# User Guide

DiaLog-Quick Start

1– Introduction

The aim of this Quick Start Guide is to give you a quick introduction to using the DiaLog software to configure a Rebel Data Logger and analyse recorded data the Logger. It only covers the basic functionality in a very concise manner, for in depth coverage of the details please see the DiaLog User Manual.

2—Software

2.1—DiaLog Installation

To begin installation of the DiaLog software open the installer by running the set up file.
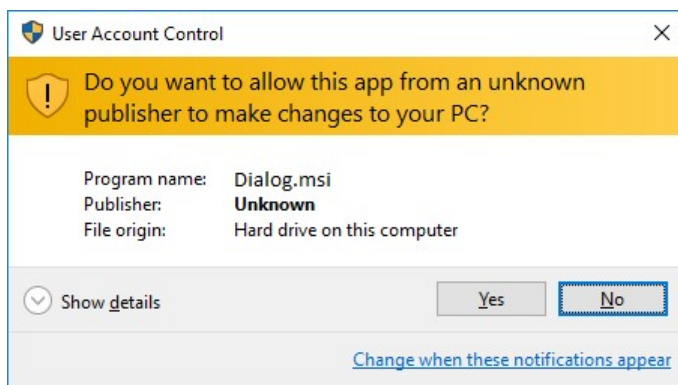
This is an in-built Windows security warning,

- To begin installation click 'Run'
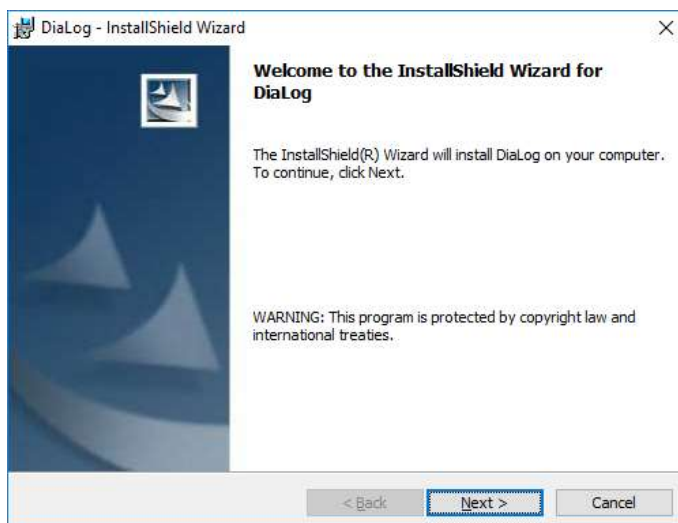
- To continue with the installation of DiaLog on your system click 'Next'.
- To cancel the installation at this stage click 'Cancel'. (No software will have been installed on the system at this point.)

- Please Read the licence agreement carefully.
- Once you understand and accept the licence agreement please click 'I accept the terms in the licence agreement' to be able to continue with the installation of DiaLog. If you do not accept the terms please click 'Cancel' to stop the installation at this point.
- Click 'Next' to continue the installation process.
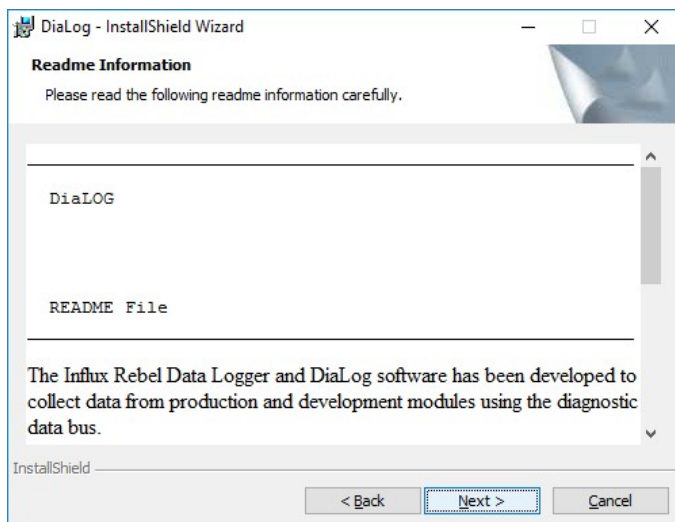
- A summary of the installation information, stating the default installation location and the user details.
- Click 'Next' to commence the installation.
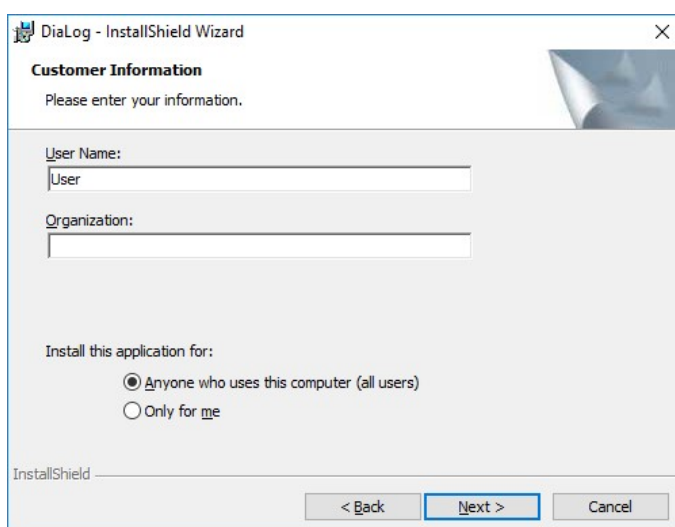
- Complete the 'User Name' and 'Organisation' fields appropriately.
- Select the preference for computer user installation, to determine which computer users will have access to the DiaLog software.
- Click 'Next' to continue with the installation.
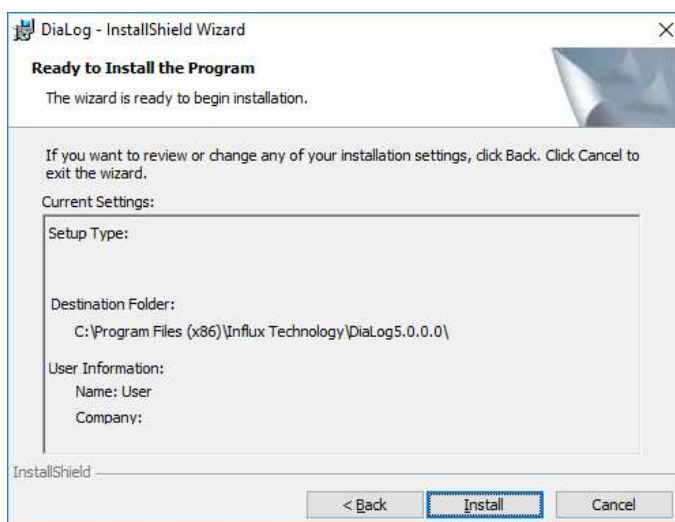
- Please review the 'Readme' information.
- Once ready, click 'Next' to continue with the installation
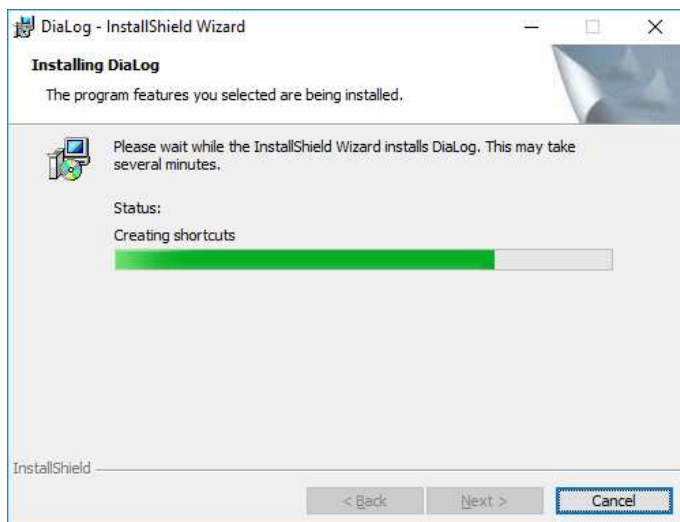
- Installation has commenced and may take some time to complete.
- Do not restart your computer during the installation process.
- To stop the installation at this point click 'Cancel'. (This may result in a fragmented version of the software on the system.)

2.2—Rebel Drivers Installation

Once DiaLog has been successfully installed, the Rebel drivers must be correctly installed to ensure the Rebel functions correctly.

DiaLog installation automatically contains a driver installation application, which can be found in the Influx Technology folder of the Start Menu as shown below.
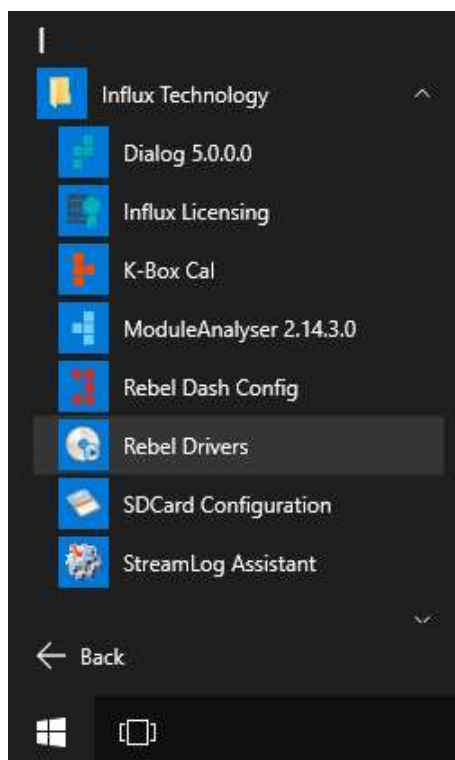
Ensure the Rebel is not plugged in and click 'Next' to continue.

Please read and accept the EULA, then click next to continue.
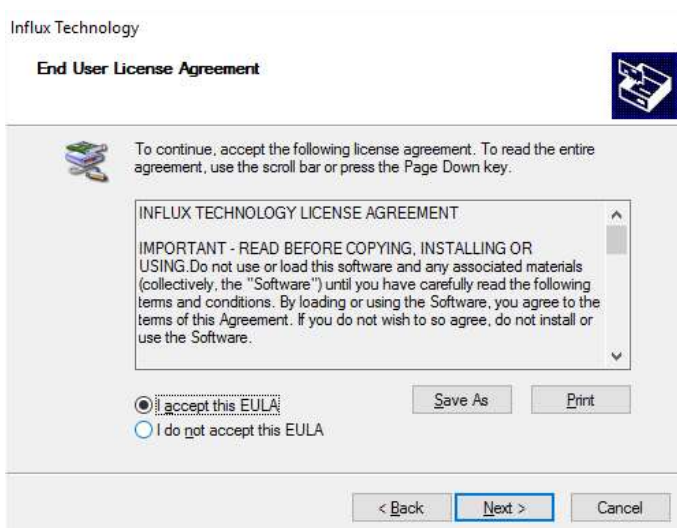
The driver installation will begin and may take a few moments.
Once the installation is complete, click 'Finish' to close the application.

Plug in the Rebel to allow the drivers to be recognised.

2.3—Software Introduction

2.3.1—Graphical Overview

DiaLog is accessed using either the desktop icon:

or the 'Start Menu' directory—'All Programs\Influx Technology'.

Once started the user is presented with the following opening screen:
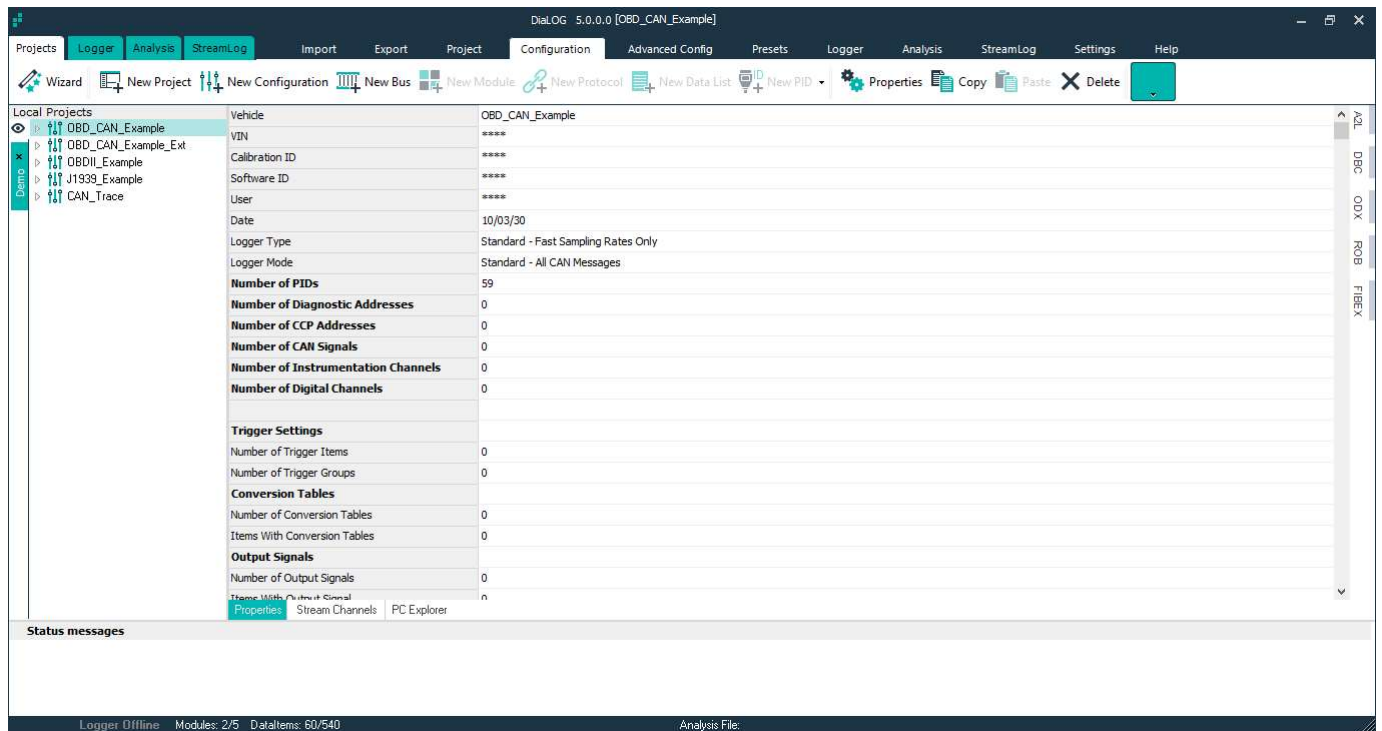
2.3.2—Database Panel

