tuning at up to 50 frames per second for V8 BBL & V7.5 pass through logging.

EDA scanning is only available on CSP^5 upgraded ECM's.

CSP^5 Upgrade Checklist

In order to upgrade your existing tune to CSP^5, there are some things you need to check first.

EFILive has made CSP^5 conversions only for certain factory ECM Operating Systems (OS's). Typically these are based off the latest factory update (at time of development), and most (if not all trucks) will have been updated to one of these OS's. If you have a truck that has an OS not listed below, you will need to upgrade your base file first.

EFILive will not be offering CSP on older or obsolete OS's.

Below is a list of the OS's available for CSP5 upgrading for the CM2200, these were the latest factory updates as of early 2015. If there is critical updates released from the factory EFILive may add these to the supported OS list.

CSP^5 Operating System # - Pickup	
22100538	23100601
22110708	23110705
22115709	23120804
22120817	24120806
22120818	
CSP^2 Operating System # - Cab & Chassis	
21110631	21120807

If the truck has had a different tuner on it in the past (i.e. not EFILive) then the conversion process may fail. EFILive highly recommends customers' source a good known base file for CSP^5. This may involve either a dealer flash, or obtaining a suitable file from your chosen tuner.

EFILive cannot always detect the presence of other tuners in files, if a situation occurs where EFILive's modifications 'clash' with other tuners modification it might result in a bricked 'brain dead' ECM that cannot be recovered.

You have to be running the following (or higher) software versions.

1. EFILive V8.2.2.276 or later
2. FlashScan V2 / AutoCal Firmware - V2.07.82
3. EFILive V7.5.7.283 or later

The latest software versions are available for download from EFILive's website.

Upgrade Operating System to CSP[5]

NOTE: The EFILive software contains a single CSP[5] upgrade process for both CSP[5] and CSP[2]. The software refers to both upgrade types as CSP[5].

Important: FlashScan V2 / AutoCal MUST be plugged in to the PC's USB port prior to starting V7.5 for the CSP[5] operating system upgrade to be available.

1. Using the EFILive V7.5 Tuning Tool, open the base tune file and click on the 'Upgrade OS' tab.

| Calibration | Permissions | VIN | Comments | History | Out of Range | Modifications | Upgrade OS | Conversions |

Select custom operating system:

Apply Upgrade | CSP5 v1.00 Custom Operating System
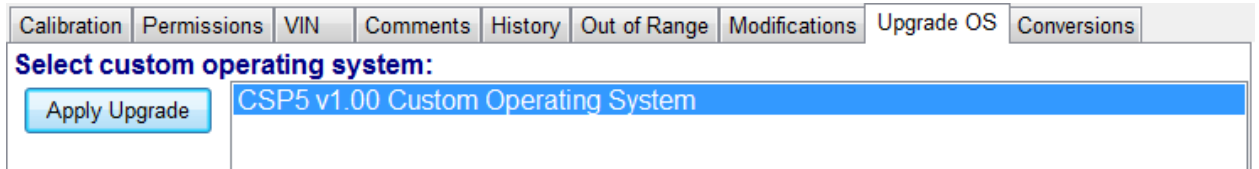
2. Select the "CSP[5] v1.xx Custom Operating System" option and click on the "Apply Upgrade" button.
3. Select Yes to "This upgrade cannot be undone, continue?"

Confirm

This upgrade cannot be undone, continue?

Yes | No
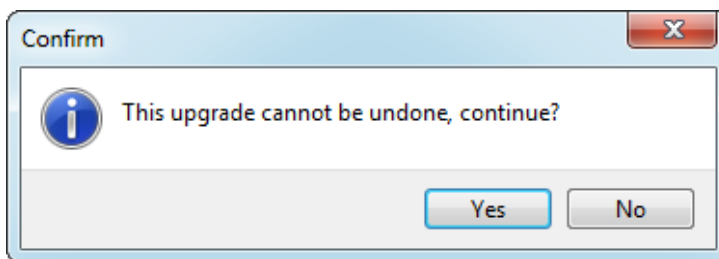
4. Save the file with a new name using, **File > Save As**. Maybe something like... 'My Truck Base CSP5 Conversion.ctz' .
5. Close the tune file by selecting, **File > Close Tuning File**.
6. Reopen the file so EFILive will recognise the file is a CSP[5] converted operating system. Take note of the new operating system (OS) number of the CSP[5] converted file. Eg, 22100538 now becomes 52100538.

Calibration Identifiers:

OS: 52100538   OS ID: N/A

Calibration: 10350031BG   BCC: N/A

Calibration Definition File (*.cal):

Name: 52100538.calz   Disable Checksums

Version: 7.02   Date: 6th May, 2015

EFILive automatically populates the new CSP[5] tables with factory values during the upgrade to get you started. On modified engines these may not be suitable settings, you may need to copy your own tables in to the new CSP[5] section(s).

Any existing tables from your old converted tune are now located in the final tune listed, for pickups these are in the "CSP[5] Program #5" folder, and for Cab & Chassis vehicles these are in the "CSP[5] Program #2" folder.

