

KMS

Datalog manual V1.4.0.2



Kronenburg Management Systems

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Kronenburg Management Systems

1 KMS Datalog

Kronenburg Management Systems (KMS) is a complete line of programmable engine control units (ECU), that offers you an extremely reliable and user-friendly system at a very competitive price. It gives you the possibility to manage all turbo and naturally aspirated Otto engines (engines in which the fuel mix is ignited via a spark plug) up to 12 cylinders.

An engine control unit is a type of electronic control unit that determines the amount of fuel, ignition timing and their parameters which are needed to keep an internal combustion engine running. It does this by reading values from multidimensional maps which contain values calculated by sensor devices monitoring the engine.

The programmable KMS ECU doesn't not have a fixed behaviour, but can be (re)programmed by the user. Programmable ECU's are required when a significant modification has been made to a vehicle's engine. For example adding a turbocharger, changing the camshaft profile or a conversion to an alternative fuel. In these situations, a programmable KMS ECU can be wired in. The KMS ECU's can be programmed/mapped with a computer connected using a serial or USB cable, while the engine is running.

The programmable ECU controls the amount of fuel to be injected and the ignition moment for each cylinder. This varies depending on the engine's RPM and the position of the throttle valve and/or the Manifold Absolute Pressure (MAP). This can be adjusted by bringing up a spreadsheet page on the screen where each cell represents an intersection between a specific RPM value and a throttle position. In this cell a value corresponding to the amount of fuel injected can be entered. This spreadsheet is referred to as a fuel table or fuel map. The same way the ignition spreadsheet can be setup.

By modifying these values while monitoring the exhaust gas composition (best way is using a wide band lambda sensor) you can see if the engine runs rich or lean. This way you can find the optimal amount of fuel and optimal ignition moment needed for all possible combinations of RPM and throttle position/manifold absolute pressure. This process can be best carried out at a dynamometer, giving a controlled environment (without influence from outside) to work in. An engine or chassis dynamometer gives a more precise calibration for your (racing) applications.

The KMS MD35 ECU offers a complete self learning air fuel ratio control (lambda control) for most common types of oxygen sensors (broadband/narrow band). In addition to lambda control, this management system also provides the following functions: load-dependent boost pressure control, water injection control, (variable) launch control, power-shifting, (variable) A.L.S., staged/banked injection, mapselector, odd fire, idle control, rpm limiters, engine diagnostics, 4mb datalogging, etc. The internal datalogging is what this manual is about.

Kronenburg Management Systems has developed an internal datalogger in the MD35 engine management system.

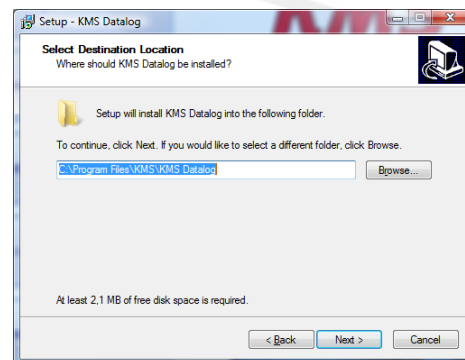
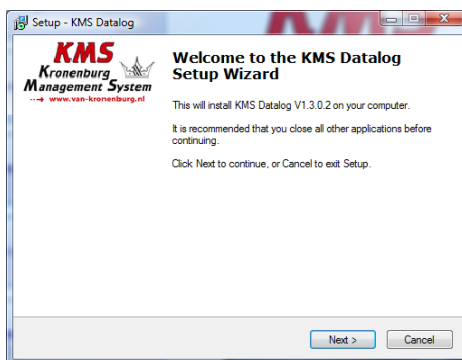
This datalogger contains 4 MB of storage. It can read 58 channels (34 analog and 24 digital) of information and is fully adjustable to the personal requirements.

2 Software installation

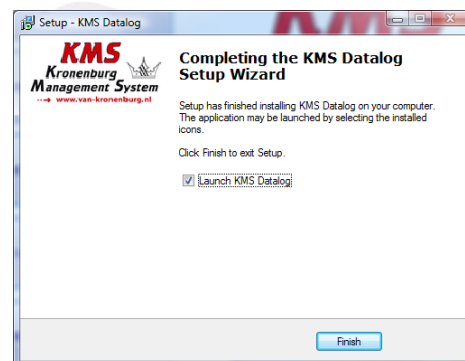
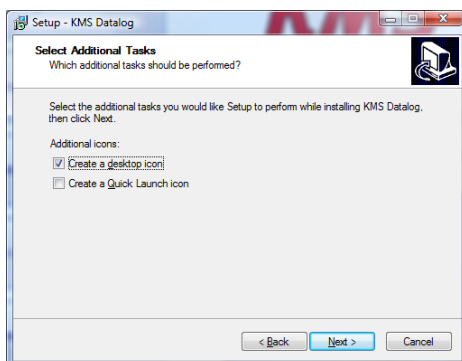
The software is supplied together with the system, on a CD-ROM. Installing the software is very easy. The CD-ROM carries the KMS installation program, which launches automatically when the CD is inserted.



