DataCat Program Reference Manual

Revision B

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Introduction

The C.A.T.S. DataCat program is a powerful, full-featured data logging program that supports most OBDI GM vehicles that support the 8192 baud ALDL data stream. (See the Supported Vehicles section for a complete list of the vehicles that are currently supported.) DataCat allows you to monitor, record and playback engine and transmission data.

Using the latest WPF user interface DataCat provides a highly graphical display of all engine parameters. The data can be viewed in both digital and graphic form allowing the user to quickly and easily identify and zoom in on critical areas of operation. All engine parameters can be displayed including Diagnostic Trouble Codes (DTCs) and Status Bit Data. Where supported by the vehicle, DataCat will also monitor, record and display the transmission parameters either separately or combined with the engine data.

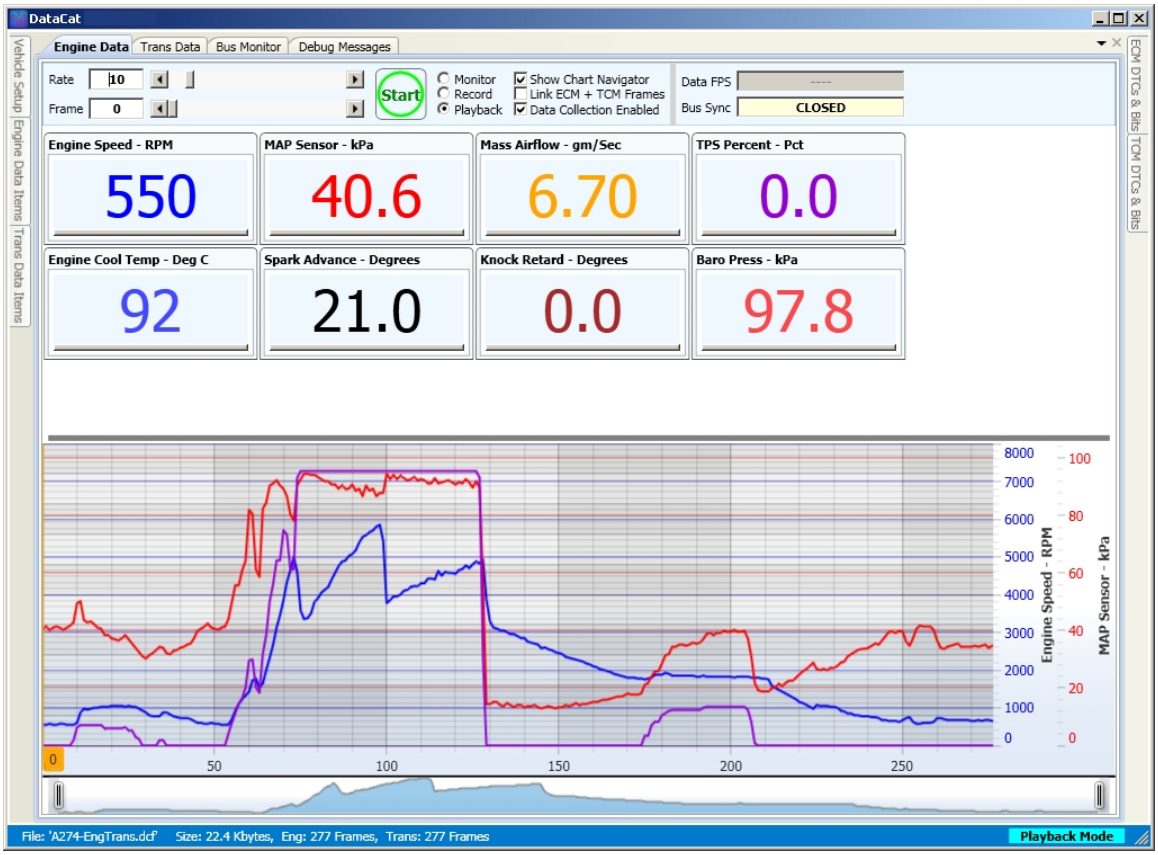
The WPF user interface gives the user virtually unlimited options when it comes to what data is displayed and how it is presented so the user can customize the program as desired.

Data Files

DataCat stores the recorded data in a compact proprietary format file. The data is organized as individual records where each record is a single snapshot of information from the Powertrain Control Module (PCM). A virtually unlimited number of data records can be recorded per session! DataCat is compatible with most ALDL interface cables including our own high-quality USB/ALDL cables.

Playback

Recorded data can be played back immediately or can be transferred to another PC for playback with DataCat program. DataCat also includes the ability to convert the old DataMaster (.uni) data files so you can still view and analyze these files in DataCat.



Getting Started

Program Installation

If you downloaded the installation program (DataCat-Setup.exe) from our web site (www.tunercat.com) then just double click on the installation program to begin the installation. Then follow the on-screen instructions to complete the installation.

If you received the DataCat CD then place the CD into your CD ROM drive and the install screen should appear. Click on 'Install DataCat' to begin the installation process and follow the on-screen instruction to complete the installation. If the CD does not auto-start, open the CD in Windows Explorer and open the DataCat folder on the CD. Then double click on the installation program (DataCat-Setup.exe) to start the installation program.

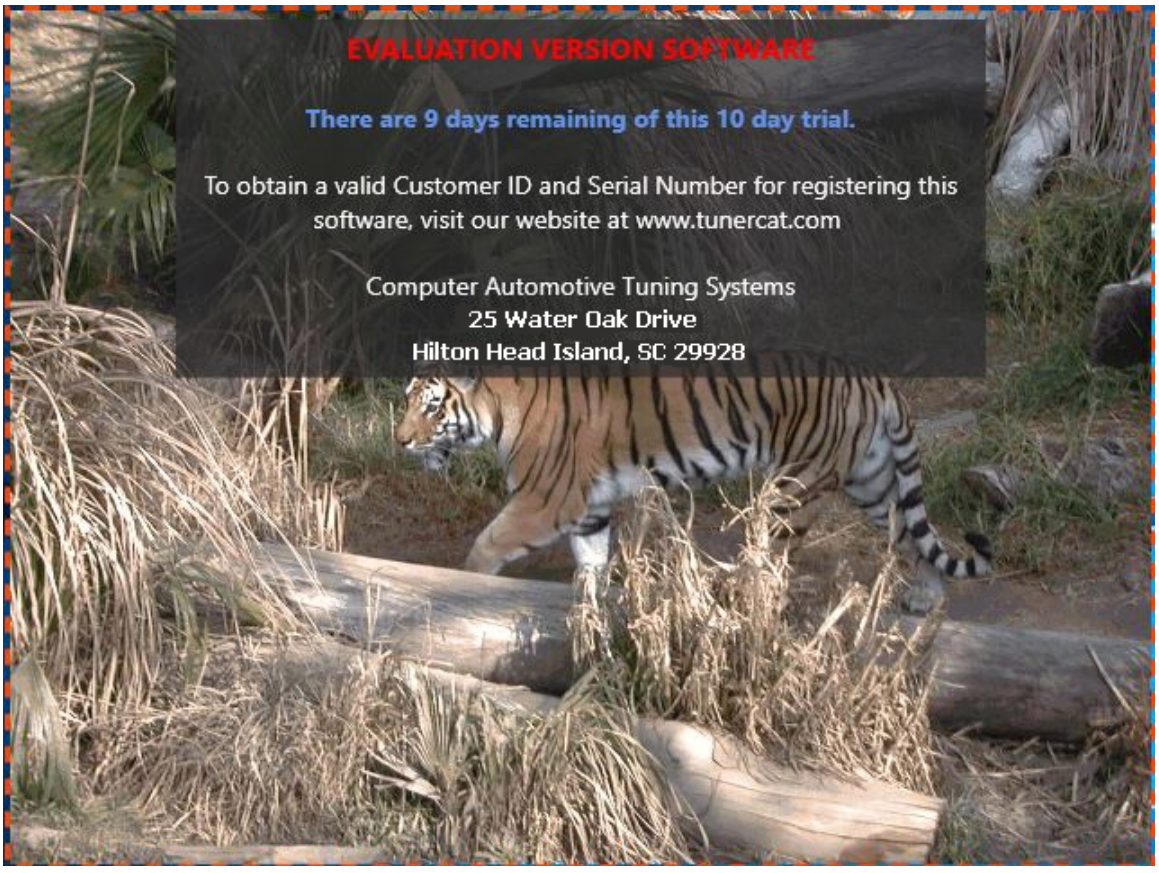
The install program will copy all necessary files to the specified directory, and copy several data test files to the Documents\DataCat\Testdata folder so you can immediately start familiarizing yourself with the DataCat program. A CATS program group is created, and a DataCat shortcut will be added to your Desktop.

NOTE: DataCat must be installed by a user with full administrative privileges or the installation will fail. If installing on a PC running Windows 7, 8 or 10 Windows will request administrator credentials.

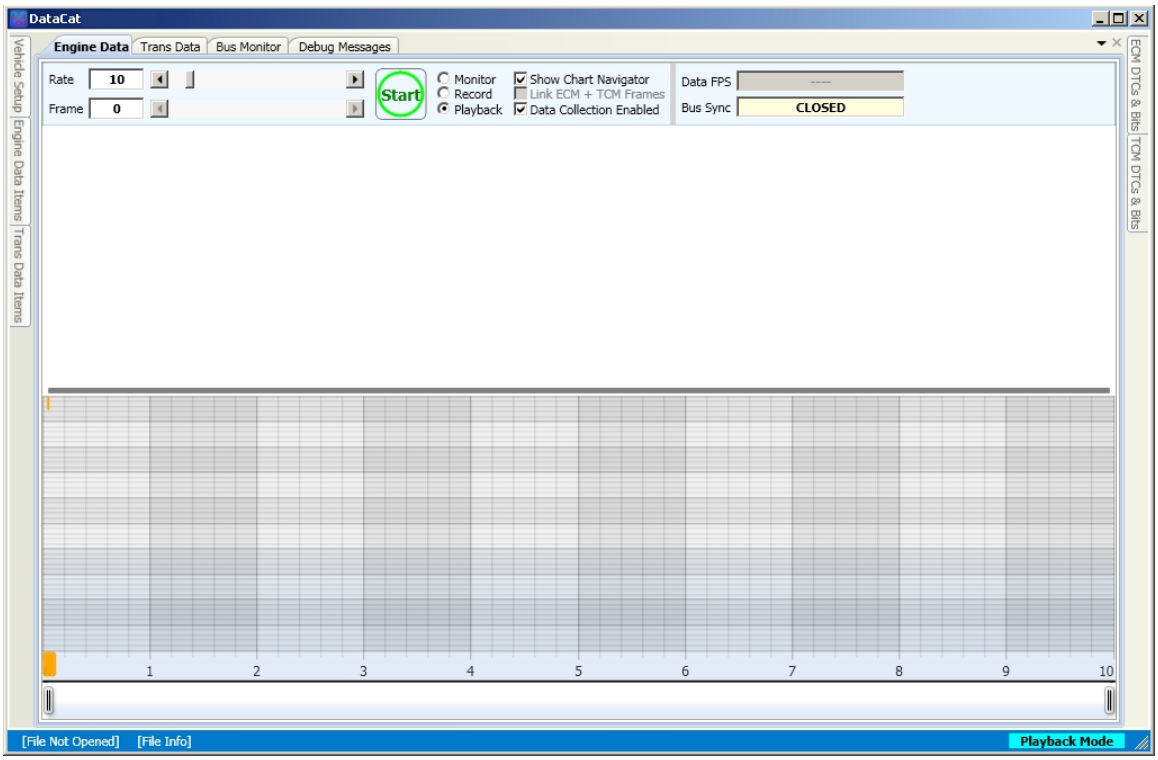
Starting the Program

To start the DataCat program just double click on the DataCat icon or select DataCat from the Windows Programs list.

An opening screen with the program registration status information will appear momentarily.



Then after a short time the main DataCat screen will be displayed.



The first time the program is run the position and size of the various screens and controls are set to their default values. The WPF (Windows Presentation Foundation) user interface used by the DataCat program gives you extensive flexibility in how the various screens and controls are positioned and sized on the main screen. Please refer to the User Interface section for more details.

User Interface

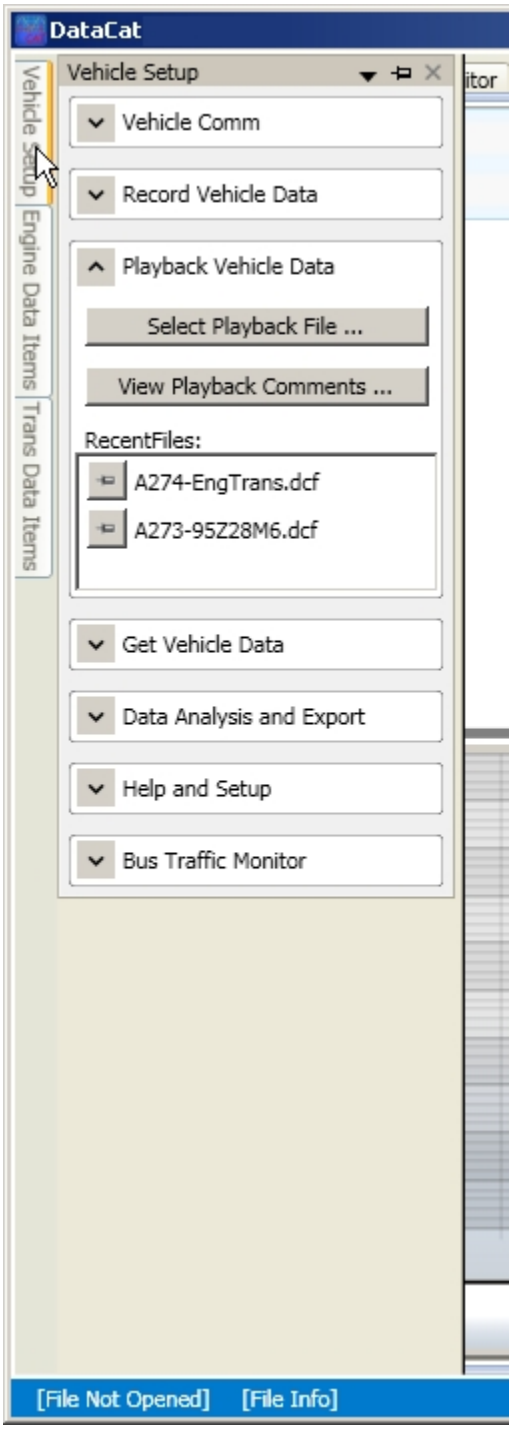
The DataCat program was developed using the WPF (Windows Presentation Foundation) User Interface, Microsoft's latest user interface. Rather than the traditional Windows menu bar style user interface this new user interface uses various control tabs to access the program's menus and screens. This new user interface gives the user much greater flexibility in how the screens and controls are positioned and sized.

The tabs at the top of the screen act much like the standard menu item in the old user interface.

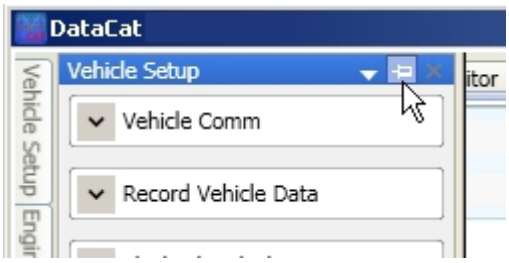
Clicking on one of these tabs immediately opens the selected screen as the main screen.

The tabs along the sides of the main screen are dockable tabs. The screen associated with these tabs will open if you place the mouse pointer over the tab and the screen will then close automatically close when you move the mouse pointer off the screen. For example if you place

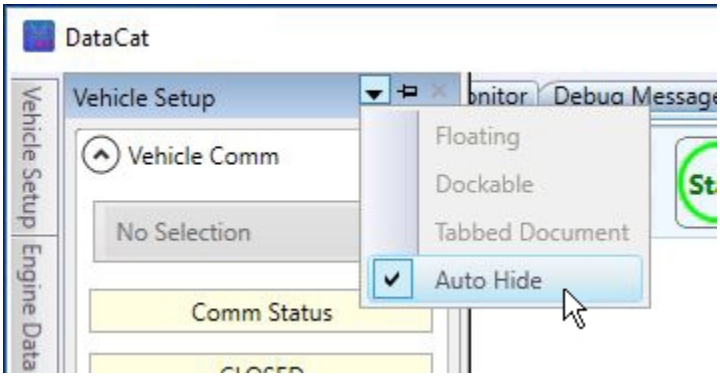
the mouse pointer over the 'Vehicle Information' tab on the left the Vehicle Setup screen will open.



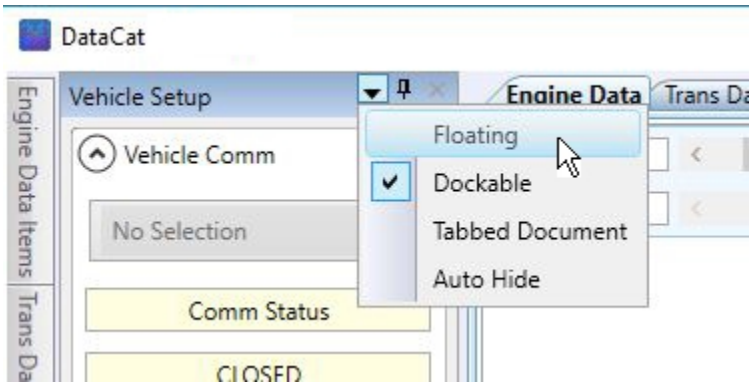
If you would like to disable the auto hide feature so that this screen will stay open, click on the pin icon at the top of this screen



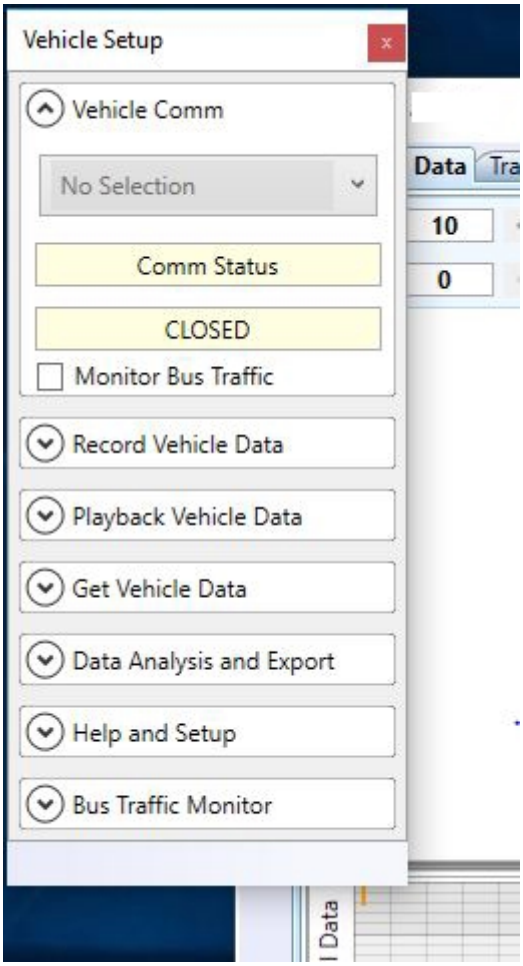
or click on the down arrow at the top of the screen and uncheck the Auto Hide option.



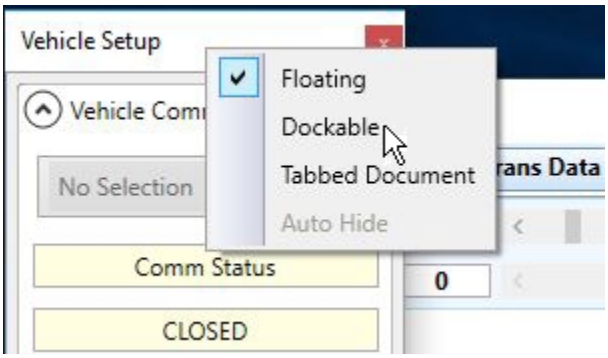
Once Auto Hide is disabled the menu accessed by clicking on the down arrow allows three choices for how the screen is displayed. If 'Dockable' is selected the screen will remain in it's original position at the side of the main screen. Selecting 'Floating' from the menu the screen becomes independent of the main screen.



The screen can then be positioned anywhere on your monitor.

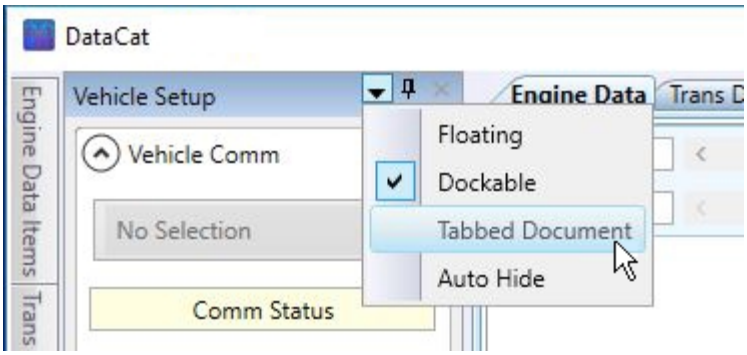


To change back from a floating screen right click on the menu bar and select the desired mode.

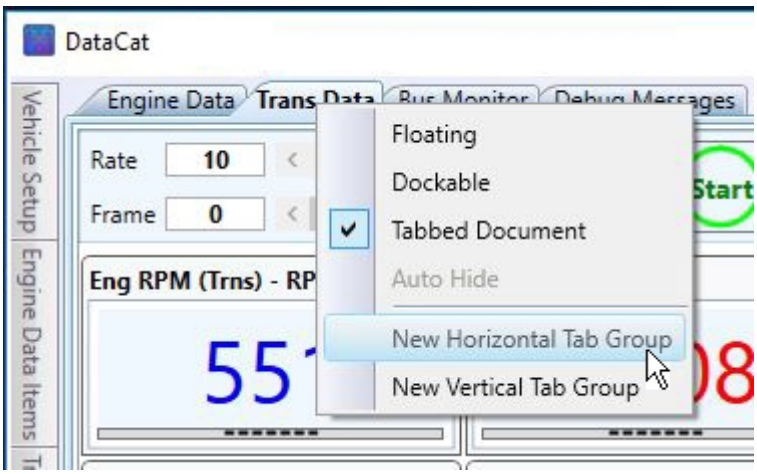


Then double-click on the screen title bar to close the floating screen.

Selecting the Tabbed Document option adds the screen tab to the tabs at the top of the main screen.



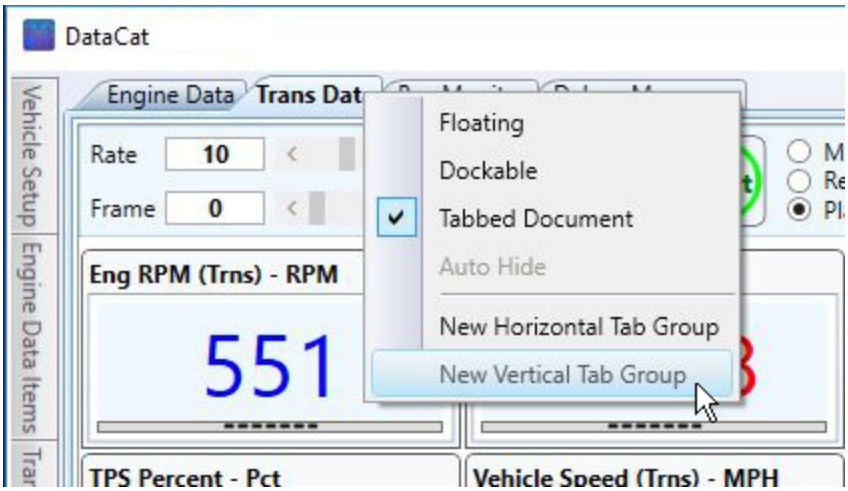
To change the screen mode of one of the tabbed documents at the top of the main screen, right click on the tab to display the screen mode menu. The Tabbed Document screens have two other possible modes; New Horizontal Tab Group and New Vertical Tab Group. Selecting 'New Horizontal Tab Group' splits the main screen in two horizontally.



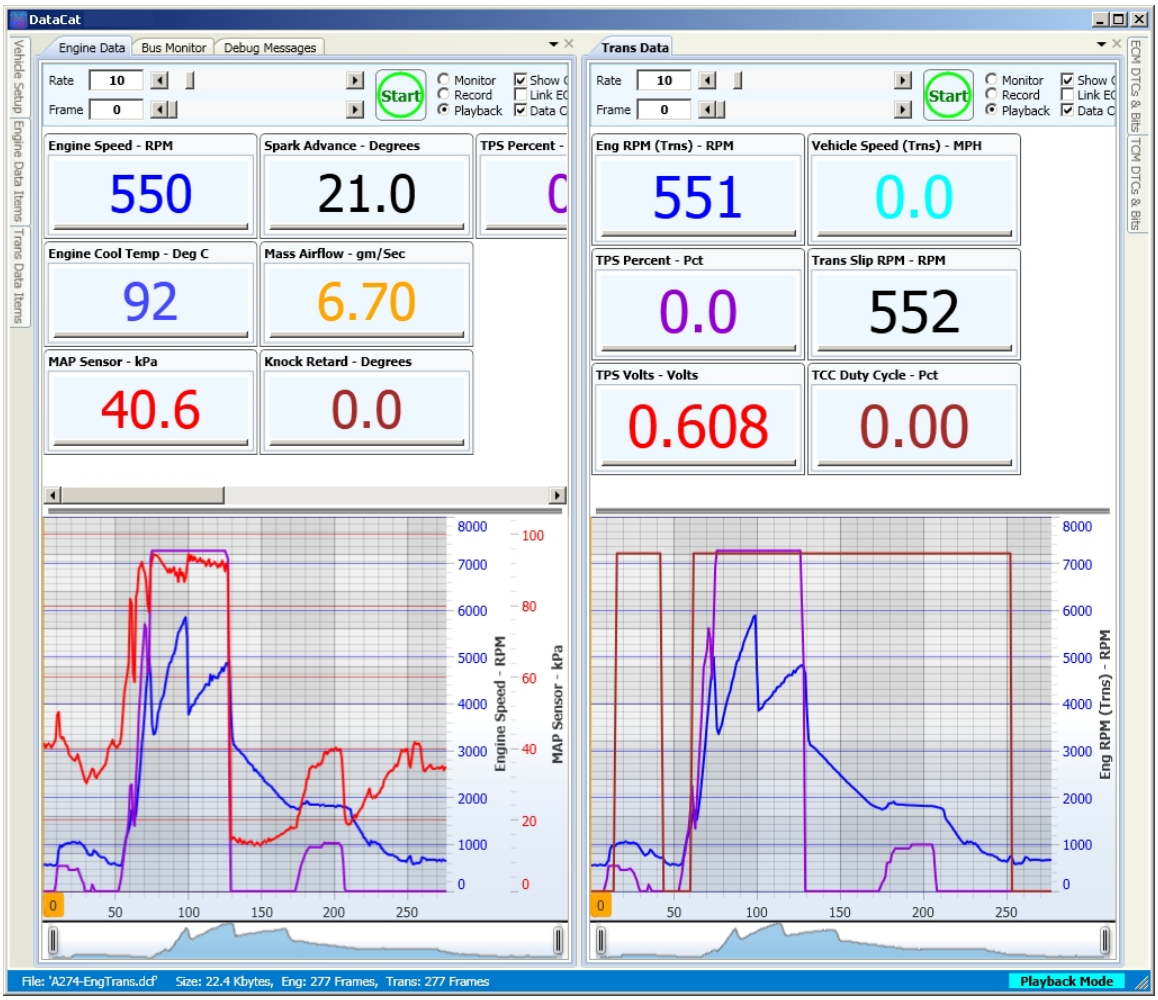
This allows you to view two separate screens with one above the other.

This can be very handy if you are working with a data file that has both engine and transmission data.

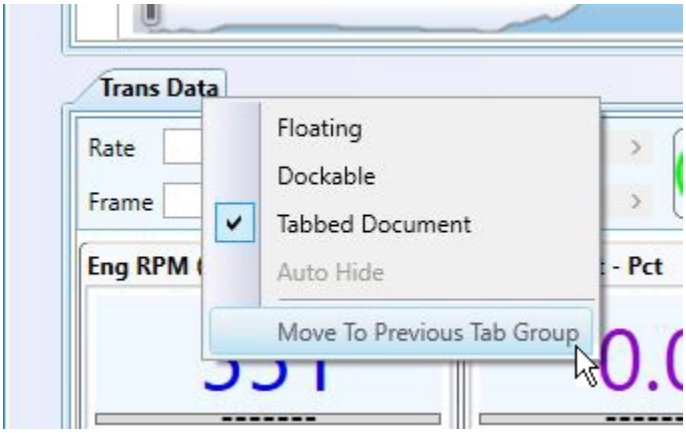
Selecting 'New Vertical Tab Group' splits the main screen in two vertically.



This allows you to view two separate screens with one next to the other.



To return the screen tab to it's original position in the top tabs right click on the tab and select 'Move to Previous Tab Group'.



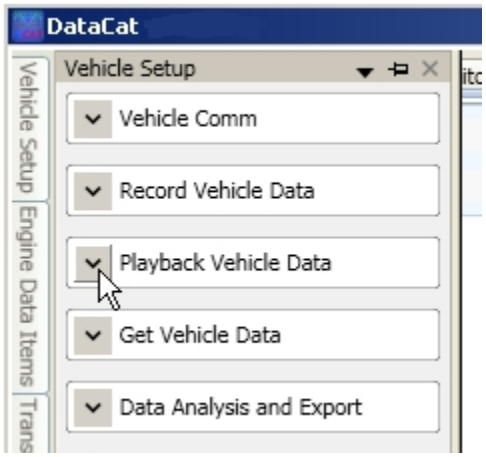
You can change the order of the top tabs by clicking on the tab and dragging it left or right.

Viewing Recorded Data

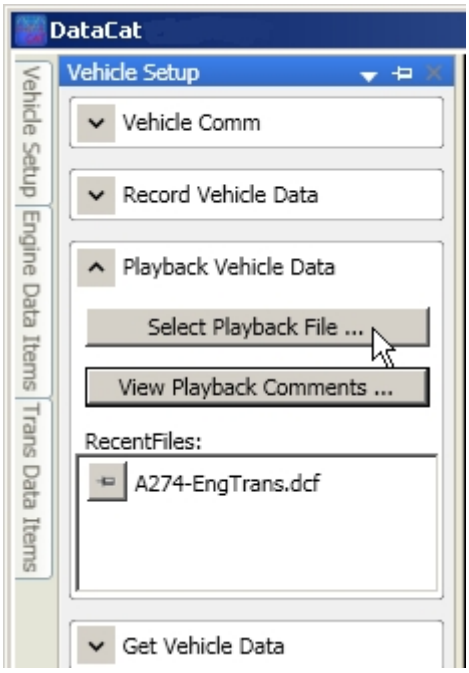
Opening a Data File

To open and view a previously recorded data file, place the mouse pointer over the 'Vehicle Setup' tab to the left of the screen.

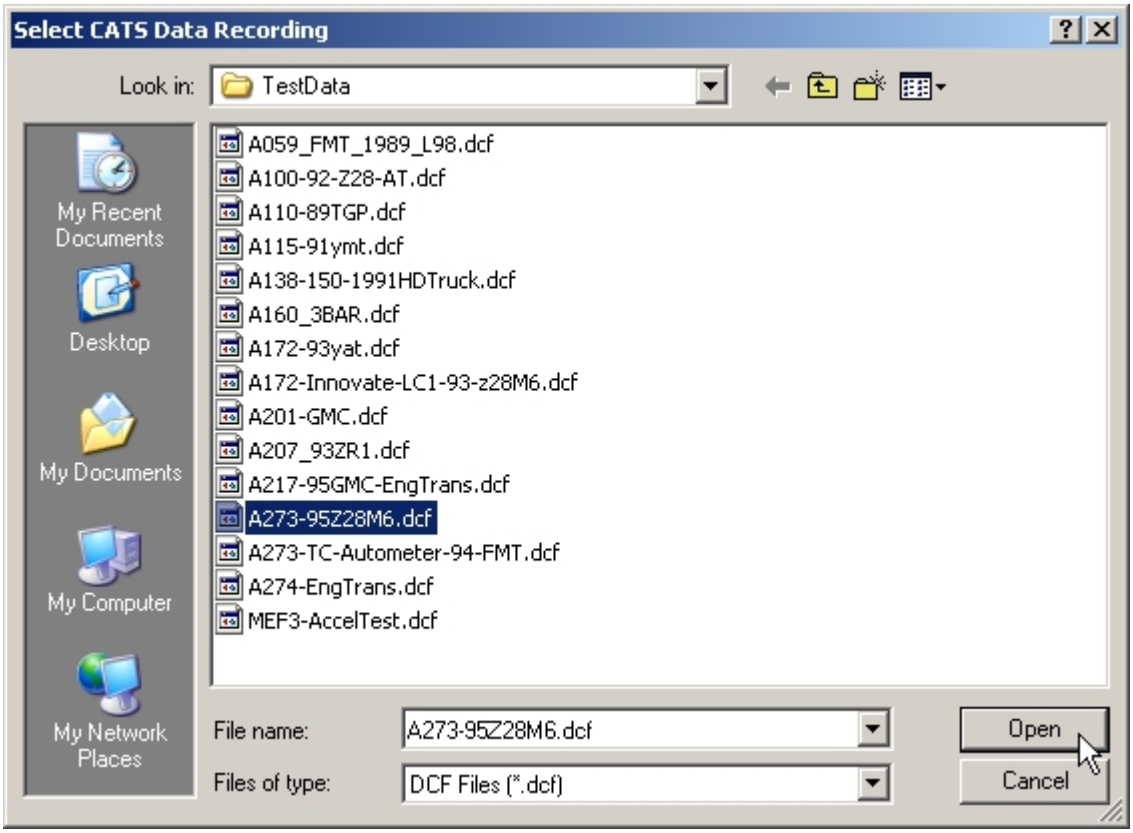
This will open the Vehicle Setup screen. On this screen click on the down arrow to the left of 'Playback Vehicle Data' to expand this item if it's not already expanded.



To select a data file click on the 'Select Playback File' button or select a file from the 'Recent Files' list.



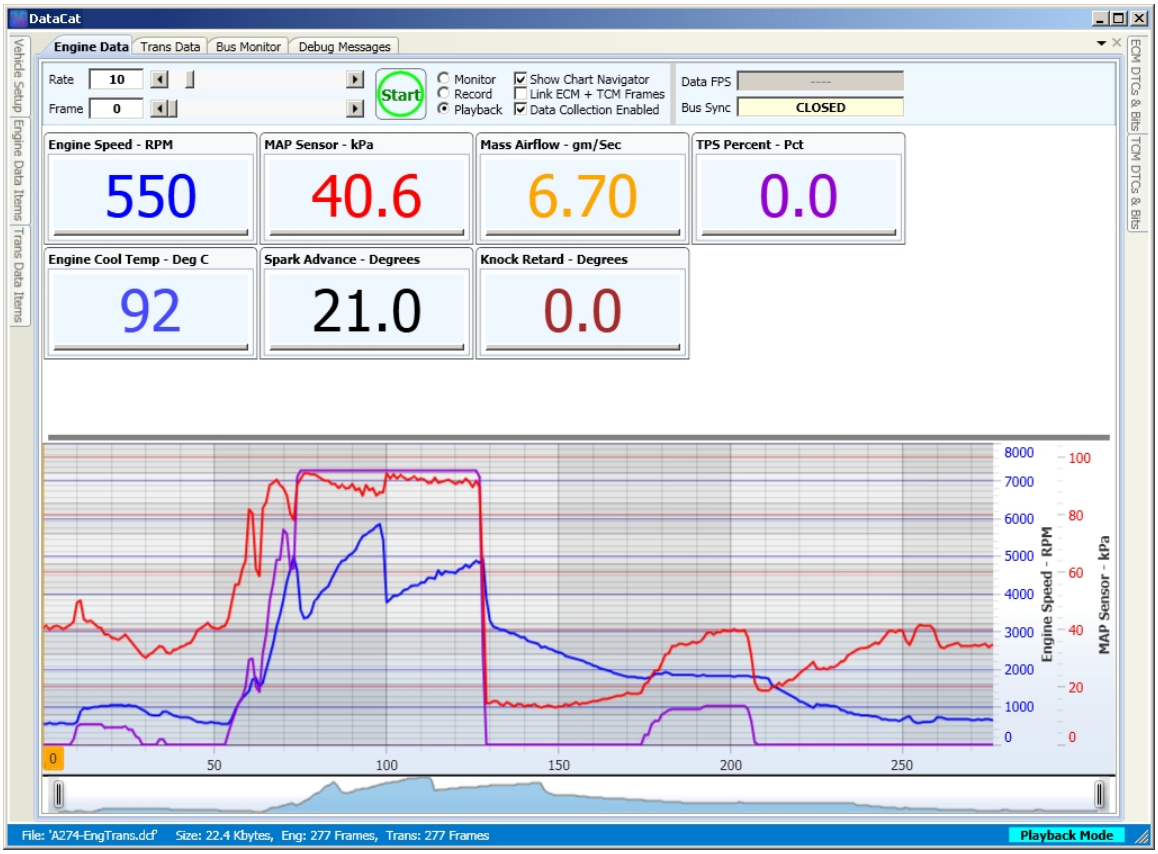
On the open file dialog screen navigate to the desired folder and select the data file that you want to playback. Then click on the 'Open' button to load the data file into the DataCat program.



Move the mouse pointer away from the Vehicle Setup screen and the screen will close automatically.

Data Display

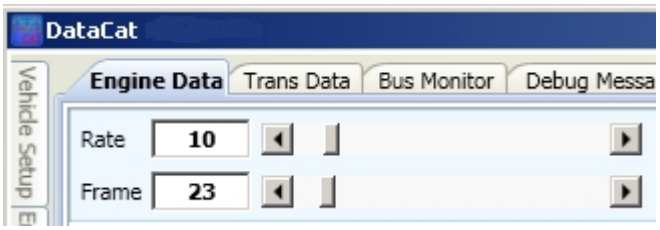
Once a data file has been opened the data will be displayed on the main DataCat screen.



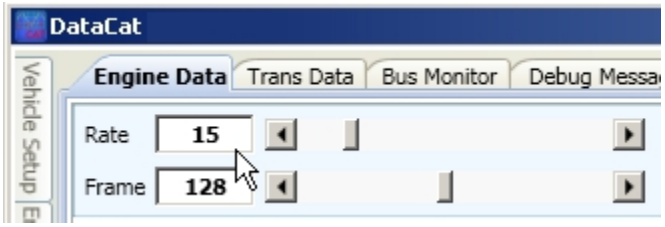
The status bar at the bottom of the screen displays the name of the data file, the size of the file and the number of engine and transmission data frames. The current program operating mode (Playback, Monitor, Record) is also displayed.

To animate the playback of the data click on the

button. The cursor on the graphic display will begin to move across the graph and the data in the digital display tiles will update accordingly. The number of the current data frame is displayed on the 'Frame' box at the top of the main screen.



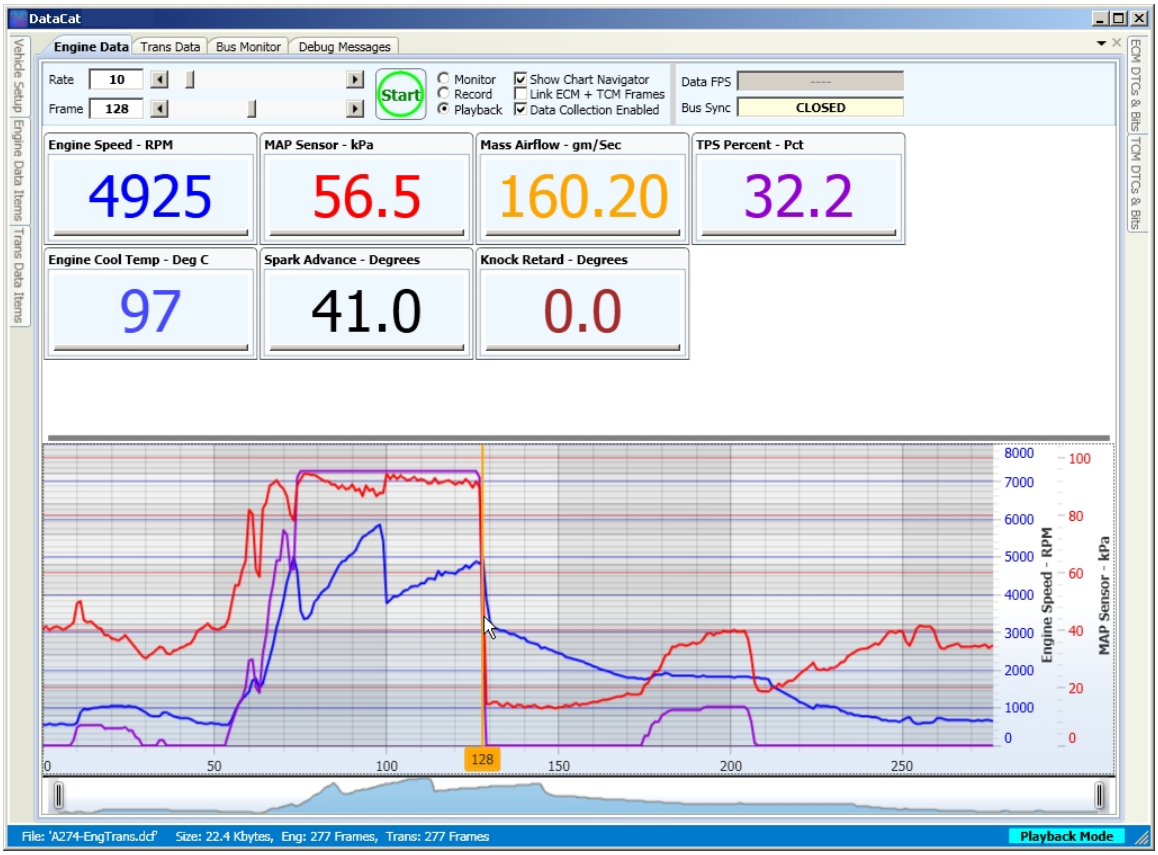
To adjust the speed of the data playback change the Rate by entering a new rate value into the Rate box at the top of the main screen, click on and drag the slider control or click on the left or right arrows on the rate control.



To stop the playback, click on the

button.

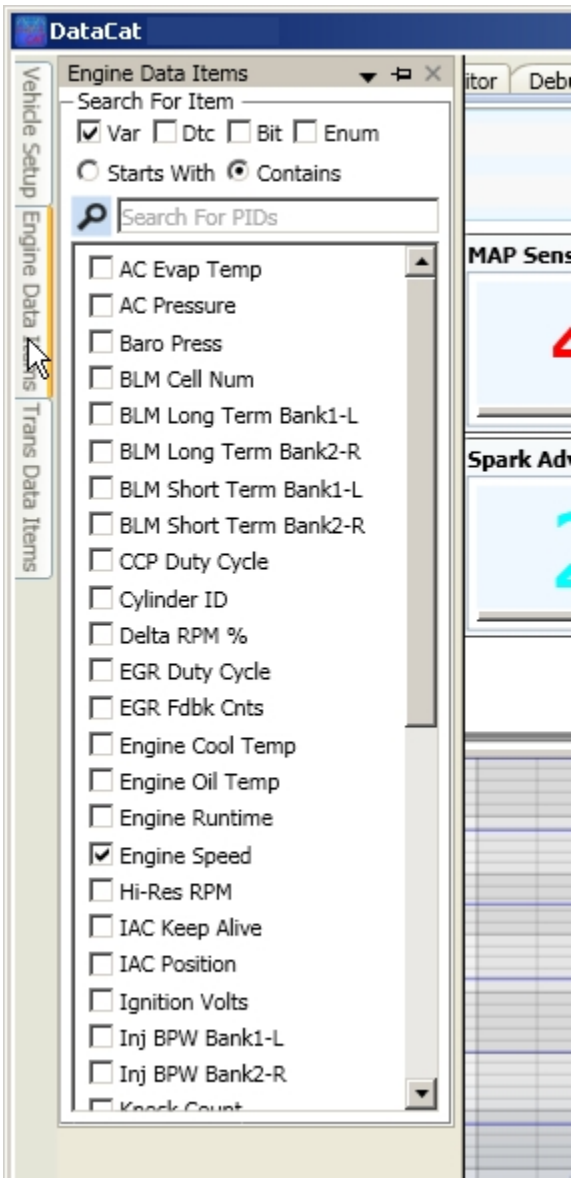
To view the data for a specific data frame just click on the desired location on the data graph. The graph cursor will move to that location and the digital data displays will be updated. The selected frame is shown at the bottom of the cursor as well as the Frame box at the top of the screen.



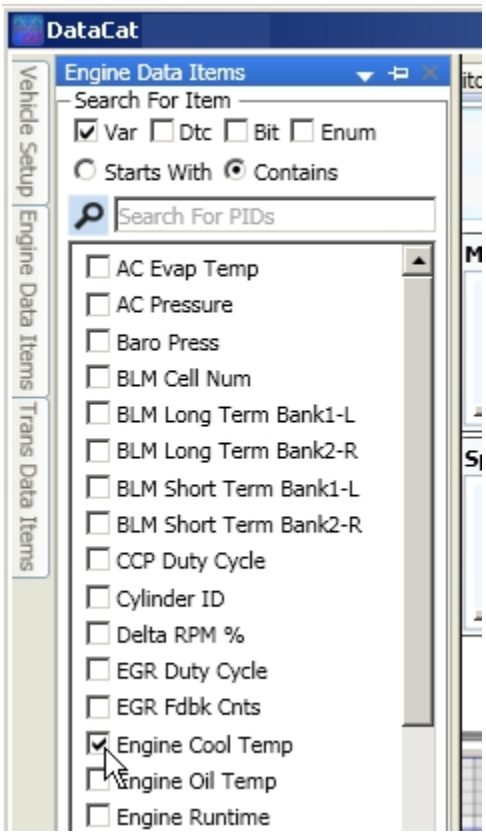
To move from data frame to data frame click on the graph cursor and drag it left or right or click on the left or right arrow in the frame control at the top of the main screen.