Once you have made the necessary changes to your individual tunes you can reflash the ECM using V8 Scan and Tune as you normally would flash a Cummins ECM.

NOTE: CSP[5] tunes cannot be read out of the ECM once flashed in.

Tune Features of CSP⁵

All tune features of CSP⁵ are accessible via the V7 Tune Tool application.

Tune Switch Password

Users may restrict tune selection by adding a password to move between tune selections to prevent unauthorized switching between tunes 1 to 5.

Before switching between tune selections, users would need to enter in the password (1 to 9999). If the password is correct, the tune will switch, if it is incorrect the tune will not switch.

It should be noted that not all switching devices may support this function, however EFILive's own FlashScan V2 and AutoCal hardware does.

To enable the tune switch password, users need to input their chosen password in the calibration. As the calibration description states, if the password = 0 then there is no password prompt given to the user when switching tunes.

CSP^5 CAN Tunes

The CSP^5 tunes labelled "Program #1 to Program #5" are all switched via a device on the CAN bus.

For Pickups, each one of these programs has duplicate sets of tables for you to alter. Program #1 to Program #4 have some 'stock' values inserted in to the maps; Program #5 contains the values you already had in the standard OS maps prior to the CSP^5 conversion.

For Cab and Chassis OS's, Program #1 has some 'stock' values inserted in to the maps; Program #2 contains the values you already had in the standard OS maps prior to the CSP^5 conversion.

EFILive automatically populates the new CSP^5 tables with factory values during the upgrade to get you started. On modified engines these may not be suitable settings, please review and change as necessary the default maps in all the CSP^5 tunes before starting and driving the vehicle.

NOTE: Whenever the ECM is reflashed tune switching will default to using CSP^5 Program #5 for pickups and Program #2 for Cab and Chassis.
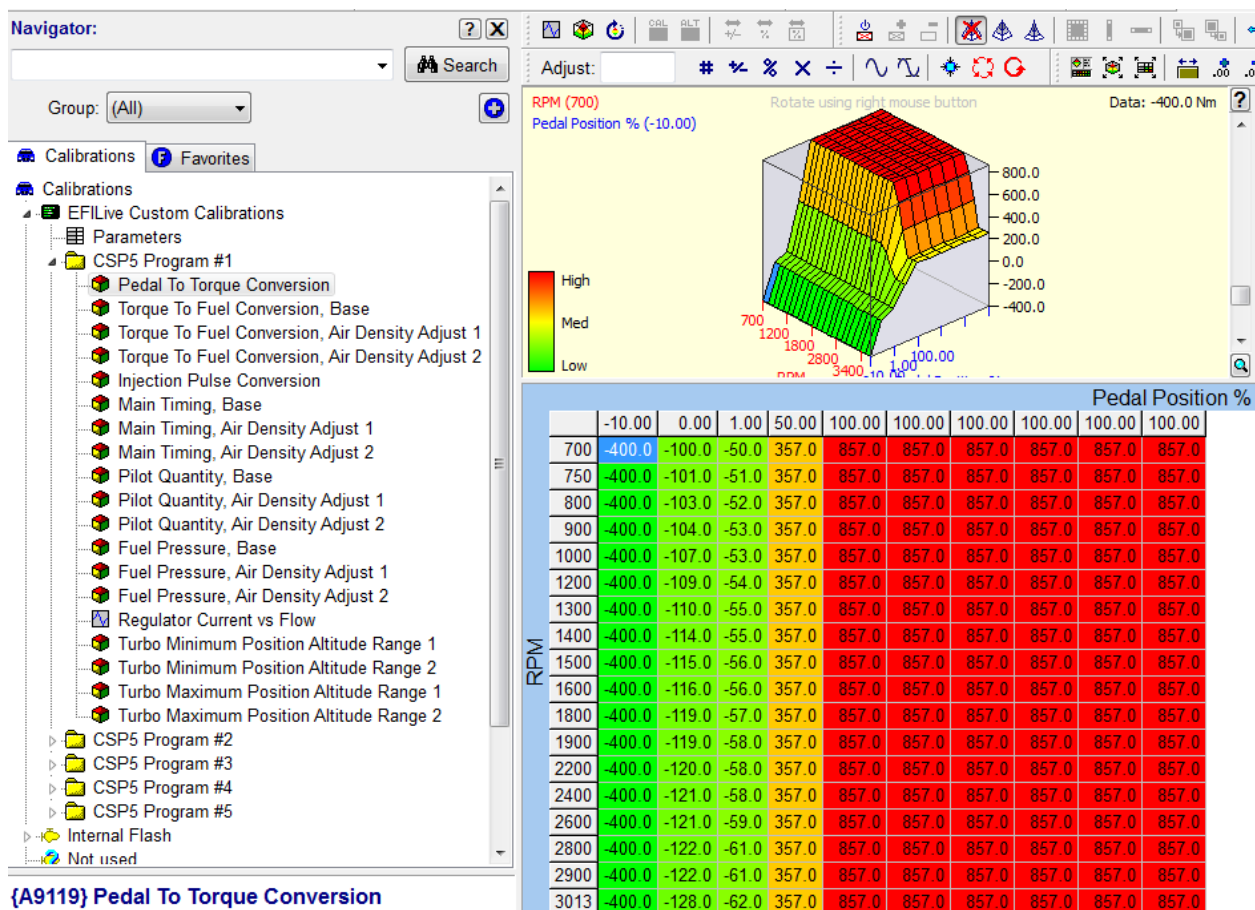
Setting up FlashScan V2/AutoCal for CSP^5 using V8 Scan and Tune