The 'Database' panel is located on the left-hand side of the application and is used to control the main functionality of the software. The main features are grouped into three (four including StreamLog) sections, navigated by the tabs found at the Top of the Application. The main tabs can be seen below.
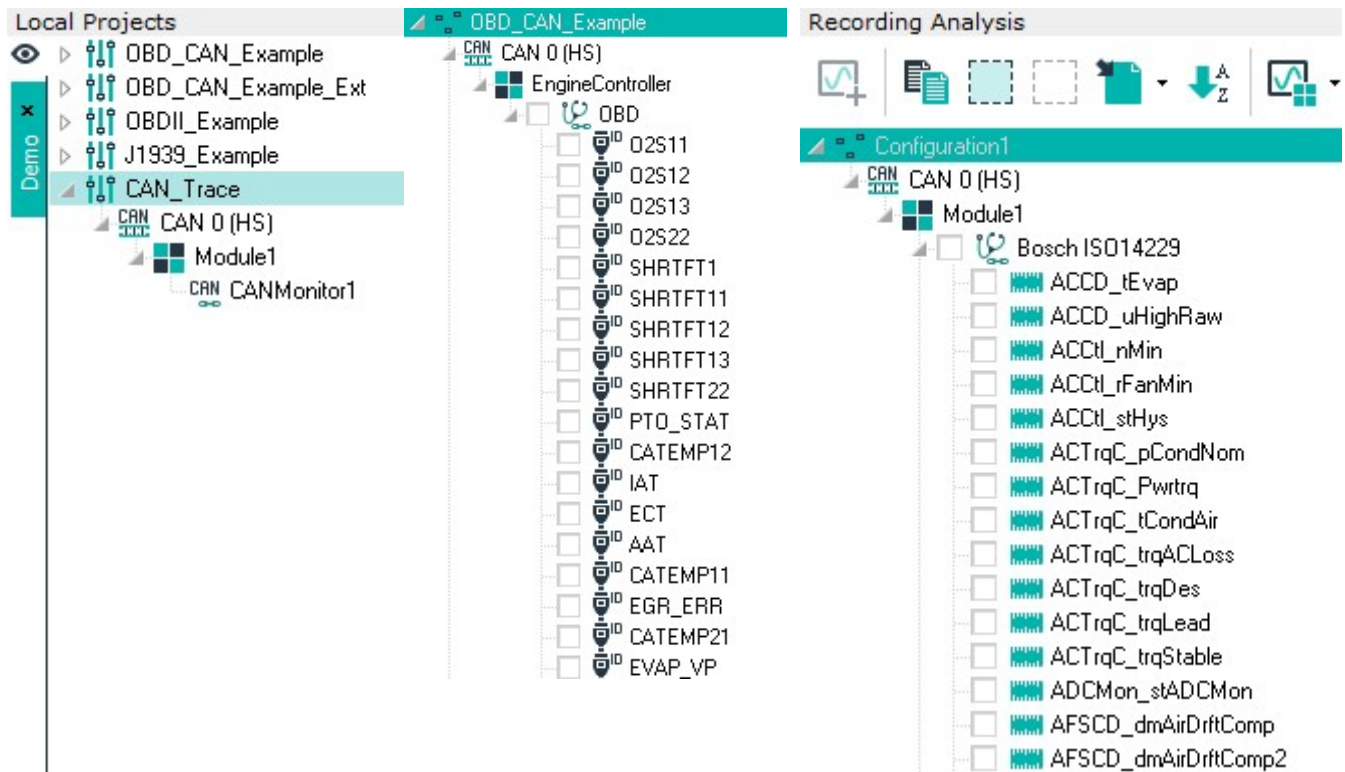
Local Projects

The 'Projects' tab is used to create and administer the configurations for every data logging application.

Logger Structure

The 'Logger' tab becomes active when a data logger is connected to the computer. It then displays the current configuration of the data logger and provides a number of Rebel data logger settings and features.

Recording Analysis

The 'Analysis' tab contains the data handling and analysis features incorporated within DiaLog.

2.3.3—Navigation Bar

The 'Navigation Bar' is situated at the top of the software screen and can be used to navigate to the majority of the program features, the features presented depend menu option selected and configuration e.g. Logger Online.

2.2.3.1—Navigation Bar – Configuration Menu

- Wizard—Allows for rapid wizard assisted configuration of the Data Logger
- New Project—Allows new Projects to be created to contain configuration
- New Bus—Allows the user to create a new 'Bus' item
- New Module—Allows the user to create a new 'Module' item
- New Protocol—Allows the user to create a new 'Protocol' item
- New Data List—Allows a new 'Data List' DAQ List or Polled List to be created.
- New PID—Allows the user to manually create a new Periodic Identifier
- Properties—Allows the user to edit the properties of the selected item
- Copy—Allows the user to Copy the selected item(s)
- Paste—Allows the user to paste the copied item(s)
- Delete—Allows the user to Delete the selected item(s)

2.2.3.2—Navigation Bar – Advanced Configuration Menu

- New/Edit Triggers—Allows Triggers to be added to a configuration to enable the Logger to be reactive to events
- New/Edit Output Signal—Allows Messages to be created to output to Control Units, Instrumentation, Displays or other tools
- New/Edit Conversion Table—Allows look up tables to be created to allow non-linear sensors to be calibrated to show true input values
- Configuration Report—Allows a user to generate a report that Details some or all of the following information:
- Vehicle Information, Triggers, Bus and Protocol Information, PIDs, Diagnostic Addresses, CCP Addresses, Event Lists, CAN Signals, Instrumentation Channels and Digital Channels

2.2.3.3—Navigation Bar – Project Menu
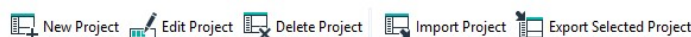
- New Project—Allows new Projects to be created to contain configuration
- Edit Project—Allows a Projects name to be changed
- Edit Project—Allows a Project to be deleted
- Import Project—Allows a Project to be imported into the database
- Export Selected Project—Allows a Project to be exported to a *.dpv file

NOTE: Projects May also be hidden using the X on the projects tab on the very left of Dialog, this will not Delete the Project, it will simply hide it can be unhidden using the 👁 button

2.2.3.4—Navigation Bar – Import Menu

- Import Configuration—Allows a configuration to be imported into the selected Project
- Allows Recorded Data—Allows Data to be opened for Analysis or Export
- Import Project—Allows a Project to be imported into the database
- Load A2L—Allows the user to import an .A2L file into DiaLog and automatically opens the 'ASAP Item Selection' panel
- Load DBC—Allows the user to import a .DBC file into DiaLog and automatically opens the 'DBC Item Selection' panel
- Load ODX—Allows the user to import an .ODX file into DiaLog and automatically opens the 'ODX Item Selection' panel
- Load ROB—Allows the user to import a .ROB file into DiaLog and automatically opens the 'ROB Item Selection' panel
- Load FIBEX—Allows the user to import a FIBEX file into DiaLog and automatically opens the 'FIBEX Item Selection' panel

2.2.3.5—Navigation Bar – Export Menu
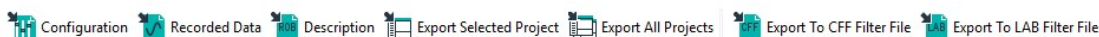
- Export Configuration—Allows a configuration to be exported
- Export Recorded Data—Allows Data to be saved as an *.ivd file
- Export Description—Allows Data Item Descriptions to be exported in *.rob file format.
- Export CFF—Export to *.cff file format.
- Export LAB—Export to *.lab file format.

2.2.3.6—Navigation Bar – Presets Menu

- Edit PID Presets—Allows On-board diagnostics Parameter IDs and Diagnostic Trouble Codes presets to be edited.
- Edit J1939 Presets—Allows the J1939 Diagnostic Trouble Codes presets to be edited
- Table/Formula Library—Formula Library—Opens the 'Conversion Methods Library'
- Show DBC Editor—Opens the in-built DBC file editor

2.2.3.7—Navigation Bar – Logger Menu

- Refresh Device Structure—Loads the active configuration resident in the Logger
- Send Configuration to the Logger—Sends the selected configuration to the Logger and activates it.
- Start—Starts the Logger if logging has been stopped
- Stop—Stops the Logger if it is recording
- Set Time—Set the real time clock in the Logger
- Settings—Find information about the Hardware, Set WiFi and GPRS settings
- Reflash—Update Logger firmware and get diagnostics information

2.2.3.8—Navigation Bar – Analysis Menu

- Add To Chart—Add Data Item to the Oscilloscope
- Show Scope—Show the Oscilloscope
- Backup IVD File—Allows backup of IVD files
- Batch Processing—Allows the user to export multiple data files to a number of alternative formats
- Merge IVD Files—Allows the user to select multiple .IVD files to be merged into a single 'Data File'
- Oscilloscope settings—Opens the 'Oscilloscope settings' window

2.2.3.9—Navigation Bar – StreamLog Menu

- StreamLog—Show the Remote Database Server
- StreamLog Settings—Set the Address and Password for the StreamLog Server

2.2.3.10—Navigation Bar – Settings Menu

- Options—Set the General Options for DiaLog
- Oscilloscope settings—Opens the 'Oscilloscope settings' window
- Logger Communication—Set the Interface you wish to communicate with the Logger on
- StreamLog Settings—Set the Address and Password for the StreamLog Server

2.3.5—Main Panel

The 'Main' panel of the software window is multi-functional and has a number of display modes:

'Properties' - Displays the properties/summary for the selected item in the 'Database' panel.
'Data Items' - Lists all the 'Data Items' present on a particular 'Protocol'
'Stream Data' - Lists the 'Data Items' selected for constant transmission to the server. (StreamLog functionality for customers only, see StreamLog manual.)
'Live Data' - Oscilloscope function for data currently being logged by the Logger.

The default setting for this panel displays the properties of the selected item in the 'Database' panel and can be seen below.

Vehicle	OBDII_Example
VIN	****
Calibration ID	****
Software ID	****
User	****
Date	17/06/14
Logger Type	Standard - Fast Sampling Rates Only
Logger Mode	Standard - All CAN Messages
Number of PIDs	59
Number of Diagnostic Addresses	0
Number of CCP Addresses	0
Number of CAN Signals	0
Number of Instrumentation Channels	0
Number of Digital Channels	0
Trigger Settings	
Number of Trigger Items	0
Number of Trigger Groups	0
Conversion Tables	
Number of Conversion Tables	0
Items With Conversion Tables	0
Output Signals	
Number of Output Signals	0
Items With Output Signal	0

Properties | Stream Channels | PC Explorer

3—Connecting to Rebel Data Logger

The first step in configuring a Rebel Data Logger is to establish a connection between the Rebel data logger and DiaLog, later this connection can be used to transfer data and view live data.

The main interface between a Rebel and DiaLog is via a USB connection. The USB port may be located behind the protective flap on the end of data logger in this case, you will need to press firmly on the centre of hinge to release flap.

There are two states in which the Rebel can communicate via USB:
Limited Mode—In this state the Rebel is powered only by the USB connection. This allows quick and simple communication with the logger when a power source is not available. In this mode the user can retrieve data via USB and send new 'Configuration Structures' to the logger. The logger may have limited capability until fully powered up.
Full Powered—To achieve this state correctly the logger must powered via the Vehicle connection and also connected to a transmitting CAN bus to ensure it is fully awake. In this mode all functionality is available. When a 'Configuration Structure' is sent to the logger, in this state the Rebel will immediately reconfigure.

Once the required logger state has been chosen the Rebel can be connected to the computer.

1. Using the USB cable supplied, connect the Rebel to your computer's USB port.
2. DiaLog will automatically recognise the Rebel.
3. Once DiaLog has recognised the Rebel it will confirm the connection.

⊷ Logger Online	Modules: 2/5	DataItems: 60/540	Analysis File: C:\...\Configuration1_RBLC100_20151110_142157.IVD

4—Logger Configuration

The 'Local Projects' panel is where configurations for data logging tasks are stored/selected and created. The 'Local Projects' panel allows the user to create a variety of complex configurations to facilitate any data logging application.
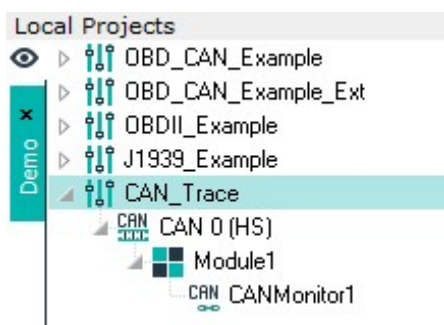
A structure is composed of a number of different components. These are: 'Configuration', 'Bus', 'Module', 'Protocol' and the 'Data Items' - more detail on each can be found in the Dialog User Manual. Once a 'Configuration Structure' has been completed it is stored by the software as an .IVS file. The .IVS file is then sent to the Rebel data logger which is used to configure it for the required task.

DiaLog also comes with pre loaded configurations so you can get started even quicker, or you can create your own:

4.1—Pre loaded Configurations

When DiaLog is installed a number of pre created 'configuration Structures' are already set up T
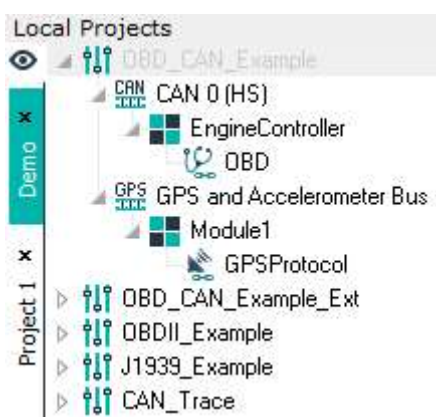
The OBD_CAN_Example - OBD legislative variables are acquired using the Mode 0x01 (GPS and Accelerometer data is also acquired if supported).

The OBD_CAN_Example_Ext - OBD legislative variables are acquired using the Mode 0x01 on Extended CAN Identifers (+GPS and Accelerometer data).

The OBDII_Example - Variables are acquired using Keyword 2000 (GPS and Accelerometer data is also acquired if supported).

The J1939_Example - Variables are acquired using J1939, this is the standard protocol used on trucks.

CAN_Trace – All signals on the CAN bus are logged.