Adding Data Parameters

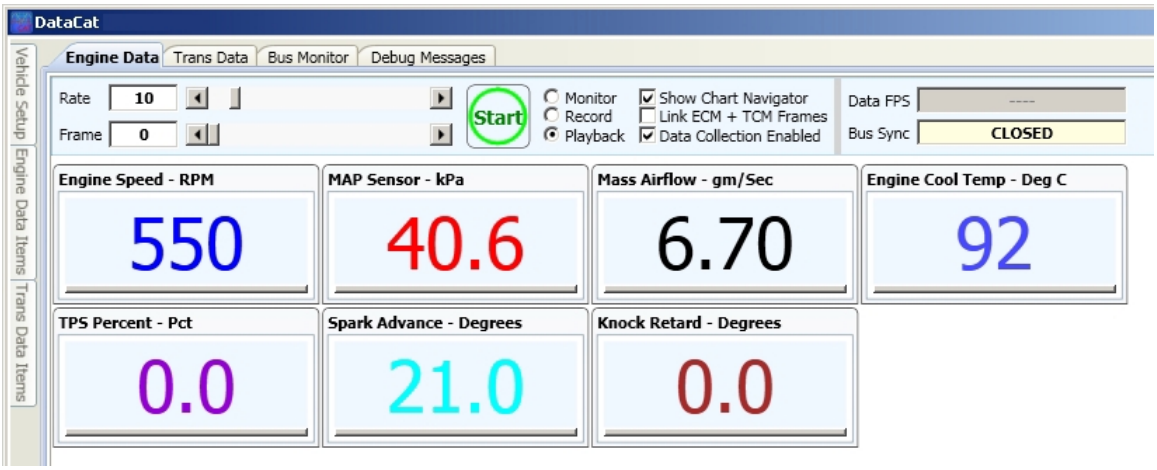
You can easily add and delete the various data parameters that you want displayed on the data display. To add a data parameter to the digital section of the data display, drag the mouse pointer over the Engine Data Items tab to the left of the main screen. This will open the Engine Data Items screen.



To locate the desired parameter, scroll down the parameter list or use the search function at the top of the list. To add the desired parameter to the digital display section of the main screen check the check-box to the left of the parameter name, for example Engine Cool Temp.

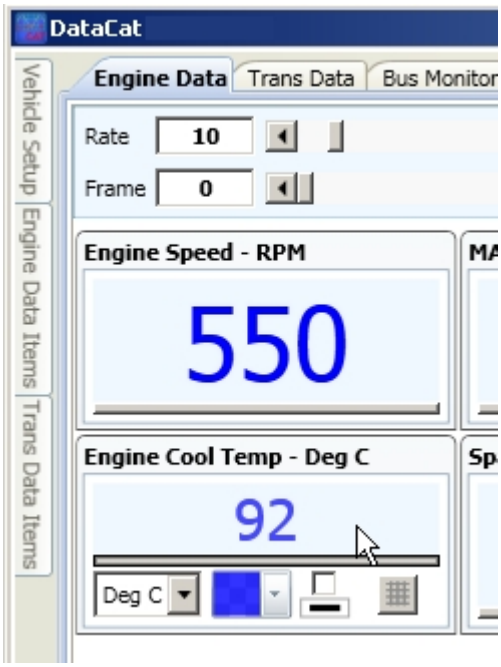


This will add a box for the engine coolant temperature parameter to the main data screen.

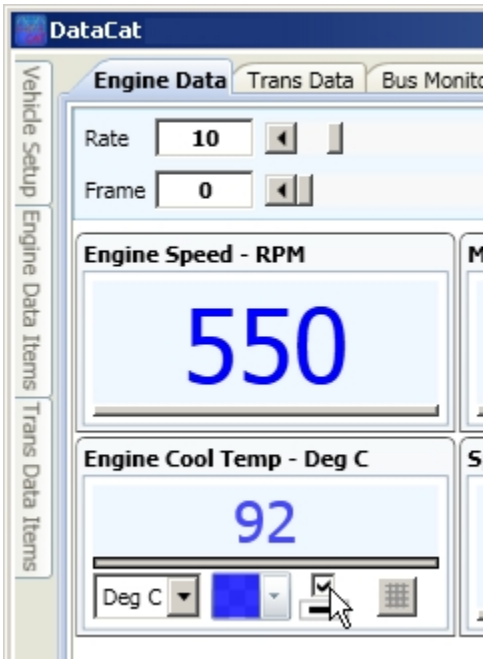


Conversely you can remove an item from the digital display by opening the Engine Data Item list and un-checking the check-box to the left of the parameter name. You can also remove an item from the digital display by clicking om the 'X' in the upper right corner of the data tile.

To add a parameter to the chart display it must first be added to the digital display. Then click on the box of the desired parameter to open the options window.



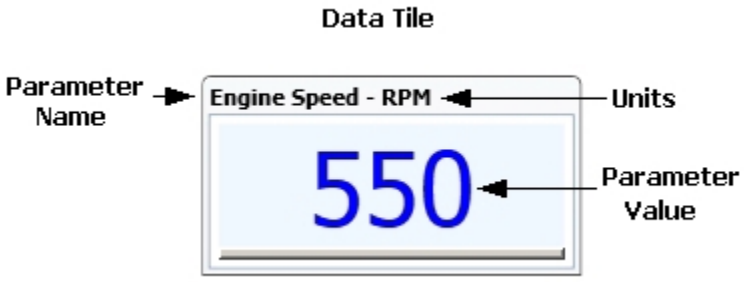
Next click on the check box above the line segment. This will add this parameter to the chart display.



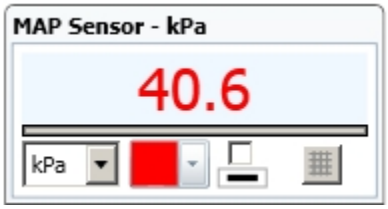
Un-checking this check box will remove this parameter from the chart display.

Digital Data Display

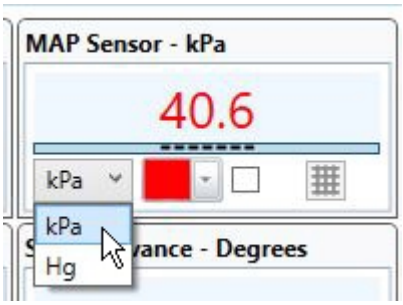
The main DataCat display is divided horizontally into two sections. The top part of the display is used to display selected data parameters in digital form. Each parameter is displayed in an individual tile that contains the parameter value, a title bar with the parameter name and units and an option box that can be opened and closed as needed.



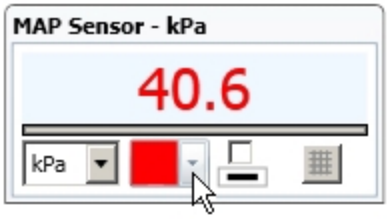
To open or close the options box, just click on the main part of the data tile.



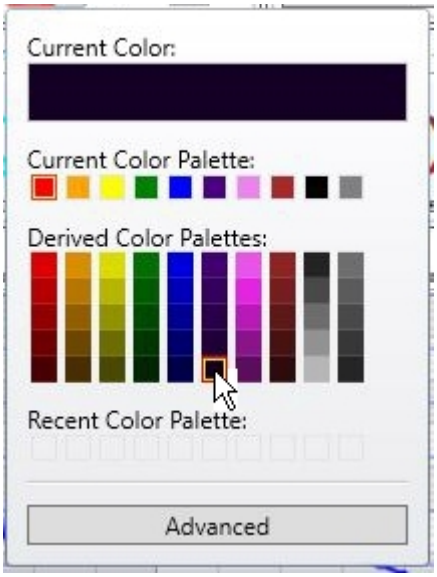
The option box contains controls that allow you to change various characteristics of the data tile. The first control allows you to change the units that are used to display the data value. To change the units click on the down arrow to the right of the units box. This will display a drop down list of the units that are available for this parameter.



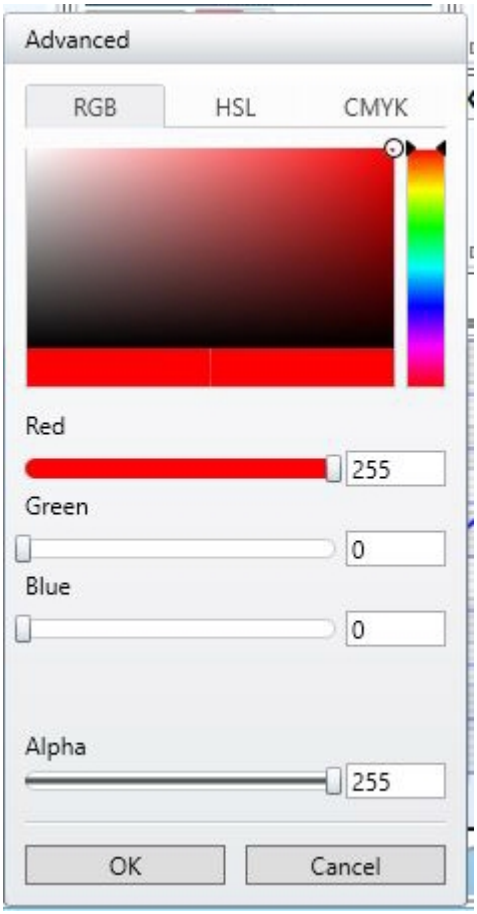
The next control allows you to change the display color of the parameter. To change the color, click on the down arrow to the right of the color box.



This opens the color selection screen.



The current color box at the top of this screen shows color over which mouse cursor resides. To view the various colors drag the mouse over the color boxes. To select a color, click on the desired color box. The digital data display color will change and the color selection screen will close. Clicking on the 'Advanced' button on the color selection screen will give you access to a much larger range of colors.

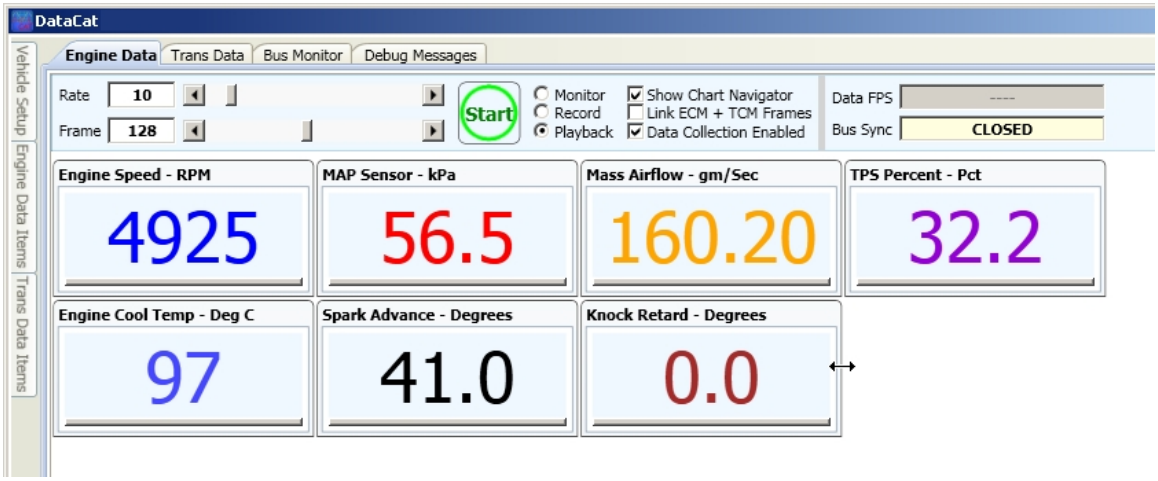


Changing the color of a parameter also changes the color of this parameter on the Chart Display if this parameter is being graphed. The other three controls in the Option box control whether or not the parameter is displayed on the Chart Display and how it is displayed. To add this parameter to the Chart Display check the check box (or un-check the box to remove it from the Chart Display). Click on the Line control below the check box to change the thickness of the line on the Chart Display for this parameter. The Axis control on the far right selects whether or not the Y-axis for this parameter is displayed on the Chart Display. See Chart Display section of the help file for more details.

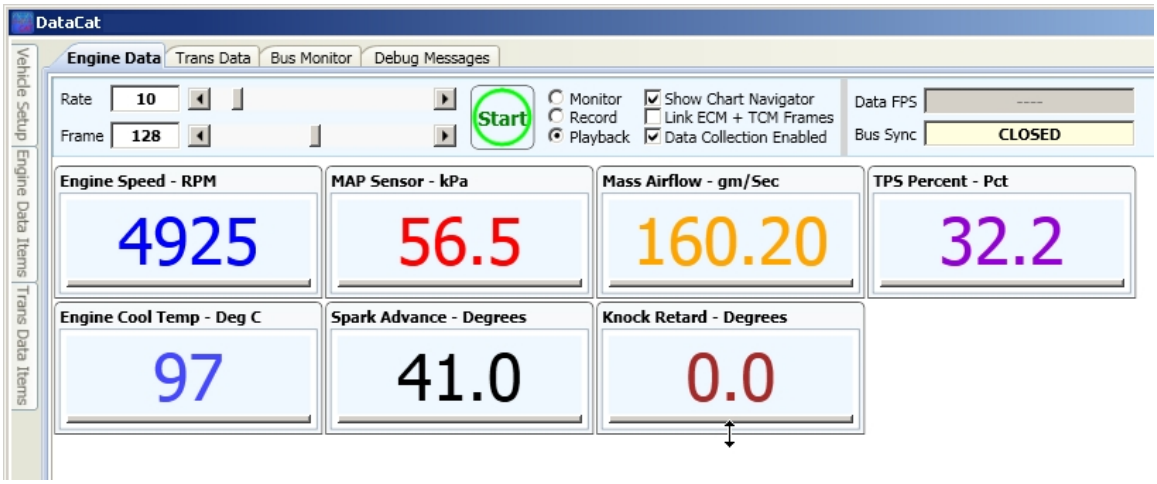
To change the order of the data tiles click on the title bar of the data box and drag it into the desired position.

To adjust the size of the Digital Data Display part of the main screen, click on the screen divider bar and drag it up or down as desired.

To change the width of the data tiles click on the side of one of the data tiles and drag the side to the desired width.

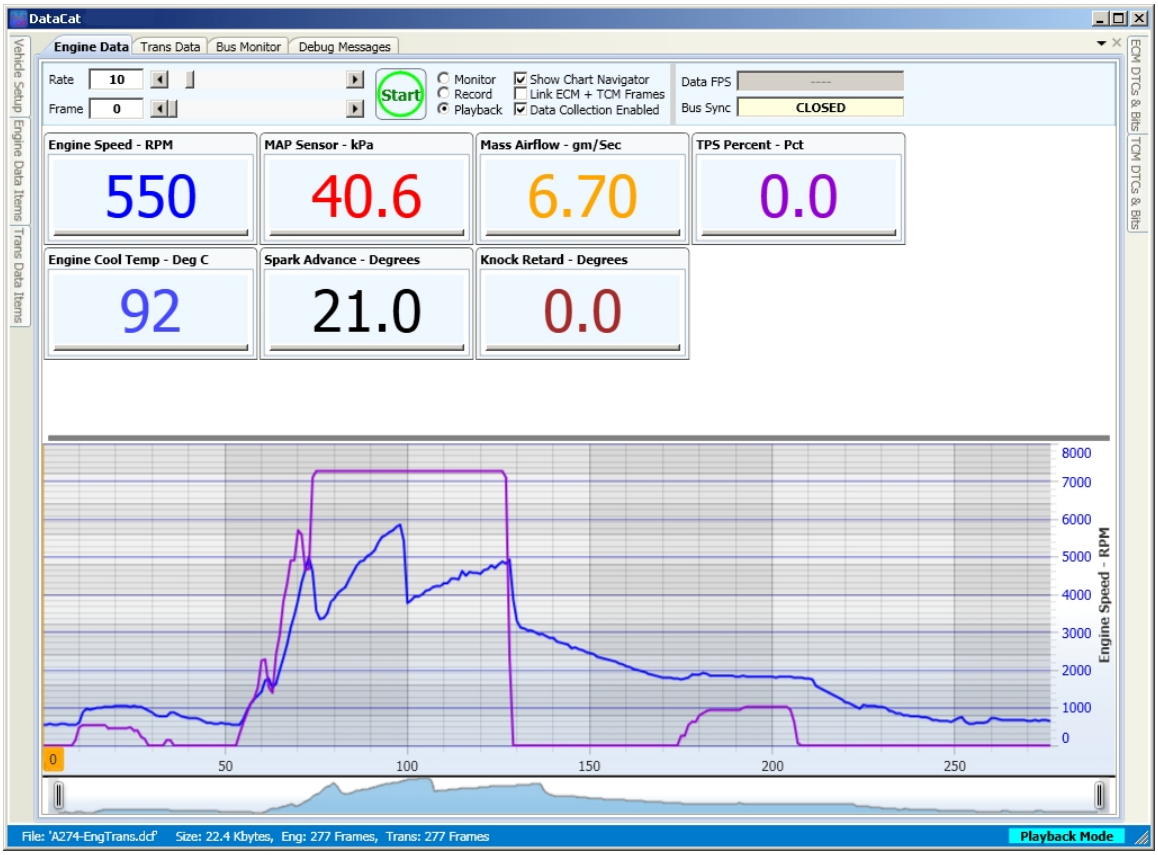


Similarly you can adjust the height of the data tiles by clicking on the bottom of the tile and dragging it to the desired height.



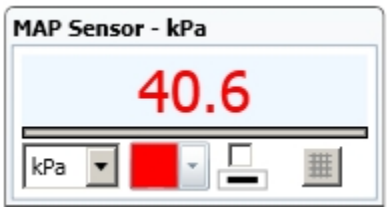
Data Chart Display

The lower section of the main data display is the chart display that allows you to view the various data parameters in graphical form.

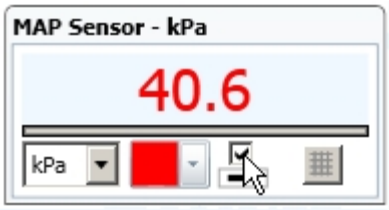


To display a data parameter on the chart it must first be added to the data display. To add a parameter to the data display open the Engine Data Items (or Trans Data Items) display and select the desired parameter from the parameters list. See the 'Adding Data Parameters' section of the program Help for more details.

To add a parameter to the chart, click on the data tile for the desired parameter. This will open the options box.

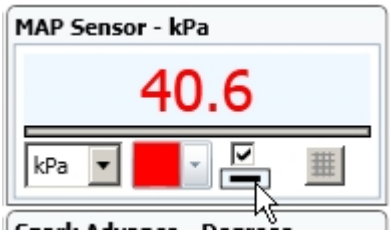


To add the parameter to the chart, click on the check box just above the line segment.

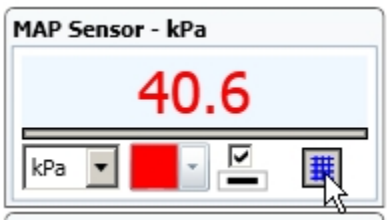


This will add this parameter to the chart.

Clicking on the line segment below the check box will select a thick on thin chart line for this parameter.

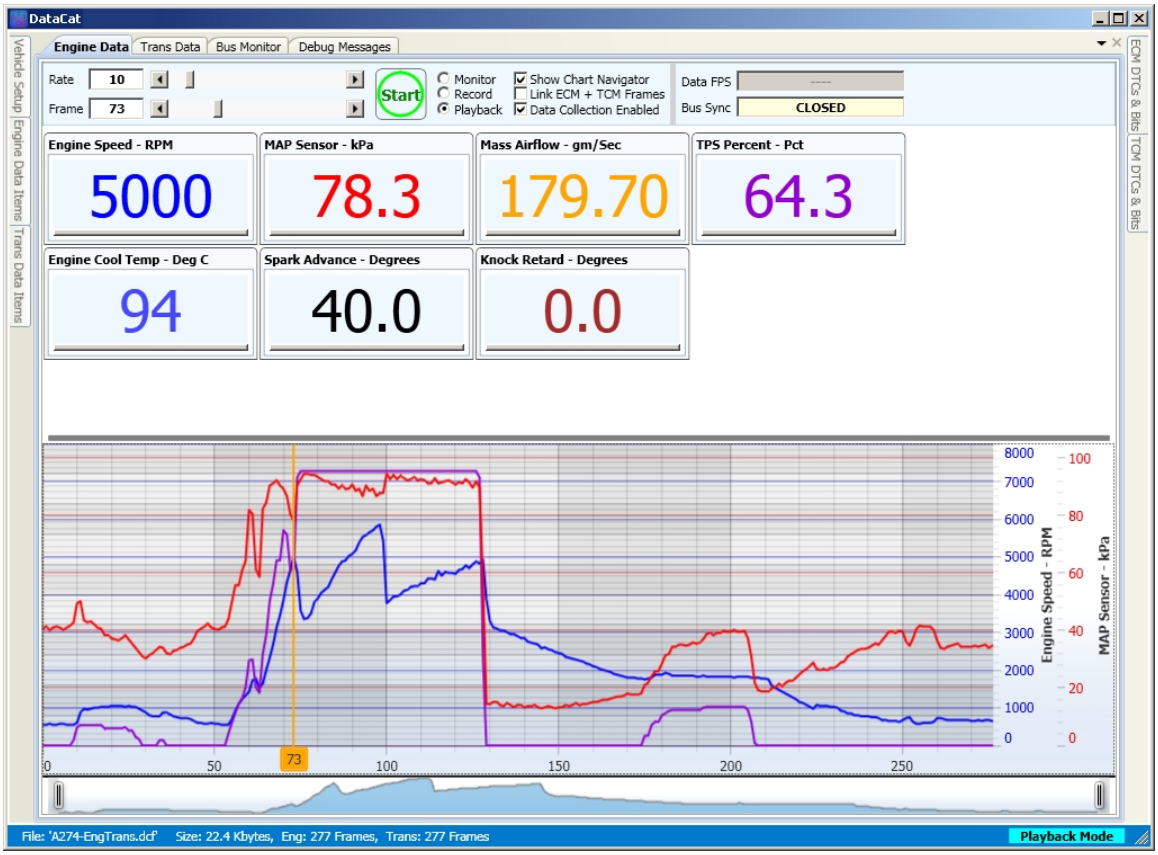


To add the axis grid for this parameter to the chart click on the Axis Grid button.

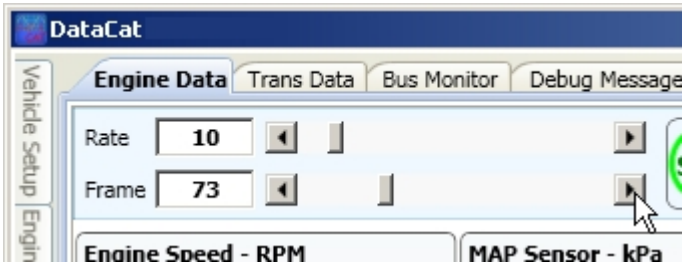


To close the option box in the data tile just click on the main portion of the data tile again.

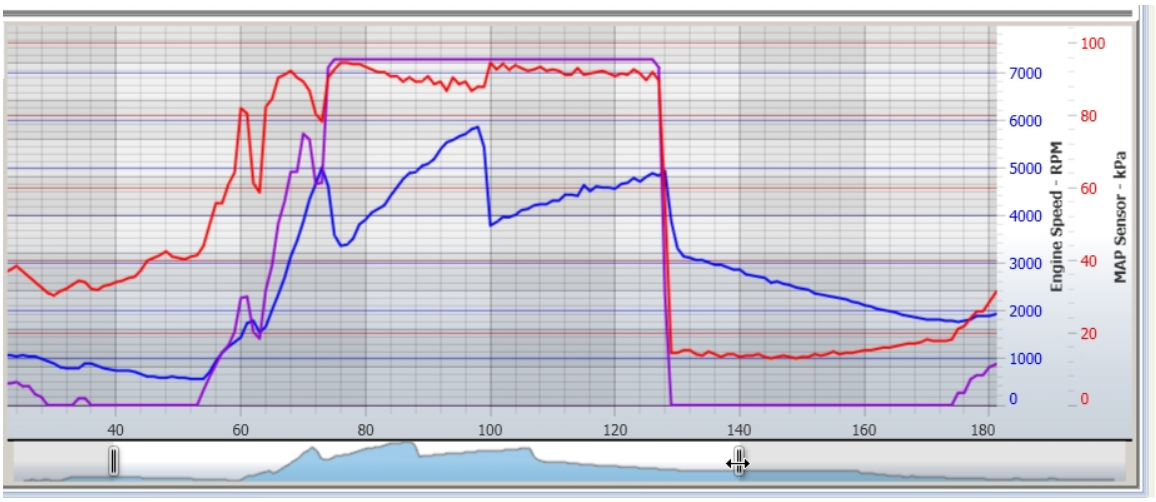
To view the data for a specific data frame you can click on the chart. This will move the chart cursor to the selected frame and update the data in the data tiles to this data frame. The data frame number will be shown at the bottom of the chart cursor as well as the data frame box at the top of the data display.



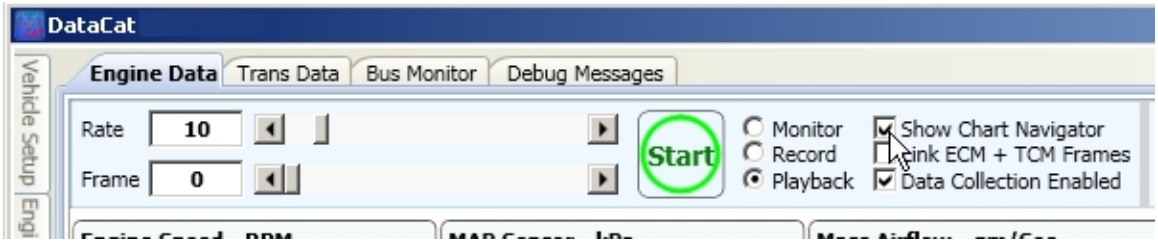
To move to a different data frame you can click on the chart cursor and drag it left or right or you can click on the left or right arrow buttons to the right of the Frame box or click on the frame slider control and drag it left or right as needed. You can also type a frame number into the Frame box.



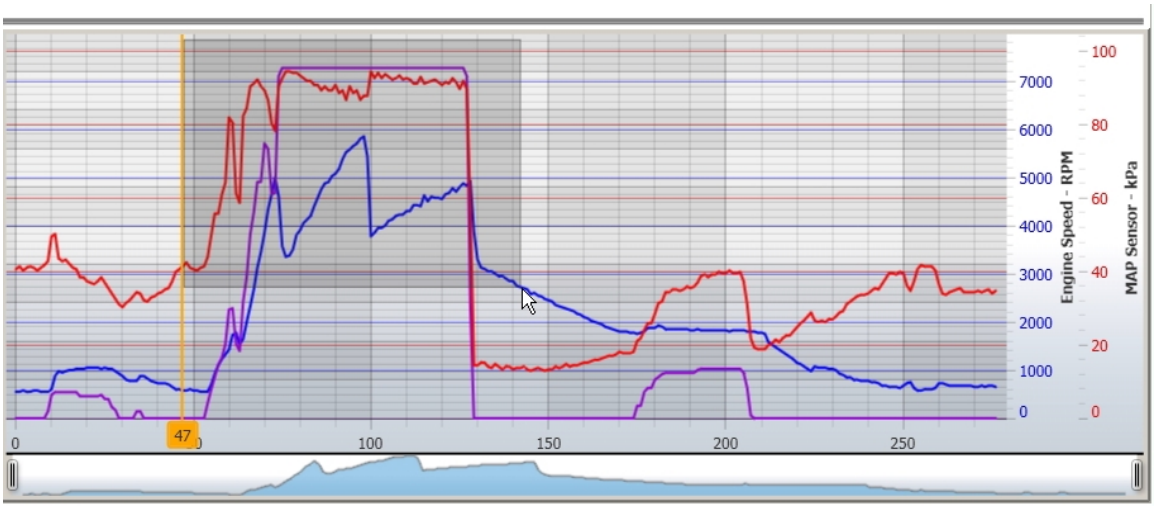
When initially opened the chart displays all the data frames in the data file. To change the start and end data frames that are displayed on the chart, click on the start or end slider control in the chart navigator at the bottom of the chart display and drag it to the desired frame.

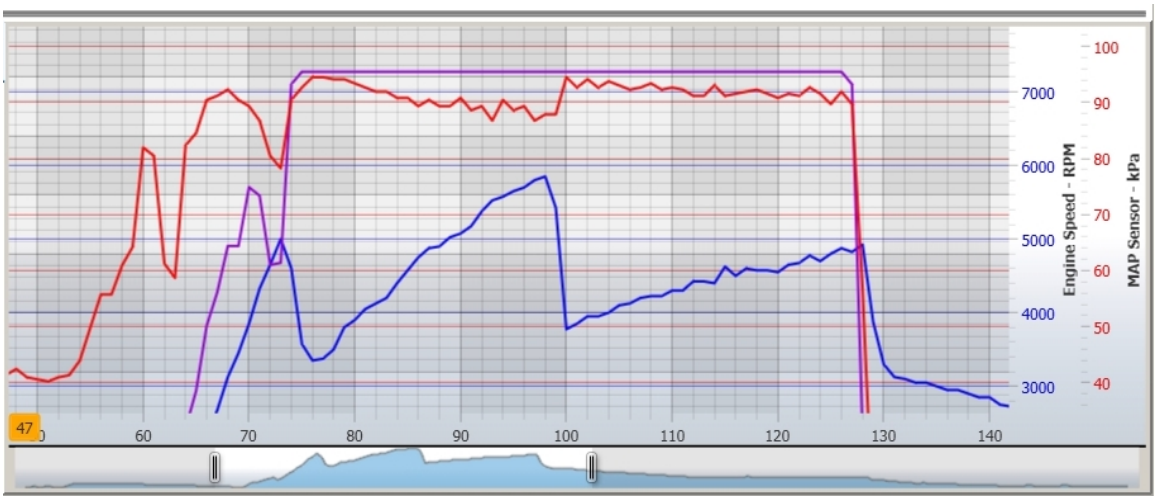


Note: it the chart navigator is not visible click on the 'Show Chart Navigator' check box at the top of the data screen.



You can also zoom in on the chart by clicking on the chart display and dragging the mouse over the portion of the chart that you want to zoom in on.

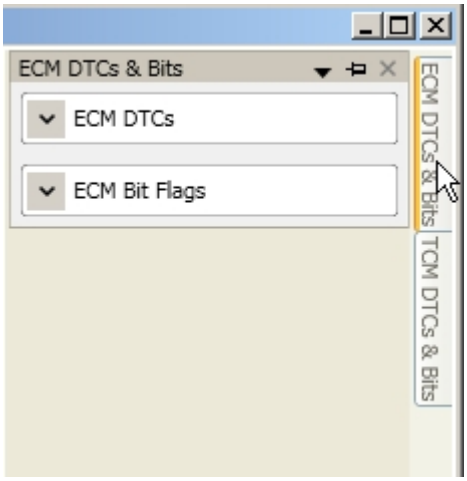




To zoom back out to the complete chart, double click on the main chart display.

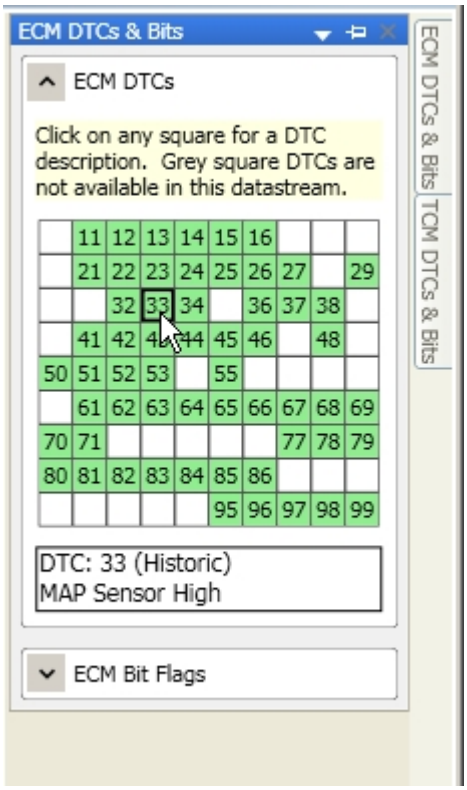
DTCs and Status Bits

To view the Diagnostic Trouble Codes (DTCs) or the Status Bits place the mouse pointer over the 'ECM DTCs & Bits' (or TCM DTCs & Bits) tab to the right of the main data screen.

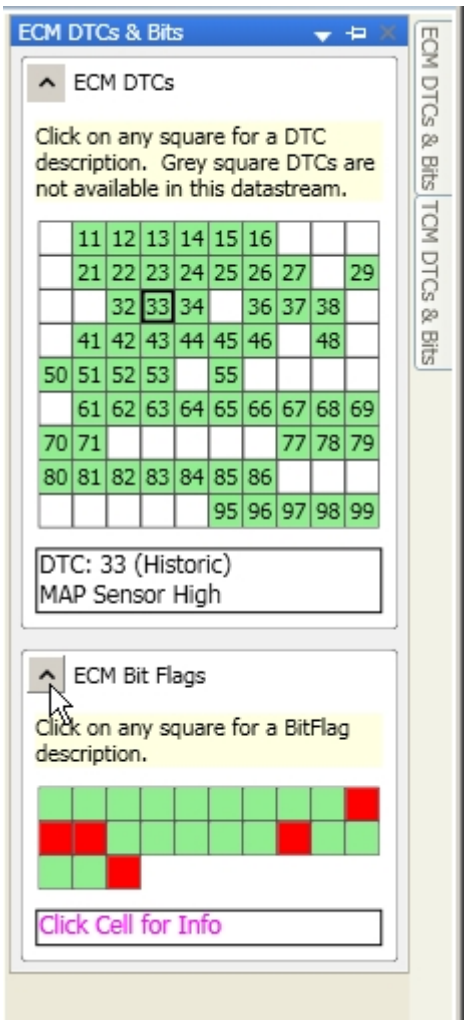


This will open the ECM DTCs & Bits (or TCM DTCs & Bits) screen. On this screen click on the down arrow to the left of 'ECM DTSs' to expand this item if it's not already expanded.

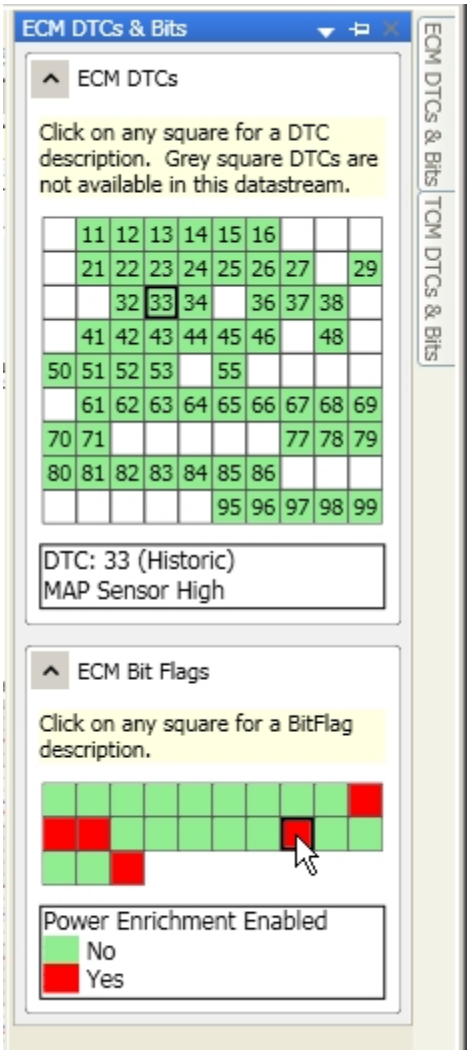
This display shows the status for each of the supported DTCs for the current data frame. A cell is displayed for each DTC containing the DTC number. For a description of each DTC position the mouse pointer over the DTC cell. To permanently display this information in the DTC information box, click on the DTC cell. If the square for the DTC is green then this DTC is not set. A red square indicates that this DTC has been set.



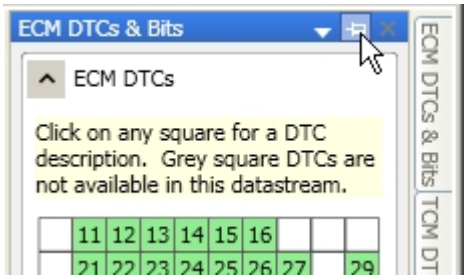
To expand the Status Bits display click on the down arrow to the left of 'ECM Bit Flags'.



This display shows the status for each of the supported Status Bits for the current data frame. A cell is displayed for each Status Bit. For a description of each Status Bit position the mouse pointer over the Status Bit cell. To permanently display this information in the Status Bit information box, click on the Status Bit cell. If the square for the Status Bit is green then this Status Bit is clear. A red square indicates that this Status bit has been set.

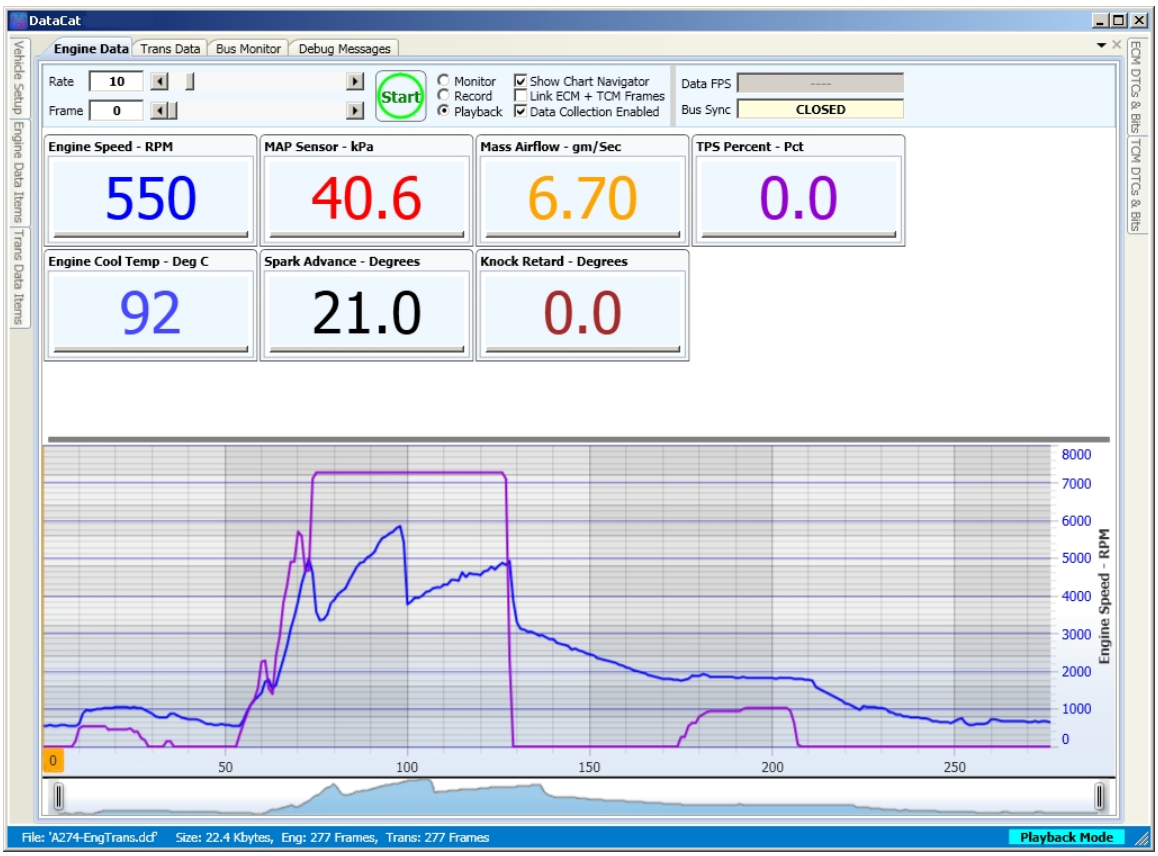


Moving the mouse pointer away from the 'ECM DTCs & Bits' screen will close this screen. If you would like the 'ECM DTCs & Bits' screen to remain open all the time, click on the Auto Hide button at the top of the screen.

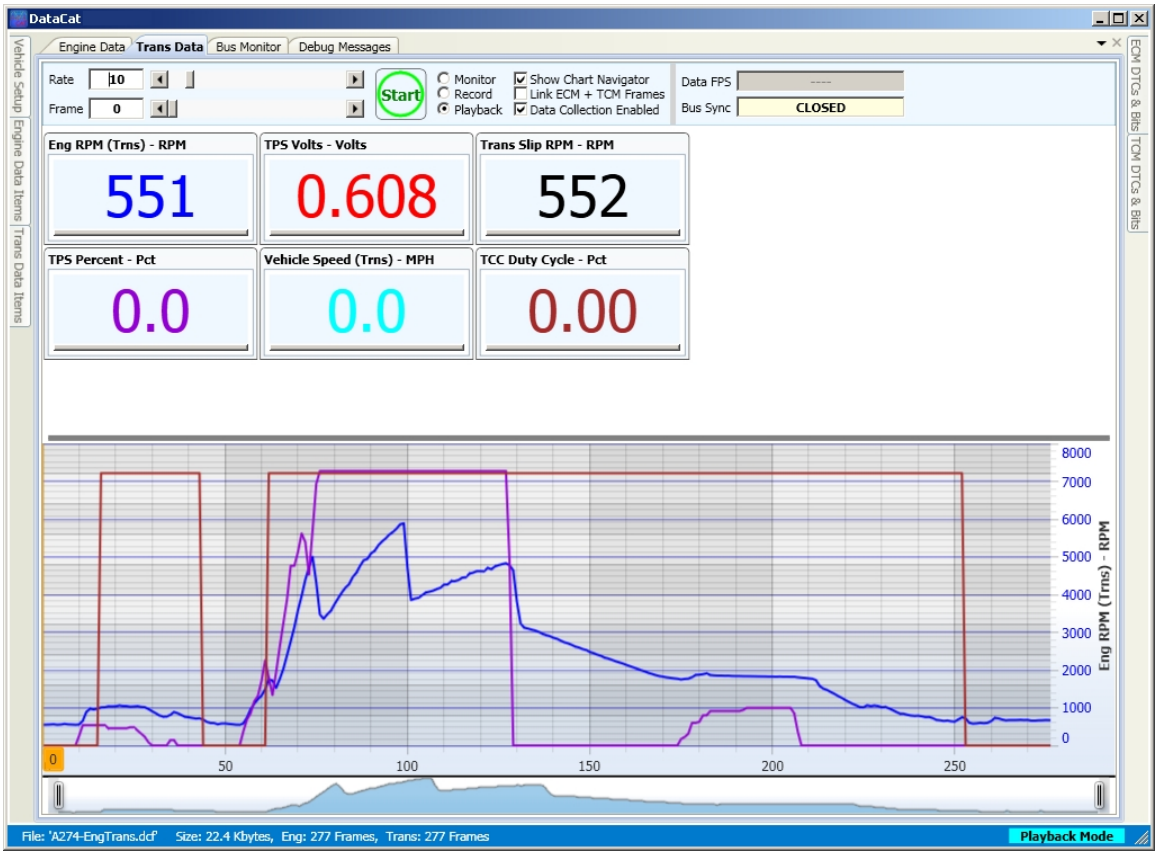


Engine and Transmission Data

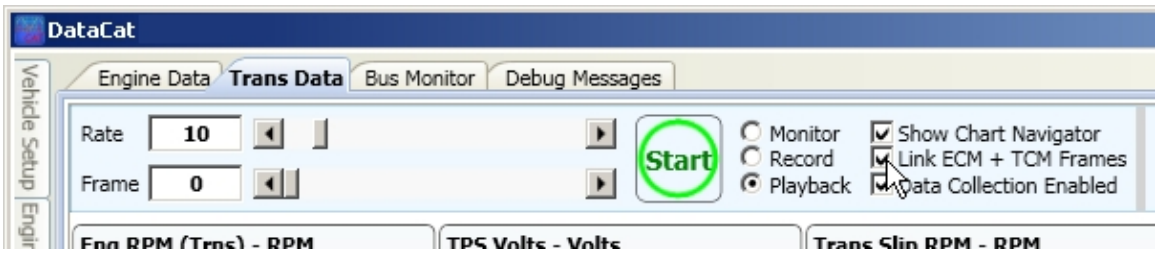
For vehicles that support both engine and transmission data the DataCat program has separate screens for each. To access the Engine Data display click on the 'ECM Data' tab at the top of the data screen.



Similarly, to view the Transmission Data click on the 'Trans Data' tab.

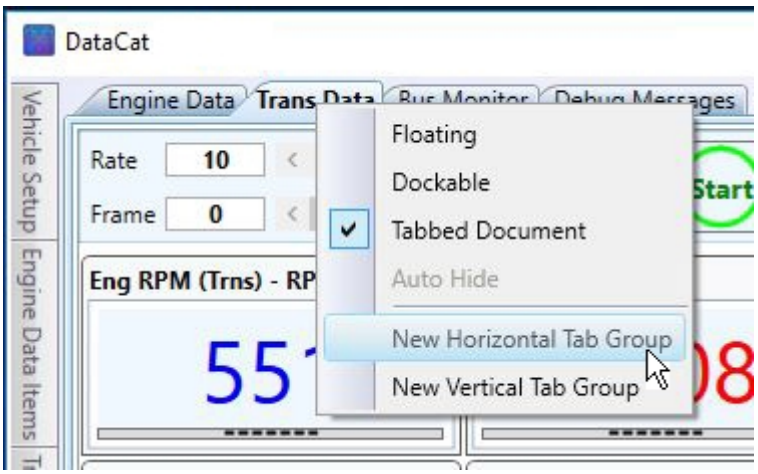


To link the ECM and TCM data frames check the 'Link ECM + TCM Frames' check box at the top of the screen.



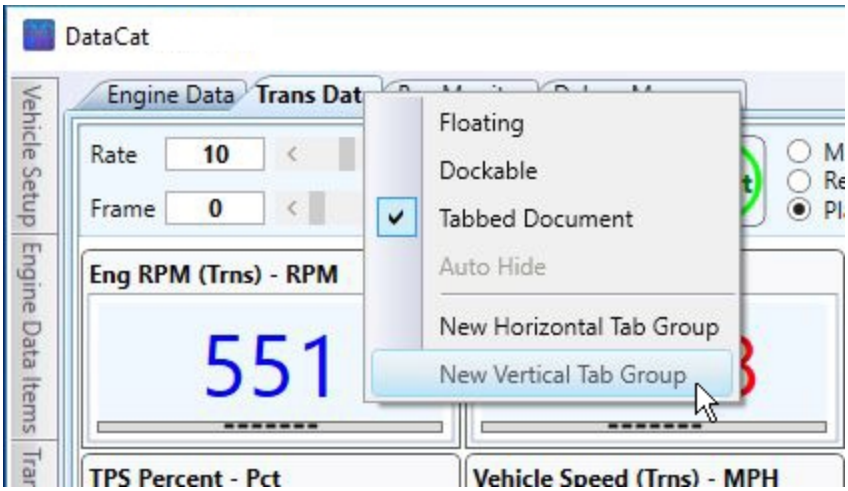
When the data frames are linked if you select a data frame on the Engine Data screen the same frame will be automatically selected on the Transmission Data screen and vice versa.