Tune Switching

With FlashScan V2/AutoCal plugged in to a USB port, open EFILive V8 Scan and Tune and click on the [F5: BBX] option.
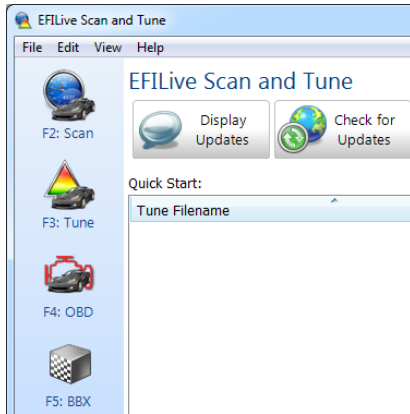
Select [F4: Switch].
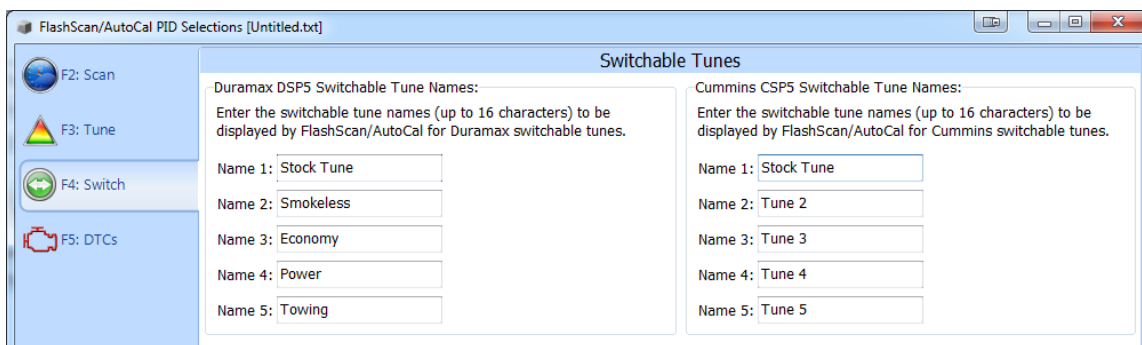
Enter tune names as they will appear on FlashScan V2/AutoCal.

To switch tunes after powering off FlashScan V2/AutoCal, the 'CMD' PID group must be selected. Switching will fail until the CMD PID group is selected.

To automate this function each time FlashScan V2/AutoCal is powered on, in V8 navigate to [F6: Devices] -> [F6: Logging] and tick the "At start-up, automatically re-select the most recently used PID list."
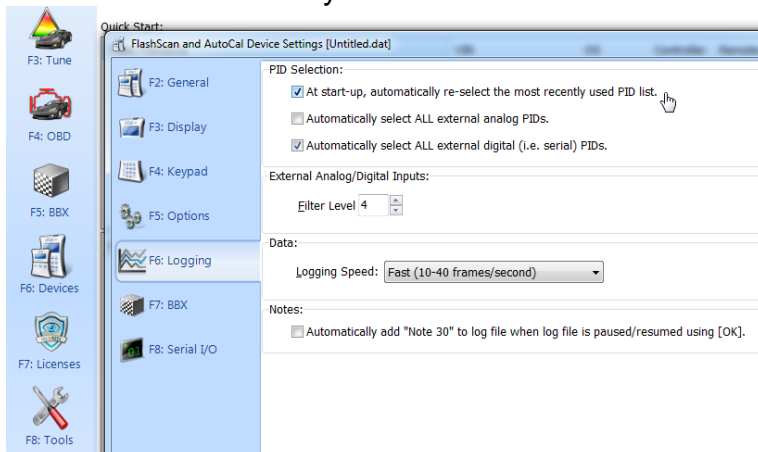
EDA Data Logging

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%.

