EcoCAL

User Manual

V1.1

Http://www.ecotrons.com

Note: If you are not sure about any specific details, please contact us at info@ecotrons.com.

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Induction

EcoCAL is the Calibration software of EFI system from Ecotrons, you can use the EcoCAL to tune the maps of ECU, start fuel/ ignition angle, warm-up fuel, idle ignition advanced angle, ignition timing MAP, fuel injection MAP, … etc.

Our ECU is programmable, so if you want to change the setting of EFI, you need connect ECU to laptop via EcoCAL.

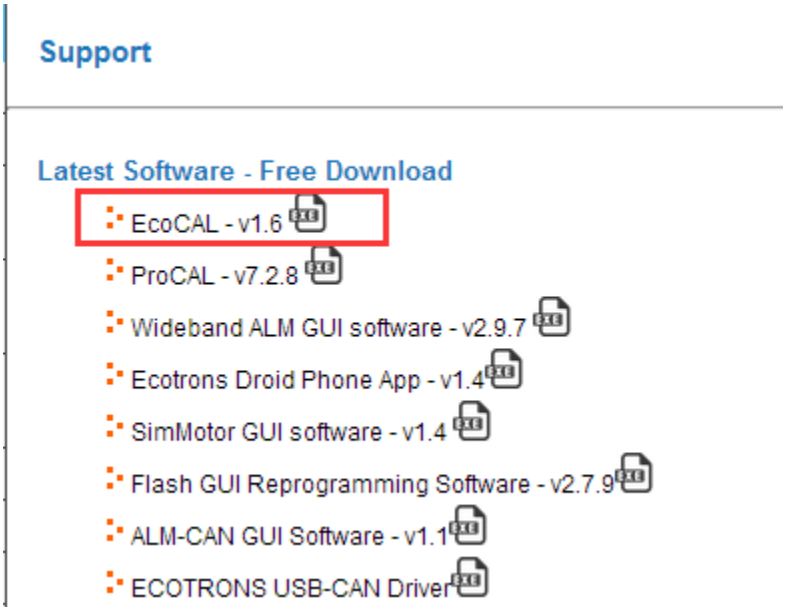
Chapter 1 Basic operation of EcoCAL

1.1 Installation of EcoCAL

1.1.1 Download the EcoCAL Software

1) Download the EcoCAL calibration software from the website:

http://www.ecotrons.com/support/



Click the “EcoCAL”, and then download the software “EcoCAL-Setup.exe”

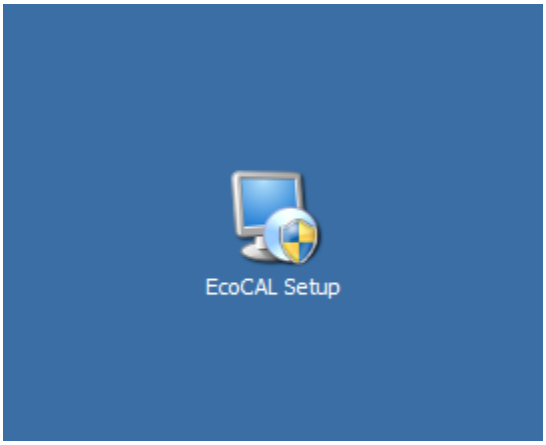
2) Maybe, you get the software through the E-mail. So you need rename the installation file name that is attached in the Email:

"**EcoCAL-setup.exe.remove**".

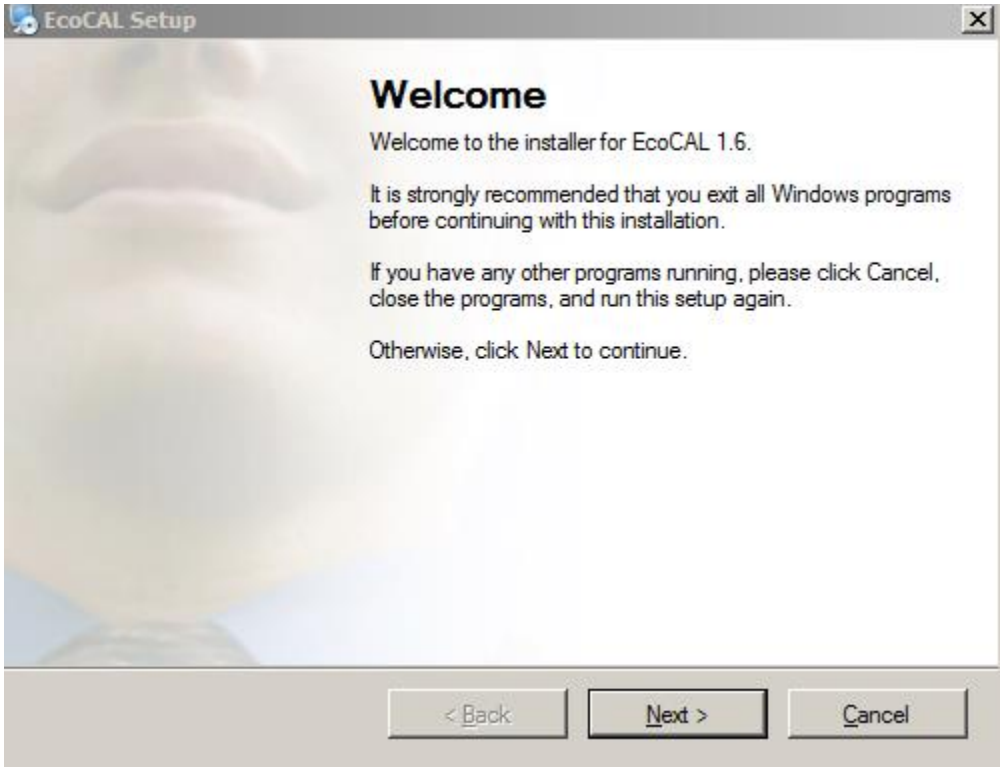
Please modify the attached file name extension, and remove the "**.remove**", then run the file: "EcoCAL-setup.exe" to install the tool software.

1.1.2 Install EcoCAL

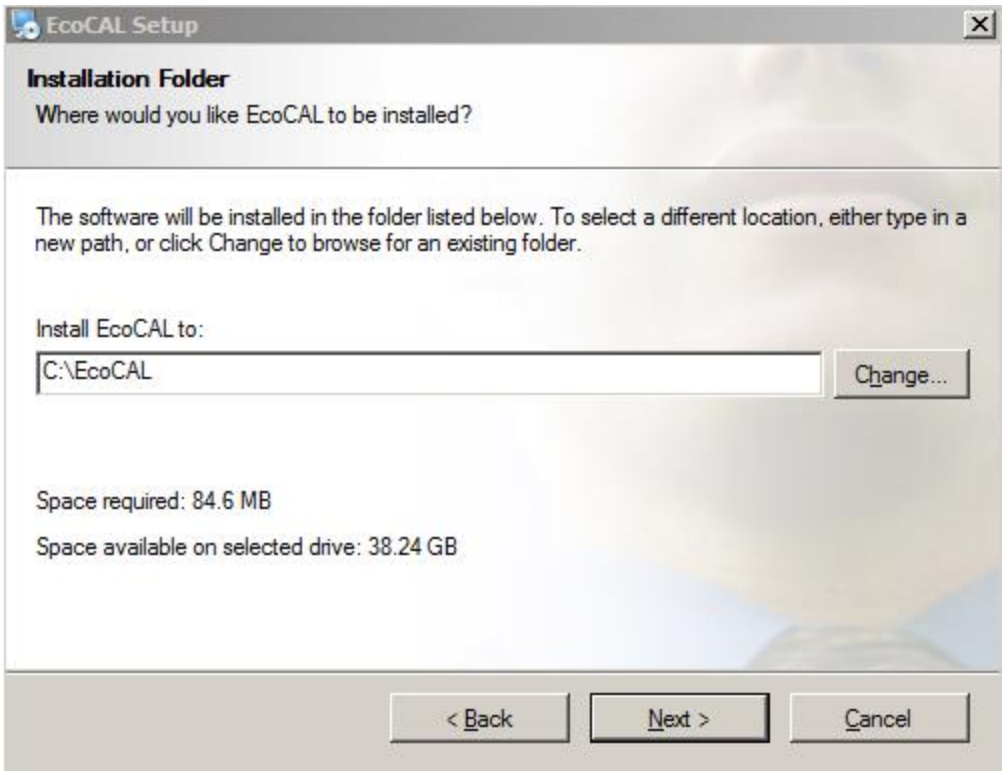
1) Double-click the ICON "**EcoCAL setup.exe"** to install the EcoCAL:



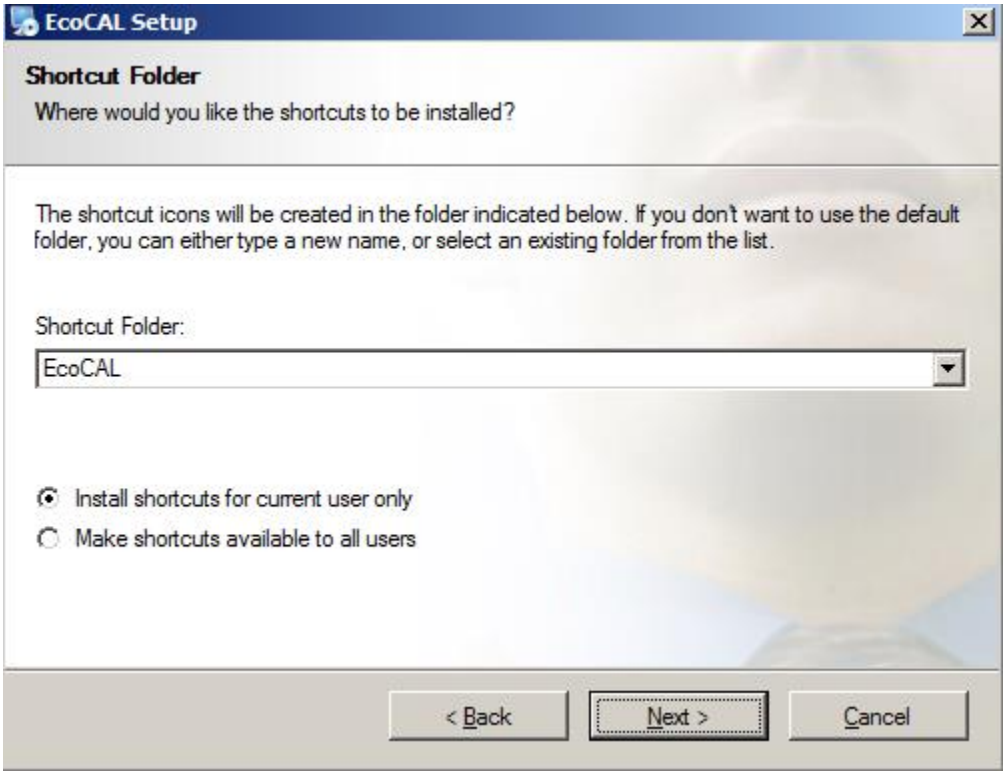
2) Click "Next"



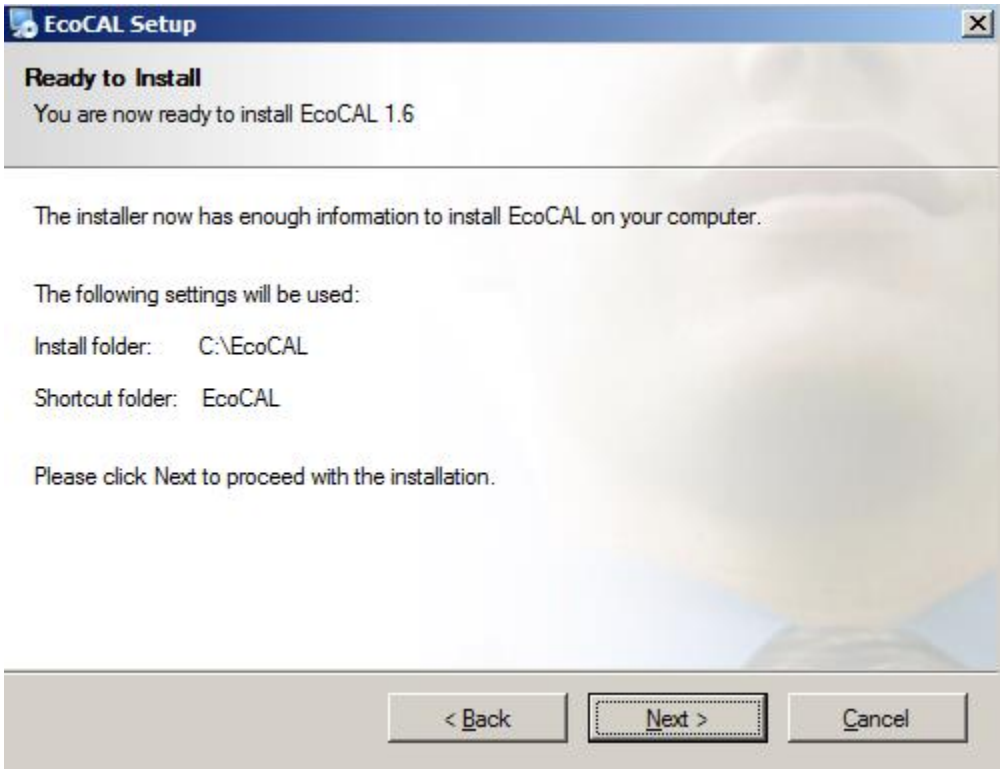
3) Click "Next" and choose the path to install EcoCAL


EcoCAL Setup
Installation Folder
Where would you like EcoCAL to be installed?
The software will be installed in the folder listed below. To select a different location, either type in a new path, or click Change to browse for an existing folder.
Install EcoCAL to:
C:\EcoCAL
Change...
Space required: 84.6 MB
Space available on selected drive: 38.24 GB
< Back
Next >
Cancel

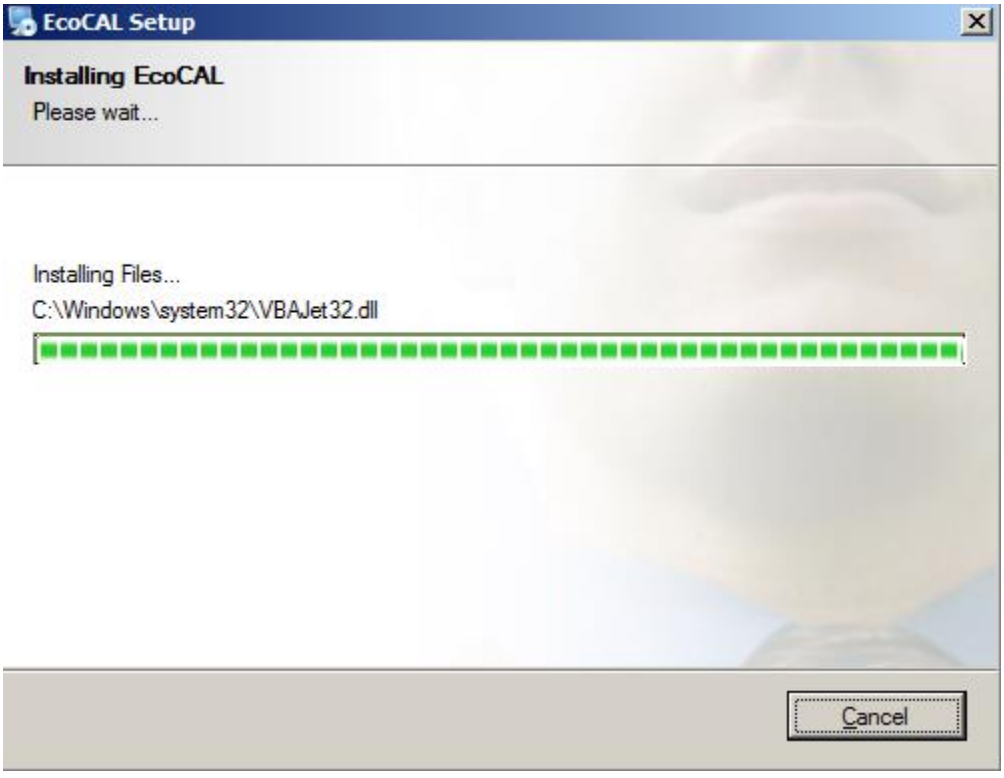
4) Click “Next”


EcoCAL Setup
Shortcut Folder
Where would you like the shortcuts to be installed?
The shortcut icons will be created in the folder indicated below. If you don't want to use the default folder, you can either type a new name, or select an existing folder from the list.
Shortcut Folder:
EcoCAL
Install shortcuts for current user only
Make shortcuts available to all users
< Back
Next >
Cancel

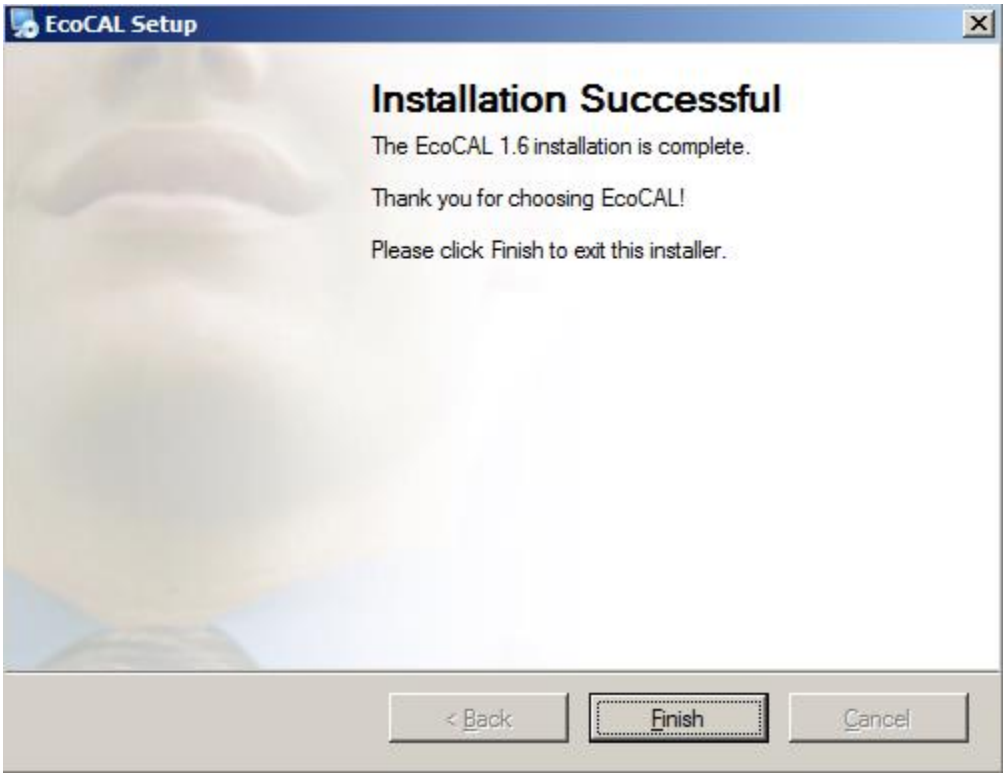
5) Click “Next”



6) Click “Next” and wait for installing



7) Click “Finish”

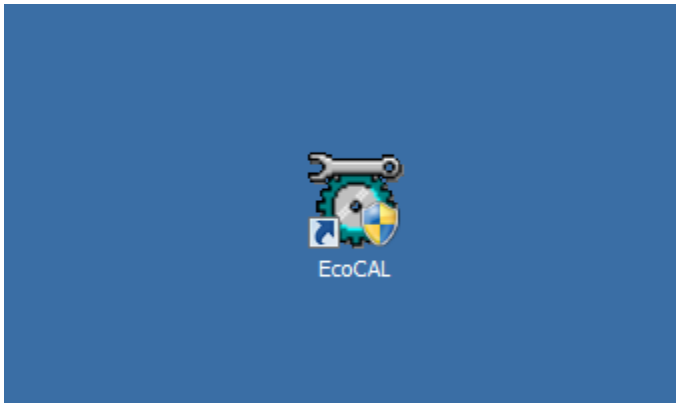


The installation of “EcoCAL” is successful.