4.1.1 OBD_CAN_Examples

The pre-loaded 'OBD_CAN_Example' and 'OBD_CAN_Example_Ext' ' 'Configuration Structures' are designed to collect the emissions related powertrain data from any module which complies with the OBD legislative requirements using the Mode 0x01—Powertrain Diagnostic Data service
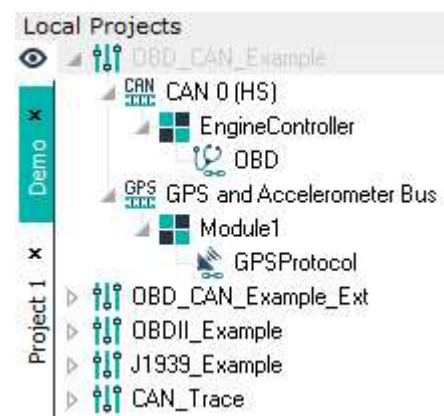
As can be seen from the structure it is configured to collect the data using the High-Speed CAN bus. The structure also utilises the ISO 14229 diagnostic protocol standards to make it universally applicable to any compatible modules

The structure contains a number of generic Periodic Data Identifiers (PIDs), which can be seen in the 'Data Items' tab of the 'Main' panel.
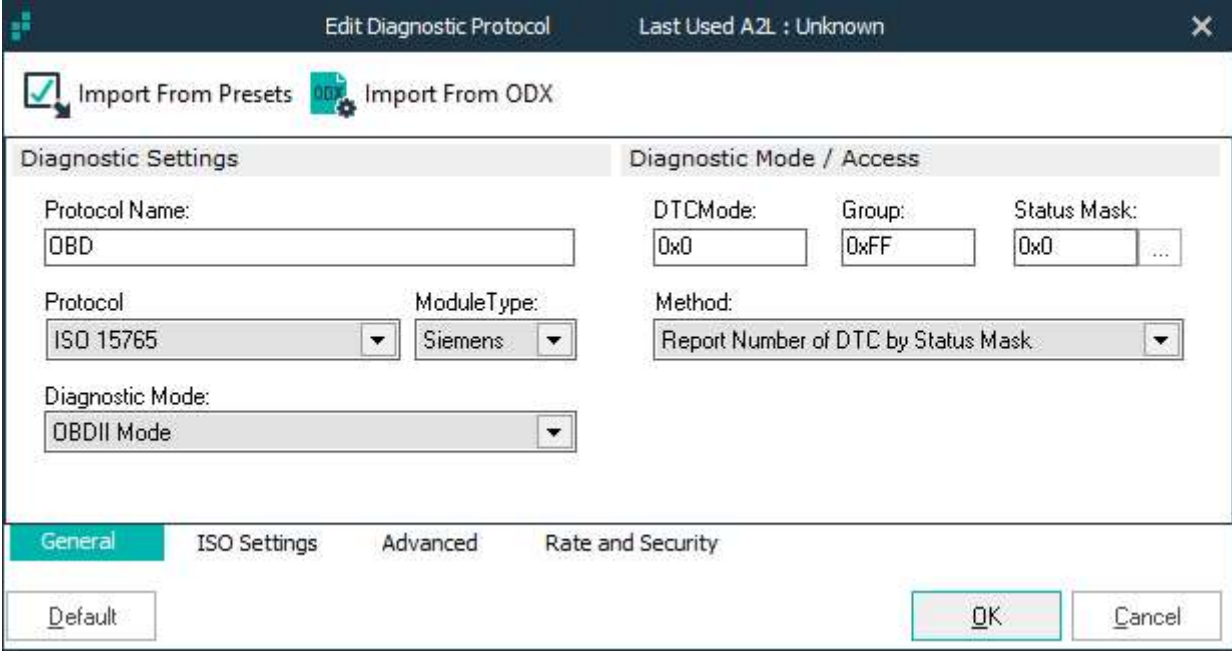
The Rebel will attempt to log the data for all of the PIDs. However, each module is different and may only support a subset of the data items. Any unsupported items will simply not be logged, without effecting the successful data logging of the remaining items. The 'Data Items' tab can be seen below with the pre-loaded PIDs.

The 'Configuration Structure' is configured to a generic 'OBDII' setting designed to work on the majority of OBD compliant vehicles. However, the structure can be manually configured for the specific module to be data logged to ensure success. In this case the module manufacturer should be identified and the appropriate settings chosen. To do this the 'Protocol' must be edited and this can be seen below.

To edit the 'Protocol' in this case called 'OBD', highlight the 'Protocol' and use the 'right click' menu shown below.
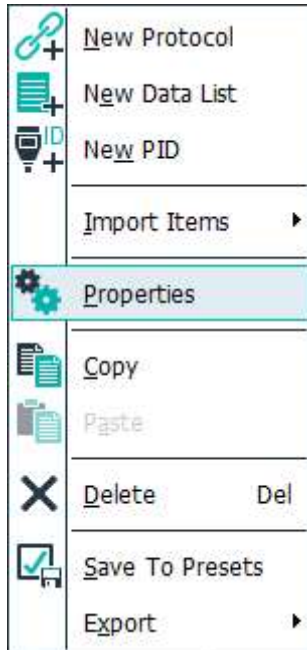
The 'Properties' menu opens 'Edit Diagnostic Protocol' window as shown below.


The window contains a number of different settings, however, here we are concerned with the 'Module Type' and 'Protocol' settings. These allow the selection of the module manufacturer and the required 'CAN Protocol' from drop-down menus. Once the required settings have been chosen click 'OK' to confirm the changes and close the window.

The 'Configuration Structure' is now ready for use.

4.1.2 J1939 Example

The 'J1939_Example' 'Configuration Structure' which comes pre-loaded in the 'Demo' project is designed to collect a sample set of the J1939 broadcast CAN data available on any J1939 bus.
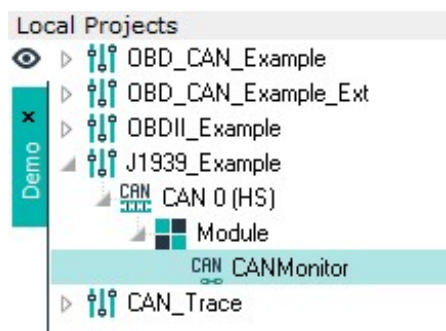
The structure utilises the 'CAN Monitor' protocol to listen to and capture specific signals from the bus.

The structure is loaded with a sample set of signals, designed to demonstrate the ability to record J1939 data. Each J1939 bus is unique may not support every signal. A large array of further signals are also available from the bus and these can be added using a suitable DBC file

The J1939 signal items loaded in the structure can be seen in the 'Items' panel as shown below.

No.	Stream	Label	Units	Rx Ident	Message Name	Start Bit	Bit Cou
1	No		L			0	32
2	No		L			32	32
3	No		km/hr			48	16
4	No		km/h			0	8
5	No		km/h			48	16
6	No		rpm			32	16
7	No					30	2
8	No					14	2
9	No					6	2
10	No		%			56	8
11	No					48	4
12	No					40	8
13	No		rpm			24	16
14	No		%			16	8
15	No		%			8	8
16	No		%			4	4
17	No					0	4
18	No		%			56	8
19	No		%			48	8
20	No					46	2

Properties | Items | PC Explorer

The 'Configuration Structure' is now ready for use.

4.2—Creating Configurations

The 'Local Projects' panel allows the user to build a completely custom 'Configuration Structure' to enable the Rebel to perform innumerable complex tasks.

The 'Local Projects' panel found on the left of the screen is the 'Projects' tab of the 'Database' panel and can be seen below.
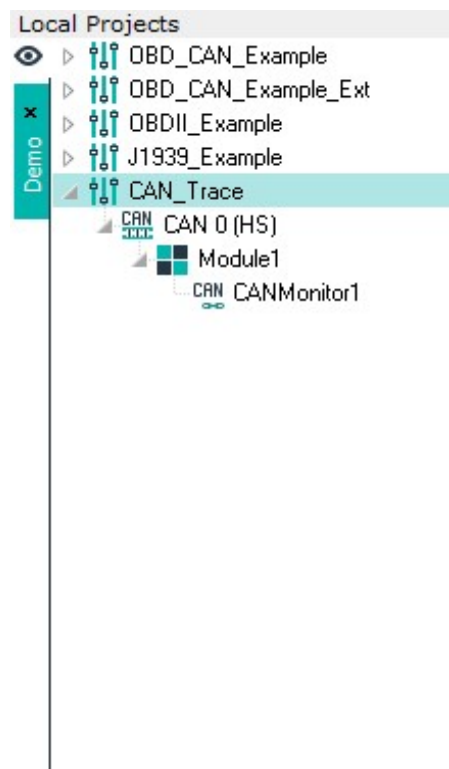
This section will explore the functionality of the 'Local Projects' panel, the main features being the creation and administration of configurations for any data logging application. The 'Configuration Structure' created contains the required configuration information and is constructed from a number of components, each of which allows an array of options.

The different stages of construction of a 'Configuration Structure' are explored in a clear, stepwise fashion. Highlighting the available options at each stage, making it simple for the user to produce a configuration for the most complex of data logging tasks.

New Project—Allows the creation of a new 'Project', which will be represented by a new tab in the 'Local Projects'. A 'Project' can also be created using the 'New Project' icon. DiaLog will prompt you to select a 'Project' name, as seen below.
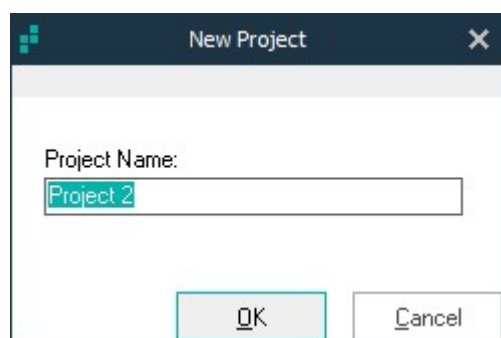
- Edit Project—Re-opens the 'Project Name' window to allow the editing of the 'Project' name.
- Delete Project—Allows the deletion of the entire selected 'Project' tab, which is the open tab in the 'Local Projects' panel.
- Import Project—Enables the import of a .DPV 'Project' file into the DiaLog software. The file includes all 'Configuration Structures' within the 'Project'.
- Export Project—Enables the export of the current selected 'Project' as a .DPV file for external storage purposes or transfer between software copies

Once a 'Project' has been created, the 'Local Projects' is ready to begin creating a 'Configuration Structure'. A 'Configuration Structure' is the structure which contains all the configuration settings to instruct and set up the Rebel for the desired application. A 'Configuration Structure' is a configuration file and is stored as an .IVS file.

A 'Configuration Structure' is created from a number of specific components. They are purposefully designed to be analogous to the physical set up, allowing the intuitive creation of structures capable of configuring the Rebel for even the most complex applications.

A simple example structure can be seen below, each of the individual components are considered in order below.

Configuration

The 'Configuration' is the base building block for the 'Configuration Structure' and represents the vehicle to be data logged. As such it contains both a number of general details for the vehicle and configuration settings for the Rebel data logger.

Communication Bus

The 'Bus' directly designates the physical connection to the module to be used by the Rebel during data logging. Multiple 'Buses' may be included in one configuration and each contain a number of settings pertaining to the physical equivalent.

Module

The 'Module' represents an individual module/ECU within a vehicle, with up to 5 modules permitted per 'Configuration Structure' across all 'Buses'.

Protocol

The 'Protocol' determines the communication method to be utilised by the logger to interact with the module. As such the 'Protocol' contains a number of settings pertaining to the communication for the module to be logged.

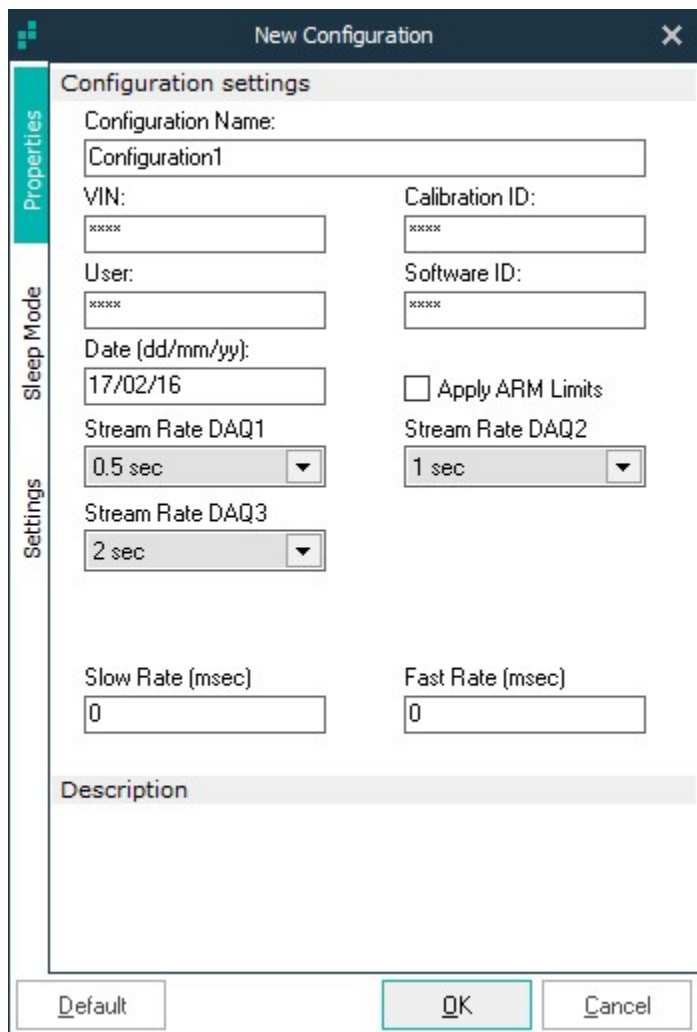| No.	Rate	Stream	Label
1	10 Sec	No	EQ_RAT
2	100 mSec	No	EGR_PCT
3	100 mSec	No	LOAD_ABS
4	100 mSec	No	TAC_PCT
5	60 Sec	No	MIL_TIME
6	60 Sec	No	FUELSYS2
7	60 Sec	No	FUELSYS1
8	60 Sec	No	CLR_TIME
9	30 Sec	No	VPWR
10	30 Sec	No	MIL_DIST
11	30 Sec	No	EGR Monitor (DPFE)
12	30 Sec	No	CLR_DIST
13	10 Sec	No	WARM_UPS
14	1 Sec	No	O2S11

Properties Items PC Explorer

Data Items

The 'Data Items' denote the individual items to be recorded and can include a large array of possibilities depending on the above configuration settings

The first step in creating a 'Configuration Structure' is to create a 'Configuration'. A 'Configuration' allows you to specify a number of settings for not only the configuration to be data logged, but also the Rebel data logger for this task. It is effectively the base building block of a 'Configuration Structure' and allows the designation of a number of general settings.

To create a new 'Configuration' either the 'New Configuration' toolbar icon or right click in the Project Tree and Select New Configuration

Upon creating a new 'Configuration' the 'Configuration Settings' window will appear as shown below. The window opens on the 'Properties' tab as default.

Configuration settings:

- Configuration Name—Allows the naming of the 'Configuration' item.
- VIN—Allows the user to specify a Vehicle Identification Number.
- Calibration ID—Allows the user to specify the calibration of the vehicle.
- User—Designates the current user/creator of the 'Configuration Structure'.
- Software ID— Allows the user to specify the module software.
- Date—Allows the user to specify a date for the 'Configuration Structure', DiaLog automatically enters the days date, but it is editable to user requirements.
- Apply ARM Limits—Allows the user to extend the logging capabilities to fully utilise the ARM processors capabilities.
- Stream Rate—Allows the user to select the stream rate for each 'Stream Data' DAQ list. (StreamLog functionality.)

Logger settings:

- Logger Type—Drop down menu selects from a number of logger sampling options.
- Logger Mode—Drop down menu selects from a number of logger operational modes.

The window also contains a default button which allows all settings to be automatically returned to their original states.