To setup EDA logging, open EFILive V8 Scan and Tune and navigate to:
1. [F5: BBX] -> [F2: Scan]
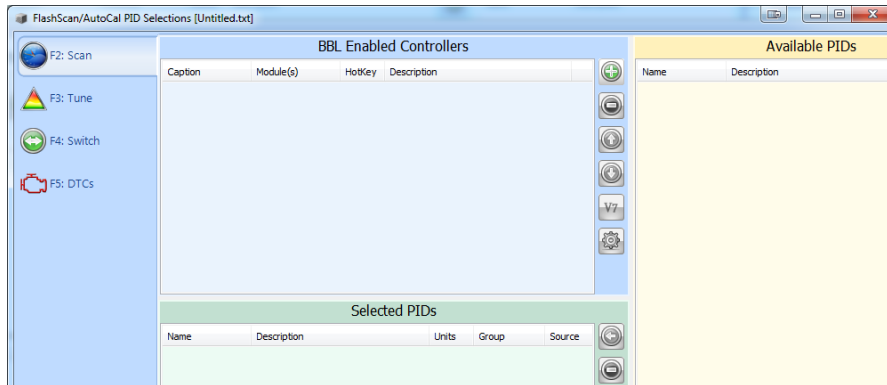
(This is what a blank FlashScan V2/AutoCal would look like, it's ok to have PID groups already in there for other controllers, however for maximum scan rates existing 6.7L CMD PID groups should be removed).

2. Add the CMD controller to your list;
    a. Press the green '+' icon.
    b. Right click on the Engine Controller box.
    c. Select "CMD CM2200 Cummins Diesel ECM"
   d. Read and accept the BBL Information display.
    e. Select OK.
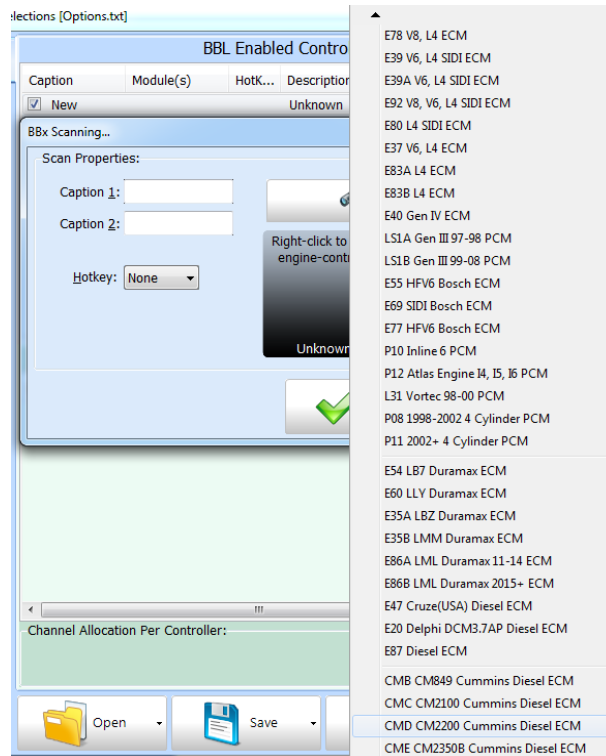
3. Click on the CMD controller in the "BBL Enabled Controllers" window.

4. Highlight the EDA 1 folder in the "Available PIDs" window and drag into the "Selected PIDs" window.
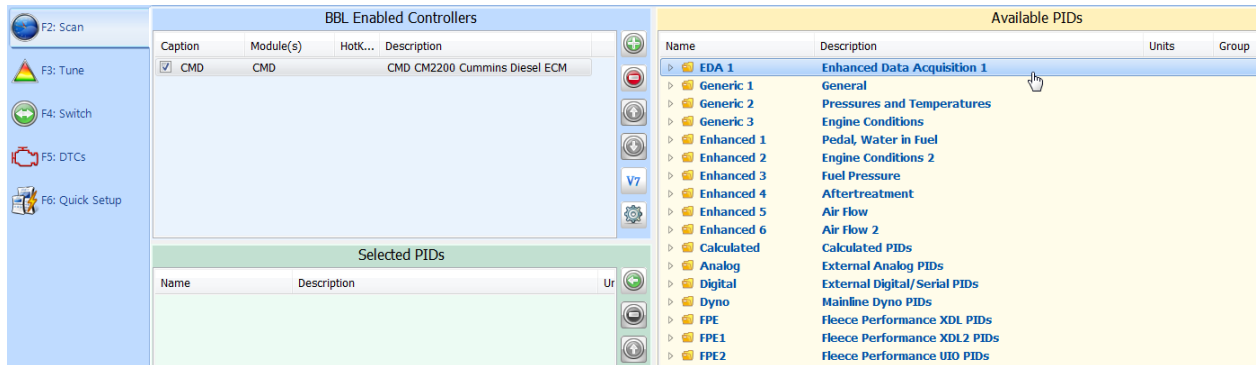
NOTE: Individual PID's cannot be added / removed from the EDA scan group, trying to do so will not improve logging speeds.

