

# Nissan DataScan II User Manual



<http://www.nissandatascan.com>  
Rev. 2 2016

A note to our customers:

This software is provided to assist the enthusiast in performing tuning and data collection on the user's car for the purpose of maintenance and performance improvement. We at Nissan Data Scan strongly suggest you read this manual and understand the contents before using it on your vehicle.

We make no warranty implied or otherwise regarding the use of this software or any hardware supplied by Nissan Data Scan.

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## 1. First time use

Before you can use the NDSII application you will need to specify the Com Port number for the OBDII adaptor. The OBDII adaptor uses a USB connection that requires an FTDI driver. The driver will assign a Com Port number for the adaptor. This Com Port number will then need to be entered in the Communication settings of the NDSII software.

### 1.1 USB driver installation

Connect the OBDII adaptor to a spare USB port on your PC.

Depending on the operating system, Windows might connect to the Windows Update website and install any suitable driver it finds for the device.

If the automatic installation takes place there is no need to continue with the procedure outlined below. If no suitable driver is automatically found, select an option to manually specify the driver location and point to the location where you saved the driver.

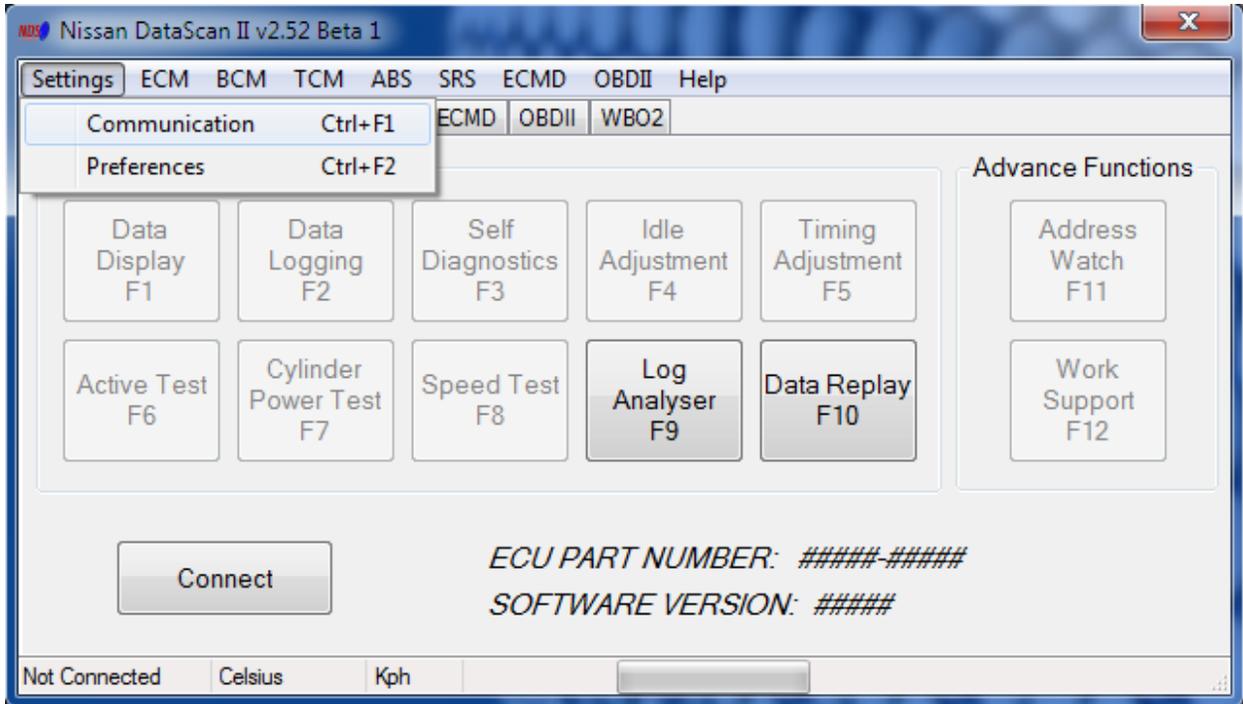
The USB drivers are available from our website [www.nissandatascan.com](http://www.nissandatascan.com). The driver can also be downloaded from FTDI website <http://www.ftdichip.com>.

During the installation the FTDI driver will assign a COM Port number for the adaptor. Take note of the Com Port number as it will be required for the NDSII software configuration.

More detailed instructions for specific operating system can be found on FTDI website: <http://www.ftdichip.com/Support/Documents/InstallGuides.htm>.

### 1.2 Communication settings

The NDSII software needs to know how to communicate with the OBDII adaptor. This is achieved by configuring the Com Port number assigned to the adaptor. The Com Port setting is located on the Communication window accessible from the pull down menu on the main window, Settings -> Communication.

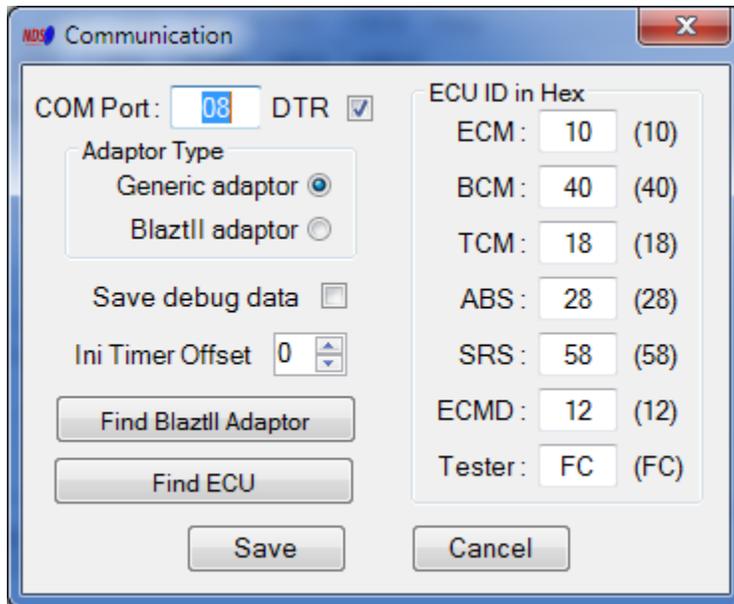


Enter the Com Port number assigned to your adaptor in the “COM Port” setting.

Select the type of adaptor you are using.

**Generic adaptor** – for generic “dumb” OBDII adaptor i.e. VAG COM 409 adaptor

**BlaztII adaptor** – for BlaztII design adaptor.



Click on the Save button to save the new settings.

If you do not know the Com Port number assigned to your adaptor follow the instructions below to identify the Com Port number.

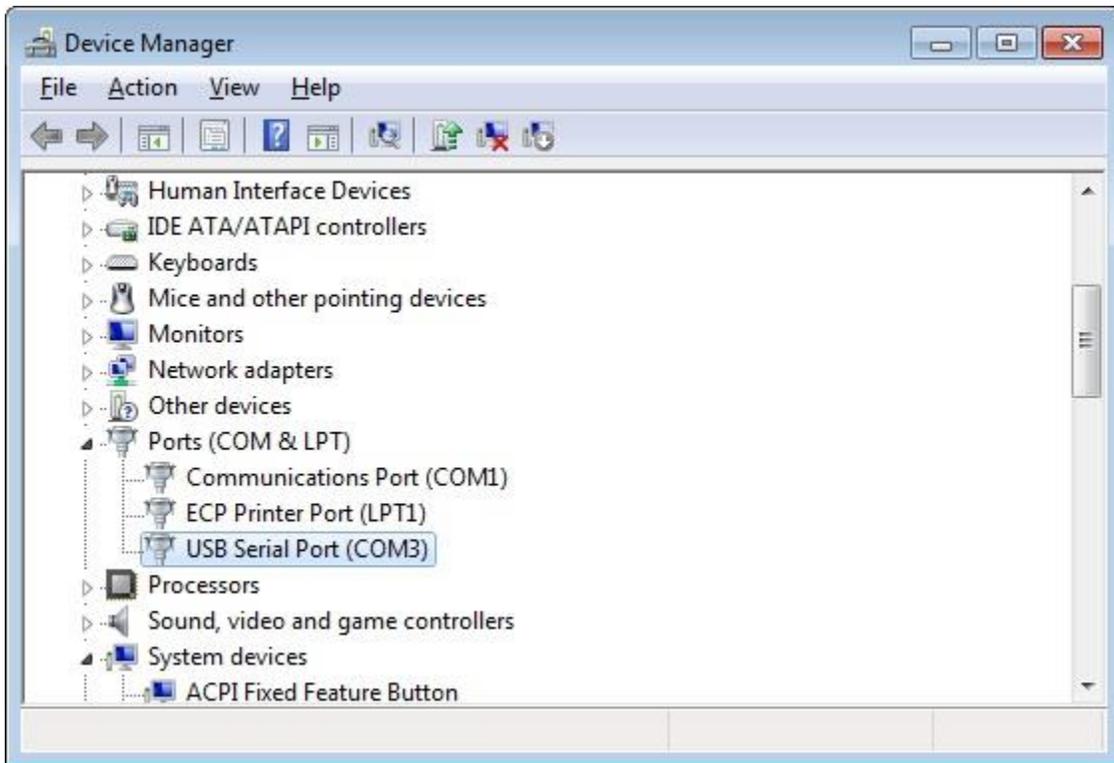
### 1.3 Identifying Com Port number

The Com Port number is assigned to your OBDII adaptor by the FTDI driver at the time of installation. You can also identify it through Windows Device Manager.

Connect the OBDII adaptor to a spare USB port on your PC.

Open your PC's Device Manager Window from the Control Panel.

If the driver is correctly installed, the OBDII adaptor will be located under "Ports (COM & LPT)". You can confirm you have identified the correct device by unplugging the adaptor from the USB port. The device should disappear from the Device Manager list.



You can also use the **Find BlaztII Adaptor** function located on the Communication Window to test all available Com Ports for the presence of a BlaztII adaptor. This function will not identify generic adaptors.

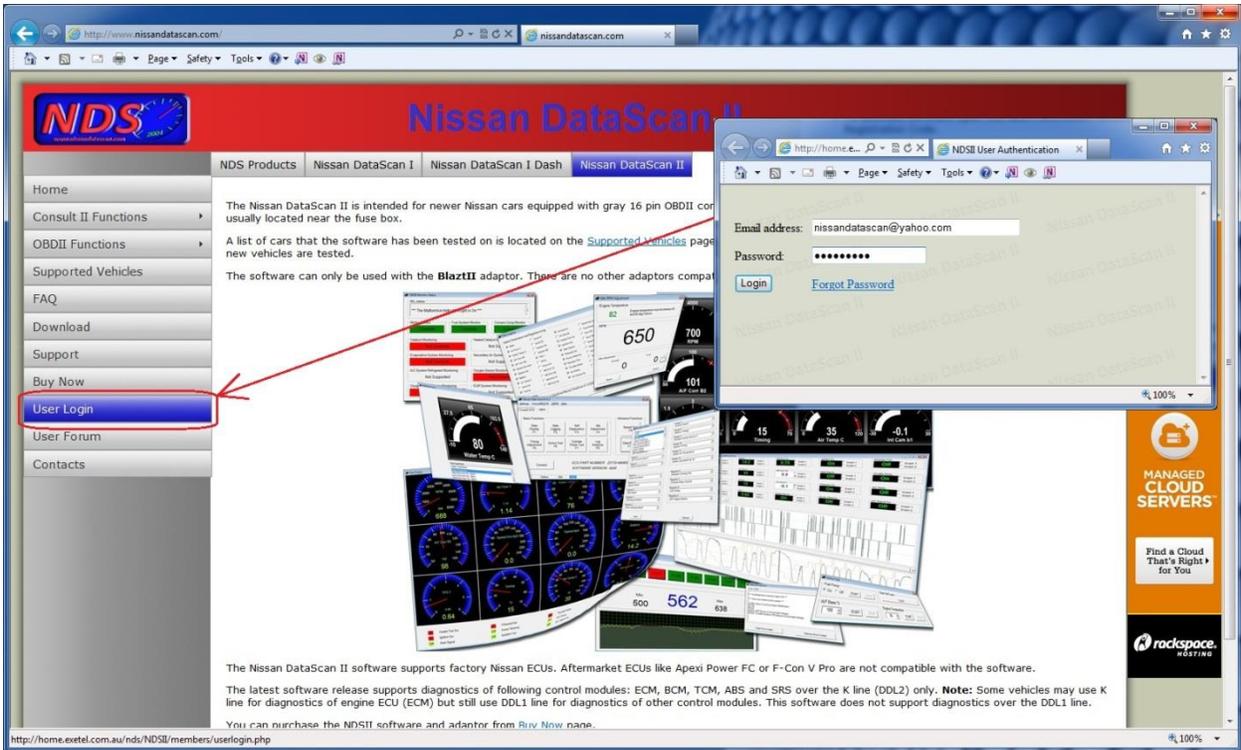
## 1.4 Software Activation

The first time you run the NDSII software you will be prompted to activate the software. Go to Help->Activation to open the Activation window.

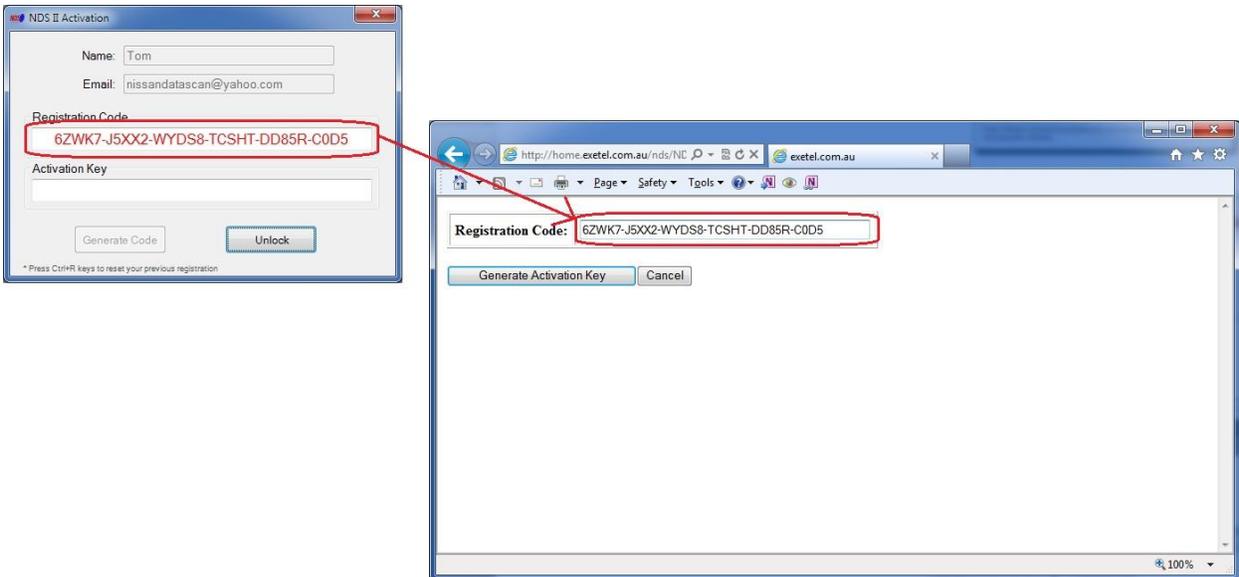
Enter your name and registration email address. Click on the Generate Code button to generate your Registration Code.

The screenshot shows a software activation dialog box titled "NDS II Activation". It features two input fields at the top: "Name" with the value "Tom" and "Email" with the value "nissandatascan@yahoo.com". Below these is a "Registration Code" field containing the alphanumeric string "6ZWK7-J5XX2-WYDS8-TCSHT-DD85R-C0D5" in red. Underneath is an empty "Activation Key" field. At the bottom of the dialog are two buttons: "Generate Code" and "Unlock". A small note at the very bottom states: "\* Press Ctrl+R keys to reset your previous registration".

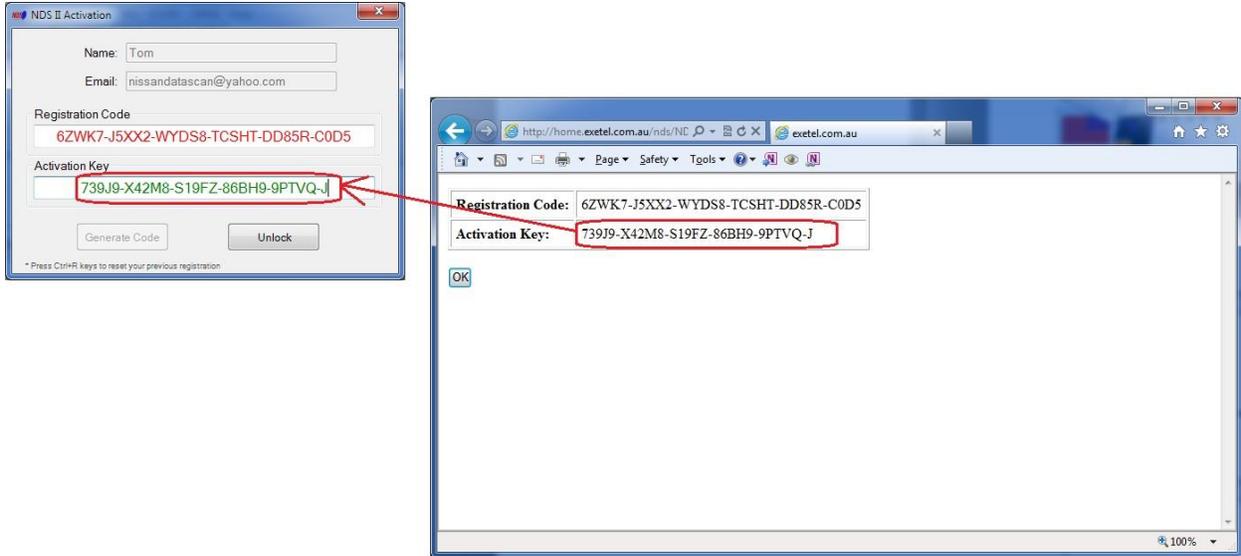
Login to the Nissan DataScan II member's area using credentials provided when purchasing the software.



Click on “Register Software” button. Copy and Paste your Registration Code from NDSII software and click the “Generate Activation Key” button.



Copy and Paste the Activation Key to NDSII software and click the “Unlock” button.



You will receive a pop up message confirming activation of your NDSII software.



The NDSII software is now ready to use.

## 2. Main Window

The main window provides access to all functions of Nissan DataScan II software. Some functions are available “off line” when not connected to an ECU. Other functions are only available when a connection with an ECU has been established.

The top menu gives access to specific ECU functions and program settings.

The tabs are used to switching between ECUs, wideband sensor or type of connection:

**ECM** – Consult II protocol, Engine Control Module

**BCM** – Consult II protocol, Body Control Module

**TCM** – Consult II protocol, Transmission Control Module

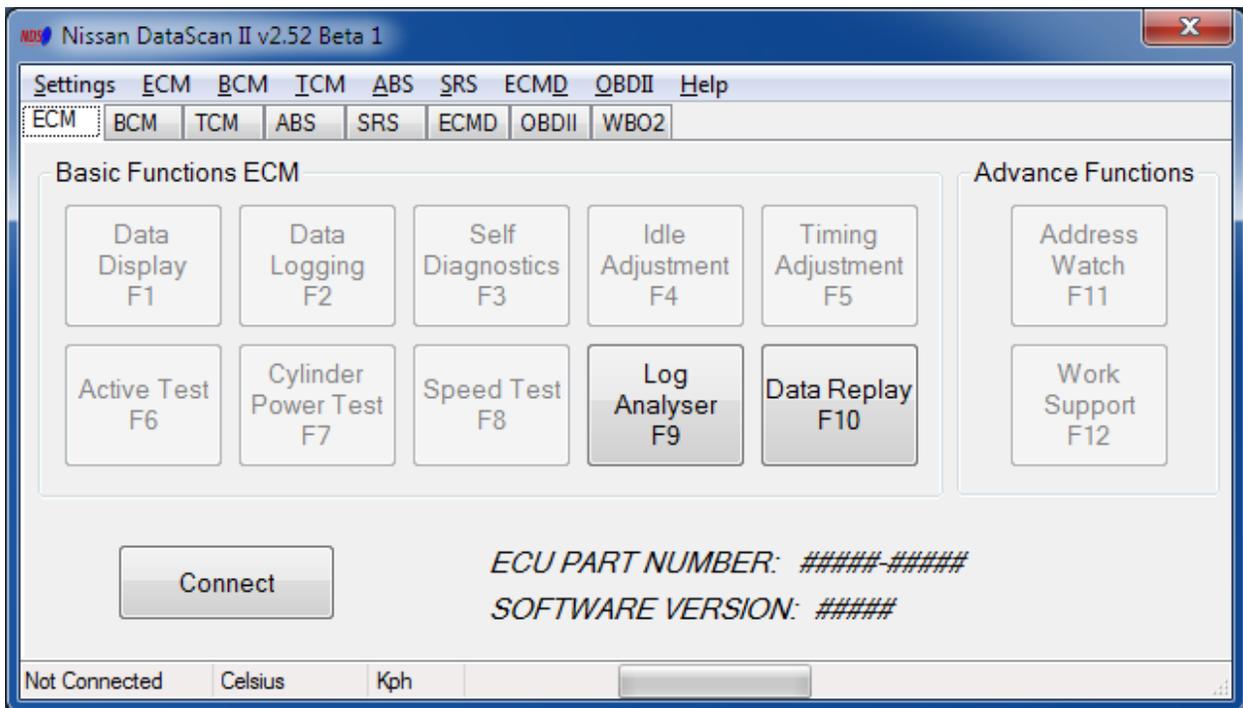
**ABS** – Consult II protocol, ABS Module

**SRS** – Consult II protocol, Airbag Module

**ECMD** – Consult II protocol, Diesel Engine Control Module

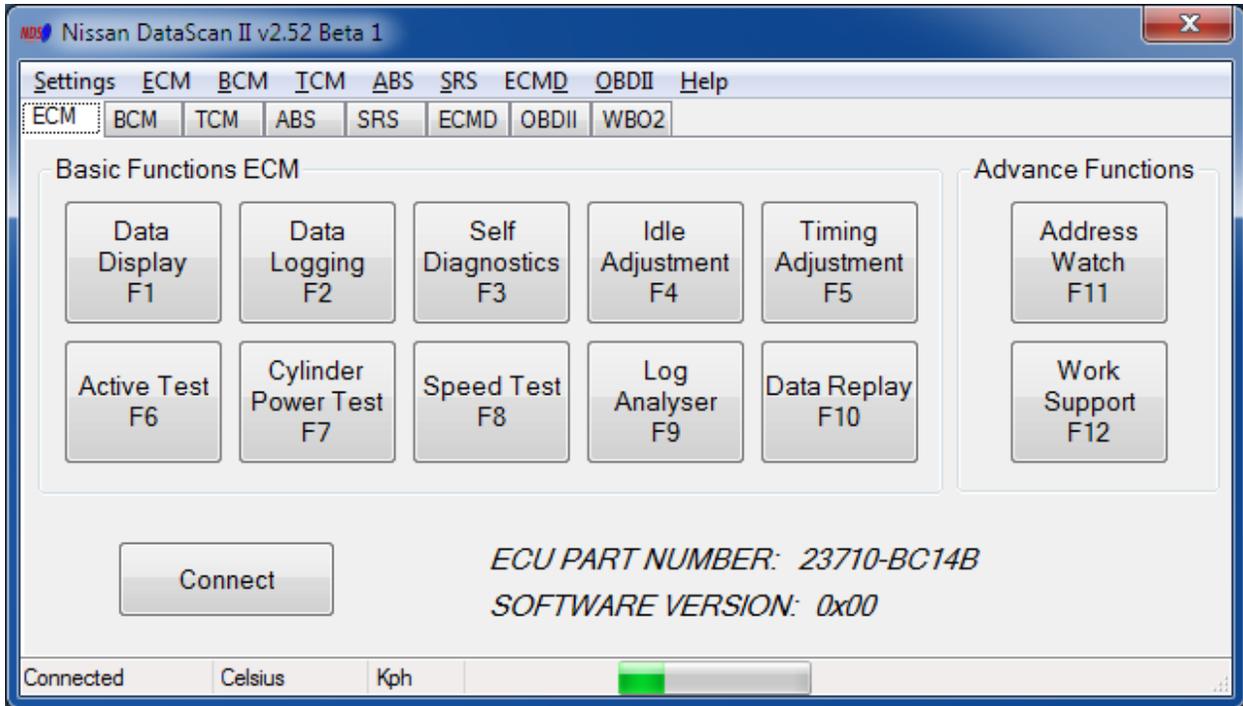
**OBDII** – OBDII protocol, Engine Control Module

**WBO2** – Innovate Motorsports wide band oxygen sensor



Due to limitations of Consult II protocol only one ECU can be connected at the time. It's not possible to establish concurrent connections to multiple ECUs.