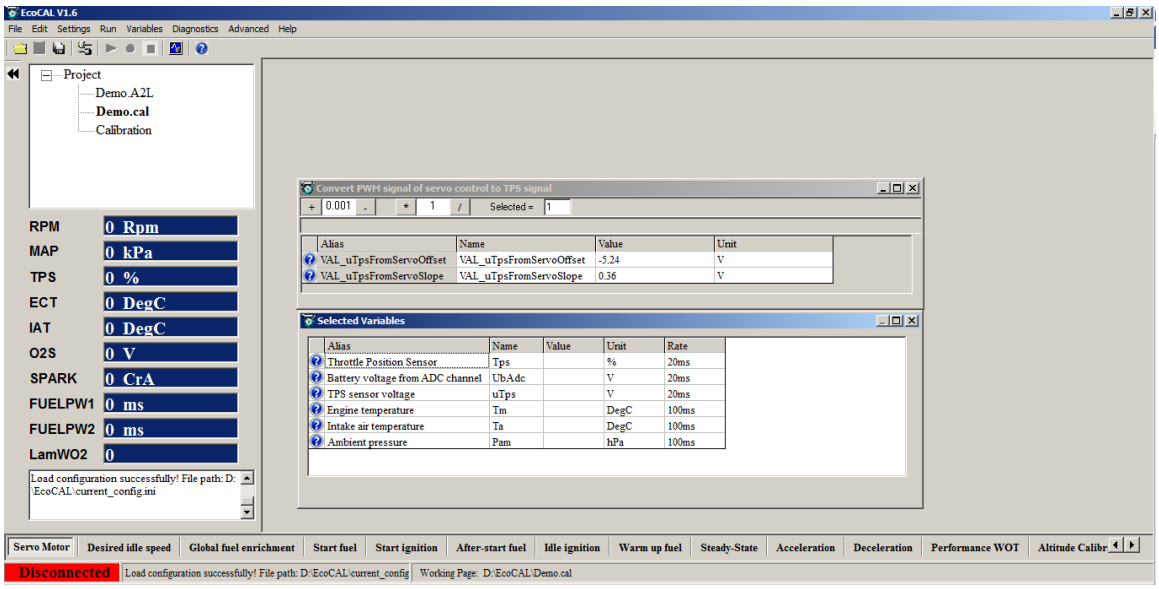
1.2 Start EcoCAL

1.2.1 Start EcoCAL software

(1) Double-click the ICON "**EcoCAL”** on the desktop to start the EcoCAL software:



(2) When you start the EcoCAL at the first time when you finish installation, the EcoCAL will load the Demo files automatically with the default page settings.



Note:

If EcoCAL does NOT automatically load the default configuration, likely you do not have the necessary A2L file and CAL file, in the installation folder of "**C:\EcoCAL**". You should copy and paste the necessary A2L file and CAL file into that folder, if the folder contains no such files.

1.2.2 Load the Calibration files

1) File types and definitions

S19 file: this is a Motorola format microprocessor executable file;

A2L file: this is an ECU description file that contains variant ECU info for EcoCAL to know where to get what, etc;

CAL file: this is a calibration data file that contains parameters users can tune.

Note: Ecotrons A2L file follows the ASAP2 standards (defined by the automotive standard association ASAM).

Note: most users don't need the S19 file; unless an ECU firmware update is necessary; it is enough to have the A2L file and CAL file to run EcoCAL and tune your engines.

2) Load the correct A2l and CAL files

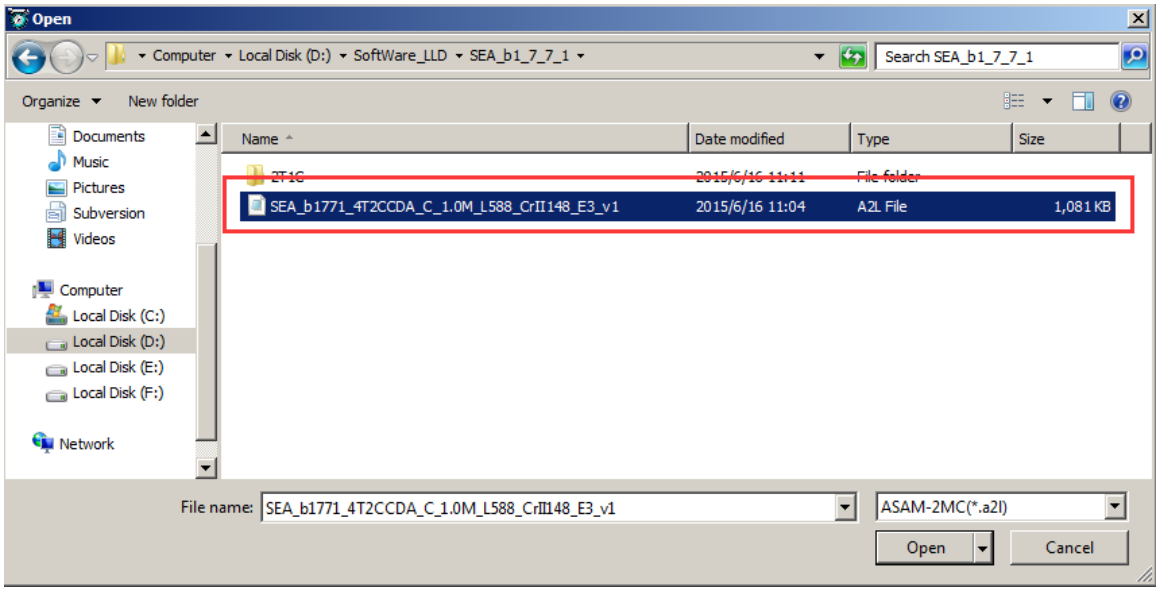
Note: If you have not got A2L file and CAL file in your CD or in the software package via Email, please contact us: **info@ecotrons.com or support@ecotrons.com.**

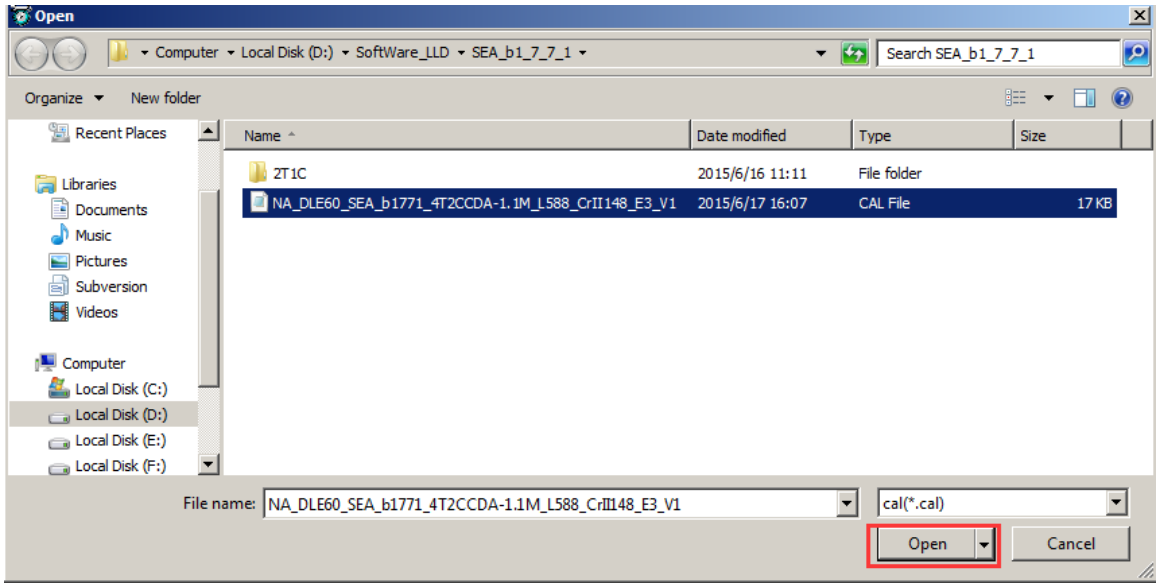
Often the user will need to load different A2L file and CAL file than the default ones coming with the EcoCAL.
For example, an ECU software update will give you a new A2L file and a new CAL file.
Or new calibration release will give you just a new CAL file (A2L file stays same).

In EcoCAL, go to menu->File->Open

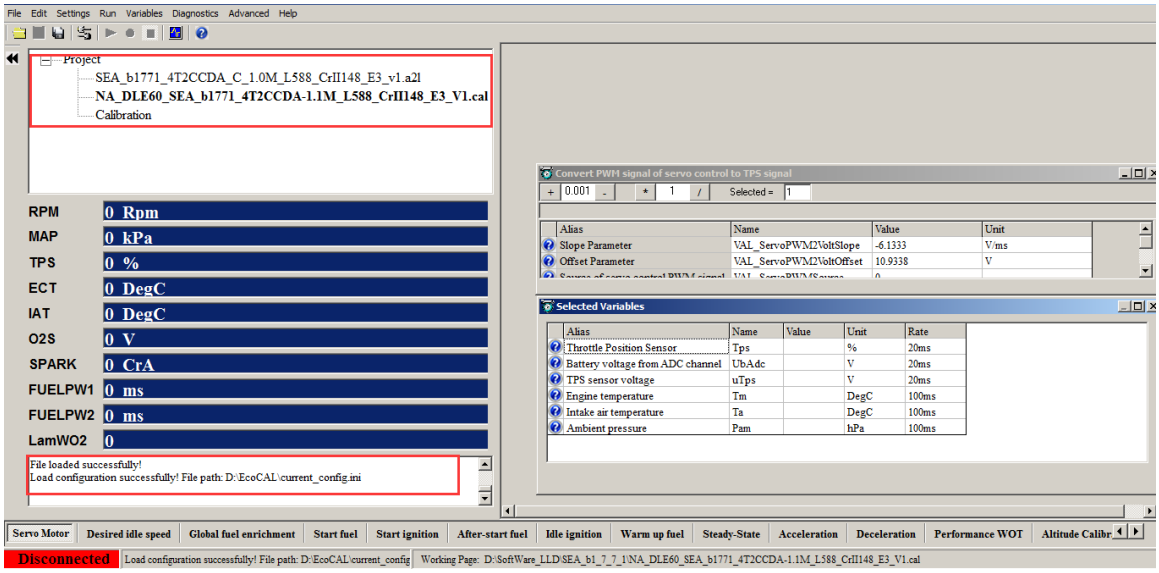
Find out the place that you put the A2L and CAL files, and then choose the correct files

Note: EcoCAL always need to open 2 files, open A2L first, and then open CAL file next,

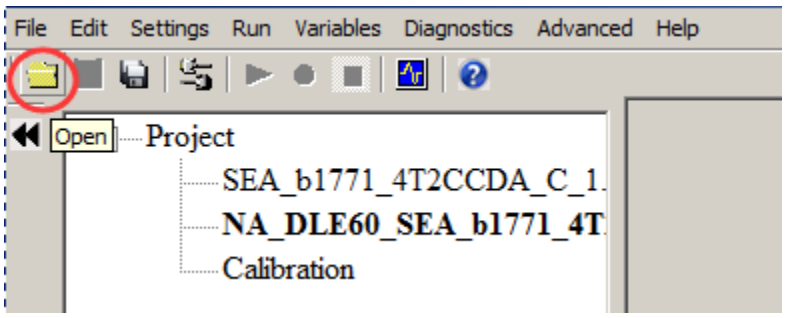




Click “Open”, and then load the A2l and CAL files successfully.



Note: You also can use the shortcut button of “Open” to open the files.



Chapter 2 Connect to ECU and Record data

2.1 Connect ECU to laptop

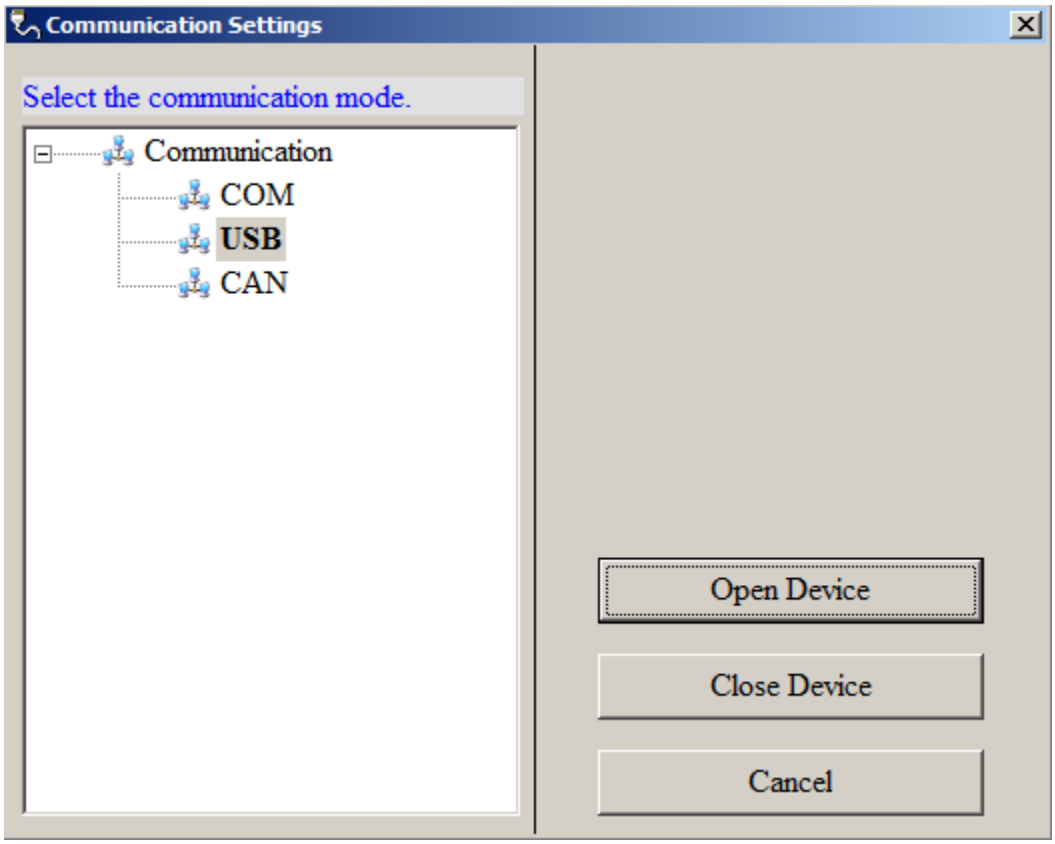
Note: When you want to connect the ECU to laptop via EcoCAL, you must make sure you have powered on the ECU-when you power on the ECU, you can hear the noise of pump working about 5 seconds.

2.1.1 Communication Settings

You should select the communication mode first based on which way you use, COM or USB or CAN.

In default, we provide the COM RS232 cable and USB adapter, so you can use the COM or USB for communication.

Go to menu->Settings->Communication Settings:

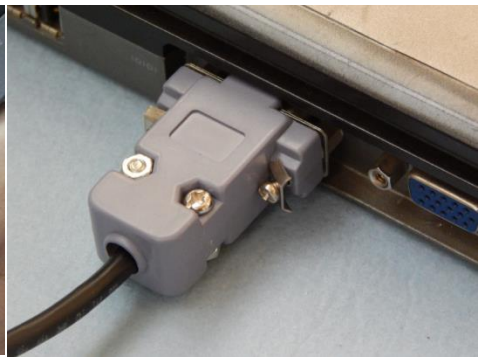


Note: By default, EcoCAL uses USB communication mode (**Note: insert the Ecotrons' USB adaptor into the laptop first for USB mode**). This configuration is consistent with most of the computers.

1) COM communication mode

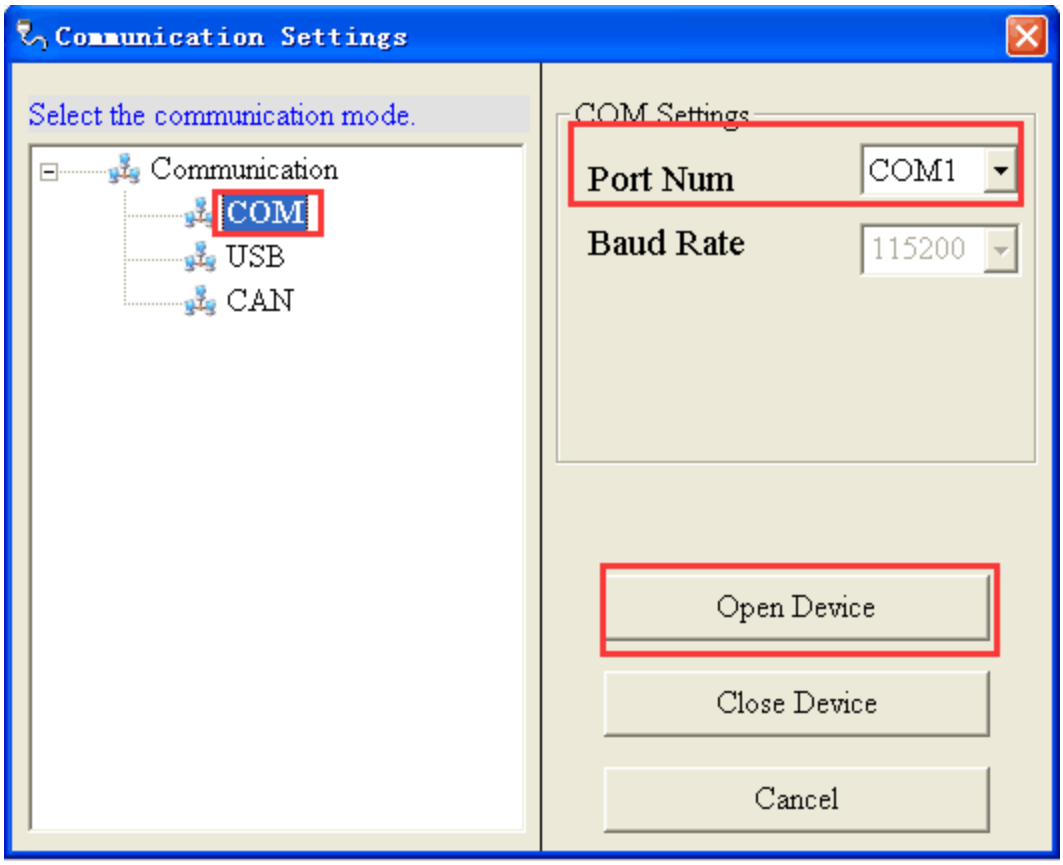
If the user is using the **COM** mode (**Note: for this mode, your laptop need to have a built-in COM port**). Select COM and set the COM port, the default COM port is **COM1**. (**Note:** To check the computer COM port availability, see Chapter 13.2 "Failed to connect to the ECU"**)**

Built-in COM port (9-pin)



RS232 cable

The default baud rate is 115200, which the fastest of the serial comm. rate of the PC. It is not supposed to change.