5. Write this configuration to FlashScan V2/AutoCal using the [Program] function. EFILive recommends you should choose the "Program ALL Required Data (Slower)" Option for initial setups.
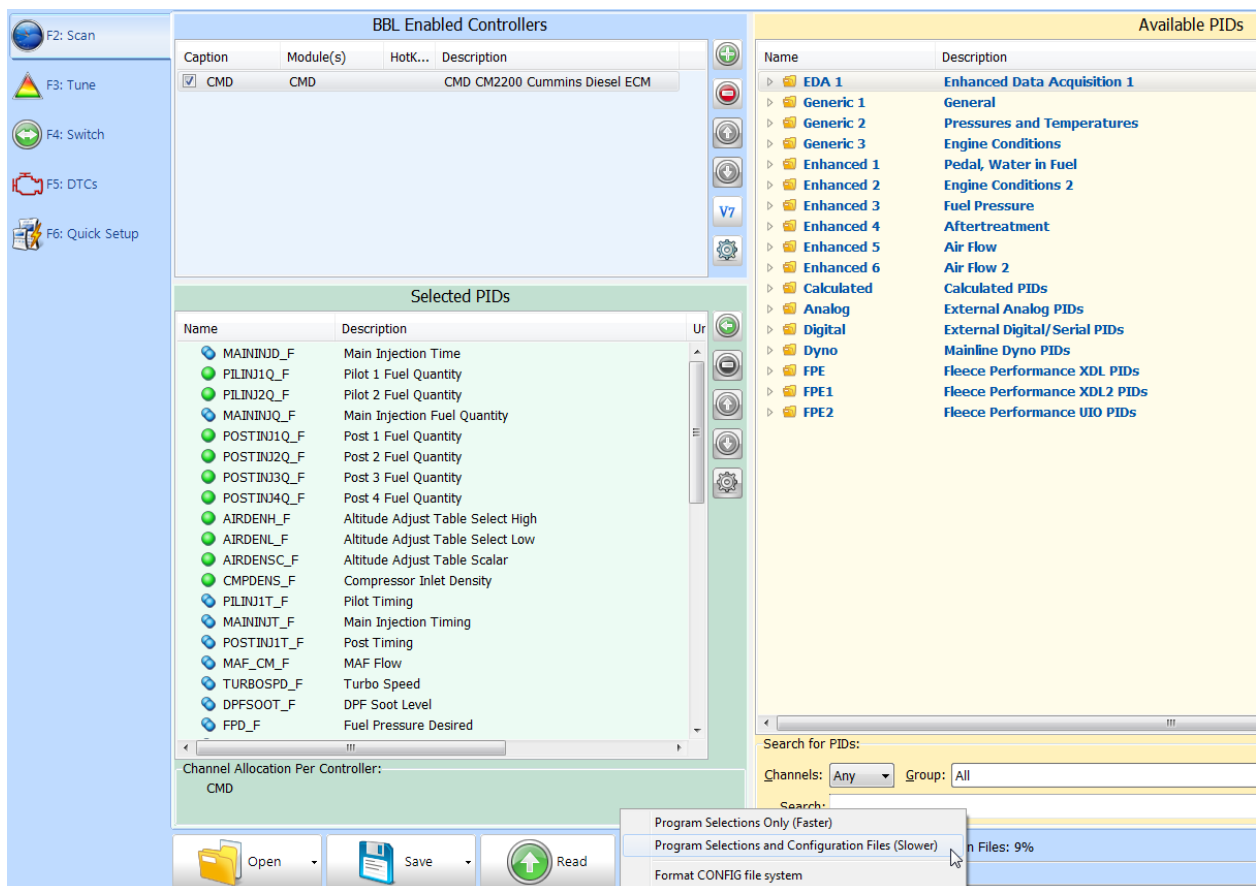
Once the device is programmed, FlashScan V2/AutoCal is configured to log data from the ECM using EDA, as well as switch tunes.

NOTE: Naming tunes, FlashScan V2/AutoCal device settings, & EDA logging can also be managed via the [F5: BBX] -> [F6: Quick Setup].

Data Logging with V7.5 Scan Tool

To perform the tasks below you should have your FlashScan V2 device connected to your vehicle. Note: Data logging with V7.5 is not supported with AutoCal hardware.

Navigate to **File -> Select Controller**.

Select the correct ECM type to log, in this case the 'CMD CM2200' ECM and press OK.
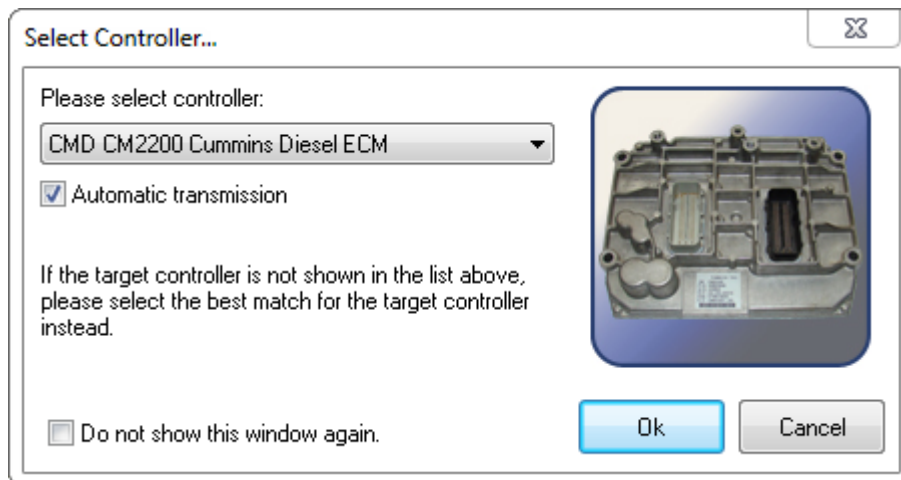