Sleep Mode Tab

Sleep Mode Settings:

Sleep Mode—Drop down menu selects the sleep mode setting.

Sleep Delay— Designates the wait time until entering sleep mode.

Limit Module Wakeup—For modules that wake on a tester message, recommend the following settings.

Init Timeout (min) - Time Rebel continues polling.

Delay after polling (min) - Time after cease polling before power down. Allows the Rebel to enter a silent mode before sleep enabling modules to sleep.

Settings Tab

Keep Alive Setting:

You should not need to alter these settings unless instructed to do so by Influx Technology Engineers

Aux Power On:

Controls the Digital 3/+Vd pin of the Logger to supply power to the Rebel Dash or K-Box when the Logger is powered via the Vehicle Connector (CAN & PWR)

Clicking 'OK' closes the window and creates the new 'Configuration' item.

Once a new 'Configuration' has been created it will appear in the 'Local Projects' panel, in the current 'Project' tab.
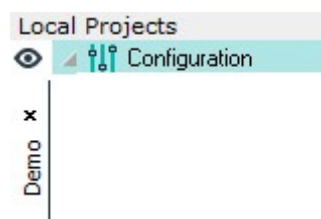
With a 'Configuration' selected, the 'Properties' tab of the 'Main' panel displays a summary of the 'Configuration Structure' built on this 'Vehicle' item as can be seen below.

Vehicle	Configuration
VIN	****
Calibration ID	****
Software ID	****
User	****
Date	17/02/16
Logger Type	Standard - Fast Sampling Rates Only
Logger Mode	Standard - All CAN Messages
Number of PIDs	0
Number of Diagnostic Addresses	0
Number of CCP Addresses	0
Number of CAN Signals	0
Number of Instrumentation Channels	0
Number of Digital Channels	0
Trigger Settings	
Number of Trigger Items	0
Number of Trigger Groups	0

Properties | Stream Channels | PC Explorer

The 'Configuration' can also be created using a 'right click' menu as shown below

- New Configuration—Allows the creation of a new 'Configuration'.
- New Bus—Creates a new 'Bus' item
- Triggers—Provides the ability to create and edit 'Triggers'
- New/Edit Conversion Table—Provides the ability to create and edit 'Conversion Tables'
- New/Edit Output Signal—Provides the ability to create and edit 'Output Signals'
- Properties—Re-opens the 'Vehicle Settings' window for the current selected 'Vehicle' to allow editing of the 'Vehicle' settings.
- Copy—Copies selected item.
- Paste—Places copied item in to the 'Local Projects' panel.
- Delete—Removes selected item from the 'Local Projects' panel.
- Send Configuration to the Logger— Uploads 'Configuration Structure' to the Logger
- Send Configuration to SD Card— Uploads 'Configuration Structure' to the SD Card
- Import Configuration—Allows the user to import an .IVS, 'Configuration Structure' file.
- Export—Allows the export of the current 'Configuration Structure' as either a .IVS file or a .ROB file, for transfer between installations.

The second step in building a 'Configuration Structure' is to select the required 'Bus'. A 'Bus' is the physical connection between the logger and the vehicle and determines how the Rebel will communicate with the configuration being logged.

There are a number of different 'Bus' types available and it is possible to have up to one of each type of 'Bus' per 'Configuration Structure'.

Creating a Bus

To create a new 'Bus', select the required 'Vehicle' and use the 'New Bus' toolbar icon or the right click menu.
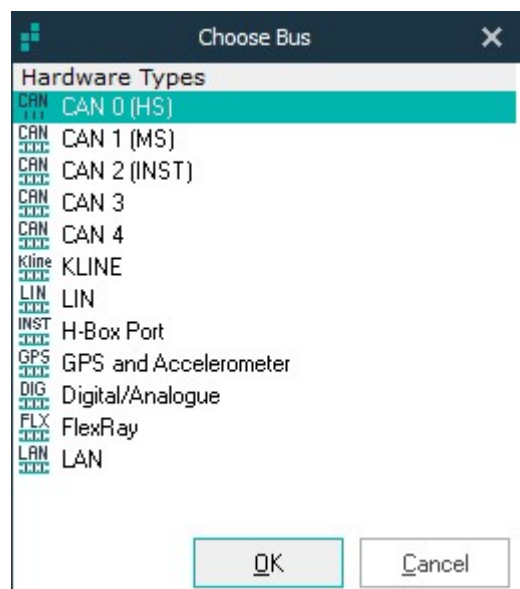

Hardware Types
- CAN 0 (HS)—CAN bus 0.
- CAN 1 (MS)—CAN bus 1.
- CAN 2 (INST)—CAN bus 2.
- CAN 3—CAN bus 3.
- CAN 4—CAN bus 4.
- KLINE—ISO 9141-2 and ISO 14230-4 Kline bus
- LIN—Local Interconnect Network bus
- H-Box Port—Connection to the internal Instrumentation board, instructs the logger to record from the board.
- GPS and Accelerometer—GPS and Accelerometer connection and instructs the logger to record GPS and Accelerometer data.
- Digital/Analogue—Designates the digital inputs.
- FlexRay—High Speed FlexRay Bus
- LAN—Ethernet Bus

Select the required 'Bus' type and click 'OK'.

Upon selecting a 'Bus' type a window with a number of options for the selected 'Bus' opens. The window and options are dependent on the bus selected and are considered individually below.

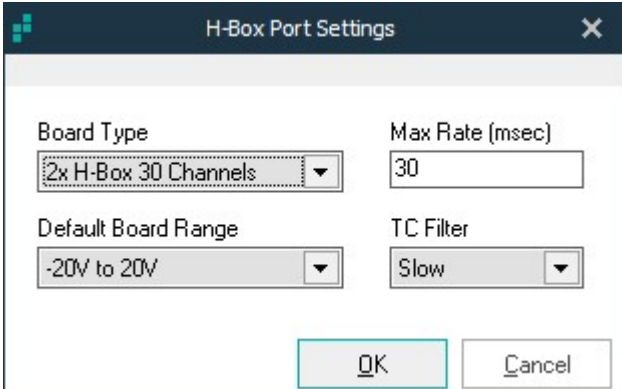## CAN Buses
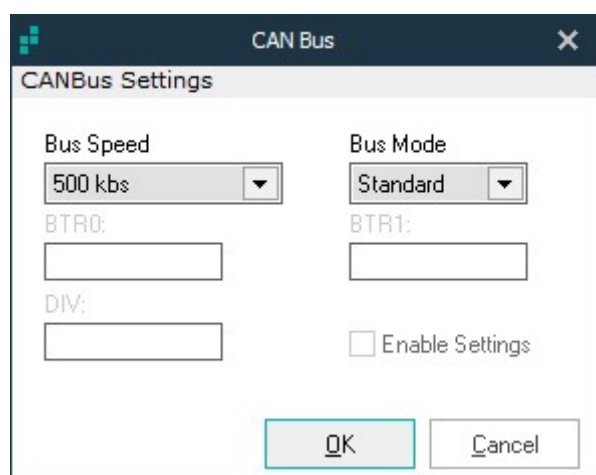
CAN Bus Settings:
Bus Speed—Drop down menu selects the transmission rate for the 'Bus'.
Bus Mode—Drop down menu selects the operational mode for the 'Bus'.

Enable Settings:
Currently disabled.
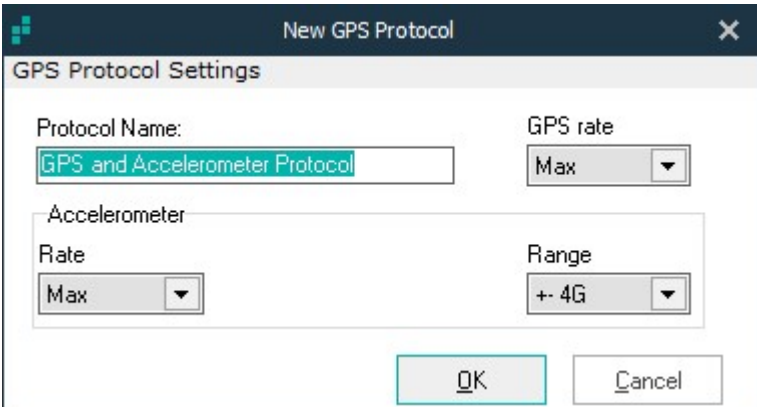
H-Box Port Instrumentation Bus

H-Box Port Settings:
- Board Type—Drop down menu selects the Influx instrumentation board type installed.
- Max Rate—Specifies the maximum transmission rate.
- Default Board Range—Sets the Hardware Voltage Range to be used.
- TC Filter—Enables/Disables filtering of thermocouple data and selects the speed of the filter

GPS and Accelerometer Bus
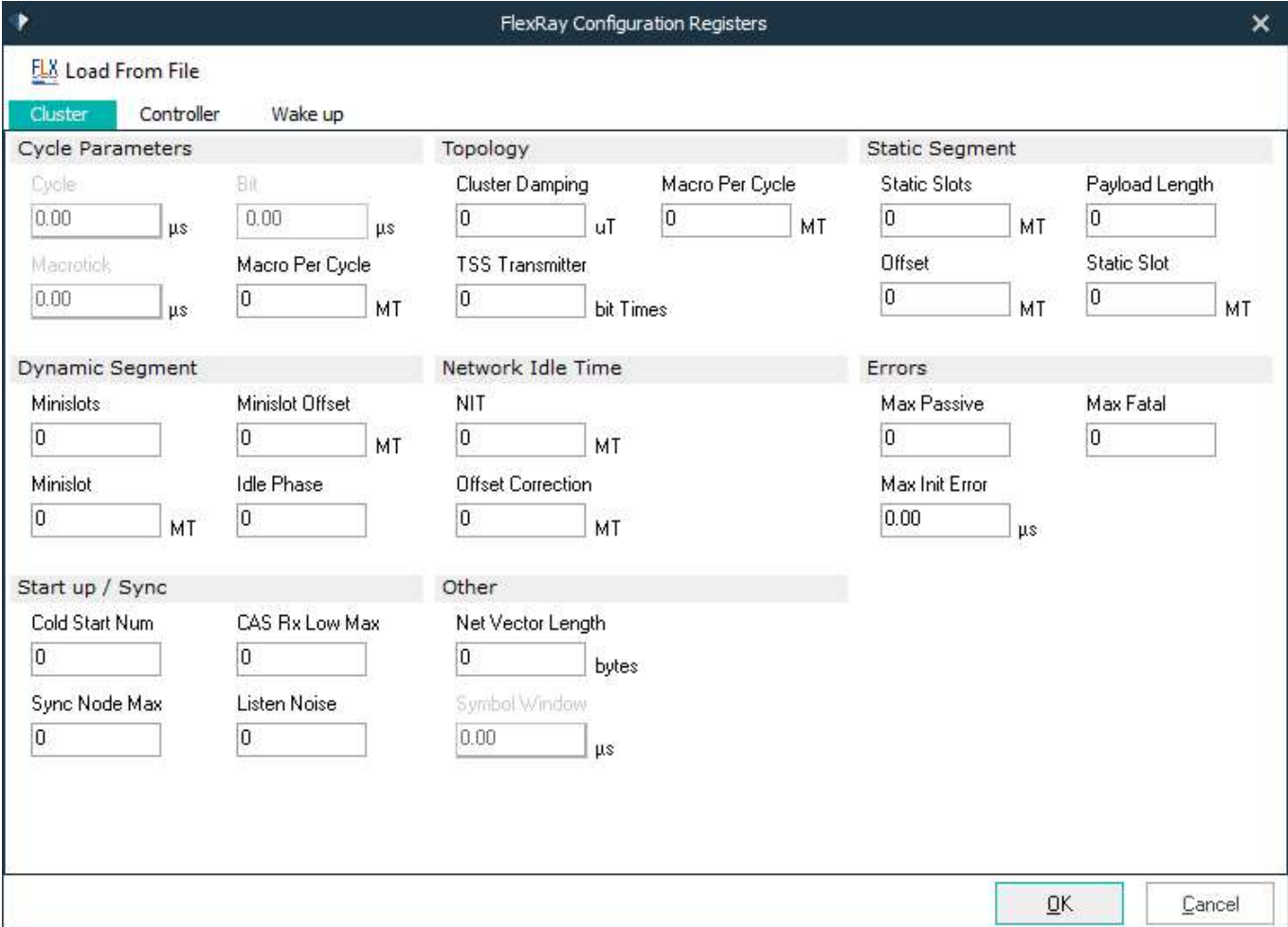
GPS and Accelerometer Settings:
- Protocol Name—Name of the Bus.
- GPS Rate—Rate at which GPS Data is Logged.
- Accelerometer Rate—Rate at which Acceleration is Logged, Max will Log at a very high rate and use a lot of space on the SD Card, if Acceleration Data is not needed it is recommended that this be limited.
- Accelerometer Range—Sets the Range of Acceleration that can be recorded

FlexRay Bus

Normally the configuration is loaded from a FIBEX file but it can be manually configured as well.
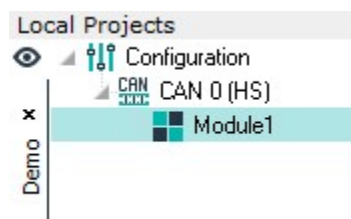
Clicking 'OK' will close the window and creates the selected 'Bus' which appears in the 'Local Projects' panel.

As can be seen, this process also automatically creates a 'Module', with a 'Bus' created, this enables a 'right click' menu, when a 'Bus' is selected, as shown below.
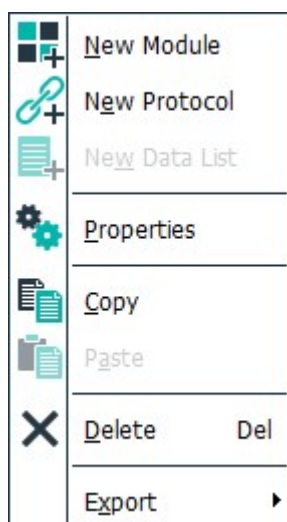
New Module—Allows the creation of a new 'Module'
Load Protocol—Allows the creation of a 'Protocol'
Properties—Re-opens the 'CAN Bus Settings' window to allow editing of the settings.
Copy—Copies the complete 'Bus', to allow 'Pasting' into alternative open 'Projects' in the software.
Paste—Places the 'Copy' of a 'Bus' into the selected 'Projected', however note only one 'Bus' of each type is allowed in a single 'Project'.
Delete—Removes the entire selected 'Bus' from the 'Configuration'.
The Projects are designed to allow the administration of a large number of different 'Configuration Structures'
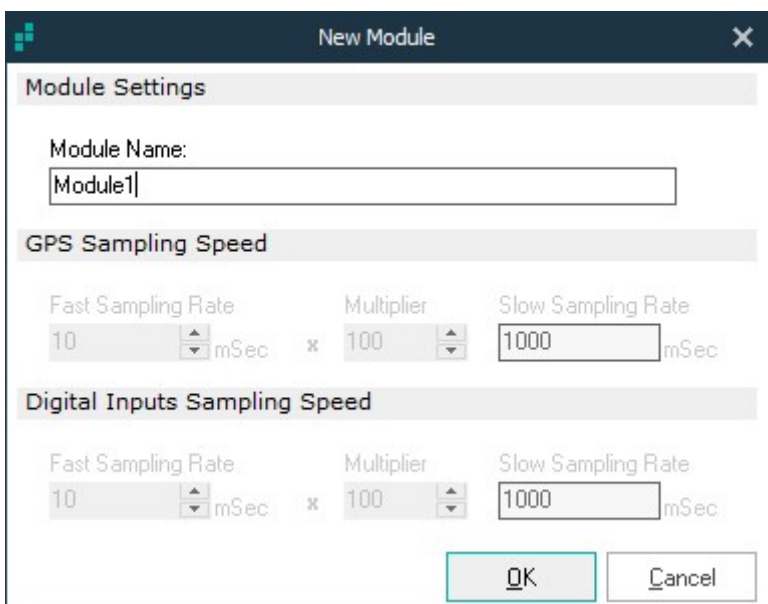
The third step in building a 'Configuration Structure' is to create a 'Module'. A 'Module' is analogous to the module/ECU within the vehicle to be logged.