If you click on the button 'datalog version' the installation of the datalog software will start.



The installation software will ask where the software must be installed. We recommend to install the software in the same place as the rest of the KMS software to keep things organised.



After the installation there is the option to choose if you want shortcuts and where you want them.

Finally the confirmation and the question if you want to start the software directly. This is not necessary, so if you don't want to start the software that instant just deselect this option.



3 KMS datalog software

3.1 Start-up

When the software is started up, the screen below will appear and after the KMS logo disappears the datalog software is ready to use.



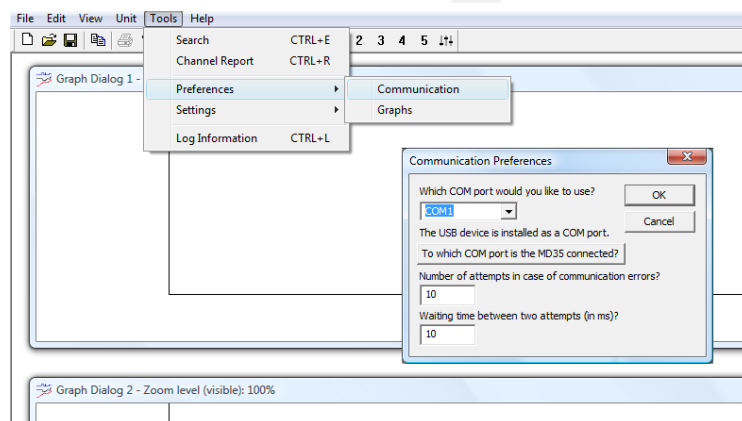
The program doesn't automatically load the data from the ECU like the KMS Management software. You can load a saved file on the computer or make a connection with your ECU to receive the stored data.

3.2 Setting up the ECU

It's very important that the settings are set correct in the ECU. This determines what kind of data you get after downloading the data out of the ECU.

3.2.1 Communication port

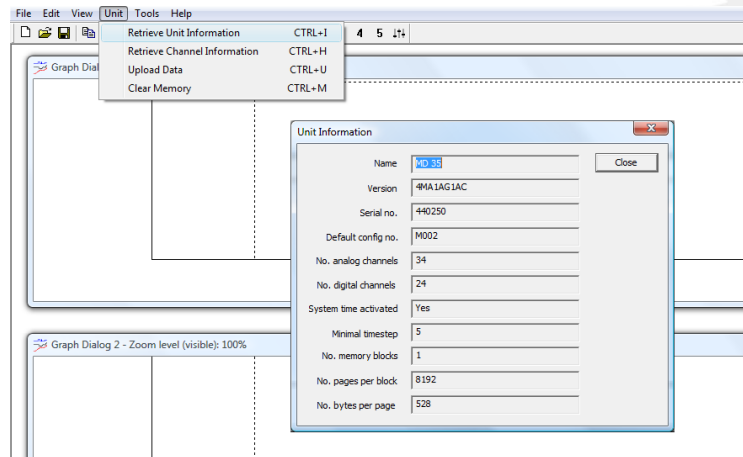
First step is selecting the right communication port.



At the tab communication preferences, the COM port can be selected. If you don't know the COM port number where the USB cable of the MD35 ECU is at, click the button and the software will search for the correct COM port. You do have to fill in the COM port manually at the pull down menu.

3.2.2 Retrieve unit information

When the COM settings are correct we can now 'read' the ECU.



Go to 'Unit' → 'retrieve unit information' and the information about the ECU that is connected will be displayed.

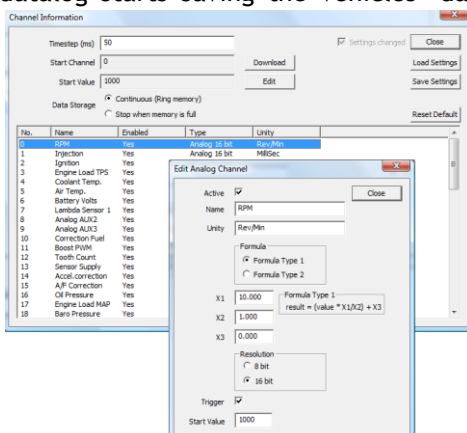
3.2.3 Setting up the channels

When the MD35 ECU comes out the box, certain standard settings for the datalog are made.