You can display both the Engine Data screen and the Transmission Data screen at the same time. To do so right click on the Trans Data tab and select 'New Horizontal Tab Group' from the drop-down menu.

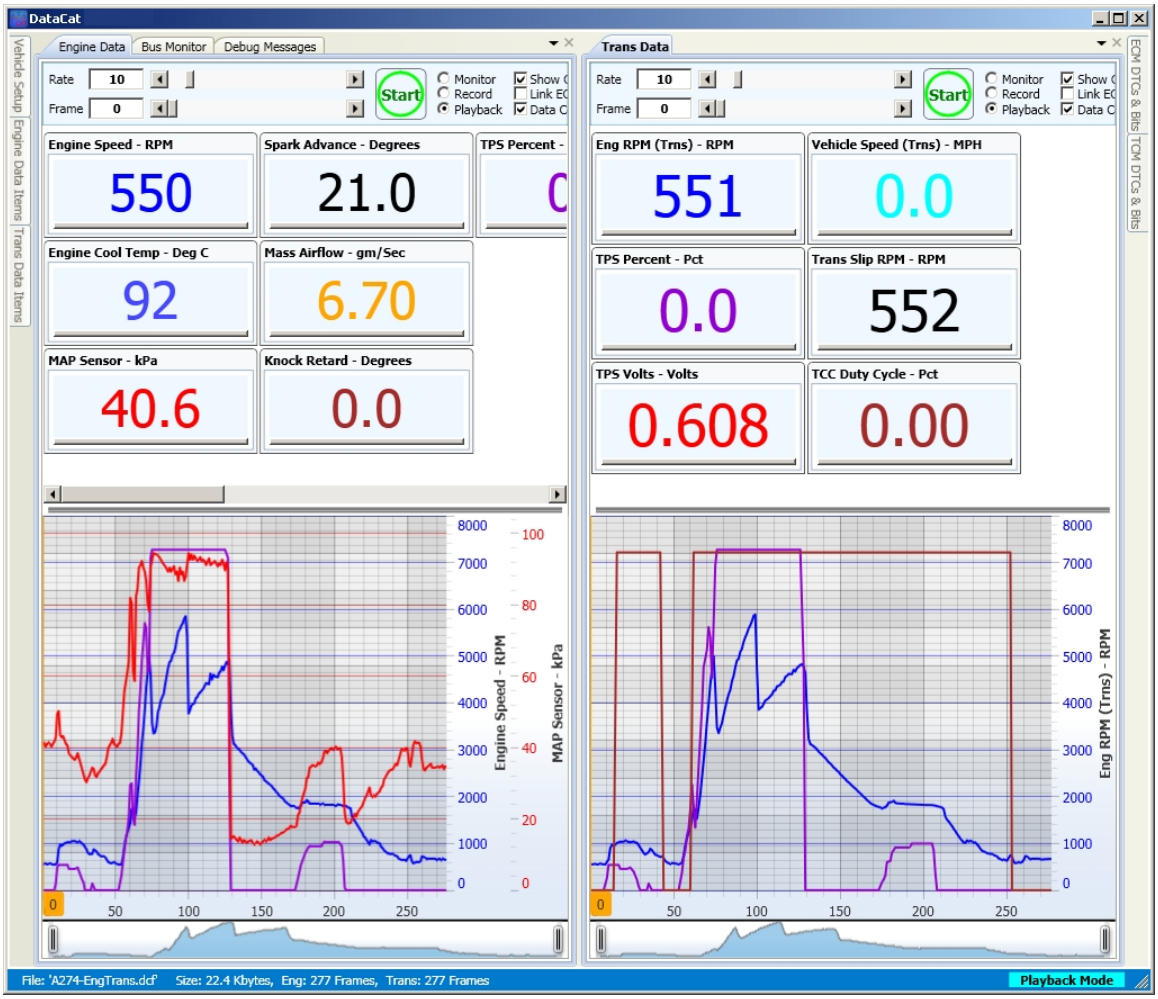


This will display the transmission data screen below the Engine Data screen.

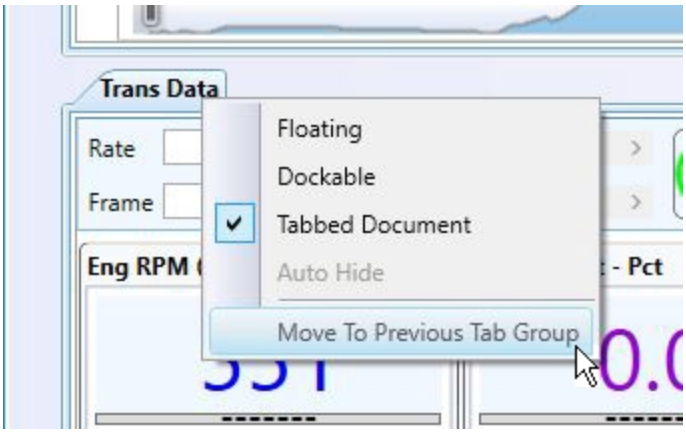
Selecting 'New Vertical Tab Group' from the drop-down menu will split the data screen vertically.



This will display the Transmission Data screed to the right of the Engine Data screen.



To return the screen tab to it's original position in the top tabs right click on the tab and select 'Move to Previous Tab Group'.



Recording Data

Introduction to Data Recording

The DataCat program allows you to view and record real-time data for a wide range of GM OBDI vehicles. You can view the data while recording and also save the data for later playback. This data can be viewed in both digital and graphic form. Depending on the vehicle both engine and transmission data can be viewed and recorded. The program allows you to pause and restart the data as desired. Data can be recorded at up to 10 data frames per second with virtually no limit on how long data is recorded.

Notes can be added to the data log file as desired.

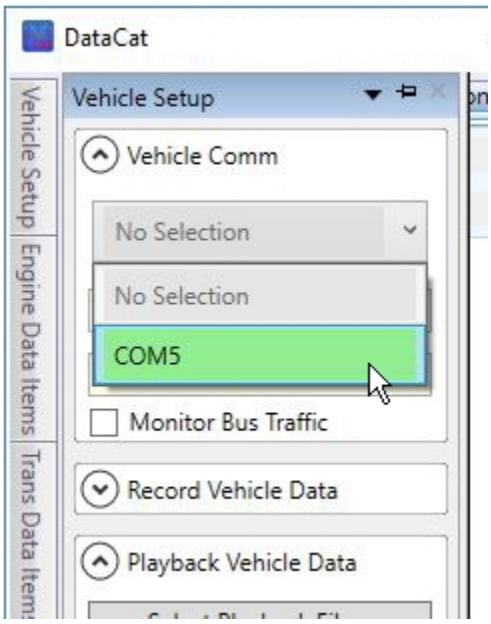
Recording Setup

Com Port Selection

Before viewing or logging data you need to select the com port the program is using to communicate with the vehicle.

First, connect your ALDL cable to a USB port on your PC. Open the 'Vehicle Setup screen and click on the down arrow next to 'Vehicle Comm' to expand this section if it's not already expanded.

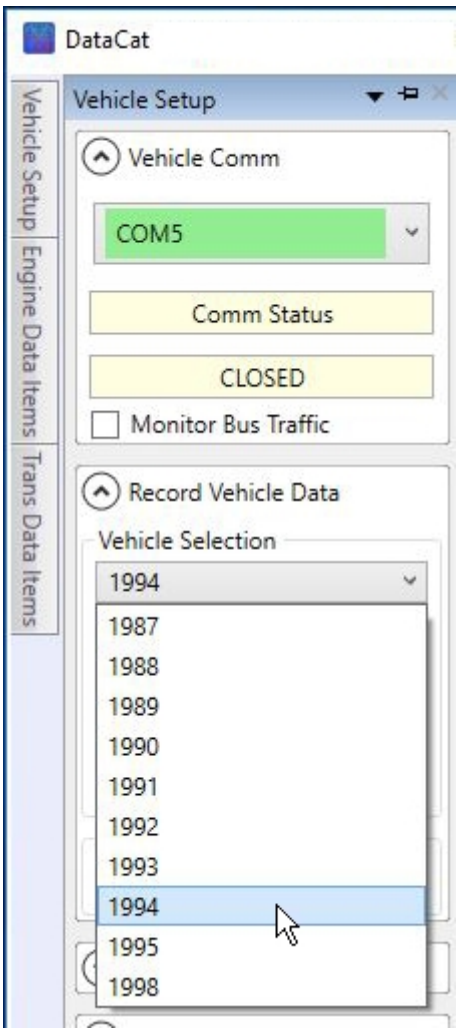
To expand the list of possible com ports, click on the down-arrow to the right of the com port selection box and click on the desired com port number from the drop-down list.



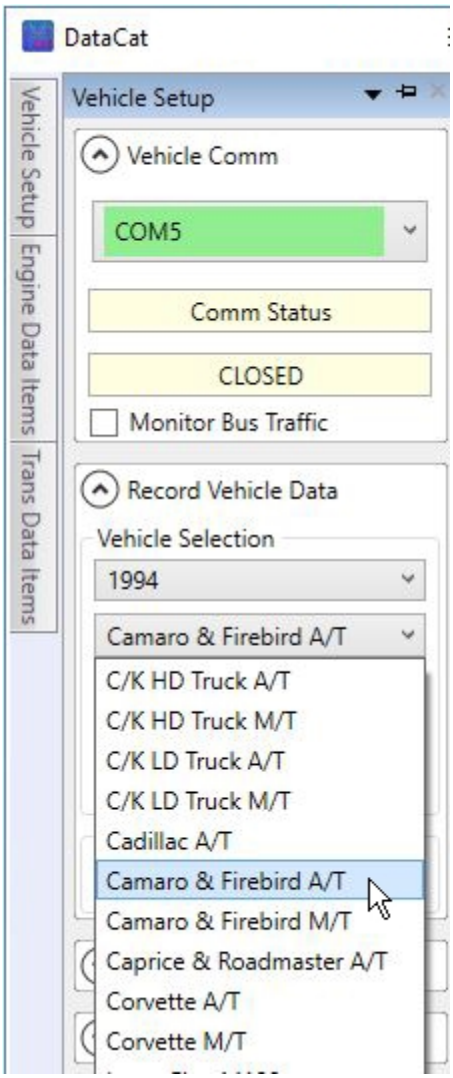
Vehicle Selection

The DataCat program supports a wide range of OBDI GM vehicles. To select the type of vehicle you are working on open the 'Vehicle Setup' screen and click on the down arrow next to 'Record Vehicle Data' to expand this section if it's not already expanded.

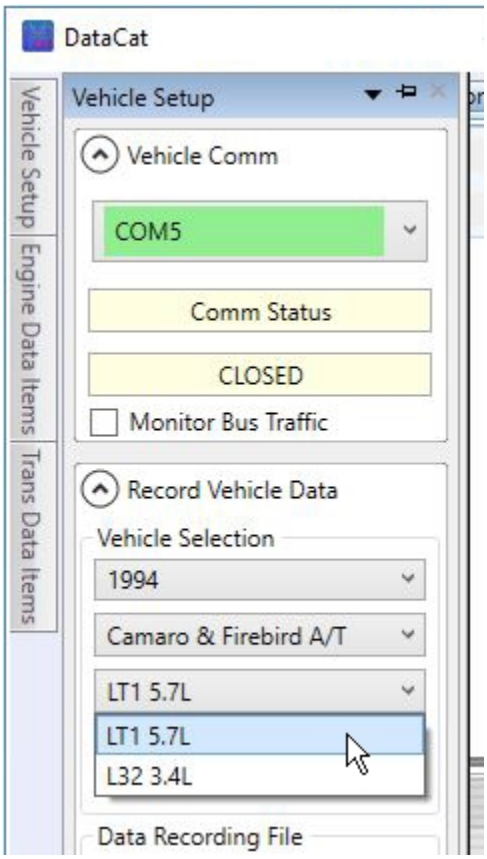
To select the vehicle model year click on the down-arrow to the right of the vehicle year box and select the desired year from the drop-down list.



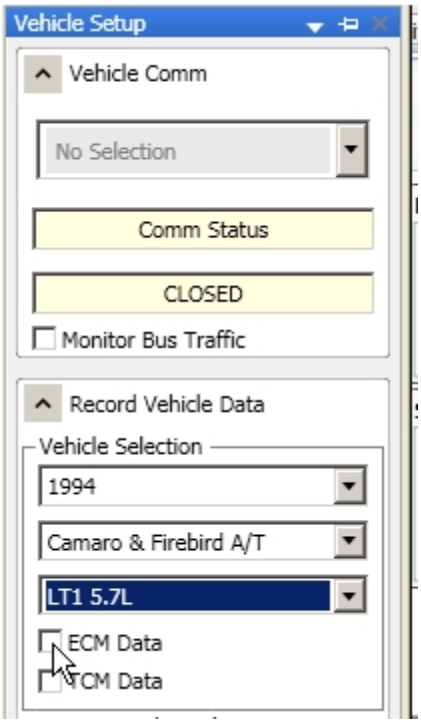
To select the vehicle type click on the down-arrow to the right of the vehicle type box and select the desired vehicle from the drop-down list.



To select the engine type click on the down-arrow to the right of the engine type box and select the desired engine from the drop-down list.

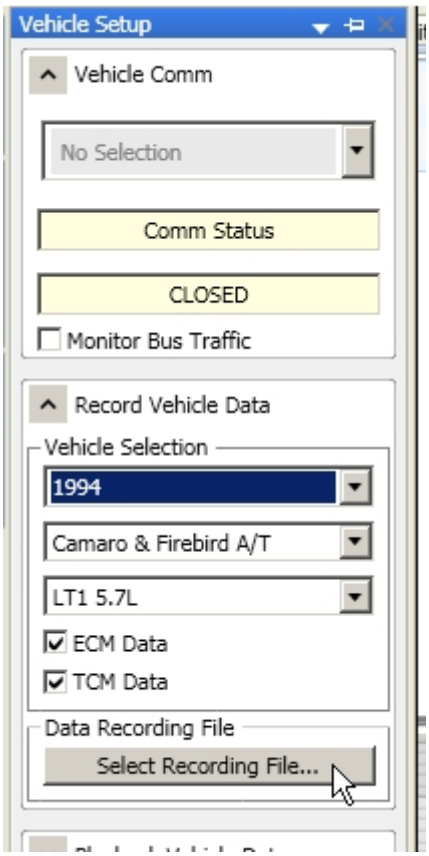


After selecting the vehicle select whether to record the ECM (engine) or TCM (transmission) data or both by checking the ECM Data and TCM Data check boxes. (Note: only some vehicles provide TCM Data.)

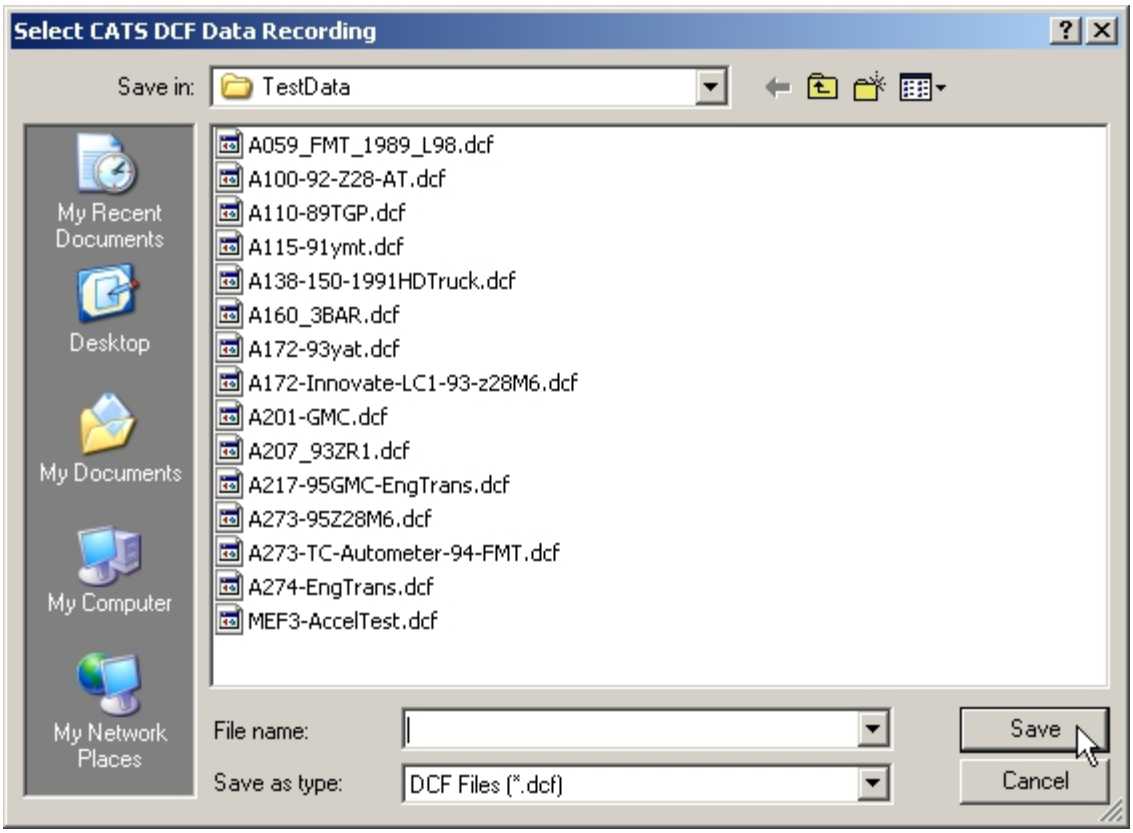


Data Recording File Selection

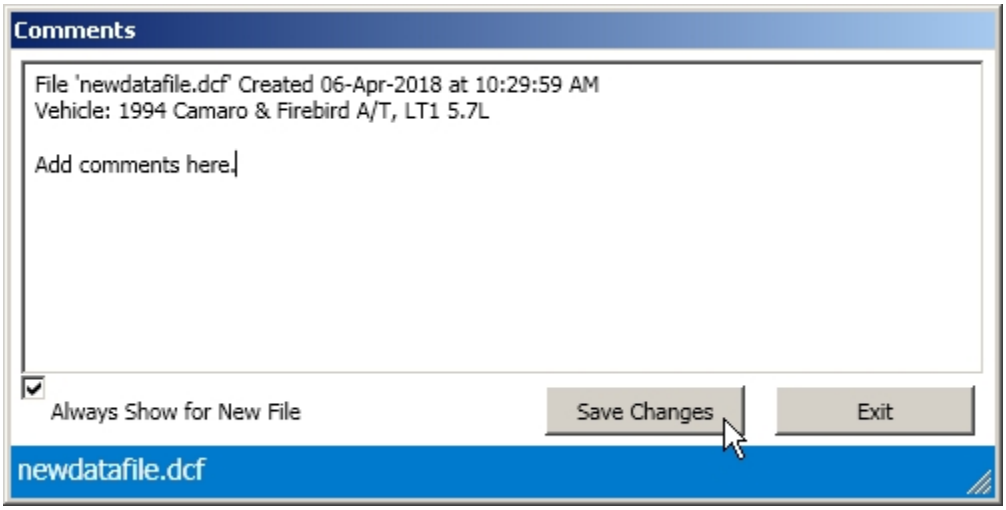
To store the logged data in a data file so it can be played back and analyzed select a data record file. To select a recording file click on the Select Recording File button in the Record Vehicle Data section of the Vehicle Setup screen



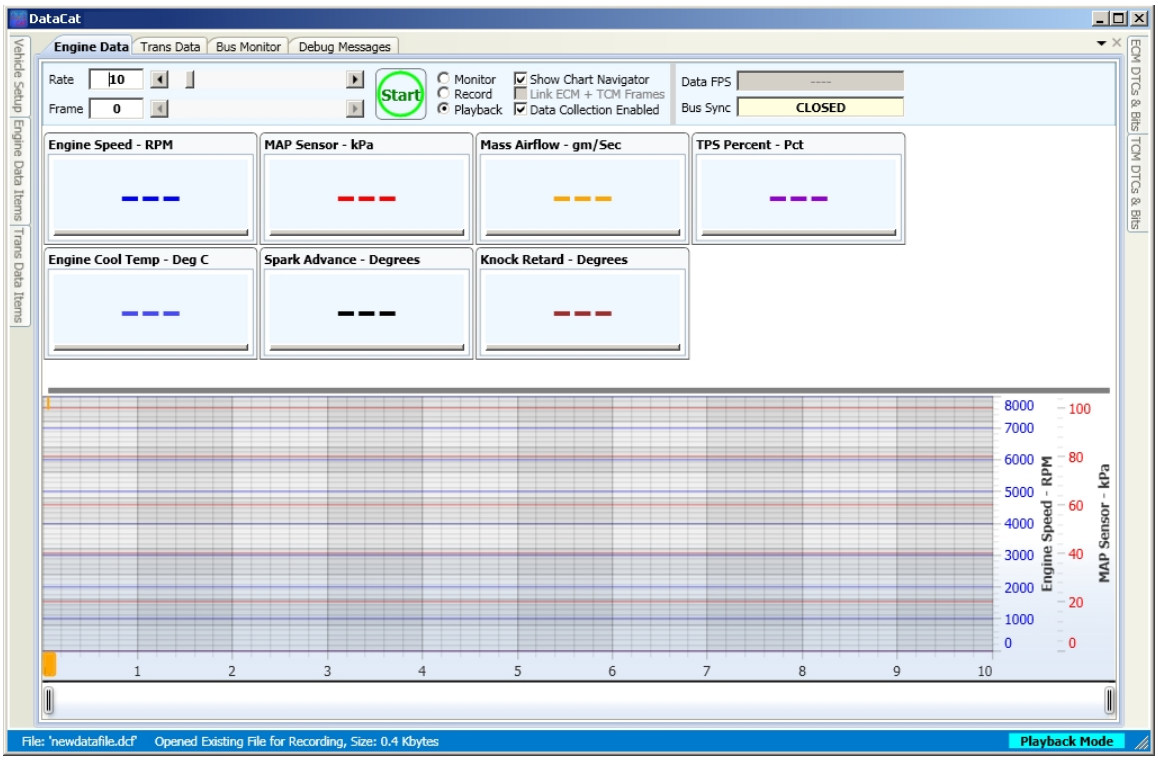
This will open up a file dialog box allowing you to select and existing data file or type in a new record file name.



If you select an existing data file the new data will be appended to the file. After selecting a data file or typing in a new file name, click on the 'Save' button. An Add Comments screen will appear allowing you to add comments to your data file.

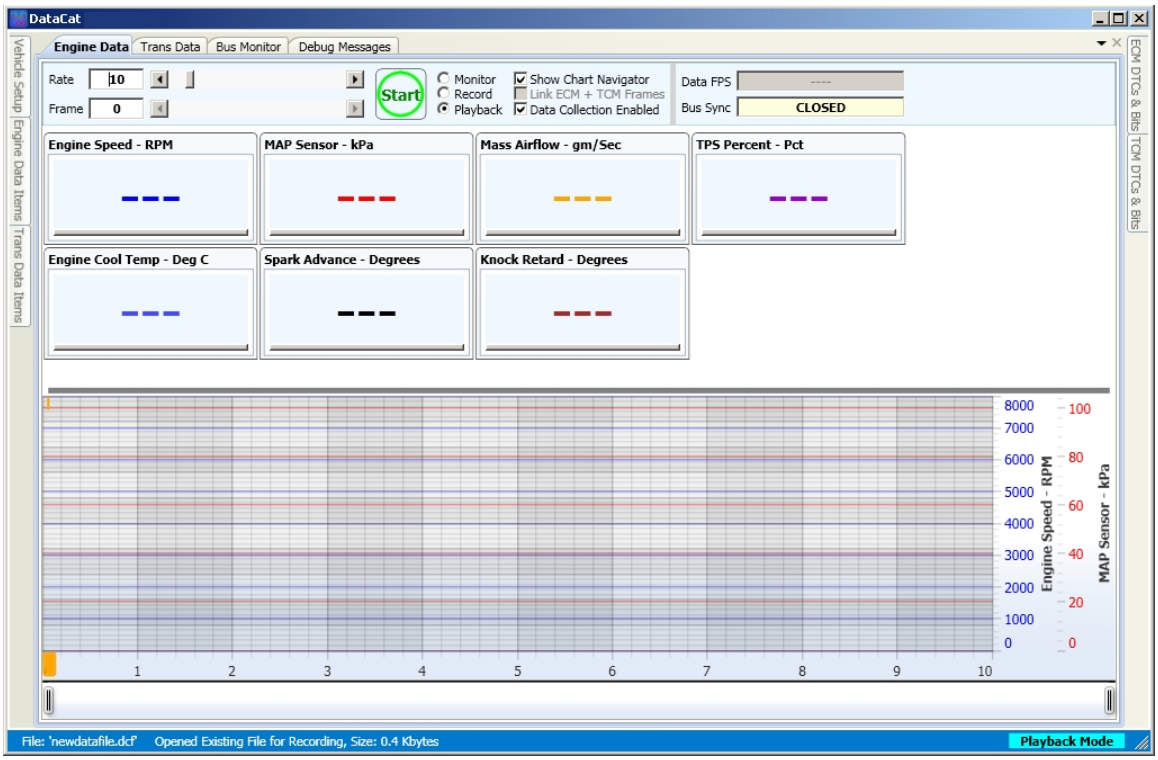


Then click on the 'Save Changes' button to save the new comments and open the data file for recording. The default data monitor screen will then be displayed.

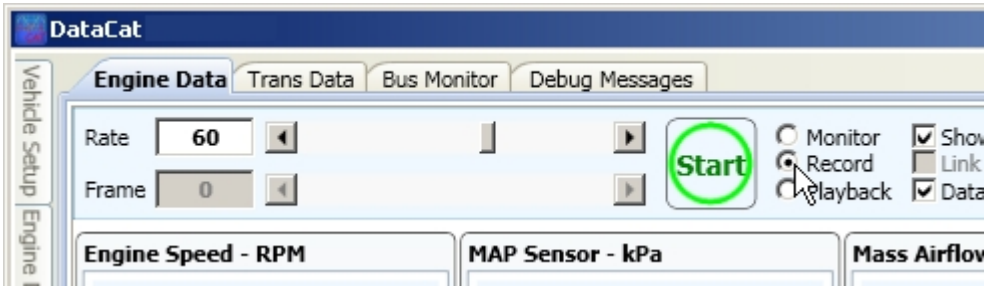


Data Recording

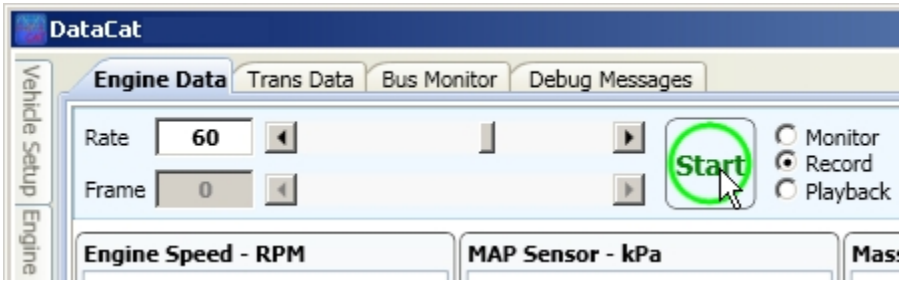
Once you have selected the com port, selected the vehicle type and selected a recording file you see the real-time data viewing and recording screen.



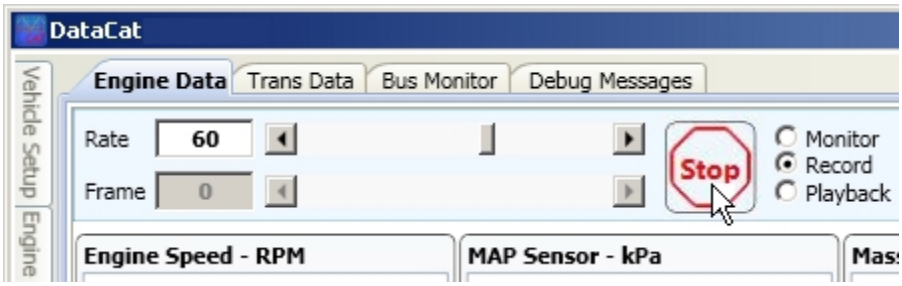
To begin recording data, first click on the 'Record' option at the top of the screen .



Then to begin recording data, click on the Start button.



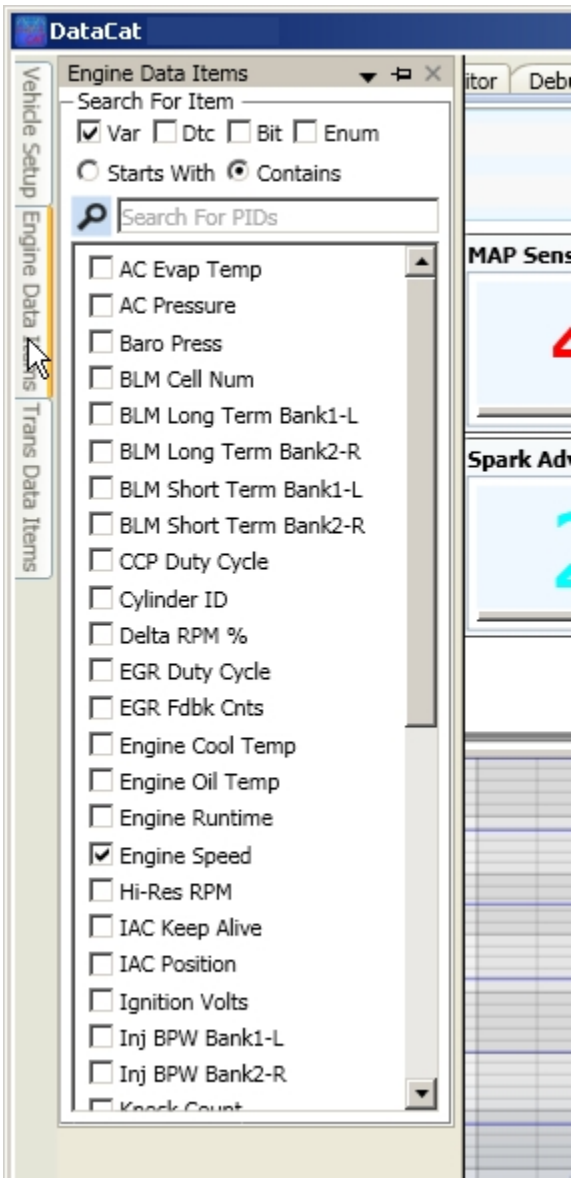
The DataCat program will then start recording all the available engine and/or transmission data that is available for the vehicle. To stop the data recording click on the Stop button.



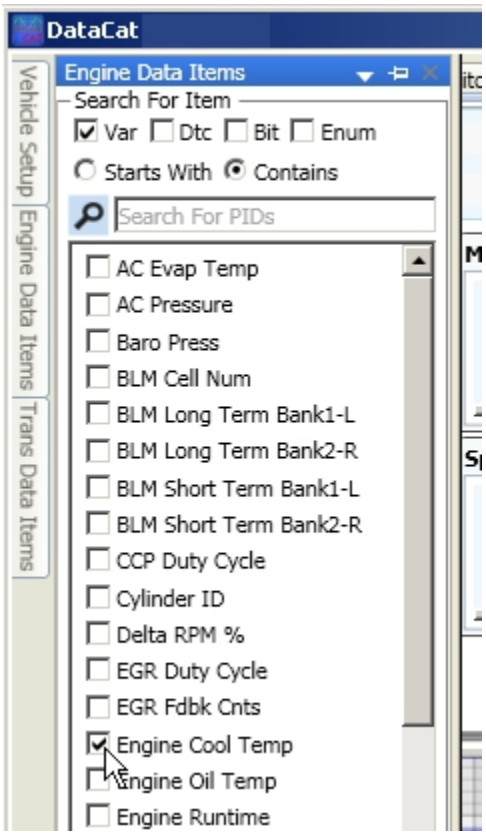
While the data is being recorded the real-time data is also displayed on the main data display in both digital and chart form. Like viewing recorded data, the data that is displayed and charted can be selected by the user. See the 'Real-Time Data Display' section for more details.

Real-Time Data Display

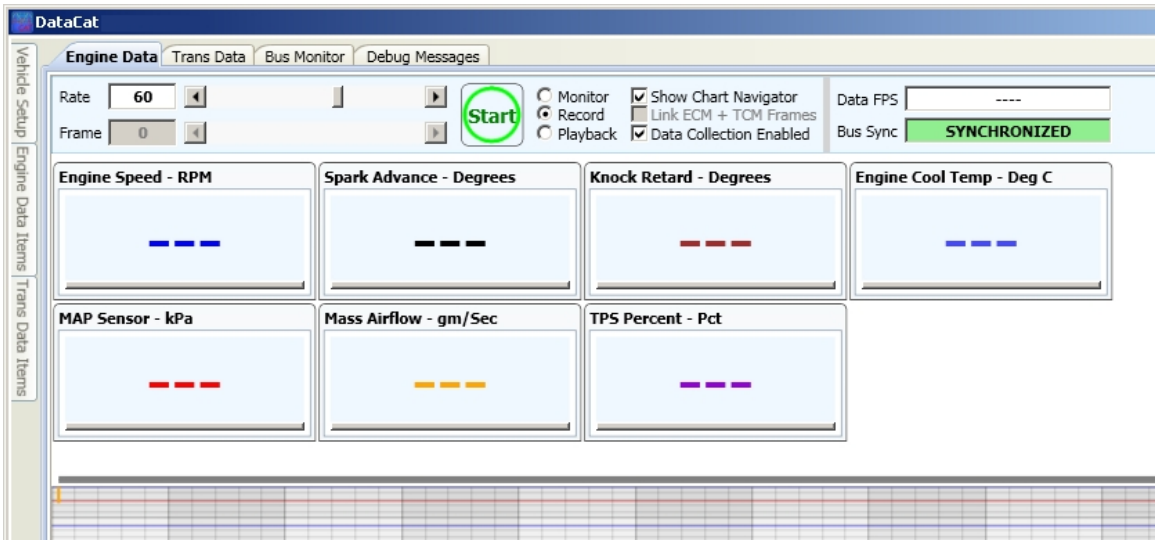
While the DataCat program is recording data you can view the data in real-time on the main data screen. To select what data you'd like to view during the recording process drag the mouse pointer over the Engine Data Items tab to the left of the main screen. This will open the Engine Data Items screen.



To locate the desired parameter scroll down the parameter list or use the search function at the top of the list. To add the desired parameter to the digital display section of the main screen check the check-box to the left of the parameter name, for example Engine Cool Temp.

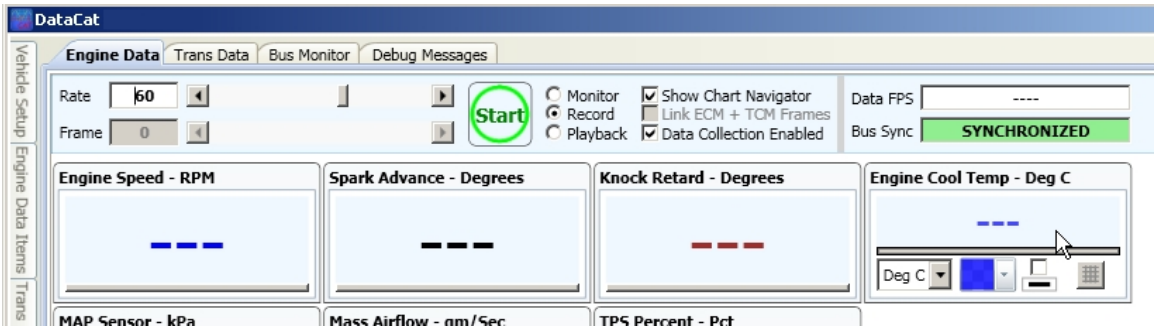


This will add a box for the engine coolant temperature parameter to the main data screen.



Conversely you can remove an item from the digital display by opening the Engine Data Item list and un-checking the check-box to the left of the parameter name.

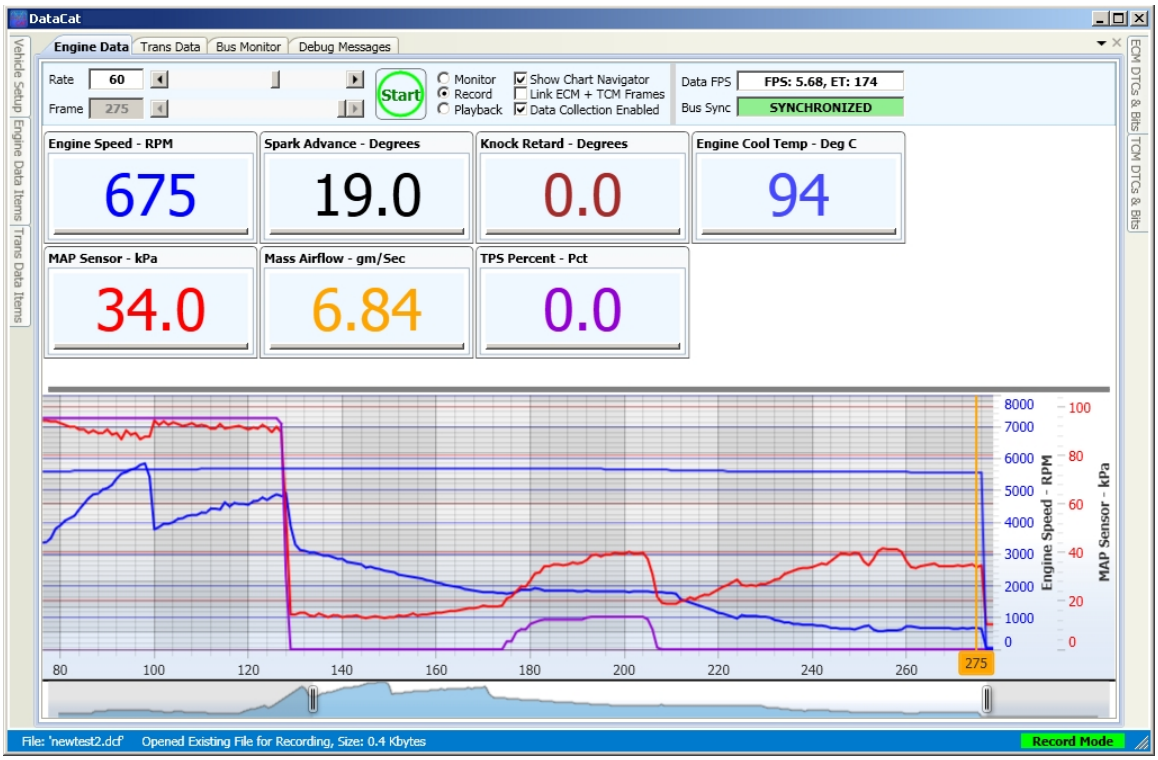
To add a parameter to the chart display it must first be added to the digital display. Then click on the box of the desired parameter to open the options window.



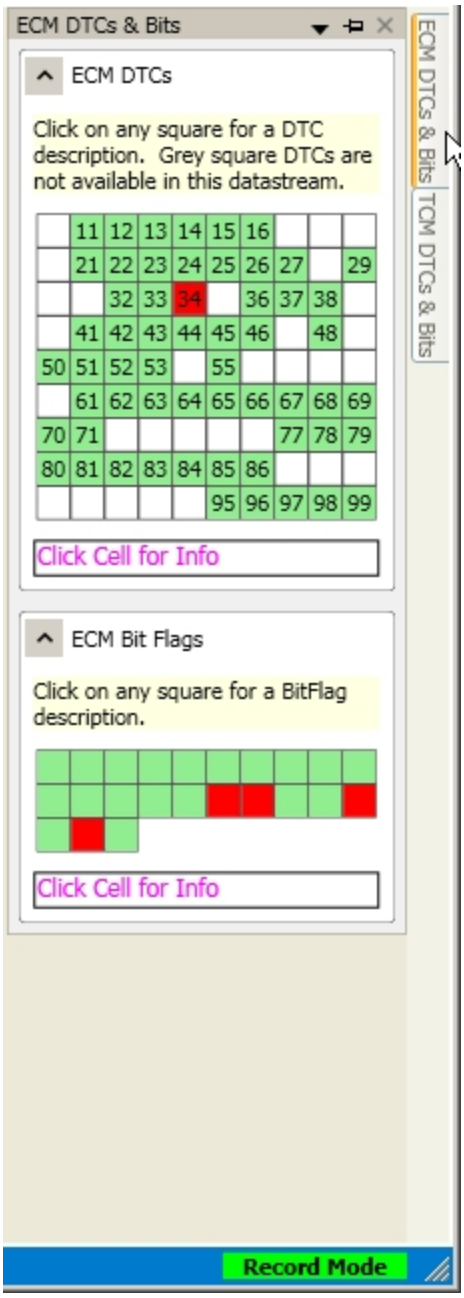
Next click on the check box above the line segment. This will add this parameter to the chart display.

Un-checking this check box will remove this parameter from the chart display.

Once the recording process is started, the data in the digital data tiles and the chart data will be continuously updated as new data frames are received. The current data frame is displayed in the 'Frame' box at the top of the data screen as well as at the bottom on the chart cursor. The data in each of the digital data tiles will display the value for the current data frame and the chart display will add the new data frame data to the chart.



To view DTCs and Bit Flags in real time place the mouse pointer over the 'ECM DTCs & Bits' tab to the right of the data screen. This will display the status of the various DTCs and Bit Flags. Both are updated for each new data frame.



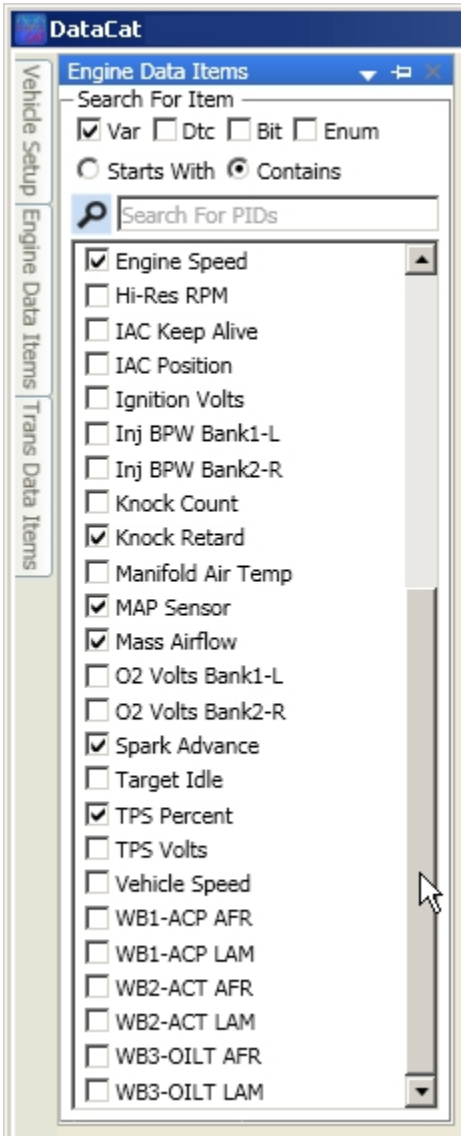
Wide-band O2 Sensors

Using a wide-band O2 sensor can be very useful when tuning a vehicle. For many vehicles, the DataCat program allows you to use an input on the vehicle's computer to record the wide-band sensor data while recording the other data. Depending on the type of vehicle there are up to four different computer inputs that you can use for the wide-band O2 sensor:

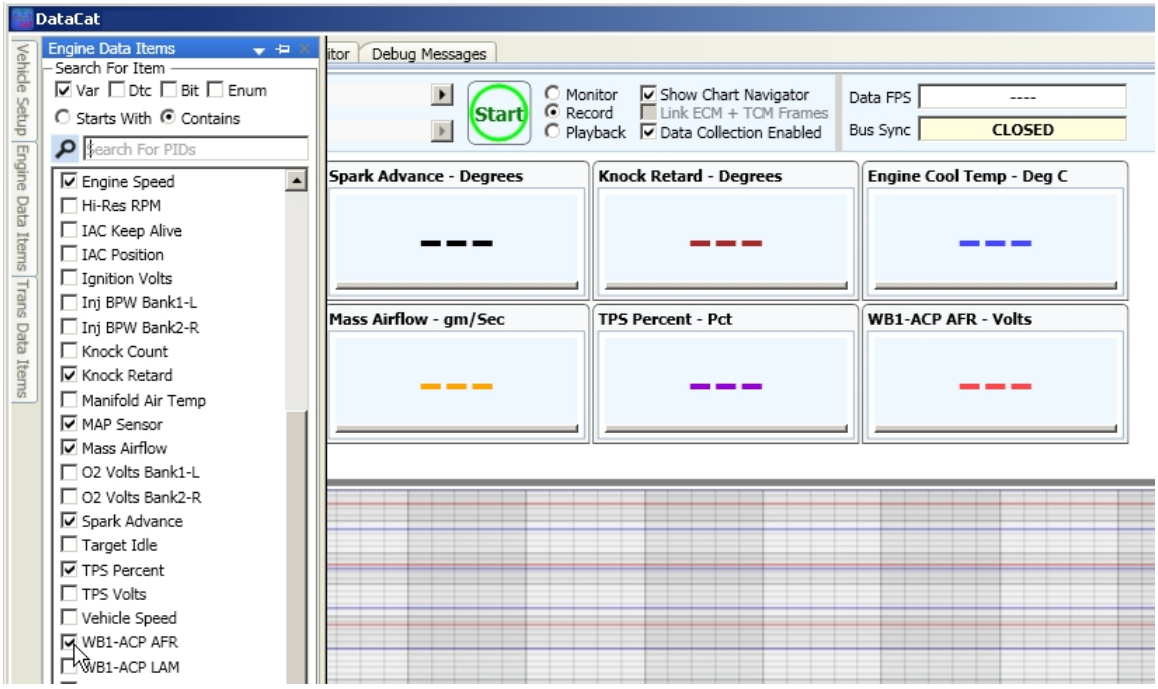
A/C Evap. Temperature (PCM Pin D24)

A/C Pressure (PCM Pin D12)
Engine Oil Temperature (PCM Pin D26)
EGR Feedback Counts (PCM Pin D27)

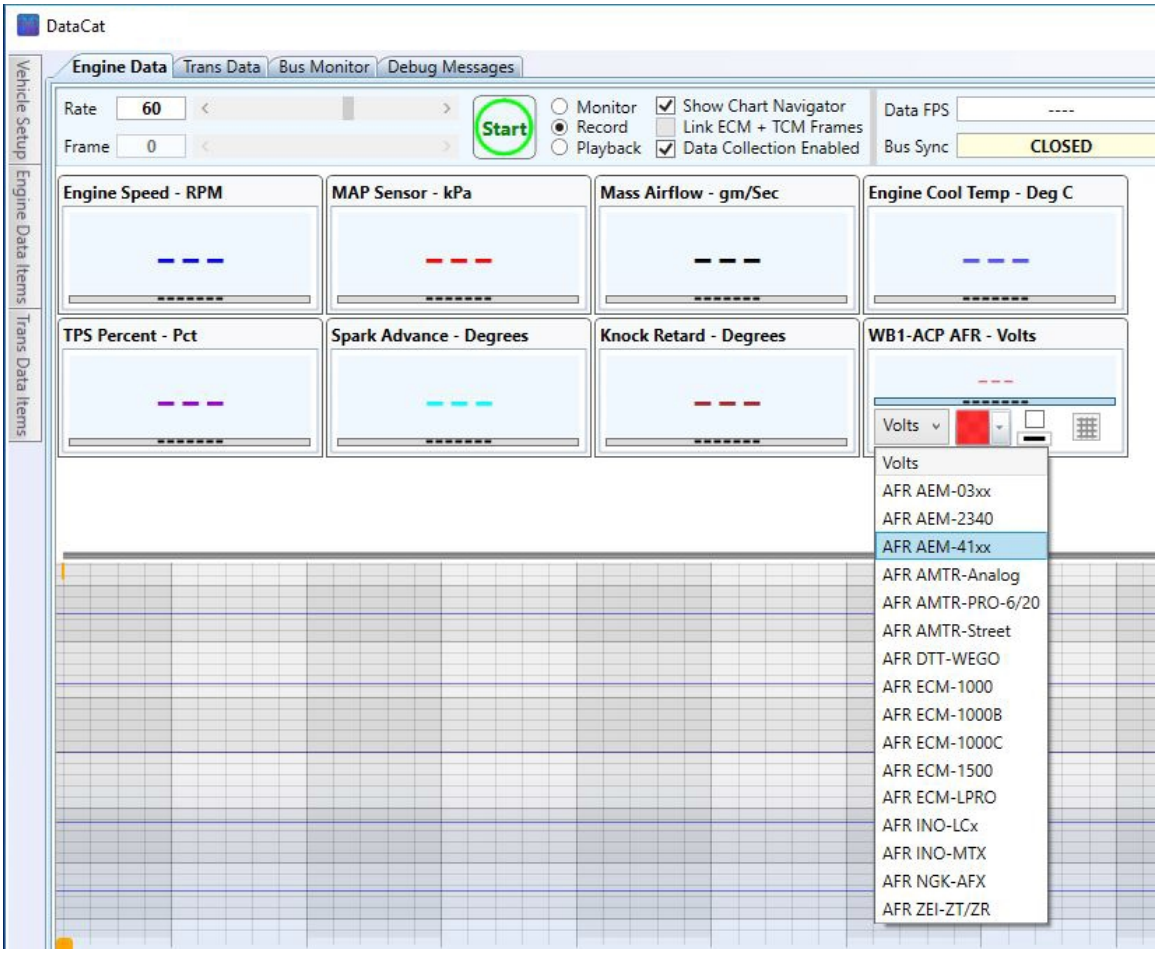
To use one of these inputs disconnect the normal input to the vehicle's computer and connect the output from the wide-band O2 sensor to this input. Next move the mouse pointer over the 'Engine Data Items' tab to open the Engine Data Items display. Then scroll to the bottom of the Items list to locate the available wide-band O2 inputs.