Creating a Module

To create a new 'Module', select the required 'Bus' and use the 'New Module' toolbar icon, or the 'right click' menu as shown below
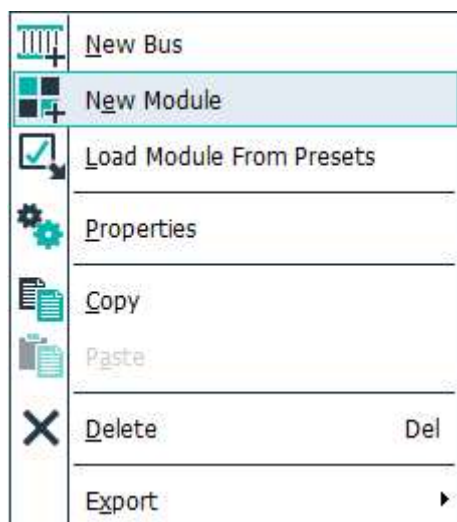
The 'Module Settings' window is shown below

Module Settings:
• Module Name—Allows the user to designate the name for the module.

GPS/Digital Inputs Sampling Speed:
• Fast Sampling Rate—Designates the faster rate of sampling.
• Multiplier—Over sampling multiplier, calculates the slow sampling rate.
• Slow Sampling Rate—Specifies the calculated slow sampling rate.
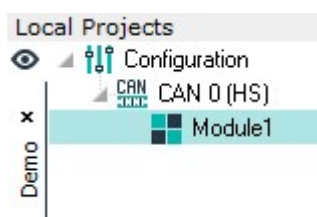
Once a new 'Module' has been created it will appear in the 'Local Projects' panel.

There is a maximum of five 'Modules' permitted per 'Configuration Structure' and the current tally can be found in the 'Status Bar'.

Creating a Module from Presets

A second method allows a 'Module' to be created by loading pre-configured settings. This is achieved by using the 'Bus' activated 'right click' menu as shown below.

New Bus	
New Module	
Load Module From Presets	
Properties	
Copy	
Paste	
Delete	Del
Export	▶
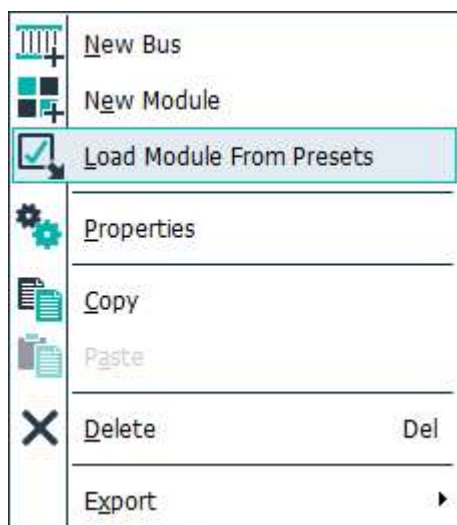
The 'Load Module from Presets' menu item opens a window, which allows the user to import a DiaLog Presets File (.DPF) to automatically configure a 'Module'.

With a 'Module' created, this enables a 'right click' menu, as shown below.

New Module	
New Protocol	
New Data List	
Properties	
Copy	
Paste	
Delete	Del
Export	▶

- New Module—enables the user to create a new 'Module' on the same 'Bus' as the current selected 'Module'.
- New Protocol—enables the user to create a new 'Protocol' on the selected 'Module'
- Properties—Re-opens the 'Module Settings' window, to allow the user to edit the settings for the selected 'Module'.
- Copy—Copies the 'Module', to allow pasting into alternative open 'Projects' in the software.
- Paste—Places the copy of a 'Module' into the selected 'Bus'.
- Delete—Removes the selected 'Module' from the 'Bus'.

The fourth stage of creating a 'Configuration Structure' is to create the 'Protocol'. A 'Protocol' is the definition of the method of communication between the Rebel and the vehicle. There are a number of different 'Protocols' available and it is possible to have multiple 'Protocols' running within one 'Configuration Structure'. However as a 'Protocol' defines the communication for each 'Module' only one protocol can be used per 'Module' and not all 'Protocols' can be used on every 'Bus'.

There are a number of different 'Protocol' options, which vary depending on the 'Bus' type selected. The different options are considered below. However, physical module specific restrictions may also apply.

Bus Types	Protocol Types					
	Diagnostic	CCP	CAN Monitor	Instrumentation	GPS	Digital
CAN HS	✓	✓	✓			
CAN INST	✓	✓	✓			
CAN MS	✓	✓	✓			
Instrumentation				✓		
GPS					✓	
Digital						✓

Creating a Protocol

To create a new 'Protocol', select the required 'Module' and use the 'New Protocol' toolbar icon or the right click menu.
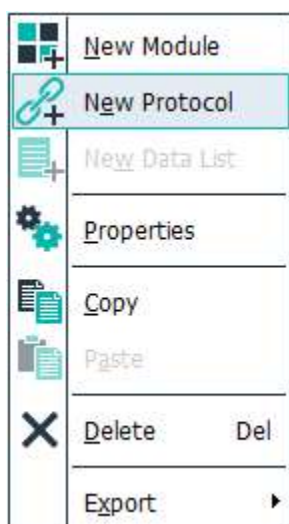
As discussed above there are a number of 'Protocol' options depending on the 'Bus' type. Here a 'Protocol' being created on a 'CAN' bus is shown, the process is analogous for all 'Bus' types. Each 'Protocol' type is considered in detail in the following sections.

Upon creating a 'Protocol' the 'Choose Protocol Type' window will appear as shown below.
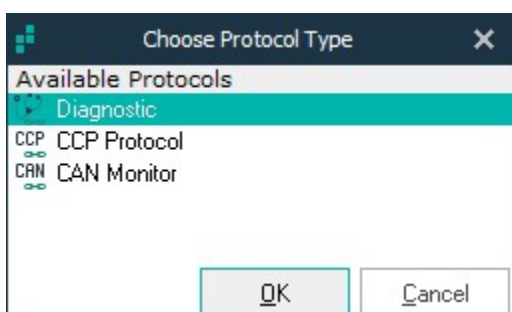
Available Protocols:
- Diagnostic
- CCP Protocol
- CAN Monitor
- Instrumentation
- GPS
- Digital

Each 'Protocol' can only be used once for each 'Module', if a 'Protocol' already exists for the selected 'Module', it will automatically not appear in the 'Choose Protocol Type' window shown previously.

Upon selecting a 'Protocol' type, the 'Settings' window will appear.

Once a 'Protocol' has been created, it appears in the 'Local Projects' panel.

Once a 'Protocol' has been created the settings can be edited using the 'Properties' window, an example is shown below.

The window is specific to each 'Protocol', however, for all 'Protocols' where description file imports are possible. If any 'Data Items' have been imported for the 'Protocol', the file utilised is denoted in the bar at the top of the window. With a 'Protocol' item created a 'right click' menu is enabled.

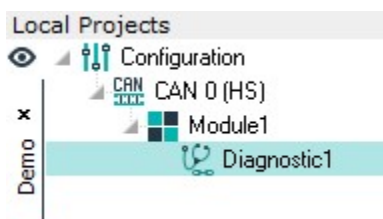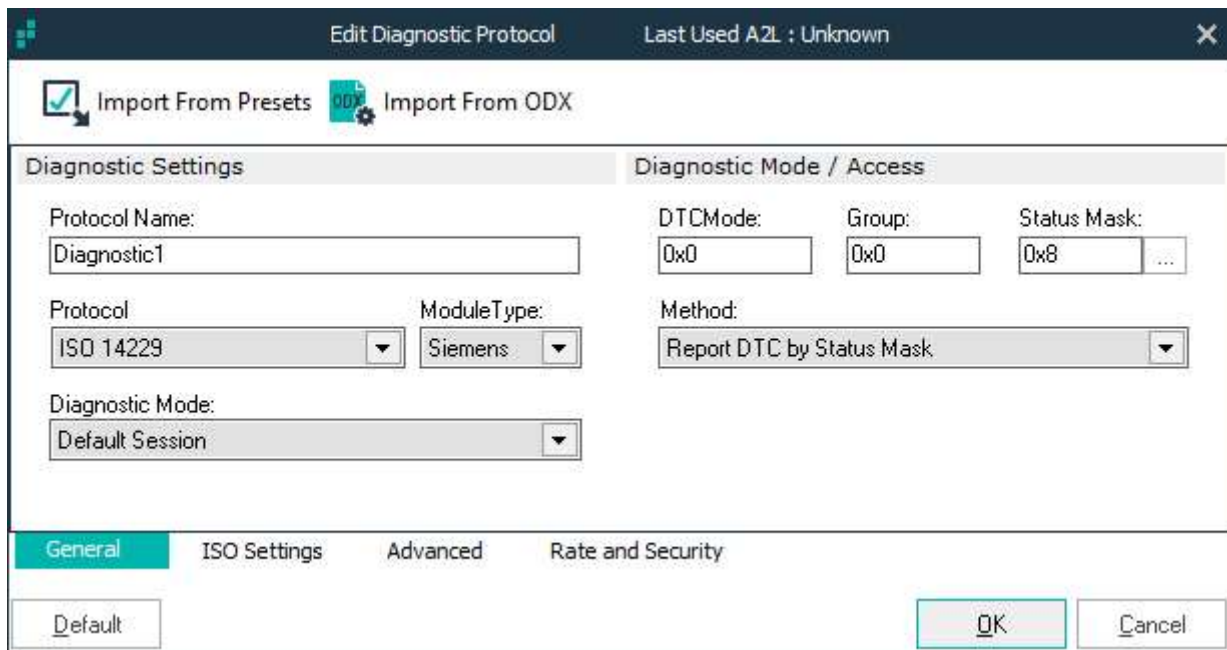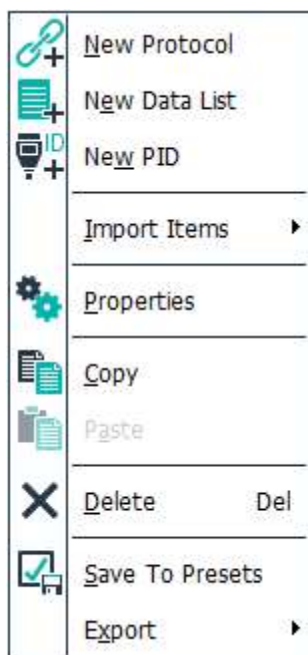- New Protocol—Allows the user to create a new 'Protocol' on the same 'Module'.
- New PID—Allows the user to manually create a new PID 'Data Item'.
- New Data List—Allows the user to manually create a new 'Data List'.,
- Properties—Displays a summary of the 'Protocol' in the 'Properties' panel.
- Copy—Copies the selected 'Protocol'.
- Paste—Places the copied item into the 'Configuration Structure'.
- Delete—Removes the selected item from the 'Configuration Structure'.
- Save To Presets—Allows the user to save the 'Protocol' as a .DPV file, for loading into alternative 'Configuration Structures'.

The final step in creating a 'Configuration Structure' is to select the 'Data Items' - the different values or signals to be recorded by the Rebel. The 'Data Items' capable of being logged via each 'Protocol' varies. Therefore each 'Data Item' option will be considered separately in the following sections.

The 'Data Items' available for each 'Protocol' are summarised below.

| Data Items	Protocol Types					
	Diagnostic	CCP	CAN Monitor	Instrumentation	Digital	GPS
PID	✓					
Address	✓	✓				
Signal			✓			
Channel				✓	✓	✓

Once a 'Data Item' has been added to a 'Configuration Structure' it will appear in the 'Data Items' panel as can be seen in the example below, which contains a number of Mode 0x01 PIDs.

No.	Rate	Stream	Label	Units	PID	Address	Size	Datatype
1	1 Sec	No	O2S11	V	0x14	0x00	2	Unsigned Byte
2	1 Sec	No	O2S12	V	0x15	0x00	2	Unsigned Byte
3	1 Sec	No	O2S13	V	0x16	0x00	2	Unsigned Byte
4	1 Sec	No	O2S22	V	0x19	0x00	2	Unsigned Byte
5	1 Sec	No	SHRTFT1	%	0x06	0x00	1	Unsigned Byte
6	1 Sec	No	SHRTFT11	%	0x14	0x00	2	Unsigned Byte
7	1 Sec	No	SHRTFT12	%	0x15	0x00	2	Unsigned Byte
8	1 Sec	No	SHRTFT13	%	0x16	0x00	2	Unsigned Byte
9	1 Sec	No	SHRTFT22	%	0x19	0x00	2	Unsigned Byte
10	1 Sec	No	PTO_STAT	-	0x1E	0x00	1	Unsigned Byte
11	2 Sec	No	CATEMP12	degC	0x3E	0x00	2	Unsigned Word
12	2 Sec	No	IAT	deg	0x0F	0x00	1	Unsigned Byte
13	2 Sec	No	ECT	degC	0x05	0x00	1	Unsigned Byte
14	2 Sec	No	AAT	degC	0x46	0x00	1	Unsigned Byte
15	2 Sec	No	CATEMP11	degC	0x3C	0x00	2	Unsigned Word
16	5 Sec	No	EGR_ERR	%	0x2D	0x00	1	Unsigned Byte
17	5 Sec	No	CATEMP21	°C	0x3D	0x00	2	Unsigned Word
18	5 Sec	No	EVAP_VP	Pa	0x32	0x00	2	Signed Word
19	5 Sec	No	CATEMP22	°C	0x3F	0x00	2	Unsigned Word
20	10 Sec	No	AIR STAT: OFF		0x12	0x00	1	Bitfield

Properties　Items　PC Explorer

The 'Data Items' panel contains a 'Rate' icon at the top of the panel, this allows the user to edit the logging rate for the selected 'Data Item(s)' simultaneously.