Just like when setting up the V8 PID's you need to make sure that the EDA PID group is the only item selected before logging. If you have other selections (or warnings like the PID's [F8] screenshot below) the logging will either fail to start or be a lot slower than expected.
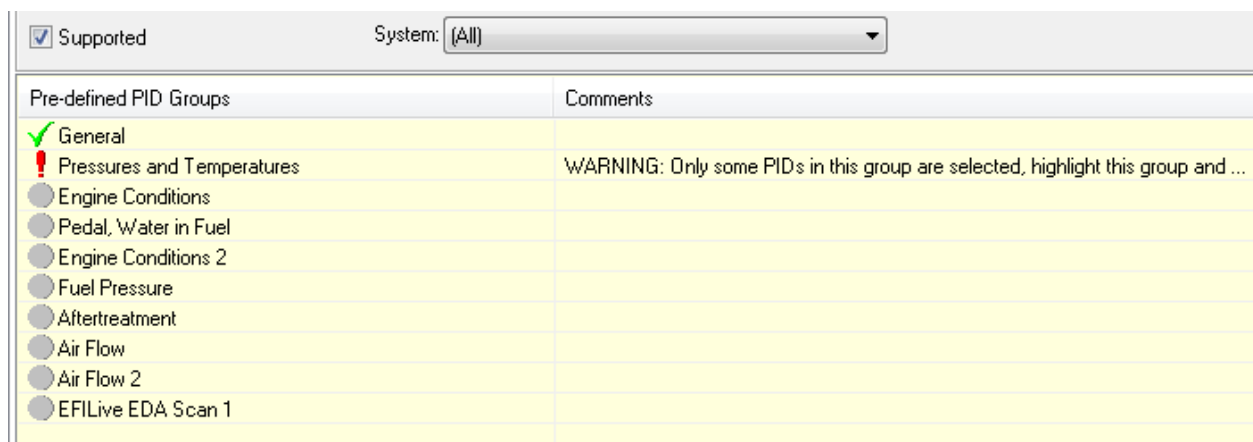

In the situation like above you should create a new PID selection group, further details on how to do that can be found in the V7.5 user manual. A quick overview is contained within the following pages.

1. Navigate to the PIDs [F8] tab.
2. Create a new blank PID selection file by clicking the 'Clear Existing PID's' button and unselect all PIDs.
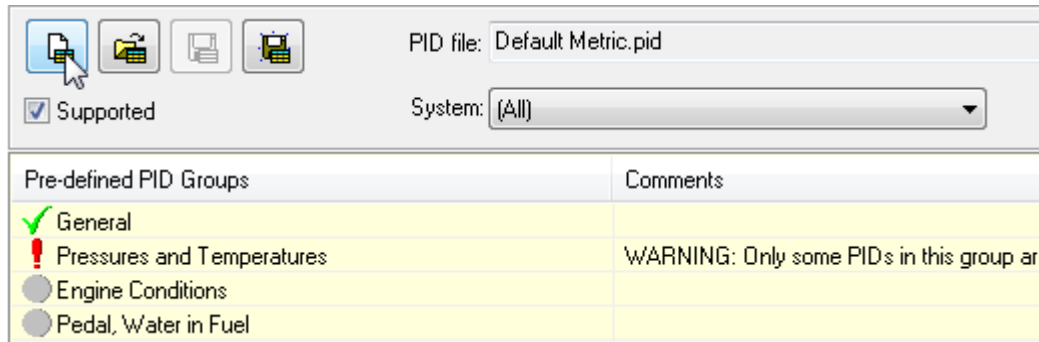