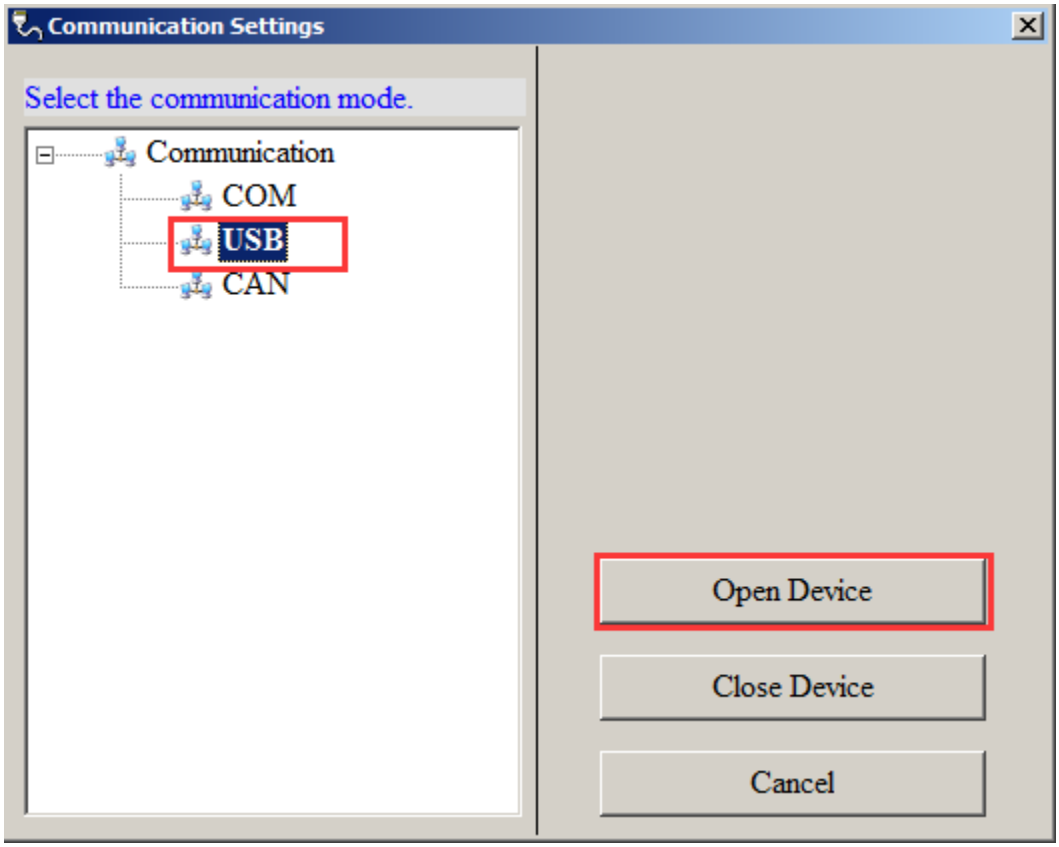
2) USB communication mode

Most new computers do NOT have a built-in COM port any more. You should insert the USB adaptor (Ecotrons' USB Adaptor) to the laptop, and then select the **USB** in the communication settings window of EcoCAL.

Note: We do not support the 3rd party USB-RS232 adapters, even though they might work sometime. The problem is that those consumer electronics rated USB adapters only works in a noise-free environments. This means, once the engine is running, it

generates a lot of electronic magnetic noises. And those USB adapters, though looking pretty, will not stay working when you are driving. That's why we developed our own.

Note: Make sure the connection between laptop and USB adaptor (Serial communication cable) is **FULLY** plugged in.



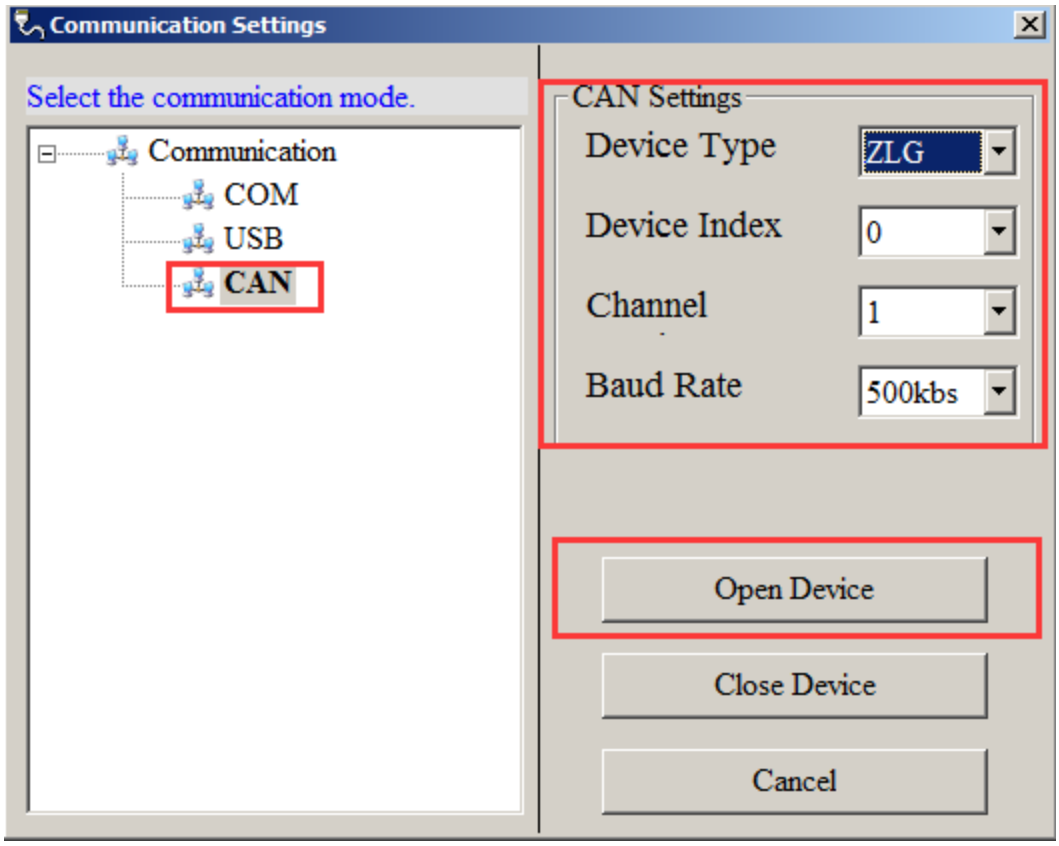
Choose the USB first, and then click “Open Device”.

3) CAN communication mode

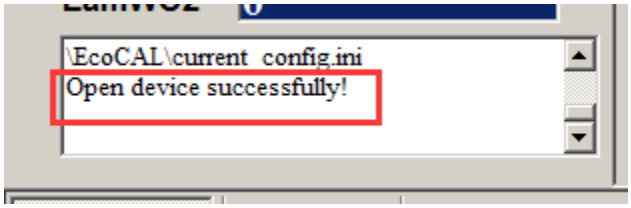
Our custom ECU support the CAN communication, if the ECU of EFI system supports the CAN communication, you can use this communication mode to connect ECU.

You need to choose the CAN device Type, Baud Rate, after finishing setting, then click “**Open Device**” to open the CAN device.

And if you don’t want to use the CAN, you also need to click “**Close Device**” to close the CAN device.



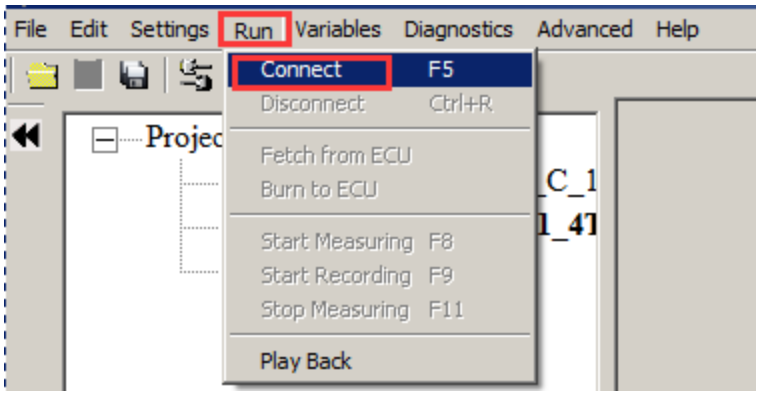
Note: when you click the "Open Device", if the equipment is existed and working, the message will pop up, "Open device successfully!" Then you can connect to ECU.



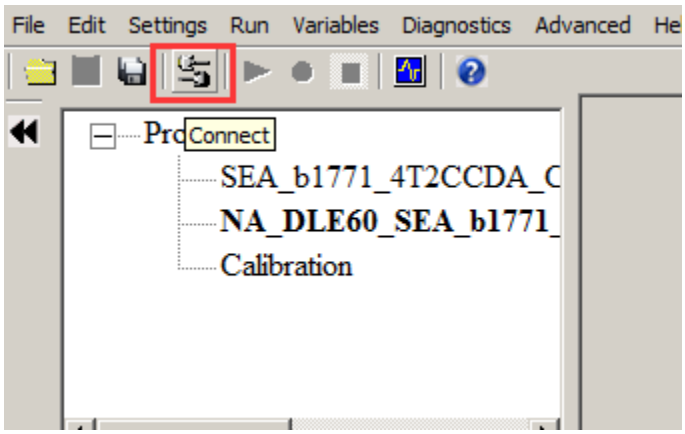
2.1.2 Connect to ECU

After finishing communication setting, you can try to connect ECU to laptop.

Go to menu->Run->Connect

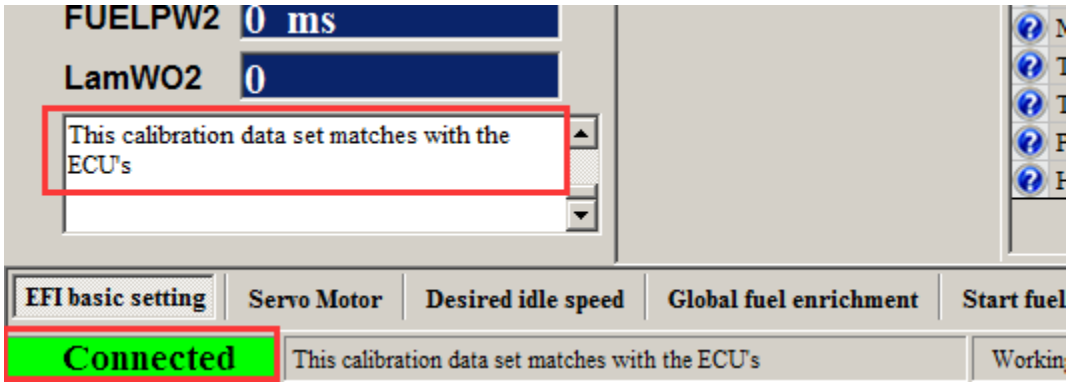


Note: You also can use the shortcut button ( ) of "Connect" to Connect to ECU

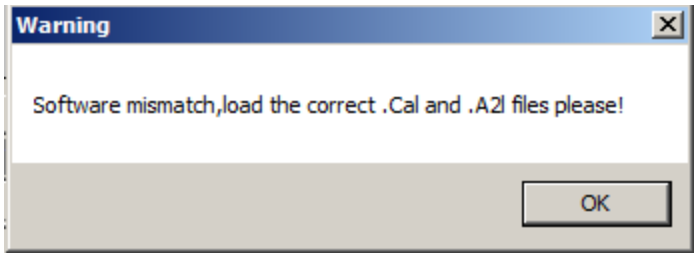


When you connect to ECU successfully, the left lower corner of window will show "Connect" in Green color.

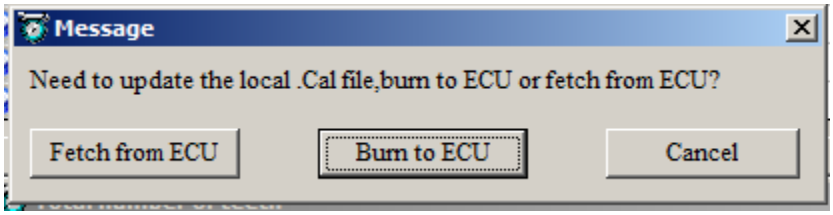
"This calibration data set matches with the ECU's"



Note 1: If there is a warning window popped up as below, this means the software version of A2l and CAL files you loaded doesn't match the ECU, and you need connect us to get the right files.

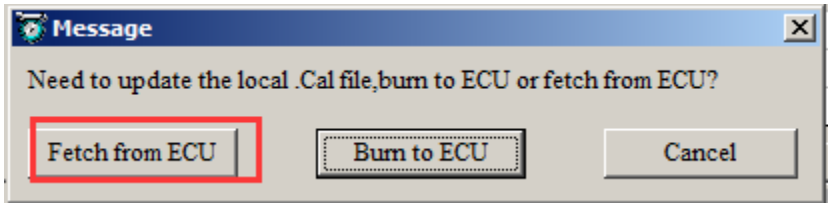


Note 2: If there is a message window popped up as below, it means the settings of Calibration data file (CAL file) is different from the ECU in, you need to “Burn to ECU”, burn the CAL files you use to ECU.

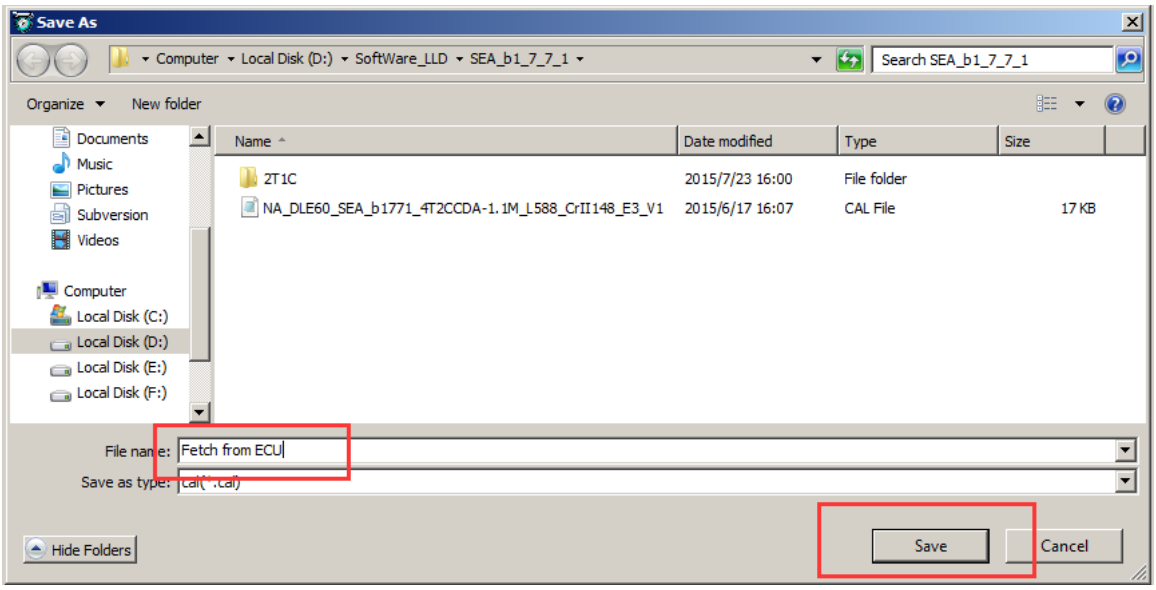


And if burn to ECU successfully, you will hear fuel pump running for a couple seconds. If not, please do again and check all of connection is right.

Note 3: If you want to know the settings in ECU, you also can click “Fetch from ECU”, this will save one new CAL file.



Save it as to be “Fetch from ECU.CAL” file

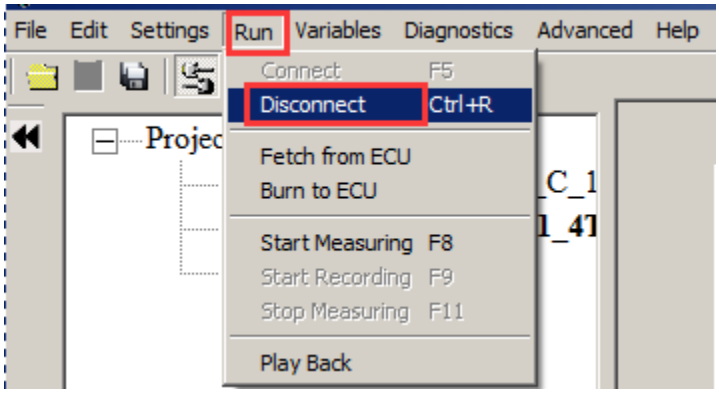


Then, the EcoCAL will load the CAL file automatically.

Note: make sure your 12V battery is healthy, before you do any "burn to ECU" or "fetch from ECU"!
During the upload or download, users are not allowed to do any operations to the EFI system.
Do not turn off the ECU power or disconnect the serial cable before the upload/download is finished

2.1.3 Disconnect to ECU

Go to menu->Run->Disconnect

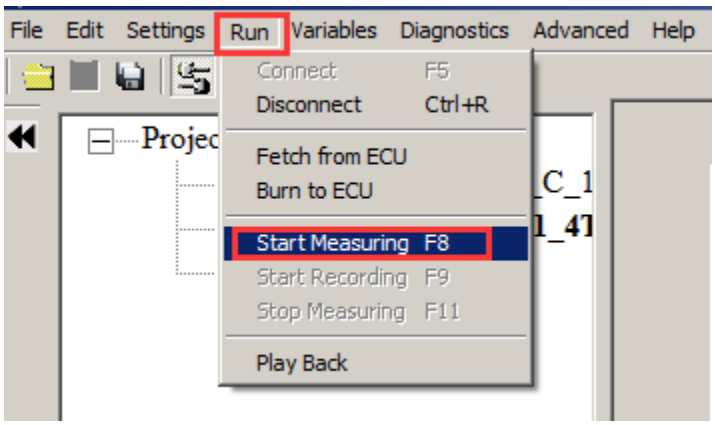


Note: You also can click the shortcut button () to disconnect to ECU

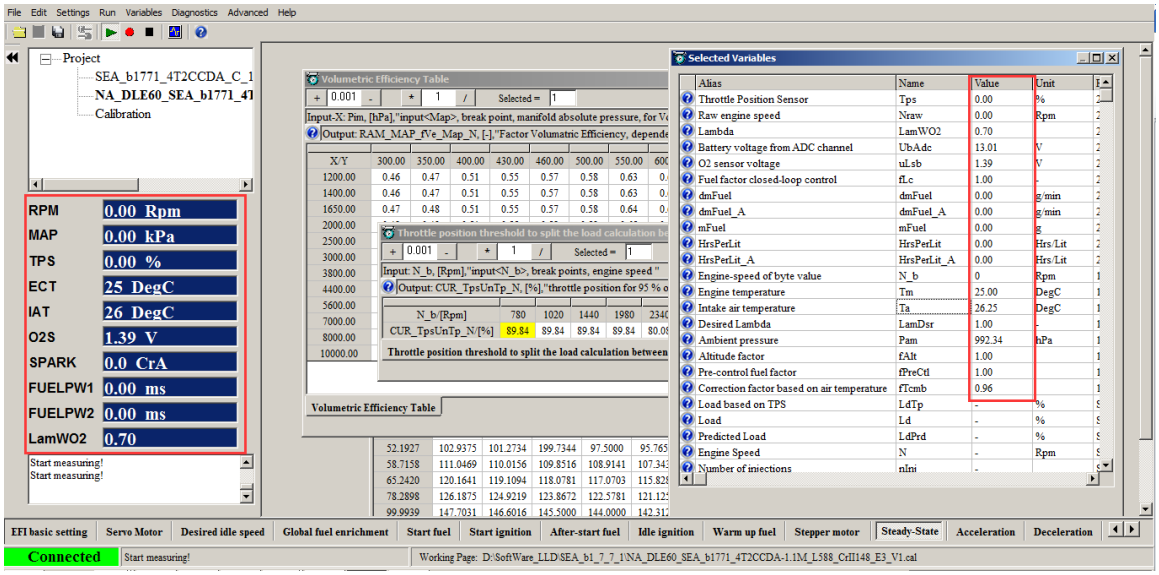
2.1.4 Start Measuring

When you connect to ECU successfully, you can measure the data of sensors' and engine running, to see the running state of engine.