Check the input that you wish to use for the wide-band sensor. WB1-ACP selects the A/C Pressure input, WB2 - ACT selects the A/C Evap. Temperature, WB3-OILT selects the Engine Oil Temperature inputs and WB4-EGRC selects the EGR Feedback Counts input. For each available input you can select whether to show the wide-band O2 sensor values as AFR (air/fuel ratio) or (LAM) Lambda. Check the desired input and this will add this value to a data tile on the data display.

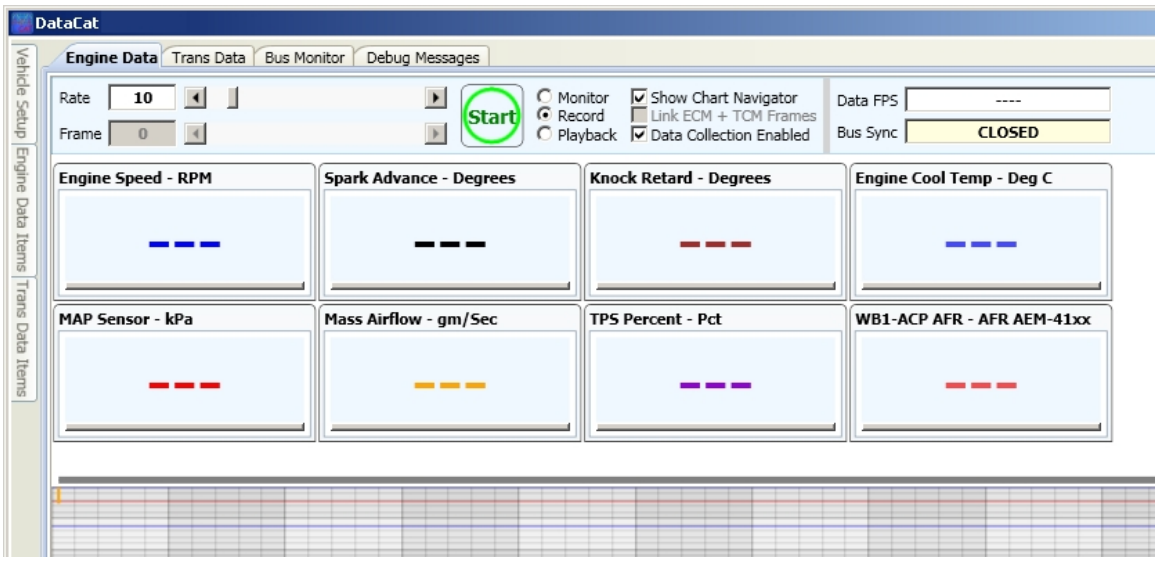


To set the type of wide-band O2 sensor being used click on the wide-band data tile to open the Options box and click on the down arrow to the right of the units box. This will display a list of the wide-band O2 sensors currently supported. (To view the wide-band O2 sensor output as a raw voltage, select 'Volts' from the list.)



The DataCat program currently supports the following wide-band O2 sensors:

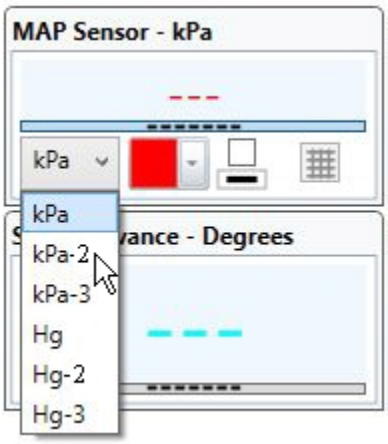
AEM-03xx
AEM-2340
AEM-41xx
Auto Meter Analog
Auto Meter Pro 6/20
Auto Meter Street
Daytona Twin Tec WEGO
ECM (Engine Control and Monitoring) 1000
ECM 1000B
ECM 1000C
ECM 1500
ECM Lambda Pro
Innovate LCx
Innovate MTX
NKG AFX
Zeitronix ZT/ZR



2 and 3 Bar MAP Sensors

If you have replaced the original 1-bar MAP sensor with a 2 or 3-bar MAP sensor you can recalibrate the MAP data display to account for the new MAP sensor.

Add the MAP Sensor item to the data display and then click on the MAP data tile to display the Options box. Click on the down arrow next to the units box to show the possible options.

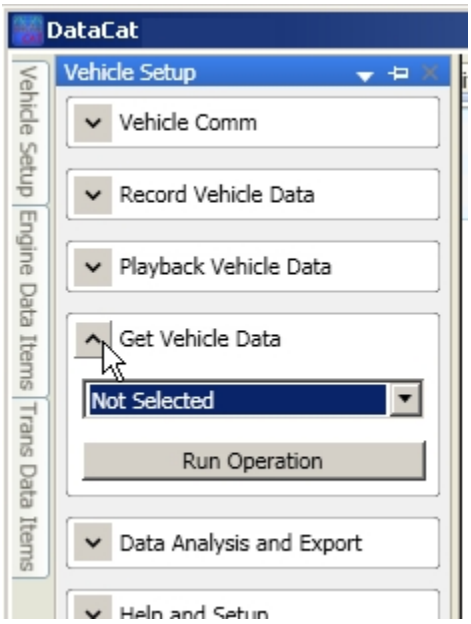


If you are using a 2-bar MAP sensor then select 'kPa-2' if you wish to view the MAP in kPa or 'Hg-2' to view the MAP in Hg.

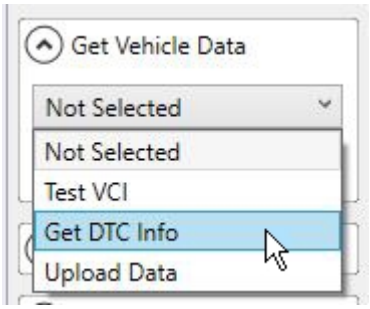
Get Vehicle Data

Check / Clear DTCs

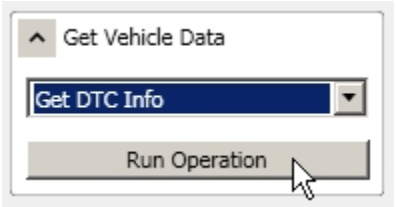
To check for any current or stored DTCs expand the Get Vehicle Data section of the Vehicle Setup screen.



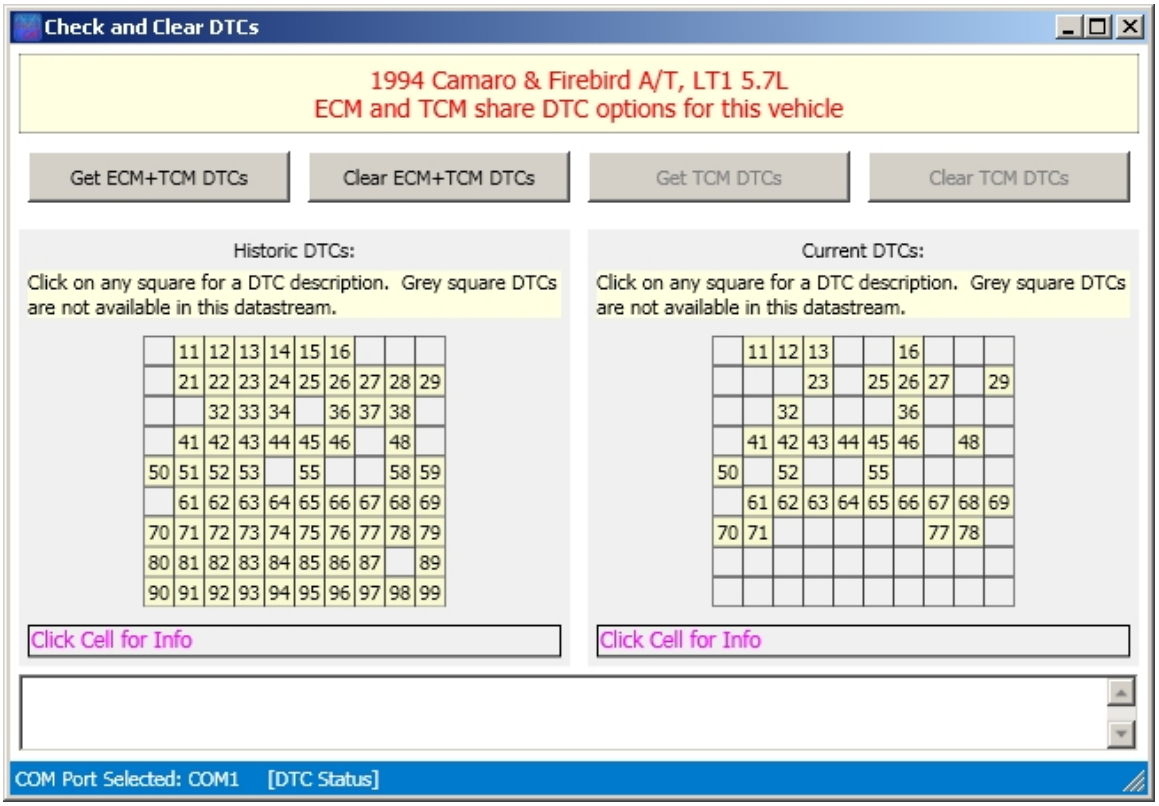
Click on the down arrow to the right of the function box and select 'Get DTC Info' from the drop-down list.



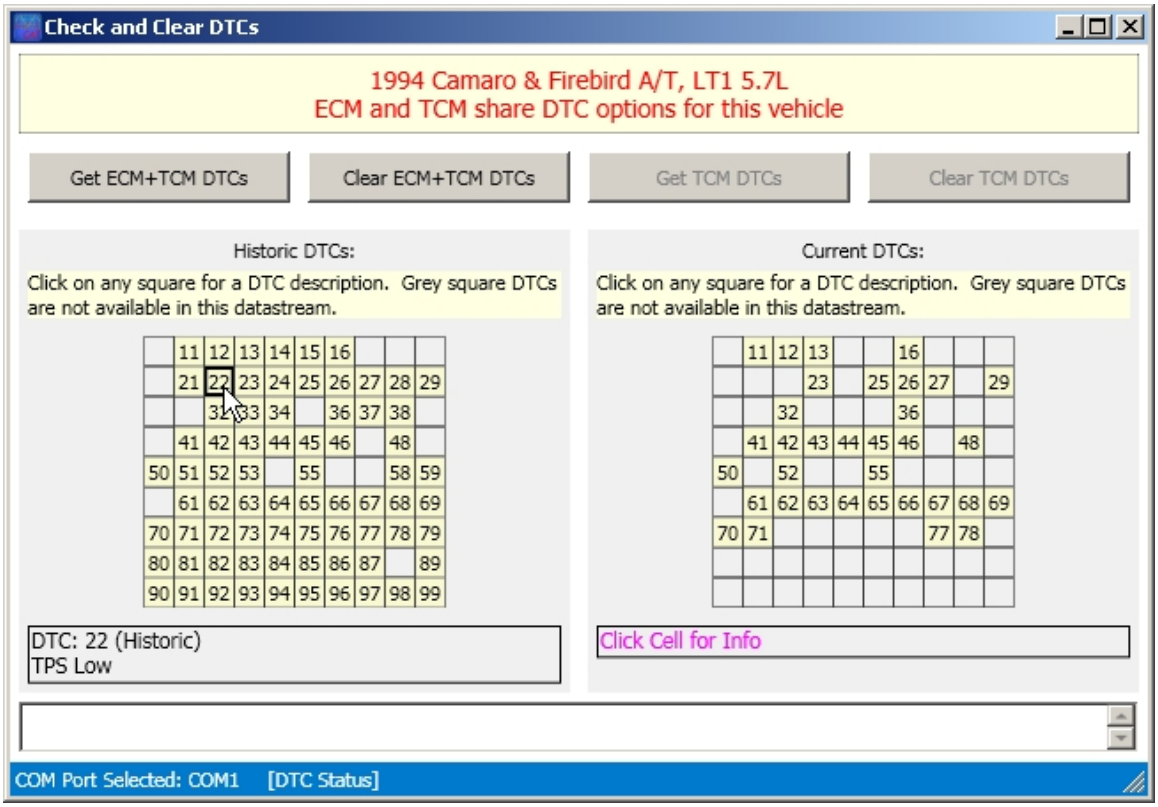
Then click on the 'Run Operation button'.



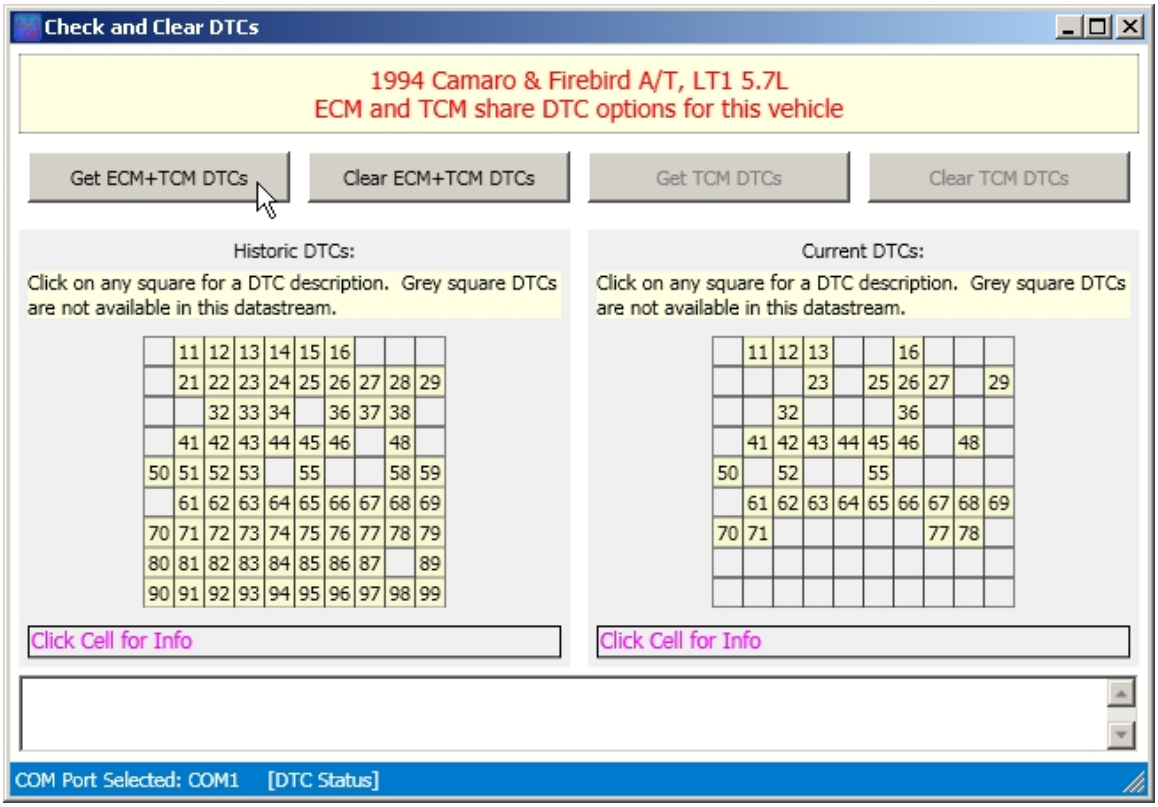
This will display the DTC status screen which shows all the historic and current DTCs supported by the selected vehicle type.



Each DTC is represented by a single cell in the DTC tables. The DTC number is displayed in each cell. Click on any cell and a full description of the DTC will be shown in the information box below the cells.

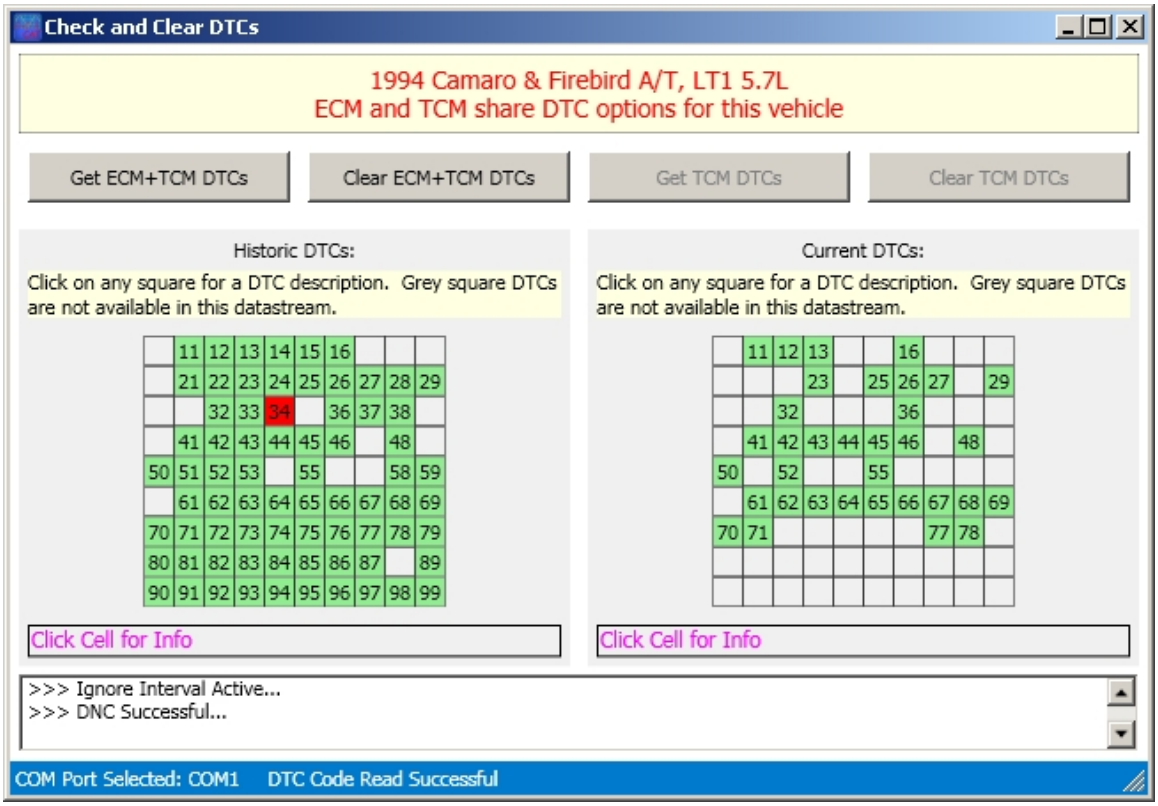


To check for any current or historic DTCs click on the 'Get ECM + TCM DTCs' button.

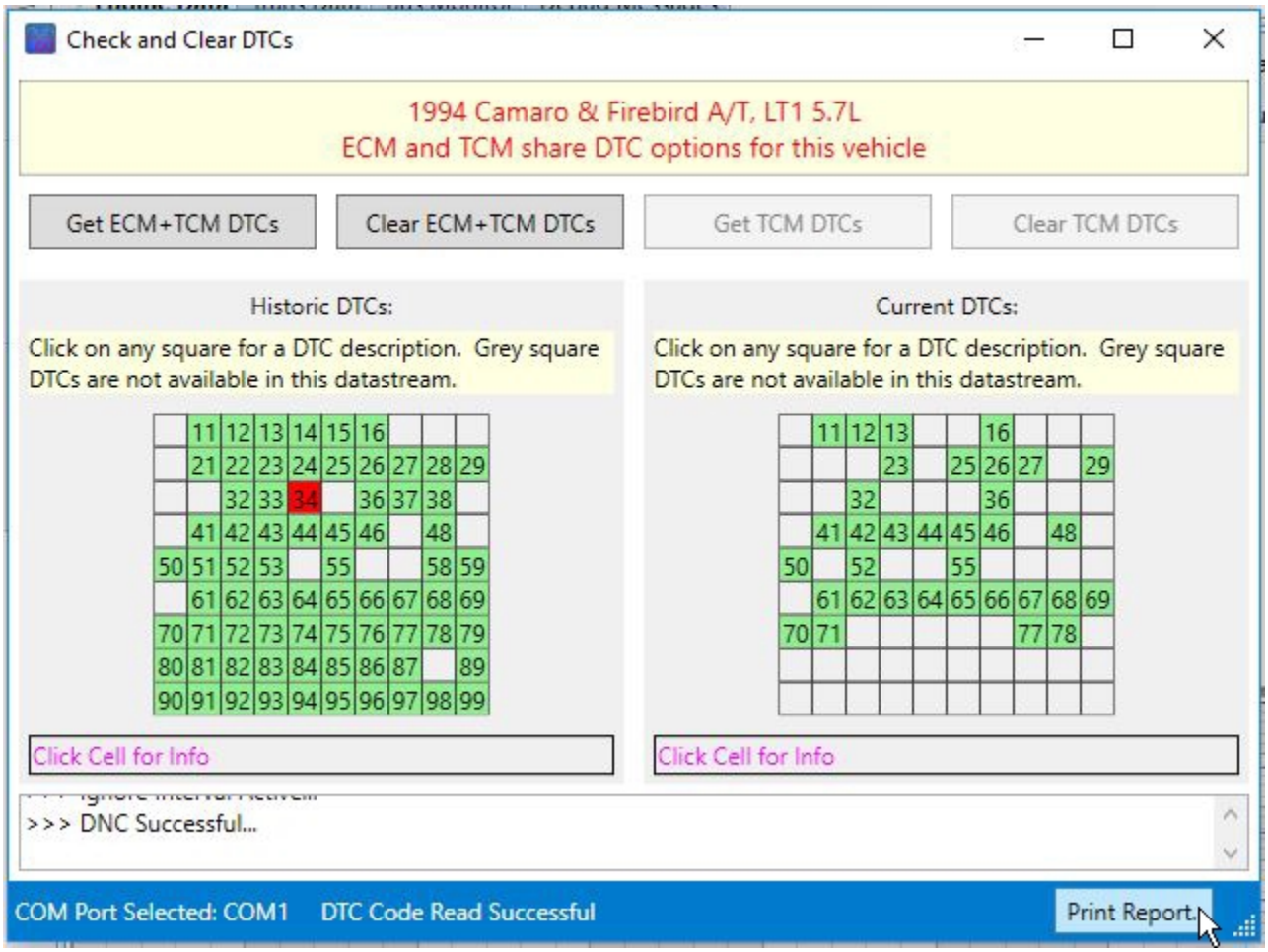


The DataCat program will then request the DTCs status from the vehicle and when complete will display a DTC code read successful message.

Click on the 'OK' button to clear this message and the DTC status screen will show the current status of all the DTCs. If the DTC cell background is green then that diagnostic test passed while a red background indicates that the diagnostic test failed.

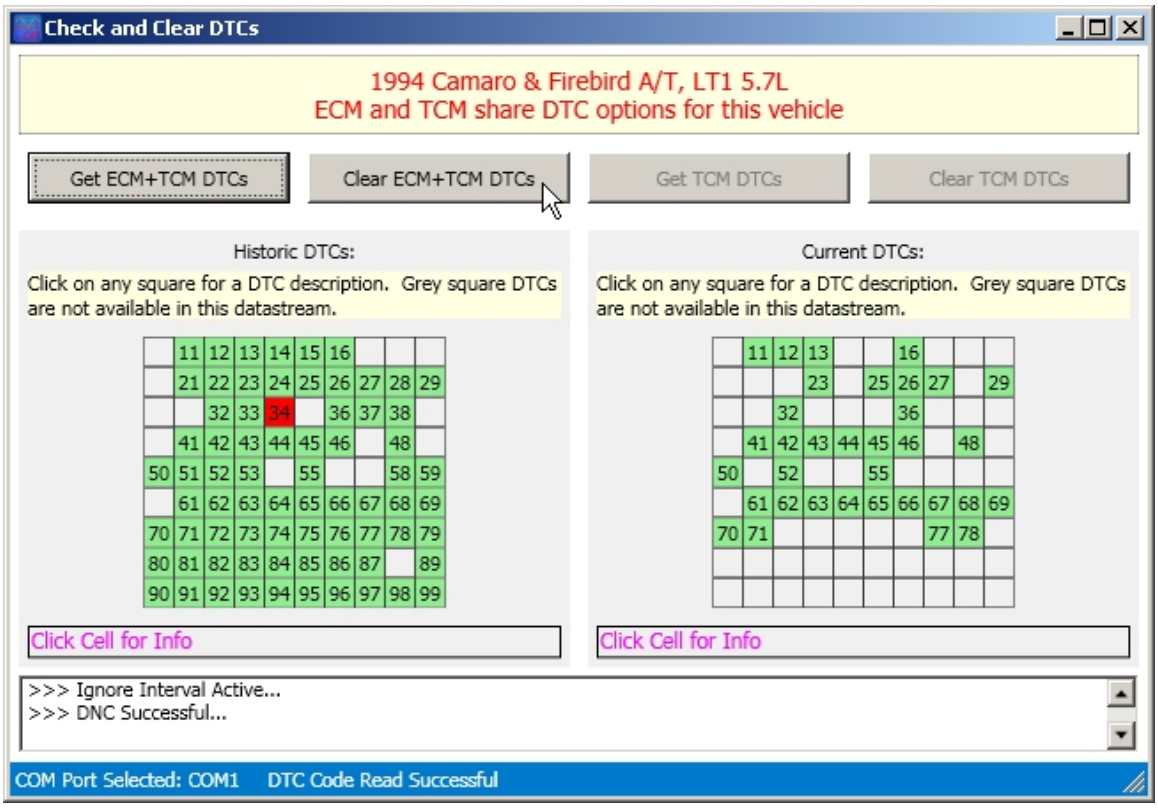


To print a DTC report click on the 'Print' button at the bottom right of the DTC screen status bar.

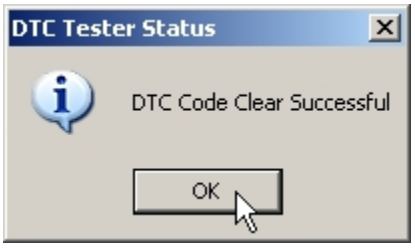


This will display a print preview screen with printer selection options.

To clear all DTCs, click on the 'Clear ECM + TCM DTCs' button.



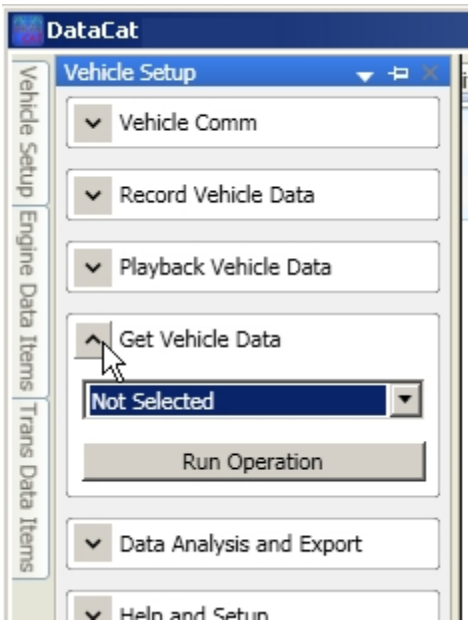
When the DTC clear process is complete a DTC Code Clear Successful message will be displayed. Click on the 'OK' button to clear this message.



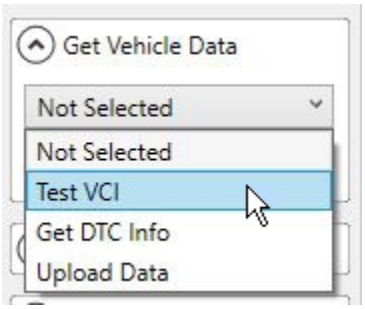
Some types of vehicles have separate TCM DTCs. In these cases, the 'Get TCM DTCs' and 'Clear TCM DTCs' button will be active allowing you access to the TCM DTCs.

Test ALDL Interface

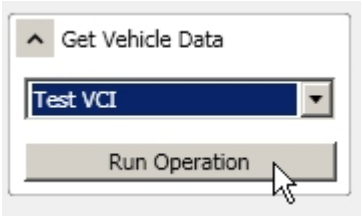
To verify that your ALDL interface cable is functioning properly expand the Get Vehicle Data section of the Vehicle Setup screen.



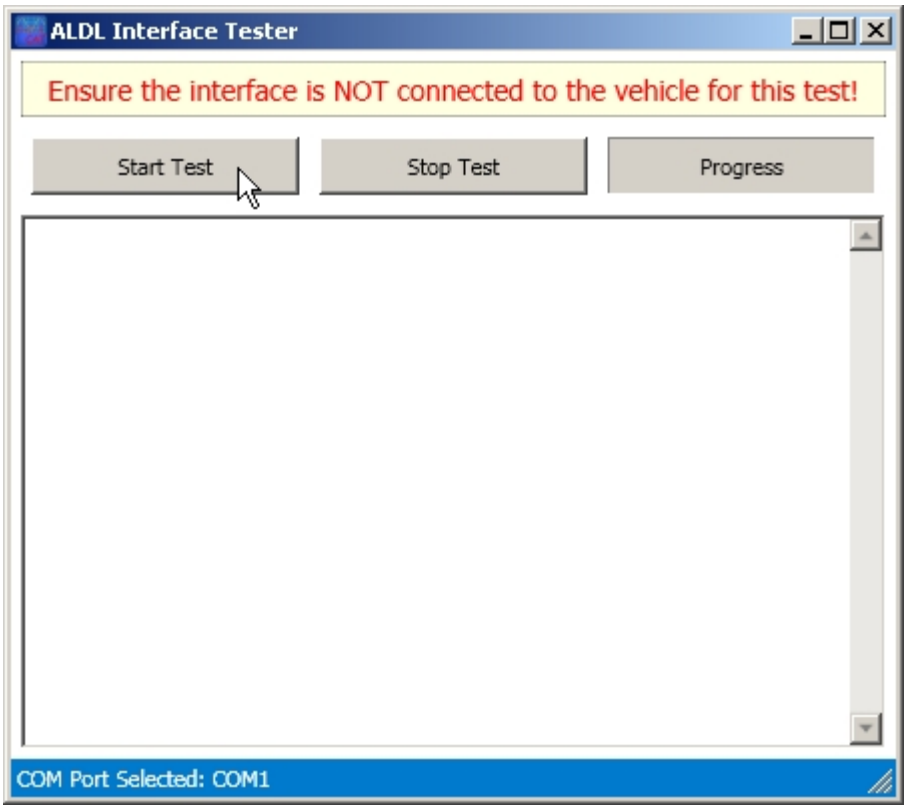
Click on the down arrow to the right of the function box and select 'Test VCI' from the drop-down list.



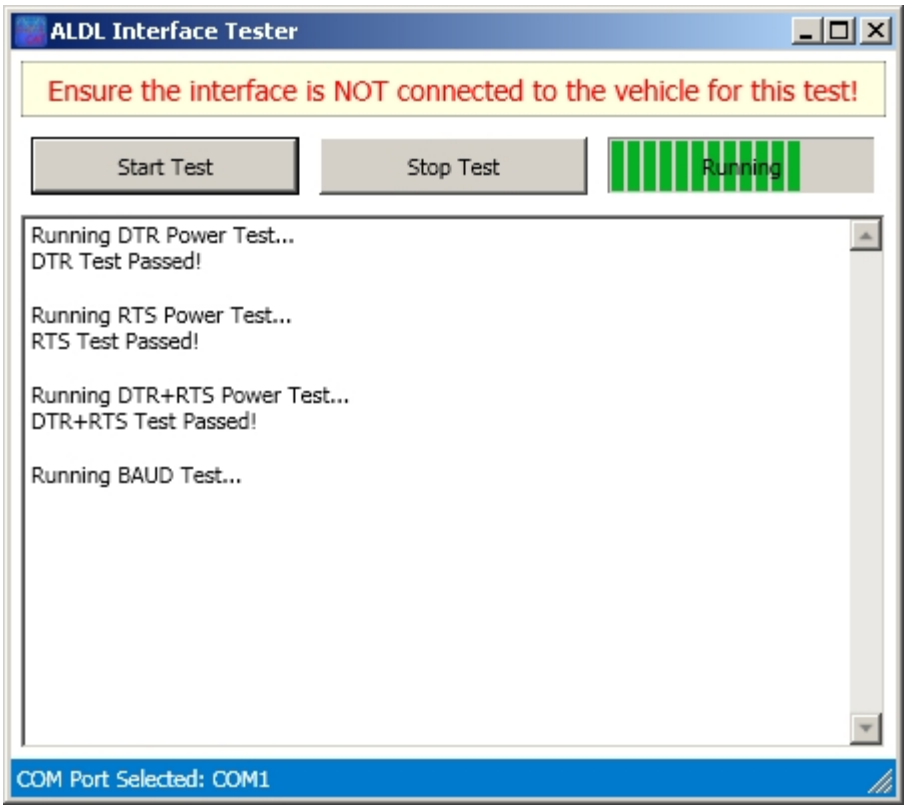
Then click on the 'Run Operation button'.



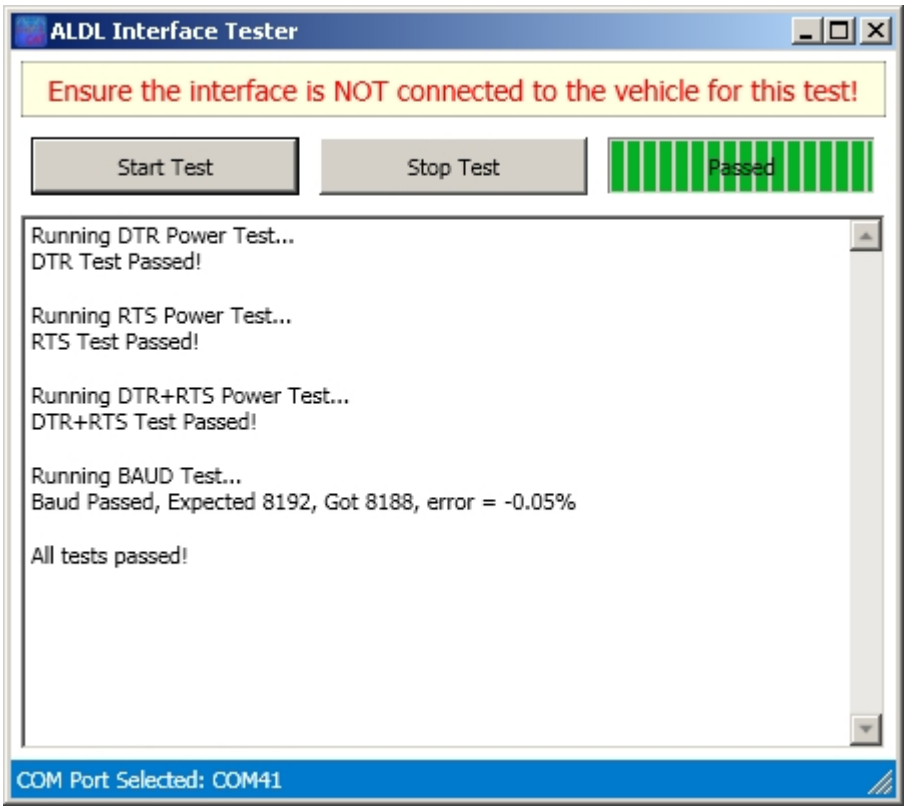
Verify that you ALDL interface cable is connected to your PC but NOT connected to the vehicle and then click on the 'Start Test' button.



This will start the testing. The progress bar will show the progress of the testing while the status box will show a description and status of each test being run.

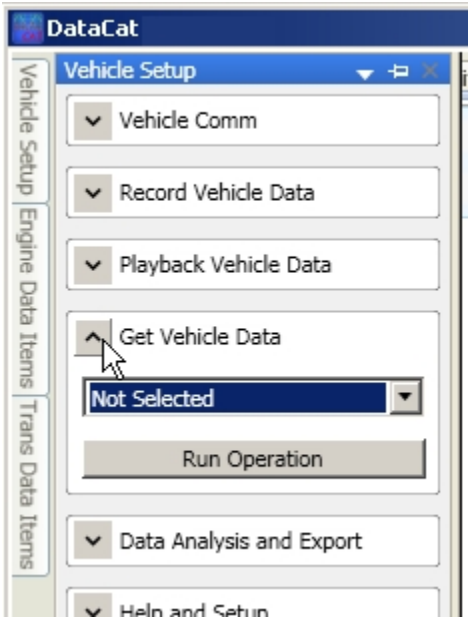


If the ALDL interface is working properly the test results will show 'All tests passed'.

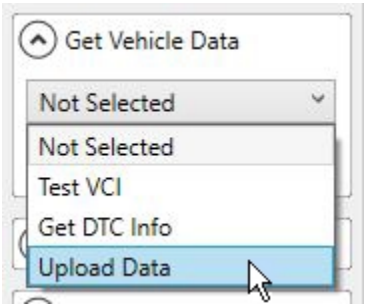


Upload Data

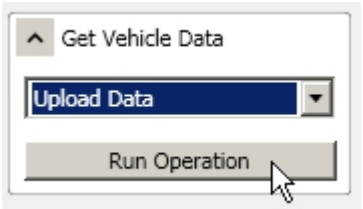
The DataCat program has the ability to upload data from a specified area of memory of the ECM or TCM. (**Note**: This function is not available on all ECM/TCMs currently supported by the DataCat program.) To access this function, expand the Get Vehicle Data section of the Vehicle Setup screen.



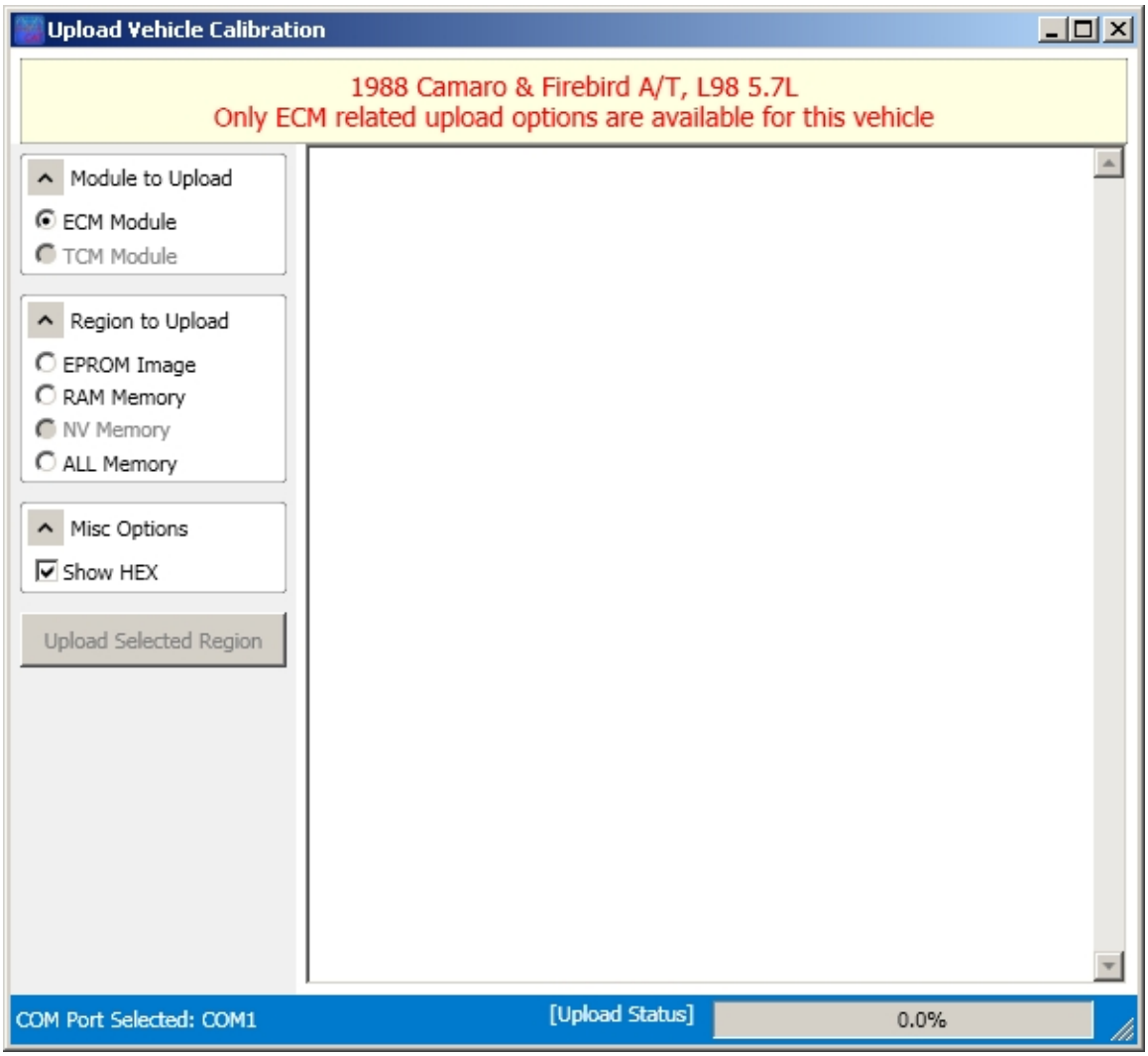
Click on the down arrow to the right of the function box and select ‘Upload Data' from the drop-down list.