The ECU will store data even if there aren't any changes made.

Standard the 'trigger' channel (which starts the data storage) is set to channel 0.

So when the engine rpm becomes more than 1000 RPM the datalog starts saving the vehicles' data. This is when the ECU isn't touched.



The trigger can be set to any channel with an own specified start value. Just select the channel which you want to adjust and press the edit button.

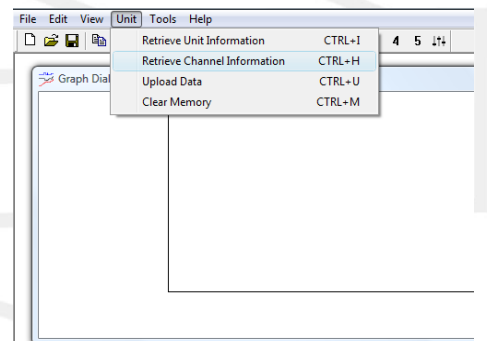
The 'edit channel' screen will appear.

As an example we opened channel 0 (an analog channel) to demonstrate how the channel can be changed.

In the picture on the right, you can see the definition of the RPM channel.

A different name can be given to this channel and the unity.

At the Formula data are some numbers filled in. To display

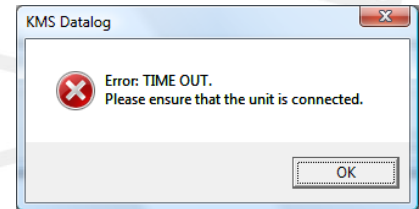


the data in a certain way on the screen these numbers can be adjusted.

Example : if the number 100 is entered at X2 then you get the same value displayed as the dashboard RPM gauge in the vehicle.(so 300 RPMx10 changes in 3 RPMx1000)

After the settings for the selected channel have been made, just click the close button. If all the channels are adjusted to the personal requirements push the download button. The new made datalog settings will be send to the ECU.

This message can appear if the ECU is not connected to the battery and supplied with 12V, or the communication between the computer and ECU isn't there anymore.



You can save the settings you have made to the different channels and save them on the computer. The extension for this file is *.kms.

After these adjustments the datalog in the ECU is set to your personal settings and is ready to use.

3.3 Uploading the data

To actually start working with the data which is stored in the ECU, the information must be transferred from the ECU to the computer.

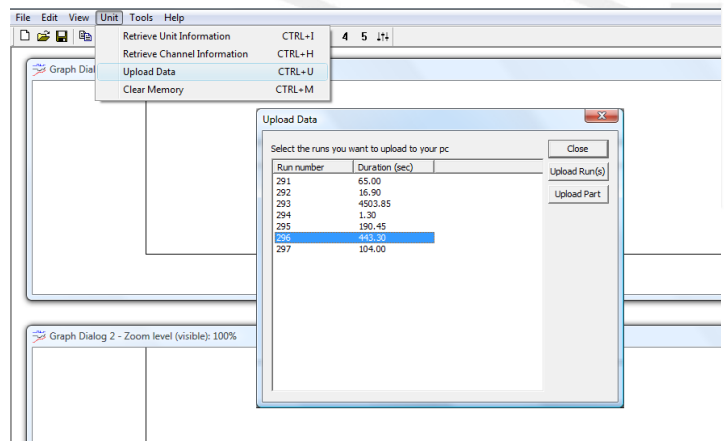
Make sure that the ECU is supplied with 12V and that the USB cable is connected to the computer.

3.3.1 Uploading run(s)

When selecting 'Upload Data' the following screen (on the right) will appear.

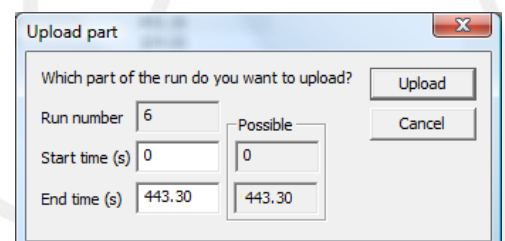
Example : At this example, we have 7 runs which we can upload from the ECU to the computer.

All runs can be uploaded together, but separate too. There is also the option to upload just a part of a specific run.



3.3.2 Uploading part of the run

At the 'Upload part' screen, there can be seen how long the specific run is. You can insert your own period of time (between the lower en upper limit) which you want to upload to the computer.



3.3.3 Report after uploading run



After completing the upload process the datalog software will first show you a report of the 'run'.

The maximum, minimum and average values will be shown for every channel you activated.