After connection has been established, the ECU part number will be displayed. All functions that require communication with the ECU and are supported by the ECU will be automatically enabled.

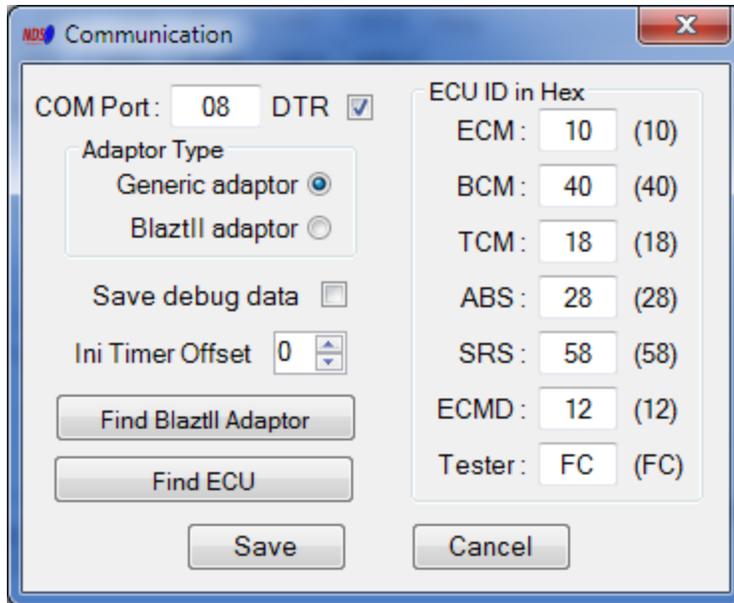


The progress bar at the bottom indicates communication between the ECU and PC. If the bar is not moving there is no data being received from the ECU. The status bar also displays the BlaztII adaptor firmware version and the user preferences settings.

### 3. Settings

#### 3.1 Communication

The communication settings are available through the main pull down menu, Settings -> Communication. These settings configure parameters required by the NDSII software to access your ECUs. The default settings will work for most users.



**COM Port** – Com Port number assigned to the OBDII adaptor. See topic “Identifying Com Port number” if you are not sure what Port number to use.

**Generic adaptor** – Select when using a generic “dumb” OBDII adaptor i.e. VAG COM 409 adaptor (<http://www.tomtop.com/vag-com-obdii-409-1-usb-car-diagnostic-cable-interface.html>)

**BlaztII adaptor** – Select when using a BlaztII design adaptor.

Please note: The ELM327 type adaptors are not supported.

We recommend using a BlaztII design adaptor. They are more reliable in establishing connection with ECUs. For a low cost setup and occasional use a generic “dumb” OBDII adaptor is also supported.

If you are having difficulty initiating connection using a generic adaptor try adjusting the **Ini Timer Offset** value. This value modifies the timing used in the initiation sequence.

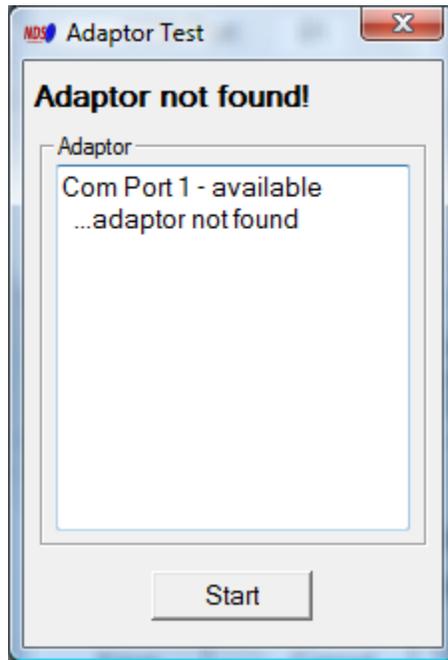
Some generic adaptors require DTR pin to be activated for the adaptor to send the data to the k-line. Enable the **DTR** setting for this type of adaptors.

**Save debug data** – This option when selected saves a debug file that can be analysed by NDSII developers. The file is usually saved in the same directory as the NDSII application but might vary depending on the operating system. Do not use this option unless specifically instructed by the Nissan Data Scan staff.

**ECU ID in Hex** – Target ECU Id. The IDs vary between regions. Tester ID is what the software uses to identify itself to ECUs. The default settings should work on most cars.

### 3.1.1 Find BlaztII Adaptor

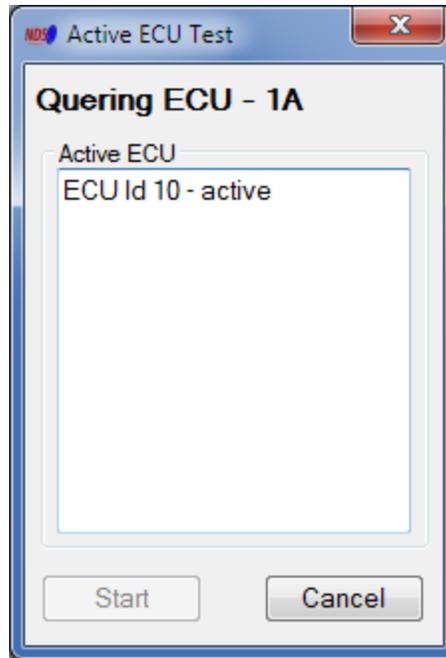
The **Find BlaztII Adaptor** button tests all available Com Ports for the presence of BlaztII adaptor.



This function can be used to easily identify the Com Port number assigned to the BlaztII adaptor given the USB driver has previously been installed. After the test, the Com Port number with the adaptor present needs to be manually entered in the **COM Port** field.

### 3.1.2 Find ECU

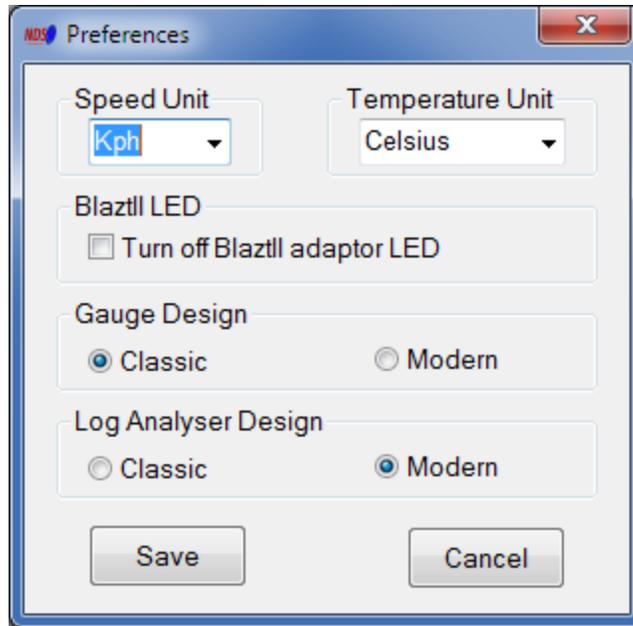
The **Find ECU** button tests for active ECUs. It is used to identify ECUs present on the car and responding to the initiation sequence. You may need to use this function if the default settings fail to establish communication with the ECU.



**Please note:** ECUs other than supported can respond to the query during the Active ECU Test. It is important to use the correct ECU ID for each type of connection. I.e. use only BCM IDs for BCM connection and ECM IDs for ECM connection. Each type of ECU supports only a specific set of features and a specific type of connection needs to be used.

## 3.2 Preferences

The preferences settings are available through the main pull down menu, Settings -> Preferences.



The preferences window lets users specify the units used throughout the software.

- Speed Unit – Kph or Mph
- Temperature Unit – Celsius or Fahrenheit

The **Turn off BlaztII adaptor LED** option disables the flashing LED on BlaztII cable.

The **Gauge Design** option specifies the type of gauge design is used throughout the software.

### Classic



Or

**Modern**



The “Log Analyser Design” option specifies the type of Log Analyser design to be used. Depending on user preference Classic or Modern design can be used. The modern design offers a more flexibility.

## 4. ECM functions

The ECM functions are divided into 2 groups. **Basic Functions** are useful for general monitoring of engine parameters and **Advanced Functions** for use in testing and tuning. They can be selected from the pull down menu at the top of the Main Screen, by clicking on the large Main screen buttons or by pressing the corresponding Function Key on the keyboard.

### 4.1 Data Display

The Data Display function uses 12 gauges and 9 registers to display real time information about the engine as measured or calculated by the engine ECM. Depending on preferences setting this window can use either Classic or Modern design gauges.

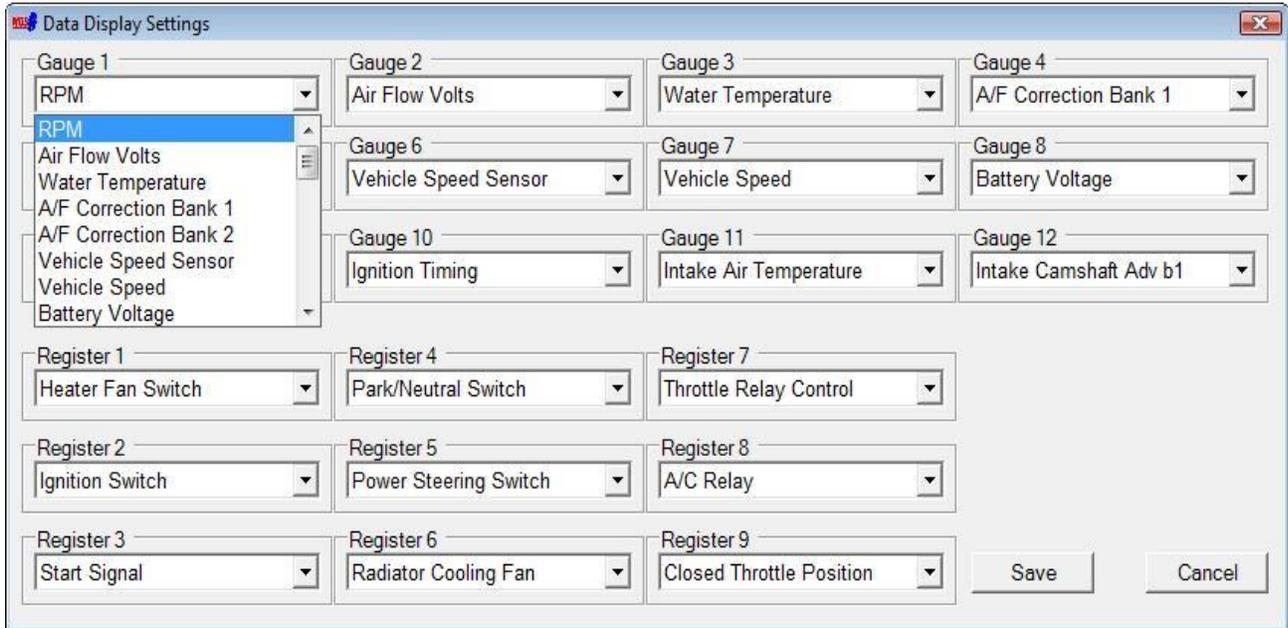
Classic



Modern



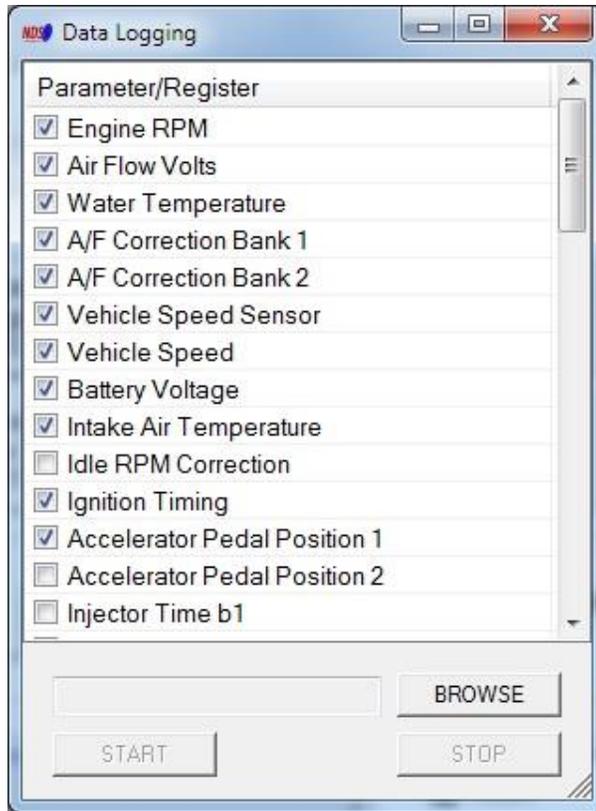
Parameters are assigned to gauges in the **Data Display Settings** window (*ECM->Data Display Settings*).



## 4.2 Data Logging

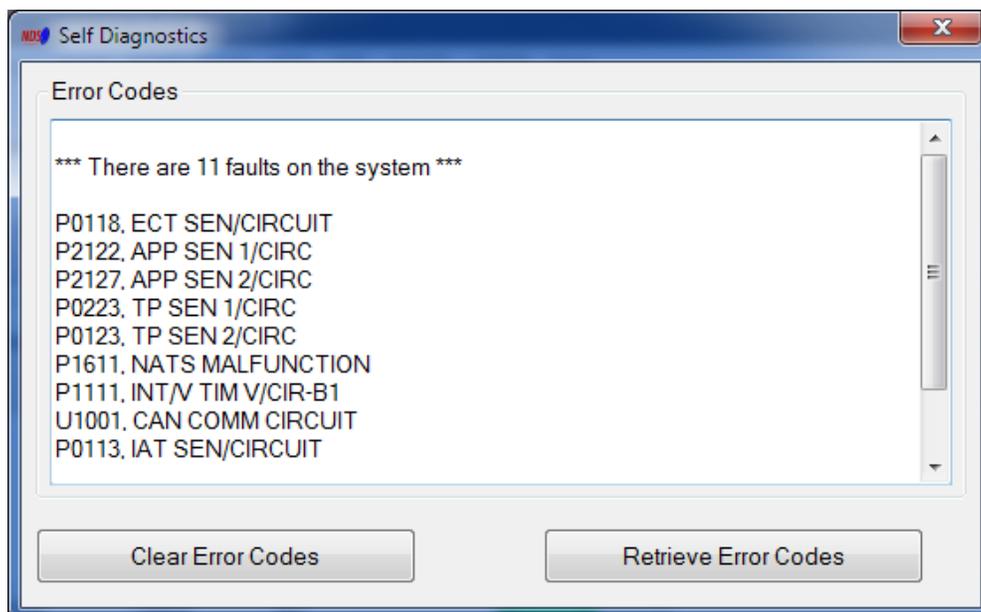
This function allows the user to select what ECM parameters and registers are logged. It also provides options for the log file name and location. When the Start button is clicked, the chosen parameters are logged to a comma delimited text file. The log file can then be reviewed using Log Analyser function or Data Replay function. The file can also be opened in common spreadsheet software such as Excel.

The Data Logging function can also be accessed from the Data Display window. A higher update rate is achieved if the function is started from the Main window.



### 4.3 Self Diagnostics

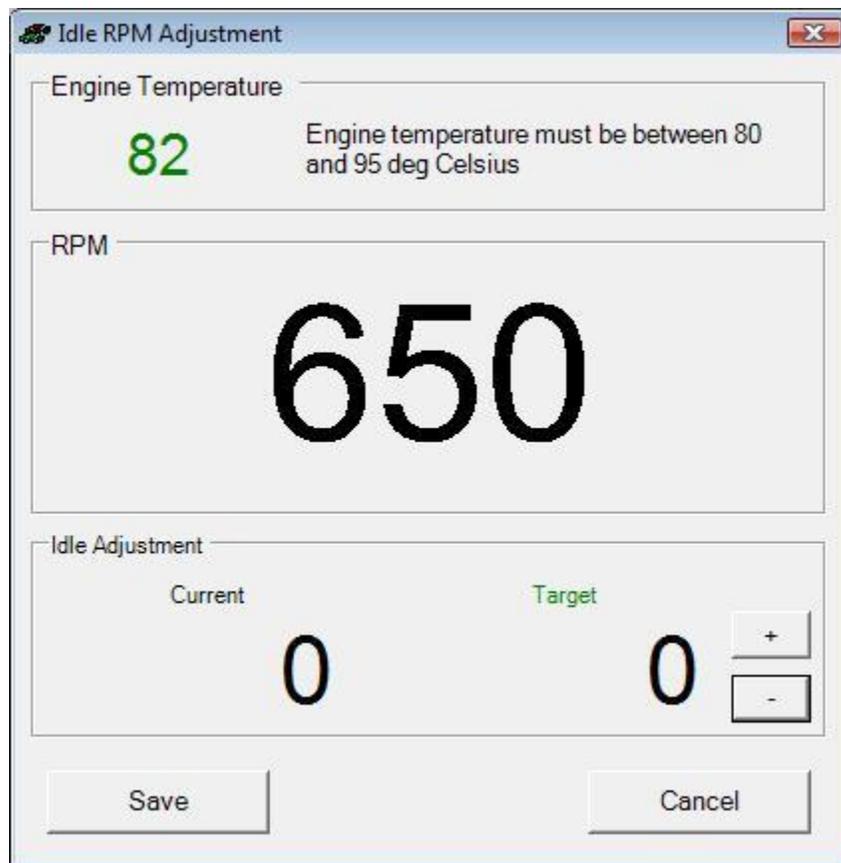
The Self Diagnostics function reports any diagnostic codes present on the ECM. It can also be used to clear the existing codes if the fault has been fixed.



## 4.4 Idle Adjustment

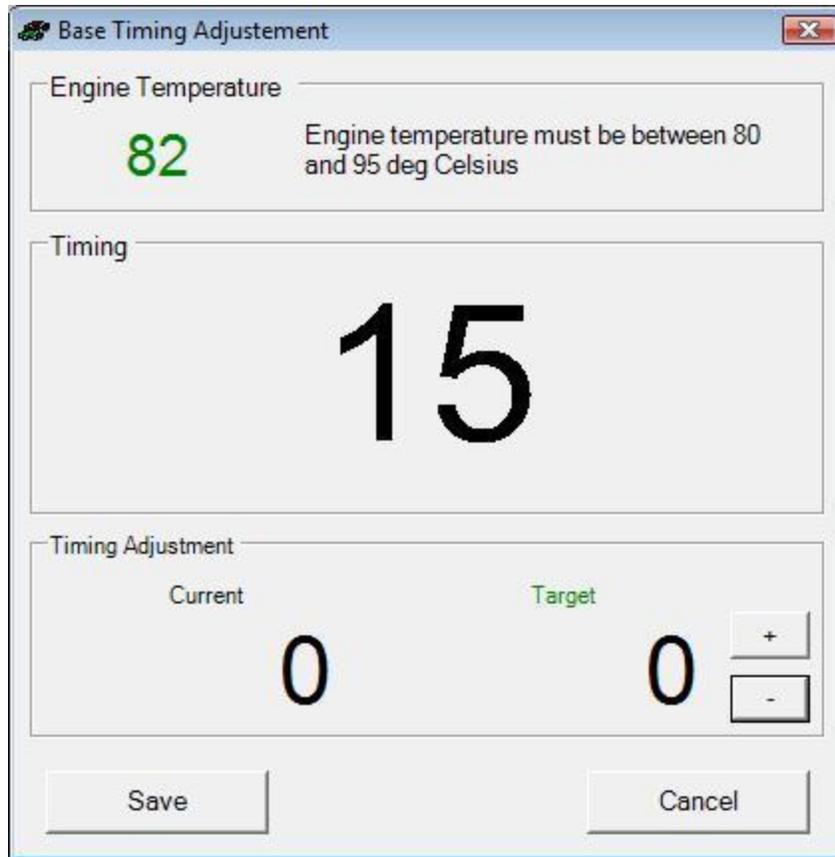
The Idle Adjustment function allows users to adjust the base idle RPM. The setting is saved in an ECM memory and it does not reset with engine restart. An engine needs to reach a minimum operating temperature (80 deg C) before this function can be initiated.

This function is mostly used to increase the base idle RPM on modified engines. To lower an unusually high base idle RPM use an Idle Air Volume Learn function.



## 4.5 Base Timing Adjustment

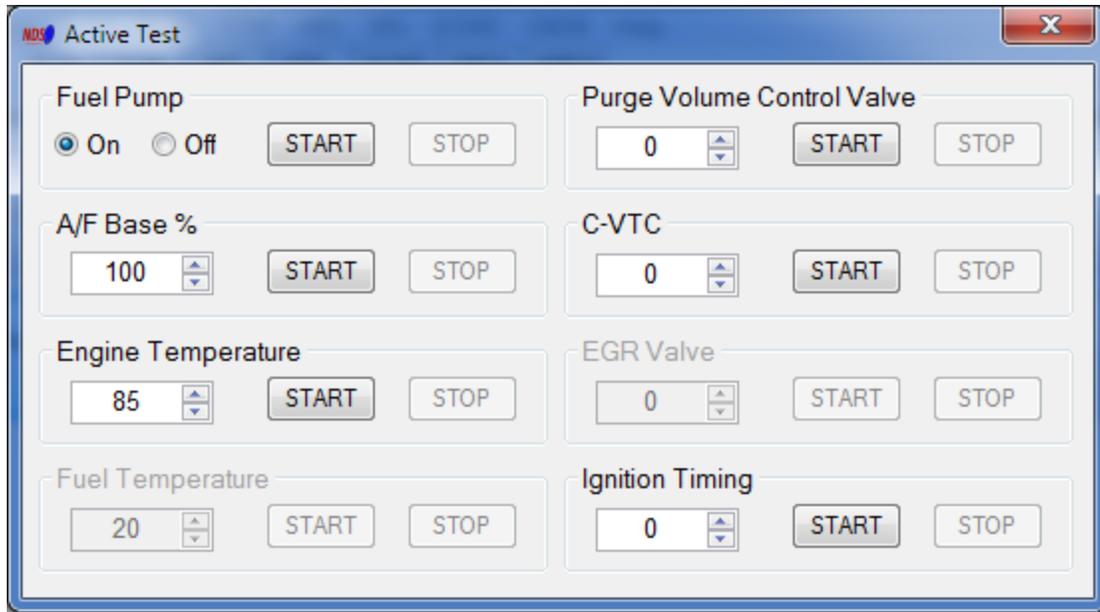
The Base Timing Adjustment function allows users to adjust the base ignition timing. The setting is saved in an ECM memory and it does not reset with engine restart. An engine needs to reach a minimum operating temperature (80 deg C) before this function can be initiated.



## 4.6 Active Test

The Active Test function allows the user to interact directly with the ECM. With this tool, control parameters can be overridden to evaluate engine system response to individual variables. For example, setting the *Engine Temperature* to a particular value makes the ECM respond as if the temperature was really at that reading. This could be used to diagnose temperature sensor failures.

Only functions supported by the ECM are activated. The greyed out functions are not supported by the ECM.



**Fuel Pump** – Turns the fuel pump On or Off.

**A/F Base %** - Base fuel injection as programmed in the fuel map. By temporary increasing this value you are adding more fuel across the whole fuel map.

**Engine Temperature** – Overwrites the current engine temperature with the set value. Do not use this function for long period of time as it may lead to engine overheat.

**Fuel Temperature** - Overwrites the current fuel temperature with the set value.

**Purge Volume Control Valve** – Opens the Purge Valve to the set value.

**C-VTC** – Adjusts the Cam timing to the set value.

**EGR Valve** – Opens the EGR valve to the set value.

**Ignition Timing** – Modifies the ignition timing by the set value.

The tests are activated until they are stopped or the engine is turned off. The changes can not be saved permanently.

This function can also be accessed from the Data Display window.

## 4.7 Cylinder Power Test

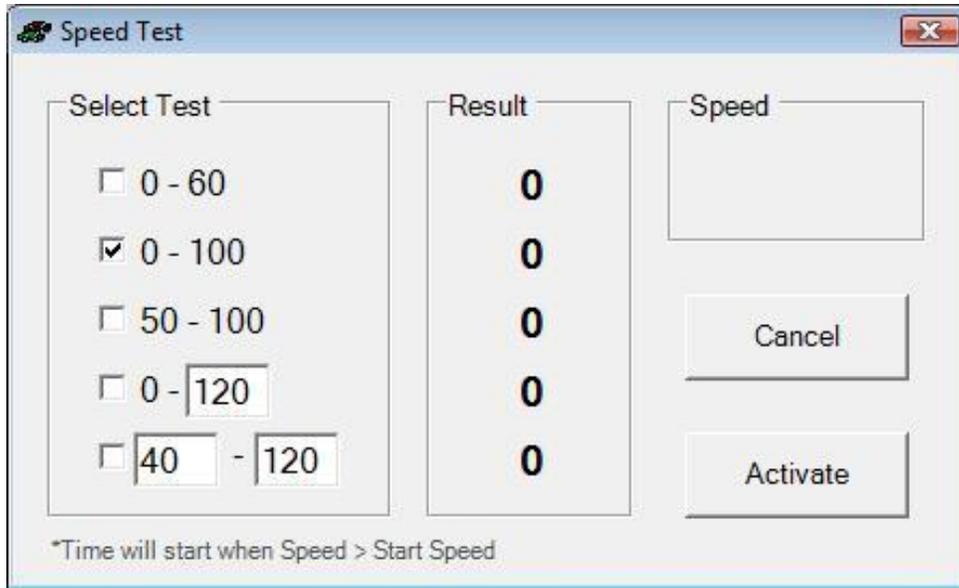
The Cylinder Power Test function allows the use to turn off individual cylinders. This function can be used to identify cylinders that are under performing. If all of the cylinders are producing the same amount of power the engine **RPMs** will drop exactly the same amount with each cylinder turned off. The results of the test should be used as a guide for further investigation and do not represent a definite proof of defective engine.