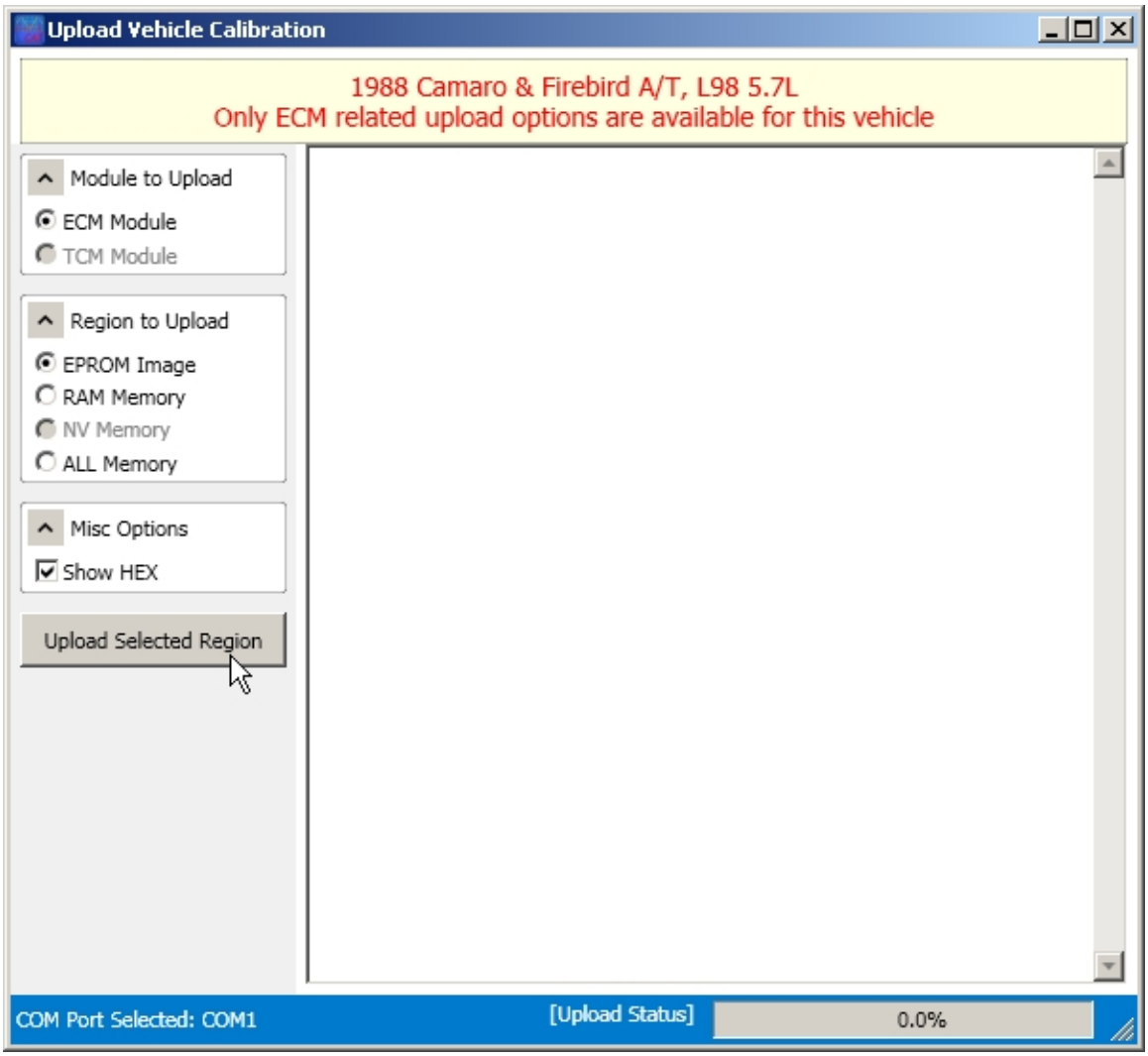
Then click on the 'Run Operation button'.



The Upload Vehicle Calibration screen will be displayed.



On this screen you can select which module you'd like to read (ECM or TCM if available), What region of memory you want to view and whether you would like the values displayed in hex or decimal. Then click on the 'Upload Selected Region' button and the selected region of memory will be uploaded and displayed.

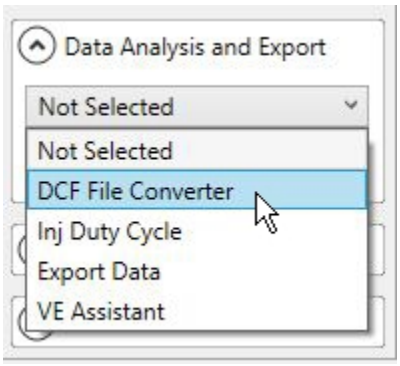


Data Analysis and Export

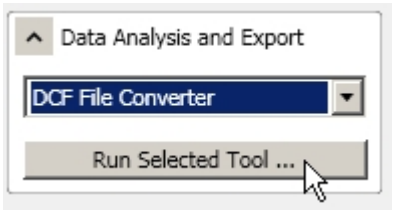
DCF File Converter

This utility allows you to convert an old .uni data file created by the DataMaster program into a .dcf file that you can view in the DataCat program. To convert an existing .uni file expand the Data Analysis and Export section of the Vehicle Setup screen.

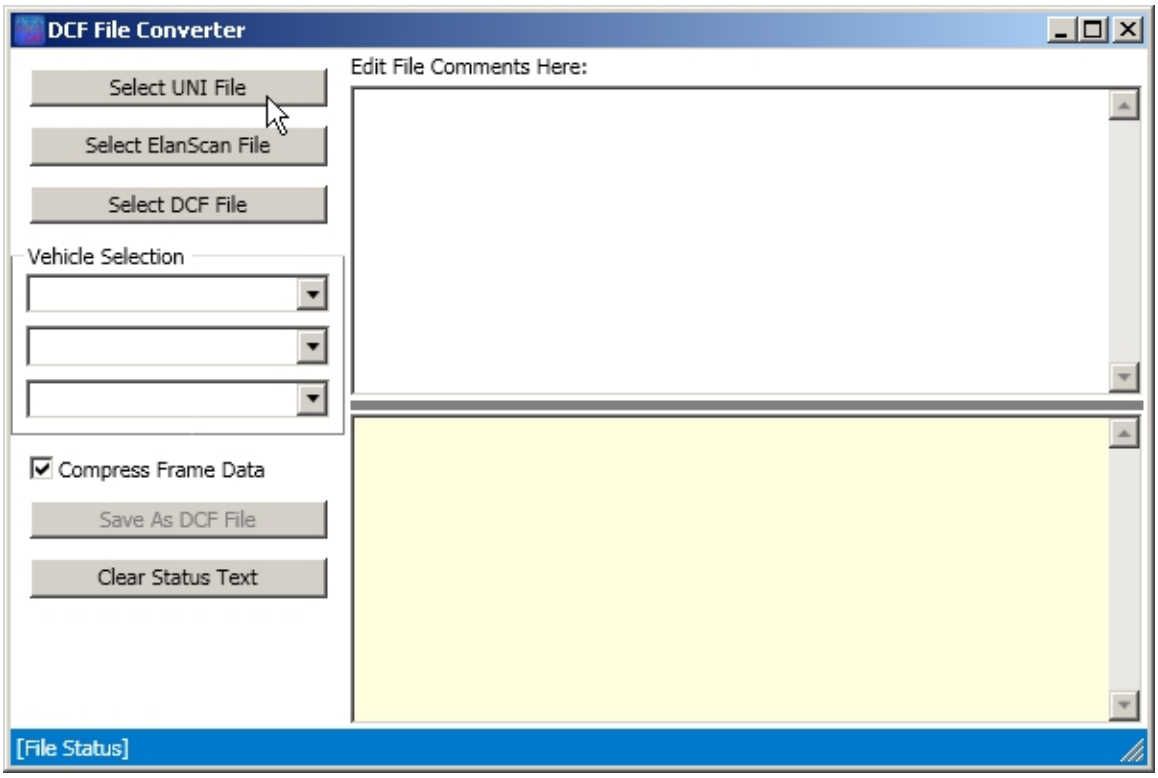
Click on the down arrow to the right of the function box and select 'DCF File Converter' from the drop-down list.



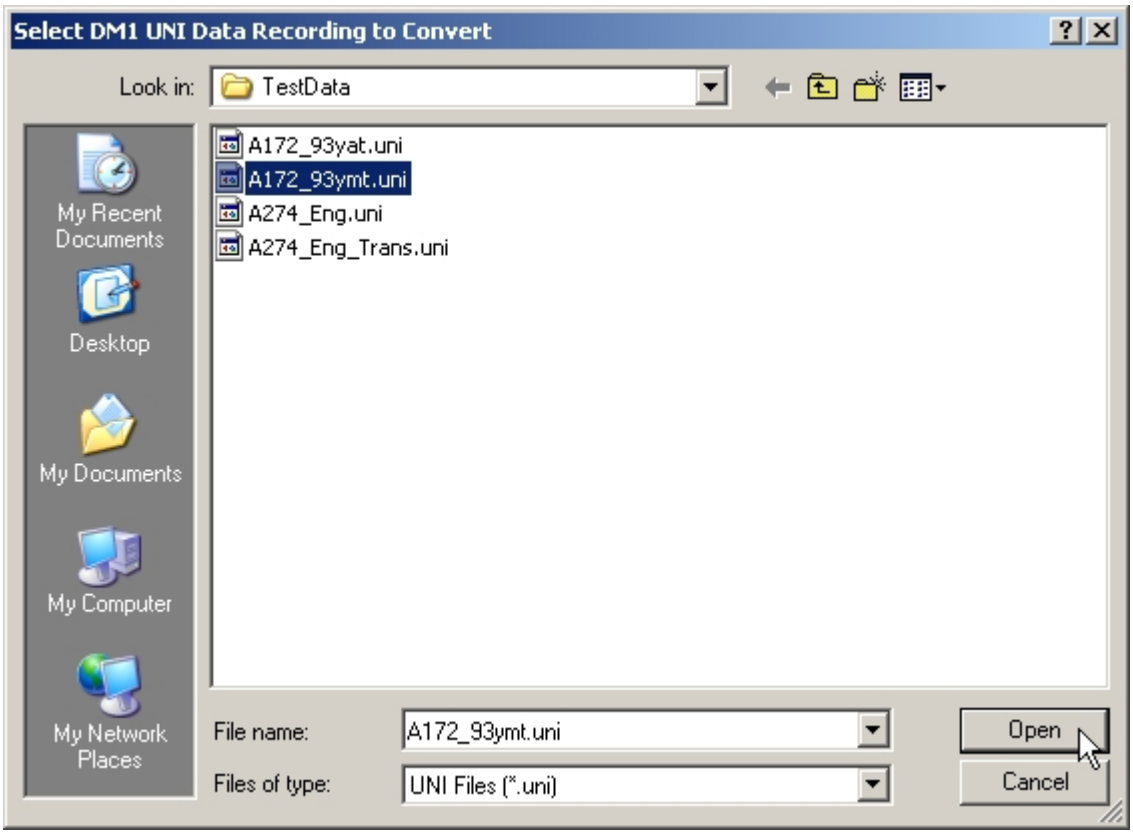
Then click on the 'Run Selected Tool button'.



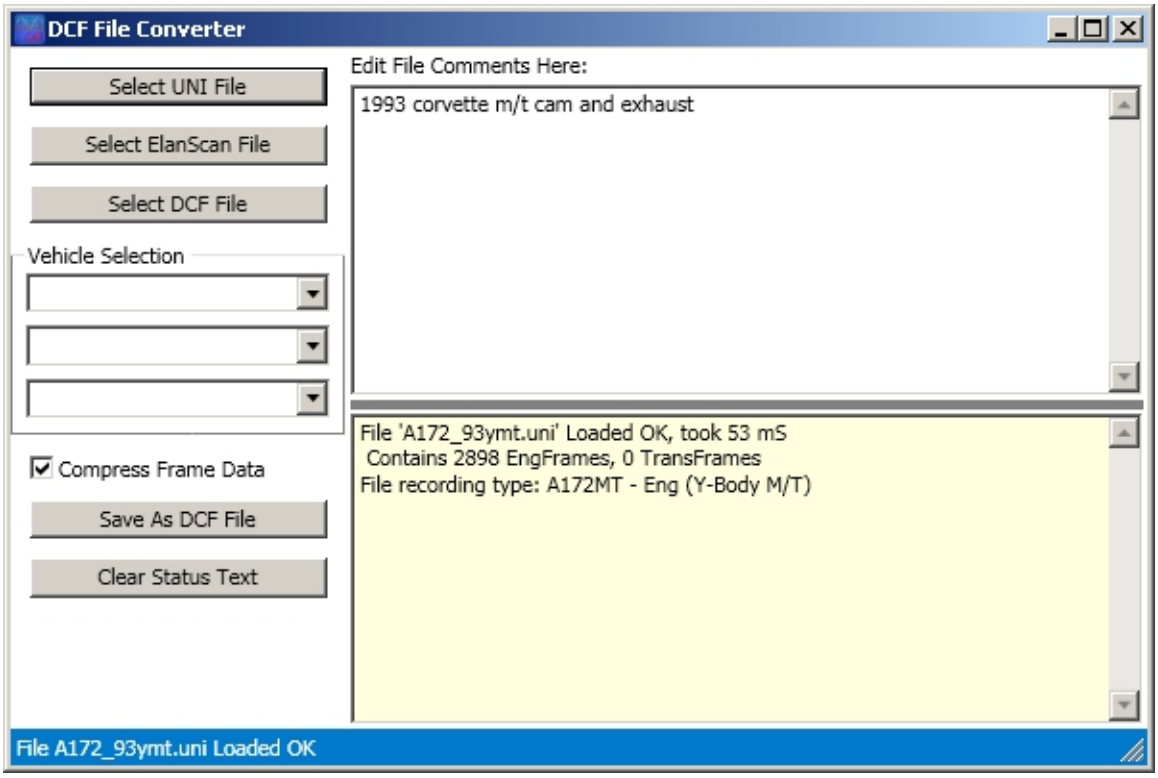
Click on the 'Select UNI File button.



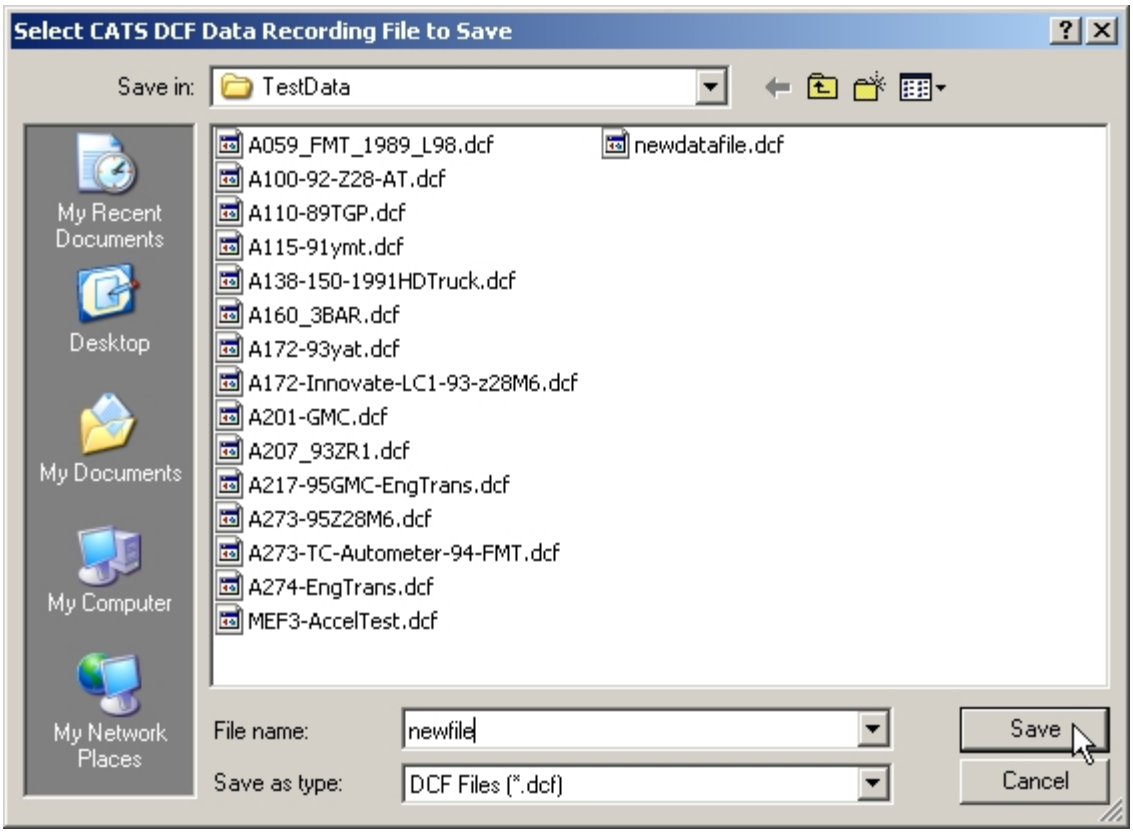
Navigate to the appropriate folder, select the desired .uni file and click on the 'Open' button.



The File Comments box shows any comments that were entered for this .uni file and allows you to modify the comments as desired. The lower information box shows the properties of the selected file. (This box can be cleared by clicking on the 'Clear Status Test' button.)



In the Vehicle Selection box click on the down arrow to the right of the top box to select the vehicle year for the selected data file, click on the down arrow to the right of the middle box to select the vehicle type and click on the down arrow to the right of the bottom box to select the engine. Once the Vehicle Selection information is complete, click on the 'Save As DCF File' button.



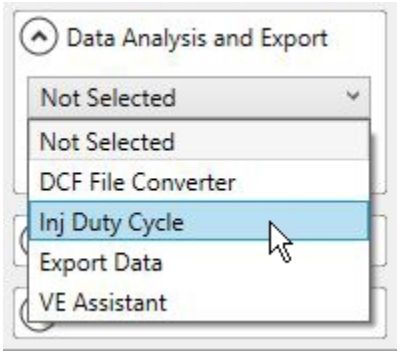
Navigate to the desired folder and enter the file name for the new .dcf file and click on the save button. This completes the conversion process and creates a .dcf file that you can open and view in the DataCat program.

Injector Duty Cycle

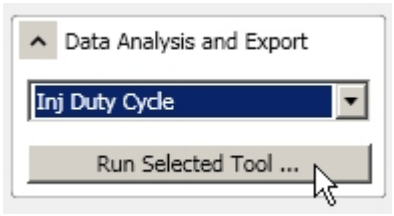
Injector sizing is an important consideration when working with a heavily modified engine. Too small an injector can cause lean conditions and power loss at high RPM, high load conditions while too large an injector will cause problems at low RPM, low load conditions so it's important to select an appropriate injector size for the engine. The Injector Duty Cycle Analysis tool gives you important information on the current injector size by calculating the injector duty cycle as a function of engine RPM. Injector duty cycles that are too large in the high RPM range indicate that the current injector size is too small while injector duty cycles that are too small in the high RPM range indicate that the current injector is too large.

To access the Injector Duty Cycle Analysis tool, expand the Get Vehicle Data section of the Vehicle Setup screen.

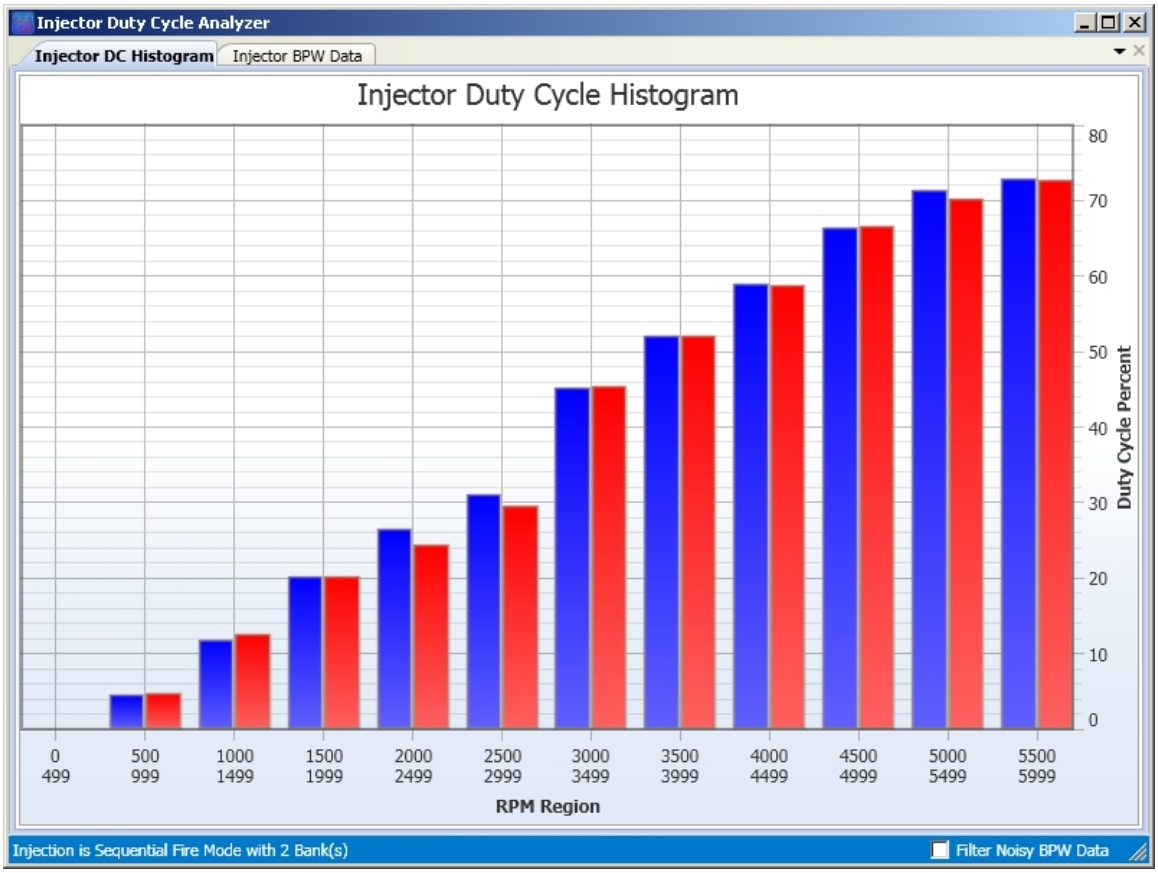
Click on the down arrow to the right of the function box and select 'Inj Duty Cycle' from the drop-down list.



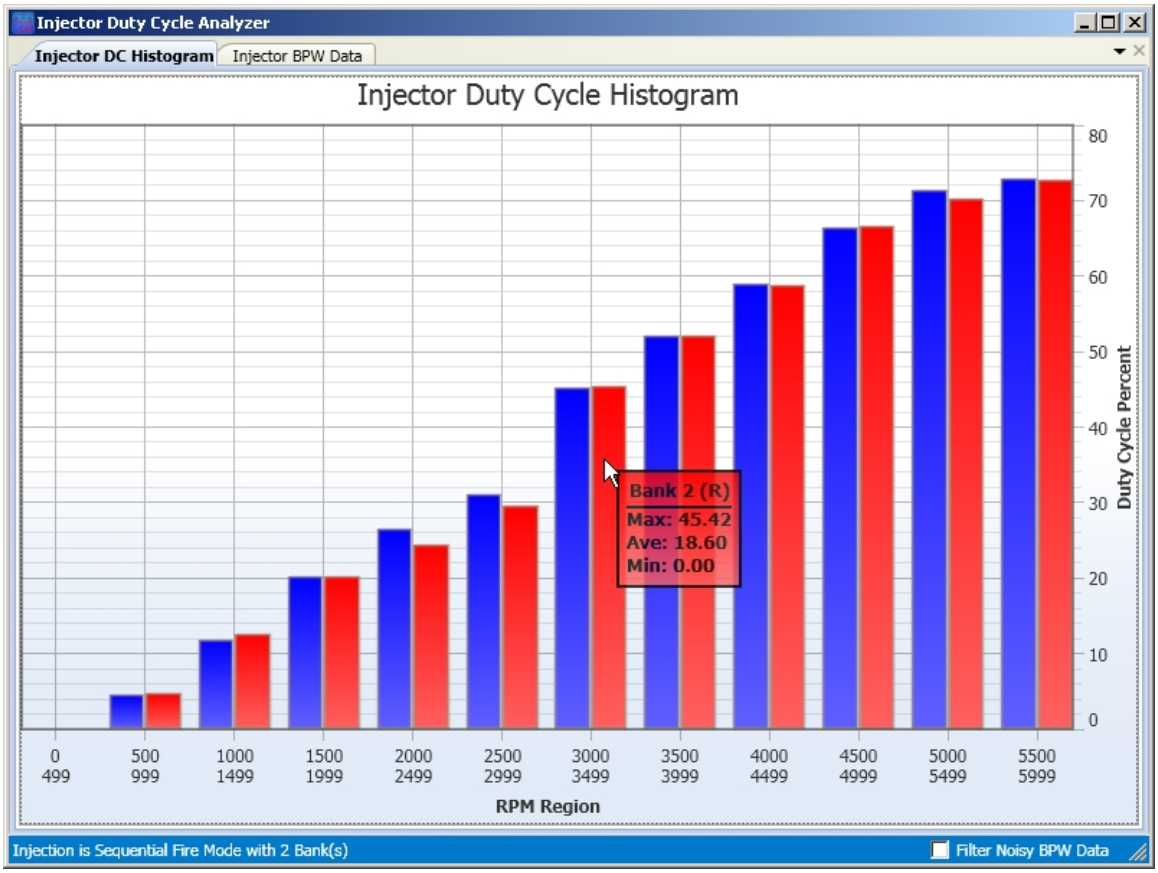
Then click on the 'Run Selected Tool button'.



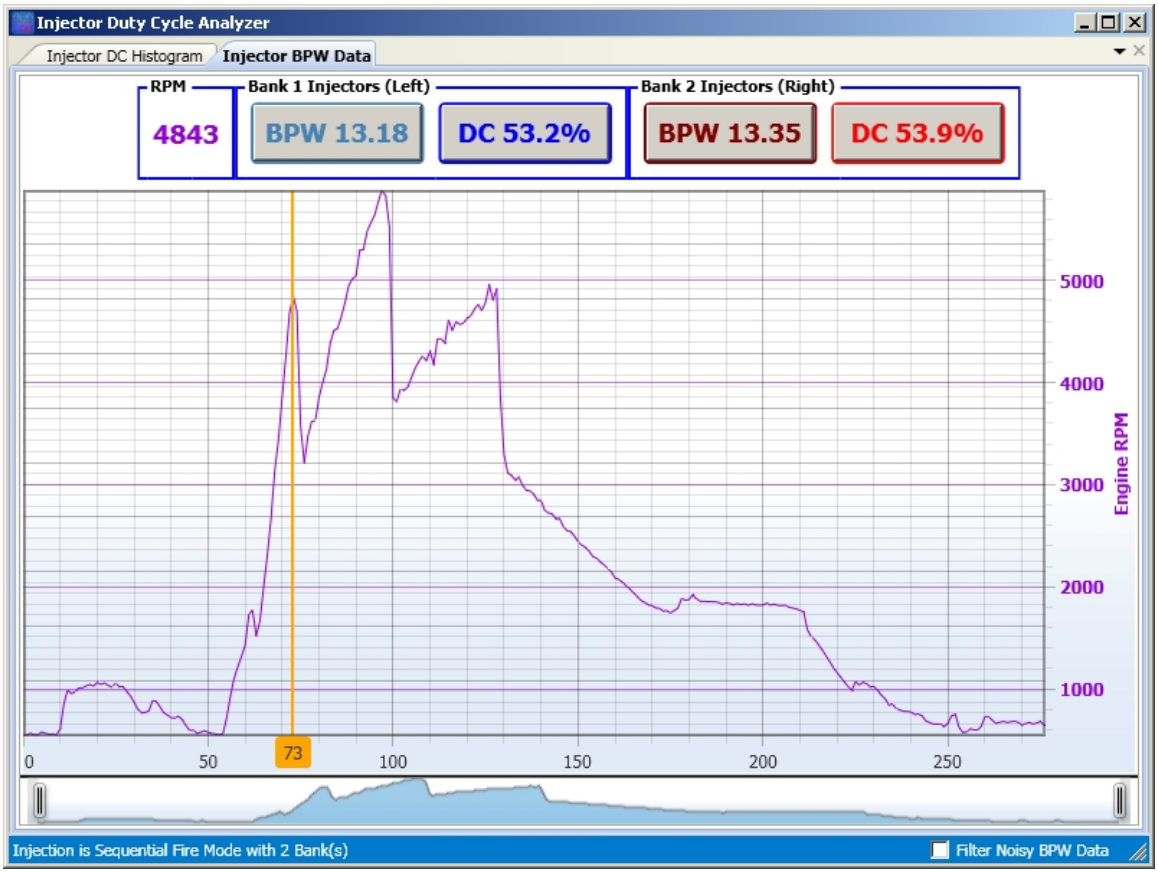
The Injector Duty Cycle Analyzer screen presents a histogram of the injector duty cycle as a function of RPM based on the recorded injector pulse width and engine RPM data.



When there are two banks of injectors the data for each bank is shown separately with bank 1 (left) data in blue and bank 2 (right) data in red. Dragging the mouse pointer over a bar in the histogram shows you the injector bank, max, min and average injector duty cycle for that RPM range.

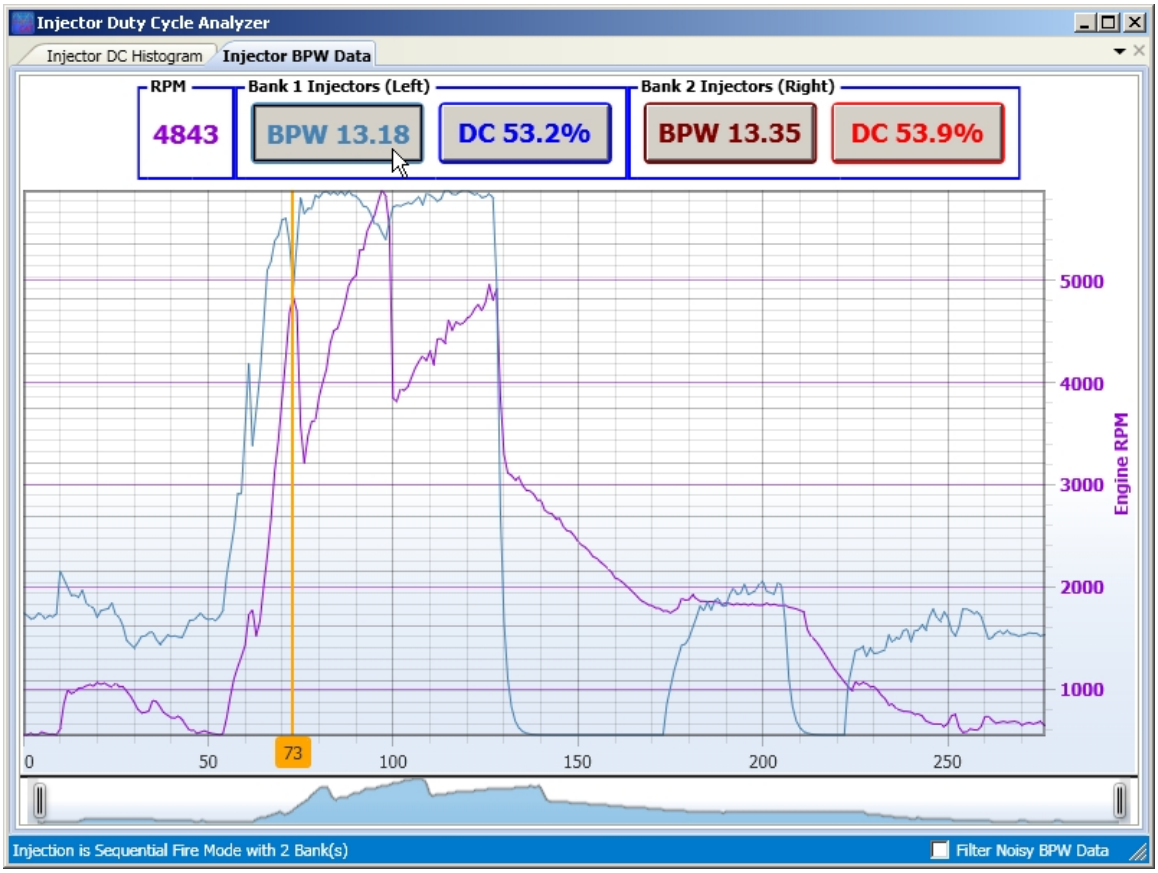


To look at the detailed injector pulse width data that was used to calculate the duty cycle histogram from the data file being analyzed click on the Injector BPW Data tab at the top of the screen. This will display a chart showing the injector pulse width and calculated duty cycle for each bank along with the engine RPM for each data frame.



The data tiles at the top of the screen show the RPM, injector bank 1 BPW and duty cycle and the injector bank2 BPW and duty cycle for the selected data frame. The chart shows the engine RPM for each data frame. The select a data frame just click on the chart. The chart cursor will move to the selected frame and the data tiles at the top of the screen will show the data corresponding to that data frame. The box at the bottom of the chart cursor shows the frame number. You can also click on the chart cursor and drag it to the desired data frame.

To add the injector BPW or duty cycle for either injector bank to the chart just click on the appropriate data tile.

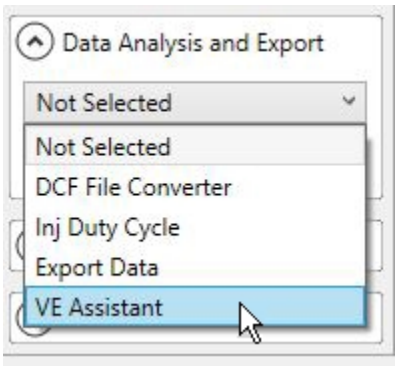


VE Assistant

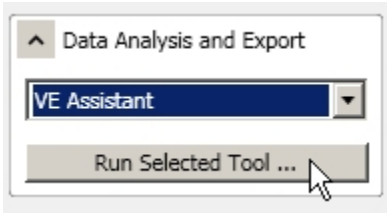
The VE Assistant will calculate VE table corrections based on recorded BLM values or wide band O2 sensor data so you can quickly and easily correct the VE tables when tuning a vehicle.

To access the VE Assistant tool, expand the Get Vehicle Data section of the Vehicle Setup screen.

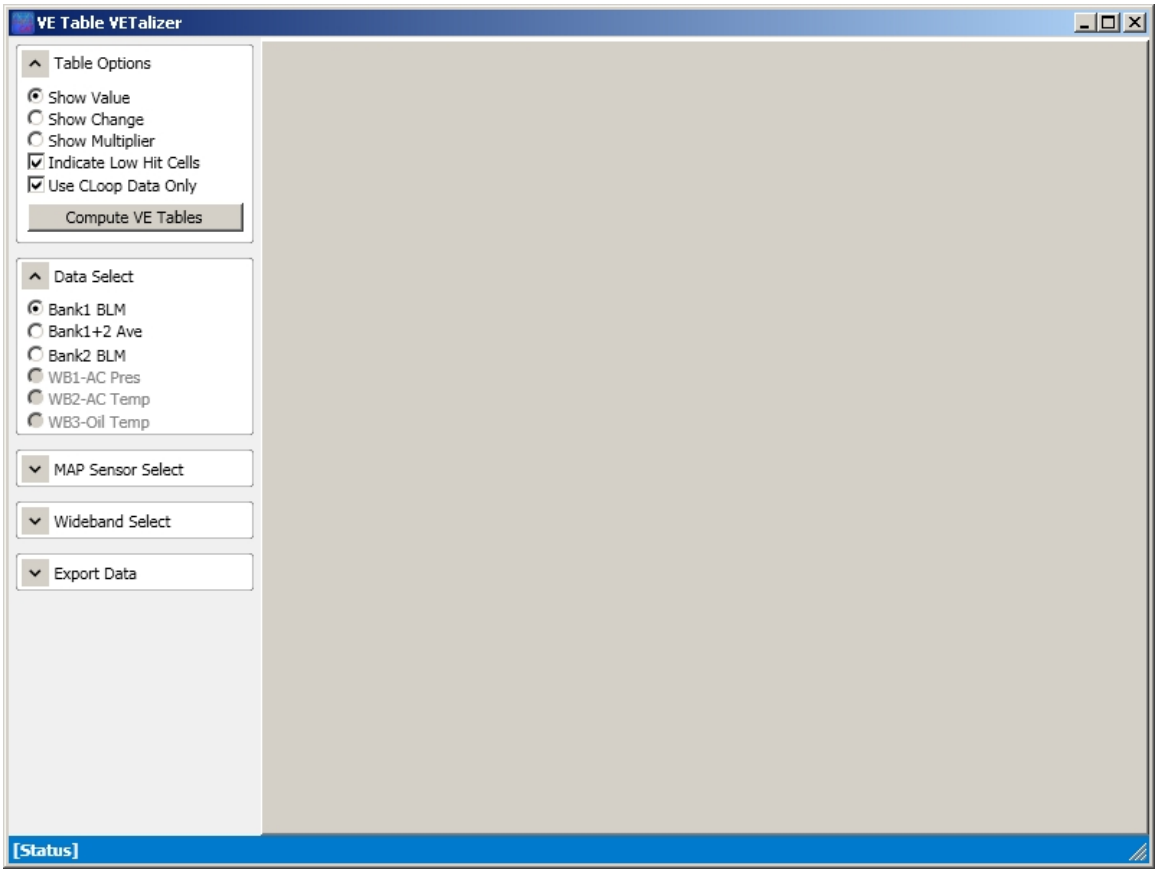
Click on the down arrow to the right of the function box and select 'VE Assistant' from the drop-down list.



Then click on the 'Run Selected Tool button'.



This will start the VE Table VET-alizer function.



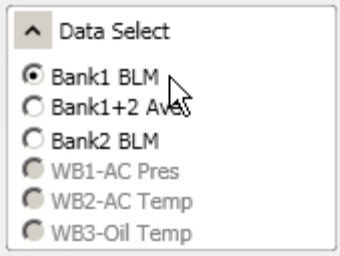
The VE table information can be shown in three basic formats:

1. The actual BLM values.
2. The BLM change or difference from the target BLM value of128.
3. As a percentage of the target BLM value of 128.

Select the desired format from the Table Options section.

Two other options are also available for the VE table. If you would like the program to indicate any of the table cells for which there is little or no data check the 'Indicate Low Hit Cells' checkbox. If you would like the program to use open loop BLM data as well as closed loop data then un-check the 'Use CLoop Data Only' check box.

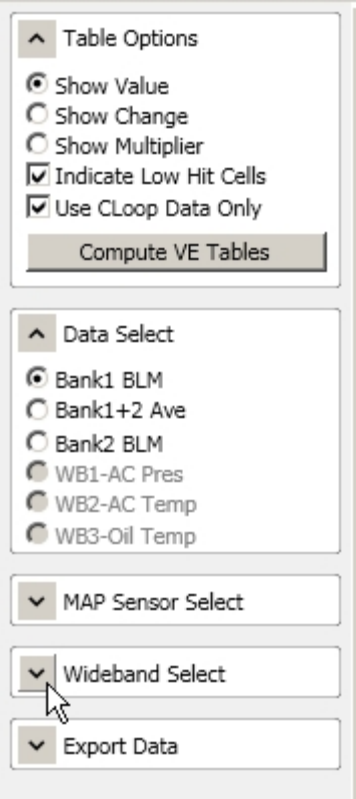
The Data Select section of the screen allows you to choose what data is used in the VE table calculations.



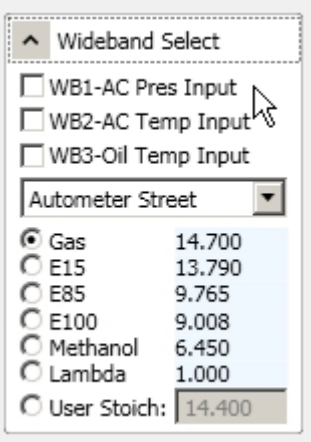
If you select the 'Bank 1 BLM' option, only the data from bank 1 will be used. Similarly, selecting 'Bank2 BLM' will use only the bank 2 data. The 'Bank 1 + 2 Ave' option will use the average of the bank 1 and bank 2 BLM data. (Note: The 'Bank2 BLM' and 'Bank 1 + 2 Ave' options are only available on vehicles with multiple O2 sensors.)

If there was data recorded from a wide band O2 sensor then you can use this instead of the BLM data for the calculations. To use the wide band O2 sensor data select either the 'WB1-AC Pres', 'WB2-AC Temp' or 'WB3-Oil Temp' options depending on which ECM input you used to connect the wide band O2 sensor. Use WB1 if the wide band O2 sensor was connected to the A/C pressure input, WB2 if the wide band O2 was connected to the A/C evap. temperature input or WB3 is the sensor was connected to the engine oil temperature input.

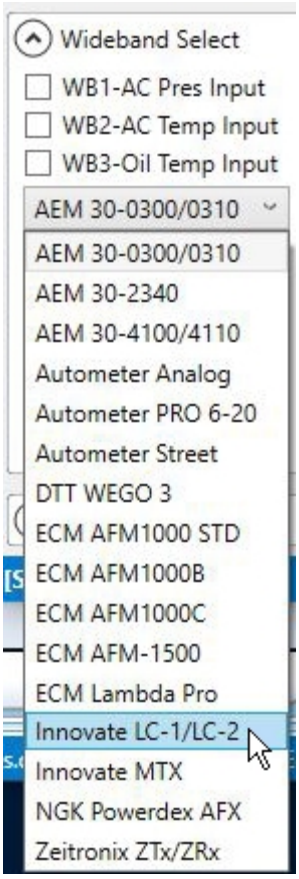
If you select one of the wide-band O2 sensor options you also need to specify the type of wide band O2 sensor that was used. To do so click on the down arrow to the left of the Wideband Select box to expand this section.



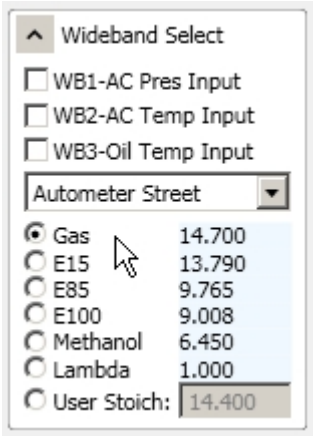
Next select the ECM input that was used to connect the wide band O2 sensor to the ECM.



Then click on the down arrow to the right of the selection box and select the type of wide-band O2 sensor that was used from the drop-down list.

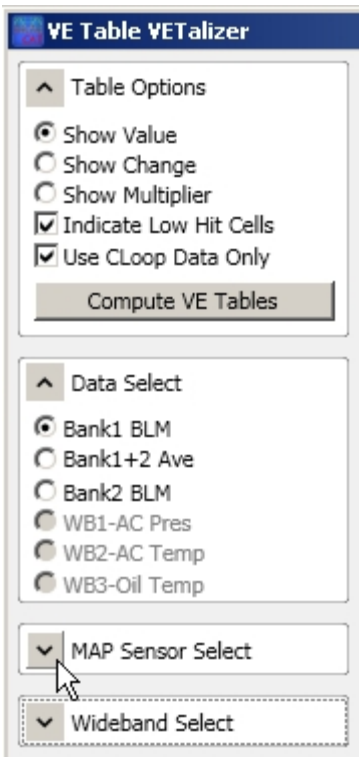


And finally select the stoichiometric AFR for the type of fuel that was being used.



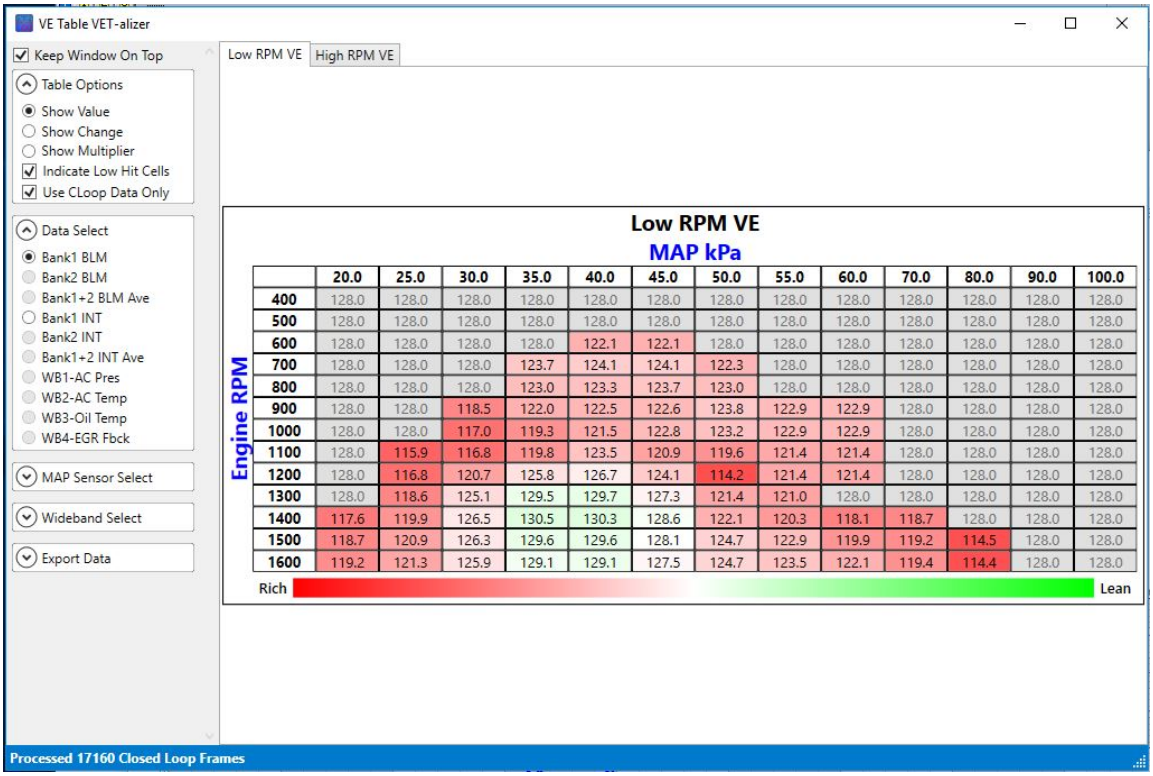
If you would like to use a non-standard stoichiometric AFR then click on the 'User Stoich:' option and enter the desired value.

If a 2 or 3 bar MAP sensor was being used then click on the down arrow to the left of the MAP Sensor Select box to expand this section.



And select the appropriate MAP sensor.

Once the desired options are selected, click on the 'Compute VE Tables' button to view the calculated VE Tables.



Typically, two VE tables are calculated, the low RPM VE table and the high RPM VE table. To view the high RPM VE table, click on the 'High RPM VE' tab at the top of the screen.