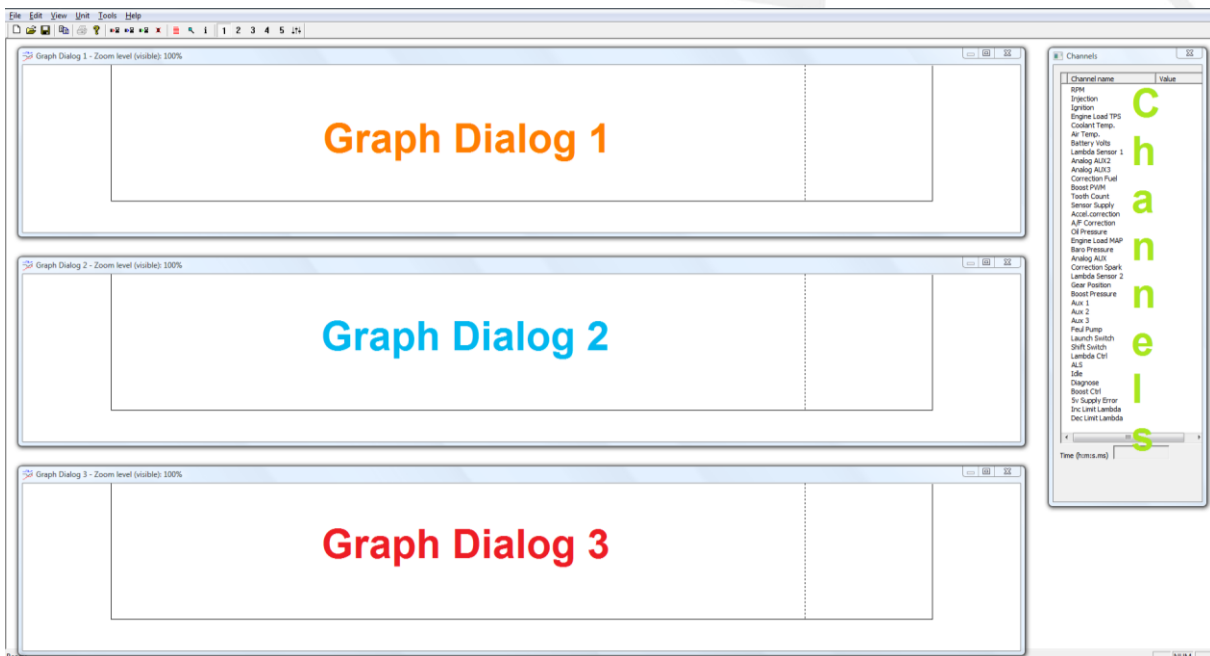
This channel report can be called back later by clicking 'Tools' → 'Channel report'.

Channel	Min	Max	Avg
RPM	0.00	3790.00	3738.36
Injection	0.00	7.34	3.97
Ignition	0.00	32.10	31.55
Engine Load TPS	7.80	7.80	7.80
Coolant Temp.	17.00	36.00	20.62
Air Temp.	39.00	49.00	39.03
Battery Volts	12.00	12.25	12.00
Lambda Sensor 1	9.50	9.50	9.50
Analog AUX2	0.00	0.00	0.00
Analog AUX3	0.00	0.00	0.00
Correction Fuel	-40.40	33.70	-33.86
Boost PWM	0.00	0.00	0.00
Tooth Count	0.00	60.00	59.95

3.3.4 Displaying data

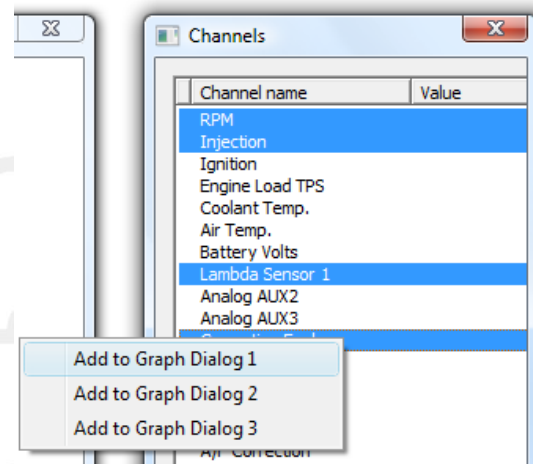
The Datalog software main screen is divided in 4 sections.

There is the 'channels' screen, where all the activated channels are seen. Next to the 'channels' screen are the 3 'graph dialog' screens.



The graph dialog(s) can be switched on/off by selecting the concerning graph dialog in the menu 'View' → 'Graphs' → 'Graph Dialog 1/2/3'. The channel screen can also be switched on/off by selecting 'Channel List' in the 'View' menu.