#### 4.8 Speed Test

This feature provides an accurate method to measure vehicle performance. Select the test to be performed and click the **Activate** button. The program monitors the ECM reported vehicle speed. When the starting speed has been reached (or exceeded in case of 0) it will begin timing. When the chosen upper limit is reached it will display the elapsed time for that test.

The **Cancel** button terminates the previously activated speed test.



## 4.9 Log Analyser

The Log Analyser provides the ability for the user to graph data logged with the Data Logging function. The graphical output is useful for evaluating the data in a more chronological fashion. Graphed logs can be evaluated for trends and compared for cause and effect determination.

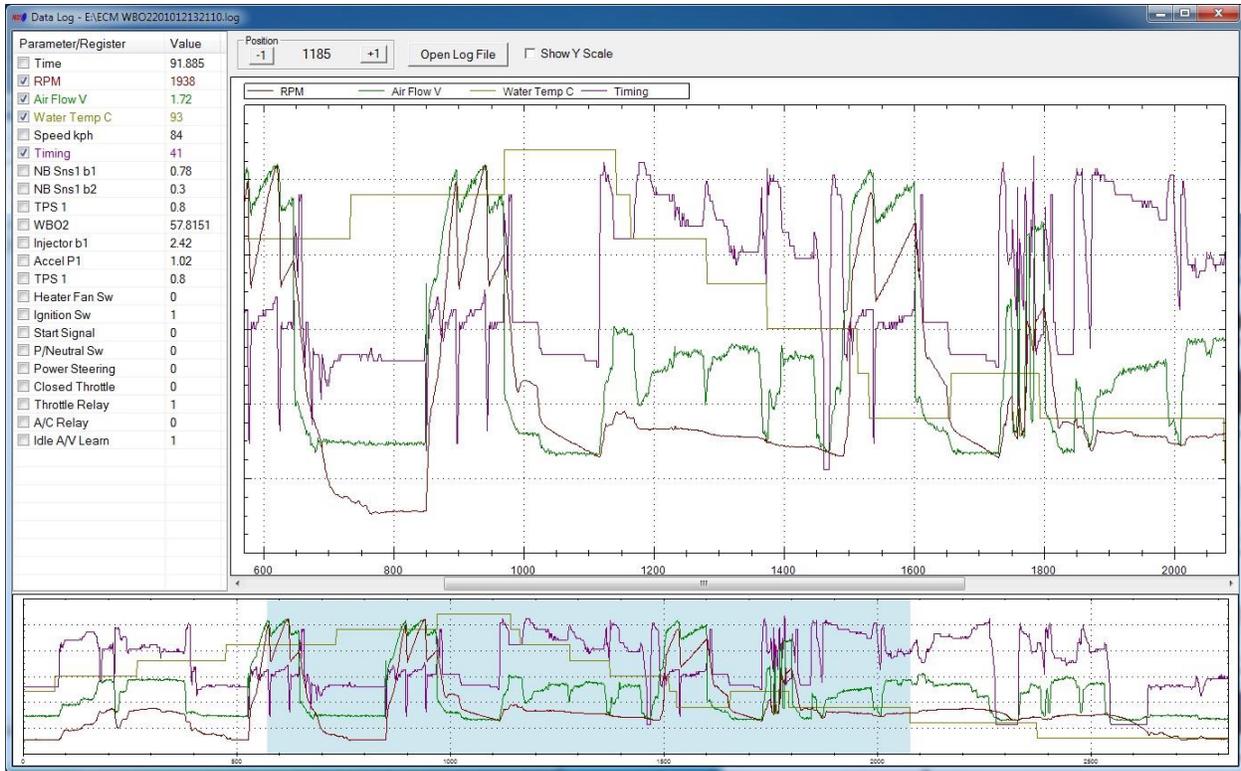
There are 2 designs available. The setting in Settings->Preferences determines which one is used.

### Classic design



The data to be graphed is displayed at the top. By checking the appropriate box the data can be graphed in either the top or bottom graph. Using this capability the logged parameters can be displayed in the most meaningful fashion. Using the **Position** buttons, values for discrete time points may be compared.

### Modern design



The data to be graphed is displayed on the left. By checking the appropriate box the data can be graphed. The colour of the graph matches the relevant data. Using the **Position** buttons, values for discrete time points may be compared.

Select the **Show Y Scale** option prior to selecting the parameter to display the vertical scale.

The highlighted area in the bottom window represents the currently graphed data in the main window.

## 4.10 Data Replay

Use the Data Replay function to “playback” a data log file collected using the Data Logging function. The playback can be run at real time or stepped through using the **Position** slider.

There are 2 gauge designs available. The setting in Settings->Preferences determines which one is used. Both perform exactly the same function.

### Classic gauge design



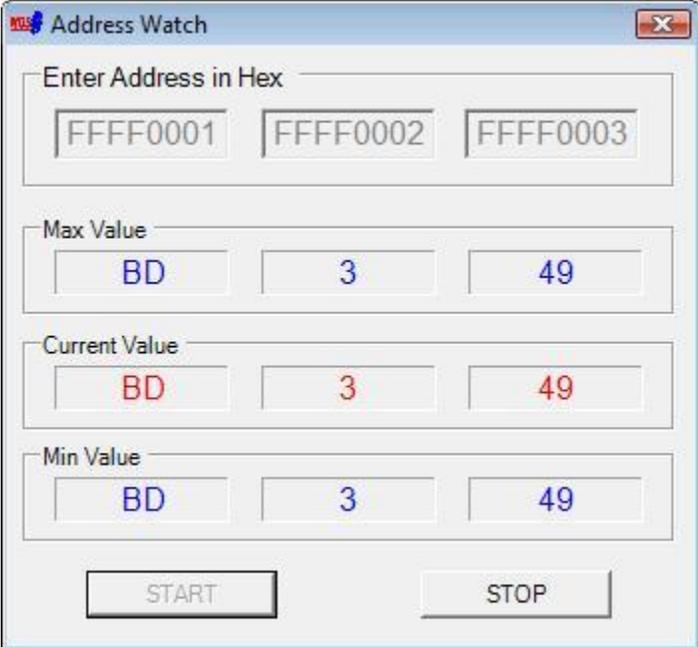
### Modern gauge design



## 4.11 Address Watch

Address Watch is an advance function. It is used to monitor specific memory address locations. This is often used if a tuner needs to monitor a specific function not available through the Consult II protocol.

Three memory addresses can be monitored at the same time. Enter the **Address** in the fields at the top of the window. Click the **Start** button to start monitoring. The **Current**, **Maximum** and **Minimum** values are displayed below the address.

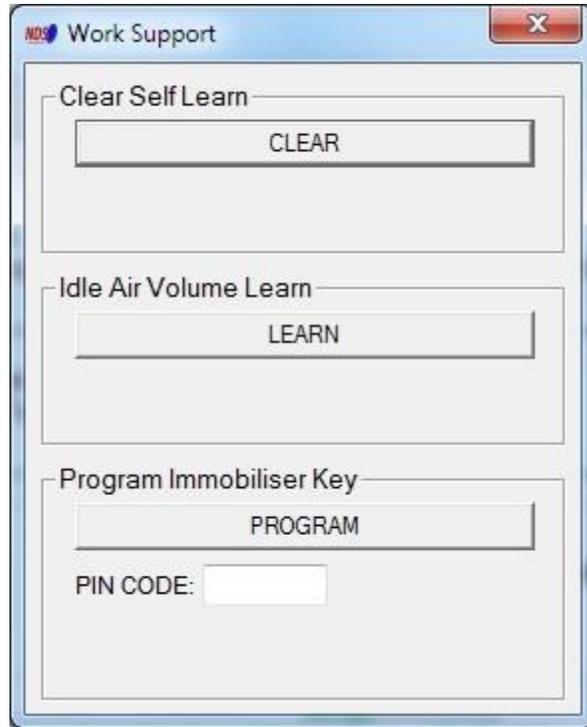


The screenshot shows a software window titled "Address Watch" with a close button in the top right corner. The window contains the following elements:

- Enter Address in Hex:** Three input fields containing the hexadecimal addresses "FFFF0001", "FFFF0002", and "FFFF0003".
- Max Value:** Three input fields containing the values "BD", "3", and "49".
- Current Value:** Three input fields containing the values "BD", "3", and "49".
- Min Value:** Three input fields containing the values "BD", "3", and "49".
- Buttons:** Two buttons at the bottom, labeled "START" and "STOP".

## 4.12 Work Support

Work Support functions allow users to perform some of the advance service procedures. Those procedures may need to be performed after replacement parts are installed.



**Clear Self Learn** – clears the Air/Fuel Base Self Learn map. While running in a closed loop mode the ECM continuously monitors the Oxygen sensors and corrects the fuel mixture. Those corrections are saved in ECM’s memory. The ECM uses the saved corrections to quickly achieve the optimum A/F ratio. This function erases those corrections from the memory and forces the ECM to relearn them.

**Idle Air Volume Learn** – an operation to learn the idle air volume that keeps each engine within the specific range. It must be performed every time the electronic throttle control actuator or ECM is replaced. It should also be completed when the idle speed or ignition timing is out of specification.

#### PREPARATION

Before performing Idle Air Volume Learning, make sure that all of the following conditions are satisfied. Learning will be cancelled if any of the following conditions are missed for even a moment.

- Battery voltage: More than 12.9V (At idle)
- Engine coolant temperature: 70 - 100°C (158 - 212°F)
- PNP switch: ON
- Electric load switch: OFF (Air conditioner, headlamp, rear window defogger)
- Steering wheel: Neutral (Straight-ahead position)
- Vehicle speed: Stopped
- Transmission: Warmed-up

If the procedure counts to 5000 and eventually fails it means one or more basic engine control parameters are out of specification. Check the following and consult your service manual to rectify the problems:

- Check that throttle valve is fully closed.
- Check PCV valve operation.
- Check that downstream of throttle valve is free from air leakage.

**Program Immobiliser Key** – registers the Nissan transponder keys with the ECM immobiliser. Enter the 4 digit immobiliser PIN and click on the **Start** button. The PIN can be obtained from a Nissan/Infiniti dealer.

This procedure will first erase all registered keys. You will then be able to reregister keys one by one including any new keys. Keys not registered at this time will no longer be usable.

### 4.13 Parameter Settings

The Parameter Settings function can be accessed through the main pull down menu, ECM -> Parameter Settings. It is used for adjusting the value range for each individual parameter. It also defines the look of the Classic Gauge. It increases or decreases the resolution of the gauge.

The screenshot shows a 'Parameter Settings' dialog box. At the top, there is a title bar with the text 'NDSII Parameter Settings' and a close button. Below the title bar, the dialog is divided into three main sections. The first section, 'Parameter', contains a dropdown menu with 'Engine RPM' selected. The second section, 'Value Range', contains four input fields: 'Min:' with the value '0', 'Warn:' with the value '6500', 'Max:' with the value '8000', and 'Dec Point:' with the value '0'. Below these fields is a 'Visual Alert' checkbox, which is currently unchecked. The third section, 'Classic Gauge', contains two input fields: 'Ticker:' with the value '8' and 'Sub Ticker:' with the value '5'. At the bottom of the dialog, there are two buttons: 'Save' and 'Cancel'.

Select the **Parameter** from the drop down menu at the top. Enter the **Minimum**, **Warning** and **Maximum** values for the gauge. Enter how many digits after **Decimal Point** should be displayed.

The **Visual Alert** setting causes the gauge to change colour when the warning value is reached.

The **Ticker** and **Sub Ticker** settings apply to the classic gauge only. It specifies how many tickers the gauge should have.



## 5. BCM functions

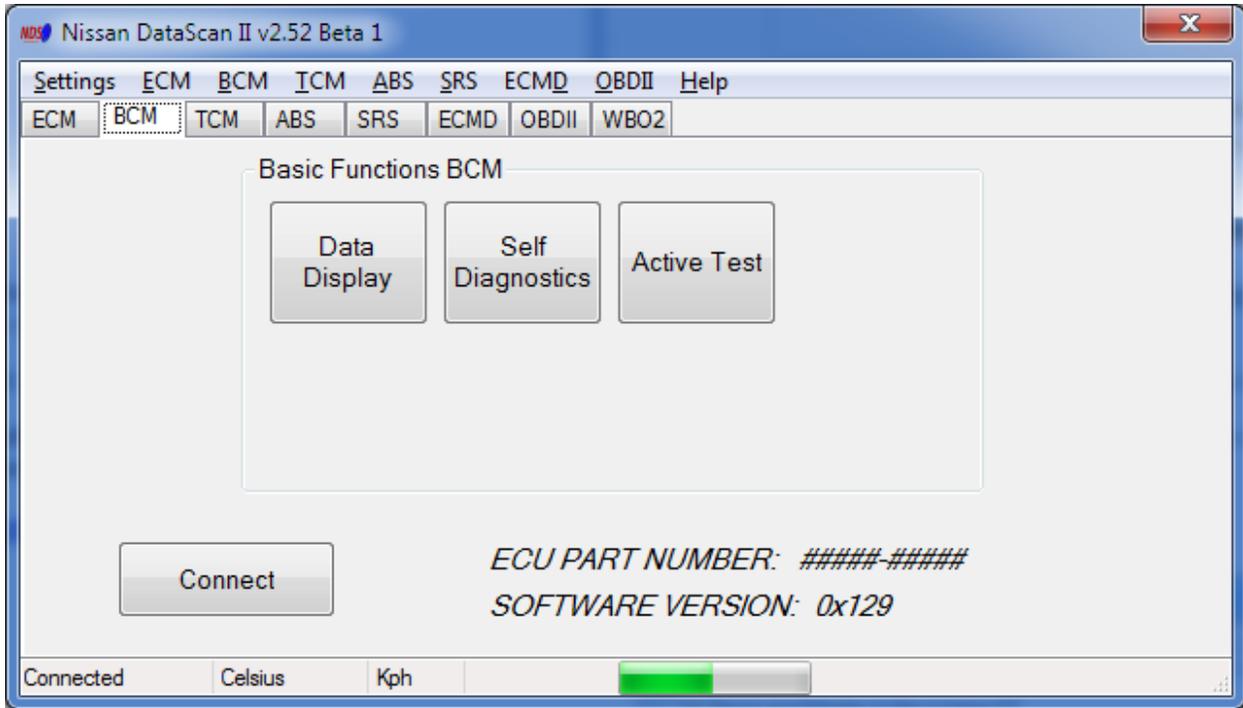
The NDSII software supports BCM diagnostics over the DDL2 communication line.

A lot of Nissan vehicles use DDL2 communication line for engine ECU (ECM) diagnostics but still use DDL1 communication line for BCM diagnostics. Those vehicles are not supported.

The BCM functions are used for diagnostics and general monitoring of Body Control Module. They can be selected from the pull down menu at the top of the Main Screen or by clicking on the large Main screen buttons.

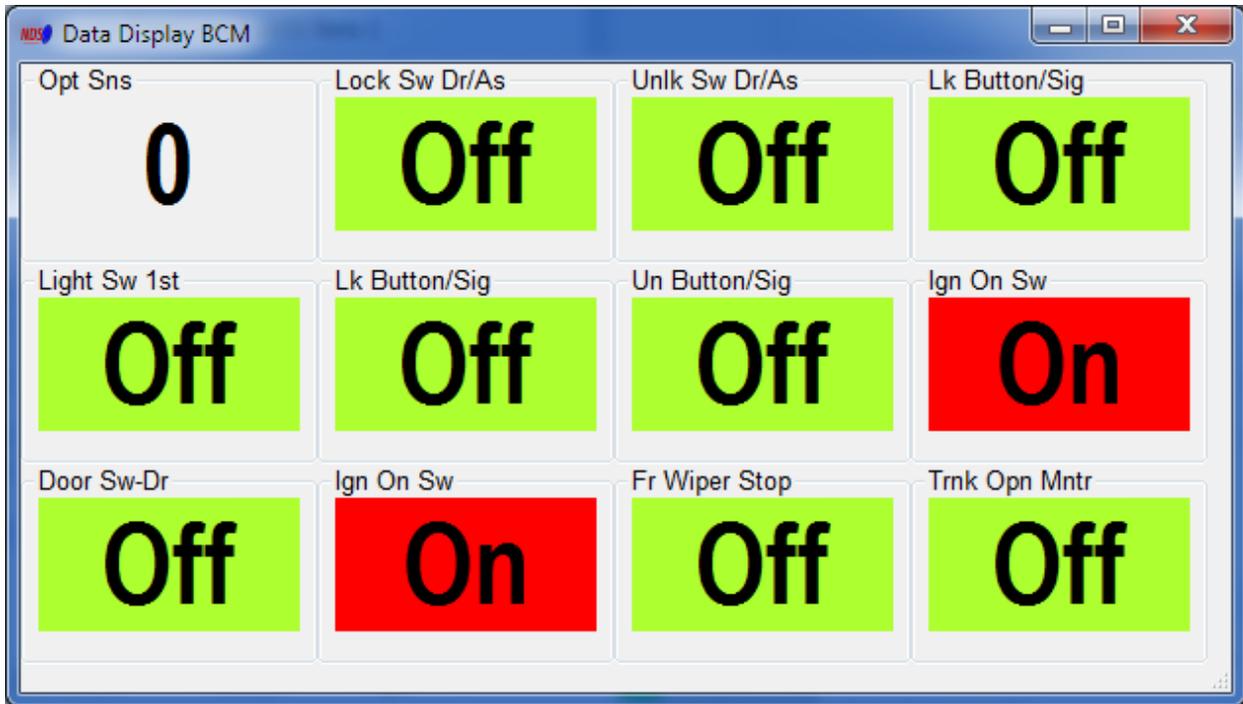
Not all BCM ECUs report their Part Number. The communication can still be established but the Part Number will not be displayed.

The progress bar at the bottom indicates data transfer between BCM and PC. If the bar is not moving there is no data being received from the BCM.

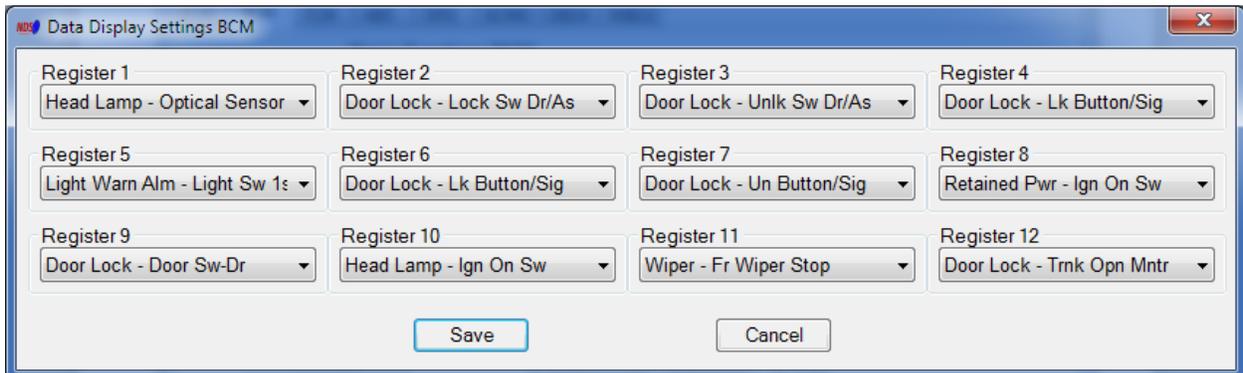


## 5.1 Data Display

The Data Display window uses 12 registers to display real time information about the BCM operation.

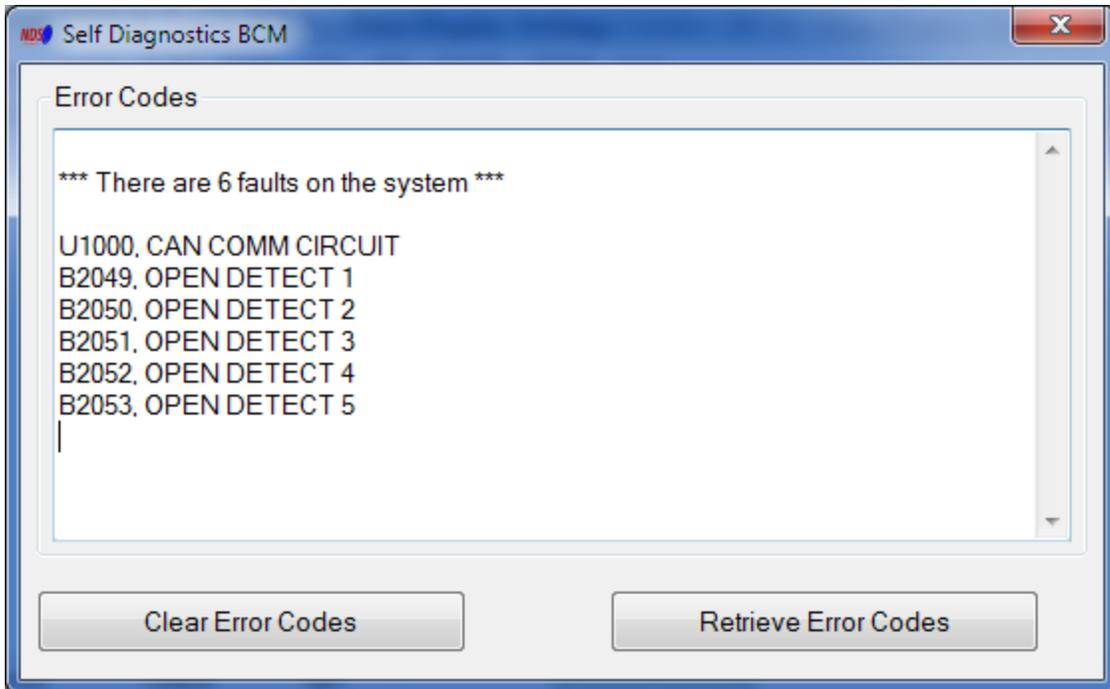


Parameters are assigned in the **Data Display Settings** window (*BCM->Data Display Settings*).



## 5.2 Self Diagnostics

The Self Diagnostics function reports any diagnostic codes present on the BCM. It can also be used to clear the existing codes if the fault has been fixed.

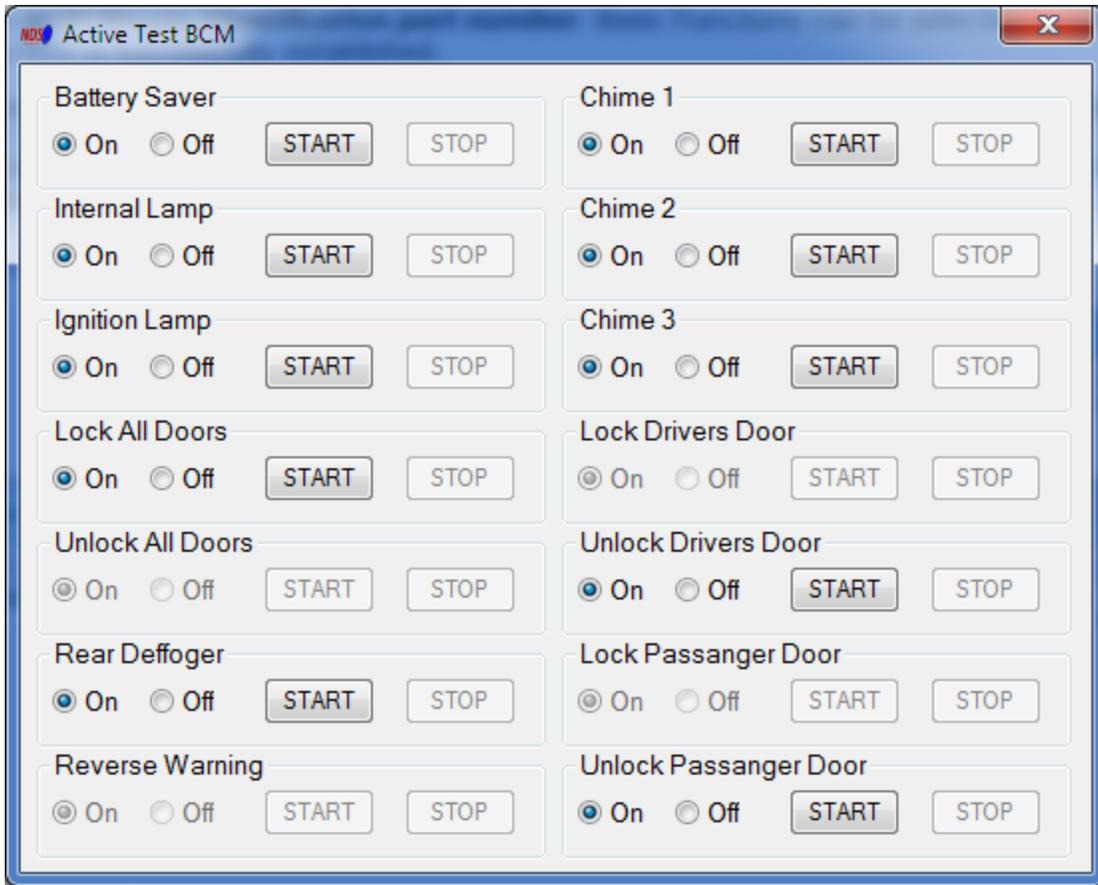


### 5.3 Active Test

The Active Test function allows the user to interact directly with the BCM. With this function, actuators/switches can be manually overwritten to test the BCM functionality.