The 'Data Items' panel also contains a 'right click' menu as shown below.   However, this varies depending on the 'Data Items' and not all options will always be identical or available.
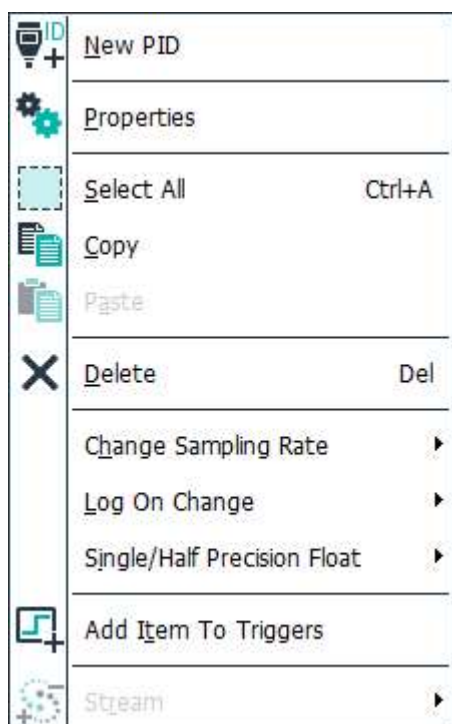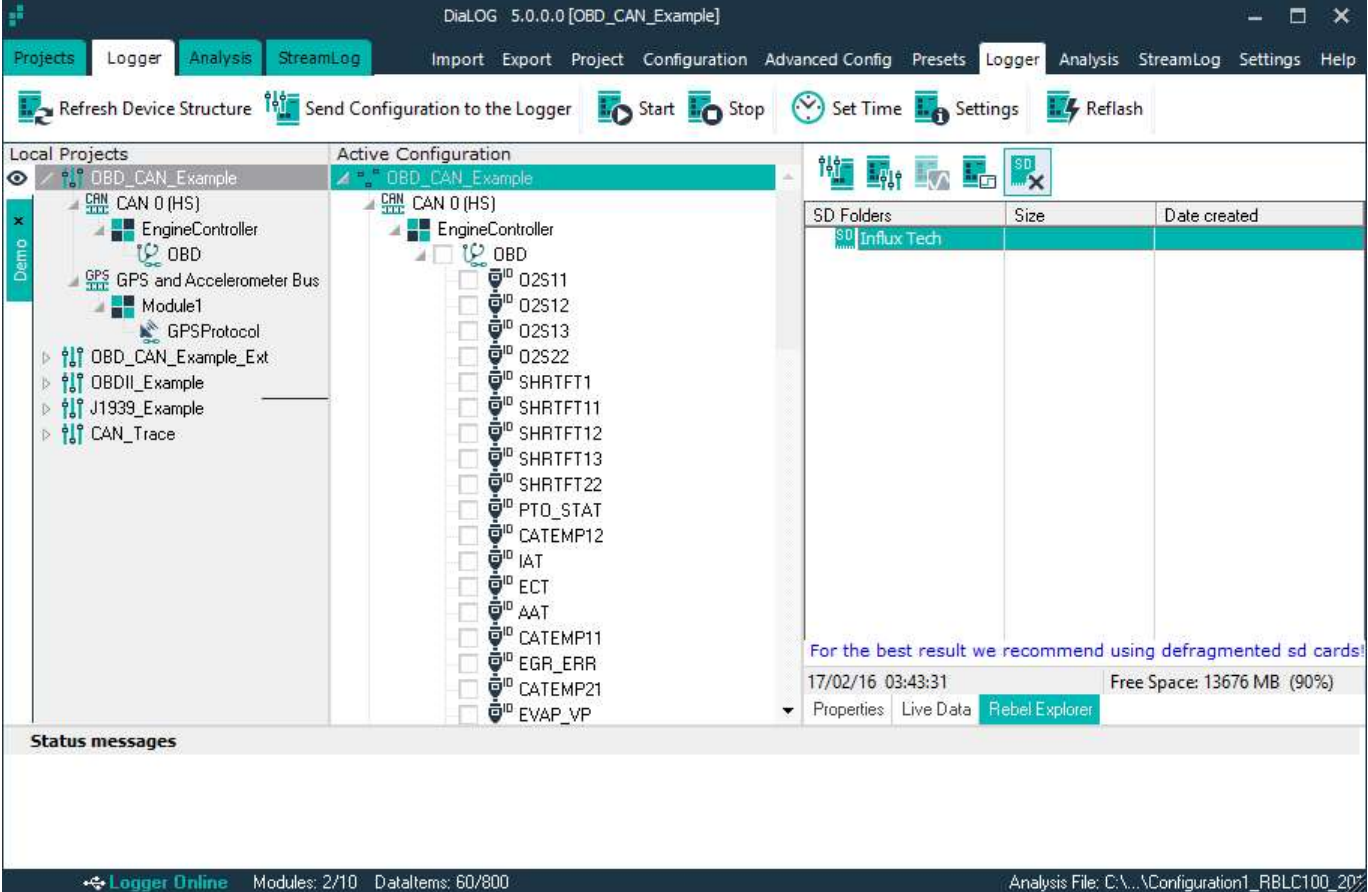
- New PID/Address/Channel—Allows the edition of a new 'Data Item', see each section for more detail.
- Properties—Opens the 'Properties' window of the selected 'Data Item', see relevant section for details.
- Select All—Selects all the listed 'Data Items'.
- Copy—Creates an exact replica of the selected 'Data Item(s)'.
- Paste—Places the copied 'Data Items' where selected.
- Delete—Removes the selected 'Data Item(s)' from the list.
- Change Sampling Rate—Allows the user to reassign the sampling rate for the selected 'Data Item(s)', see individual sections for options.
- Add Item to Triggers—Opens the 'New Condition' window for Triggers

4.3—Setting up the Logger

4.3.1—Formatting the SD Card

All new SD cards must be formatted in the Rebel prior to use. This is performed from the Logger Tab by clicking on Rebel Explorer and Clicking the Format SD Card Icon

4.3.2—Sending a Configuration Structure to the Logger

The first step is to ensure the Rebel is connected and ready to be configured. The next step is to 'Send the Configuration to the logger'.

Ensuring the required 'Configuration Structure' is selected in the 'Local Projects' panel, there are two ways of uploading the 'Configuration Structure'. The first is the 'Send Configuration to the Logger' toolbar icon.

 Send Configuration to the Logger
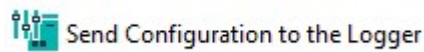
The second is through the 'right click' menu for the 'Configuration' in the 'Local Projects' panel, as shown below.

New Configuration

New Bus

Triggers ▶

New/Edit Conversion Table

New/Edit Output Signal

Message Constructor

Properties

Copy

Paste

Delete   Del

Send Configuration to the Logger

Send Configuration to SD Card ▶

Server ▶

Import Configuration

Export ▶
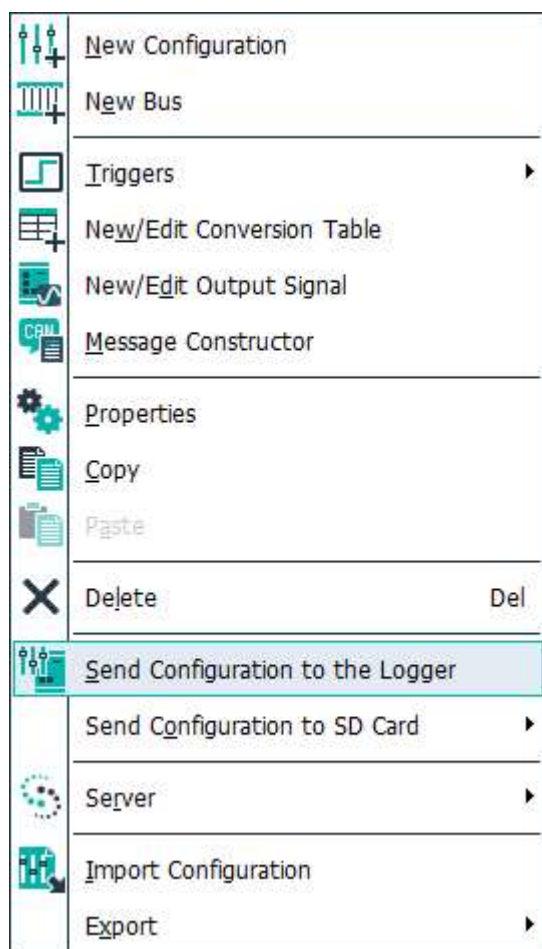
Here the 'Send vehicle file to the Logger' menu item is required. Once DiaLog has been instructed to send the required 'Configuration Structure' to the data logger the 'Confirmation' window will appear, as shown below.

DiaLog

? Are you sure you want to send Configuration "OBD_CAN_Example" to the Logger?

Yes   No
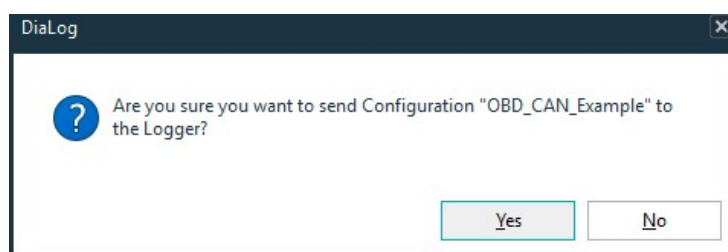
This window is a precautionary measure to ensure the logger is not accidentally reconfigured, as doing so stops the current 'Configuration Structure' from being the active structure on the Rebel data logger.

To continue the upload of the 'Configuration Structure' to the Rebel data logger, click 'Yes'. This will begin the process and the 'Progress' window will appear as shown below.

Once DiaLog has completed the upload to the Rebel the 'Progress' window will automatically close.

When a new 'Configuration Structure' is uploaded to a Rebel data logger it is automatically set as the active structure. This means that any 'Configuration Structure' present on the Rebel will remain deactivated and not be used for data logging.

With the structure loaded to the Rebel, the 'Active Configuration' panel will automatically update to display the current active 'Configuration Structure' as can be seen below.
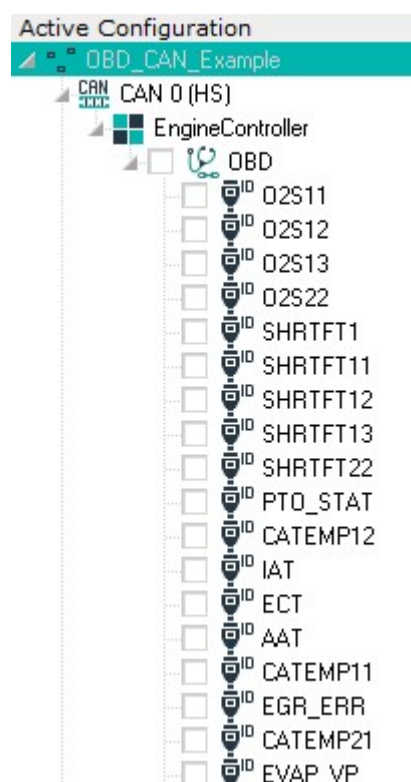
The Rebel now contains a valid 'Configuration Structure' and is ready to begin data logging the required task.

Upon connecting the Rebel to a vehicle it will automatically reconfigure itself using the new 'Configuration Structure' and begin data logging.

5—Rebel Data Logging

5.1—Connecting a Rebel Data Logger to a Vehicle/Module

Once the 'Configuration Structure' has been created and uploaded the Rebel is ready to be used for data logging. The first step is to connect the Rebel to the vehicle or module to be data logged.

The Rebel contains a number of different connection options; the current 'Configuration Structure' determining which are required for each application. The Rebel logging connections are considered below.

Main Vehicle Connection—Usually D-type connector contains a number of vehicle connections including: CAN 0 (HS), CAN 1 (MS), LIN and K-Line.

Analogue and Digital Channels and or connection for H Box external instrumentation (If installed)

With the correct connection established between the Rebel and the vehicle/module, the vehicle/module can be powered up for data logging to begin.

Upon powering up, the Rebel will automatically wake on the CAN Bus activity (Dependent on the Sleep Mode Setting). Each time a new 'Configuration Structure' is uploaded or set as the active structure (or an SD Card containing a new 'Configuration Structure' inserted), on the first Rebel power up it will automatically use the new 'Configuration Structure' to reconfigure itself.

The reason for this process is to fully configure and prepare the Rebel for the data logging task, e.g. creating any required DAQ lists. This process may vary in length with the complexity of the 'Configuration Structure'. However, it is a one time process for a new structure and ensures on each subsequent power up, the Rebel is prepared to immediately begin data logging.

5.2—Data Logging

Once the Rebel data logger has completed reconfiguring itself it is ready to begin. With the correct vehicle/module connection established the Rebel will begin to data log immediately.

The front panel also contains a number of LEDs intended to inform the user of the logger status. The LEDs are user programmable but unless specified operate in the default mode:

F1. CAN 1 (MS) Bus traffic.
F2. Data Logger is configured and ready.
F3. Instrumentation/Trigger status.
F4. GPS status—flashes when acquiring data.
F5. CAN 0 (HS) Bus traffic.
Status. On—waiting, Flashing—ready
Connect. On—connected, Flashing—activity
SD Card. On– connected, Flashing—activity

5.3—Active Configuration

Within the 'Database' panel on the left hand side of the software window there is the 'Rebel' tab, this tab displays the 'Active Configuration' panel as can be seen below.
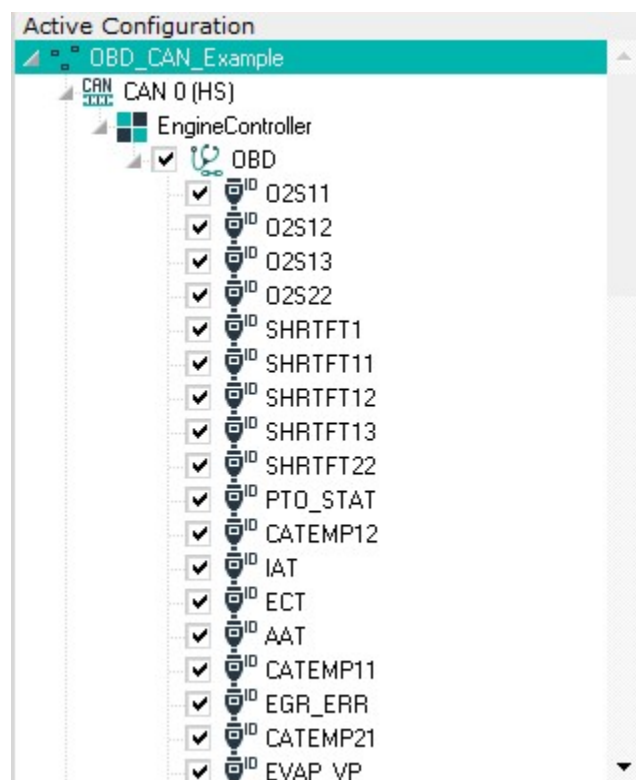
The 'Active Configuration' panel is designed to display the current condition of the Rebel data logger and allows the user to interact with the device in a number of ways.
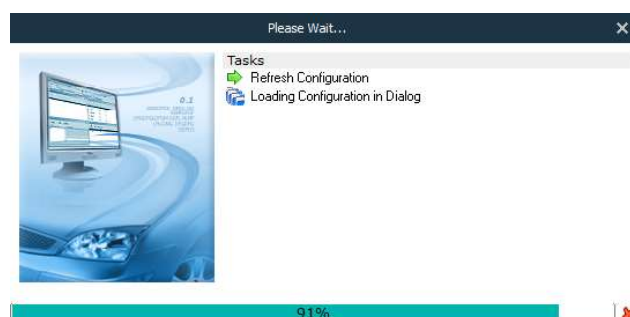
Ensure the Rebel is connected. Once connected DiaLog will automatically read the Rebel data logger and update the 'Active Configuration' panel displaying the 'Progress' window below.