The Pre-Defined PID Groups should now look like this.
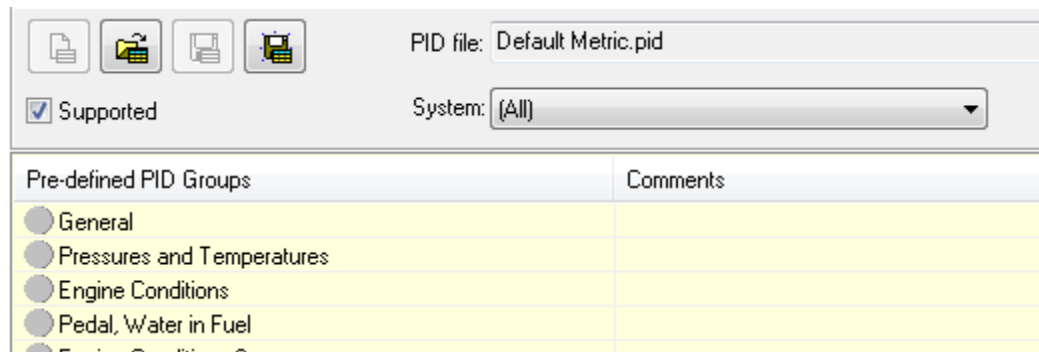
3. Double click just the 'EFILive EDA Scan' PID group.
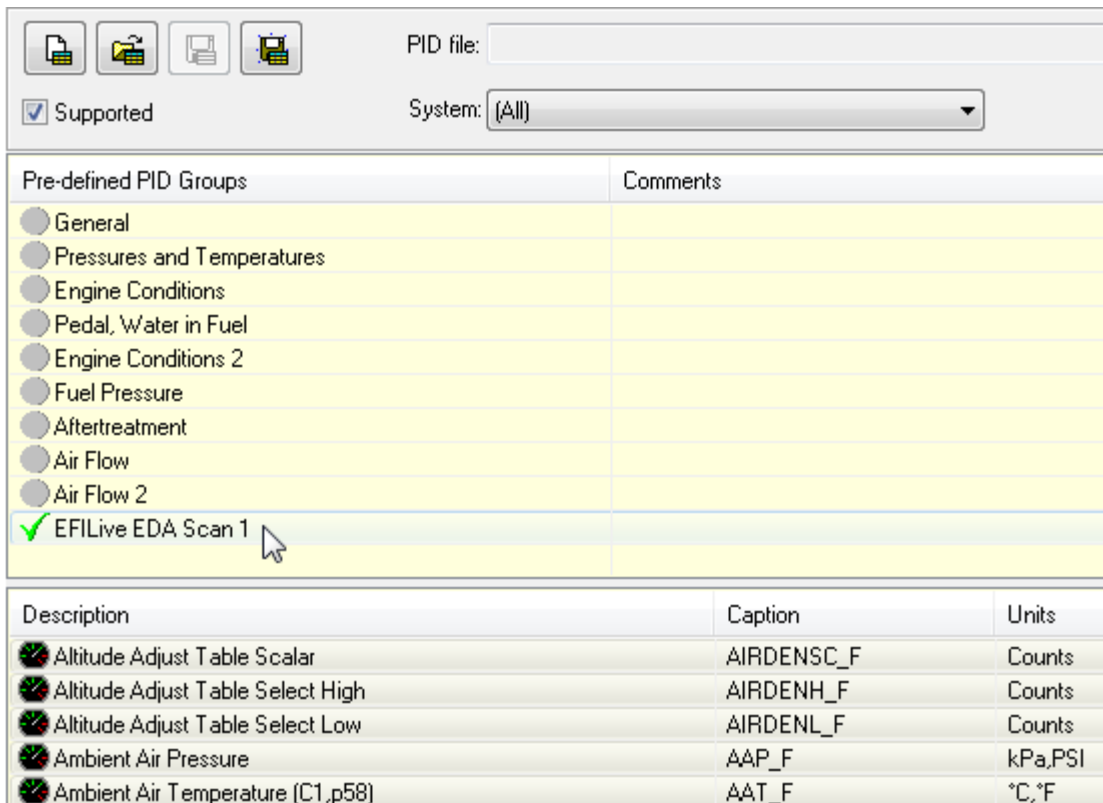
4. Click on the 'Save PID selection' icon, and rename (eg ' CMD EDA') for easy reference later on.
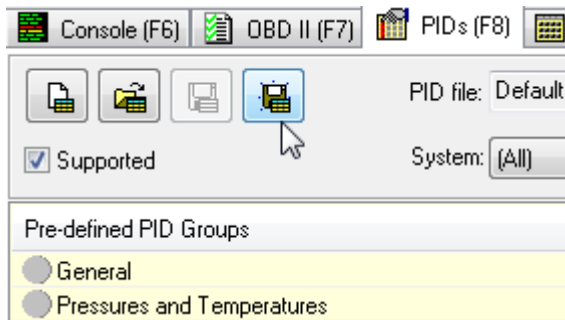
5. Select the Yellow button to monitor data, or the Red button to log data.

NOTE: When a laptop is connected to FlashScan V2 and data logging is active, tune switching will not work from the keypad. Logging must be stopped for tune switching to activate.

Important note for tuners:
If your CSP[5] tune does not seem to be switching as expected please check the data in the "AIRDENSC" PID. For CSP[5] to work correctly the "AIRDENSC" PID must be between 1 and 2. If this value is higher then the ECM will not be using normal Altitude based tables, and therefore will not using the CSP[5] tables.
The mode displayed is a direct result of tuning strategy or DPF regen states.

Switching Tunes with FlashScan V2/AutoCal

To switch tunes via the FlashScan V2/AutoCal, the device must first be configured for switching, and a CSP[5] tune file flashed into the ECM, as detailed above. Once configured, navigate the menu like so (FlashScan V2 samples shown)...