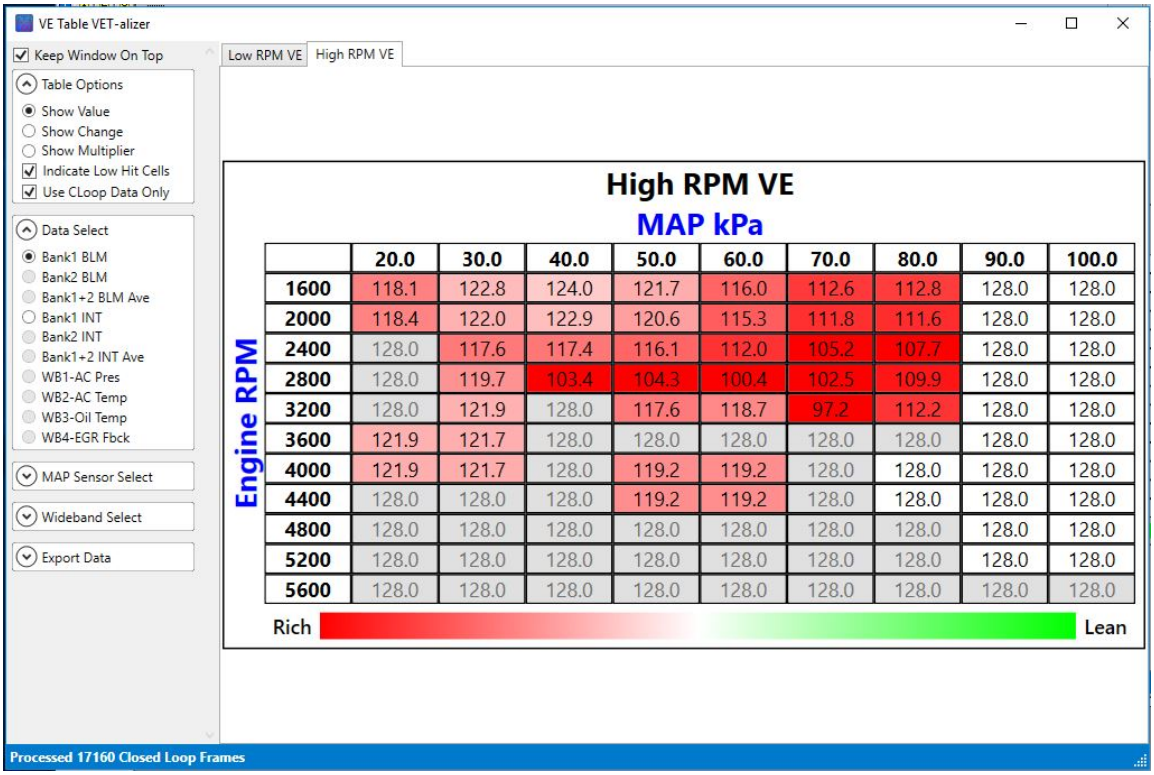
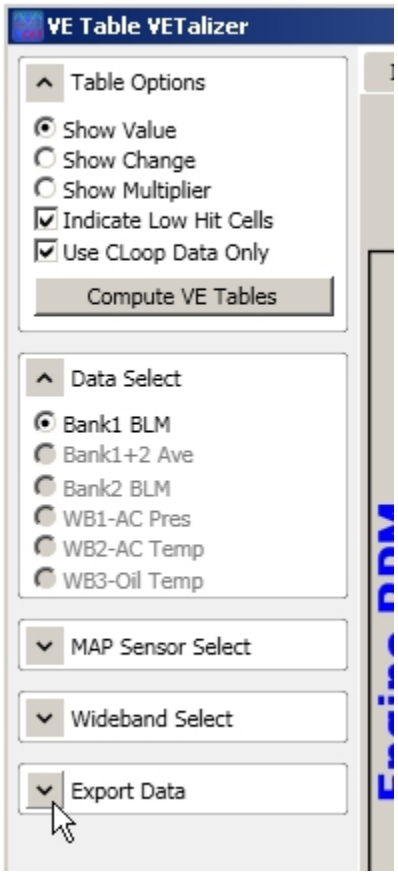
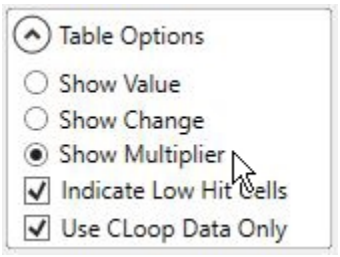


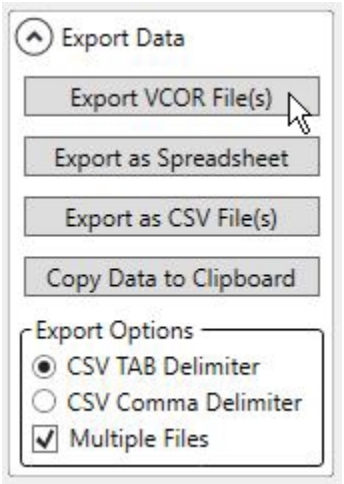
Table cells with a red background indicate a rich condition while cells with a green background indicate a lean condition. Cells with a gray background (only visible if the "indicate Low Hit Cells' option is selected) indicate cells where there was insufficient data to calculate a BLM value and a default value of 128 (no correction) is assumed. While the table is displayed you can select other table options to change the display but if any changes are made in the 'Data Select', 'MAP Sensor Select' or 'Wideband Select' sections you must click on the 'Compute VE Tables' button again to update the VE tables.

Once the VE tables are calculated you can export the data in several file formats. Click on the down arrow next to 'Export Data' to expand this section.



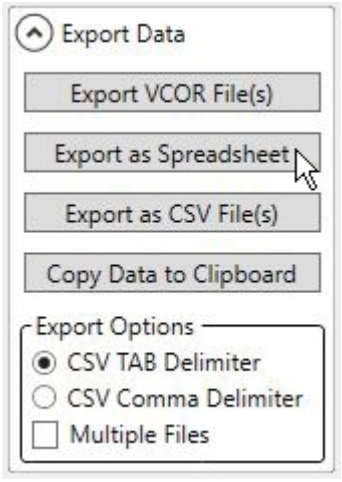
The first export file format is the VCOR format. This is a special file format that is compatible with the Scalar Correction Table Tool in our OBDI Tuner program that will automatically apply the calculated corrections to the VE tables. To create the VCOR files, check the 'Show Multiplier' option in the 'Table Options' section, next check the 'Multiple Files' checkbox in the 'Export Options' box and then click on the 'Export VCOR File(s)' button.





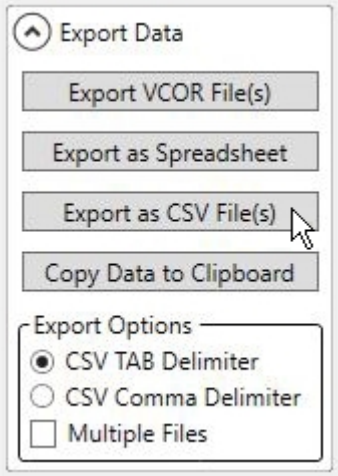
Then navigate to the desired folder, enter in a file name and click on the 'Save' button. This will create two files; one containing the corrections to the Low RPM VE table and the other containing the corrections for the High RPM VE table. The correction file for the low RPM VE table will be named *vcorfilename*-Table01.vcor and the correction table for the high RPM VE table will be named *vcorfilename*-Table02.vcor.

To export the VE table data to a Microsoft Excel (.xlsx) format file, click on the 'Export as Spreadsheet' button.



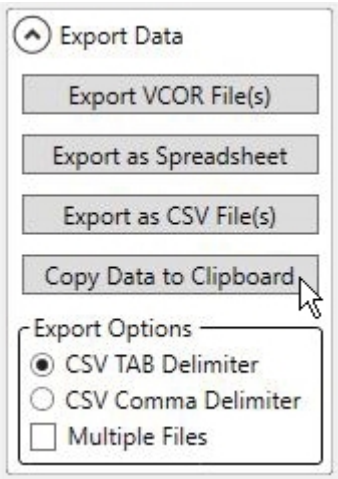
You can also export the VE table data to a .csv format file which is either tab delimited or comma delimited. To export the VE table data to a .csv format file, select which format option

you want (tab or comma delimited) in the ‘Export Options’ box and click on the 'Export as CSV' button.



Then navigate to the desired folder, enter in a file name and click on the 'Save' button. A .csv format file will be created containing both low RPM VE table and high RPM VE table values. To create separate .csv files for the low RPM and high RPM VE table values select the 'Multiple Files' option before clicking on the 'Export as CSV File(s) button.

If you would like to place the VE table values of the table currently displayed on the VE Table VET-alizer screen on the Windows Clipboard so that they can be pasted into another program for further analysis, click on the 'Copy Data to Clipboard' button.

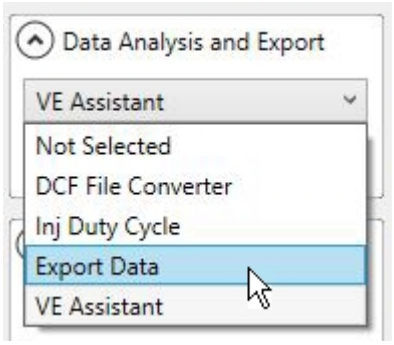


Data Export

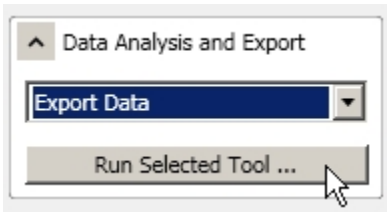
The Data Export function allows you to select parameters from the open recorded data file and save all the recorded data to a .csv format file for additional analysis.

To access the Data Export tool, expand the Get Vehicle Data section of the Vehicle Setup screen.

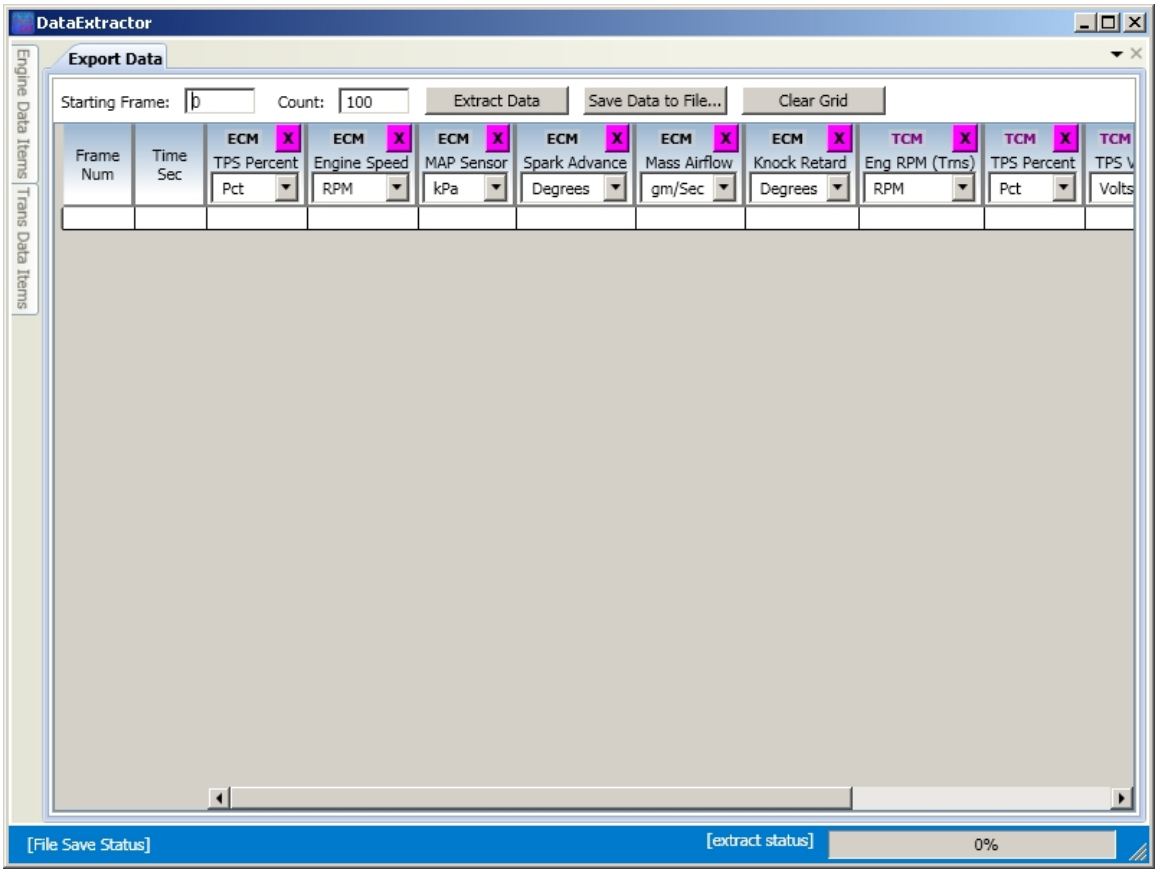
Click on the down arrow to the right of the function box and select 'Export Data' from the drop-down list.



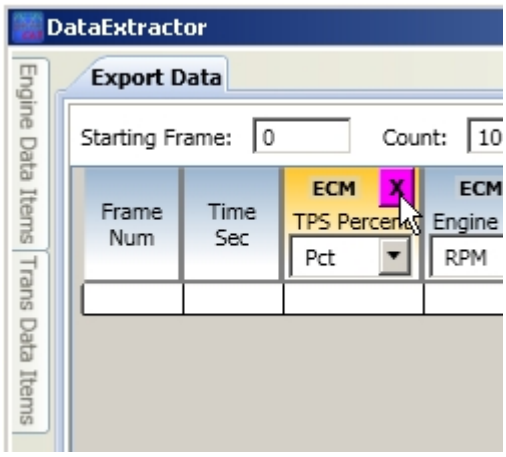
Then click on the 'Run Selected Tool button'.



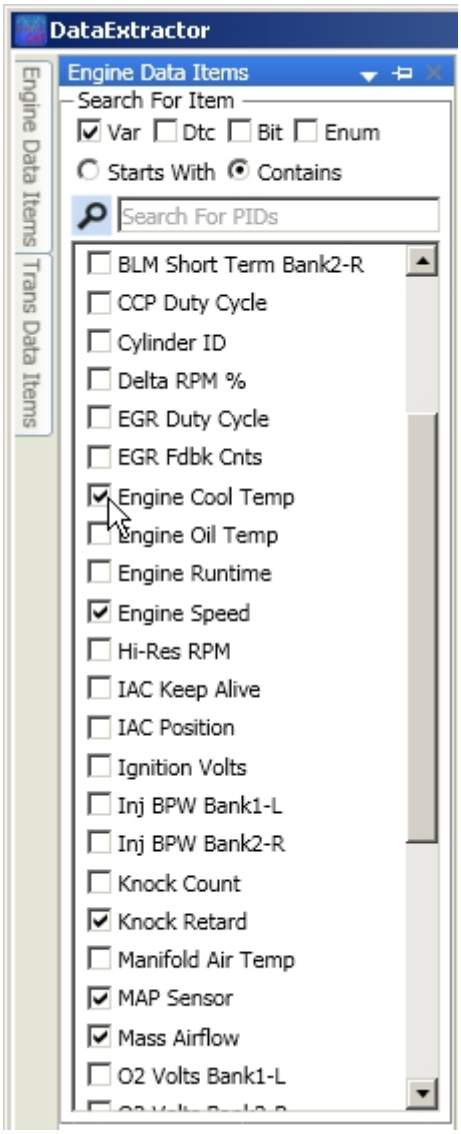
The Data Extractor screen shows the data grid with a column assigned to each of the selected ECM Data Items and Trans Data Items (if available).



You can modify the export data grad as needed. To remove a parameter from the grid just click on the 'X' at the top right corner of the column.



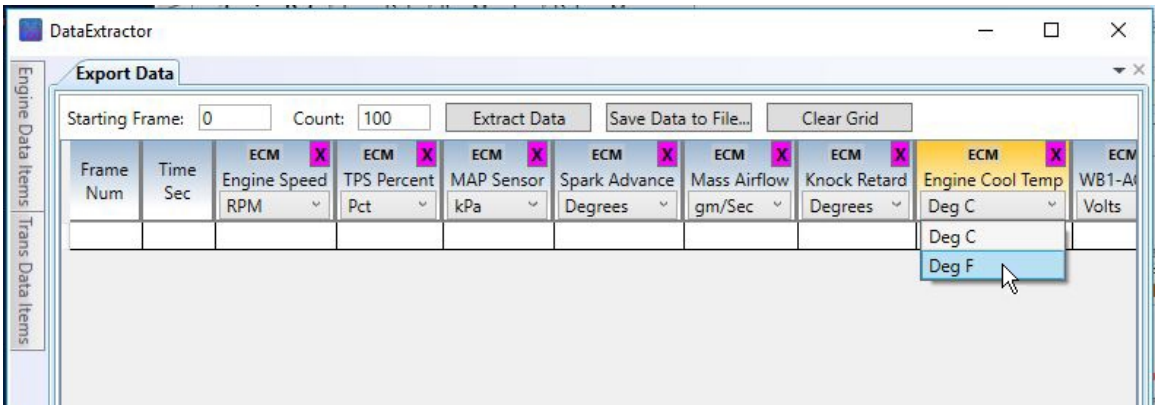
To add a new parameter to the data grid place the mouse pointer over the Engine Data Items (or Trans Data Items) tab to show the corresponding data items list. Then check the box to the left of the desired data parameter.



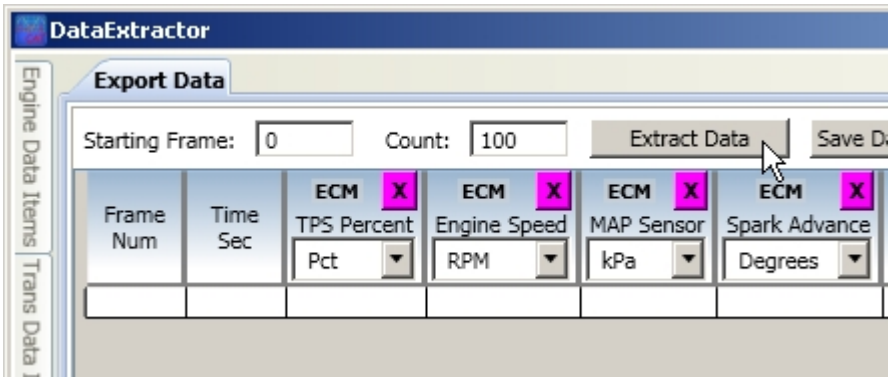
This will add a column in the data grid for the selected parameter. Un-checking the box next to a parameter that is currently checked will remove that parameter from the data grid.

You can change the order of the columns on the data grid by clicking on the desired parameter and dragging it to the new location.

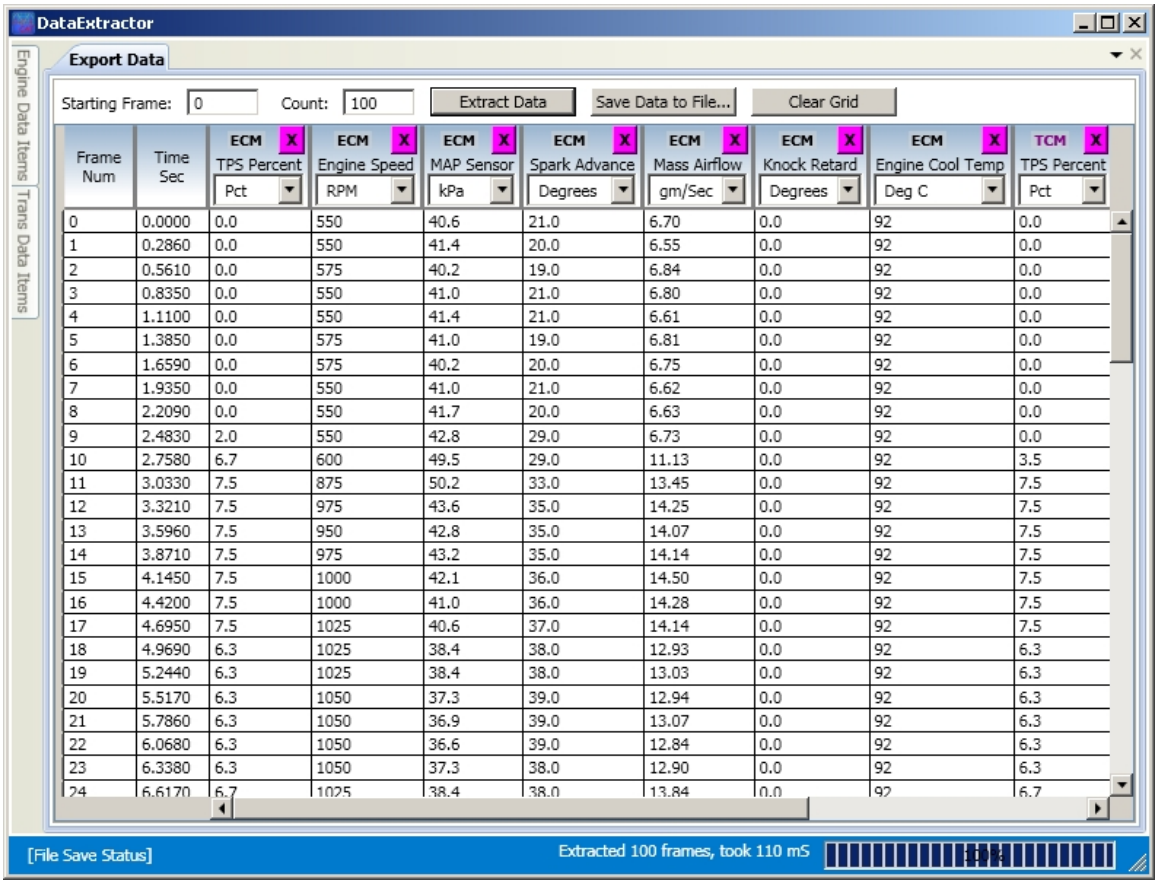
You can change the units of a parameter by clicking on the down arrow to the right of the units box and selecting the desired units from the drop-down list if alternate units are available.



Once you have the data grid set up click on the 'Extract Data' button.

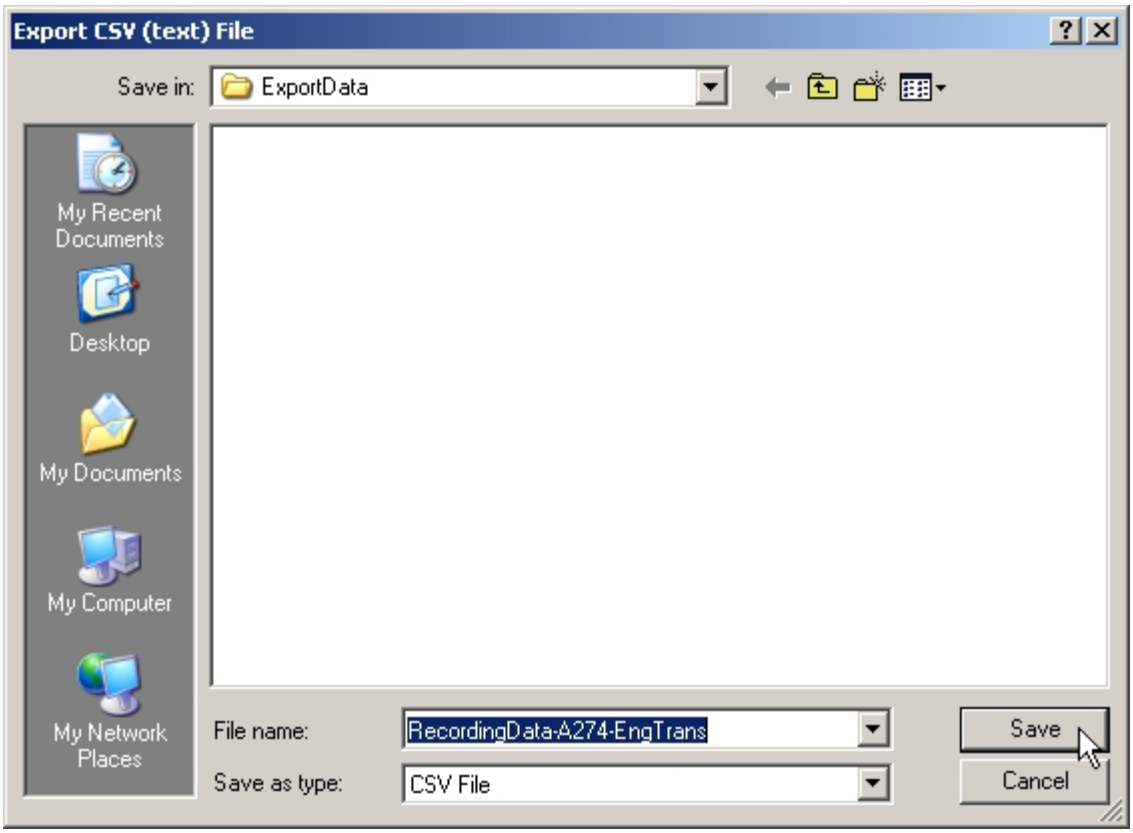


The data from each recorded data frame will be extracted from the recorded data and added to the data grid so that there will be one row of data for each data frame.



Frame Num	Time Sec	ECM TPS Percent (Pct)	ECM Engine Speed (RPM)	ECM MAP Sensor (kPa)	ECM Spark Advance (Degrees)	ECM Mass Airflow (gm/Sec)	ECM Knock Retard (Degrees)	ECM Engine Cool Temp (Deg C)	TCM TPS Percent (Pct)
0	0.0000	0.0	550	40.6	21.0	6.70	0.0	92	0.0
1	0.2860	0.0	550	41.4	20.0	6.55	0.0	92	0.0
2	0.5610	0.0	575	40.2	19.0	6.84	0.0	92	0.0
3	0.8350	0.0	550	41.0	21.0	6.80	0.0	92	0.0
4	1.1100	0.0	550	41.4	21.0	6.61	0.0	92	0.0
5	1.3850	0.0	575	41.0	19.0	6.81	0.0	92	0.0
6	1.6590	0.0	575	40.2	20.0	6.75	0.0	92	0.0
7	1.9350	0.0	550	41.0	21.0	6.62	0.0	92	0.0
8	2.2090	0.0	550	41.7	20.0	6.63	0.0	92	0.0
9	2.4830	2.0	550	42.8	29.0	6.73	0.0	92	0.0
10	2.7580	6.7	600	49.5	29.0	11.13	0.0	92	3.5
11	3.0330	7.5	875	50.2	33.0	13.45	0.0	92	7.5
12	3.3210	7.5	975	43.6	35.0	14.25	0.0	92	7.5
13	3.5960	7.5	950	42.8	35.0	14.07	0.0	92	7.5
14	3.8710	7.5	975	43.2	35.0	14.14	0.0	92	7.5
15	4.1450	7.5	1000	42.1	36.0	14.50	0.0	92	7.5
16	4.4200	7.5	1000	41.0	36.0	14.28	0.0	92	7.5
17	4.6950	7.5	1025	40.6	37.0	14.14	0.0	92	7.5
18	4.9690	6.3	1025	38.4	38.0	12.93	0.0	92	6.3
19	5.2440	6.3	1025	38.4	38.0	13.03	0.0	92	6.3
20	5.5170	6.3	1050	37.3	39.0	12.94	0.0	92	6.3
21	5.7860	6.3	1050	36.9	39.0	13.07	0.0	92	6.3
22	6.0680	6.3	1050	36.6	39.0	12.84	0.0	92	6.3
23	6.3380	6.3	1050	37.3	38.0	12.90	0.0	92	6.3
24	6.6170	6.7	1025	38.4	38.0	13.84	0.0	92	6.7

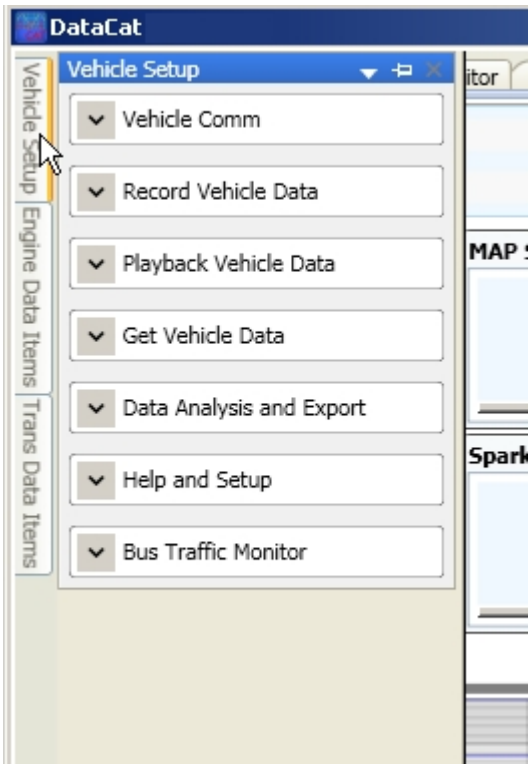
To save the data in the data grid to a file, click on the 'Save Data to File' button.



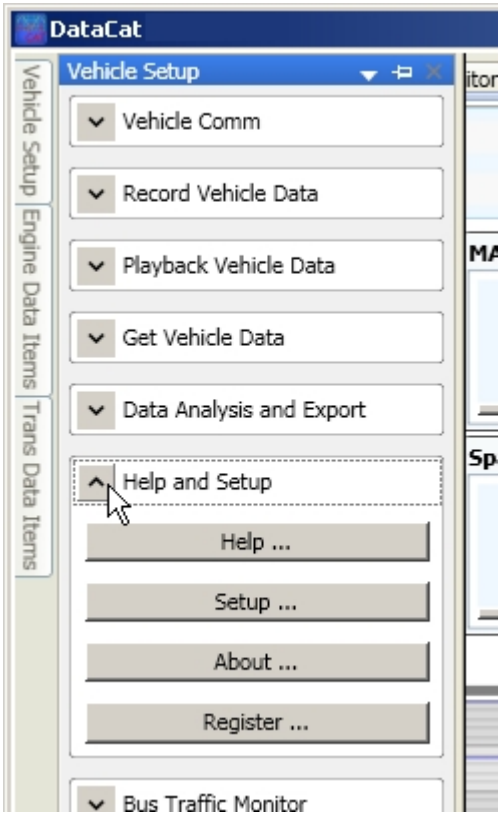
Navigate to the desired folder, enter a file name and click on the 'Save' button. This will create a comma delimited .csv format file containing all the data from the data grid.

Help and Setup

The Help and Setup section allows you to access the help file, change the general program setting, get DataCat program information and register the program. To access the Help and Setup functions, move the mouse pointer over the Vehicle Setup tab to the left of the main data screen to open the Vehicle Setup screen.

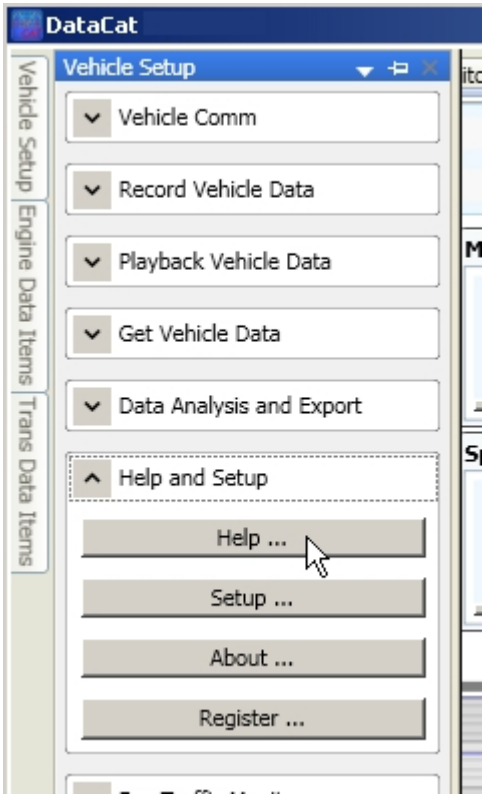


Then click on the down arrow to the left of 'Help and Setup' to expand this section.



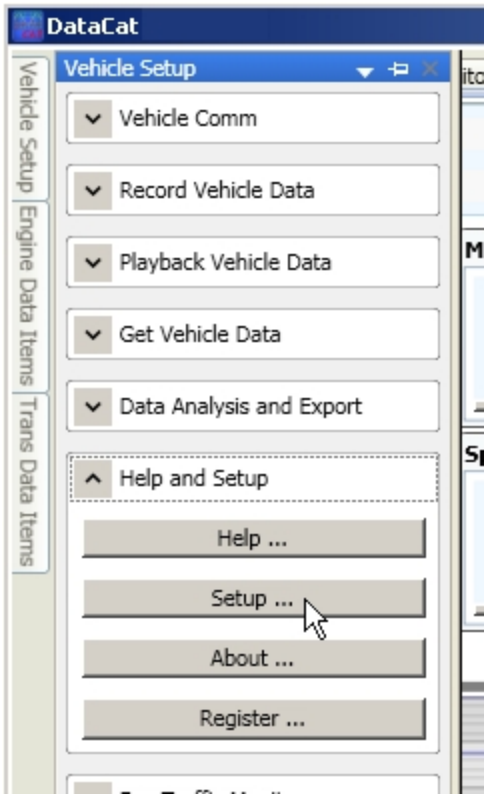
Program Help

To access this help file click on the Help button in the 'Help and Setup' section of the 'Vehicle Setup' screen.

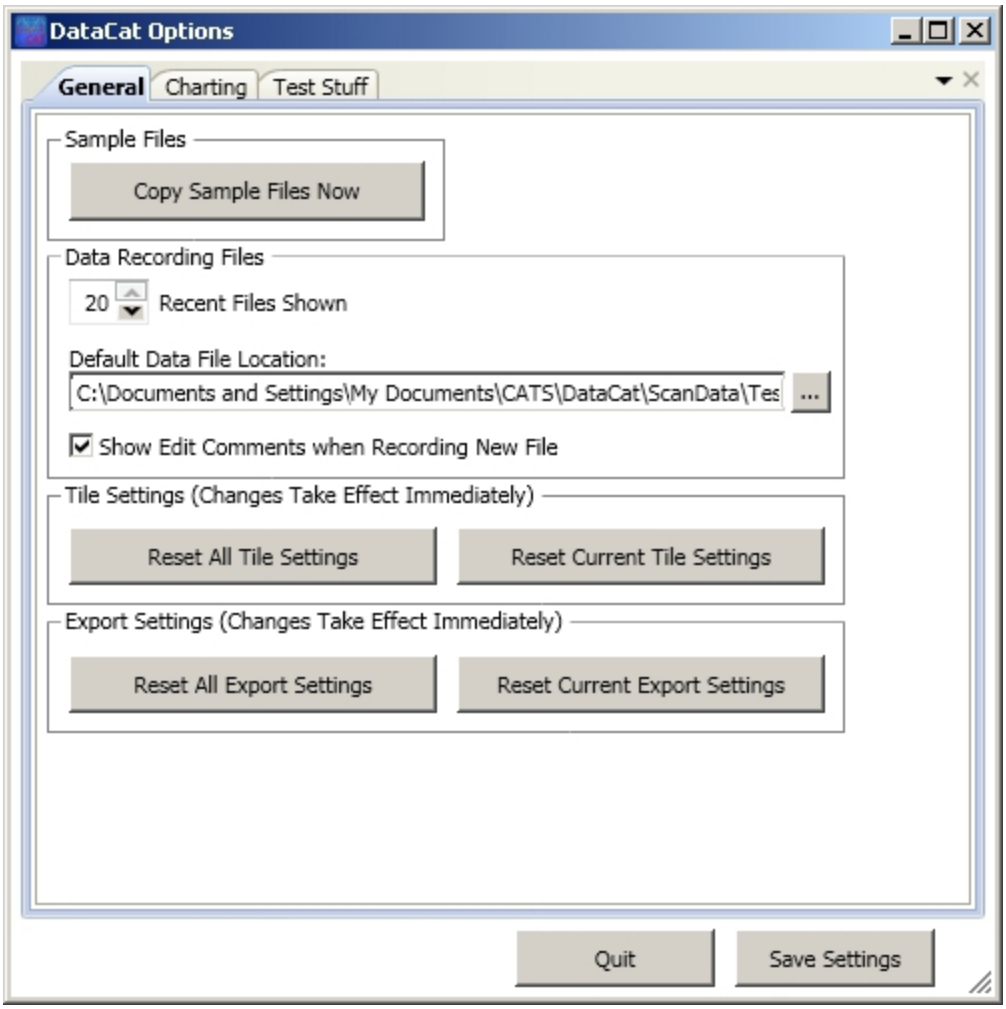


Program Options

To access the general program setup functions click on the 'Setup' button in the 'Help and Setup' section of the 'Vehicle Setup' screen.

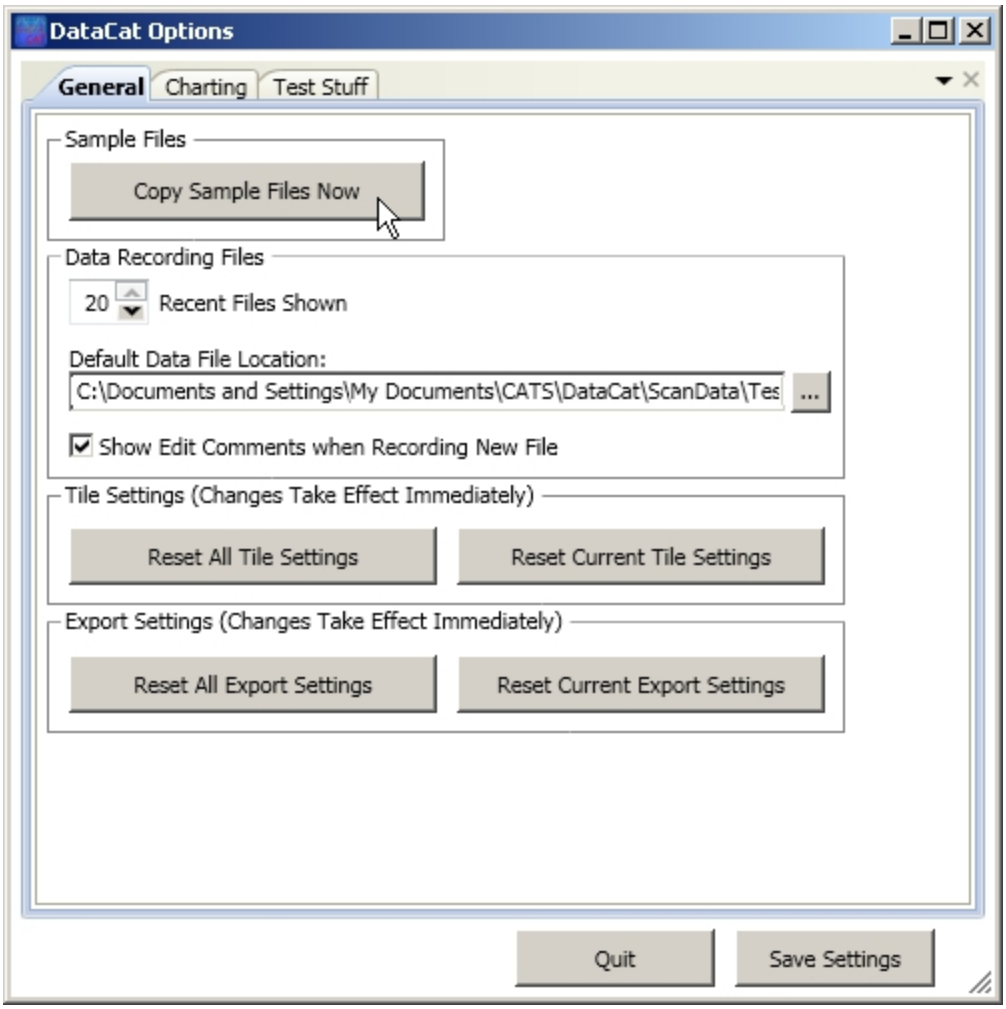


This will display the DataCat Options screen.



Copy Sample Data Files

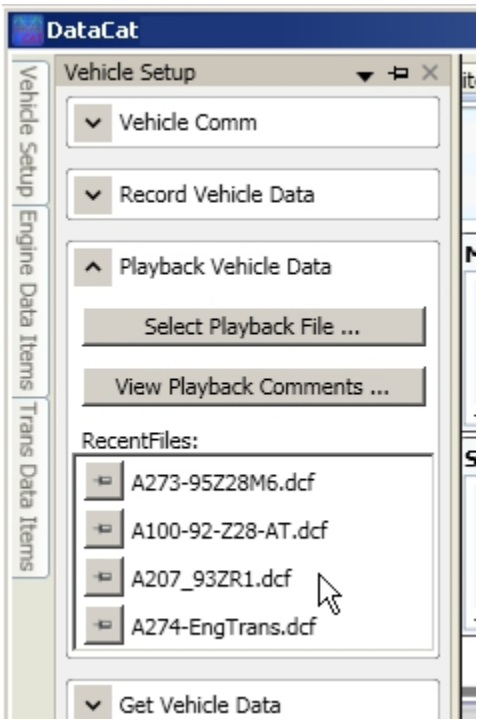
Several sample data files are included with the DataCat program. Clicking on the 'Copy Sample Files Now button will copy these sample data file into the folder that is specified in the 'Default Data File Location' box.



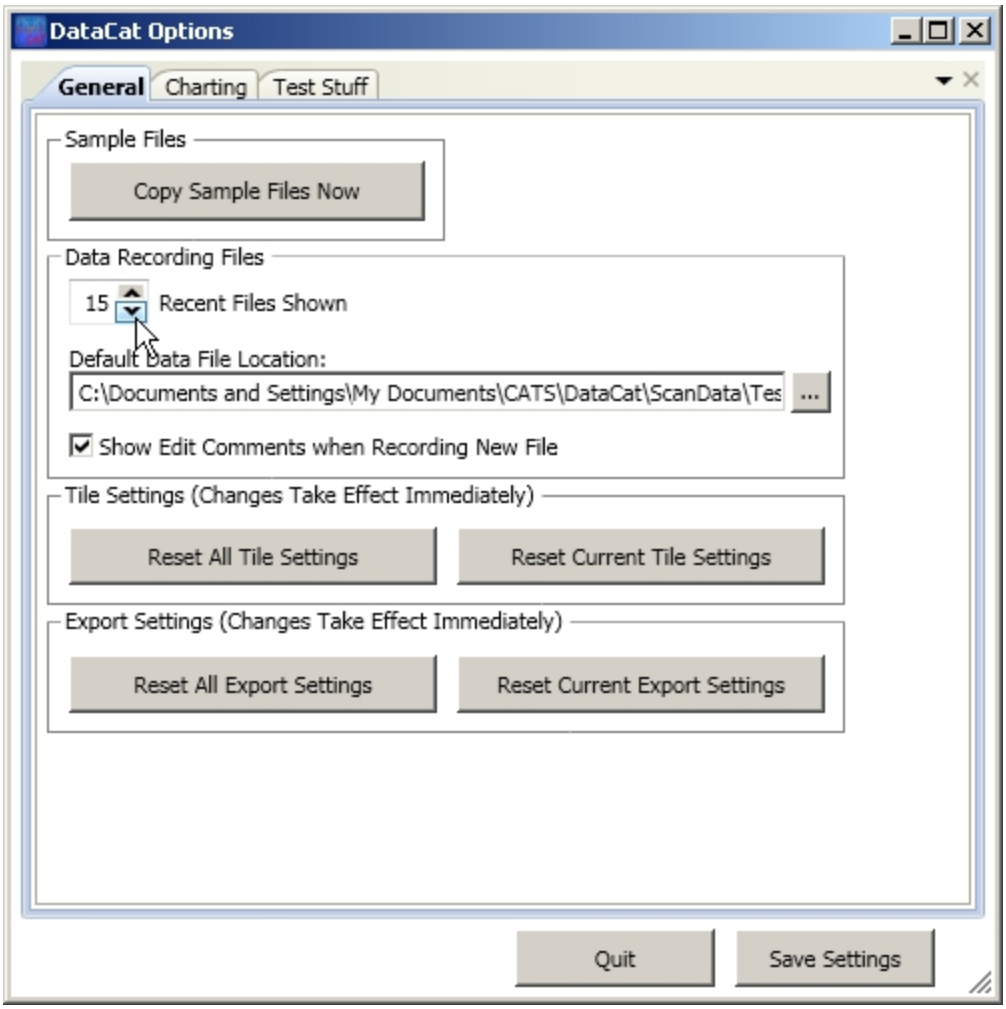
With regards to the data recording files you can set the number of files displayed in the 'Recent Files box in the 'Playback Vehicle Data' section of the 'Vehicle Setup' screen. This value defaults to 20 but you can increase or decrease the value by clicking on the up or down arrows next to the 'Recent Files Shown' box.

Recent Files List

The most recently accessed data recording files are listed in the 'Recent Files box in the 'Playback Vehicle Data' section of the 'Vehicle Setup' screen.



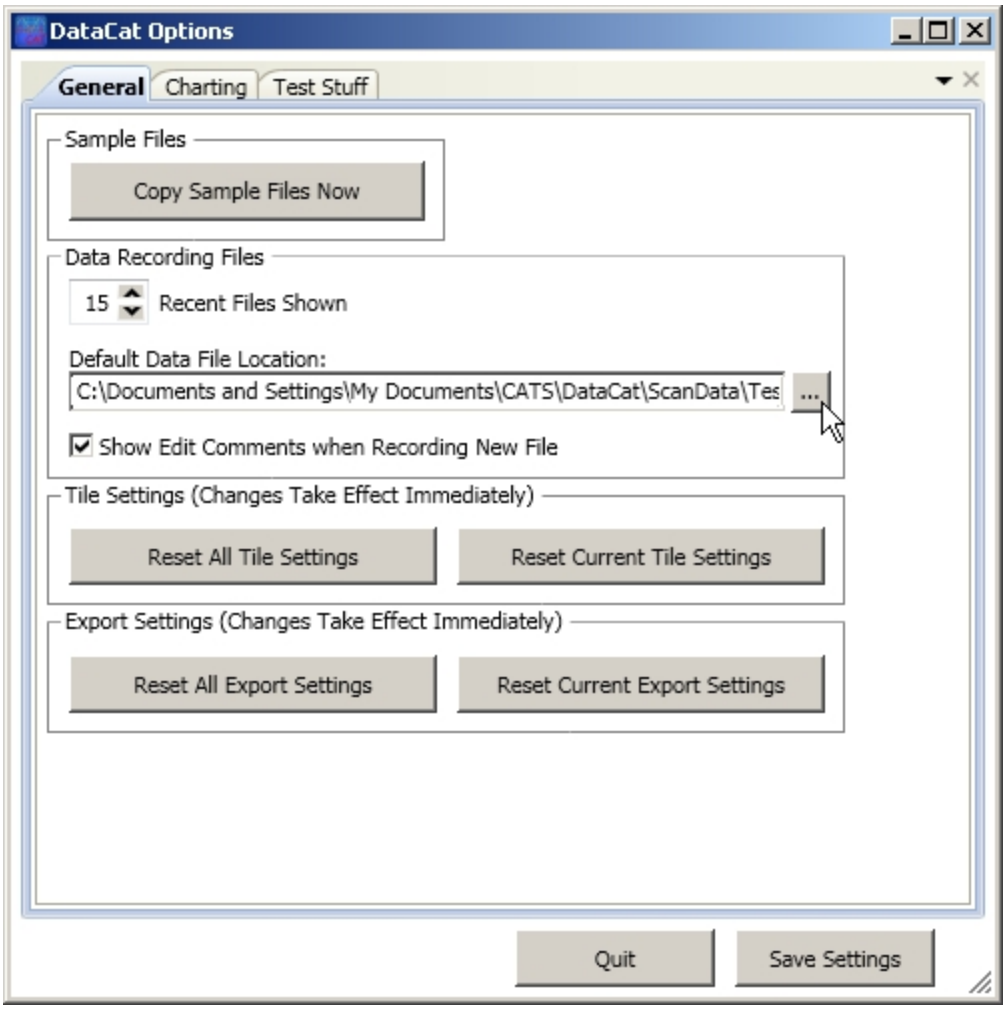
By default up to the number of files listed in the Recent Files box is set to the maximum of 20. To change this value click on the up or down arrows next to the 'Recent Files Shown' box.