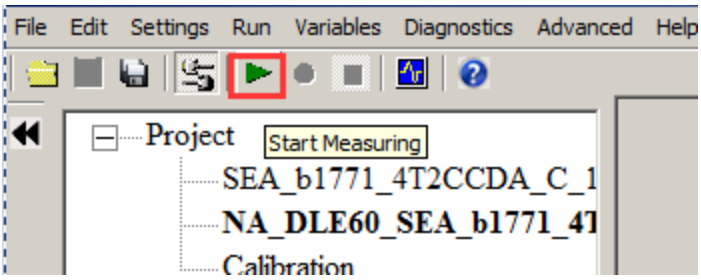
Go to menu->Run->Start Measuring



Then you can see the values of measured variables.



Note: You also can use the shortcut button () of "Start Measuring" to measure the value of measured variables.

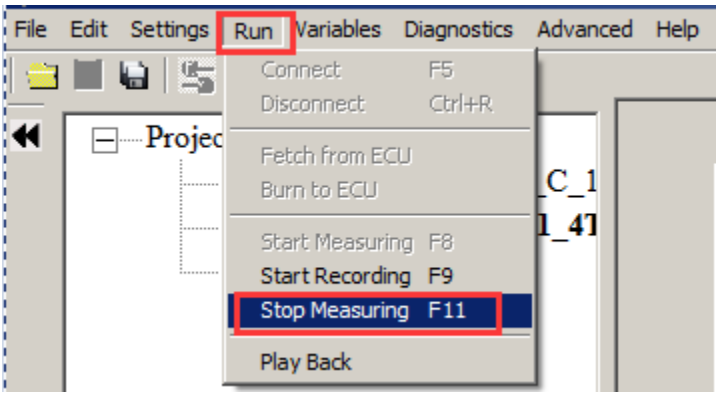


Note: The "Start measuring" only works when connect to ECU successfully.

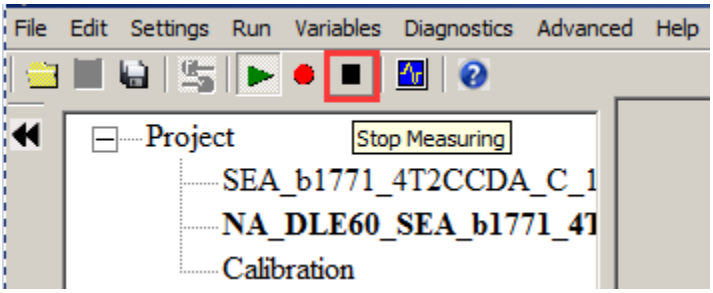
2.1.5 Stop Measuring

When you finish the test and want to do other operation, for example, **read the DTC, or add measured variable, burn to /fetch from ECU**, you should stop measuring first.

Go to menu->Run->Stop Measuring



Note: You also can use the shortcut button (■) of "Stop Measuring" to stop measuring.



2.2 Record data and Play-back

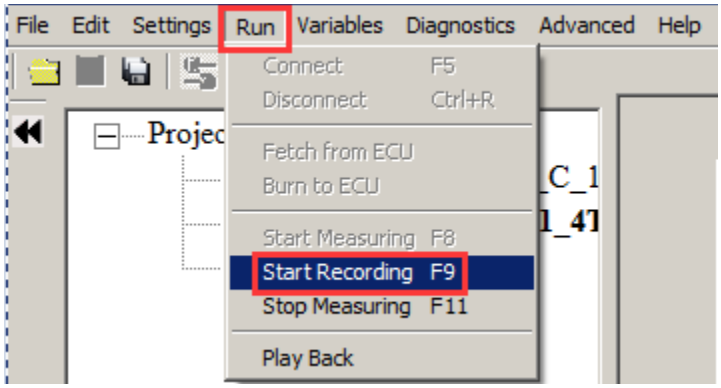
2.2.1 Record data

Sometimes, you need to record the data of engine running to analyze for EFI tuning, or you need us to help you on tuning, so you need to log data while do test and send us.

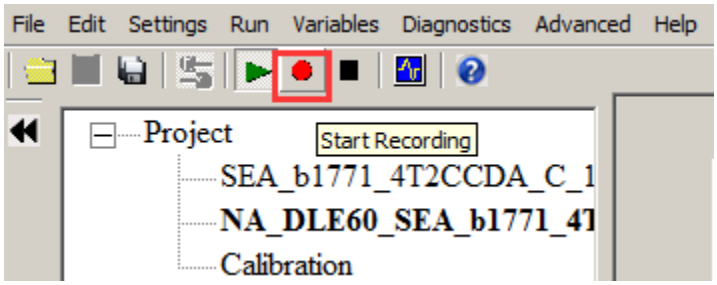
Start Recording

After successfully to connect ECU and start measuring, you can read the values of measured variables, then you can click the “Start recording” button to record the data.

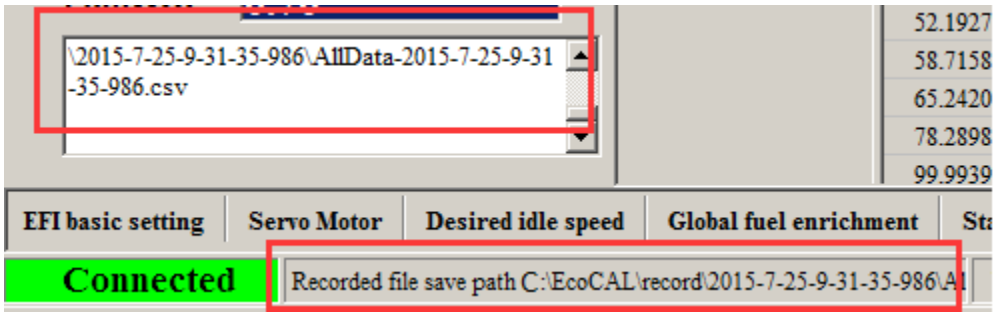
Go to menu->Run->Start Recording



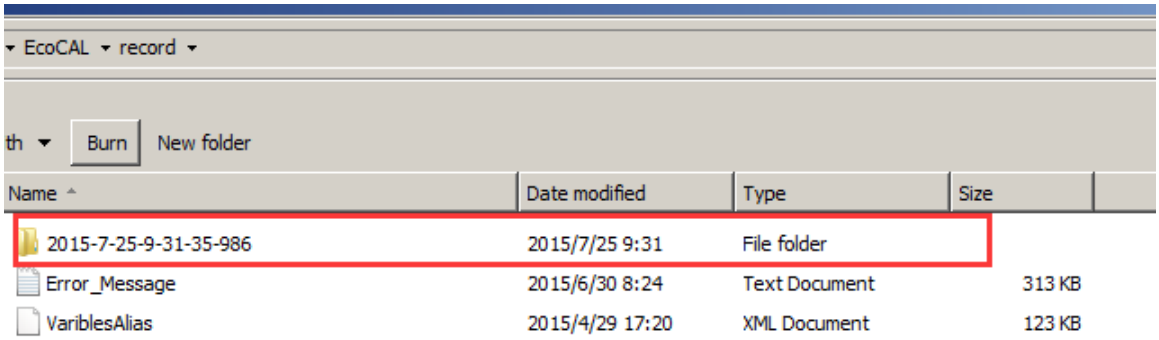
Note: You also can use the shortcut button () of “Start Recording” to record the data.



When you click down the button, EcoCAL will record the data automatically. And save the record file at the installation path of EcoCAL, “C:\EcoCAL\record”, and it is named with the time of recording.



For example, the record named “2015-7-25-9-31-35-986” is the record file in record.

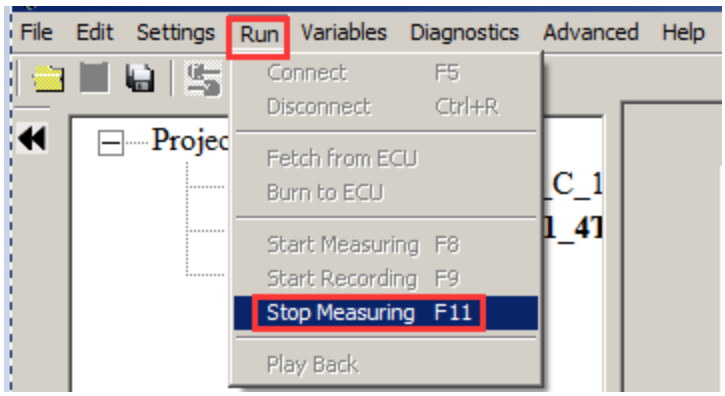


Note: If you need us to help you on tuning, please send the recorded files to us.

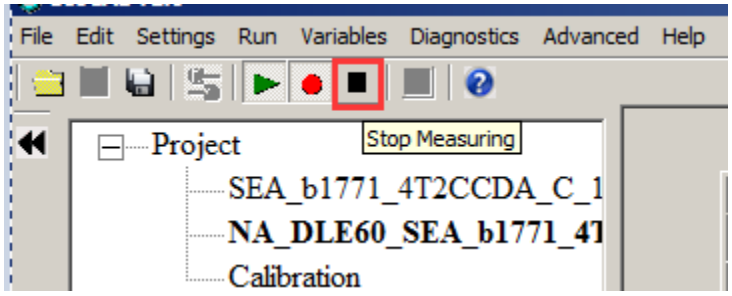
Stop Recording

When you finish the test and want to see the record file, please stop recording first.

Go to menu->Run->Stop Measuring

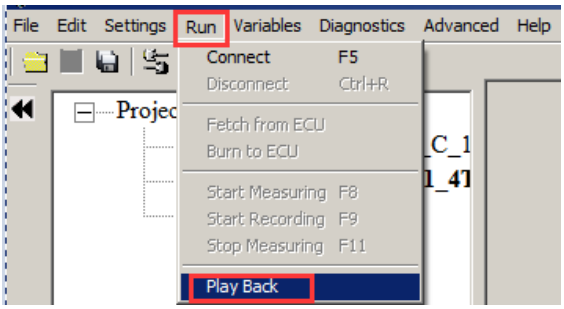


Note: You also can use the shortcut button (■) of “Stop Measuring” to stop recording.

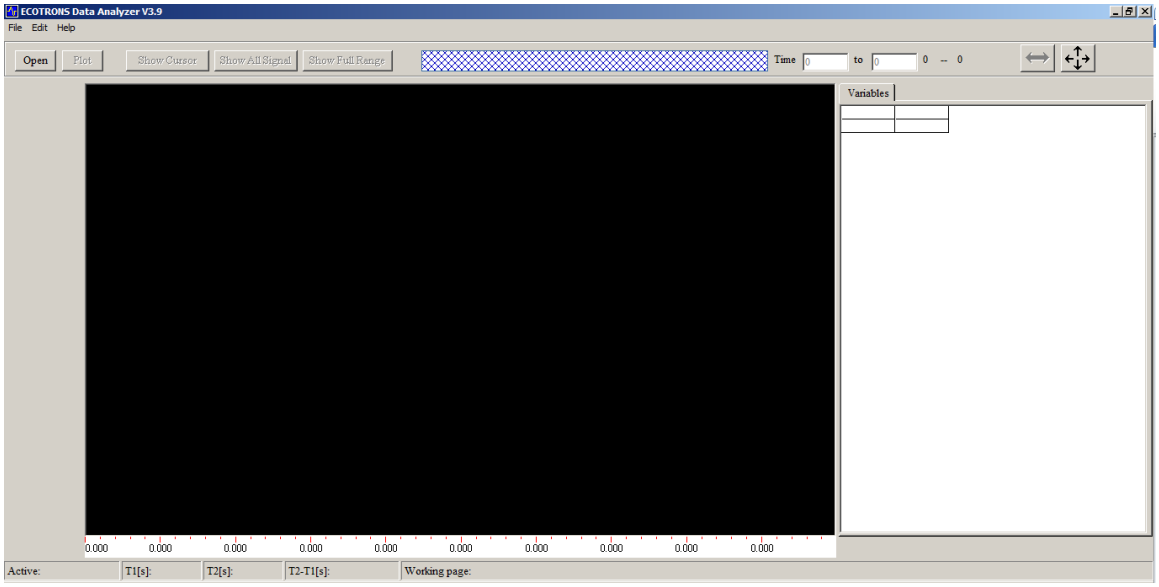


2.2.2 Play-back with data analyzer

After the data files are recorded, the user can select "**Run →Play Back**" or click the button  to play back the data.



The play-back software, "**Data Analyzer**", can start as below:

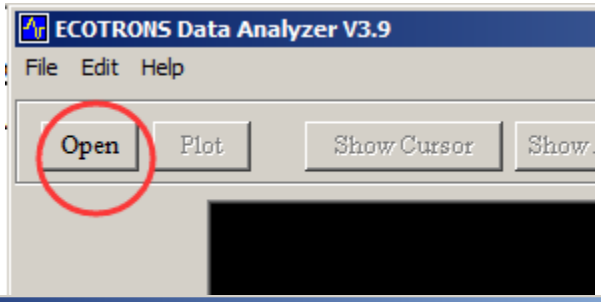


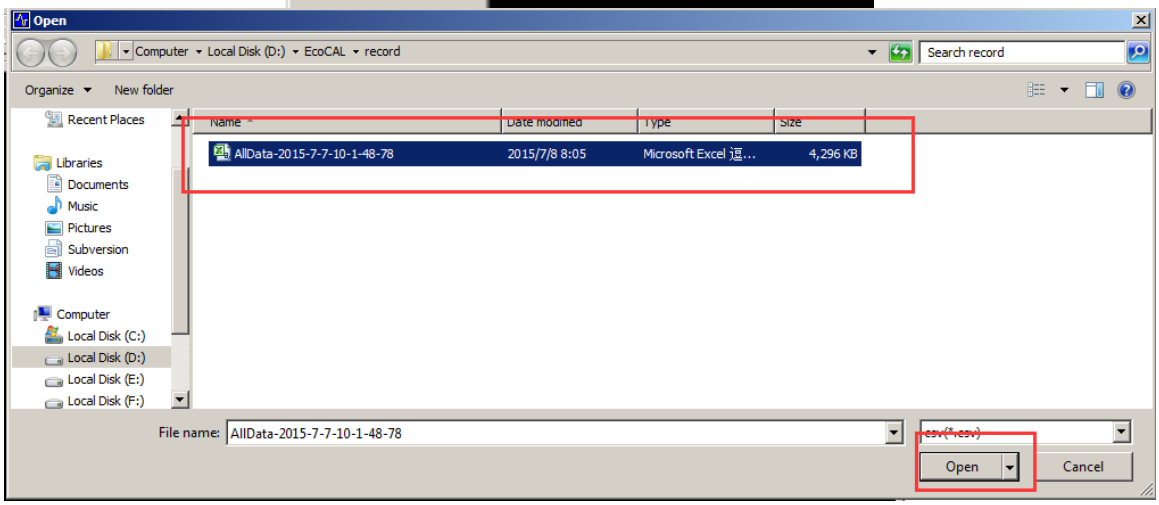
Data Analyzer

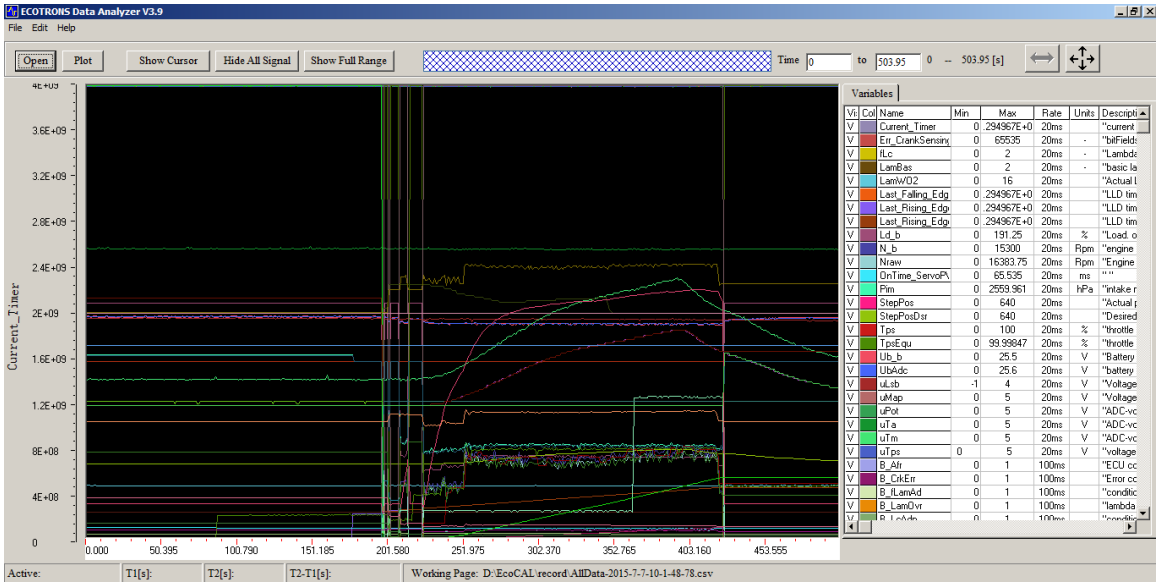
Open Data Files

In **Data Analyzer**, Go to "**File → open**", select the data file you want to analyze:

Again, by default, your saved files are under: "…\EcoCAL\record"; where "…" is your EcoCAL installation folder, usually it is "C:\EcoCAL\record".