Only functions supported by the BCM are activated. The greyed out functions are not supported by the BCM.

The tests are activated until they are stopped or the engine is turned off. The changes can not be saved permanently.



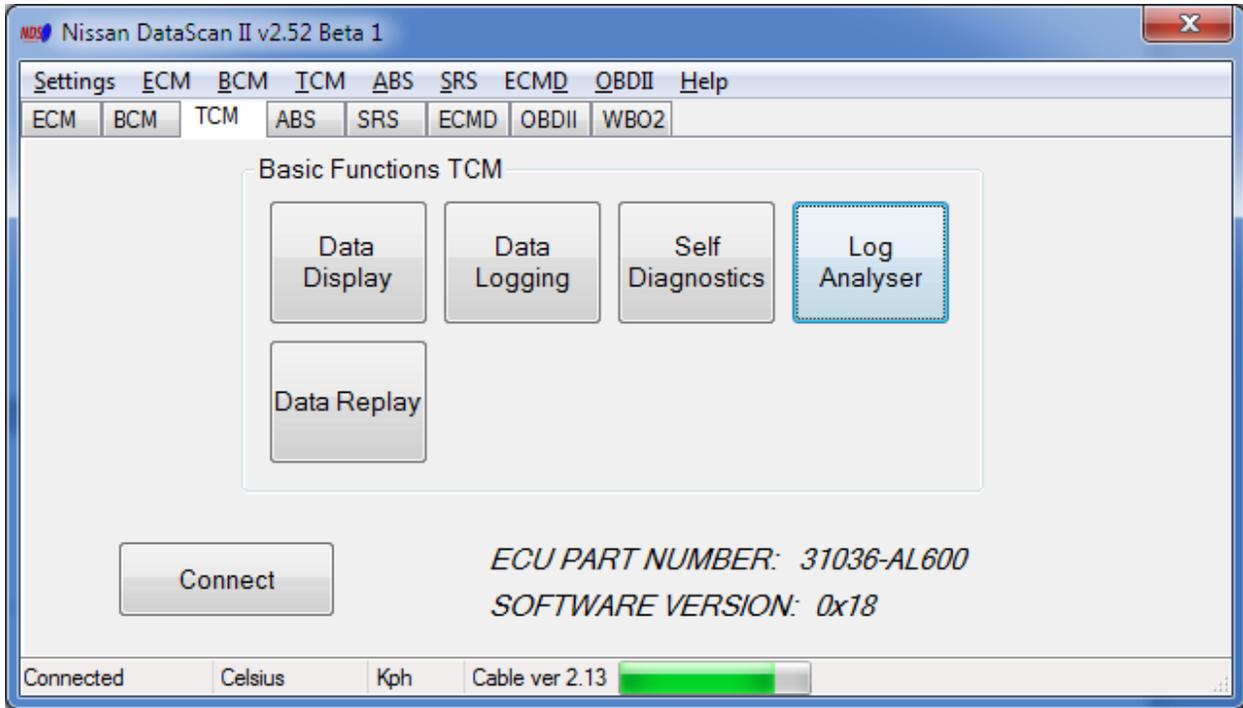
## 6. TCM functions

The NDSII software supports TCM diagnostics over the DDL2 communication line.

A lot of Nissan vehicles use DDL2 communication line for engine ECU (ECM) diagnostics but still use DDL1 communication line for TCM diagnostics. Those vehicles are not supported.

The TCM functions are used for diagnostics and general monitoring of the Transmission Control Module. They can be selected from the pull down menu at the top of the Main Screen or by clicking on the large Main screen buttons.

The progress bar at the bottom indicates data transfer between TCM and PC. If the bar is not moving there is no data being received from the TCM.



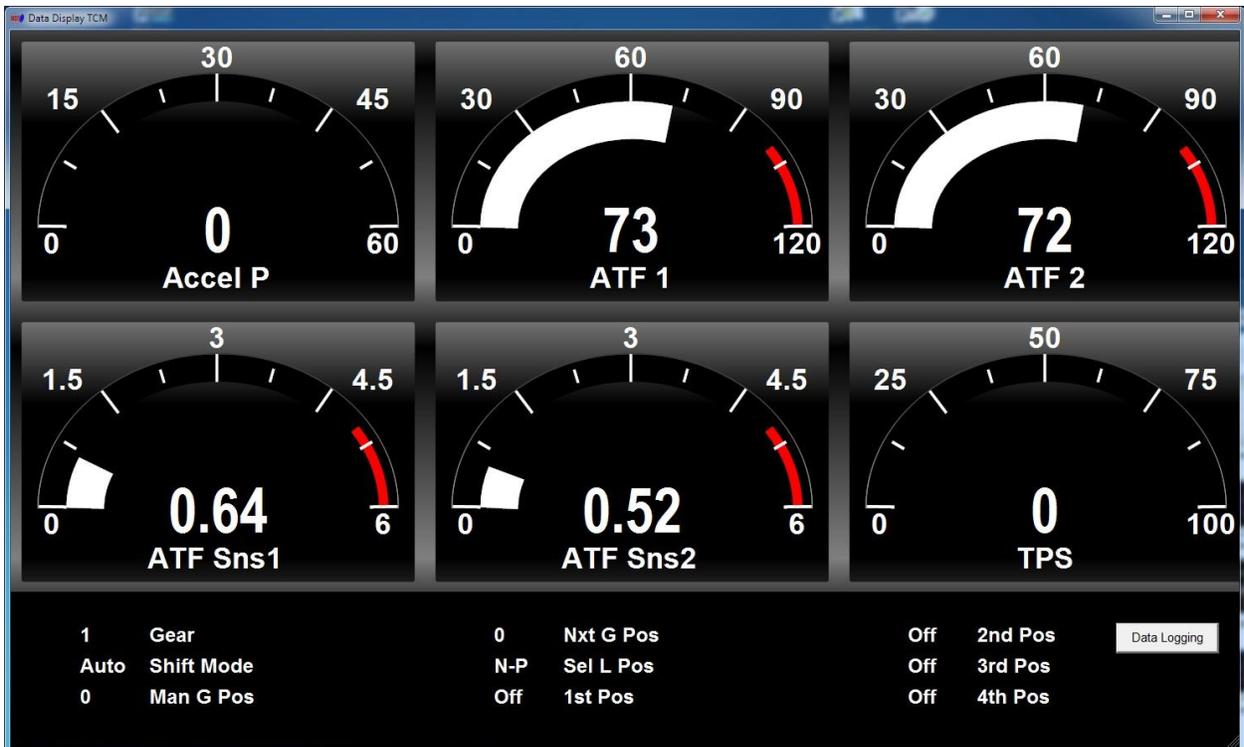
## 6.1 Data Display

The Data Display function uses 6 gauges and 9 registers to display real time information about the transmission as measured or calculated by the TCM. Depending on preferences setting this window can use either Classic or Modern design gauges.

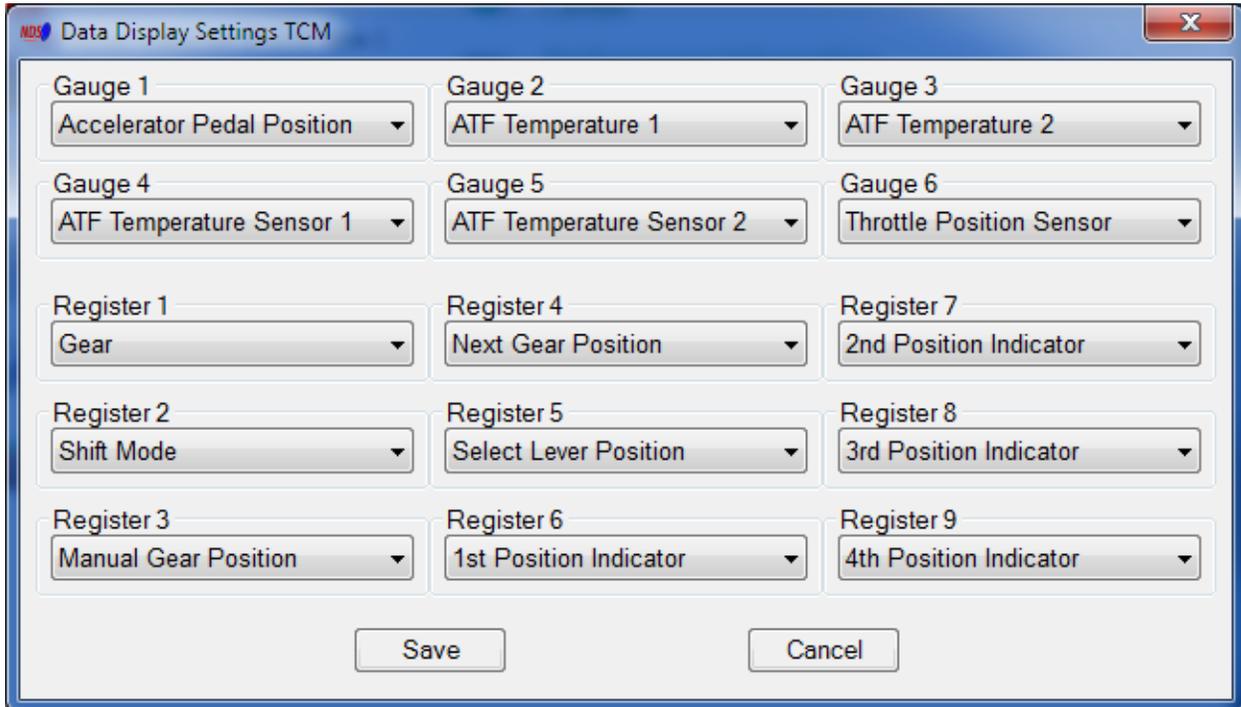
### Classic



Modern



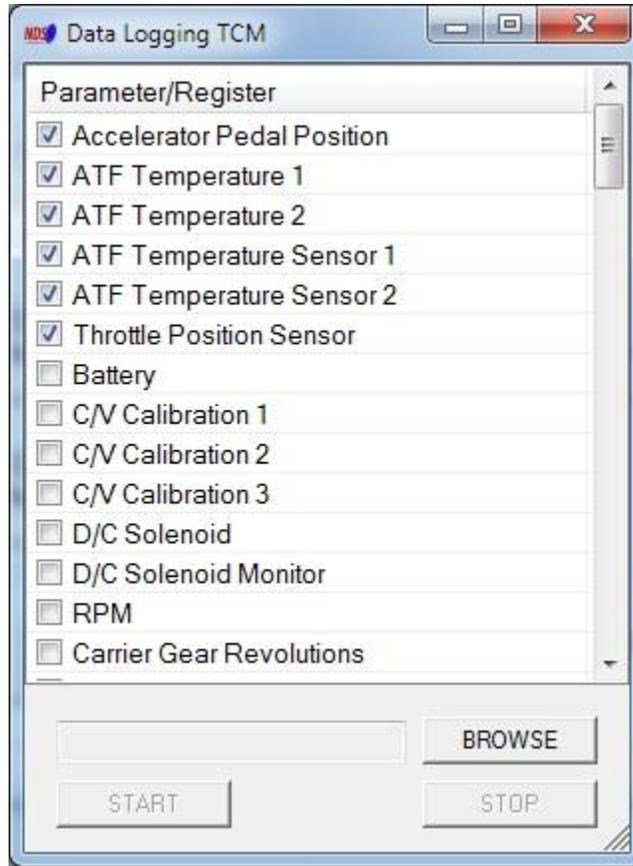
Parameters are assigned to gauges in the **Data Display Settings** window (*TCM->Data Display Settings*).



## 6.2 Data Logging

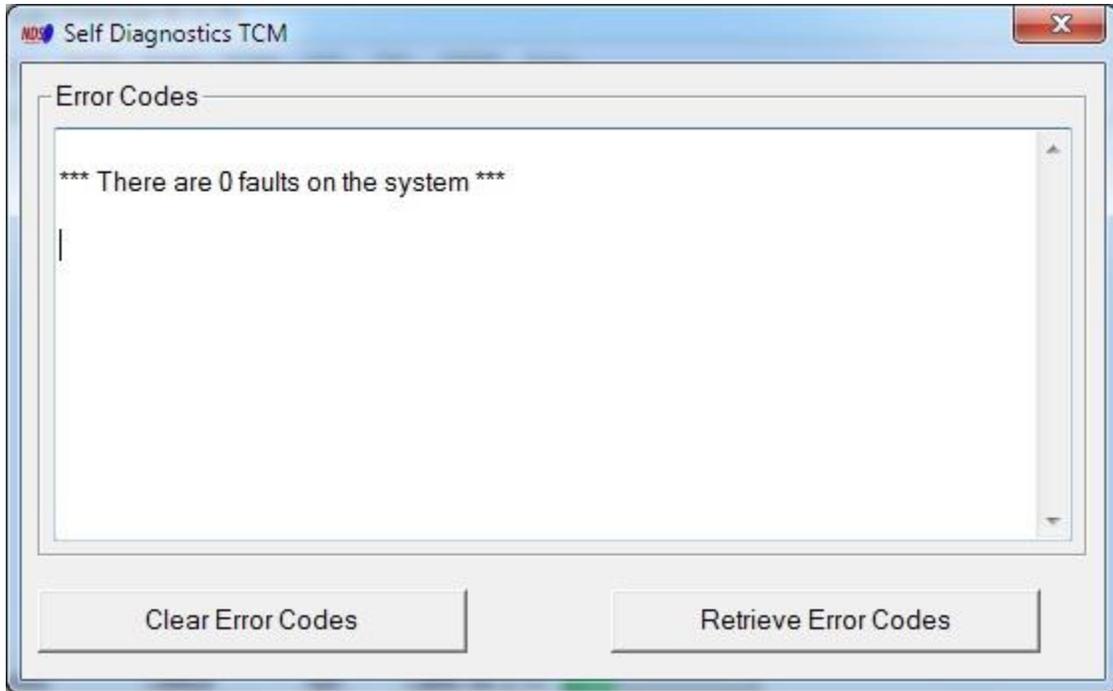
This function allows the user to select what TCM parameters and registers are logged. It also provides options for the log file name and location. When the Start button is clicked, the chosen parameters are logged to a comma delimited text file. The log file can then be reviewed using Log Analyser function or Data Replay function. The file can also be opened in common spreadsheet software such as Excel.

The Data Logging function can also be accessed from the Data Display window. A higher update rate is achieved if the function is started from the Main window.



### 6.3 Self Diagnostics

The Self Diagnostics function reports any diagnostic codes present on the TCM. It can also be used to clear the existing codes if the fault has been fixed.

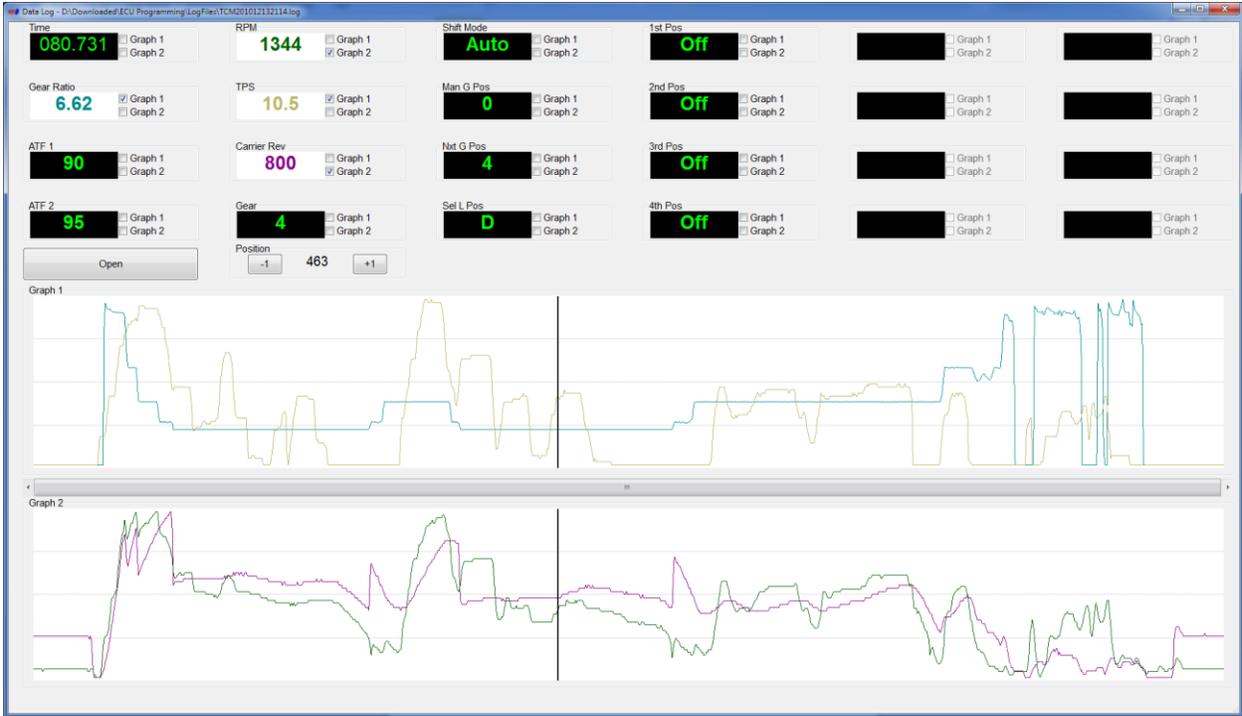


## 6.4 Log Analyser

The Log Analyser provides the ability for the user to graph data logged with the Data Logging function. The graphical output is useful for evaluating the data in a more chronological fashion. Graphed logs can be evaluated for trends and compared for cause and effect determination.

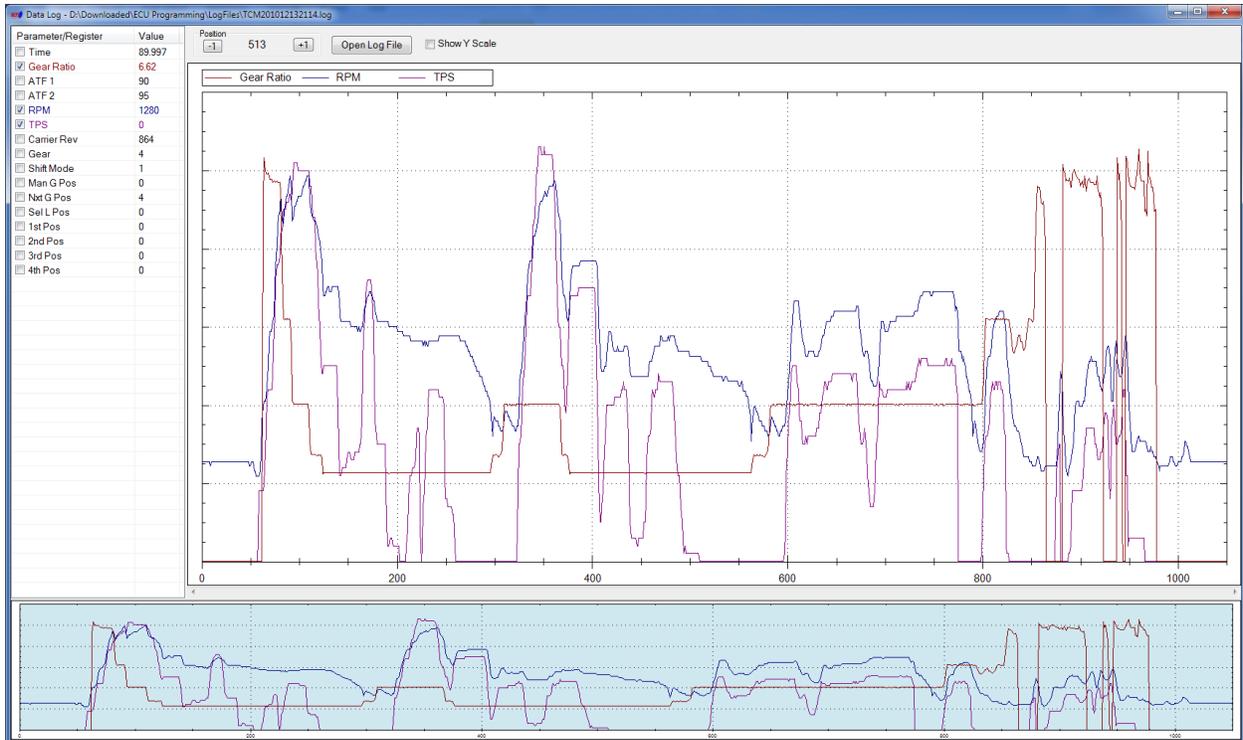
There are 2 designs available. The setting in Settings->Preferences determines which one is used.

### **Classic design**



The data to be graphed is displayed at the top. By checking the appropriate box the data can be graphed in either the top or bottom graph. Using this capability the logged parameters can be displayed in the most meaningful fashion. Using the **Position** buttons, values for discrete time points may be compared.

### Modern design



The data to be graphed is displayed on the left. By checking the appropriate box the data can be graphed. The colour of the graph matches the relevant data. Using the **Position** buttons, values for discrete time points may be compared.

Select the **Show Y Scale** option prior to selecting the parameter to display the vertical scale.

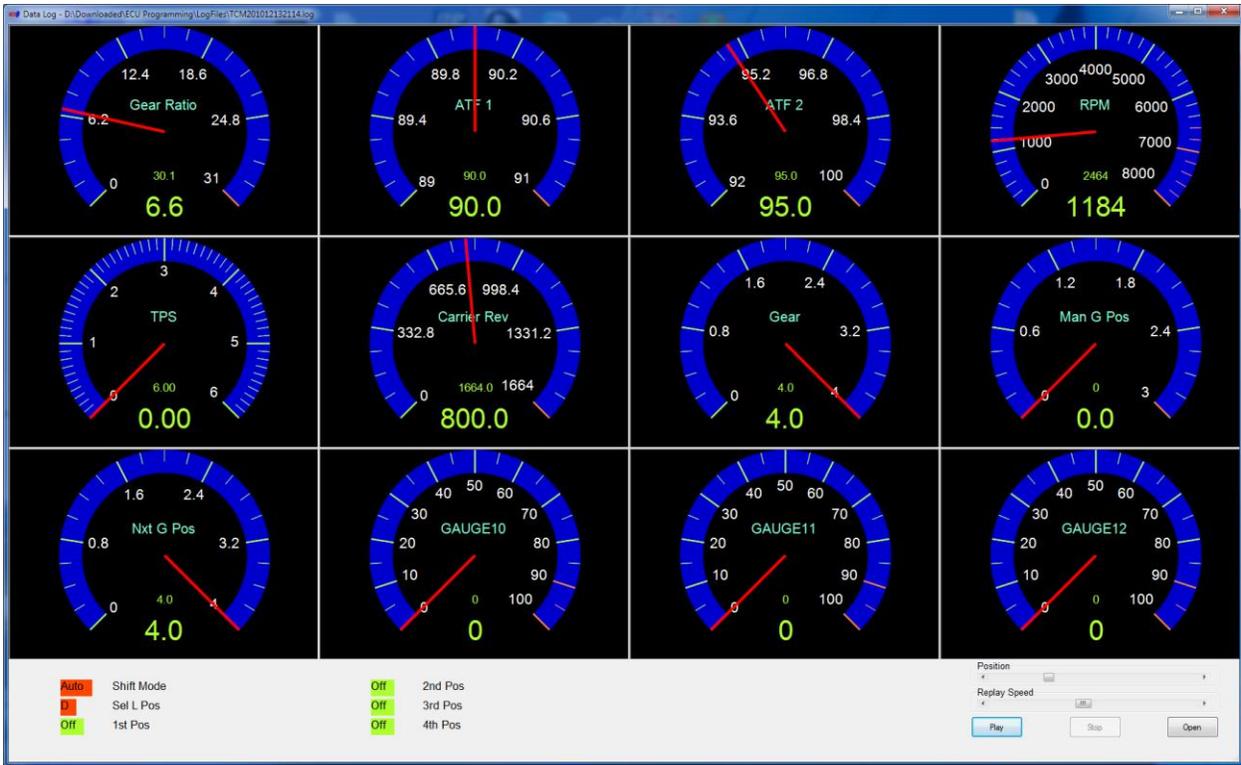
The highlighted area in the bottom window represents the currently graphed data in the main window.