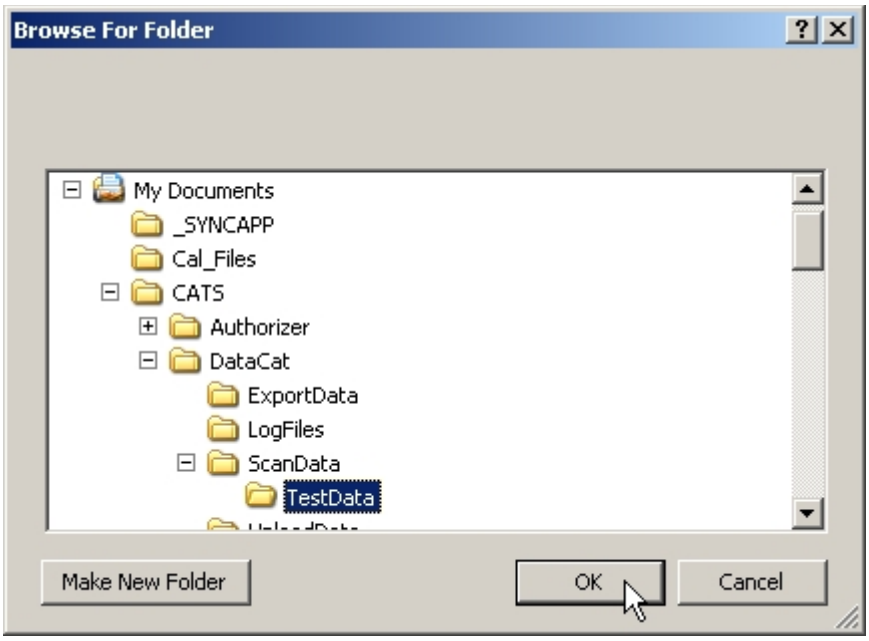
When data is recorded the data file will be placed in the Default Data File Location'. To change the default folder click on the button to the right and navigate to the desired default folder.

Default Data File Folder

Whenever you select a previously recorded data file or create a new data file the DataCat program will default to the folder specified in the 'Default Data File Location:' box on the General tab of the DataCat Options screen. By default this folder is 'My Documents\CATS\DataCat\ScanData\TestData'. To change the default data folder, click on the browse button to the right of the 'Default Data File Location:' box.

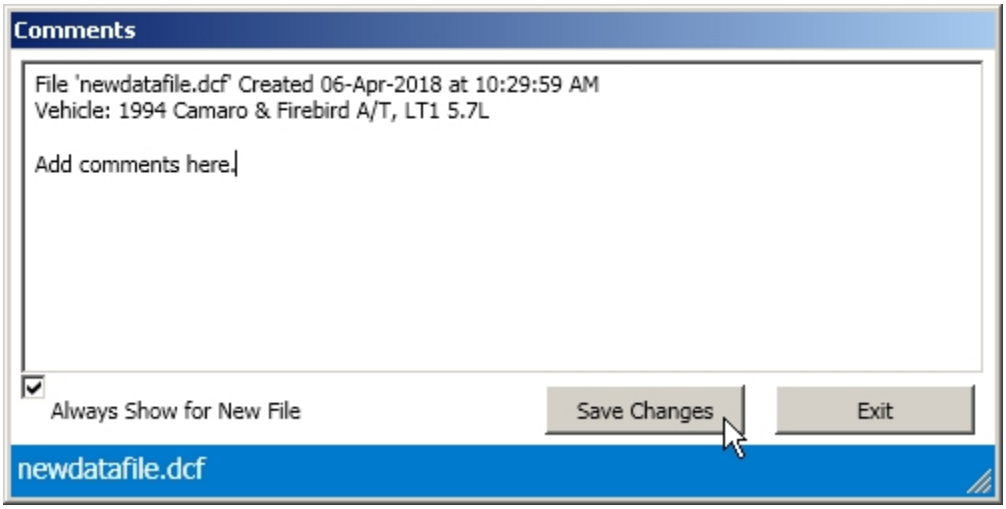


This will open the Browse for Folder screen allowing you to select a new default folder. When you have selected the desired folder click on the 'OK' button to change the default folder or click on the 'Cancel' button to retain the current default folder.

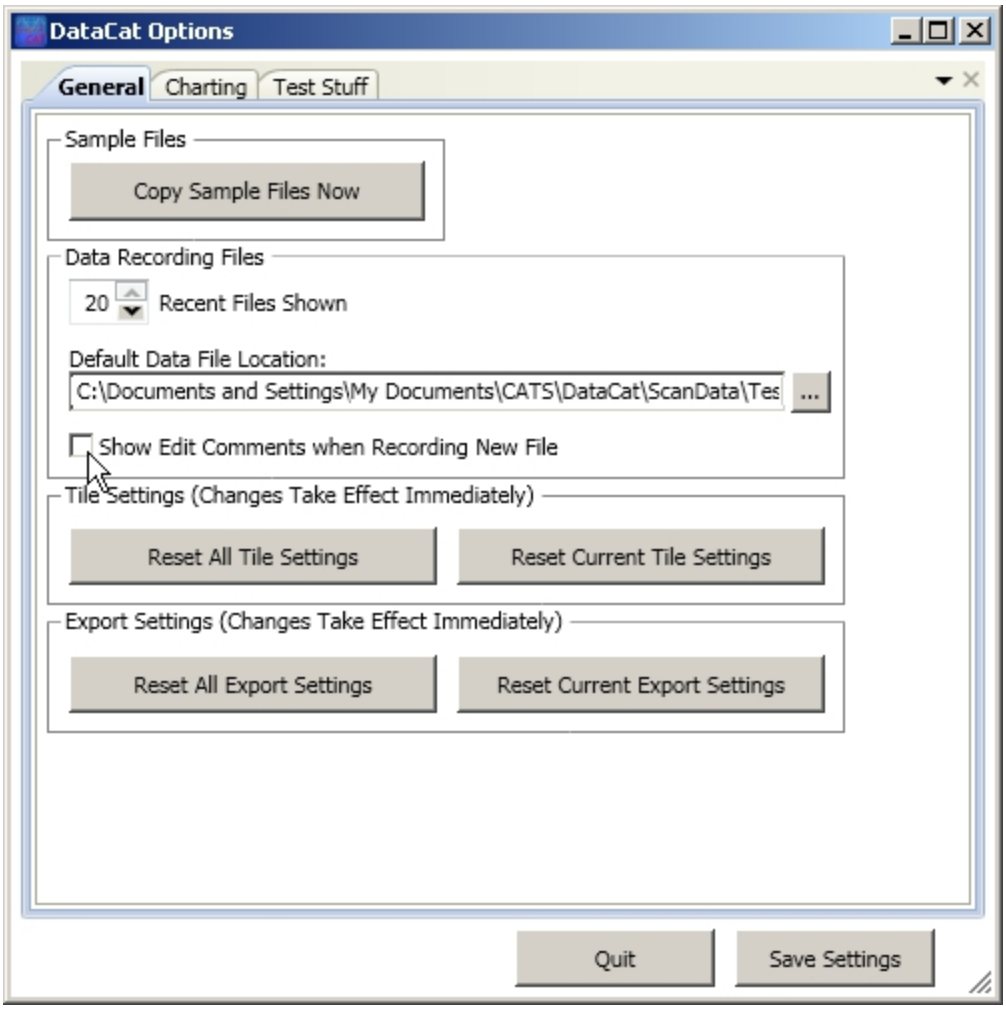


Edit Comments Screen

Normally whenever you open a new data file for recording the DataCat program will display the Comments screen allowing you to add comments regarding this data file.

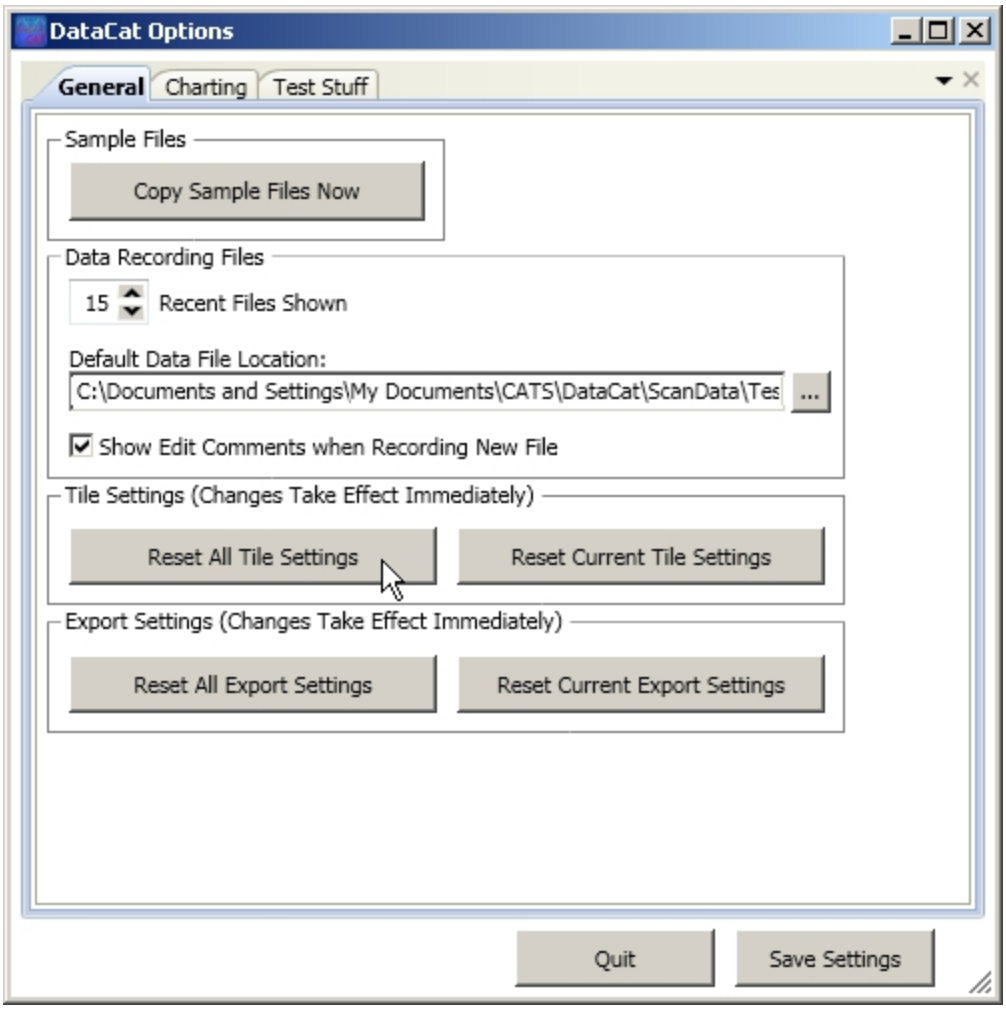


If you would prefer that this screen is not displayed when a new data recording file is opened then un-check the 'Show Edit Comments when Recording New File' box on the Options screen.

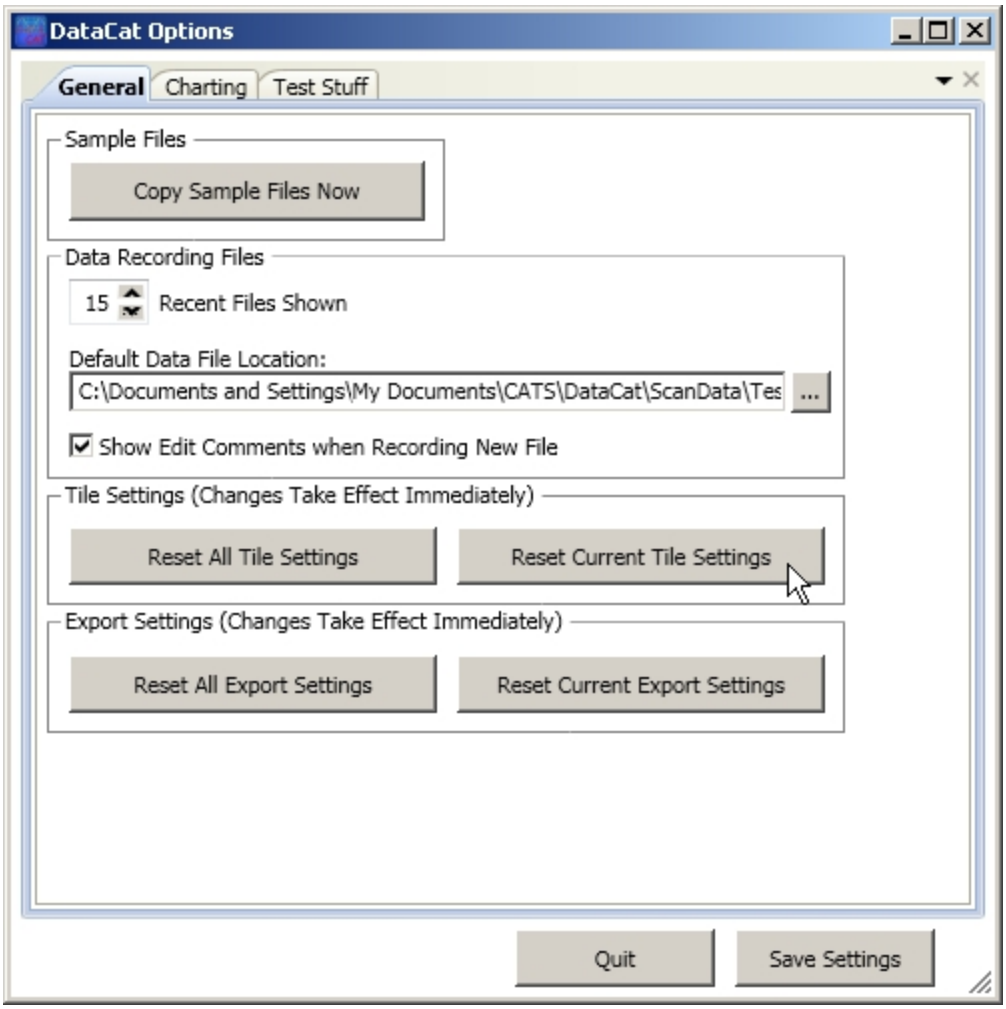


Reset Data Tile Settings

To return the settings of all the Data Tiles to their default values click on the 'Reset All Tile Settings' button on the Options screen.

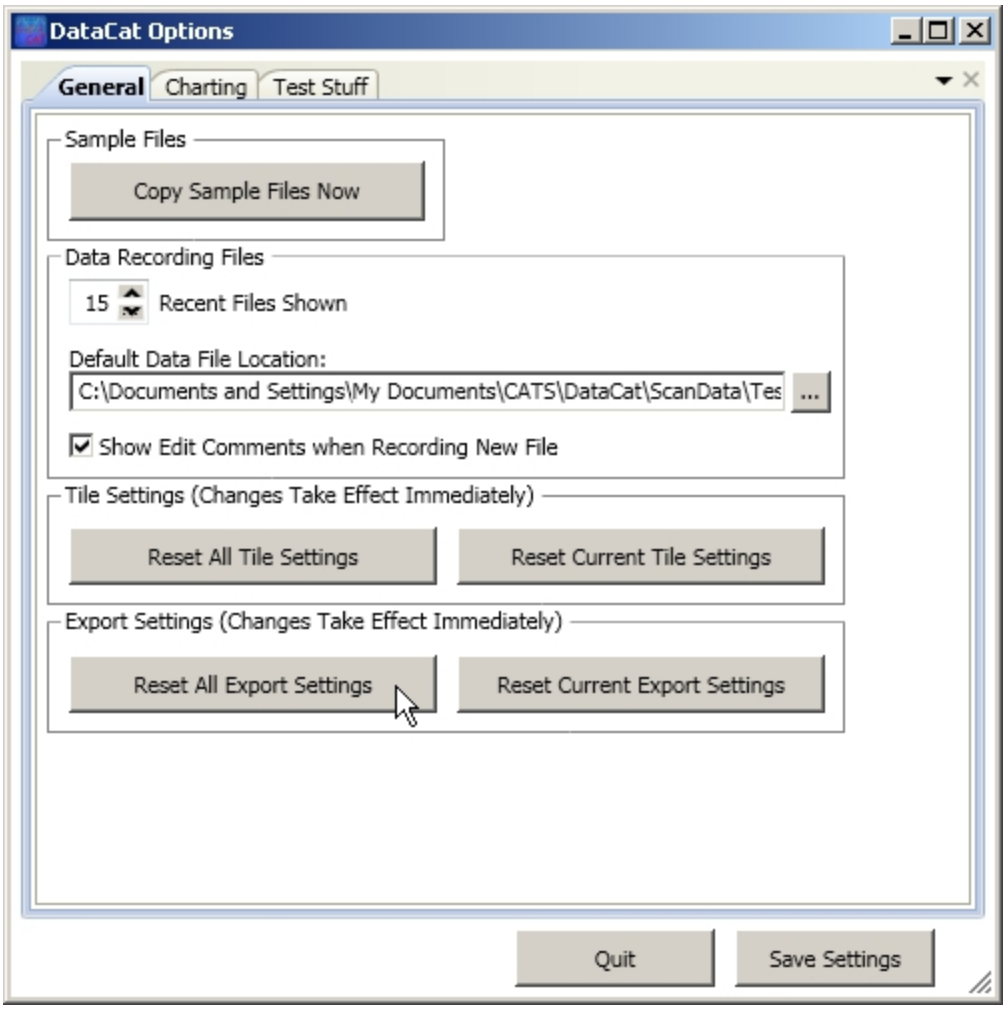


To return the settings of the Current Data Tiles to their default values click on the 'Reset Current Tile Settings' button on the Options screen.

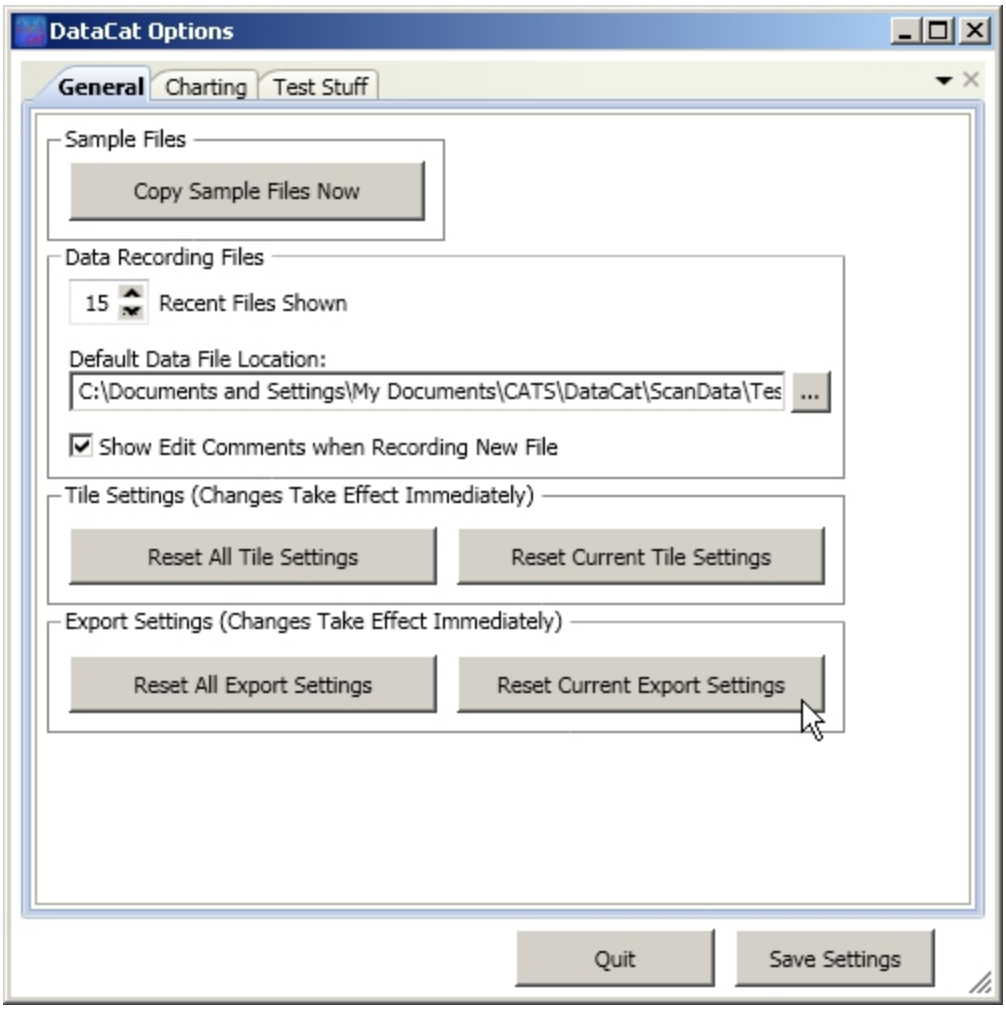


Reset Export Settings

To return all the Data Export settings to their default values click on the 'Reset All Export Settings' button on the Options screen.

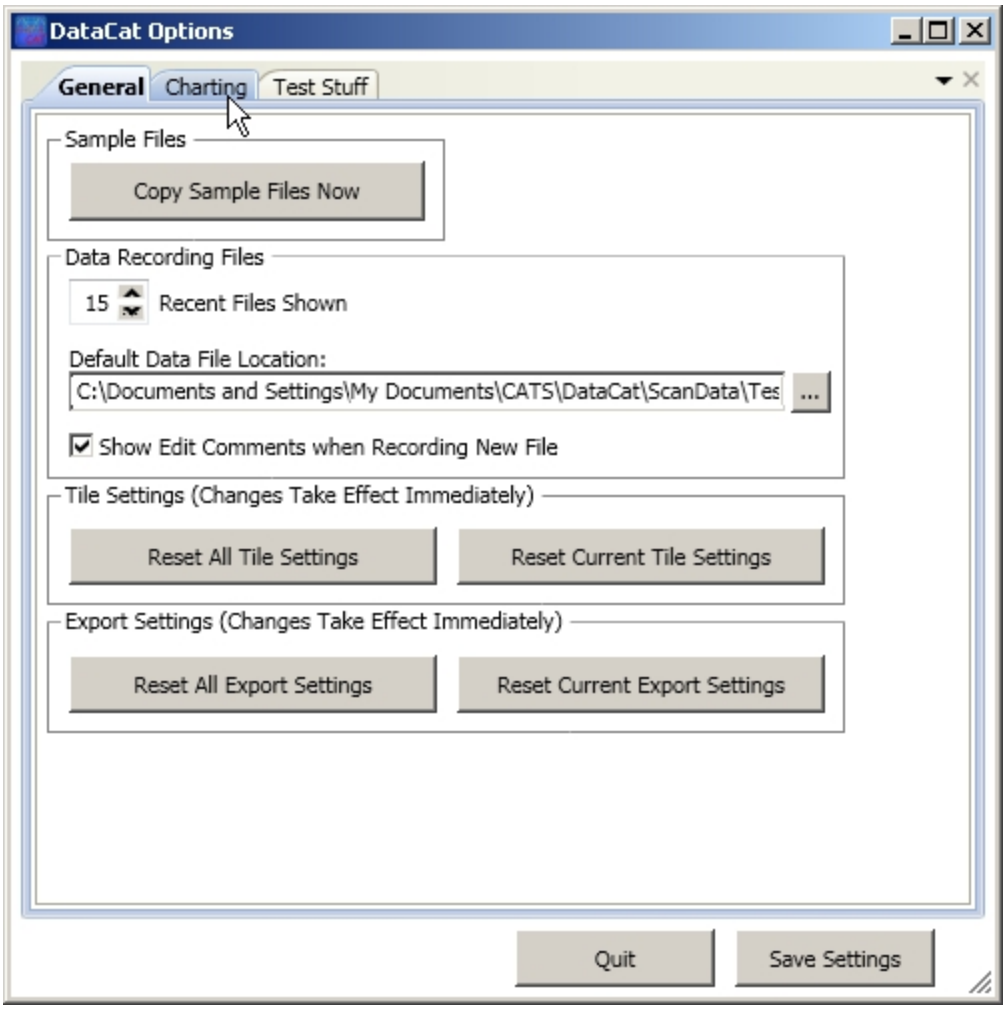


To return the current Export Data settings to their default values click on the 'Reset Current Export Settings' button on the Options screen.

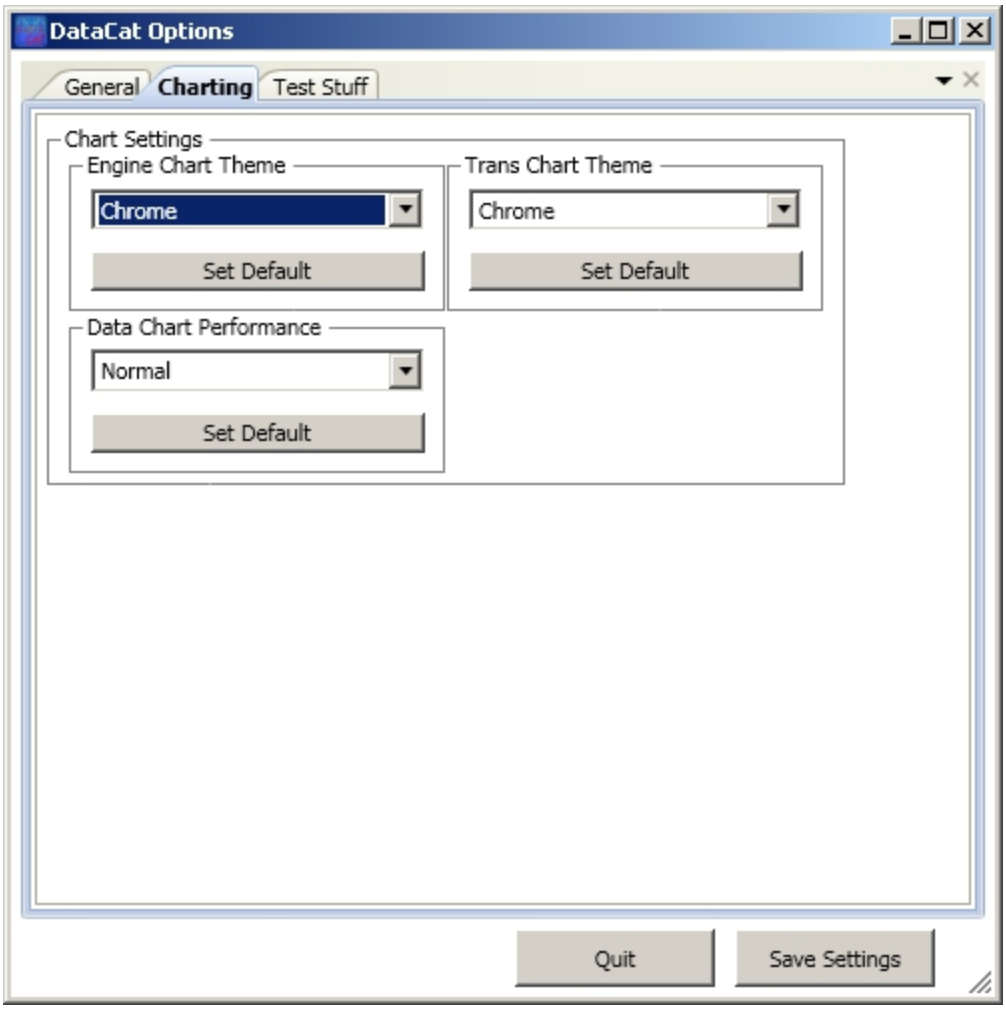


Data Chart Options

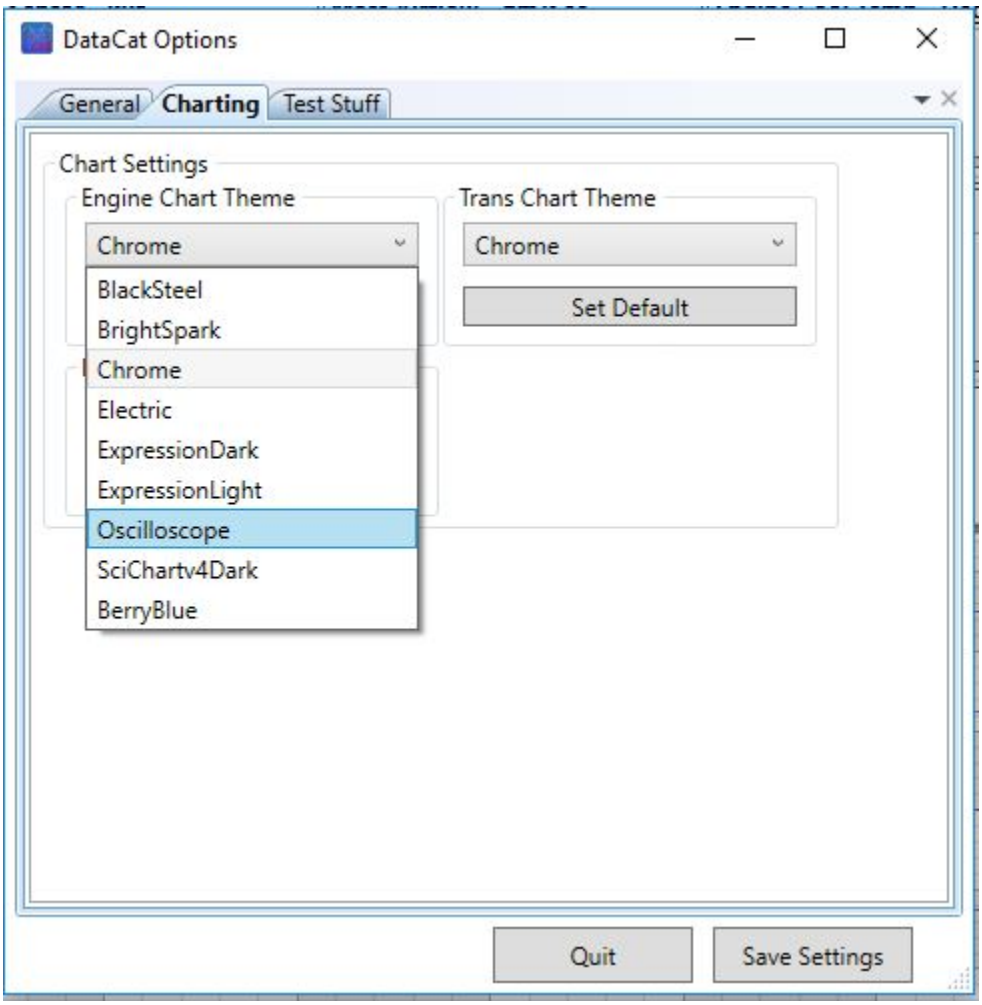
To change the Data Chart default settings click on the 'Charting' tab at the top of the Options screen.



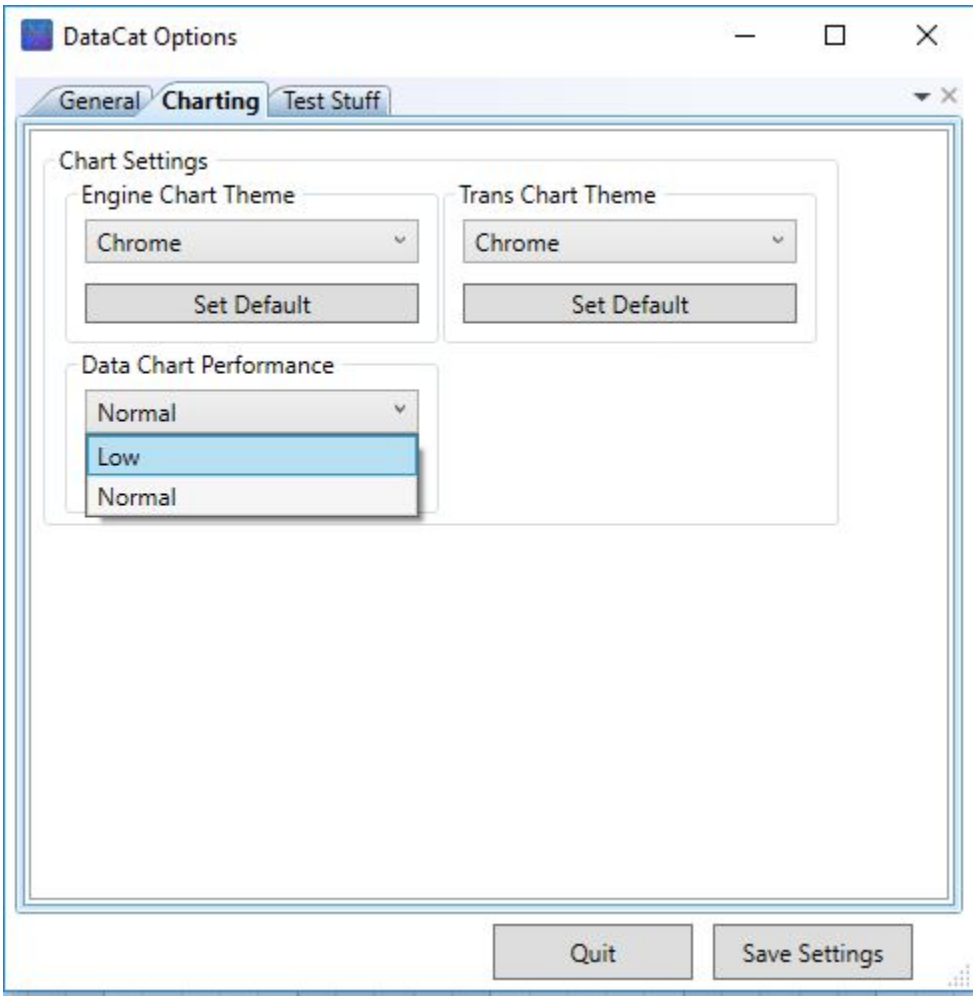
This will display charting options screen.



The screen allows you to select the Chart Theme for both the Engine Data and the Transmission Data charts. The various themes change the appearance of the data charts. To select a different theme, click on the down arrow to the right of the theme box and select the desired theme from the displayed list.

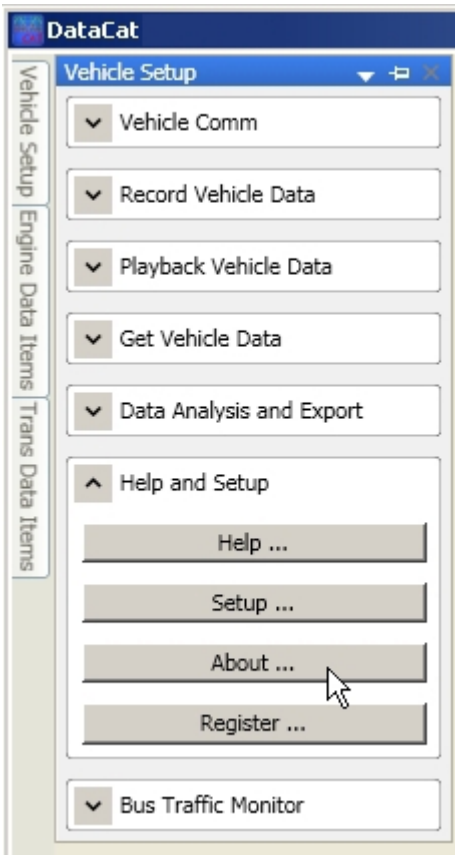


You can also adjust the Data Chart Performance if needed by clicking on the down arrow to the right of the 'Data Chart Performance' box.

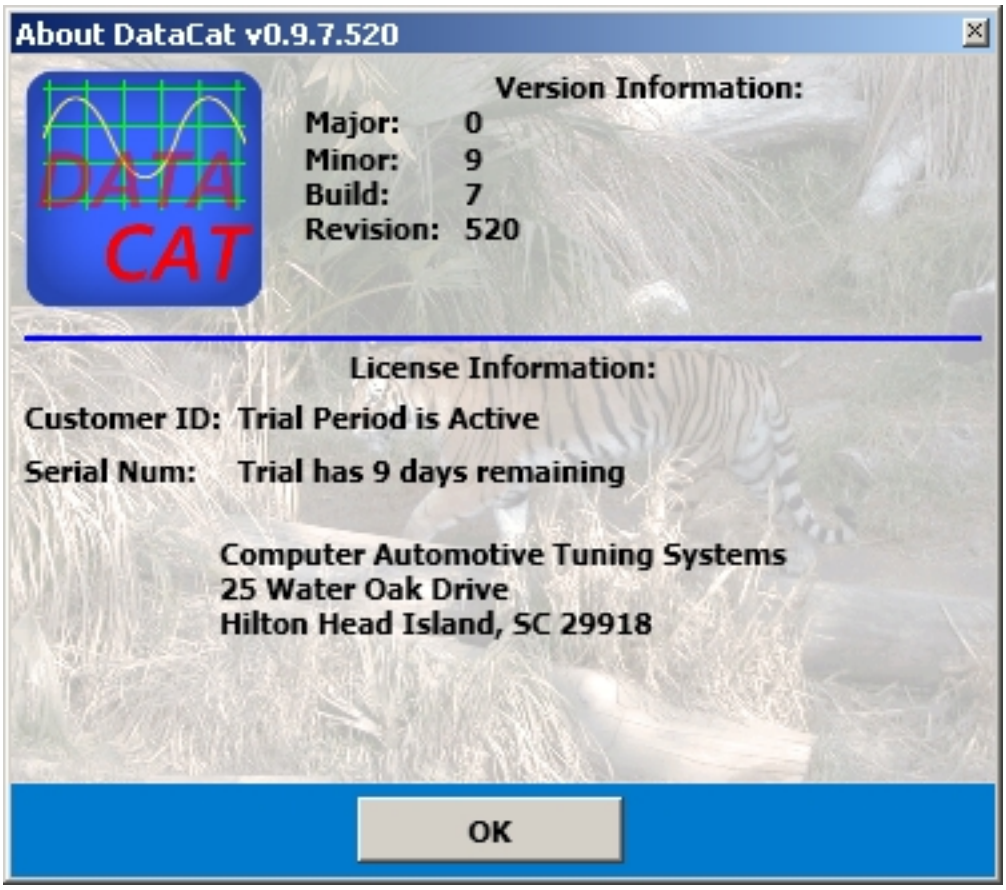


Program Information

To access the program information screen click on the Help button in the 'Help and Setup' section of the 'Vehicle Setup' screen.



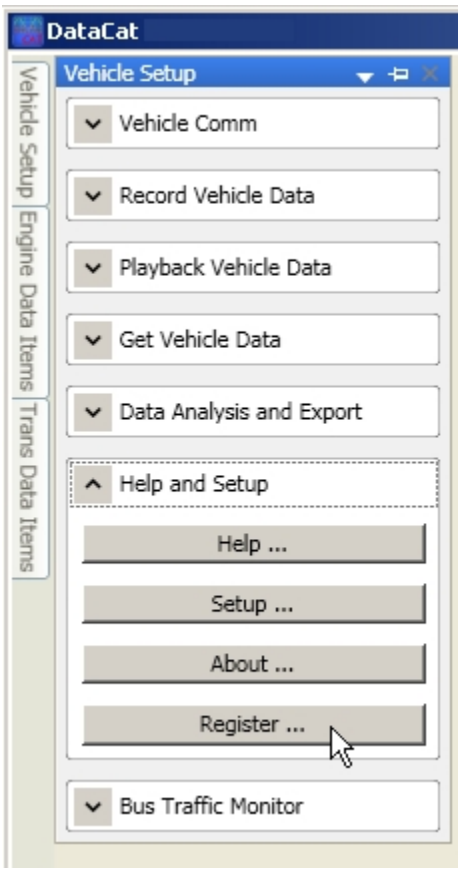
The will display the program information screen which shows the program version information and license information.



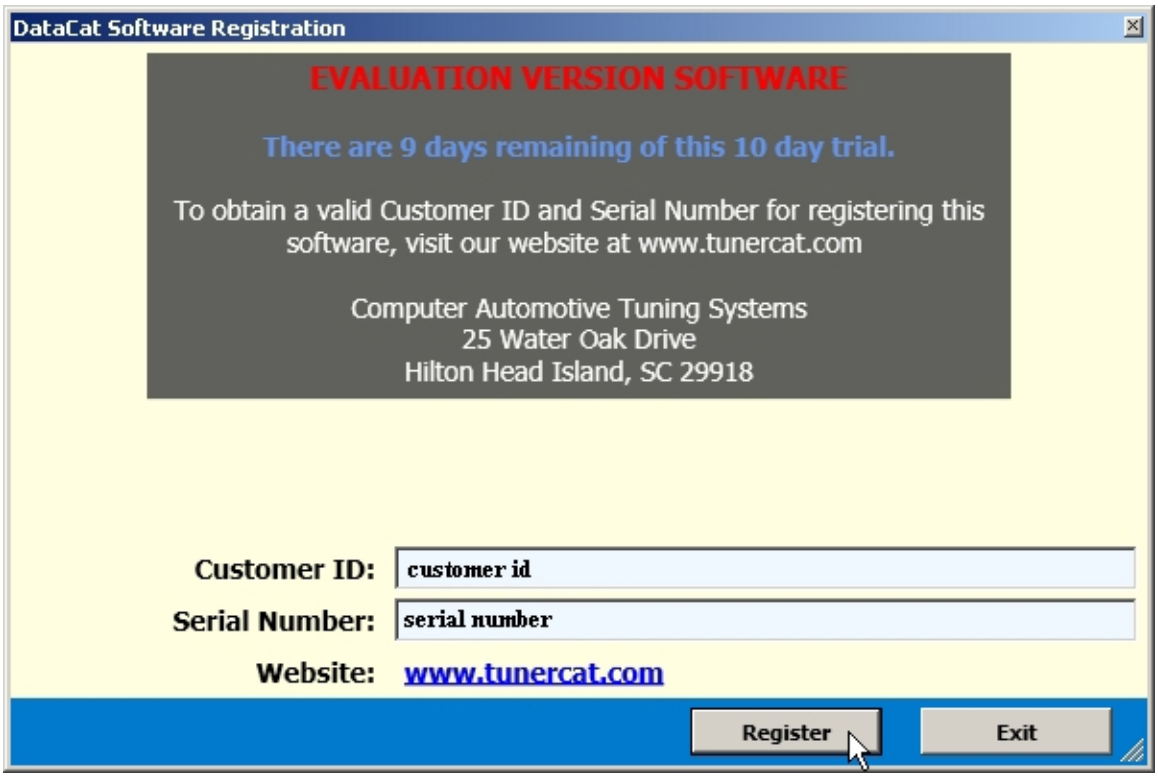
Click on the 'OK' button to close this screen.

Program Registration

To register your copy of the DataCat program, click on the Help button in the 'Help and Setup' section of the 'Vehicle Setup' screen.



The will display the program registration screen. Enter your Customer ID and serial number that you received when you purchased the program into the corresponding boxes and click on the 'Register' button.



Click on the 'OK' button to close this screen.

Miscellaneous Topics

USB Driver Installation

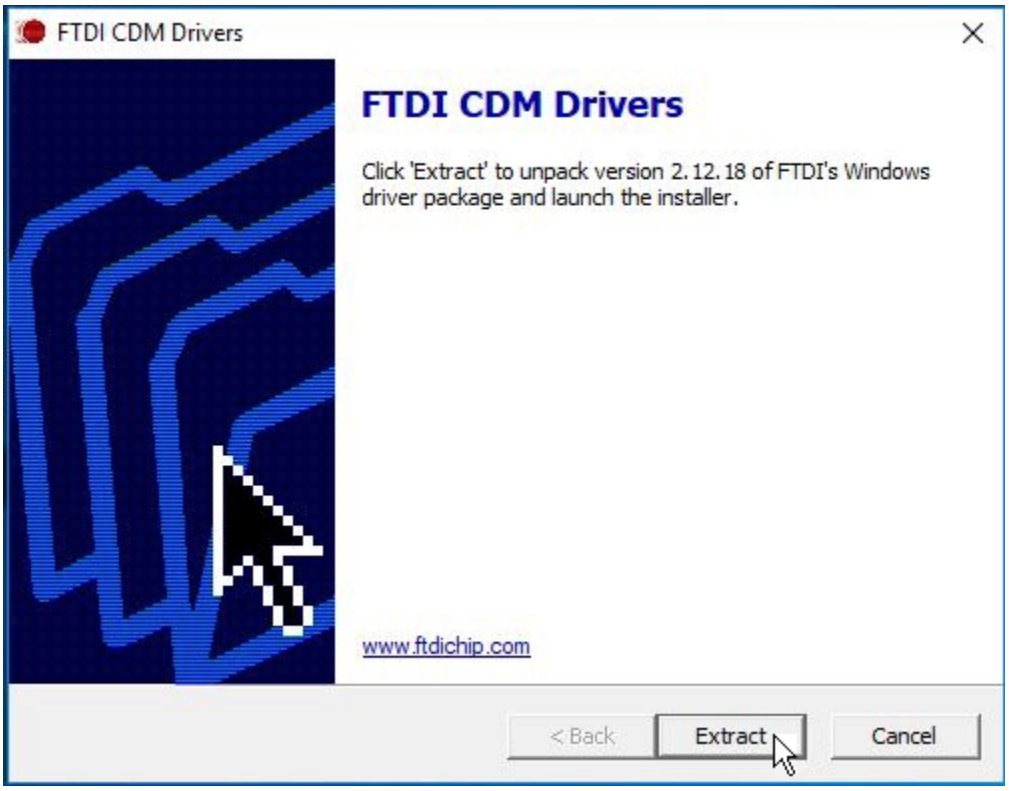
Before connecting your C.A.T.S. USB/ALDL cable to your PC for the first time you need to install the USB drivers for the cable.

To install these drivers, download the installation program from our web site at www.tunercat.com/software/cables/CDM_Setup.exe and save it to a convenient place on your PC.