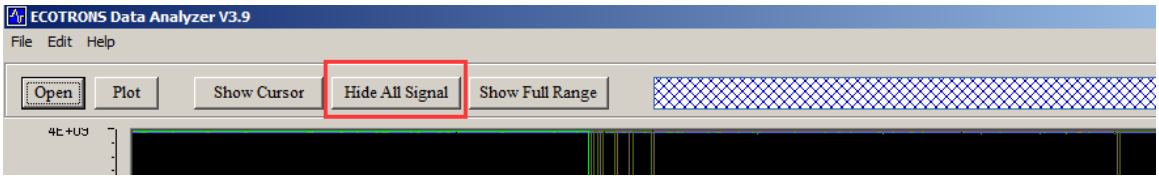






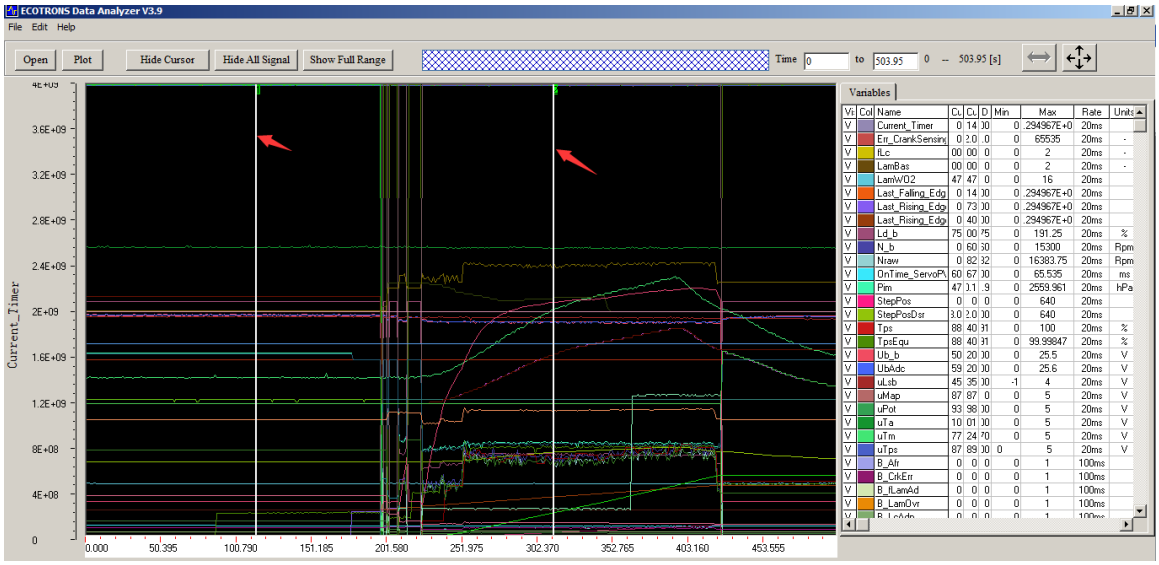
Show/Hide all signals

Click "**show all signals / hide all signals**", toggle the signal displays.

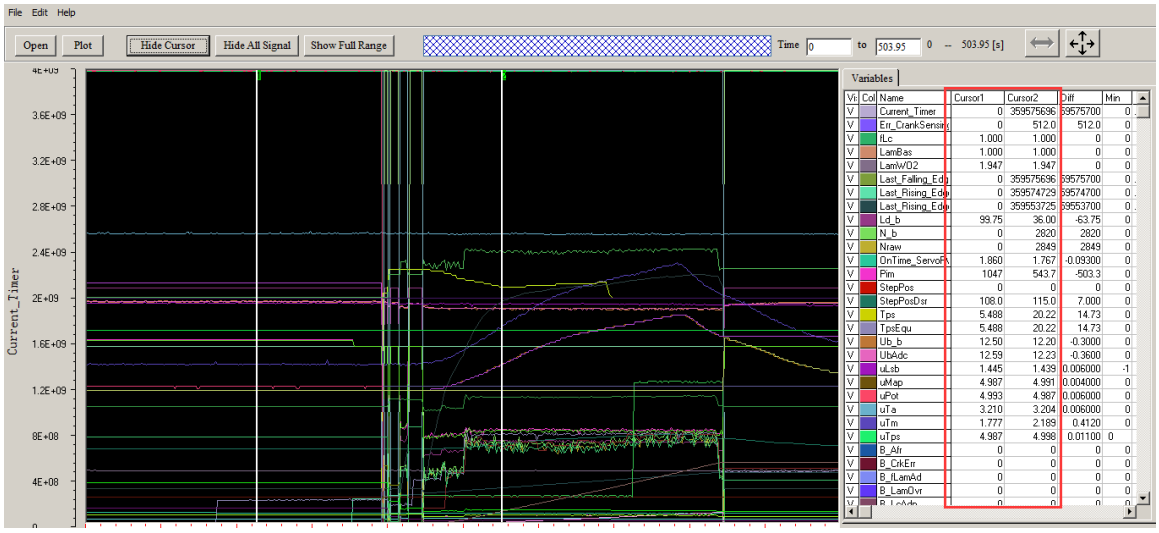


Show/Hide Cursors

Click "show cursors / hide cursors", toggle the cursors. There are 2 cursors in the scope window. The values of all signals at the 2 cursor locations will be displayed on the right, in the variable list window:

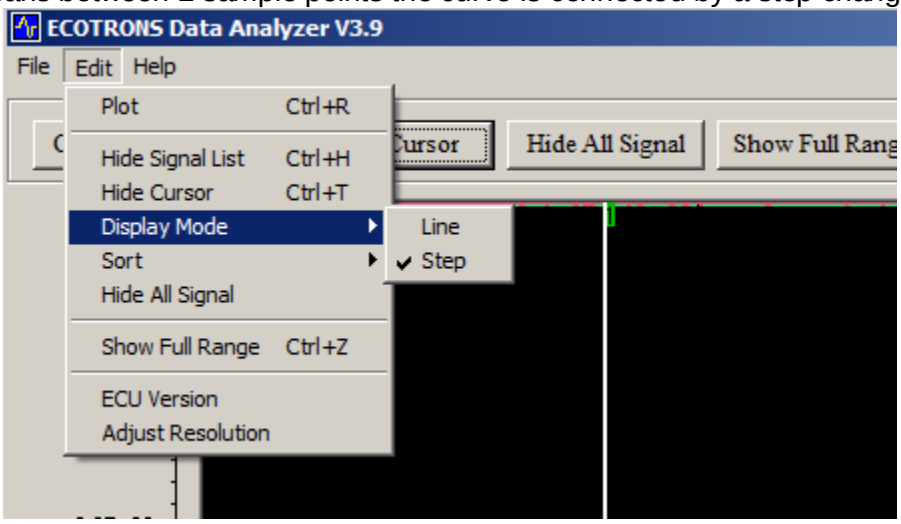


You can move the either cursor by put your mouse on it, press the mouse button and drag it to your desired location. It will show the values of all the signals at the new cursor location.



Line/Step curve type

Select curve type: Step / Line, to see the different curve effect.
"Line" means between 2 sample points the curve is connected by a straight line.
"Step" means between 2 sample points the curve is connected by a step change.

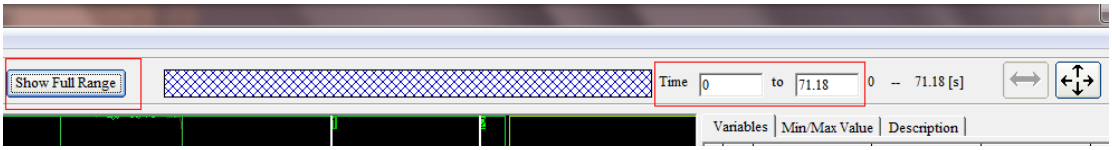


Zoom in/out X-axis

Input the "start time" value, and "end time" value, shown as below, to zoom in/zoom out the X-axis.

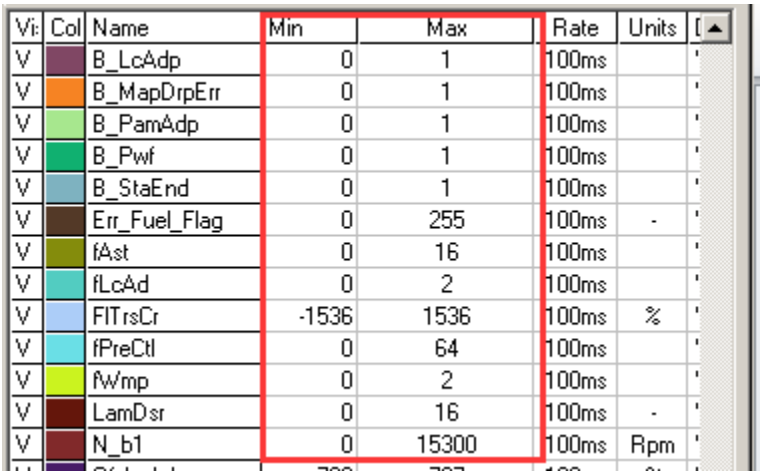
Click "show all time", to get the full time range of the data file.

You can also the mouse to zoom in the X-axis direction. Just press, drag and release.



Zoom in/out Y-axis

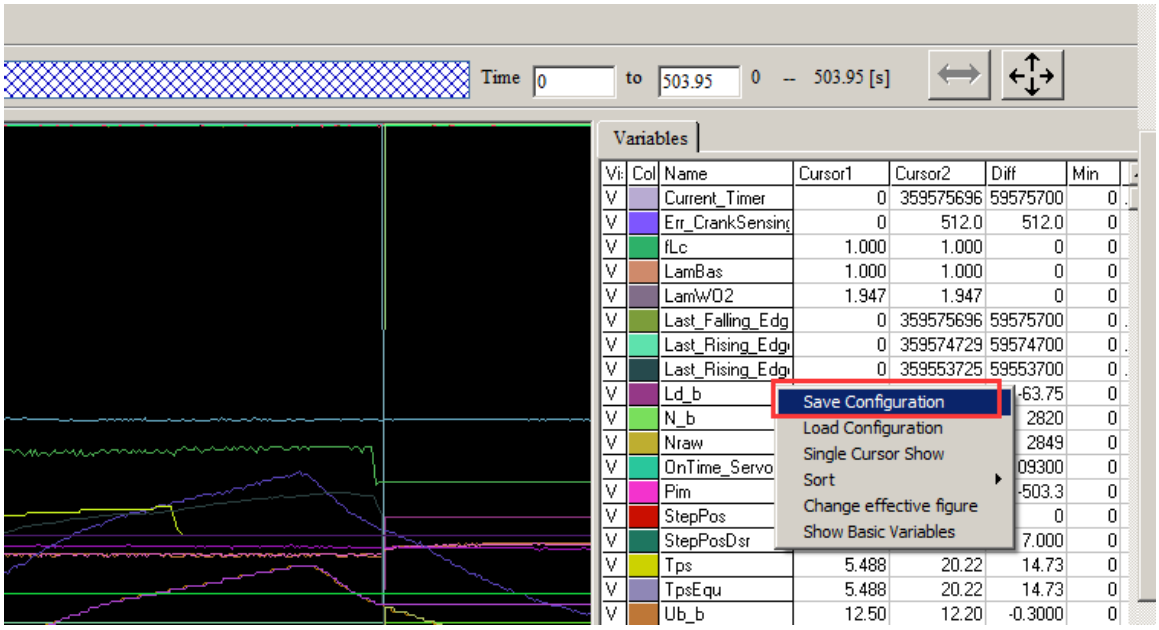
Double click the "Max / Min" fields in the signal list, you can modify the max and min range of the signals, it will automatically zoom in/zoom out the Y-axis for the signals.



Vi	Col	Name	Min	Max	Rate	Units
V		B_LcAdp	0	1	100ms	
V		B_MapDrpErr	0	1	100ms	
V		B_PamAdp	0	1	100ms	
V		B_Pwf	0	1	100ms	
V		B_StaEnd	0	1	100ms	
V		Err_Fuel_Flag	0	255	100ms	-
V		fAst	0	16	100ms	
V		fLcAd	0	2	100ms	
V		FltrsCr	-1536	1536	100ms	%
V		fPreCtl	0	64	100ms	
V		fWmp	0	2	100ms	
V		LamDsr	0	16	100ms	-
V		N_b1	0	15300	100ms	Rpm

Save the Data Analyzer configuration

After you spend time to zoom in/out and/or select signals, you want to save these configurations. Just right click and choose "save configuration" and store it in a configuration file. Next time you run Data Analyzer; you can open that configuration file and load all your previous settings.



You also can click the “Load Configuration” that you have saved before.

Chapter 3 Operation for tuning

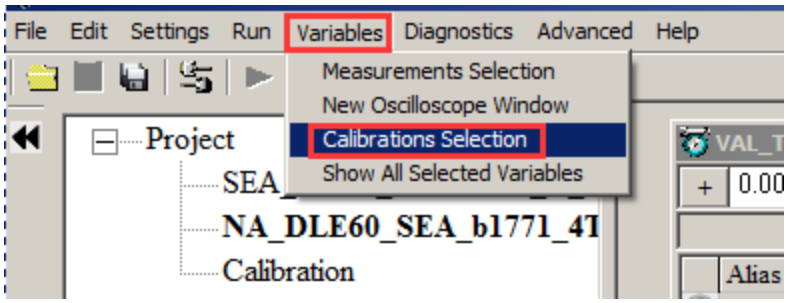
3.1 Add and Delete Calibration Variables

There are two types of Calibration variables window,

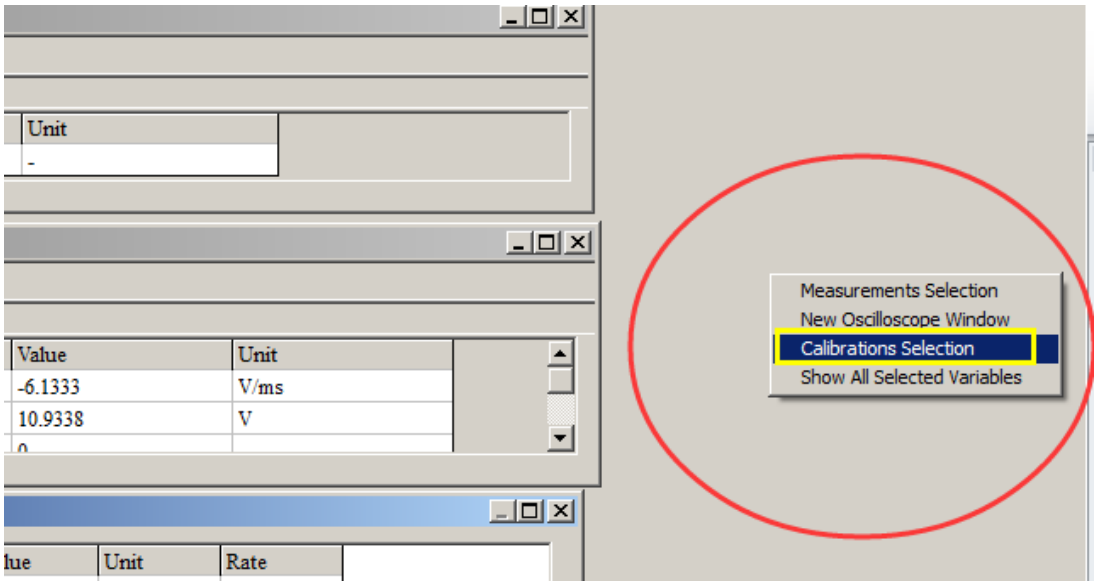
One calibration window is for “VAL_XXX” and “CV_XX” variables, and another calibration window is for “CUR_XXX_XXX” and “MAP_XXX_XXX” variables.

3.1.1 Add Calibration variables

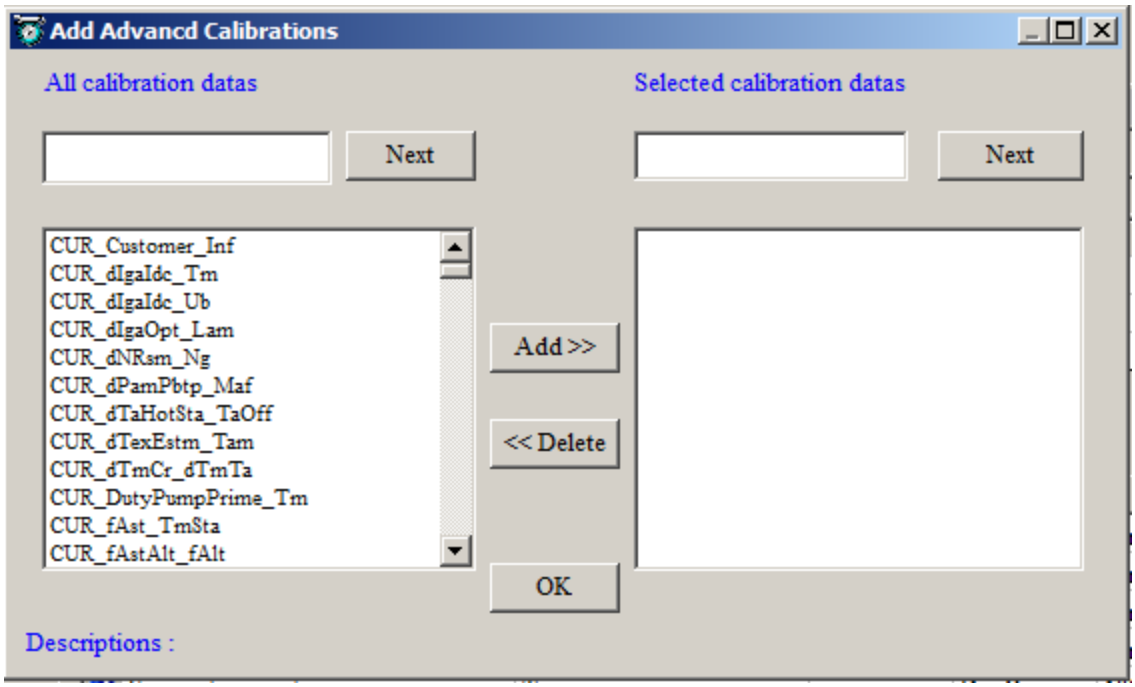
1) Go to menu->Variables-> Calibration Selection



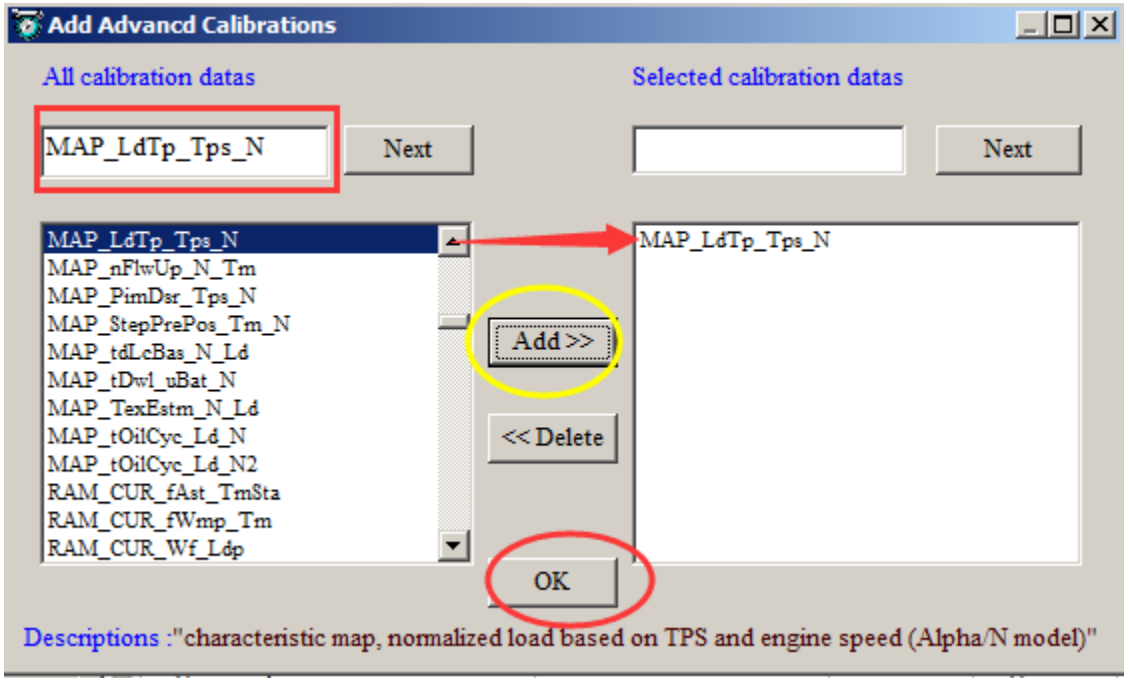
2) Right click on the blank area of window, click "Calibration Selection"

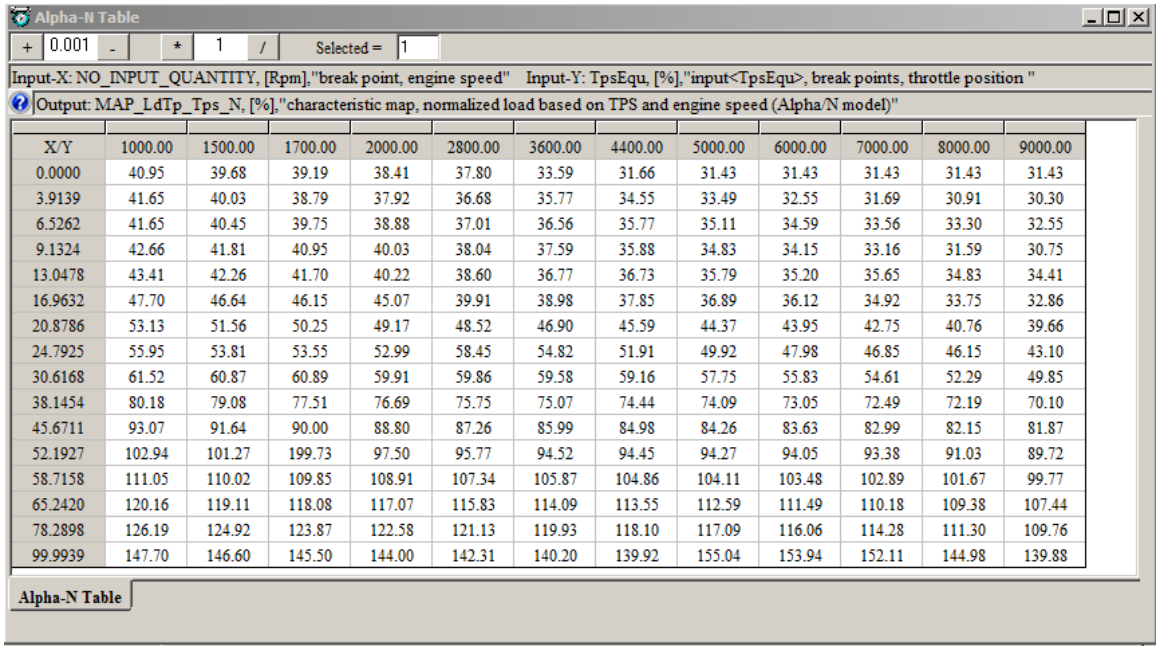


Then, the "Add Advanced Calibrations" window wills pop-up,



Input the variable on the left side, then you can see the calibration variable, for example, “MAP_LdTp_Tps_N”, then click “Add” button, add it to be right side, then Click “OK”, you can see the calibration window.