## 6.5 Data Replay

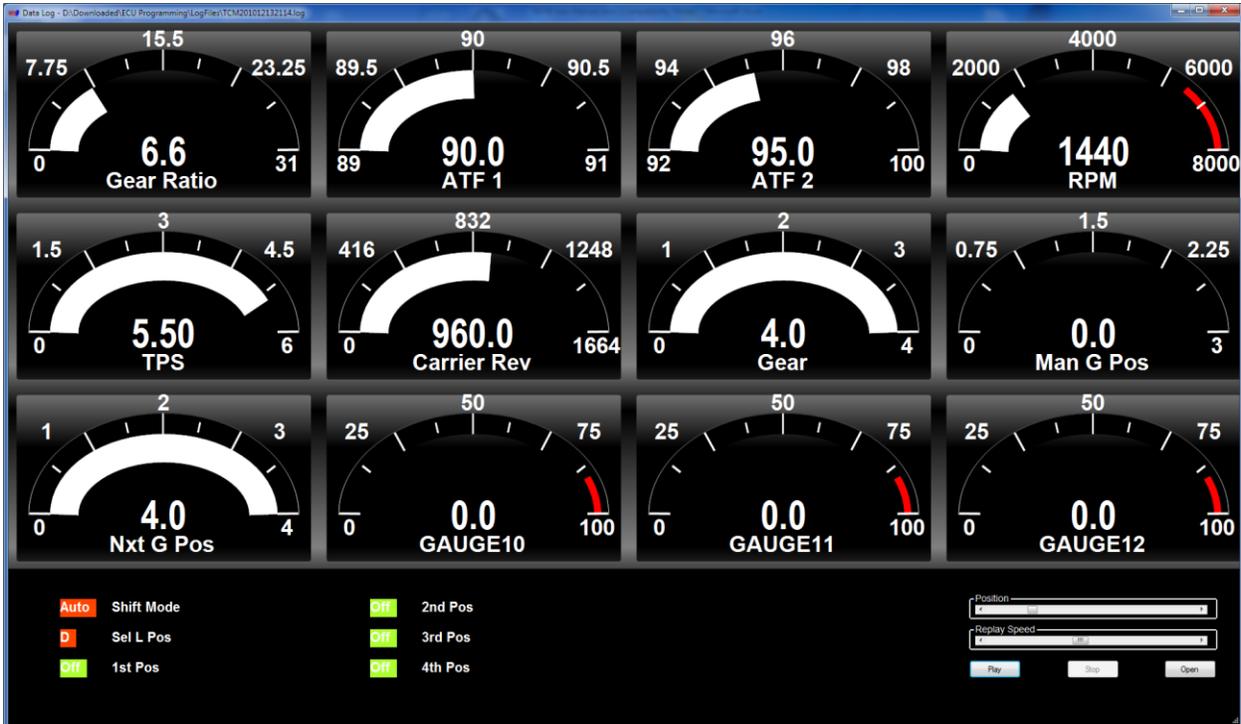
Use the Data Replay function to “playback” a data log file collected using the Data Logging function. The playback can be run at real time or stepped through using the **Position** slider.

There are 2 gauge designs available. The setting in Settings->Preferences determines which one is used. Both perform exactly the same function.

### Classic gauge design

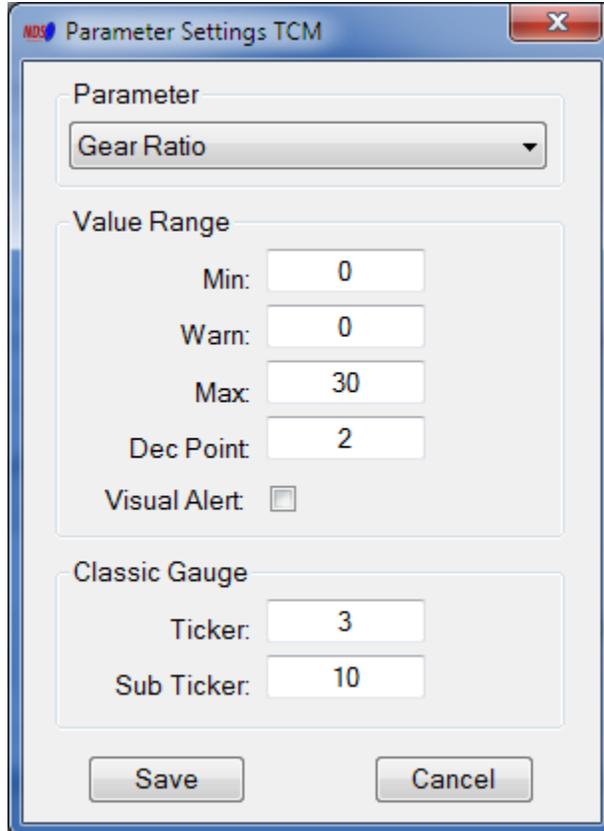


### Modern gauge design



## 6.6 Parameter Settings

The Parameter Settings function can be accessed through the main pull down menu, TCM -> Parameter Settings. It is used for adjusting the value range for each individual parameter. It also defines the look of the Classic Gauge. It increases or decreases the resolution of the gauge.



The screenshot shows a dialog box titled "Parameter Settings TCM". It features a dropdown menu for "Parameter" currently set to "Gear Ratio". Below this is a "Value Range" section with four input fields: "Min:" (0), "Warn:" (0), "Max:" (30), and "Dec Point:" (2). There is also a "Visual Alert" checkbox which is unchecked. The "Classic Gauge" section has two input fields: "Ticker:" (3) and "Sub Ticker:" (10). At the bottom of the dialog are "Save" and "Cancel" buttons.

Select the **Parameter** from the drop down menu at the top. Enter the **Minimum**, **Warning** and **Maximum** values for the gauge. Enter how many digits after **Decimal Point** should be displayed.

The **Visual Alert** setting causes the gauge to change colour when the warning value is reached.

The **Ticker** and **Sub Ticker** settings apply to the classic gauge only. It specifies how many tickers the gauge should have.



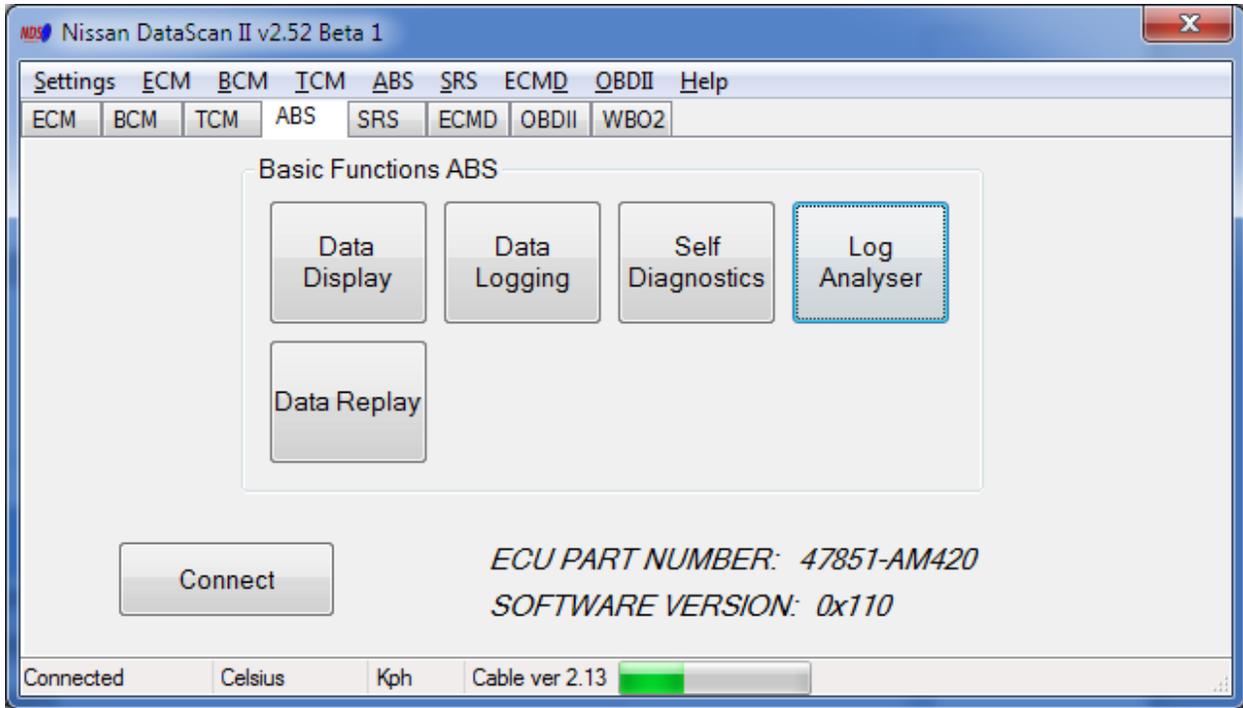
## 7. ABS functions

The NDSII software supports ABS diagnostics over the DDL2 communication line.

A lot of Nissan vehicles use DDL2 communication line for engine ECU (ECM) diagnostics but still use DDL1 communication line for ABS diagnostics. Those vehicles are not supported.

The ABS functions are used for diagnostics and general monitoring of the ABS Control Module. They can be selected from the pull down menu at the top of the Main Screen or by clicking on the large Main screen buttons.

The progress bar at the bottom indicates data transfer between ABS ECU and PC. If the bar is not moving there is no data being received from the ABS ECU.



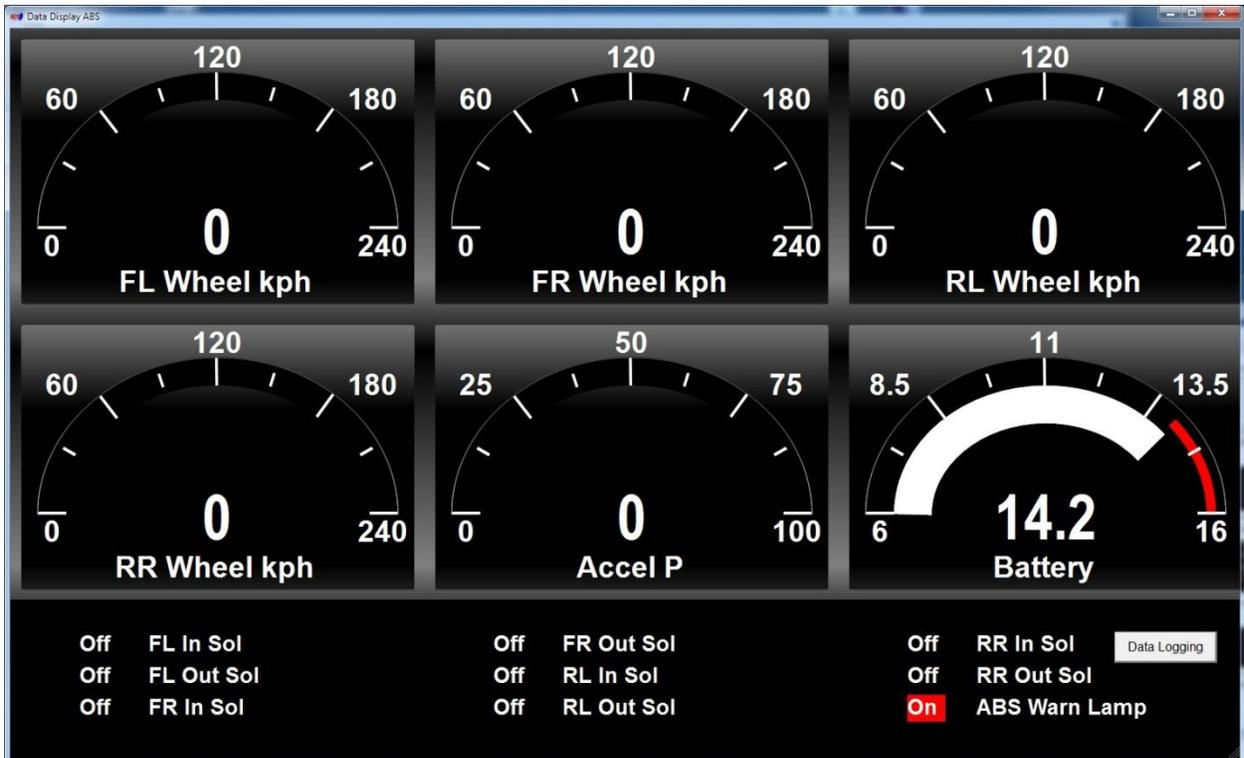
## 7.1 Data Display

The Data Display function uses 6 gauges and 9 registers to display real time information about the ABS system as measured or calculated by the ABS ECU. Depending on preferences setting this window can use either Classic or Modern design gauges.

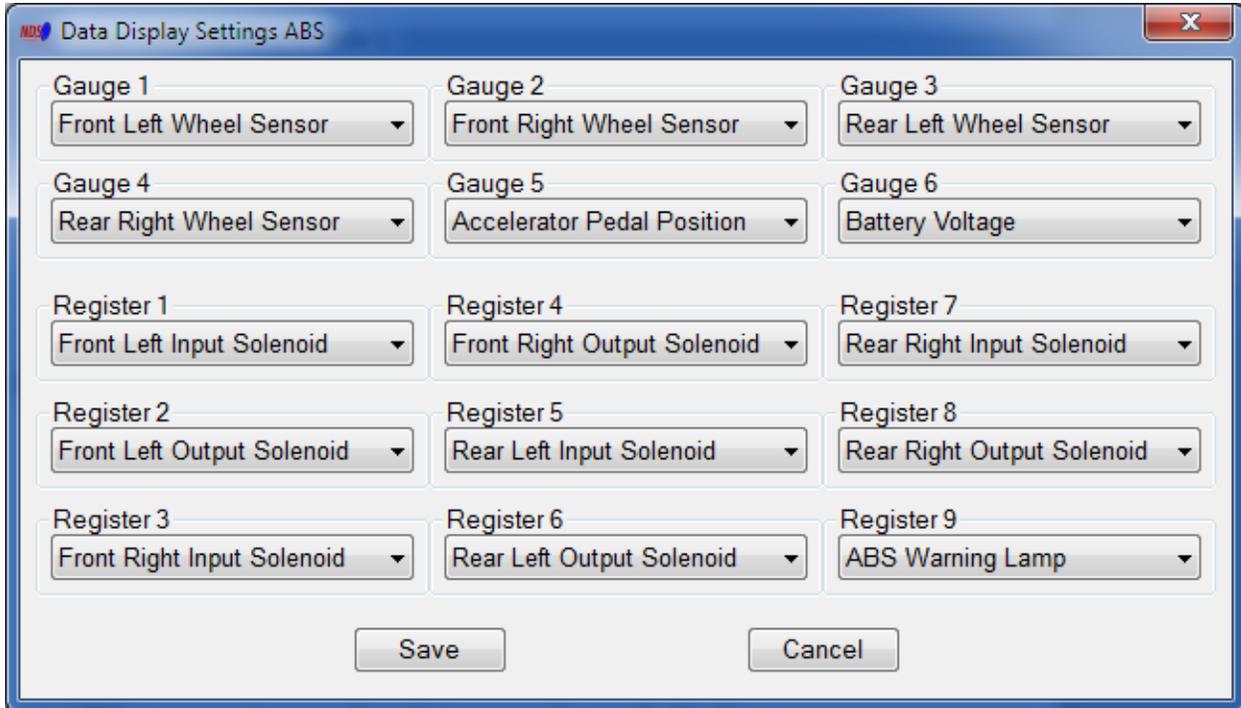
### Classic



Modern



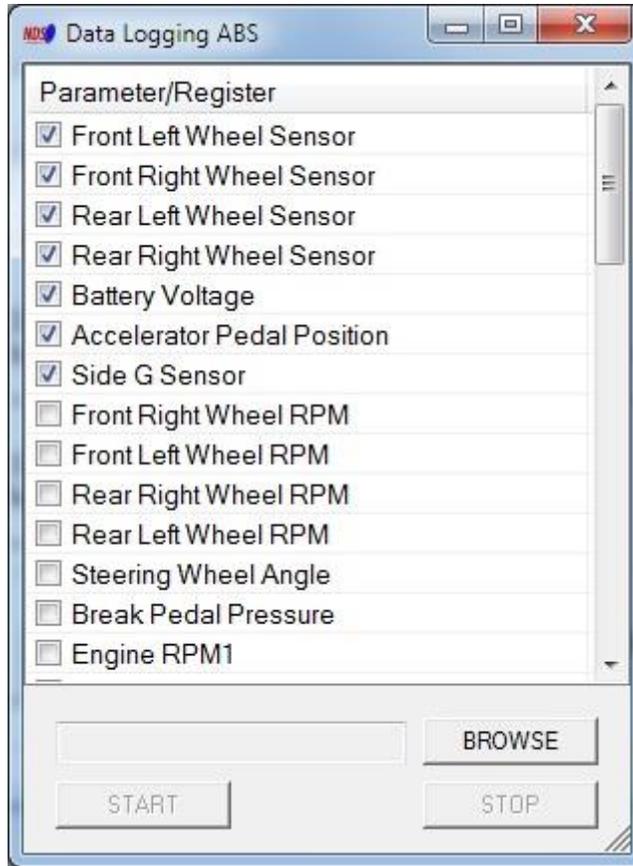
Parameters are assigned to gauges in the **Data Display Settings** window (*ABS->Data Display Settings*).



## 7.2 Data Logging

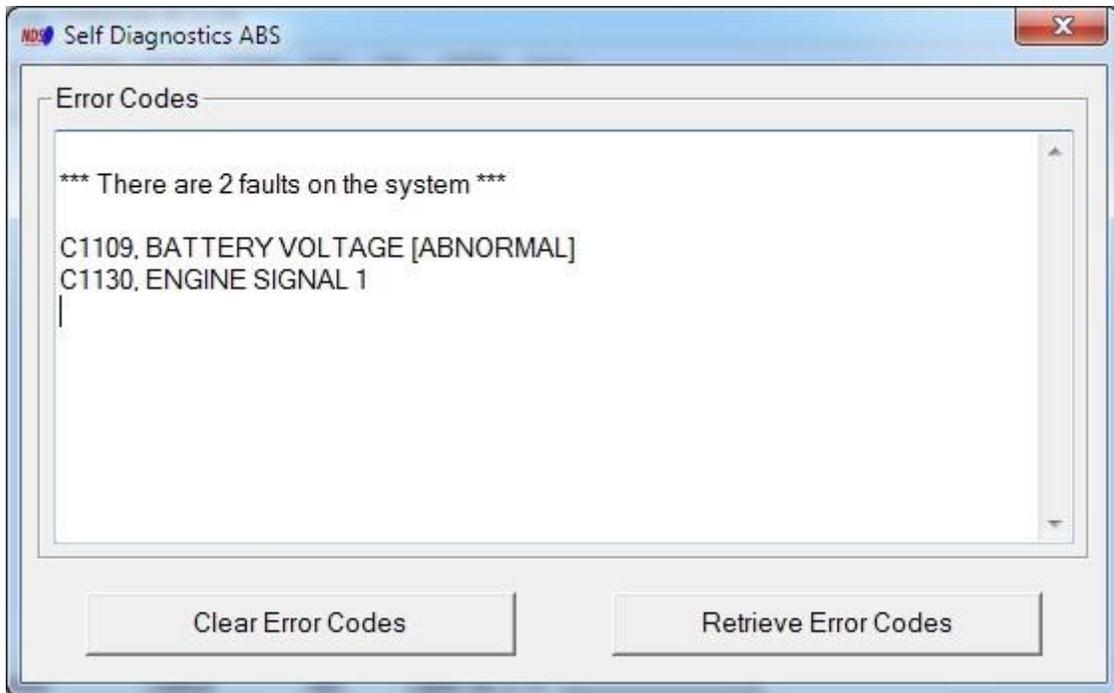
This function allows the user to select what ABS parameters and registers are logged. It also provides options for the log file name and location. When the Start button is clicked, the chosen parameters are logged to a comma delimited text file. The log file can then be reviewed using Log Analyser function or Data Replay function. The file can also be opened in common spreadsheet software such as Excel.

The Data Logging function can also be accessed from the Data Display window. A higher update rate is achieved if the function is started from the Main window.



### 7.3 Self Diagnostics

The Self Diagnostics function reports any diagnostic codes present on the ABS ECU. It can also be used to clear the existing codes if the fault has been fixed.

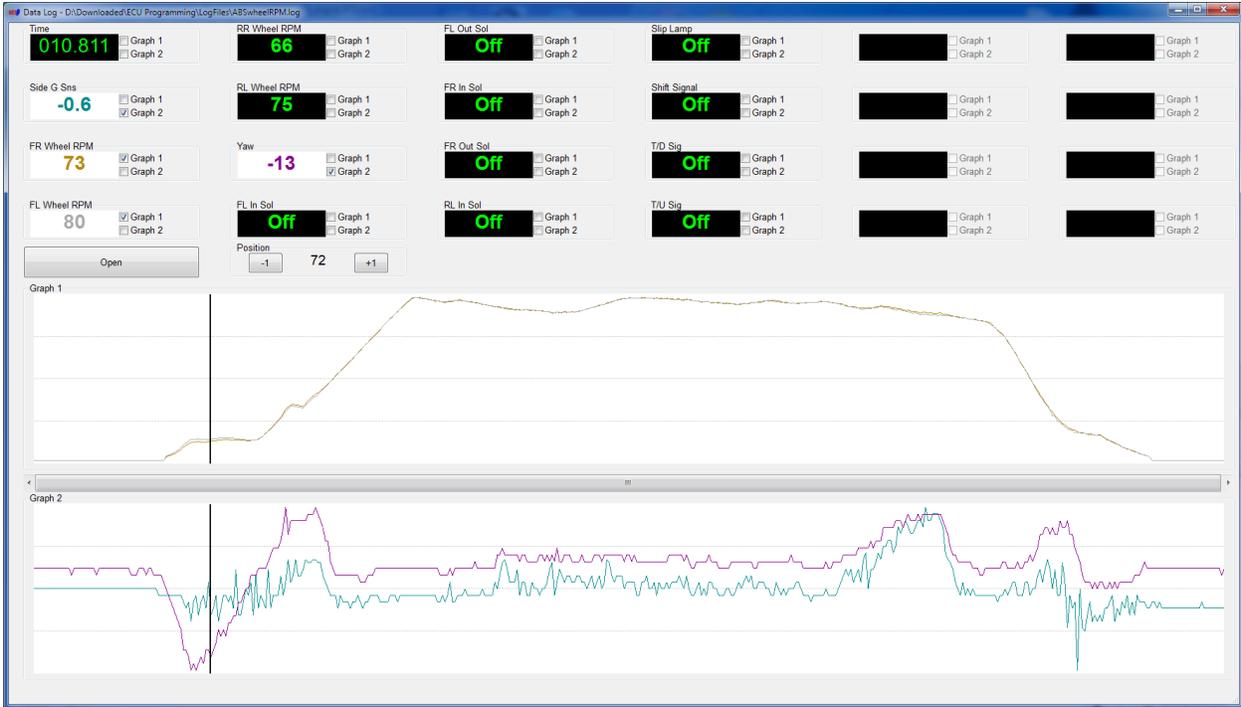


## 7.4 Log Analyser

The Log Analyser provides the ability for the user to graph data logged with the Data Logging function. The graphical output is useful for evaluating the data in a more chronological fashion. Graphed logs can be evaluated for trends and compared for cause and effect determination.

There are 2 designs available. The setting in Settings->Preferences determines which one is used.

### **Classic design**



The data to be graphed is displayed at the top. By checking the appropriate box the data can be graphed in either the top or bottom graph. Using this capability the logged parameters can be displayed in the most meaningful fashion. Using the **Position** buttons, values for discrete time points may be compared.

### Modern design



The data to be graphed is displayed on the left. By checking the appropriate box the data can be graphed. The colour of the graph matches the relevant data. Using the **Position** buttons, values for discrete time points may be compared.

Select the **Show Y Scale** option prior to selecting the parameter to display the vertical scale.