Channels from the 'channels' screen can be dragged with the mouse to the 'graph dialog' screen. You can select multiple channels at once before dragging them to a graph dialog. Hold 'Ctrl' and select multiple channels. There is a maximum of 4 channels which you can drag to one specific 'graph dialog' screen. Channels don't necessarily need to be dragged to the graph dialog. You can also click the right-mouse-button and then select on which graph dialog the channel has to be displayed.



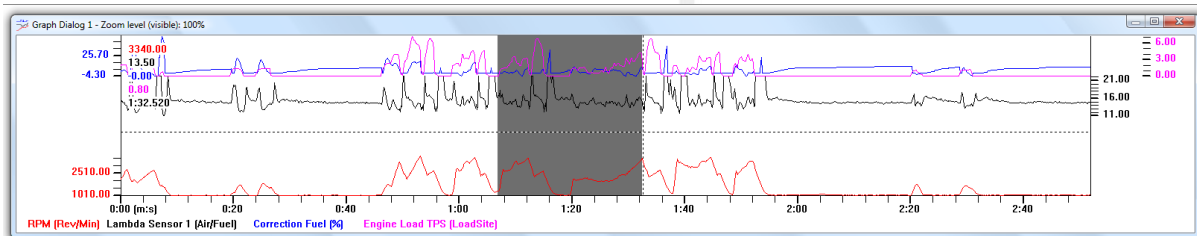
3.4 Interpreting the data

There are some manners for easier understanding the data shown in the graph dialog(s). These options in datalog software will be explained in the following sections.

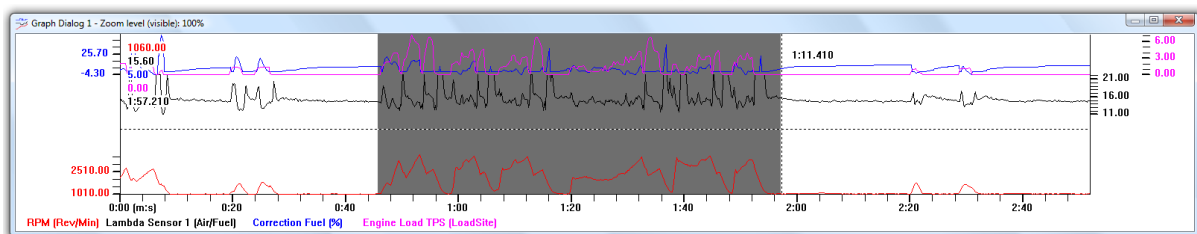
3.4.1 Zoom

If you press the left mouse button (keep pressed) and drag the mouse to the right, the graph will zoom in. If you drag the mouse the other way with the left mouse button pressed, the graph will zoom out.

In the blue bar you can see the zoom level (how much the graphs are zoomed in).



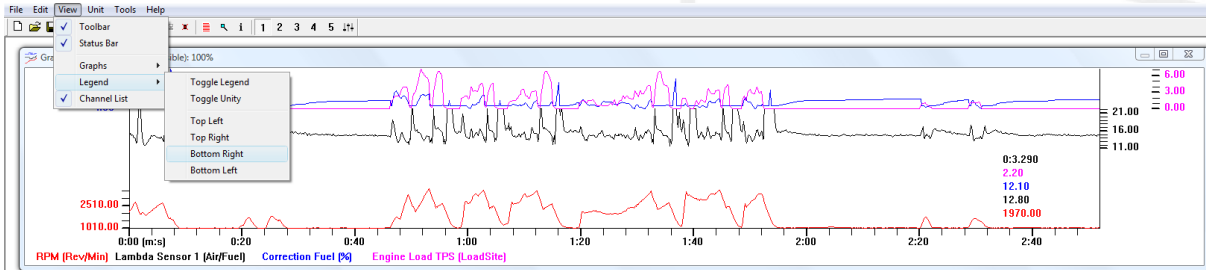
Another option on the zoom is, that when the space-bar is hold, then the marked area is showed in time. So you can see in what time period you are zooming.



With a graph zoomed in you can scroll through time using the 'Ctrl' button simultaneously while pressing the arrow key left of right.