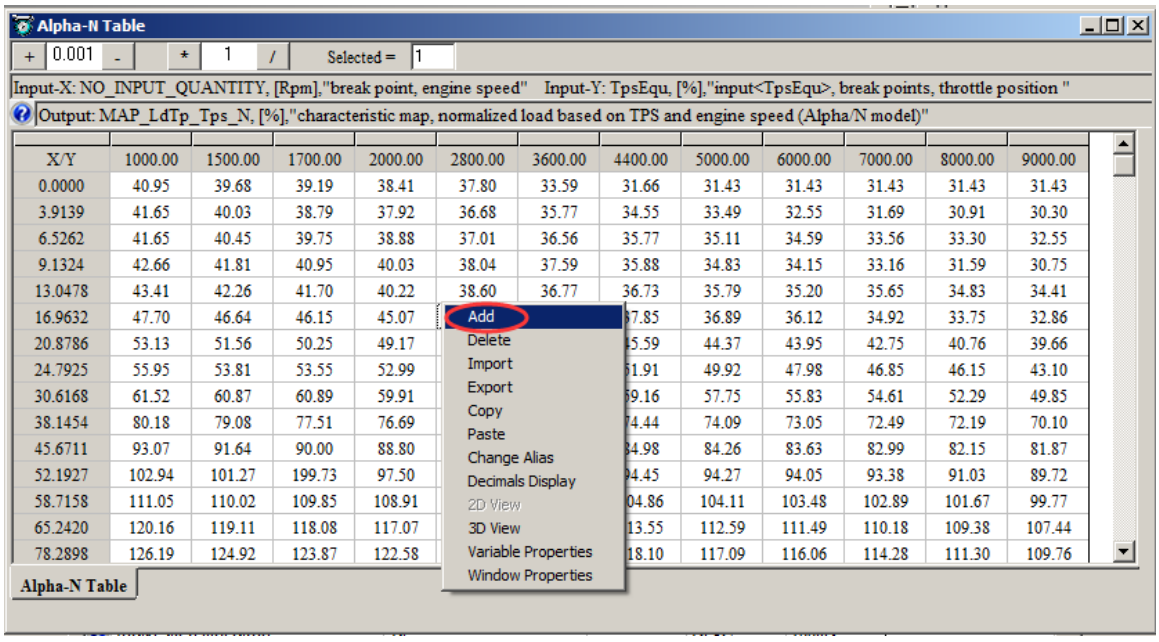




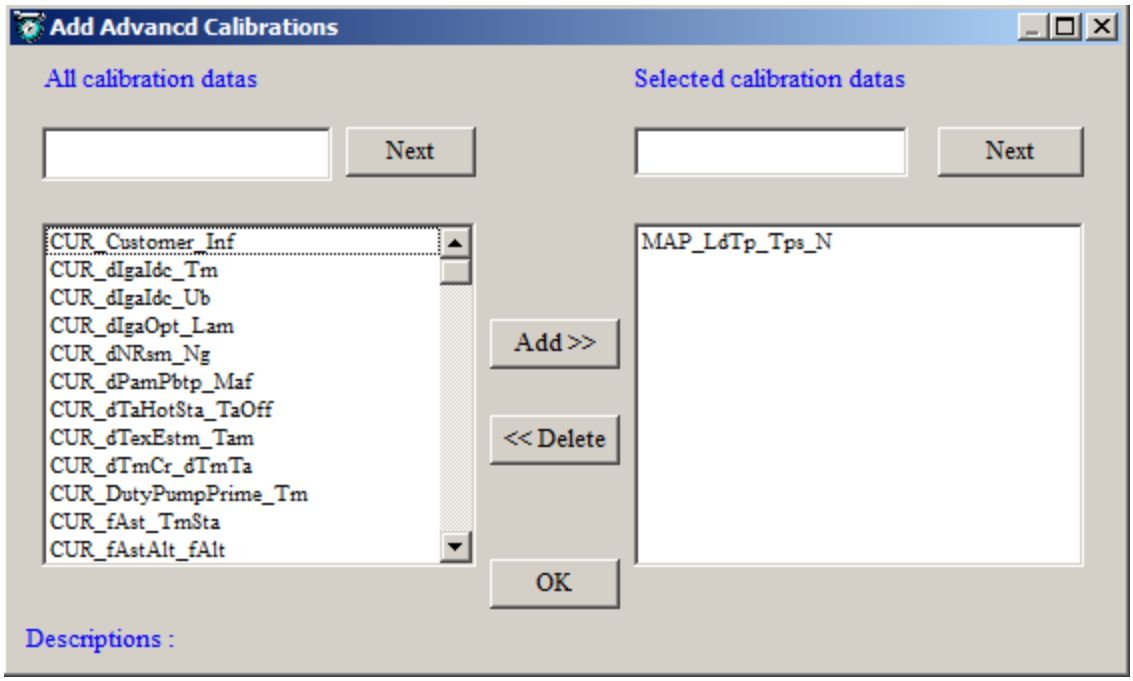
X/Y	1000.00	1500.00	1700.00	2000.00	2800.00	3600.00	4400.00	5000.00	6000.00	7000.00	8000.00	9000.00
0.0000	40.95	39.68	39.19	38.41	37.80	33.59	31.66	31.43	31.43	31.43	31.43	31.43
3.9139	41.65	40.03	38.79	37.92	36.68	35.77	34.55	33.49	32.55	31.69	30.91	30.30
6.5262	41.65	40.45	39.75	38.88	37.01	36.56	35.77	35.11	34.59	33.56	33.30	32.55
9.1324	42.66	41.81	40.95	40.03	38.04	37.59	35.88	34.83	34.15	33.16	31.59	30.75
13.0478	43.41	42.26	41.70	40.22	38.60	36.77	36.73	35.79	35.20	35.65	34.83	34.41
16.9632	47.70	46.64	46.15	45.07	39.91	38.98	37.85	36.89	36.12	34.92	33.75	32.86
20.8786	53.13	51.56	50.25	49.17	48.52	46.90	45.59	44.37	43.95	42.75	40.76	39.66
24.7925	55.95	53.81	53.55	52.99	58.45	54.82	51.91	49.92	47.98	46.85	46.15	43.10
30.6168	61.52	60.87	60.89	59.91	59.86	59.58	59.16	57.75	55.83	54.61	52.29	49.85
38.1454	80.18	79.08	77.51	76.69	75.75	75.07	74.44	74.09	73.05	72.49	72.19	70.10
45.6711	93.07	91.64	90.00	88.80	87.26	85.99	84.98	84.26	83.63	82.99	82.15	81.87
52.1927	102.94	101.27	199.73	97.50	95.77	94.52	94.45	94.27	94.05	93.38	91.03	89.72
58.7158	111.05	110.02	109.85	108.91	107.34	105.87	104.86	104.11	103.48	102.89	101.67	99.77
65.2420	120.16	119.11	118.08	117.07	115.83	114.09	113.55	112.59	111.49	110.18	109.38	107.44
78.2898	126.19	124.92	123.87	122.58	121.13	119.93	118.10	117.09	116.06	114.28	111.30	109.76
99.9939	147.70	146.60	145.50	144.00	142.31	140.20	139.92	155.04	153.94	152.11	144.98	139.88

Note: Above method is to add new calibration window, if you want to add the calibration variables at the current calibration window, please use following method.

Right click on the calibration window, and then click “Add”,

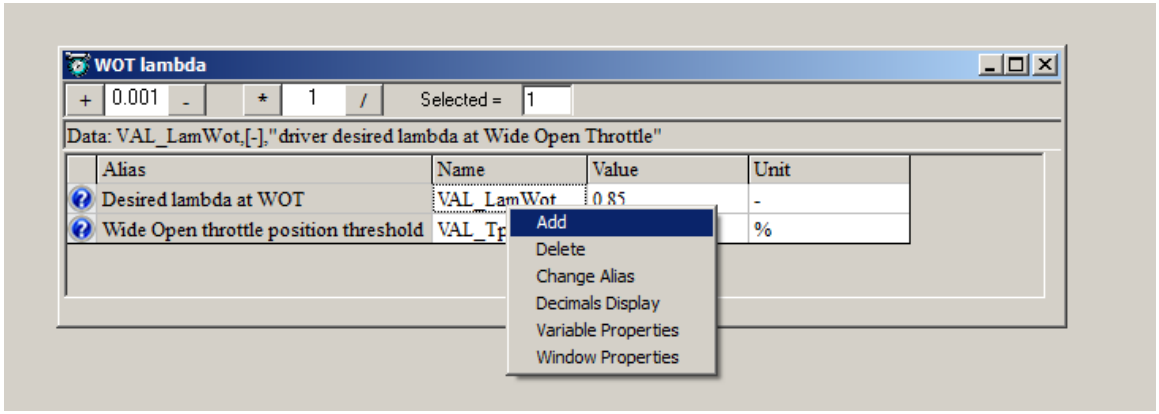


X/Y	1000.00	1500.00	1700.00	2000.00	2800.00	3600.00	4400.00	5000.00	6000.00	7000.00	8000.00	9000.00
0.0000	40.95	39.68	39.19	38.41	37.80	33.59	31.66	31.43	31.43	31.43	31.43	31.43
3.9139	41.65	40.03	38.79	37.92	36.68	35.77	34.55	33.49	32.55	31.69	30.91	30.30
6.5262	41.65	40.45	39.75	38.88	37.01	36.56	35.77	35.11	34.59	33.56	33.30	32.55
9.1324	42.66	41.81	40.95	40.03	38.04	37.59	35.88	34.83	34.15	33.16	31.59	30.75
13.0478	43.41	42.26	41.70	40.22	38.60	36.77	36.73	35.79	35.20	35.65	34.83	34.41
16.9632	47.70	46.64	46.15	45.07	39.91	38.98	37.85	36.89	36.12	34.92	33.75	32.86
20.8786	53.13	51.56	50.25	49.17	48.52	46.90	45.59	44.37	43.95	42.75	40.76	39.66
24.7925	55.95	53.81	53.55	52.99	58.45	54.82	51.91	49.92	47.98	46.85	46.15	43.10
30.6168	61.52	60.87	60.89	59.91	59.86	59.58	59.16	57.75	55.83	54.61	52.29	49.85
38.1454	80.18	79.08	77.51	76.69	75.75	75.07	74.44	74.09	73.05	72.49	72.19	70.10
45.6711	93.07	91.64	90.00	88.80	87.26	85.99	84.98	84.26	83.63	82.99	82.15	81.87
52.1927	102.94	101.27	199.73	97.50	95.77	94.52	94.45	94.27	94.05	93.38	91.03	89.72
58.7158	111.05	110.02	109.85	108.91	107.34	105.87	104.86	104.11	103.48	102.89	101.67	99.77
65.2420	120.16	119.11	118.08	117.07	115.83	114.09	113.55	112.59	111.49	110.18	109.38	107.44
78.2898	126.19	124.92	123.87	122.58	121.13	119.93	118.10	117.09	116.06	114.28	111.30	109.76



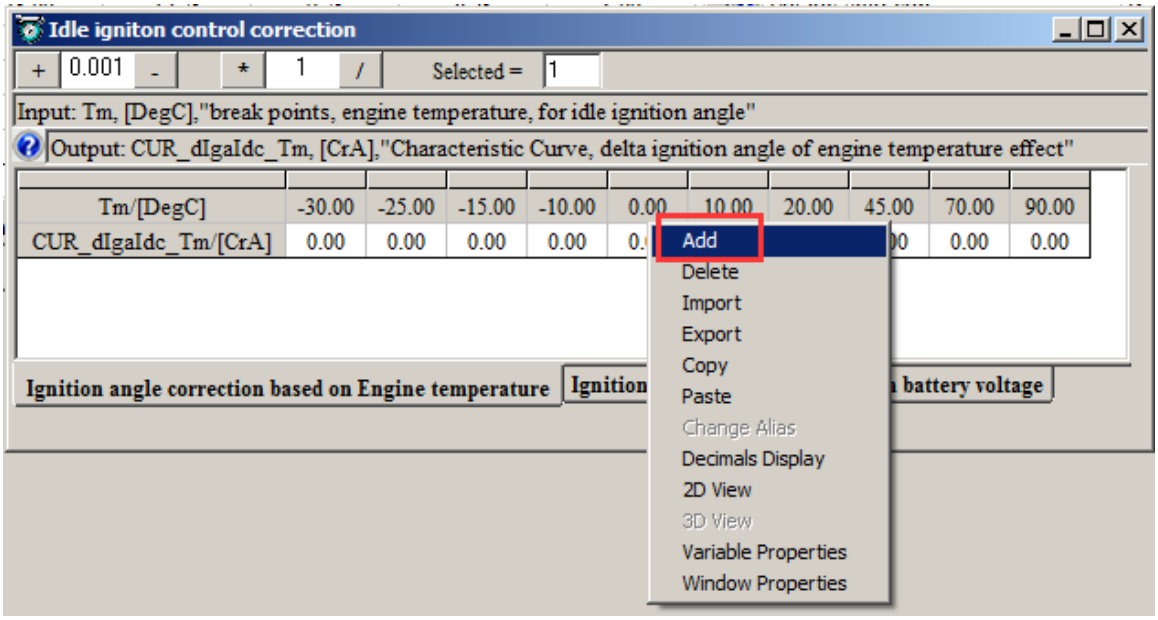
Then, use the same method to add the calibration variables.

If you want to add the **"VAL_XXX" and "CV_XX"** variables, please right click on the corresponding window to add the calibration variables.

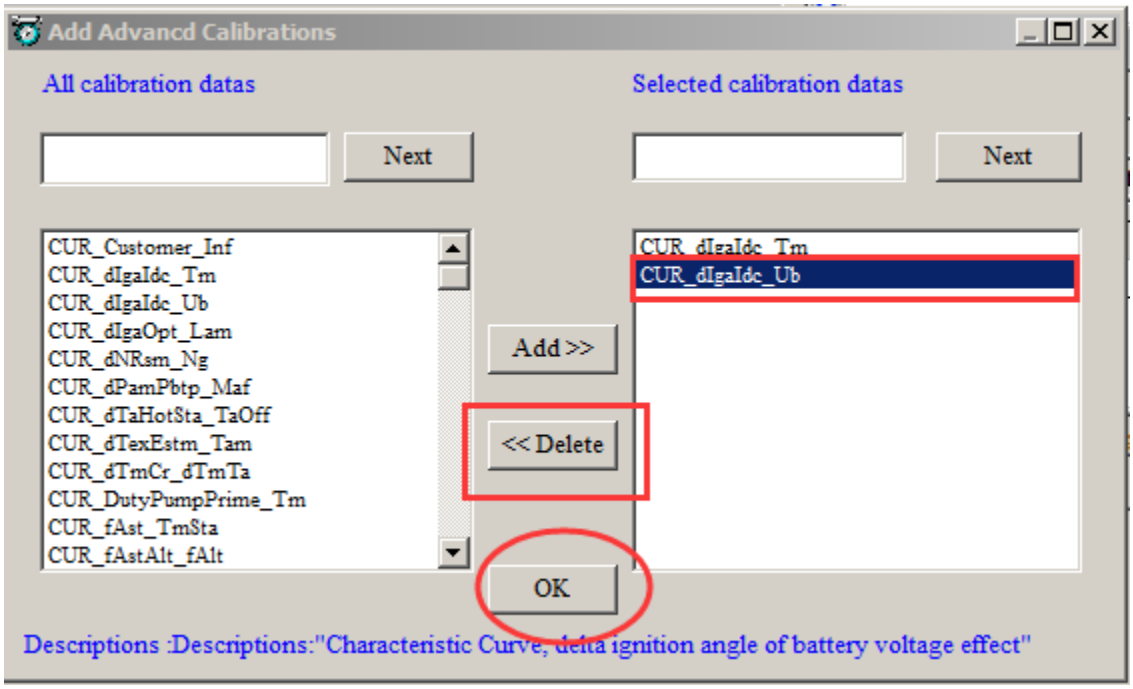


3.1.2 Delete Calibration variables

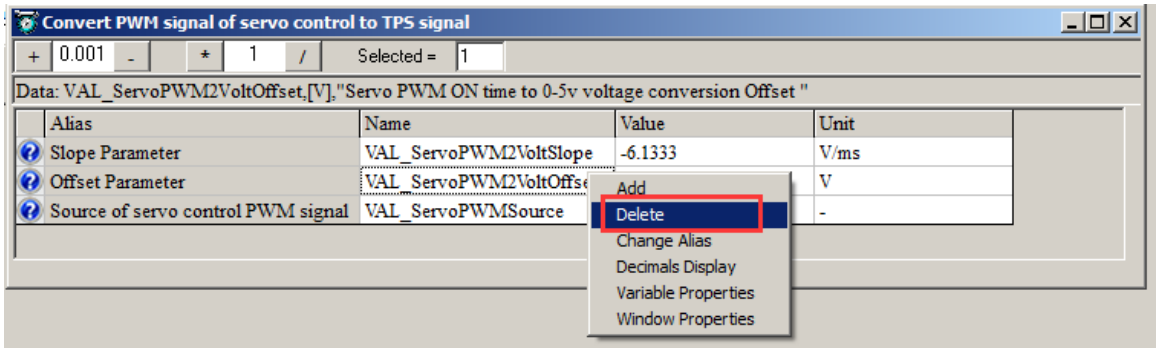
1）Right click on the current window; click "Add", pop-up the "Add Advanced Calibrations" window, to delete the calibration variables that you have added it once.