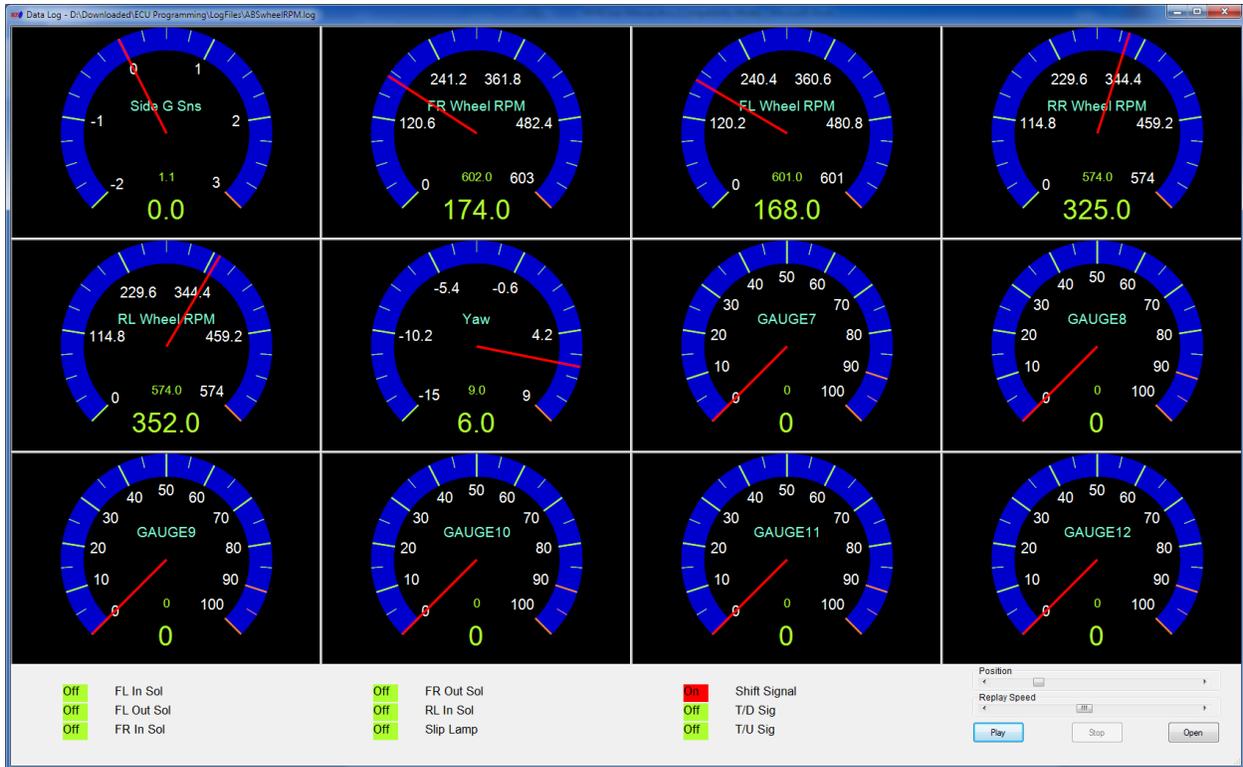
The highlighted area in the bottom window represents the currently graphed data in the main window.

## 7.5 Data Replay

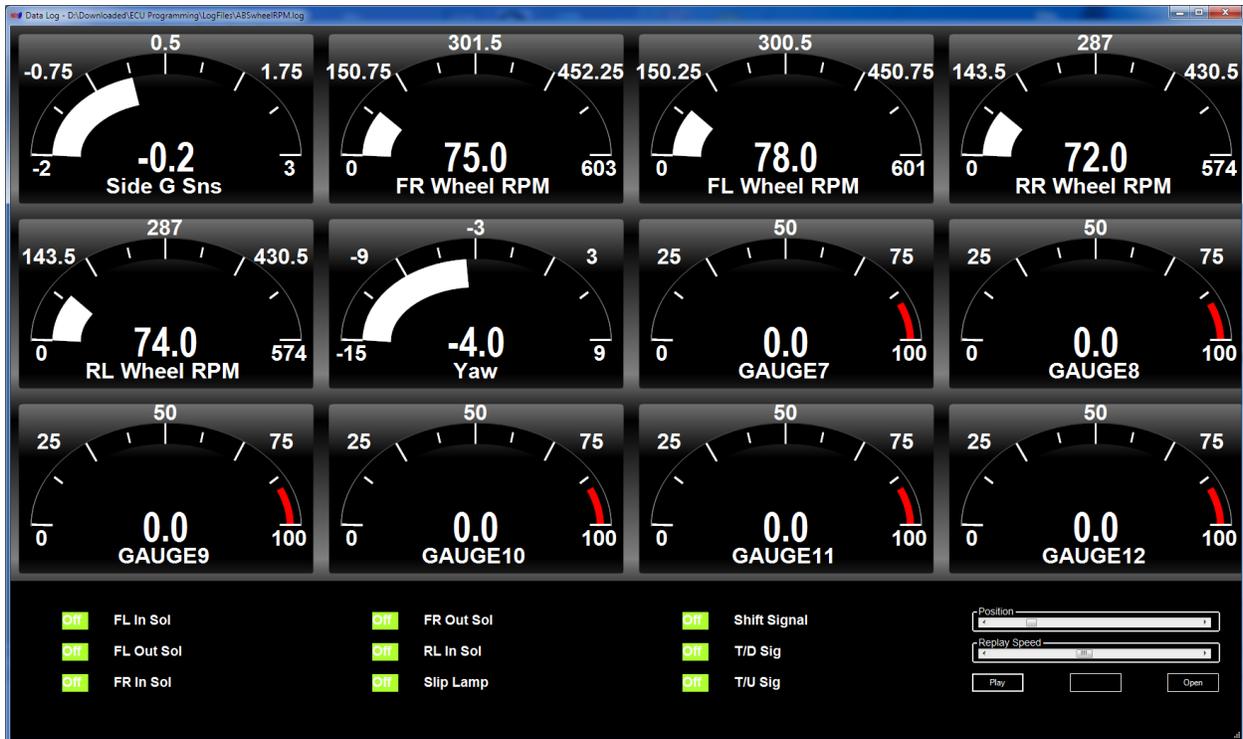
Use the Data Replay function to “playback” a data log file collected using the Data Logging function. The playback can be run at real time or stepped through using the **Position** slider.

There are 2 gauge designs available. The setting in Settings->Preferences determines which one is used. Both perform exactly the same function.

### Classic gauge design

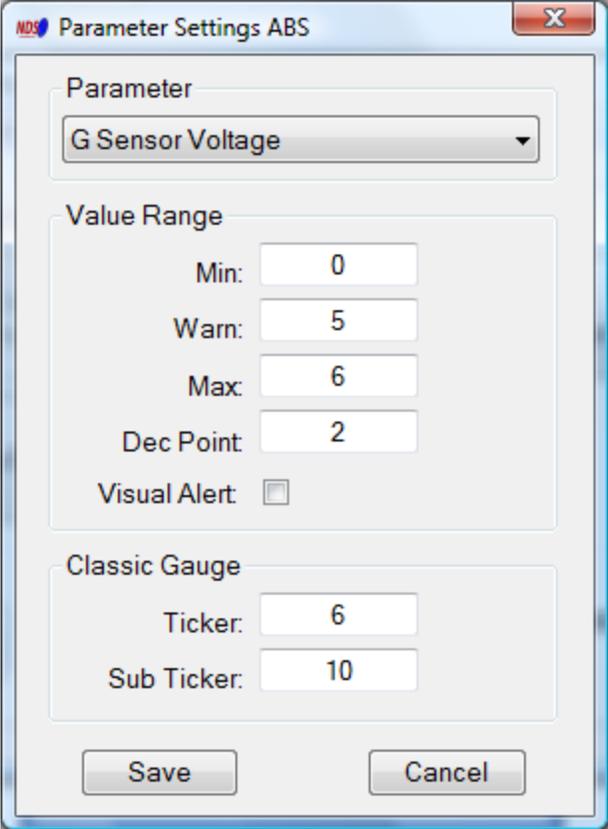


### Modern gauge design



## 7.6 Parameter Settings

The Parameter Settings function can be accessed through the main pull down menu, ABS -> Parameter Settings. It is used for adjusting the value range for each individual parameter. It also defines the look of the Classic Gauge. It increases or decreases the resolution of the gauge.



The screenshot shows a dialog box titled "Parameter Settings ABS". It features a "Parameter" dropdown menu currently set to "G Sensor Voltage". Below this is a "Value Range" section with four input fields: "Min:" (0), "Warn:" (5), "Max:" (6), and "Dec Point:" (2). There is also a "Visual Alert" checkbox which is unchecked. The "Classic Gauge" section has two input fields: "Ticker:" (6) and "Sub Ticker:" (10). At the bottom of the dialog are "Save" and "Cancel" buttons.

Select the **Parameter** from the drop down menu at the top. Enter the **Minimum**, **Warning** and **Maximum** values for the gauge. Enter how many digits after **Decimal Point** should be displayed.

The **Visual Alert** setting causes the gauge to change colour when the warning value is reached.

The **Ticker** and **Sub Ticker** settings apply to the classic gauge only. It specifies how many tickers the gauge should have.



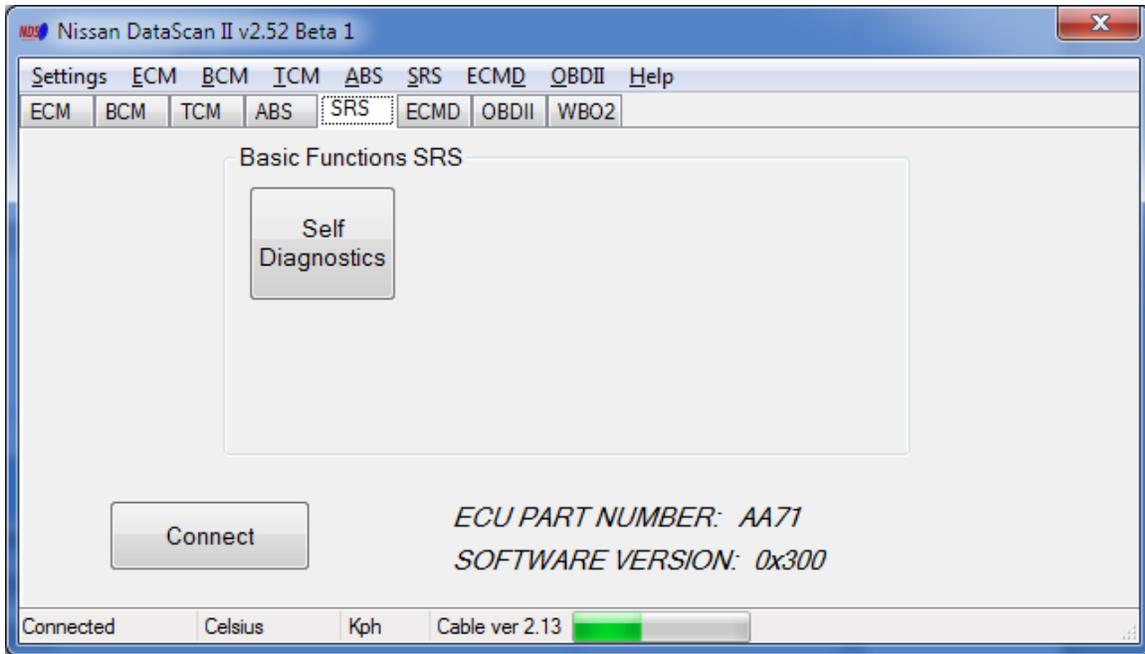
## 8. SRS functions

The NDSII software supports SRS diagnostics over the DDL2 communication line.

A lot of Nissan vehicles use DDL2 communication line for engine ECU (ECM) diagnostics but still use DDL1 communication line for SRS diagnostics. Those vehicles are not supported.

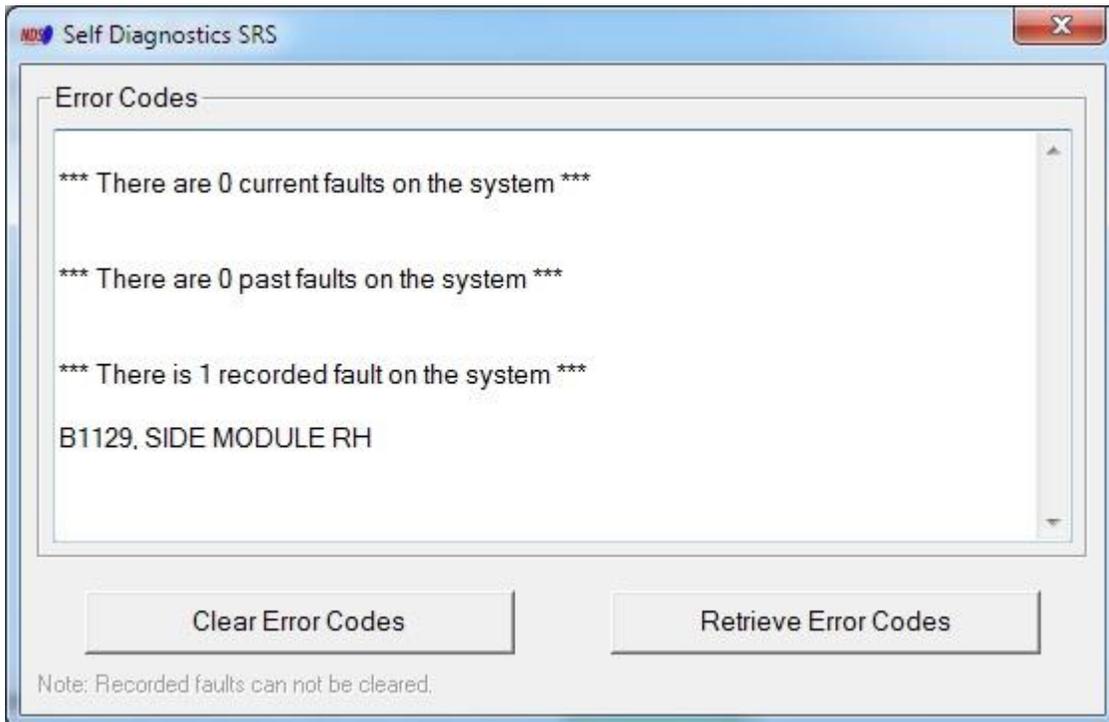
The Self Diagnostics function can be selected from the pull down menu at the top of the Main Screen or by clicking on the large Main screen button.

The progress bar at the bottom indicates data transfer between SRS ECU and PC. If the bar is not moving there is no data being received from the SRS ECU.



## 8.1 Self Diagnostics

The Self Diagnostics function reports any diagnostic codes present on the SRS ECU. It can also be used to clear the existing codes if the fault has been fixed.



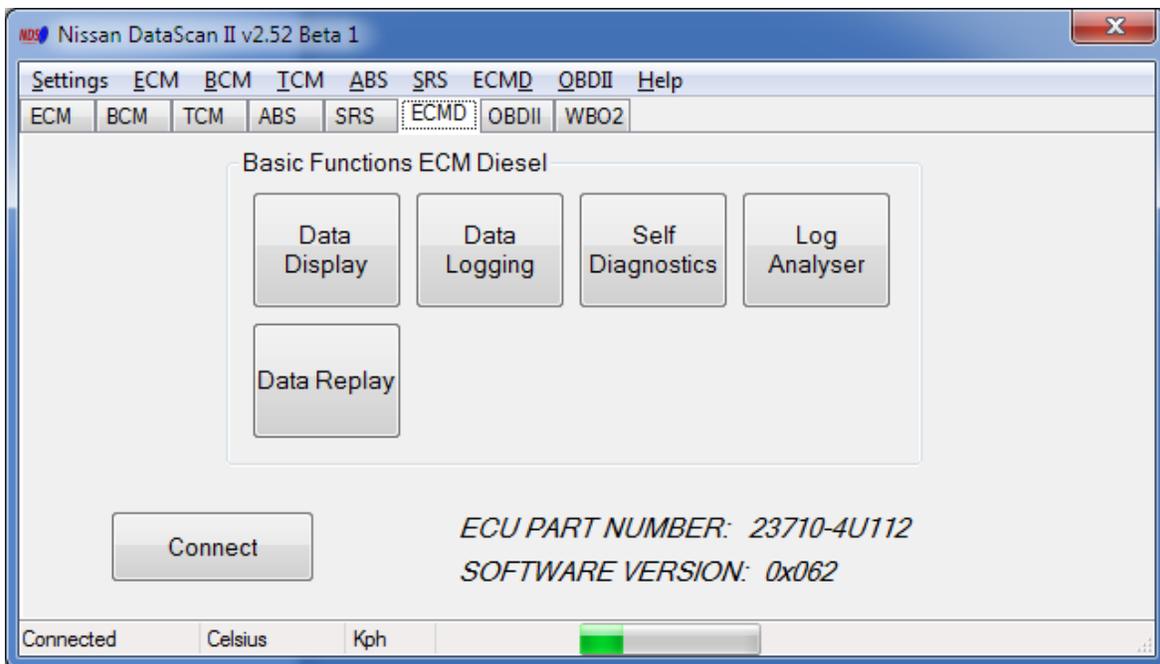
The **recorded faults** are historical and can not be cleared. Those faults have occurred in the past and have been fixed since. They could be as simple as a failure to reconnect a module or as serious as air bag deployment due to accident.

## 9. Diesel ECM (ECMD) functions

The NDSII software supports diesel ECM diagnostics over the DDL2 communication line.

The ECMD functions are used for diagnostics and general monitoring of the diesel ECM. They can be selected from the pull down menu at the top of the Main Screen or by clicking on the large Main screen buttons.

The progress bar at the bottom indicates data transfer between ECMD and PC. If the bar is not moving there is no data being received from the ECMD.



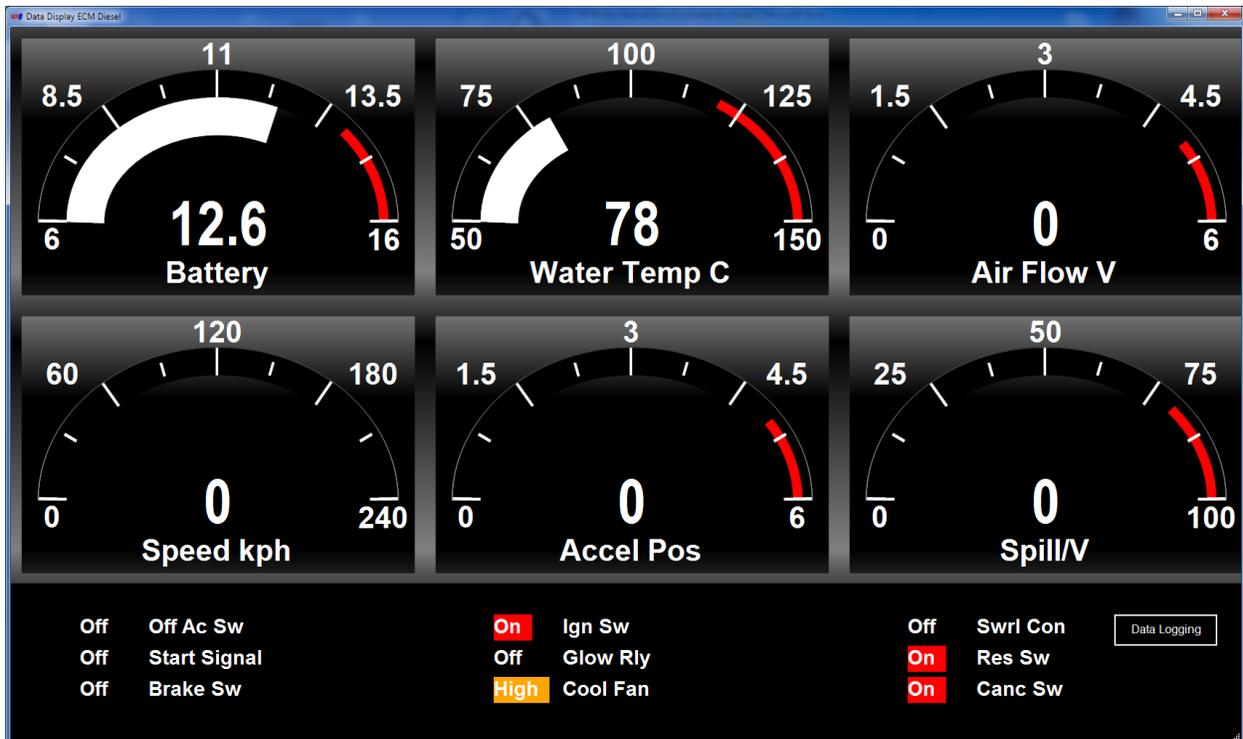
### 9.1 Data Display

The Data Display function uses 6 gauges and 9 registers to display real time information about the engine as measured or calculated by the ECM. Depending on preferences setting this window can use either Classic or Modern design gauges.

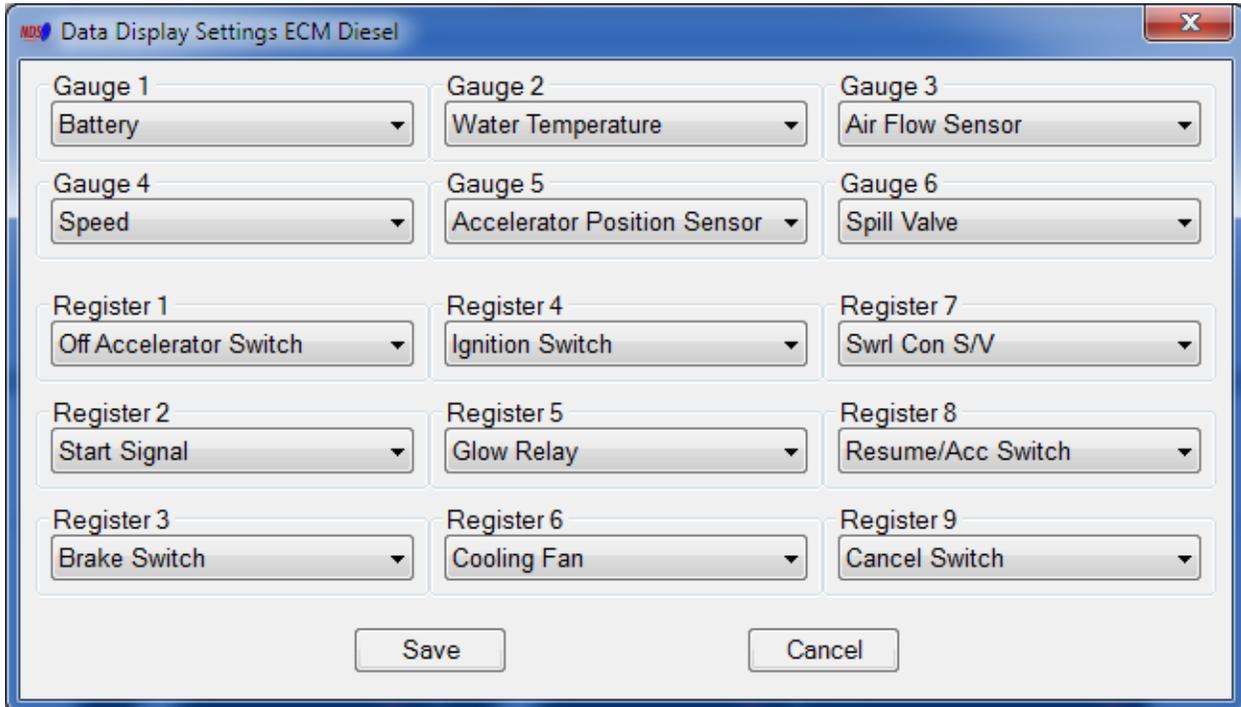
### Classic gauge design



### Modern gauge design



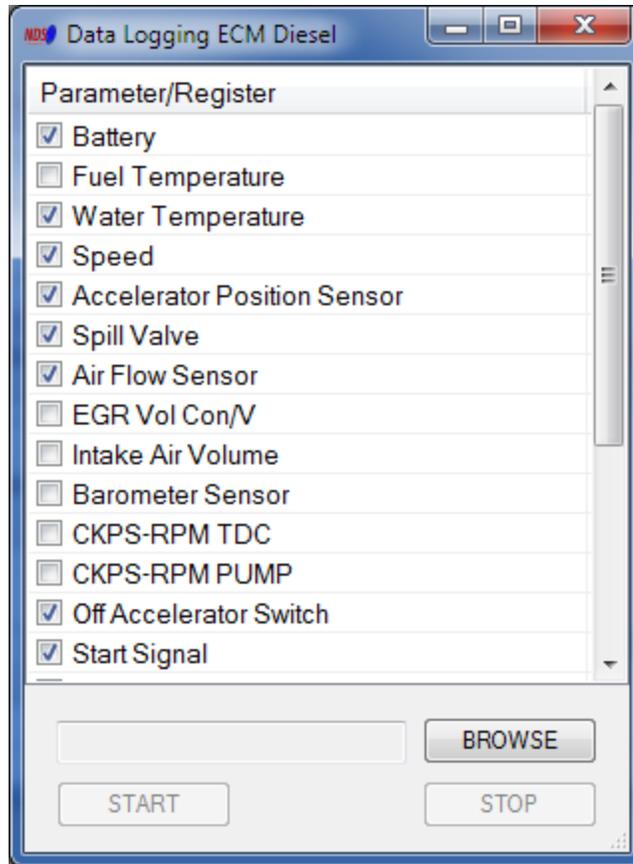
Parameters are assigned to gauges in the **Data Display Settings** window (*ECMD->Data Display Settings*).