1. Select **F2 Tune Tool.**
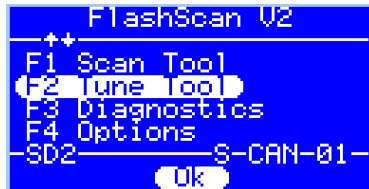
2. Select **F3 Switchable Tunes.**

3. Use the **Up** and **Down** arrow to navigate between tunes.
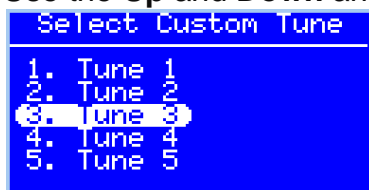
4. Press the **'Ok'** button to select that tune. If it was successful you should see confirmation of that on the screen.
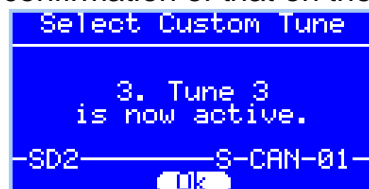
    You do not need to reselect the tune once the engine is shut down; the ECM 'remembers' which tune you previously selected.

5. If you attempt to select a tune higher than #2 on a C&C vehicle you will see an error like this.
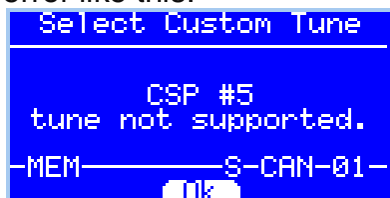
    The ECM will ignore this request and keep the last valid tune selected.

Data Logging with FlashScan V2/AutoCal

1. From the Main Menu, choose **F1 Scan Tool**.

```
         FlashScan V2
   ·++·
(F1 Scan Tool)
 F2 Tune Tool
 F3 Diagnostics
 F4 Options
-SD2————S-CAN-01-
        ( Ok )
```
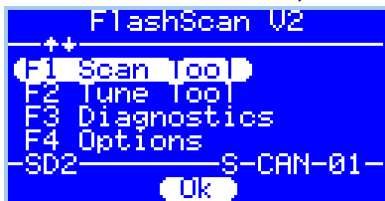
2. Select **F1 Select PIDs** (If you haven't previously selected 'CMD' PID's).

```
        Scan Tool
   ·++·
(F1 Select PIDs)
 F2 Data Logging
 F3 Scan Options

-SD2————S-CAN-01-
       ( ↰ )( Ok )
```

3. Select **'CMD'** and press **Ok.**

```
    Select PID List

 E20
(CMD          )
 CME
```
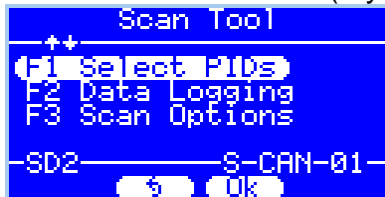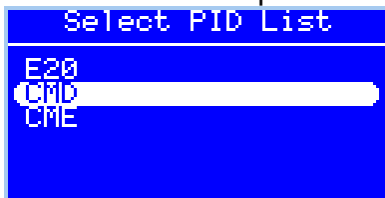
4. Select **Record Data** to record a log, or **Display Data** to display to LCD (display data shown below).

```
CMPDENS_:0.6953kg/m3
PILINJ1T:   10.0°
MAININJT:    1.00°
POSTINJ1:   18.0°
MAF_CM_F: 0.000g/s
TURBOSPD:     0rpm
DPFSOOT_: 7.242g
FPD_F   : 120.0MPa
```

NOTE: When data logging is activated you cannot return to the tune selection menu unless logging is stopped.

Integrating CSP^5 with Approved 3rd Party Products

Integration of EFILive's proprietary CSP^5 custom operating system with 3rd party products is restricted to approved providers, many of which are listed on the www.efilive.com website. EFILive recommends that customers confirm that their chosen integration product is approved for use.

To setup an approved integration product, users should:
1. Convert their base file to a CSP^5 operating system, as described in this document.
2. Edit tune parameters as necessary and save the file using the V7 Tune Tool application, as described in this document.
3. Flash their modified file into their ECM using the V8 Scan and Tune application as described in this document. (Specific selection of 3rd party product is NOT required in tune file).
4. Setup the 3rd party device as per the manufacturer's instructions.

Troubleshooting

Should users encounter problems with upgrading to CSP^5 they should:

1. Confirm V7, V8 firmware and bootblock versions match the CSP^5 minimum requirements (listed above) using these instructions Finding FlashScan & AutoCal Bootblock and Firmware versions
2. Confirm CSP^5 file was upgraded to new operating system number, as sequenced above.
3. If you require assistance in reading, flashing or editing tuning parameters on your controller it is recommended you read the Cummins 2010-2015 Quick Start guide which can be found in your V8 installation under documents, or the Documentation section of the EFILive website.
4. If you require assistance in setting up FlashScan V2 or AutoCal standalone features (BBX), it is recommended you refer to the EFILive V8 Reference.
5. If you are concerned your device is not switching between tunes, edit your tunes to see a notable difference (ie Pedal to Desired Fuel table), reflash and then test. Also note the EDA data stream has a parameter that indicates which tune the ECM is running.