Click the calibration variable which one do you want to delete, then click"Delete" button, then click "OK"



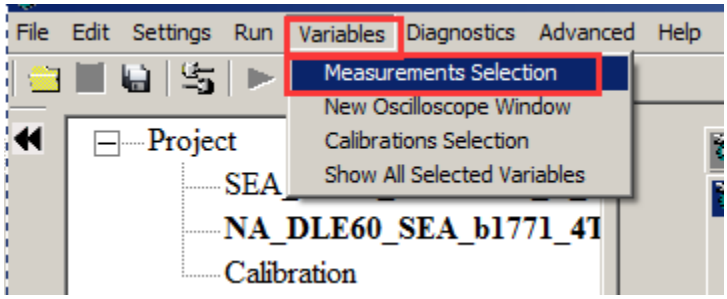
2） Choose the calibration variable that you want to delete, right click, then click "Delete", it will delete the variable directly.



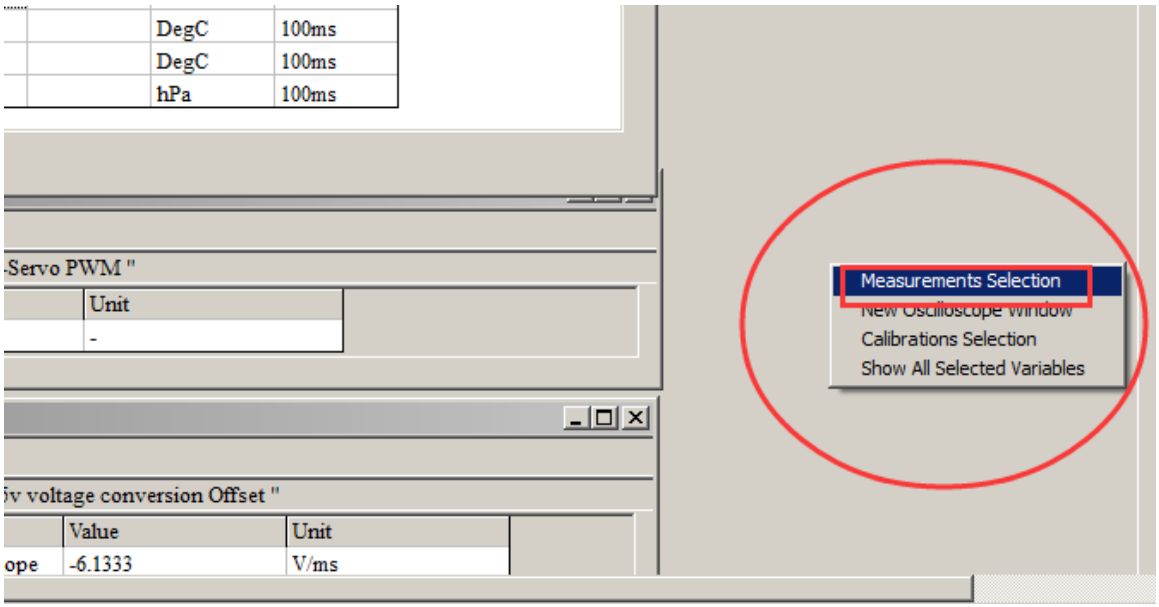
3.2 Add and Delete Measured Variables

3.2.1 Add Measured variables

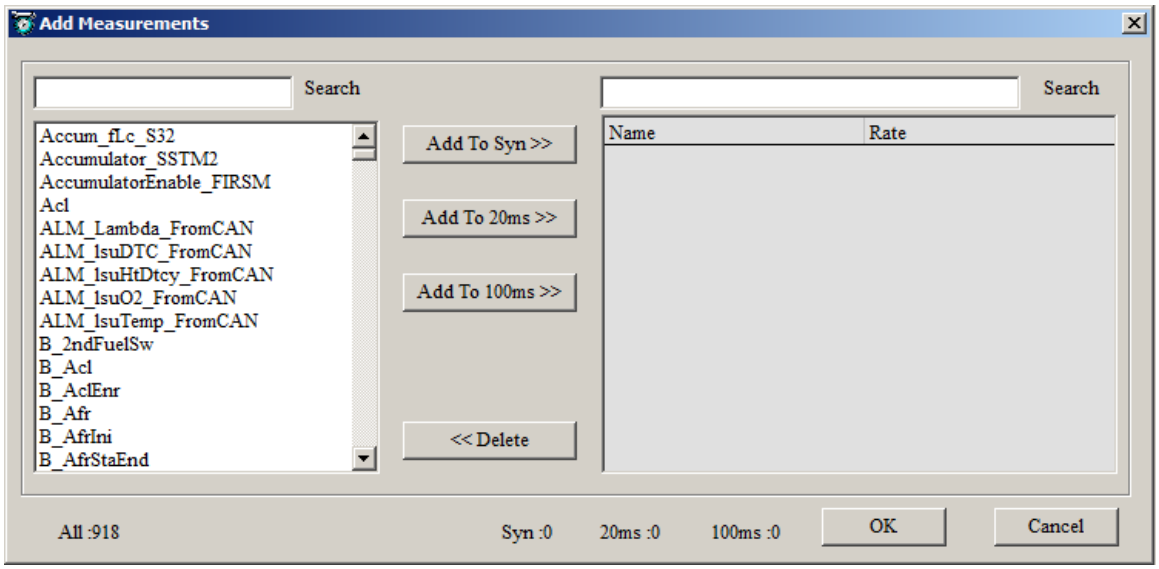
1) Go to menu->Variables-> Measurements Selection



2) Right click on the blank area of window, click "Measurements Selection"



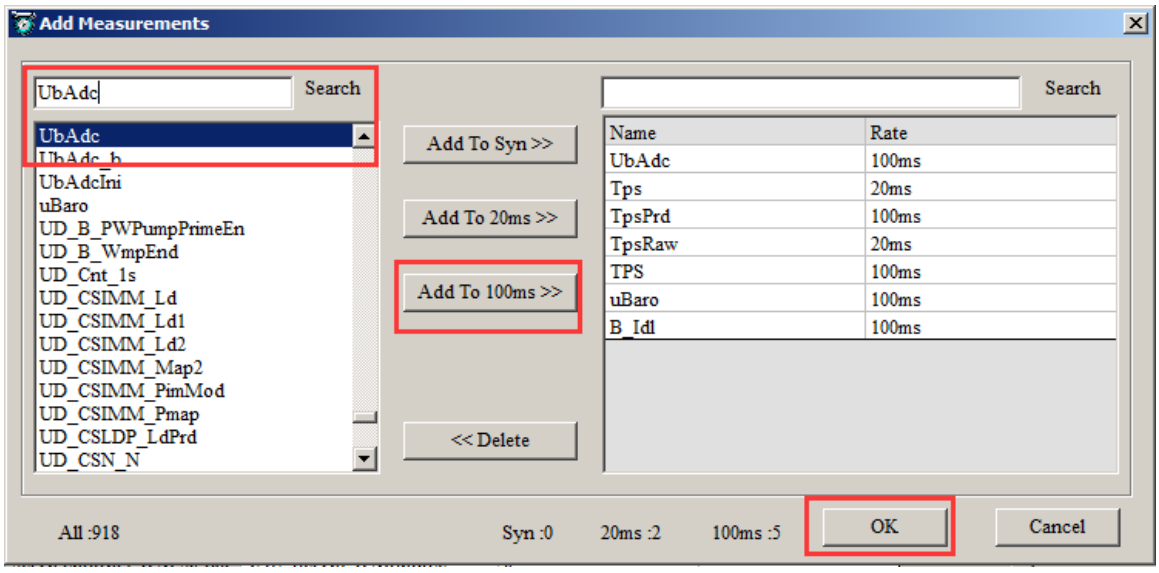
Then, the "Add Measurements" window wills pop-up,



Input the variable on the left side, then you can see the measured variable, for example, “UbAdc”, then click “Add to 100ms” button, add it to be right side, and then click “OK”, you can see the measured window.

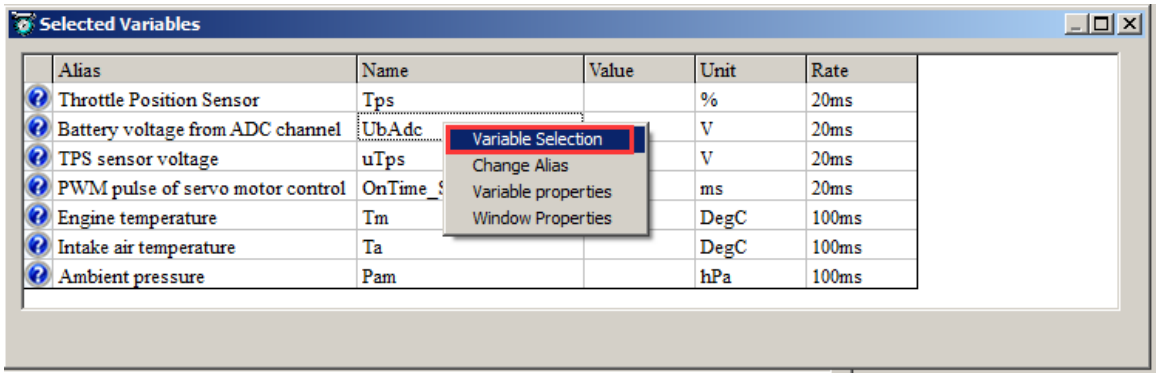
Note: You also can add the variables to be “Syn”,”20ms”, this means the display frequency.

Here, we also add some other variables as example.

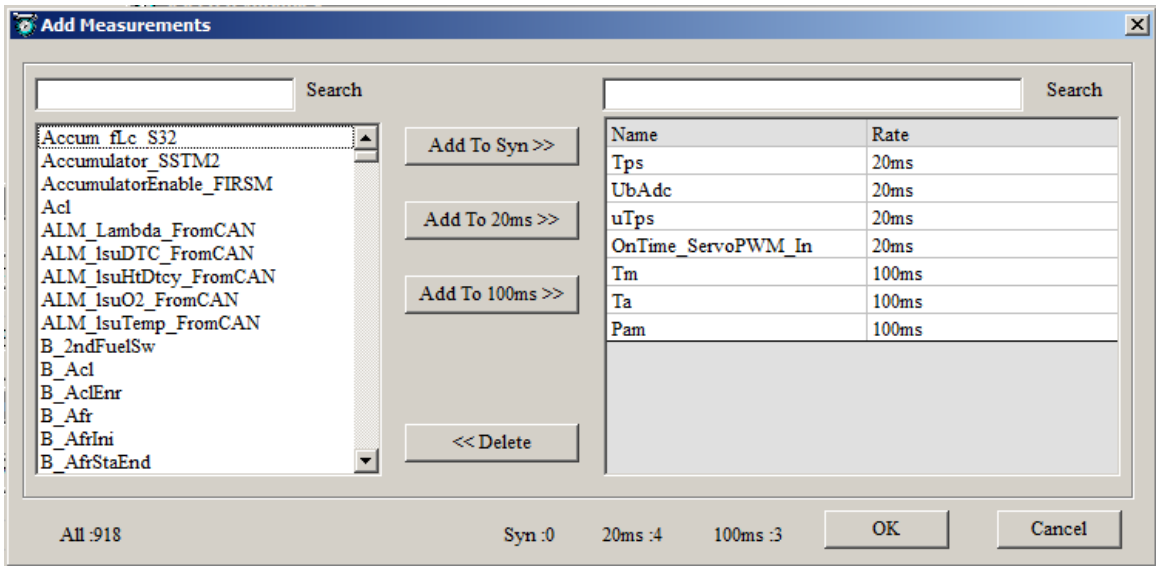


Note: Above method is to add new measured variables window, if you want to add the measured variables at the current Selected Variables window, please use following method.

Right click on the Selected Variables window, and then click “Variable Selection”,

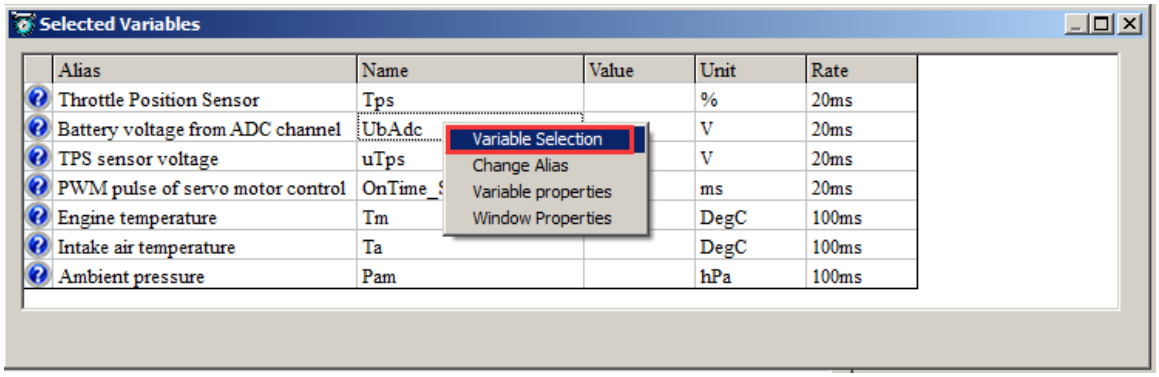


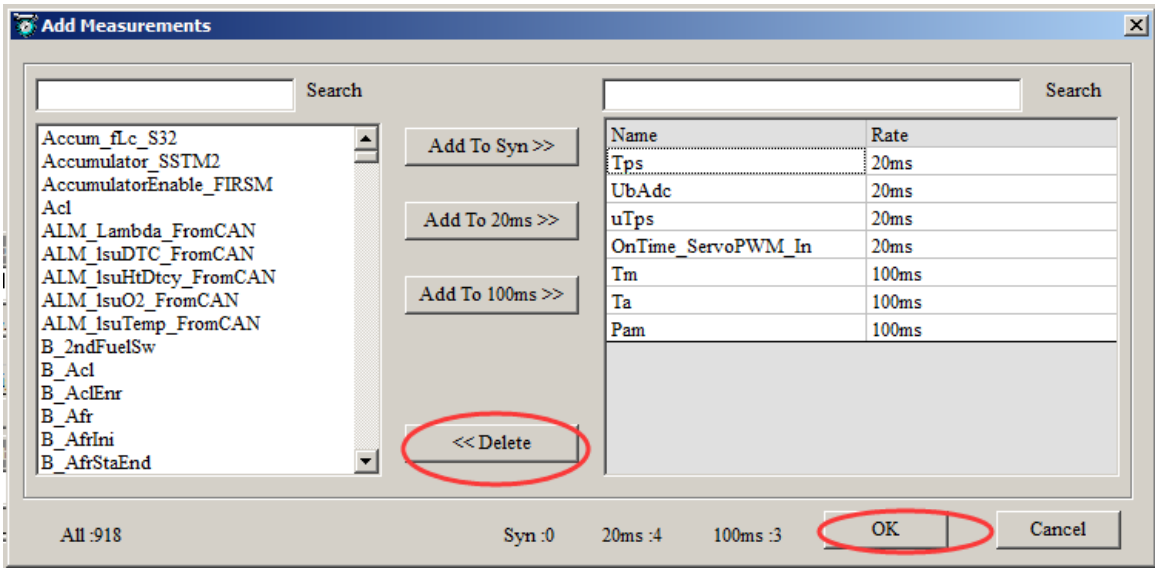
Then you can see all of the variables that you have chosen, and then you can add the new measure variables as you want by using the above method.



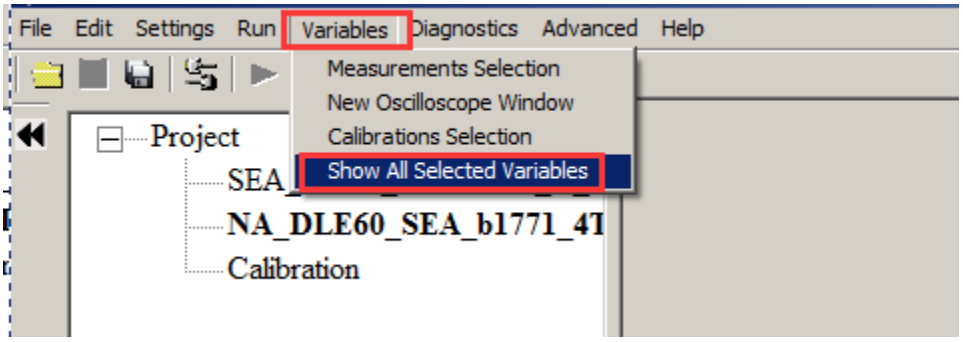
3.2.2 Delete Measured variables

1) Right click on the Selected Variables, choose “Variable Selection”, and then delete the variables those you want.

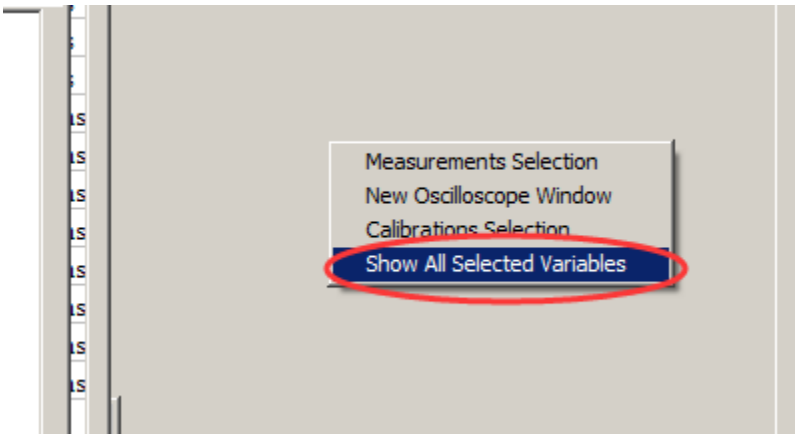




2) **Go to menu->Variables-> Show All Selected Variables**

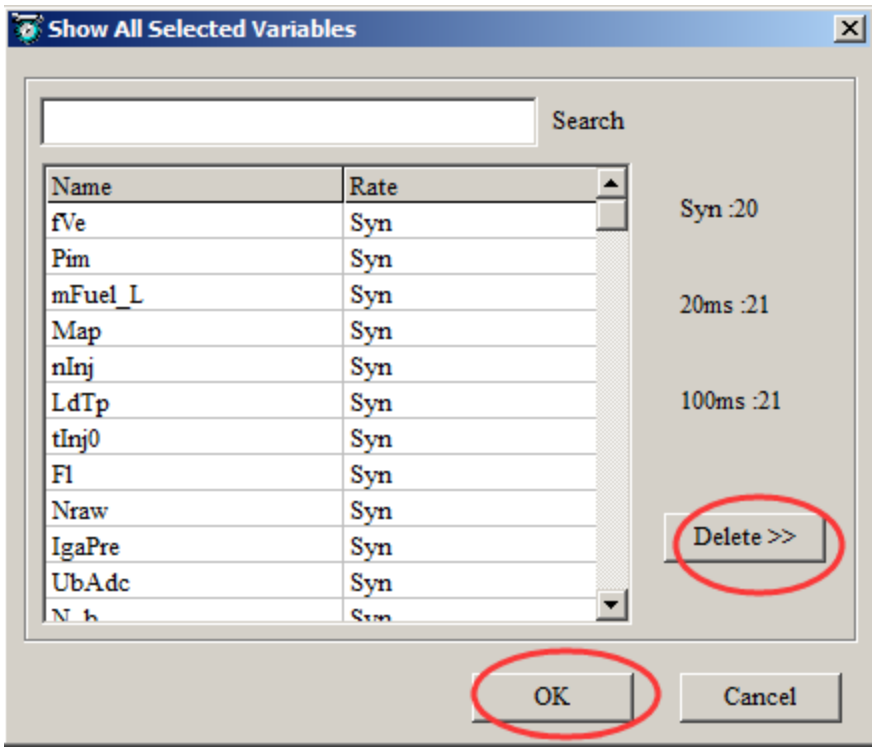


Or right click on the blank of window, then choose “Show All Selected Variables”



A window will pop-up, all of the selected measured variables showing are there, then you can find out the variable that you want to delete, and then delete it.