## 9.2 Data Logging

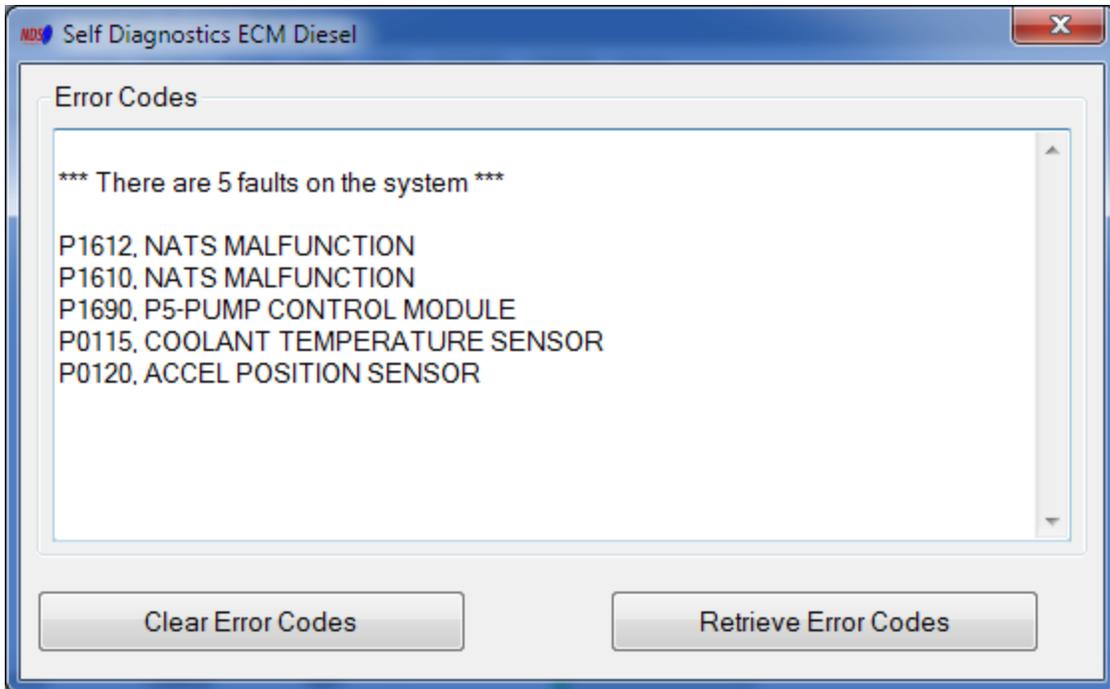
This function allows the user to select what ECMD parameters and registers are logged. It also provides options for the log file name and location. When the Start button is clicked, the chosen parameters are logged to a comma delimited text file. The log file can then be reviewed using Log Analyser function or Data Replay function. The file can also be opened in common spreadsheet software such as Excel.

The Data Logging function can also be accessed from the Data Display window. A higher update rate is achieved if the function is started from the Main window.



### 9.3 Self Diagnostics

The Self Diagnostics function reports any diagnostic codes present on the ECMD. It can also be used to clear the existing codes if the fault has been fixed.



## 9.4 Log Analyser

The Log Analyser provides the ability for the user to graph data logged with the Data Logging function. The graphical output is useful for evaluating the data in a more chronological fashion. Graphed logs can be evaluated for trends and compared for cause and effect determination.

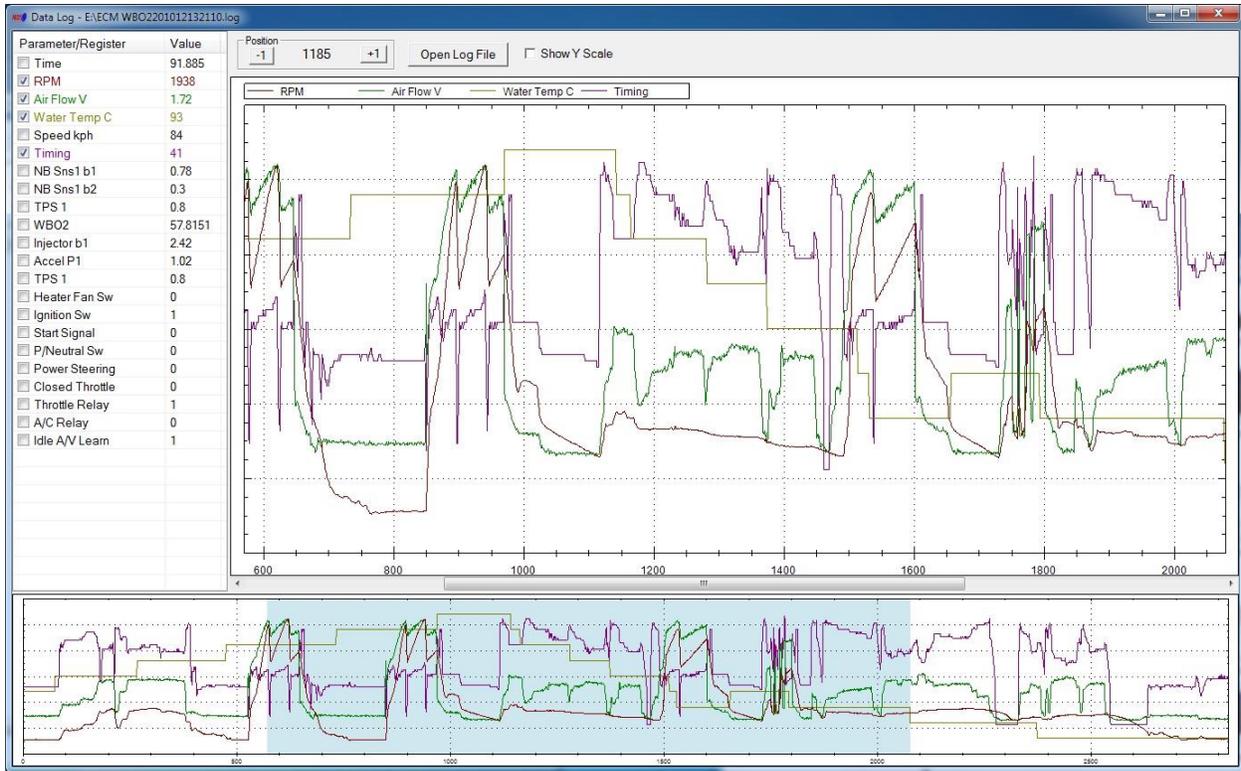
There are 2 designs available. The setting in Settings->Preferences determines which one is used.

### **Classic design**



The data to be graphed is displayed at the top. By checking the appropriate box the data can be graphed in either the top or bottom graph. Using this capability the logged parameters can be displayed in the most meaningful fashion. Using the **Position** buttons, values for discrete time points may be compared.

### Modern design



The data to be graphed is displayed on the left. By checking the appropriate box the data can be graphed. The colour of the graph matches the relevant data. Using the **Position** buttons, values for discrete time points may be compared.

Select the **Show Y Scale** option prior to selecting the parameter to display the vertical scale.

The highlighted area in the bottom window represents the currently graphed data in the main window.

## 9.5 Data Replay

Use the Data Replay function to “playback” a data log file collected using the Data Logging function. The playback can be run at real time or stepped through using the **Position** slider.

There are 2 gauge designs available. The setting in Settings->Preferences determines which one is used. Both perform exactly the same function.

### Classic gauge design

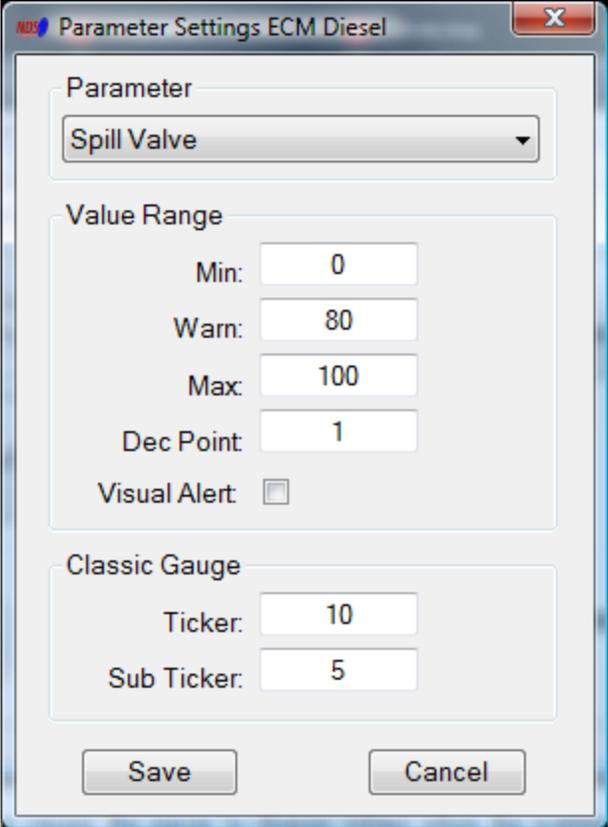


### Modern gauge design



## 9.6 Parameter Settings

The Parameter Settings function can be accessed through the main pull down menu, ECMD -> Parameter Settings. It is used for adjusting the value range for each individual parameter. It also defines the look of the Classic Gauge. It increases or decreases the resolution of the gauge.



The screenshot shows a dialog box titled "Parameter Settings ECM Diesel". It contains three main sections: "Parameter", "Value Range", and "Classic Gauge".

- Parameter:** A dropdown menu showing "Spill Valve".
- Value Range:** A group of input fields: "Min:" with value 0, "Warn:" with value 80, "Max:" with value 100, and "Dec Point:" with value 1. Below these is a "Visual Alert:" checkbox which is unchecked.
- Classic Gauge:** A group of input fields: "Ticker:" with value 10 and "Sub Ticker:" with value 5.

At the bottom of the dialog are two buttons: "Save" and "Cancel".

Select the **Parameter** from the drop down menu at the top. Enter the **Minimum**, **Warning** and **Maximum** values for the gauge. Enter how many digits after **Decimal Point** should be displayed.

The **Visual Alert** setting causes the gauge to change colour when the warning value is reached.

The **Ticker** and **Sub Ticker** settings apply to the classic gauge only. It specifies how many tickers the gauge should have.

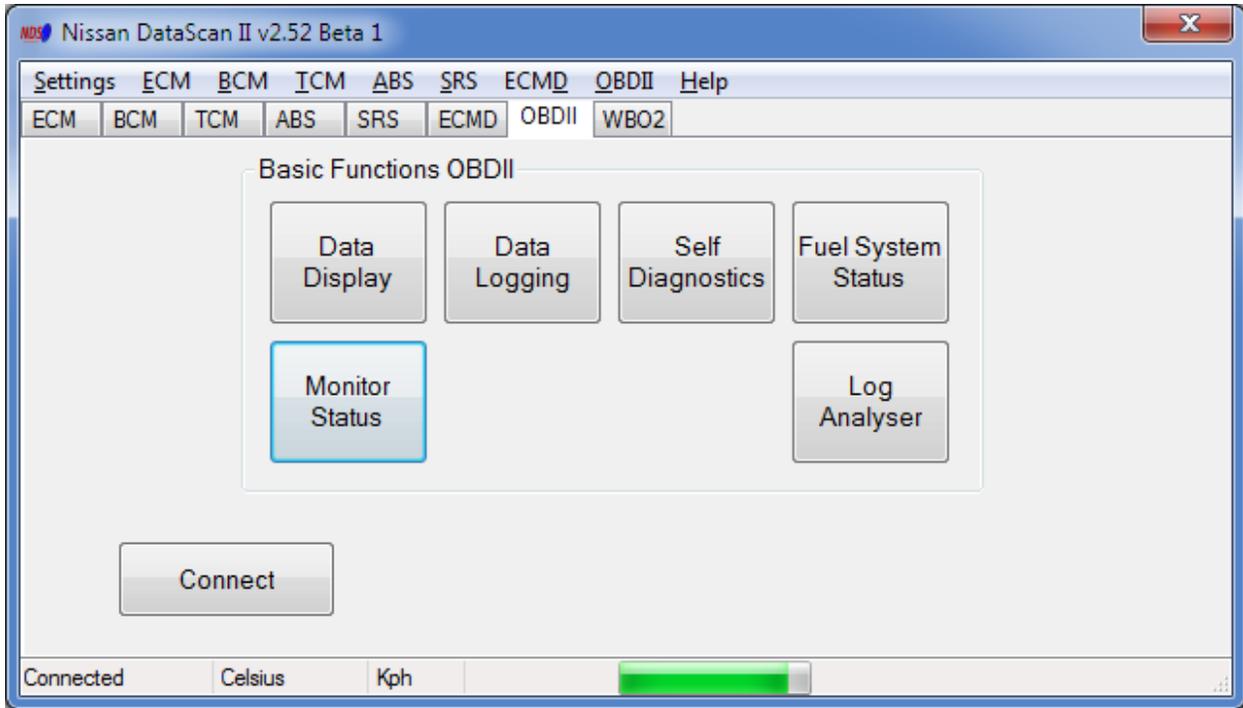


## 10. OBDII functions

The OBDII functions use ISO9141 protocol over the k-line to connect to the Engine Control Module (ECM). Not all Nissan/Infiniti cars equipped with the OBDII diagnostic connector support the OBDII ISO9141 protocol. The protocol has become a compliance requirement in North America but not in other regions. Most USDM models support the protocol but the JDM models don't.

The OBDII functions can be selected from the pull down menu at the top of the Main Screen or by clicking on the large Main screen buttons.

The progress bar at the bottom indicates data transfer between ECM and PC. If the bar is not moving there is no data being received from the ECM.



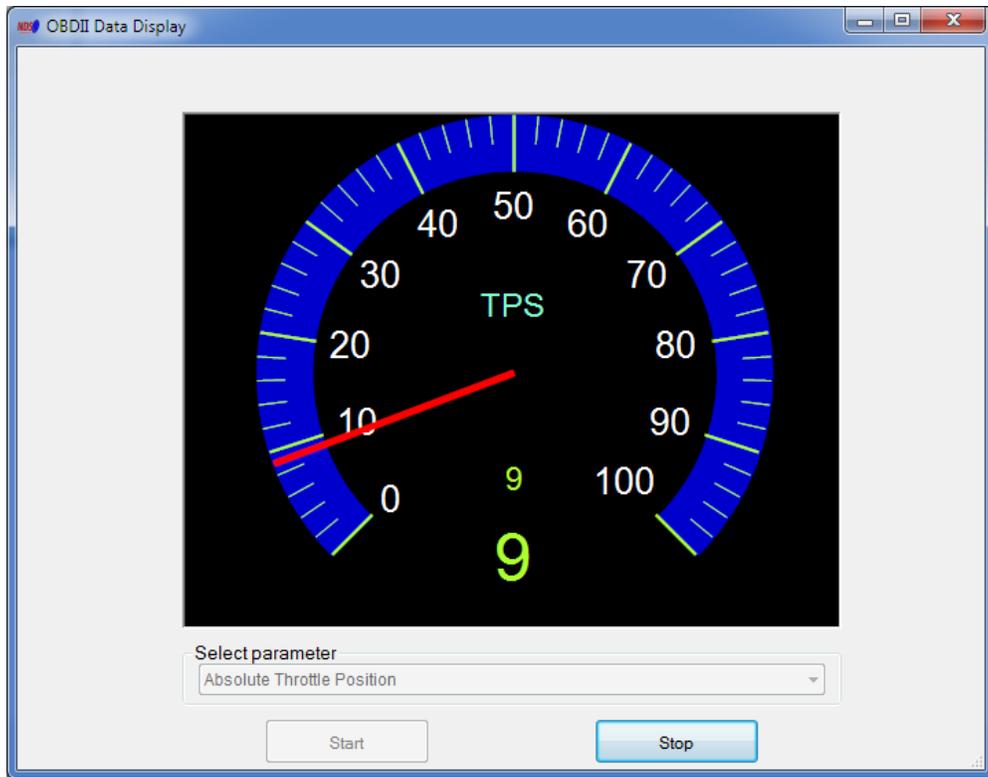
## 10.1 Data Display

The Data Display function uses 1 gauge to display real time information about the engine as measured or calculated by the engine ECM. Select parameter to be monitored from the drop down list. Click on the **Start** button to start monitoring. Click on the **Stop** button to stop monitoring. The monitoring has to be stopped before the parameter can be changed.

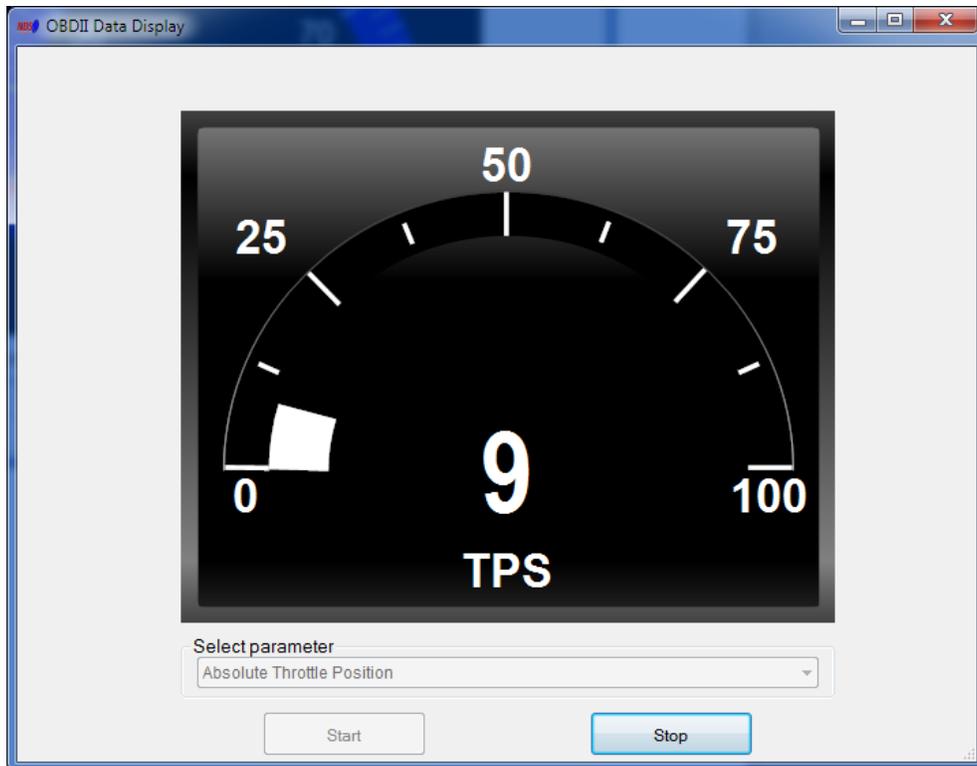
Only parameters that are supported by the ECM are listed.

Depending on preferences setting this window can use either Classic or Modern design gauge.

### Classic gauge design



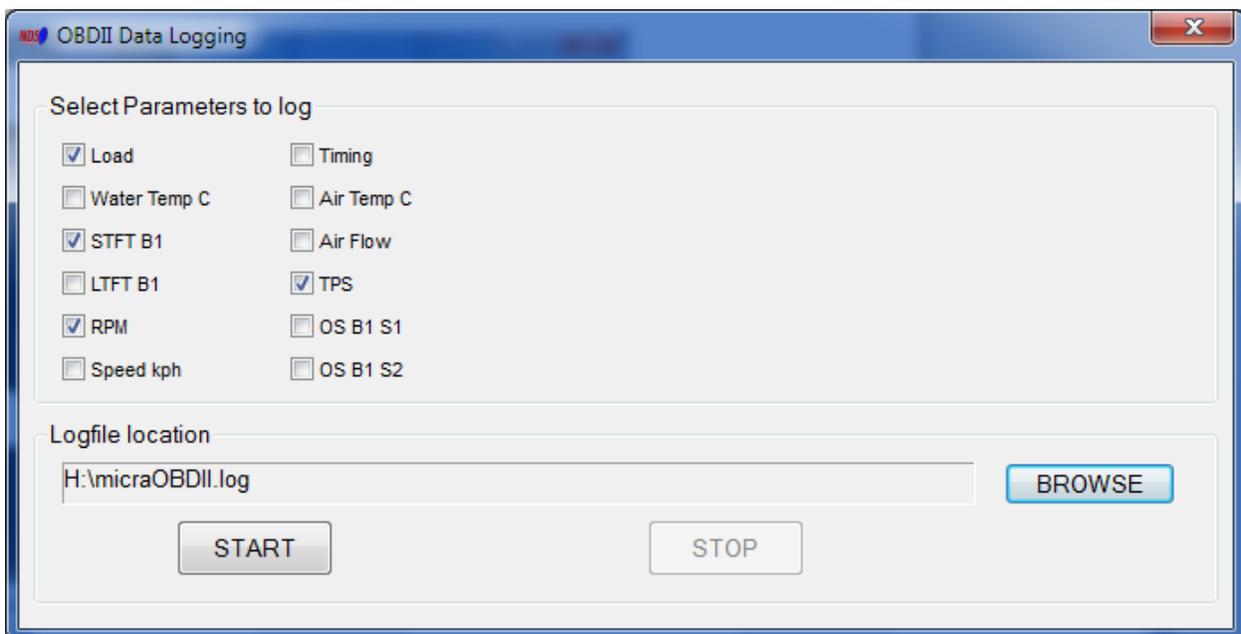
**Modern gauge design**



## 10.2 Data logging

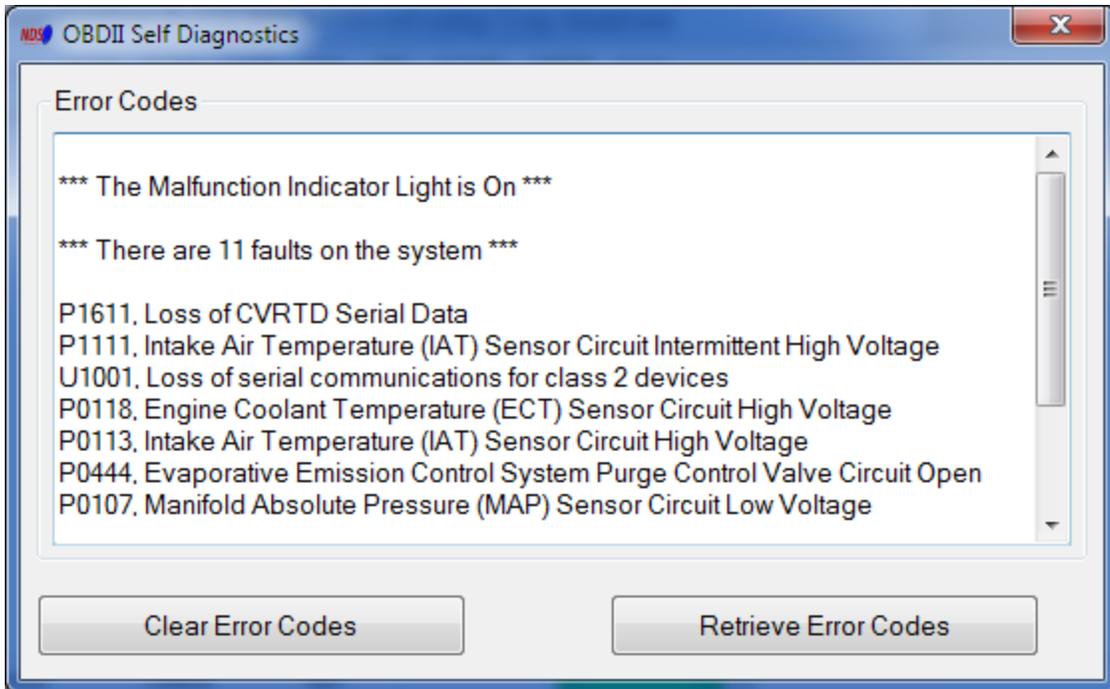
This function allows the user to select what OBDII parameters logged. It also provides options for the log file name and location. When the Start button is clicked, the chosen parameters are logged to a comma delimited text file. The log file can then be reviewed using Log Analyser function. The file can also be opened in common spreadsheet software such as Excel.

The OBDII protocol has a very slow update rate. It can only achieve around 3-4 single parameter updates per second. The more parameters selected the slower log file updates will be.