As can be seen the 'Configuration Structure' is displayed in an analogous manner to the 'Local Projects' panel. This allows simple and familiar navigation of all the components of the 'Configuration Structure' currently active on the Rebel.

The 'Active Configuration' panel also contains a toolbar at the top of the panel and a 'right click' menu as can be seen below.
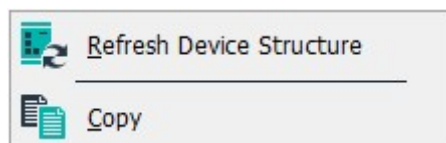
- Refresh Active Configuration—This allows the user to instruct DiaLog to read the 'Active Configuration' from the device.
- Copy—This provides the user the facility to create a duplicate of any part of the 'Configuration Structure' to place in an alternative 'Project' in the 'Local Projects' panel.

As in the 'Local Projects' panel upon highlighting an item within the 'Configuration Structure' a summary of the details of the item are displayed in the 'Properties' panel.

5.4—Live Rebel Connection

With Rebel connected to DiaLog, it is also possible for the device to be simultaneously connected to the vehicle/module it is configured to data log. Upon connection of the Rebel to the vehicle it will automatically configure itself and begin data logging from the vehicle.

In this situation a number of features are enabled and these are considered in this section. A summary of the section is shown below.

## 5.4.1—Data Logging Control

With the Rebel connected to both DiaLog and a vehicle it is possible to use DiaLog to control whether it is data logging. This is achieved through the toolbar at the top of the software window as shown below.

- Start - Allows the user to instruct the Rebel device to commence data logging.
- Send Configuration to the Logger - Allows the user to, in one process, update the Rebel device with the selected 'Configuration Structure' from the 'Local Projects' panel and automatically configure the Rebel and commence data logging.
- Stop -Allows the user to instruct the Rebel to cease data logging

5.4.2—Live Data

With the Rebel simultaneously connected to DiaLog and logging from a vehicle it is possible to use DiaLog to monitor the data being recorded in real time. This is called 'Live Data' and is initiated using the 'Active Configuration' panel as seen below.
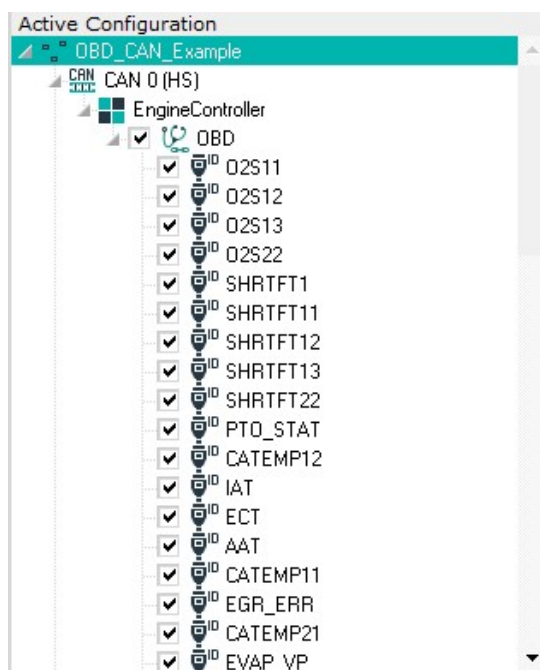
To display 'Live Data' for an item in the 'Configuration Structure', select the item to be displayed by ticking the appropriate satellite box for this item.

Upon ticking the satellite box of the required 'Data Items' DiaLog automatically adds the items to the 'Live Data' panel as can be seen below.
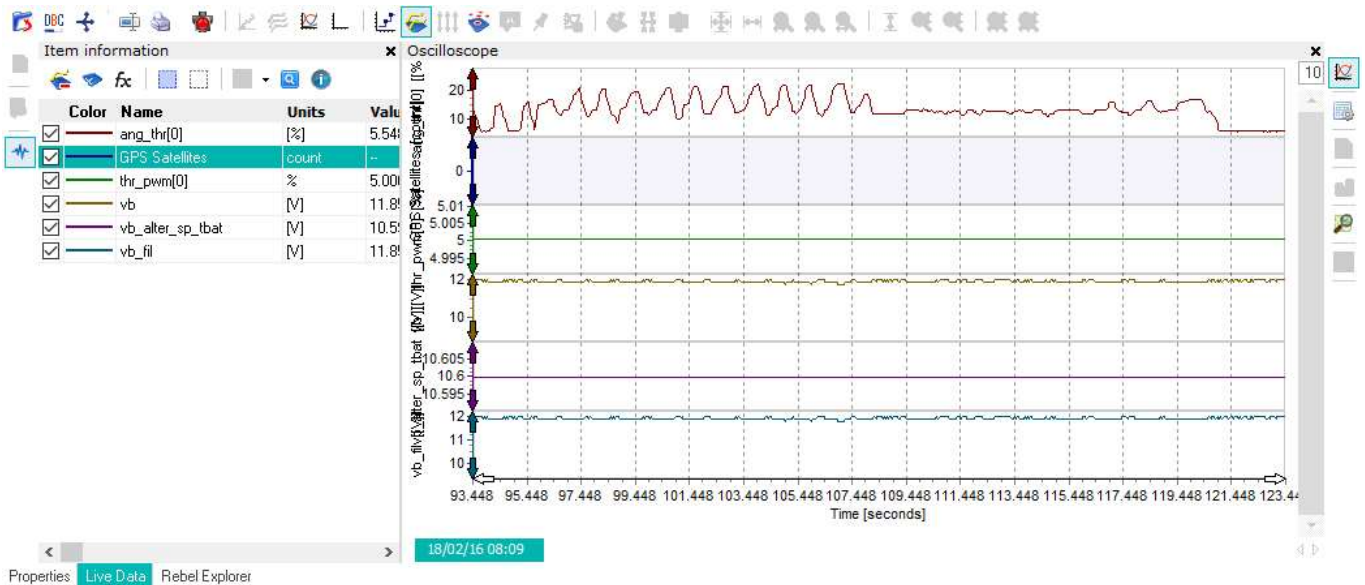
The 'Live Data' tool is largely analogous to the 'Oscilloscope' tool featuring most of the same functionality. The tool is controlled by the toolbar as shown below.
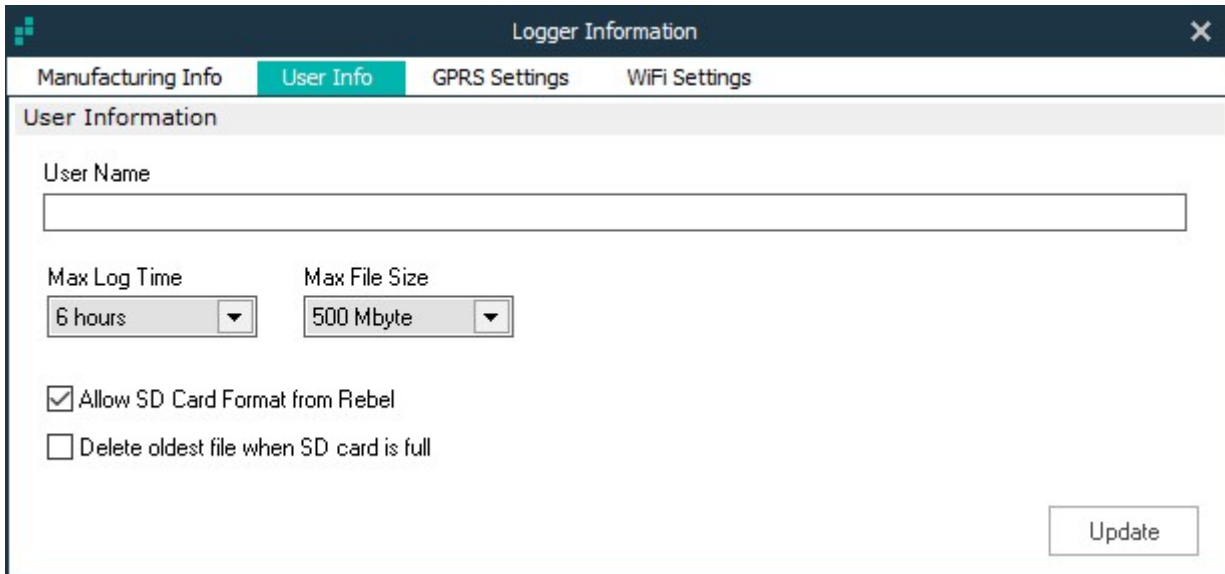
Plotting Live Data

Once the required 'Data Items' have been added to the 'Live Data' tool, the user must instruct plotting to begin.

   Allows the user to start and stop plotting of the 'Data Items'.

User Information:

User Info:
- User Name—Your Name.
- Max Log Time—Maximum length of recordings, after reaching this length of time a new file will be created.
- Max File Size—Maximum size of recordings, after reaching this size a new file will be created.
- Allow SD Card Format from Rebel—Allows the Rebel to format the card.
- Delete oldest file when SD card is full—If set when the SD Card is full the oldest recording will be deleted when space is required for new recordings.

The window also contains an 'Update' button which allows the settings to be sent to the Logger.

6—Data Retrieval and Analysis

The Rebel is capable of collecting a large amount of data from an array of sources, utilising a number of methods simultaneously. Once the required data has been logged to the Rebel, for this example a number of Mode 0x01 PIDs, it needs to be retrieved from the Rebel data logger in order to be analysed.

## 6.1—Retrieving Recorded Data from a Rebel Data Logger

The procedure for retrieving the data from the Rebel is very simple and there are a number of options for achieving this. The first and most common method, utilises DiaLog to download the required data directly from the Rebel. Simply navigate to the Logger Tab, select the Rebel Explorer, with the Rebel connected and 'Online' with Dialog, the 'Rebel' window opens as shown below.

The Rebel Explore displays all the files currently stored on the Rebel in associated 'Configuration Structure' folders. To retrieve the data logged using this structure, click the 'expansion' icon to display the files related to the required structure.

Here the tree lists two file types, the first is an .IVS file which is the 'Configuration Structure'. The second is an .IVD file, which is a data file, containing all the recorded data from a single logging session. A session being each time the Rebel power cycles, normally with the power on and off of the vehicle/module.

The data files are named in the format: configuration name_rebel name_YYYYMMDD_HHMMSS.IVD to ensure each data file is unique.

To retrieve the data file(s) from the logger, 'right click' on the selected data file(s) to display the menu shown below.
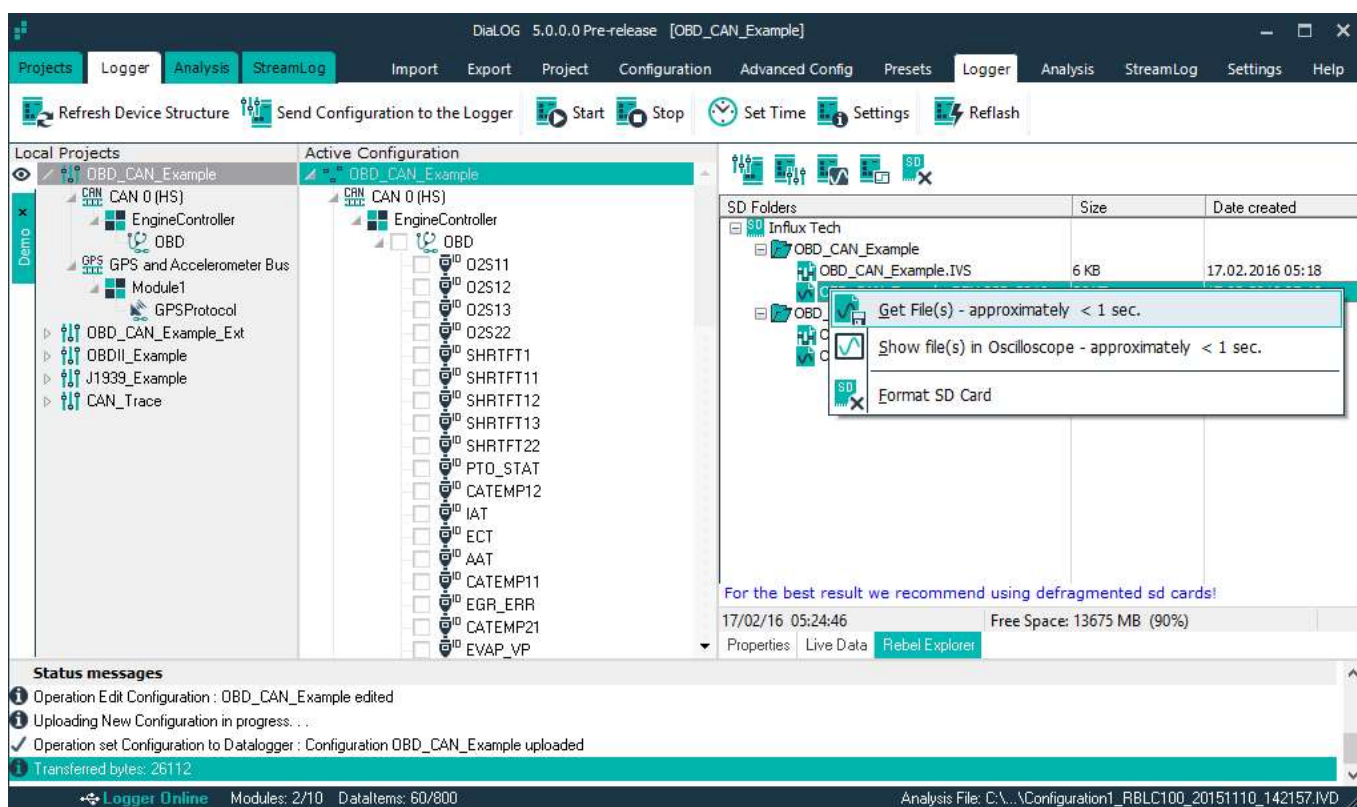

Clicking 'Get File(s)' will begin the download of data file(s) on to the user's computer. As can be seen there is an approximated download time for the file(s).