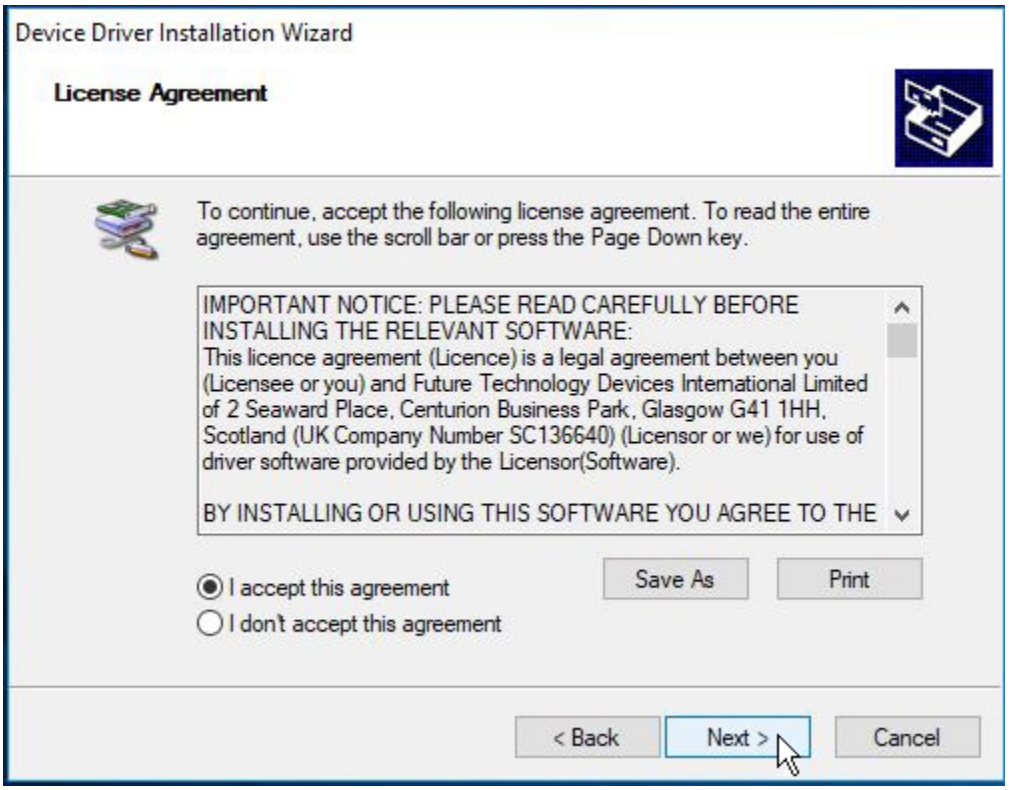
Then double click on the installation program (CDM_Setup.exe) to begin the installation program.

If you receive a 'Do you want to allow this app to make changes to your device?' message, click on the 'Yes' button to continue.

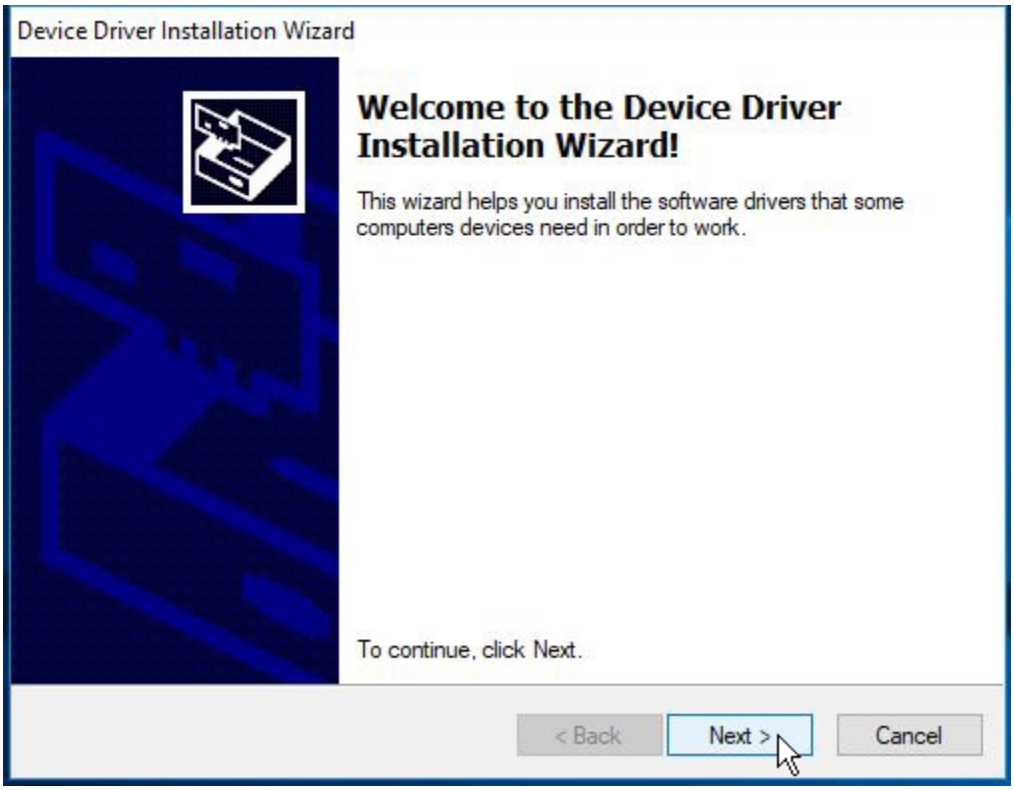
When the next screen appears, click on the 'Extract' button.



On the License Agreement screen click on 'I accept this agreement and then click on the 'Next' button.

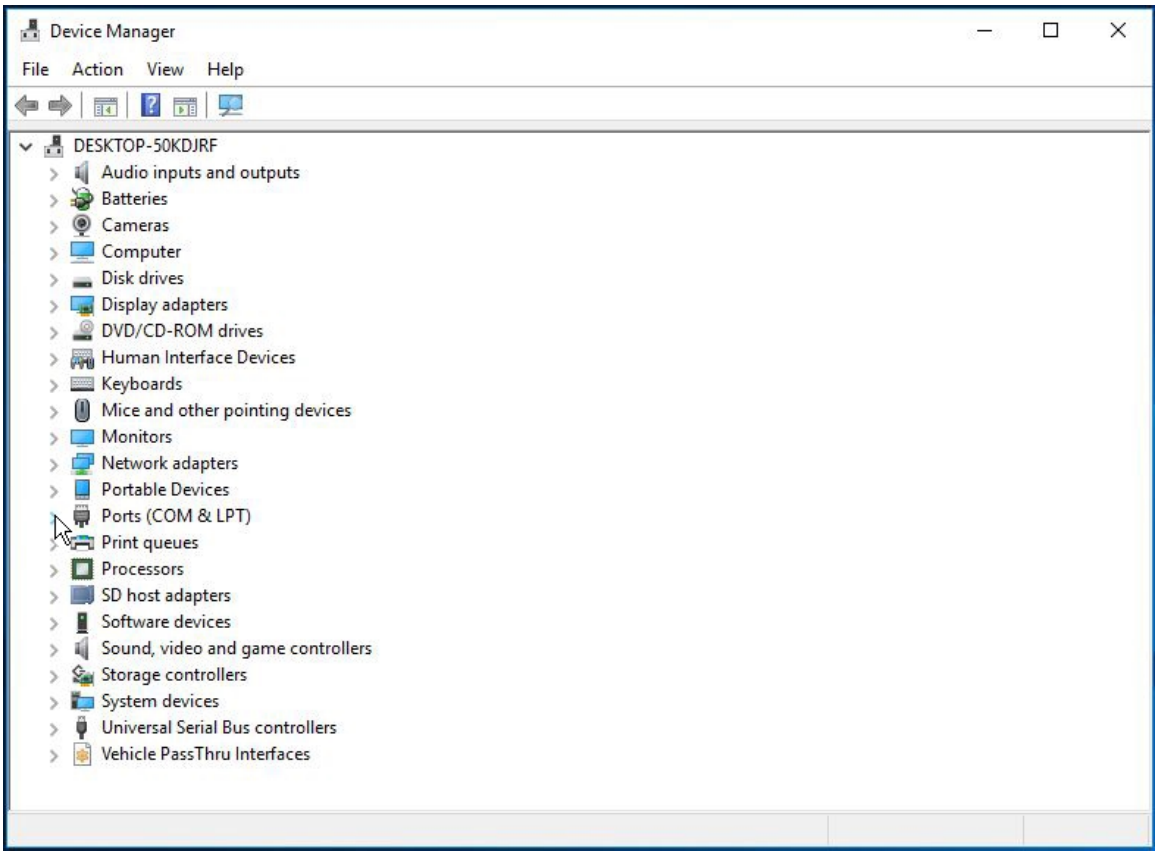


Then click on the 'Next' button to start the Device Drive Installation Wizard.

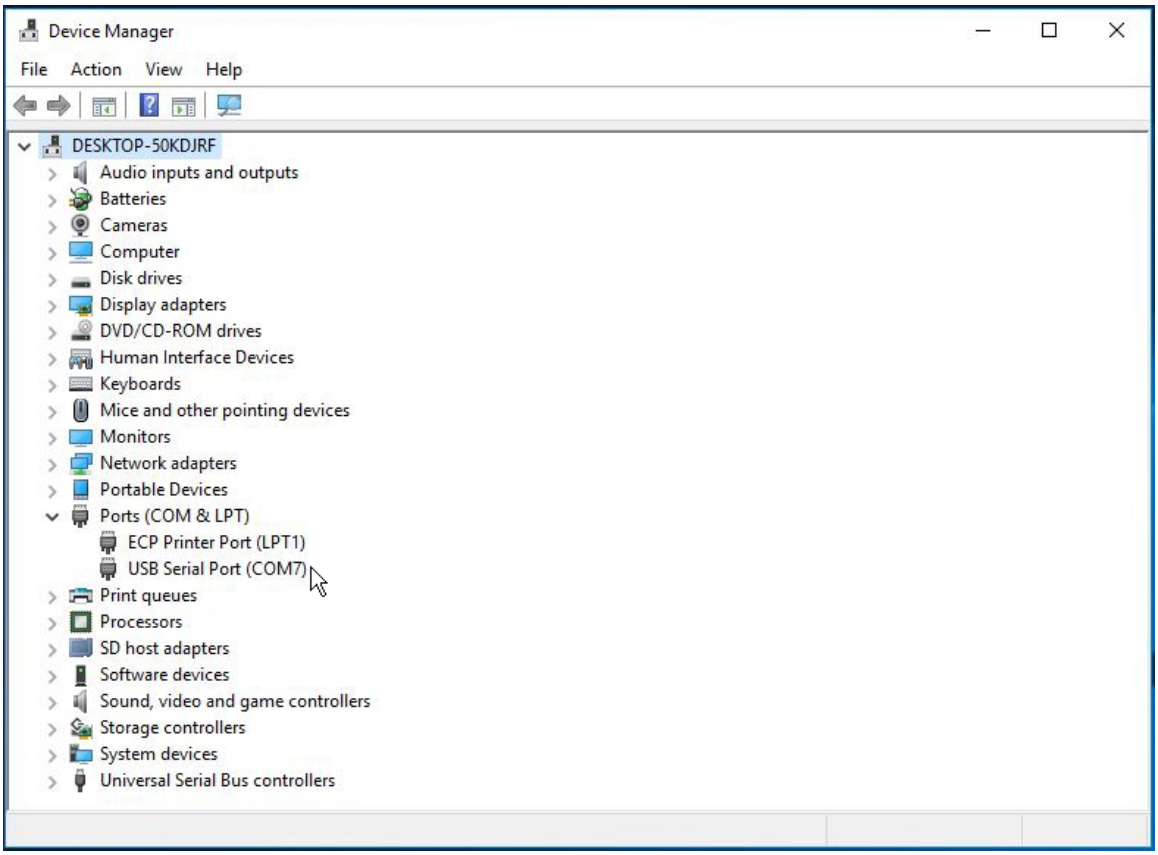


Once the drive installation is complete you will see receive a message showing that the drivers were successfully installed.

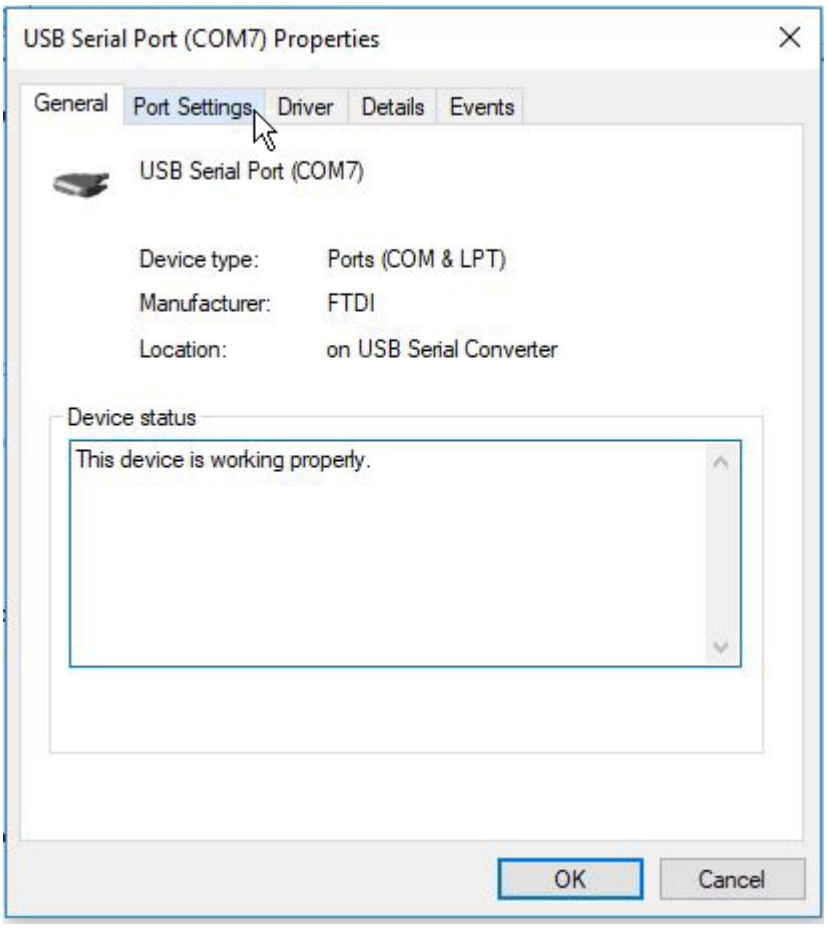
Click on the 'Finish' button to complete the installation. Once the driver installation is complete open the Windows Device Manager.



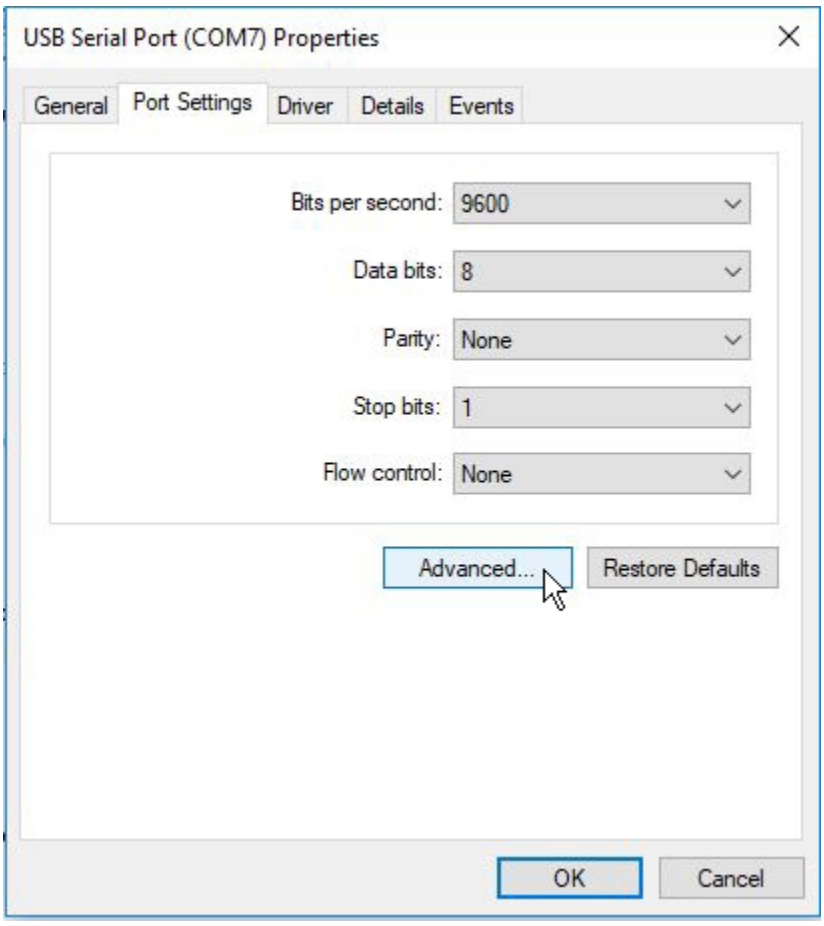
Click on the arrow to the left of 'Ports (COM & LPT)' to expand this section. Connect the USB/ALDL cable to a USB port on your PC (it does not need to be connected to a vehicle) and a new USB Serial Port (COMx) should appear in the Ports (COM & LPT) list. Note the USB Serial Port number is the parentheses. This is is the port number you should use when setting the Com Port for recording data (see Com Port Selection).



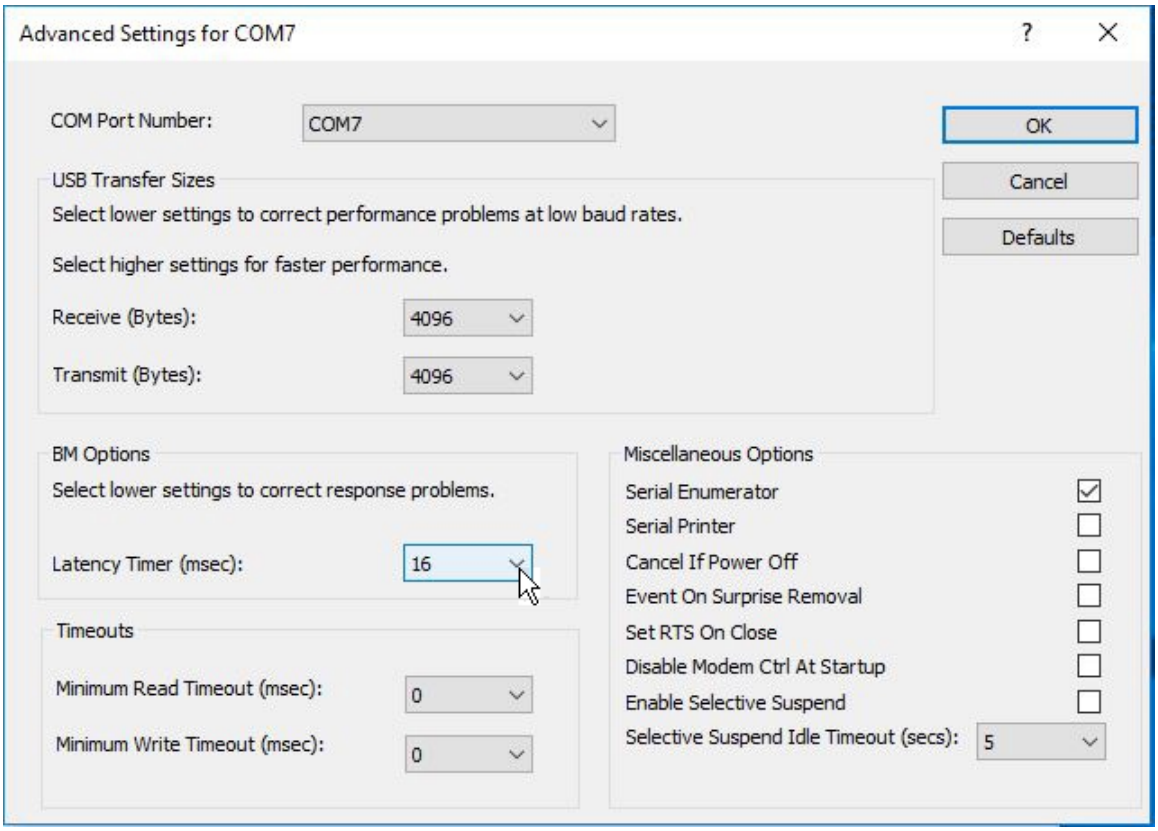
Double click on this USB Serial Port to open the Properties screen.



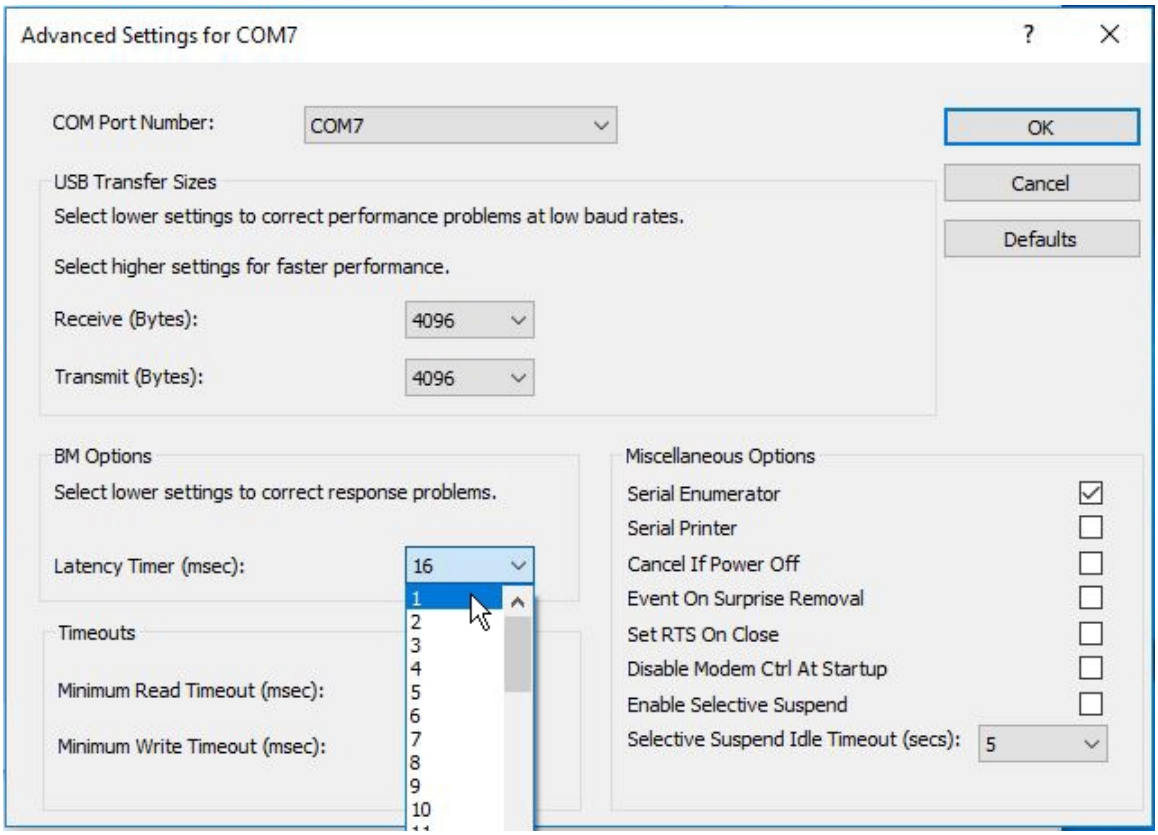
Click on the 'Port Settings' tab and then click on the 'Advanced' button.



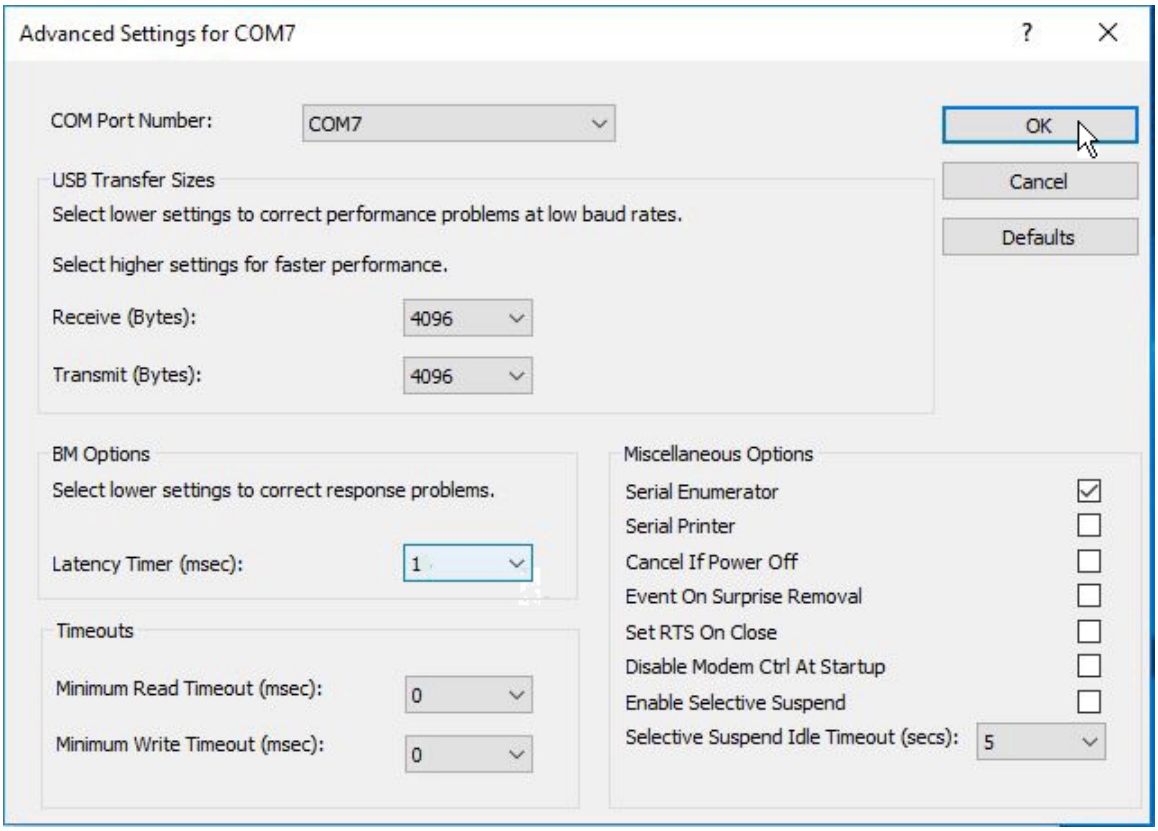
On the Advanced Settings screen click on the down arrow to the right of the 'Latency Timer'.



Select '1' from the list of possible values for the Latency Timer.



Click on the 'OK' button to close save the new setting and close the Advanced Settings screen.



Click on the 'OK' button to close the USB Serial Port Properties screen and close the Device Manager.

Click on the 'OK' button to close this screen.

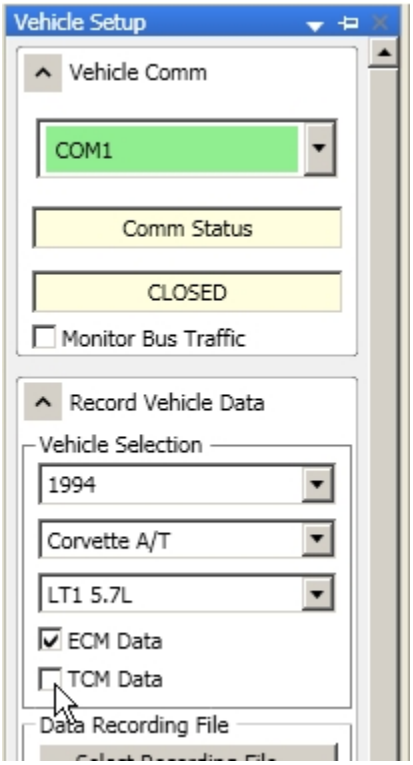
Communications Problems

No Communications

If you are unable to connect to the vehicle first run the VCI test as described in the 'Test VCI' section of the manual. If the test is successful then the correct com port has been selected and the ALDL cable is working properly.

1989 F & Y-Body cars: To communicate with these vehicles you need to set the diagnostic mode enable switch on the ALDL cable to connect the 10K ohm resistor between ALDL pins A and B (see the 'ALDL Connector Information' section of the manual for more details).

Manual Transmission Vehicles: If you are working with a manual transmission vehicle verify that the TCM Data option in the 'Record Vehicle Data' section of the 'Vehicle Setup' screen is un-checked.



If this option is checked with a manual transmission vehicle, data records may be missed or no data records may be recorded.

A VCI test failure normally indicates that the wrong com port has been selected or the USB drivers for the ALDL cable did not install properly. A failure can also indicate a problem with the ALDL cable itself. If you get a VCI test failure then check the following:

1. Unplug the ALDL cable from your PC and reboot your PC.

2. Once Windows is back up and running plug your ALDL cable into a USB port on your PC. (It should not be connected to the car.) If you get the Windows 'Found new hardware' message and Windows asks to search for a compatible driver then the drivers did not install correctly and you should repeat the driver installation process.

3. Once the USB drivers are installed, click on the Windows 'Start' button and then select Control Panel. From the Control Panel double click on 'System', click on the 'Hardware' tab and then select 'Device Manager'.

4. Go to 'Mice and other pointing devices' and verify there is no 'Microsoft Serial Ball Point' item listed. If there is right click on this item and select 'Disable' from the pop-up menu.

5. Go to 'Ports (COM and LPT) and verify that there is a USB Serial Port listed there. Unplug the ALDL cable and this COM port should go away and then reappear when you plug the ALDL cable back in. If there is no USB Serial Port listed here then expand the 'Universal Serial Bus controllers' section of the Device Manager and right-click on the 'USB Serial Converter'. Go to the 'Advanced' tab, and check the box indicated as 'Load VCP'. Then hit 'OK'. Unplug the USB/ALDL cable, and plug it back in. Expand the Ports (COM & LPT) section of the Device Manager and you should now see a USB Serial Port listed.

6. Note the COM port number assigned to the USB Serial port.

7. Run the DataCat program and select the com port that was assigned to the ALDL cable as noted is step 6 above (see the 'Com Port Selection' of the manual for more details).

8. Now see if you can successfully log data.

Errors in Recorded Data

Sometimes you may see erratic readings in the recorded data. If you see a data error message this indicates that there is a checksum error in the received data record. This is generally due to electrical noise or a bad connection.

Note: A common source for data errors is from a poorly grounded after-market ignition system. All these devices should be carefully grounded to the chassis. Ignition manufactures often sell a noise suppressor kit which can help with this problem.

Erratic Data Readings

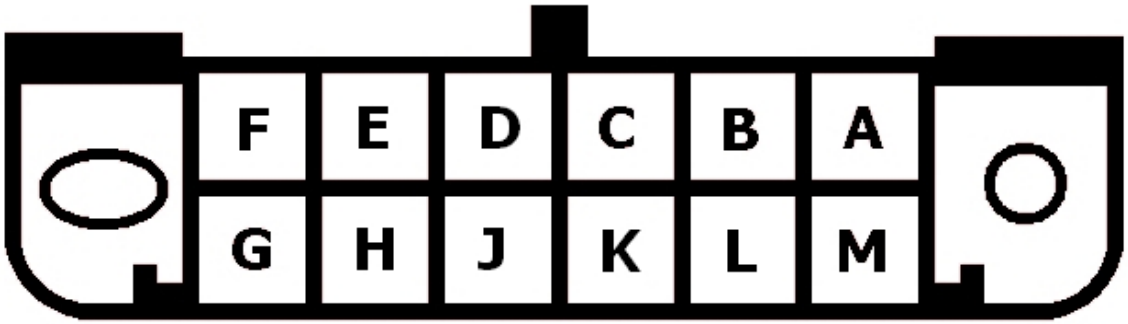
Erratic readings can result from a bad or intermittent sensor; however there is another possibility that has been seen on the older design PCM's: When the PCM is busy running the engine, sometimes there is not enough CPU time left to correctly process the requests for ALDL data. In this case, the ALDL data is incompletely updated (it's not as important as running the motor), and can be a mix of old and new values, and in some cases this results in bogus readings that are way out of normal range! When this occurs, it is usually most evident if the data is plotted and

will show up as a "spike" in the data.

ALDL Connector Information

There are three different ALDL connectors used in the vehicles supported by the DataCat program; The OBDI style 12-pin ALDL connector used on most of the OBDI cars and trucks, the 16-pin OBD2 style ALDL connector used on some 1994 & 95 vehicles and the 10-pin marine (MEFI) ALDL connector.

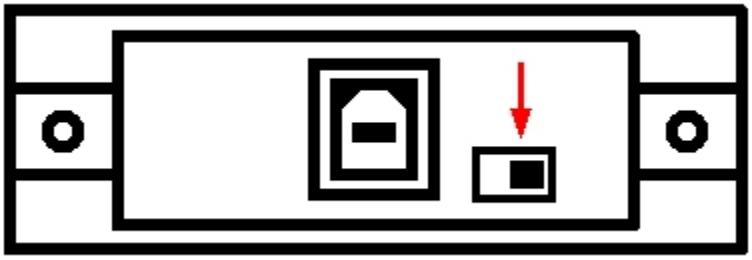
OBDI Style ALDL Connector:



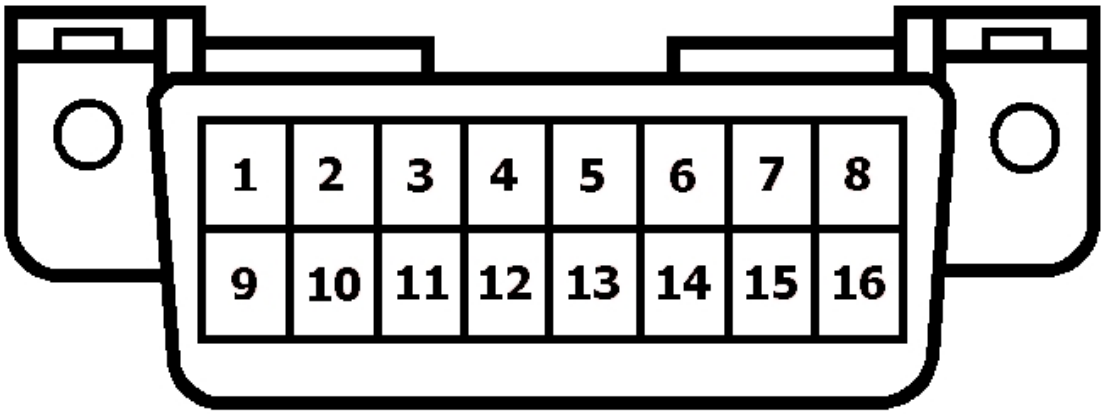
Pin	Function	Pin	Function
A	Ground	G	Fuel Pump (if used)
B	Diagnostic Mode	H	N/C
C	AIR (if used)	J	N/C
D	SES Light (if used)	K	N/C
E	160 Baud Serial Data	L	N/C
F	TCC (if used)	M	8192 Baud Serial Data

Note: The 1987 - 1989 F & Y-body cars were unique in that the ECM supported both the early 160 baud serial data as well as the later 8192 baud serial data which is what is used by the DataCat program. For these cars a 10K ohm resistor must be connected between pins A & B of the ALDL connector to activate the 8192 baud serial data and the data is then available on pin E rather than pin M as usual. If you are using one of the C.A.T.S. USB/ALDL cables then all you

need to do when working on one of these cars is to move the slider switch next to the USB connector away from the USB connector.



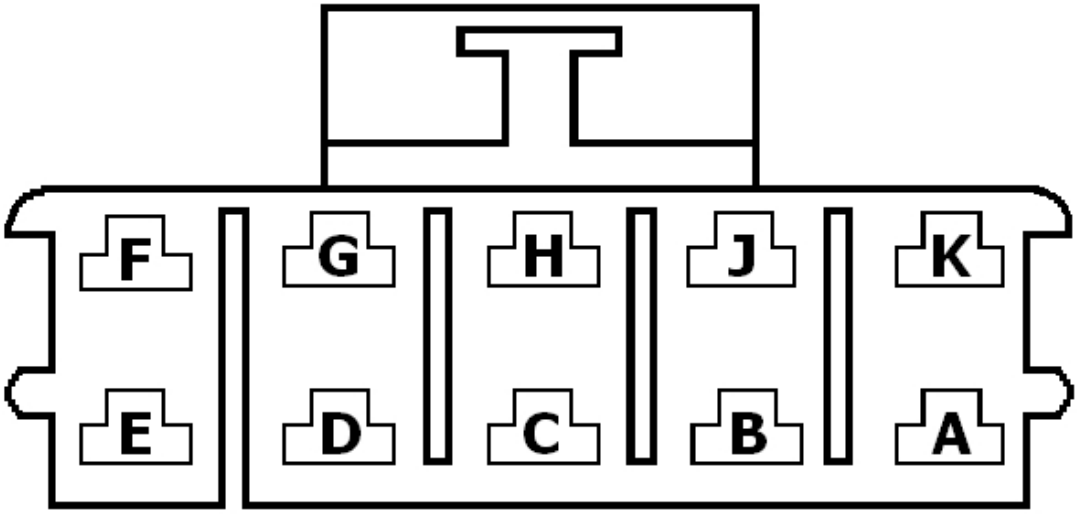
OBDII Style ALDL Connector:



Pin	Function	Pin	Function
1	N/C	9	8192 Baud Serial Data
2	J1850 Data Bus +	10	N/C
3	Ride Control Diagnostic	11	N/C
4	Ground	12	CCM Diagnostic
5	Signal Ground	13	N/C
6	Tire Pressure Diagnostic	14	Entertainment Serial Data Bus

7	N/C	15	N/C
8	Keyless Entry Diagnostic	16	Battery Voltage

Marine Style Connector (MEFI & Lotus):



Pin	Function	Pin	Function
A	Ground	F	Battery Voltage
B	Diagnostic Mode	G	8192 Baud Serial Data
C	N/C	H	N/C
D	N/C	J	N/C
E	Check Engine Light (MIL)	K	N/C

Common Abbreviations

Numeric

2GR: Second Gear

3GR: Third Gear

3-2TS: 3-2 Timing Solenoid. A device that controls the "third to second" timing valve in an automatic transmission.

4GR: Fourth Gear

4WD: Four Wheel Drive

A

A/T: Automatic Transmission or Transaxle

A/C: Air Conditioner

ACL: Air Cleaner

AAT: Ambient Air Temperature

AFGS: Air Flow Grams per Second. The mass air flow reading., used on engines that have mass flow meters.

AFR: Air Fuel Ratio

ALDL: Assembly Line Diagnostic Link. The serial data link from the PCM to the monitoring computer. Also referred to as ALCL.

AP: Accelerator Pedal

APP: Accelerator Pedal Position

B

B+: Battery Positive Voltage

BARO: Barometric Pressure. A measure of the atmospheric pressure

BLM: Block Learn Multiplier. Now called Long Term Fuel Trim. The Long Term fuel correction factor that the PCM is using.

BLM Cell: Now called Fuel Trim Cell. The Fuel Trim cells store Long Term correction factors that correct for each engine's unique operating conditions. A cell is active within a particular operating region as determined by engine RPM and load. Most PCM's use 16 to 20 cells.

BPW: Base Pulse Width. The length of time of the injector pulse, usually measured in

Milliseconds (1/1000 second).

BPP: Brake Pedal Position

C

CAT: Catalytic Converter

CCM: Central Control Module. Used in Corvettes to communicate between the various on-board computers. Also called body computer.

CCS: Coast Clutch Solenoid

CCP: Charcoal Canister Purge. Typically, there is a solenoid that controls when purge is active. Used to control evaporative emissions.

CFI: Continuos Fuel Injection. A fuel injection system whereby the injector flow is controlled by the fuel pressure.

CL: Closed Loop. An operating mode which allows modification engine control parameters based on a feedback system.

CMP: Camshaft Position

CTOX: A system for lowering Diesel engine particulate emissions by collecting particulate and continuously burning them through oxidation.

CKP: Crankshaft Position

CPP: Clutch Pedal Position

D

DC: Duty Cycle. A value from 0 to 100%. The ratio of ON to OFF of a controlled device. A value of 0 means the device is OFF, a value of 25% means the device is 1/4 of full on.

DTC: Diagnostic Trouble Code

DFI: Direct Fuel Injection. A fuel injection system that supplies fuel directly into the combustion chamber.

DI: Distributor Ignition. A system in which the ignition coil secondary circuit is sequentially switched by a distributor to the spark plugs

DLC: Data Link Connector

DLI: Distributor less Ignition, also called Electronic Ignition (EI). A system in which the ignition coil secondary circuit is dedicated to specific spark plugs without the use of a distributor.

DRIVER: An electronic switching device used to control an output state.

DTM: Diagnostic Test Mode. Any of various PCM Test modes that allow the observation and control of PCM signals.

DTC: Diagnostic Trouble Code

E

EATX: Electronic Automatic Transmission/Transaxle.

ECM: Engine Control Module

ECL: Engine Coolant Level

ECT: Engine Coolant Temperature

EDF: Electro Drive Fan Control

EECS: Evaporative Emission Control System

EFI: Electronic Fuel Injection

EGO, EGOS: Exhaust Gas Oxygen Sensor (O2S)

EGR: Exhaust Gas Recirculation. Reduces NoX emissions by adding exhaust gas to the incoming air/fuel mixture.

EGRT: EGR Temperature

EGRV: EGR Vacuum Regulator Valve

EOP: Engine Oil Pressure

EOT: Engine Oil Temperature

EP: Exhaust Pressure

EPROM: An electronic memory device which is erasable by UV lignt and re-programmable using the appropriate equipment.

EI: Electronic Ignition. A distributorless ignition system in which the ignition coil secondary circuit is dedicated to specific spark plugs without the use of a distributor.

EVAP: A system used to prevent fuel vapor from escaping into the atmosphere. Typically includes a charcoal canister to store fuel vapors.

EVP: EGR Valve Position

F

F4WD: Full-time Four Wheel Drive

FBC: Feed Back Control or Feed Back Carburetor

FC: Fan Control

FI: Fuel Injection

FLASH: A type of memory that is electrically eraseable and re-programmable in-circuit.

FREEZE FRAME: A block of data containing vehicle operating conditions for a specific instance.

FP: Fuel Pump

FT: Fuel Trim. A fuel correction term.

FWD: Front Wheel Drive

G

GEN: Generator

GCM: Governor Control Module

GPM: Grams Per Mile

GND: Ground. An electrical conductor used as a common return for an electrical circuit.

H

HEI: High Energy Ignition

HO2S: Heated Oxygen Sensor

I

IA: Intake Air

IAC: Idle Air Control

IACV: Idle Air Control Valve

IAT: Intake Air Temperature

IC: Ignition Control

ICM: Ignition Control Module

ICP: Injection Control Pressure

IFS: Inertia Fuel Shut-off

ISC: Idle Speed Control

ISS: Input Shaft Speed

IMRC: Intake Manifold Runner Control

INT: Integrator. Now called Short Term Fuel Trim. The Short Term fuel correction factor that

the PCM is using.

K

KS: Knock Sensor

L

LONG TERM, LTerm: Long Term Fuel Trim (previously called Block Learn)

LTFT: Long Term Fuel Trim

M

MAF: Mass Air Flow

MAP: Manifold Absolute Pressure

MAT: Manifold Temperature

MFI: Multipoint Fuel Injection. A fuel injection system in which each cylinder is individually fueled.

MDP: Manifold Differential Pressure

MIL: Malfunction Indicator Lamp

MST: Manifold Surface Temperature

N

NVRAM: Non-Volatile RAM. Memory which retains information typically via an internal battery.

O

O2S: Oxygen Sensor

OBD: On Board Diagnostic. A system that monitors some or all computer input and control signals. Signal(s) outside a predetermined range imply a fault in the system or a related system.

OC: Oxidation Catalytic Converter. A catalytic converter system that reduces HC and CO.

OL: Open Loop. An operating mode based on programmed values and not modified by a feedback system.

OSS: Output Shaft Speed

P

PCM: Powertrain Control Module

PCV: Positive Crankcase Ventilation

PNP: Park Neutral Position

PRNDL: Automatic transmission gear selection lever. Park, Reverse, Neutral, Drive, Low

PROM: Programmable Read Only Memory. A memory chip which can be programmed only one time.

PSP: Power Steering Pressure

PSPS: Power Steering Pressure Switch

PTOX: A system for lowering Diesel engine particulate emissions by collecting particulates and periodically burning them through oxidation.

PWM: Pulse Width Modulation. A method of proportionally controlling an actuator by varying the on/off time of a rectangular waveform.

Q

QDM: Quad Driver Module. An electronic component that contains four output driver circuits.

R

RAM: Random Access Memory. A memory which does not maintain its content when power is removed.

RM: Relay Module

ROM: Read Only Memory. Memory which is programmed by the device manufacturer and whose contents cannot be altered.

RPM: Revolutions Per Minute

RWD: Rear Wheel Drive

S

SHORT TERM, STerm: Short Term Fuel Trim. The Short Term fuel correction factor that the PCM is using.

SA: Spark Advance. The crankshaft angle relative to TDC (generally) at which a spark event is initiated.

SC: Supercharger

SCB: Supercharger Bypass

SRT: System Readiness Test (applicable to OBD2 scan tool communications)

SFI: Sequential Fuel Injection. A multiport fuel injection system in which each injector is individually energized and timed relative to its cylinder intake event.

SR: Spark Retard. The degrees of spark retard which have been subtracted form the nominal spark advance value. Is generally caused by an engine knock condition.

SRI: Service Reminder Indicator

SS: Shift Solenoid

SIR: Supplemental Inflatable Restraint (air bag)

STFT: Short Term Fuel Trim

T

TAC: Throttle Actuator Control

TBI: Throttle Body Injection. An electronically controlled fuel injection system in which one or more fuel injectors are located in a throttle body.

TC: Turbocharger

TCC: Torque Converter Clutch

TCCP: Torque Converter Clutch Pressure

TCM: Transmission Control Module

TDC: Top Dead Center. The position of the crankshaft when the piston of interest is at the topmost point of travel.

TFP: Transmission Fluid Pressure

TFT: Transmission Fluid Temperature

TR: Transmission Range

TSS: Turbine Shaft Speed

TRLHP: Track Road Load Horsepower. The power required to maintain a vehicle at a constant speed, taking into account power losses due to wind resistance, tire losses, bearing friction, etc.

TP: Throttle Position

TPS: Throttle Position Sensor

TFP: Transmission Fluid Pressure

TVV: Thermal Vacuum Valve. A valve that controls vacuum levels or routing based on temperature.

TWC: Three Way Catalyst. A Catalytic converter system that reduces HC, NO and Nox.

V

VAF: Volume Air Flow. A system that provides information on the volume flow rate of the intake air to the engine.

VCM: Vehicle Control Module

VCRM: Variable Control Relay Module

VIN: Vehicle Identification Number. A 17-character ID number.

W

WOT: Wide Open Throttle. A mode of PCM operation that is dependent on the throttle being open beyond a programmed percentage.

WU: Warm Up

Comments and Problem Reports

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