## 10.3 Self Diagnostics

The Self Diagnostics function reports any diagnostic codes present on the ECM. It can also be used to clear the existing codes if the fault has been fixed.

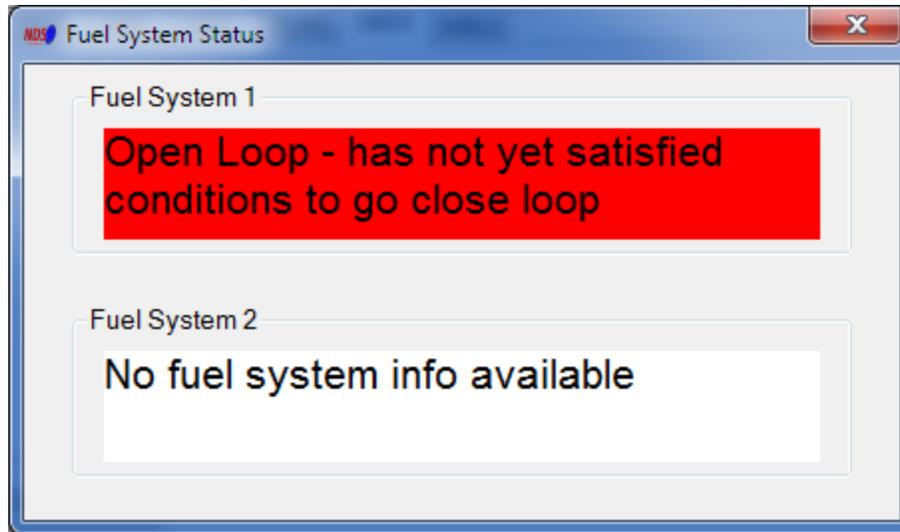


## 10.4 Fuel System Status

The Fuel System Status function displays the current fuel system state. The system can be in 5 different states:

- Open loop - has not yet satisfied conditions to go closed loop
- Closed loop - using oxygen sensor(s) as feedback for fuel control
- Open loop due to driving conditions (e.g., power enrichment, deceleration enrichment)
- Open loop - due to detected system fault
- Closed loop, but fault with at least one oxygen sensor - maybe using single oxygen sensor for fuel control

Fuel systems do not normally refer to injector banks. Fuel systems represent completely different fuel systems that can independently enter and exit closed loop fuel. Banks of injectors on a V-engine are generally not independent and share the same closed-loop enablement criteria.



## 10.5 Monitor Status

The Monitor Status function displays the supported monitors and the status of them since the DTCs were last cleared.

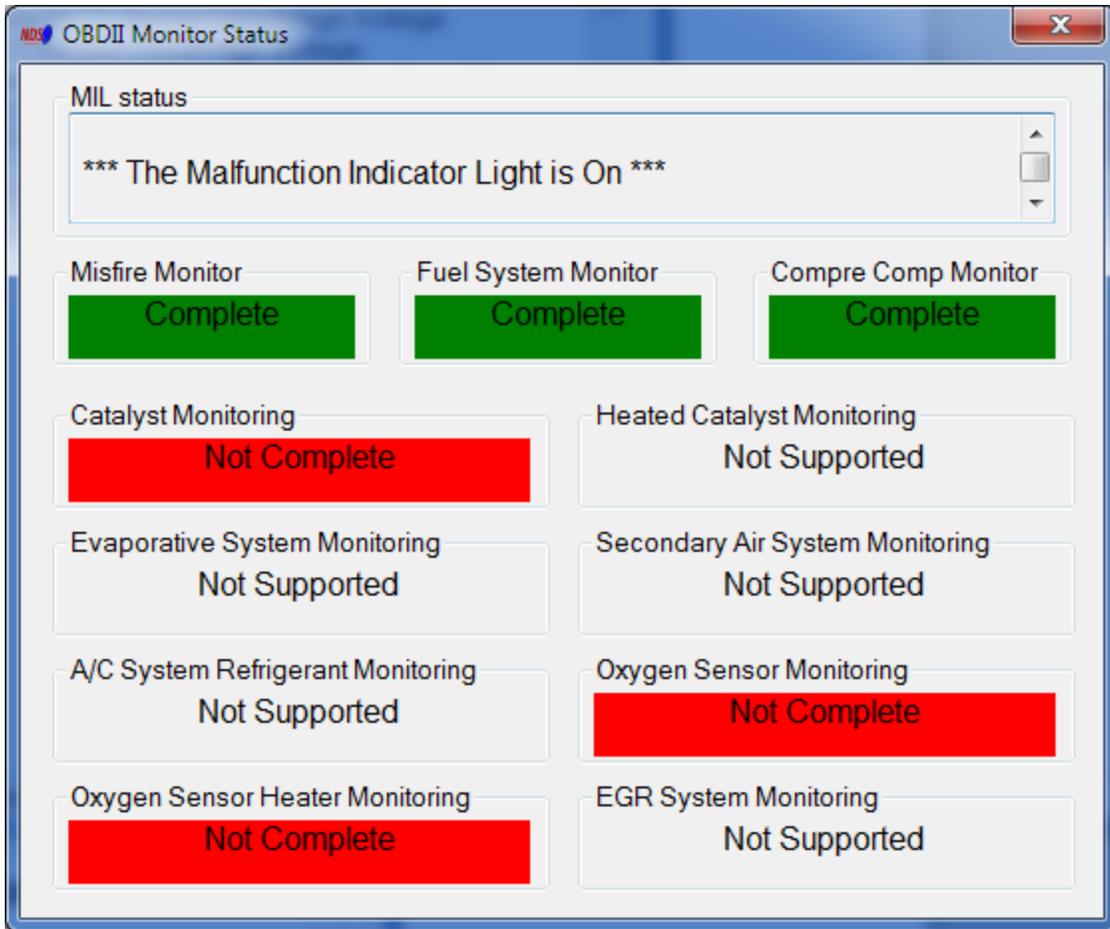
**Misfire Monitor** – supported on vehicles that utilise a misfire monitor. Spark ignition and compression

**Fuel System Monitor** – supported on vehicles that utilise oxygen sensors for closed loop fuel feedback control. Typically spark ignition engines.

**Comprehensive Component Monitor** – supported on spark ignition and compression ignition vehicles that utilise comprehensive component monitoring.

**Catalyst Monitoring, Heated Catalyst Monitoring, Evaporative System Monitoring, Secondary Air System Monitoring, A/C System Refrigerant Monitoring, Oxygen Sensor Monitoring, Oxygen Sensor Heater Monitoring, EGR System Monitoring** – status of tests run at least once per trip.

All supported monitors have to be in “Complete” state for the vehicle to pass the emissions test.

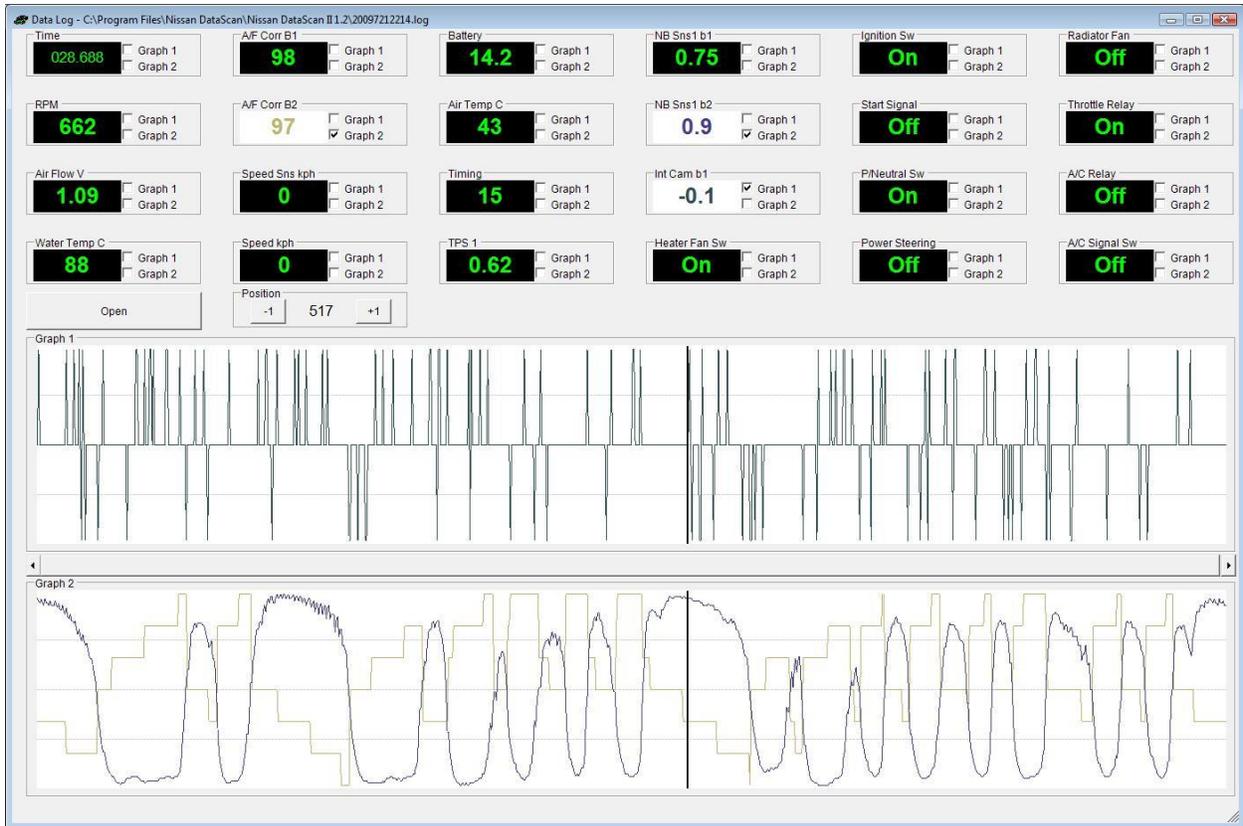


## 10.6 Log Analyser

The Log Analyser provides the ability for the user to graph data logged with the Data Logging function. The graphical output is useful for evaluating the data in a more chronological fashion. Graphed logs can be evaluated for trends and compared for cause and effect determination.

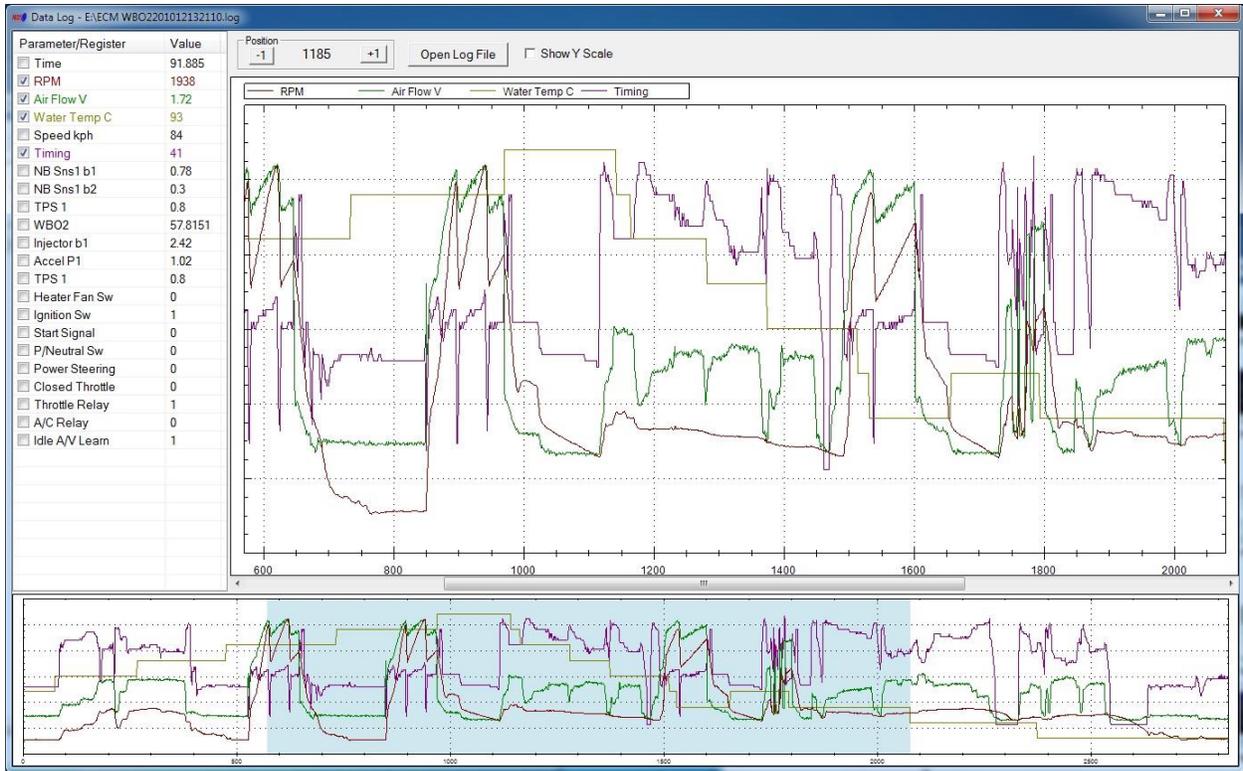
There are 2 designs available. The setting in Settings->Preferences determines which one is used.

### Classic design



The data to be graphed is displayed at the top. By checking the appropriate box the data can be graphed in either the top or bottom graph. Using this capability the logged parameters can be displayed in the most meaningful fashion. Using the **Position** buttons, values for discrete time points may be compared.

### Modern design



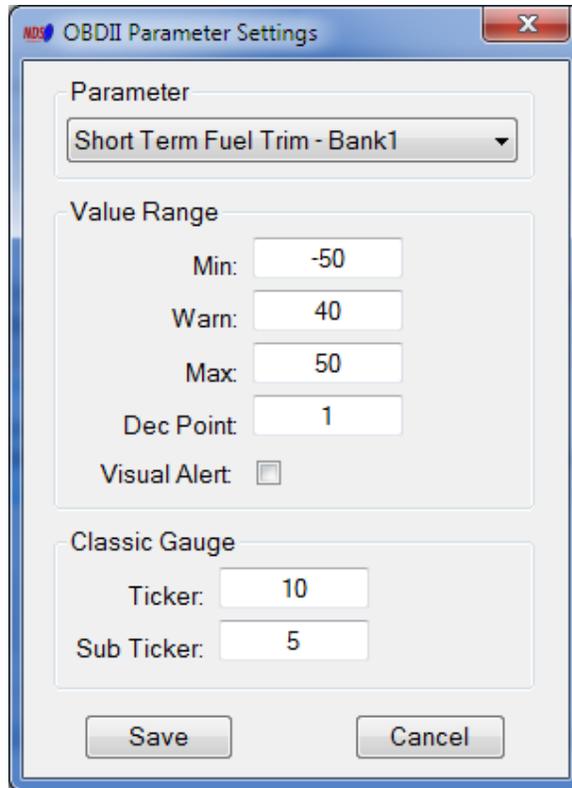
The data to be graphed is displayed on the left. By checking the appropriate box the data can be graphed. The colour of the graph matches the relevant data. Using the **Position** buttons, values for discrete time points may be compared.

Select the **Show Y Scale** option prior to selecting the parameter to display the vertical scale.

The highlighted area in the bottom window represents the currently graphed data in the main window.

## 10.7 Parameter Settings

The Parameter Settings function can be accessed through the main pull down menu, OBDII -> Parameter Settings. It is used for adjusting the value range for each individual parameter. It also defines the look of the Classic Gauge. It increases or decreases the resolution of the gauge.



Select the **Parameter** from the drop down menu at the top. Enter the **Minimum**, **Warning** and **Maximum** values for the gauge. Enter how many digits after **Decimal Point** should be displayed.

The **Visual Alert** setting causes the gauge to change colour when the warning value is reached.

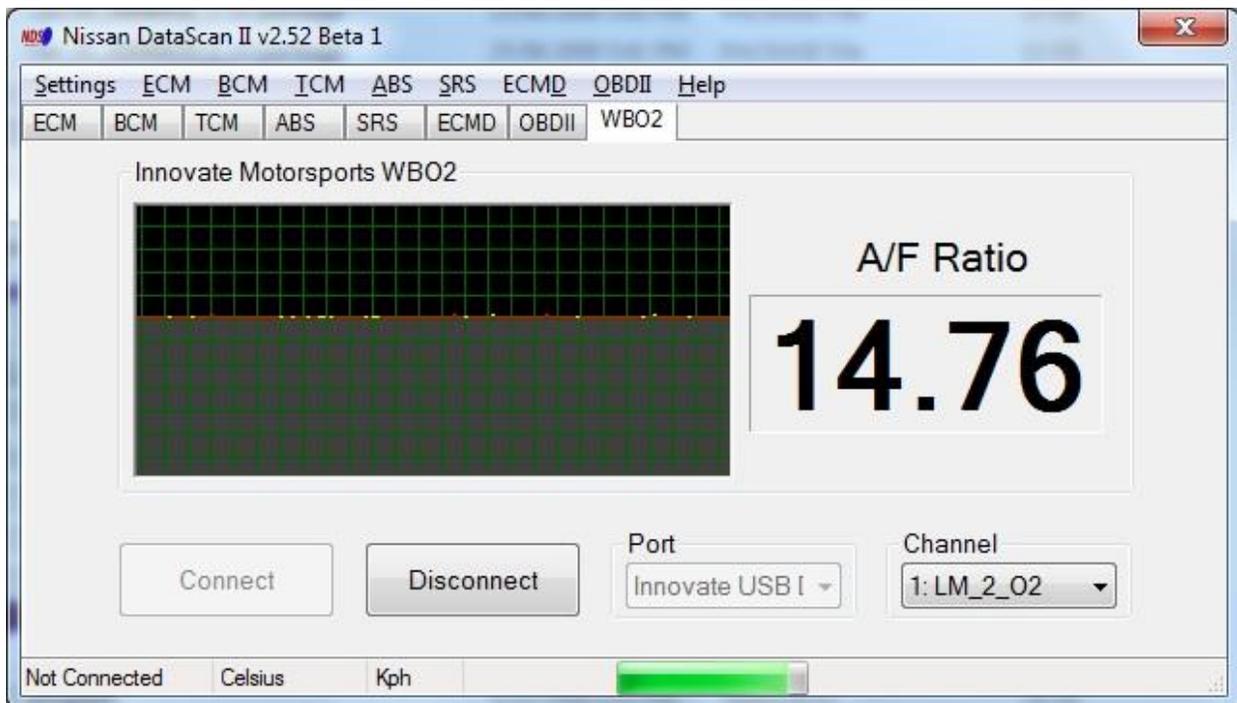
The **Ticker** and **Sub Ticker** settings apply to the classic gauge only. It specifies how many tickers the gauge should have.



## 11. WBO2

The Nissan DataScan II software supports Innovate Motorsports wideband meter. The WBO2 meter can be connected via a serial Com Port or USB cable.

Connect the wideband meter to the PC. Select the WBO2 tab on the main window. Select the Port and the Channel for the Air/Fuel ratio readout. Click the Connect button to start monitor the WBO2 meter. The Air/Fuel ratio is displayed in digital format as well as historical graph.



The data from WBO2 meter can also be displayed or logged in conjunction with other engine parameters. Assign the "Innovate WBO2" parameter to one of the gauges in the Data Display Settings window (*ECM->Data Display Settings*).



The air/fuel ratio from the WBO2 is then displayed along the other engine parameters using the Data Display function. The data can also be logged using the Data Logging function.



## Appendix A – ECM Parameters

**Please note: Not all parameters are available on every ECM.**

**Engine RPM** – engine Revolutions Per Minute. Unit: rpm.

**Air Flow Volts** – intake air flow measured by Air Flow Meter. Unit: Volts.

**Water Temperature** – engine coolant temperature. Unit: Celsius or Fahrenheit.

**Short Fuel Trim** – short term fuel trim. Fuel correction made by ECM to keep the engine running in closed loop mode. Unit: Percentage.

**Long Fuel Trim** – long term fuel trim. Fuel correction made by ECM based on the Oxygen sensor feedback. A well-tuned engine should be “pulling fuel” (i.e. <100). Unit: Percentage.

**Vehicle Speed Sensor** – speed sensor reading. Unit: KPH or MPH.

**Vehicle Speed** – vehicle speed used by ECM. Unit: KPH or MPH.

**Battery Voltage** – battery voltage read by ECM. Unit: Volts.

**Air Flow gm/s** – intake air flow calculated by ECM. Unit: gm/s.

**Fuel Tank Temperature** – temperature in fuel tank. Unit: Celsius or Fahrenheit.

**Intake Air Temperature** – temperature of intake air. Unit: Celsius or Fahrenheit.

**Calculated Load** – engine load calculated by ECM. Unit: Unknown.

**Idle RPM correction** – correction to Idle RPM. Unit: rpm.

**Ignition Timing** – ignition timing. Unit: Degrees BTDC.

**Accelerator Pedal Position 1** – position of accelerator pedal sensor 1. Unit: Volts.

**Accelerator Pedal Position 2** – position of accelerator pedal sensor 2. Unit: Volts.

**Injector Time b1** – calculated injector opening time for cylinder bank 1. Unit: Msec.

**Injector Time b2** – calculated injector opening time for cylinder bank 2. Unit: Msec.

**Throttle Position Sensor 1** – position of throttle sensor 1. Unit: Volts.

**Throttle Position Sensor 2** – position of throttle sensor 2. Unit: Volts.

**Ignition Timing Correction** – correction to idle ignition timing. Unit: Degrees.

**NB Sensor 1 bank 1** – narrow band oxygen sensor 1 for cylinder bank 1. Should be oscillating when engine running in closed loop. Unit: Volts.

**NB Sensor 1 bank 2** – narrow band oxygen sensor 1 for cylinder bank 2. Should be oscillating when engine running in closed loop. Unit: Volts.

**NB Sensor 2 bank 1** – narrow band oxygen sensor 2 for cylinder bank 1. Reading should be changing slower than the sensor 1. Unit: Volts.

**NB Sensor 2 bank 2** – narrow band oxygen sensor 2 for cylinder bank 2. Reading should be changing slower than the sensor 1. Unit: Volts

**WB Sensor bank 1** – wide band oxygen sensor for cylinder bank 1. Unit: Volts.

**WB Sensor bank 2** – wide band oxygen sensor for cylinder bank 2. Unit: Volts.

**Intake Camshaft Adv b1** – advance of intake camshaft for cylinder bank 1. Unit: Degrees.

**Intake Camshaft Adv b2** – advance of intake camshaft for cylinder bank 2. Unit: Degrees.

**Fuel Temperature** – temperature of fuel. Units: Celsius or Fahrenheit.

**Throttle Position Sensor 1b** – position of throttle sensor for cylinder bank 1. Unit: Volts.

**Throttle Position Sensor 2b** – position of throttle sensor for cylinder bank 2. Unit: Volts.

**Oil Temperature** – temperature of engine oil. Units: Celsius or Fahrenheit.

**Intake Camshaft Sol b1** – duty cycle of intake camshaft solenoid for cylinder bank 1. Unit: Percentage.

**Intake Camshaft Sol b1** – duty cycle of intake camshaft solenoid for cylinder bank 1. Unit: Percentage.

**A/F Alpha b1** – Air/Fuel base for cylinder bank 1. Otherwise known as short term fuel trim. Fuel correction made by ECM to keep the engine running in closed loop mode. Unit: Percentage.

**A/F Alpha b2** – Air/Fuel base for cylinder bank 2. Otherwise known as short term fuel base. Fuel correction made by ECM to keep the engine running in closed loop mode. Unit: Percentage.

**A/F Alpha b1 stored** – stored Air/Fuel base for cylinder bank 1. Otherwise known as long term fuel trim. Fuel correction made by ECM based on the Oxygen sensor feedback. A well-tuned engine should be “pulling fuel” (i.e. <100). Unit: Percentage.

**A/F Alpha b2 stored** – stored Air/Fuel base for cylinder bank 2. Otherwise known as long term fuel trim. Fuel correction made by ECM based on the Oxygen sensor feedback. A well-tuned engine should be “pulling fuel” (i.e. <100). Unit: Percentage.

**Purge Volume Control Valve** – EVAP Purge Volume Control Valve position. Unit: Percentage.

**Wide Band O2** – Air/Fuel ratio from wide band Oxygen sensor controller. Unit: Air/Fuel ratio.

**Base Fuel Schedule** – ECM calculated value representing engine load. Unit: Msec.

**A/C pressure** – Air Conditioning pressure sensor. Unit: Volts.

**I/P Pulley Speed** – input pulley speed. Unit: rpm.

**Fuel Level Sensor** – fuel level in fuel tank. Unit: Volts.

**EVAP system pressure** – pressure in EVAP system. Unit: Volts.

**Pos Count** – POS sensor trigger count. Used to measure cranking speed. Unit: Unknown.

**Fuel Pressure** – pressure in fuel supply system. Unit: MPa.