Upon clicking 'Get File(s)' the software requests the user to select the desired location to save the data file.

The 'Progress' window will then appear displaying the download completion for the data file(s). Once DiaLog has completed the download of the data file from the Rebel the 'Progress' window will automatically close. If you wish to 'Stop' the download of the data file during the process the 'red cross' can be used. In this instance a partial data file will be stored,

however the file will remain unaffected on the Rebel device.

With the completion of the download the Dialog software will display a prompt asking if the user requires the data file to be automatically imported into DiaLog, as can be seen below.
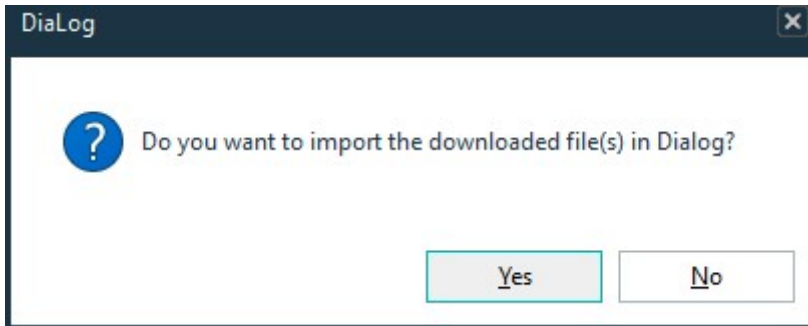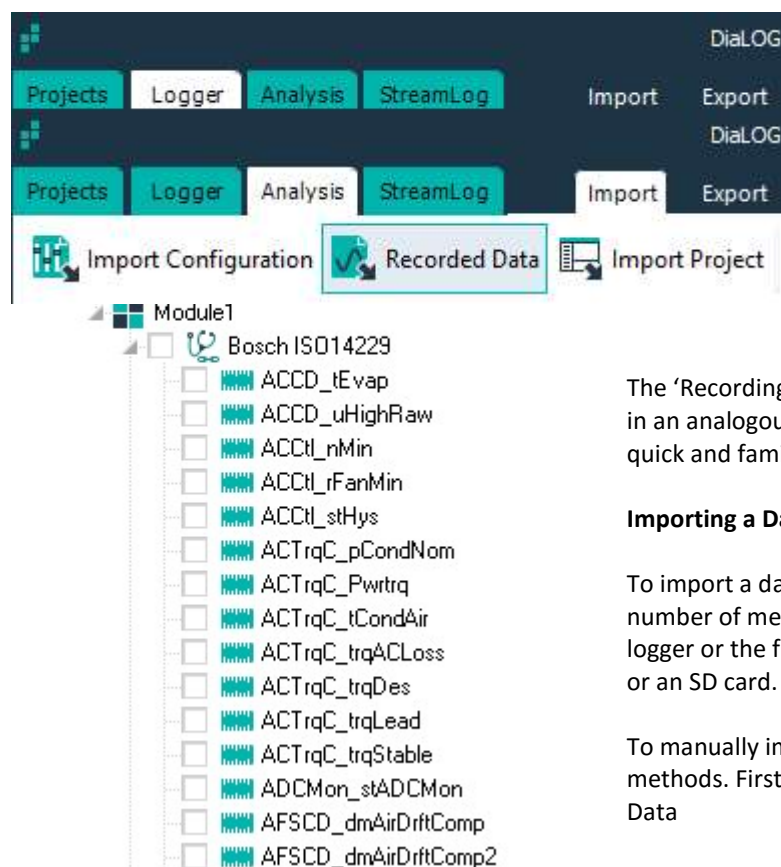

- Yes—Imports the data file into the 'Recording Analysis' tab of the 'Database' panel.
- No— The file has been saved to the computer; however it will not be imported into the software at this time.

The second method for retrieving the logged data, is to manually obtain them directly from the SD card. The Rebel writes directly into FAT32 format on the SD card which allows direct access to the cards through your operating system. The retrieval then becomes as simple as locating the required .IVD file on the SD card and saving it to your system. The file can then be imported into the DiaLog software for data analysis and subsequently exported in a number of file types for external analysis.

6.2—Data Analysis

Once data files have been retrieved from the Rebel they can be imported into DiaLog to be analysed. This can either be done automatically on retrieving the data file, or manually by the user. Data files are manually imported into DiaLog using the Import Recorded Data Functionality.

Select the required .IVD data file in the 'Open' window and click 'OK' to import in to the 'Recording Analysis' panel as shown below.

The 'Recording Analysis' panel displays any imported .IVD data files in an analogous manner to the 'Configuration Structure', enabling quick and familiar navigation of the data.

Importing a Data File

To import a data file into the 'Recording Analysis' panel there are a number of methods, the file can be retrieved from the Rebel data logger or the file can be imported manually from a saved location, or an SD card.

To manually import a data file into DiaLog there are two possible methods. Firstly use the Import Tab and select Import Recorded Data

The second method uses the dedicated 'Import Panels' found on the right hand side of the software window when the 'Recording Analysis' panel is open:
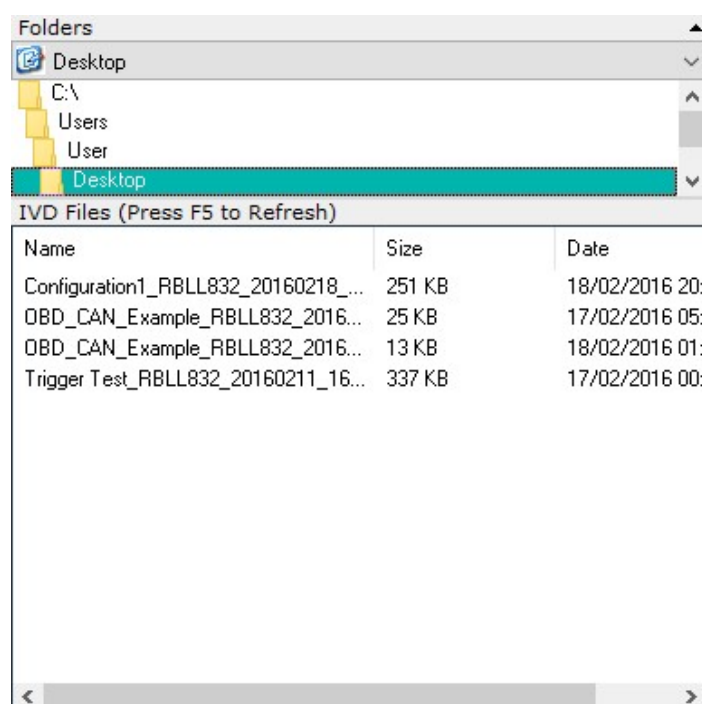
The 'Import Panels' allow the user to locate and import the required data file into DiaLog.

• Using the drop down menu at the bottom of the panels select the drive—this will open in the bottom panel.
• Select the required directory in the bottom panel—this will open displaying the files in the top panel.
• 'Double click' the required file to import into the 'Recording Analysis' panel.

This process allows the efficient working between multiple data files and simplifies the import process.

Once a data file has been successfully imported into the 'Recording Analysis' panel, a summary of each item in the displayed 'Configuration Structure' can be displayed in the 'Properties' panel by highlighting the required item.

For each data file highlighted in the list, a summary of the trigger events recorded in the file is displayed as shown below.

Settings	
Vehicle	Configuration 1
VIN	****
Calibration ID	****
Software ID	****
User	****
Date	18/02/16
Logger Type	Standard - Fast Sampling Rates Only
Logger Mode	Standard - All CAN Messages
Number of PIDs	0
Number of Diagnostic Addresses	0
Number of CCP Addresses	5
Number of CAN Signals	0
Number of Instrumentation Channels	0
Number of Digital Channels	0

Properties | DTC | OBD | CAN Trace

Event table [Trigger Test_RBLL832_20160211_160834.IVD]

ID	Time	Action	Sample method
1	17.690 sec	Run DAQ list	Initial
2	23.542 sec	Sample	Final
3	28.118 sec	Sample	Final
4	30.742 sec	Run DAQ list	Initial

7.3—Oscilloscope

The Oscilloscope tool in DiaLog contains the software's main data analysis functionality. There are a number of different ways to access the Oscilloscope.

Opening an Oscilloscope

The main method uses the Analysis Tab 'Show Scope' toolbar button as shown below.
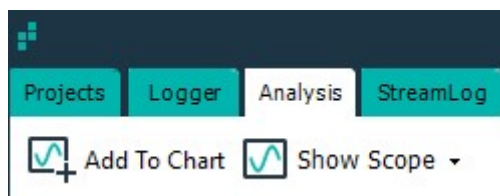
The 'Show Scope' button automatically displays all open Oscilloscope windows, if no Oscilloscope windows exist a new empty Oscilloscope window will be created. The drop down menu from the toolbar icon lists all existing Oscilloscope windows and allows the user to open the required one.

Adding Data Items to the Oscilloscope

The second method for accessing the Oscilloscope window involves adding a 'Data Item' or a selection of 'Data Items' simultaneously to an existing or new oscilloscope. The method uses the Analysis Tab 'Add to Chart' toolbar button as shown below.
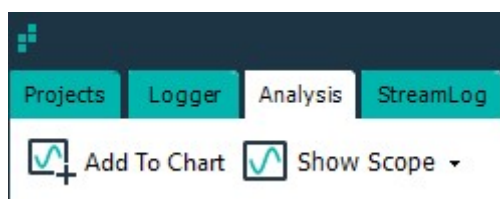

The 'Add to Chart' function is only active once at least one 'Data Item' satellite box has been checked, the items with checked boxes will then be added to the Oscilloscope.
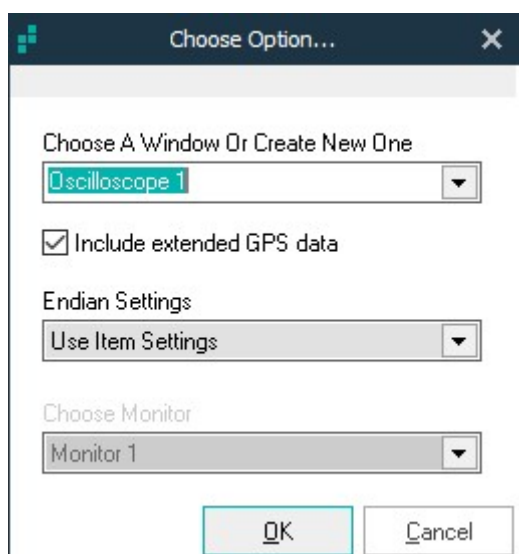
The user is prompted to choose the Oscilloscope to add the 'Data Items' to.

- Choose a Window or Create New One—Allows the user to select and existing Oscilloscope from the drop down menu or type a name to create a new one.
- Endian Settings—Allows the user to select the byte order for the 'Data Items'.

Once the required Oscilloscope has been selected the window will appear as shown below.
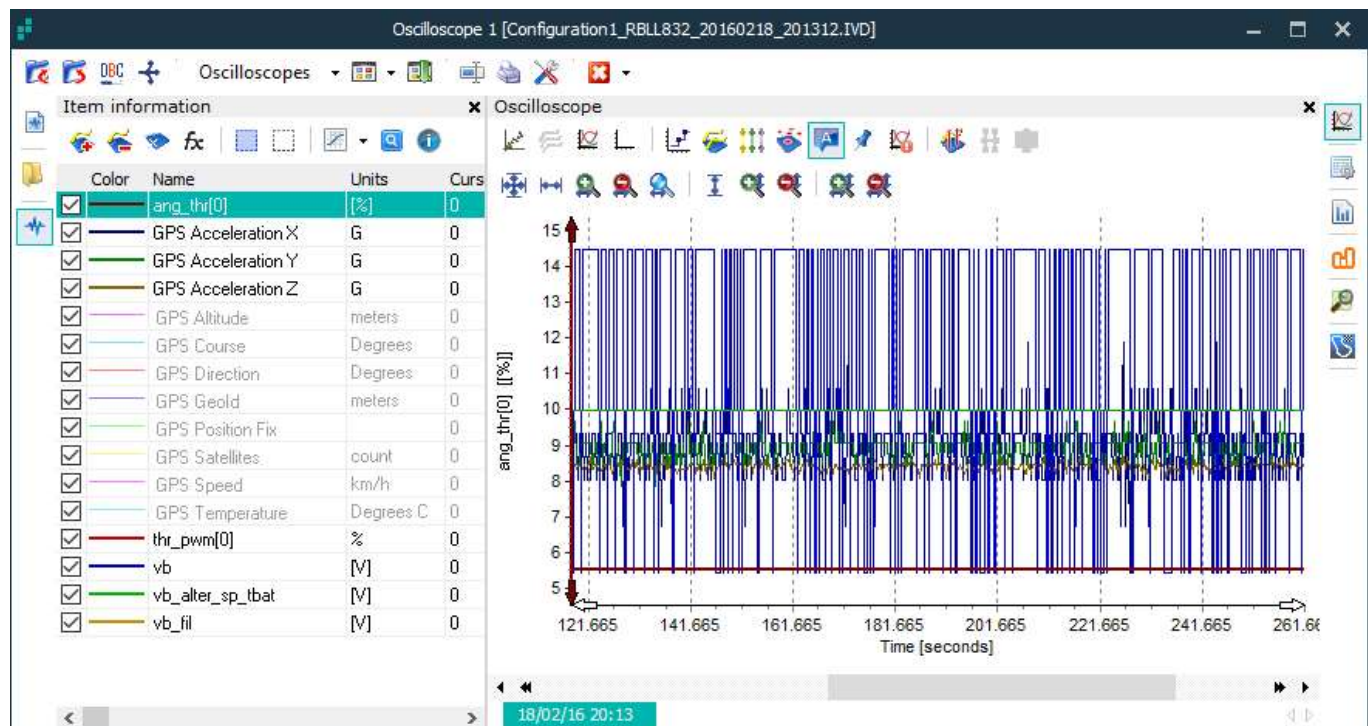
The window contains three tabs, found on the right hand side of the window, which allow the user to access the different sections of the data analysis functionality.

Influx Technology Headquaters, UK

Office Suite 22,
Building 03 Millbrook Proving Ground,
Station Lane Millbrook
Bedford
MK45 2JQ

Telephone: +44 (0) 1525 842504
Sales: sales@influxtechnology.com

Influx Big Data Solutions Pvt Ltd, India

#2,
Krishvi,
Ground Floor,
Old Airport Road,
Domlur,
Bangalore,
560071

Phone: +91 7337748490
Sales: sales_india@influxtechnology.com

Influx Technology Asia, China

Rm.722,
Flr.7,
Lisheng Tower,
Wangfujing Street 201,
Dongcheng District,
Beijing,
100005,
China

Telephone: 86-10-5718-1640
Email: info@influxasia.com