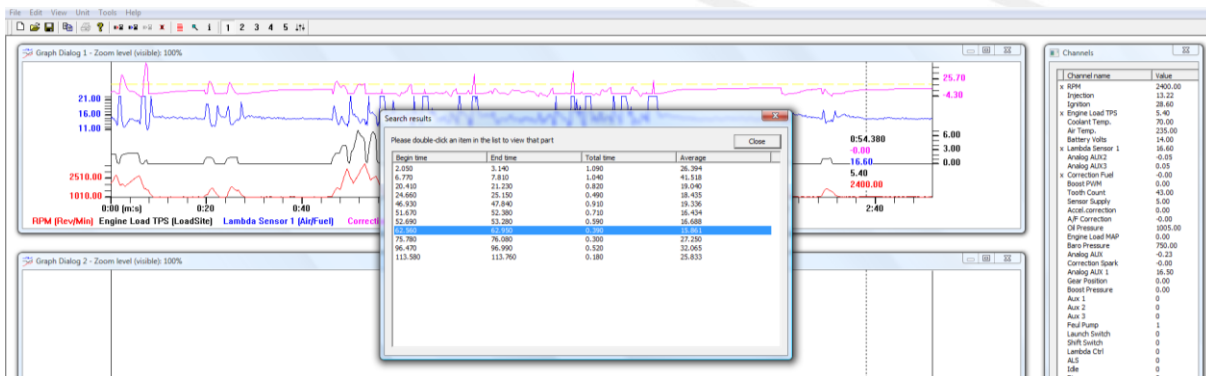
3.4.2 Legend

When moving the cursor over the lines in the graph dialog(s) the y-axis value of these channels will be displayed in the legend. These values are also displayed in the channel screen. The position of the legend in the graph dialog can be changed. Go to 'View' → 'Legend'. In this menu there is also the option of switching the legend off by pressing 'Toggle Legend'. When 'Toggle Unity' is selected in this menu, the unity of the channels will be shown behind the values in the legends.



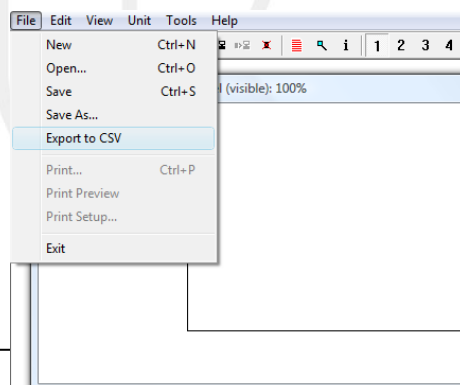
3.4.3 Search

If you select 'Tools' → 'Search' in the menu, a search screen will appear. In this screen you can select the channel you want to search. For example when the 'Correction Fuel' channel exceeds 15%. Every time the correction fuel exceeds 15% will be displayed (see picture below). Double click an item to view this part. A blocked yellow line is visible in the graph dialog representing the 15%.



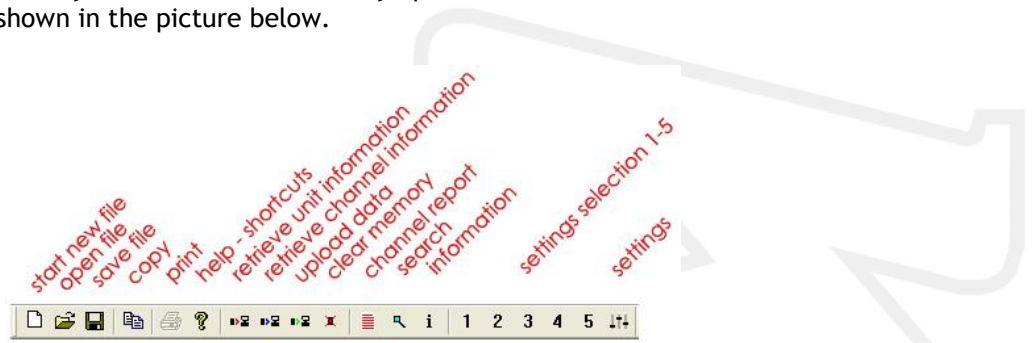
3.4.4 Export to Microsoft Excel

The KMS Datalog file can be opened with Microsoft Excel. In Excel you can add your own formulas for calculations or make your own graphs. To export the datalog file as a *.CSV (comma separated values) to Microsoft Excel go to 'File' → 'Export to CSV'. Rename the file and select the folder where you want to save the CSV.

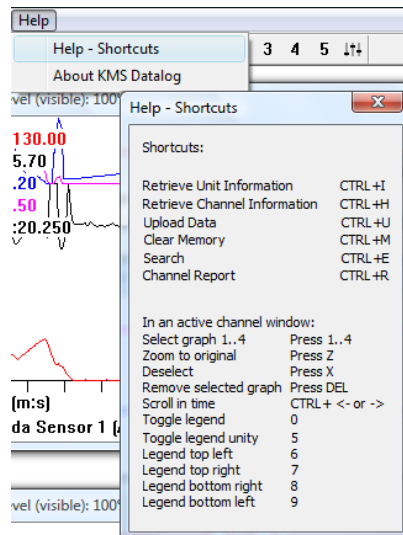


3.5 Help - Shortcuts

There are shortcuts and easy buttons for almost every option that will be mentioned in this manual. The easy buttons are shown in the picture below.



'Help-Shortcuts' in the 'Help' menu will provide some quick adjustment buttons in active channel windows.

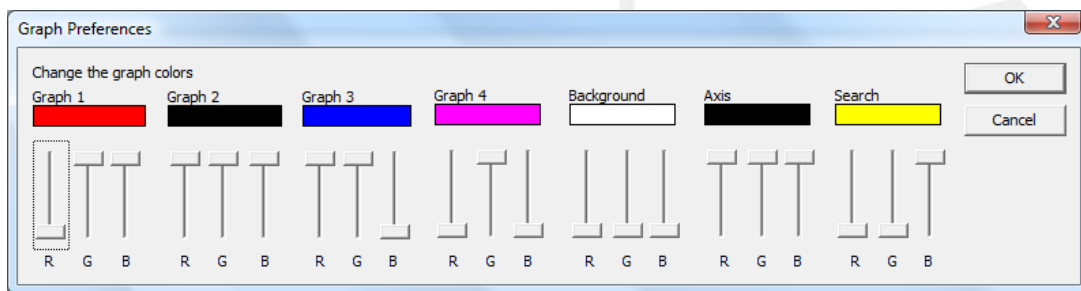
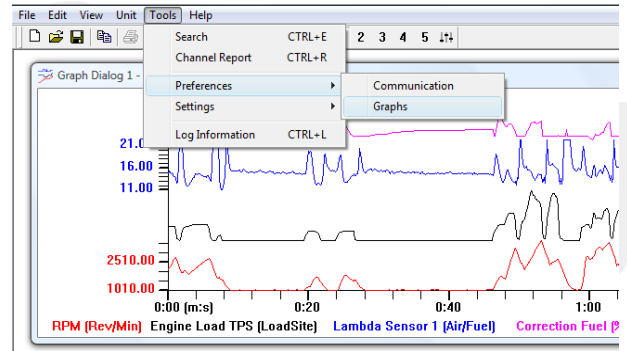


3.6 Personal settings

The datalog software is adjustable to your own preferences.

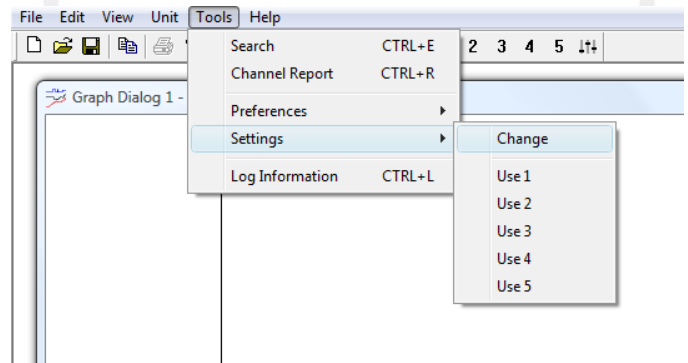
3.6.1 Colour adjustment

You can adjust the colours of the channel displayed in the graph dialogs. To change the colours go to 'Tools' → 'Preferences' → 'Graphs'. You can also change the background colour and the scale colour of the graph dialogs. Just drag the bars up and down and you will see the colours changing.



3.6.2 Graph dialog settings

There are some settings build in the program, to make understanding the data much easier. You can adjust the scale and positions of the graph inside the dialog screen. There is also an option to auto-open the graphs in the preferable dialog.



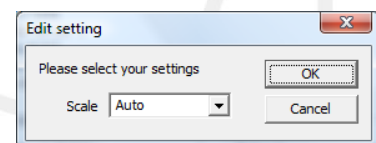
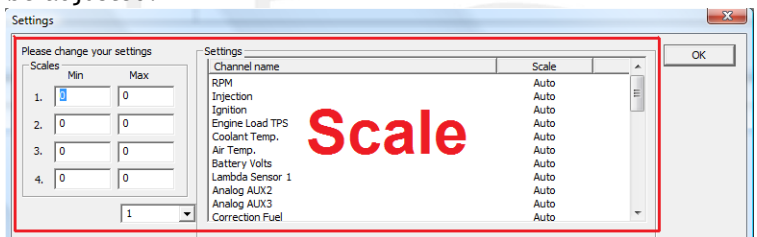
3.6.2.1 Scale

There are 4 different kind of scales which can be adjusted.

If you double click on the scale behind the channel you will see the 'edit setting' screen like on the right.

In this screen you can give the channel a preferable scale. You can select 1 of the 4 scales which you have preset yourself. Or just select 'auto' to let the software make a scaling between the maximum and minimum value of the channel.

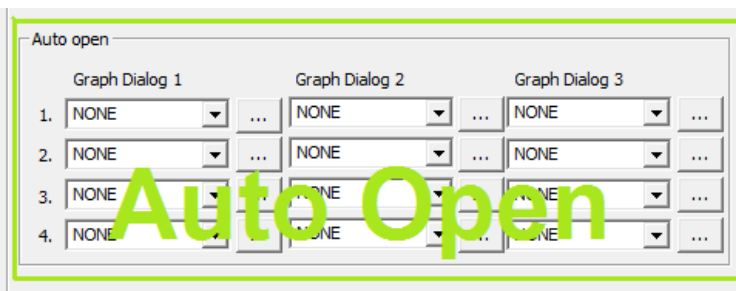
This works threw in all the 5 settings!



3.6.2.2 Auto open

The function auto-open gives you the ability to adjust the software to your own needs.

When you start the program the next time after you have set the 'auto open' options, the amount of graphs and positions of the graphs will show as you wish.




The three columns stand for the three different graph dialogs in the main screen. There's a maximum of four channels pro dialog, so there's a maximum of 12 channels you can show at once.

These 'auto-open' options can be made for are the 5 settings separately.

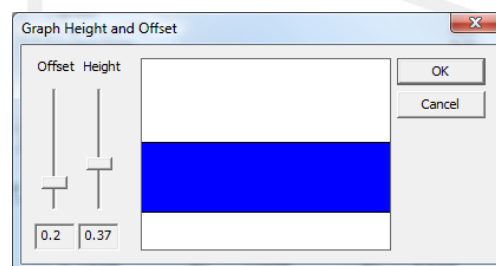
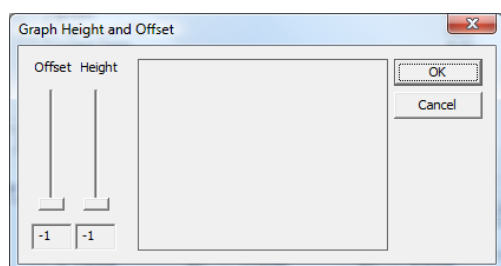
So you can set 5 different 'auto open' screens.

If you have selected the right channel on the right place of the graph dialog, then (if its desirable)

the height and offset of the channel in the graph dialog can be changed. Just click the dotted 

button behind the pull down channel select menu.

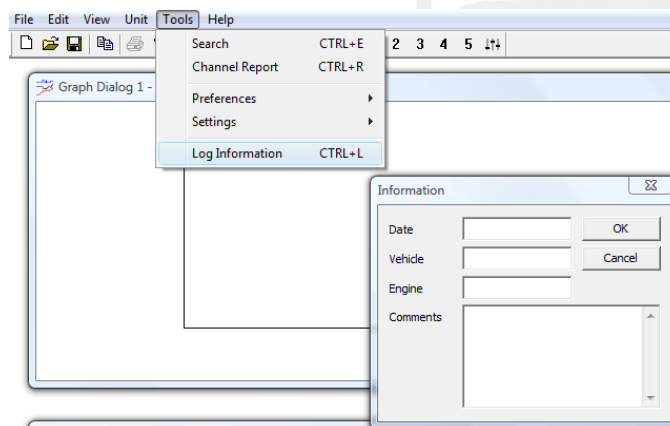
Drag the bars like showed in the figures below and then the blue marked section will show you were the channel in the graph dialog will appear.



3.6.2.3 Engine information

In this screen, information about the file and/or engine can be stored. So when the file is saved and loaded again, you can always see of what date and engine it was.

This screen will only work if a datalog file is uploaded from the ECU or loaded from the computer.



4 Fault tracing

Fault	Possible causes	Solution
Can't communicate with the ECU	<ul style="list-style-type: none">- No power on ECU- USB driver not/wrong installed	<ul style="list-style-type: none">- +12V on the ECU- Install driver on CD again
Just a few values appear	<ul style="list-style-type: none">- Channel configuration wrong- timestep too large	<ul style="list-style-type: none">- set more channels to active- make timestep smaller
Program doesn't start	<ul style="list-style-type: none">- Working with windows Vista	<ul style="list-style-type: none">- set compatibility to WinXP

5 Specifications

Minimum system requirements

Windows 2000,NT,ME,XP or Vista (XP recommended)

Internal memory 64Mb (128Mb recommended)

Screen resolution 1280x1024

Standard USB port (USB 2.0 recommended)

CD-ROM station

Acrobat reader 3.0 or higher (Acrobat reader 5.0 is included on the CD-ROM supplied)