Note: if you add one variable in all of the layers, this way will delete the measured variable in all layers.

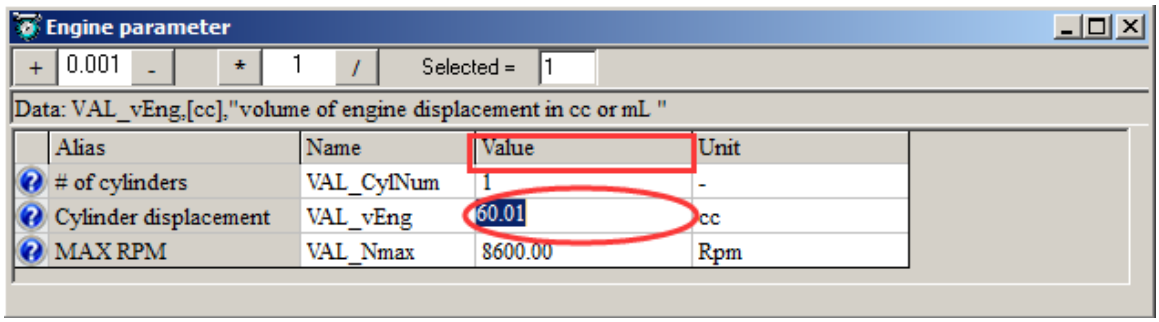


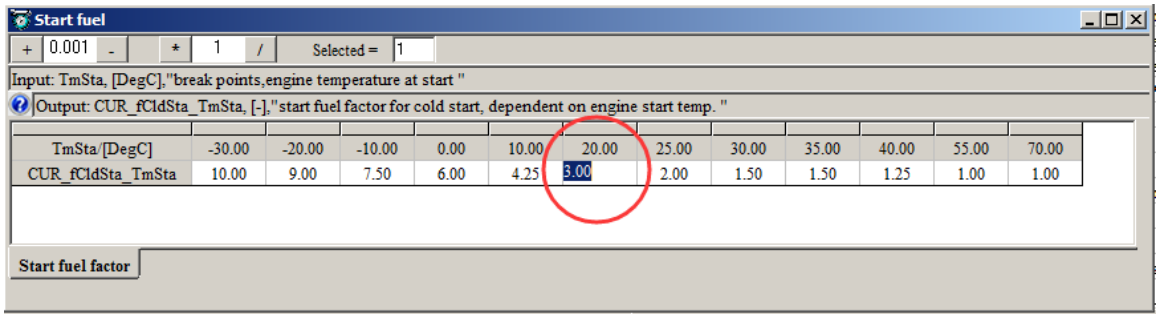
3.3 Change Calibrations (Tuning)

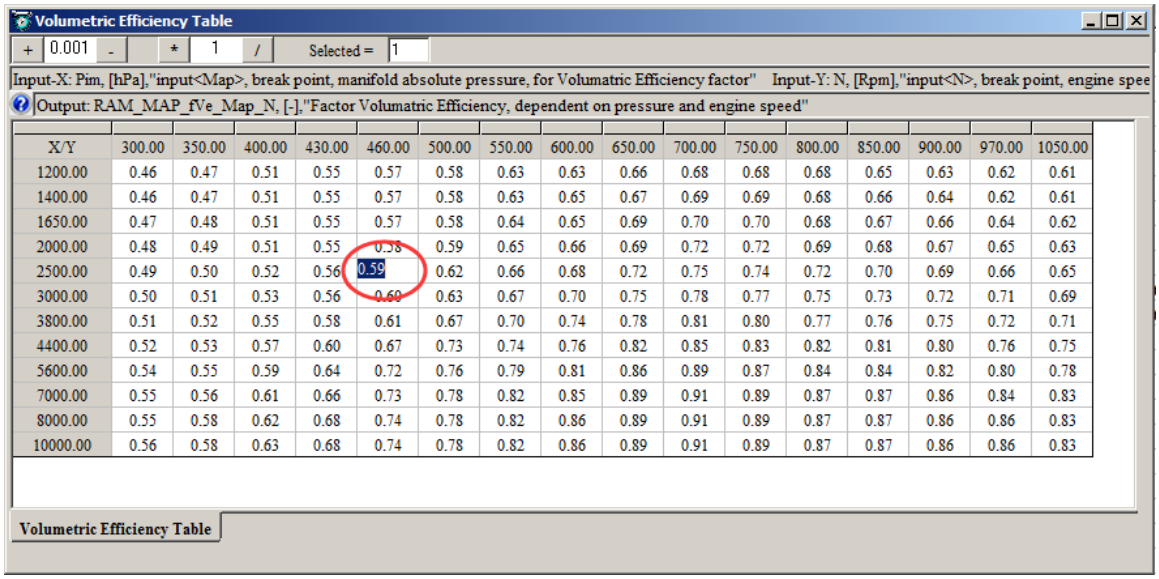
Calibration variables are 3 types: Values, Curves and Maps. The labels start with the prefix so you can tell immediately. VAL_ means it's a calibration value. CUR_ means it is a curve with one input. MAP_ means it is a map with 2 inputs.

3.3.1 Change the value directly

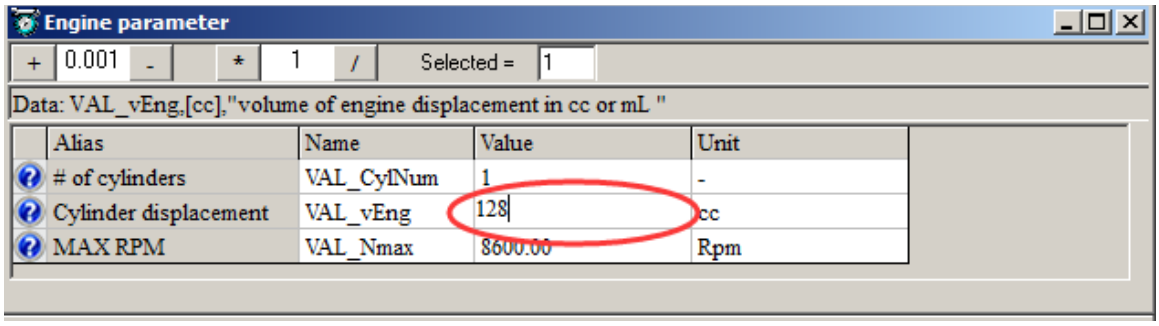
1) Double click the value cell that you want to modify,



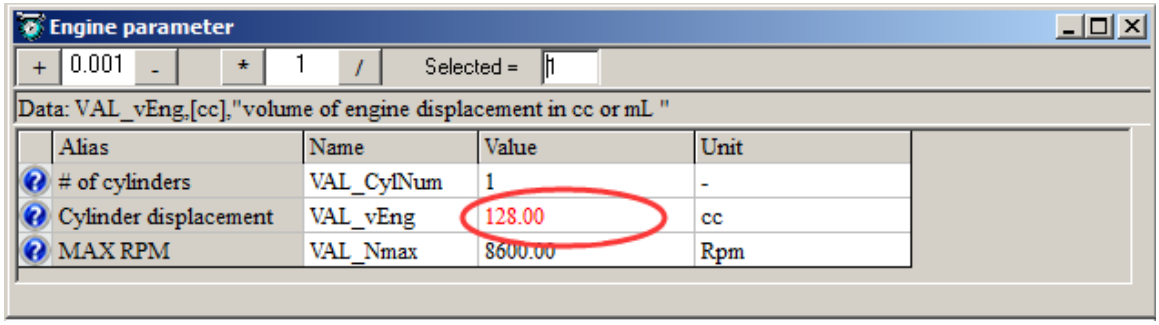




2) Input the value that you want



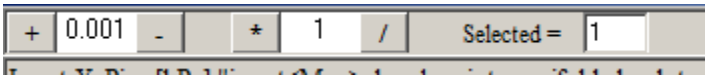
Press Enter to finish it. The modified data will show as "red" color.



Note: This method applies to break points, too.

3.3.2 Change the value with Formula

EcoCAL supports to use Formula to modify the calibration data.



Note:

+: Plus;

-: Minus;

***: multiply by;**

/: be divided by;

Selected = 1 **: be equal.**

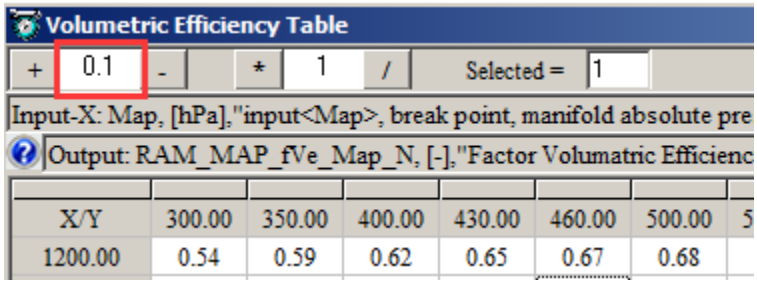
1) **Plus and Minus**

You can input the value that you want to increase or decrease, and then choose the cell or area of table you want to change

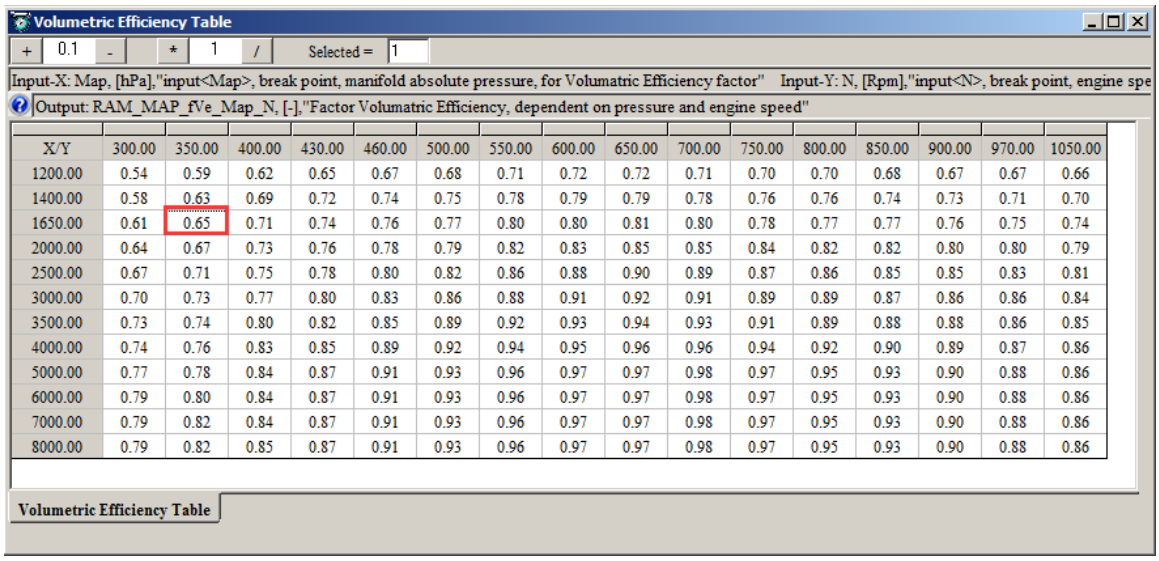
Click the Puls or Minus button to change the value.

For example:

Input 0.1 in the box

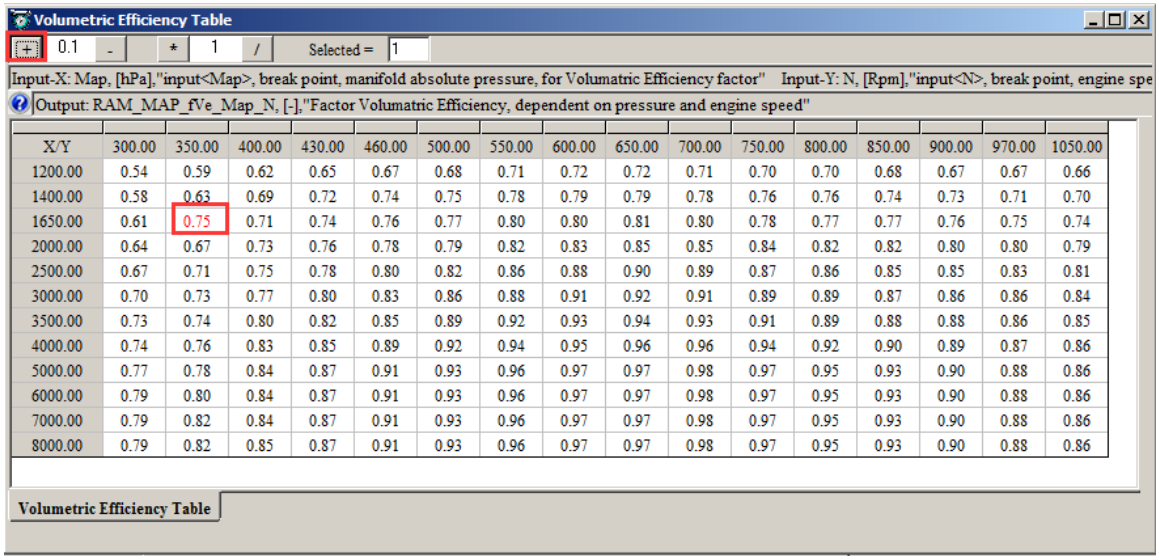


If you want to change one cell, click cell to choose it.



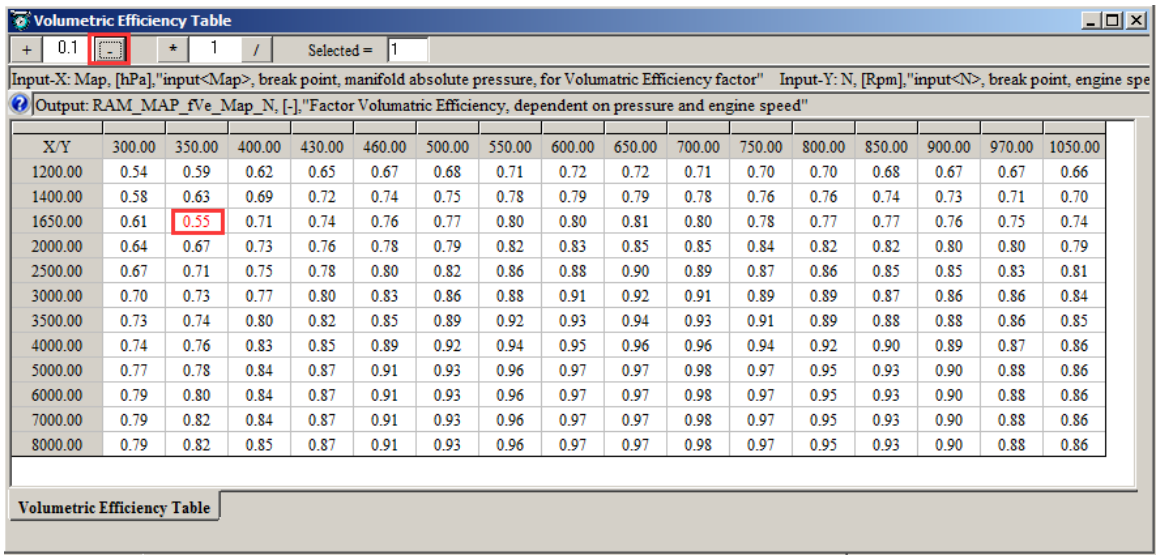
X/Y	300.00	350.00	400.00	430.00	460.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	970.00	1050.00
1200.00	0.54	0.59	0.62	0.65	0.67	0.68	0.71	0.72	0.72	0.71	0.70	0.70	0.68	0.67	0.67	0.66
1400.00	0.58	0.63	0.69	0.72	0.74	0.75	0.78	0.79	0.79	0.78	0.76	0.76	0.74	0.73	0.71	0.70
1650.00	0.61	0.65	0.71	0.74	0.76	0.77	0.80	0.80	0.81	0.80	0.78	0.77	0.77	0.76	0.75	0.74
2000.00	0.64	0.67	0.73	0.76	0.78	0.79	0.82	0.83	0.85	0.85	0.84	0.82	0.82	0.80	0.80	0.79
2500.00	0.67	0.71	0.75	0.78	0.80	0.82	0.86	0.88	0.90	0.89	0.87	0.86	0.85	0.85	0.83	0.81
3000.00	0.70	0.73	0.77	0.80	0.83	0.86	0.88	0.91	0.92	0.91	0.89	0.89	0.87	0.86	0.86	0.84
3500.00	0.73	0.74	0.80	0.82	0.85	0.89	0.92	0.93	0.94	0.93	0.91	0.89	0.88	0.88	0.86	0.85
4000.00	0.74	0.76	0.83	0.85	0.89	0.92	0.94	0.95	0.96	0.96	0.94	0.92	0.90	0.89	0.87	0.86
5000.00	0.77	0.78	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
6000.00	0.79	0.80	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
7000.00	0.79	0.82	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
8000.00	0.79	0.82	0.85	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86

If you want to increase value by 0.1 step based on the stock value, please click the "+" button.



X/Y	300.00	350.00	400.00	430.00	460.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	970.00	1050.00
1200.00	0.54	0.59	0.62	0.65	0.67	0.68	0.71	0.72	0.72	0.71	0.70	0.70	0.68	0.67	0.67	0.66
1400.00	0.58	0.63	0.69	0.72	0.74	0.75	0.78	0.79	0.79	0.78	0.76	0.76	0.74	0.73	0.71	0.70
1650.00	0.61	0.75	0.71	0.74	0.76	0.77	0.80	0.80	0.81	0.80	0.78	0.77	0.77	0.76	0.75	0.74
2000.00	0.64	0.67	0.73	0.76	0.78	0.79	0.82	0.83	0.85	0.85	0.84	0.82	0.82	0.80	0.80	0.79
2500.00	0.67	0.71	0.75	0.78	0.80	0.82	0.86	0.88	0.90	0.89	0.87	0.86	0.85	0.85	0.83	0.81
3000.00	0.70	0.73	0.77	0.80	0.83	0.86	0.88	0.91	0.92	0.91	0.89	0.89	0.87	0.86	0.86	0.84
3500.00	0.73	0.74	0.80	0.82	0.85	0.89	0.92	0.93	0.94	0.93	0.91	0.89	0.88	0.88	0.86	0.85
4000.00	0.74	0.76	0.83	0.85	0.89	0.92	0.94	0.95	0.96	0.96	0.94	0.92	0.90	0.89	0.87	0.86
5000.00	0.77	0.78	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
6000.00	0.79	0.80	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
7000.00	0.79	0.82	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
8000.00	0.79	0.82	0.85	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86

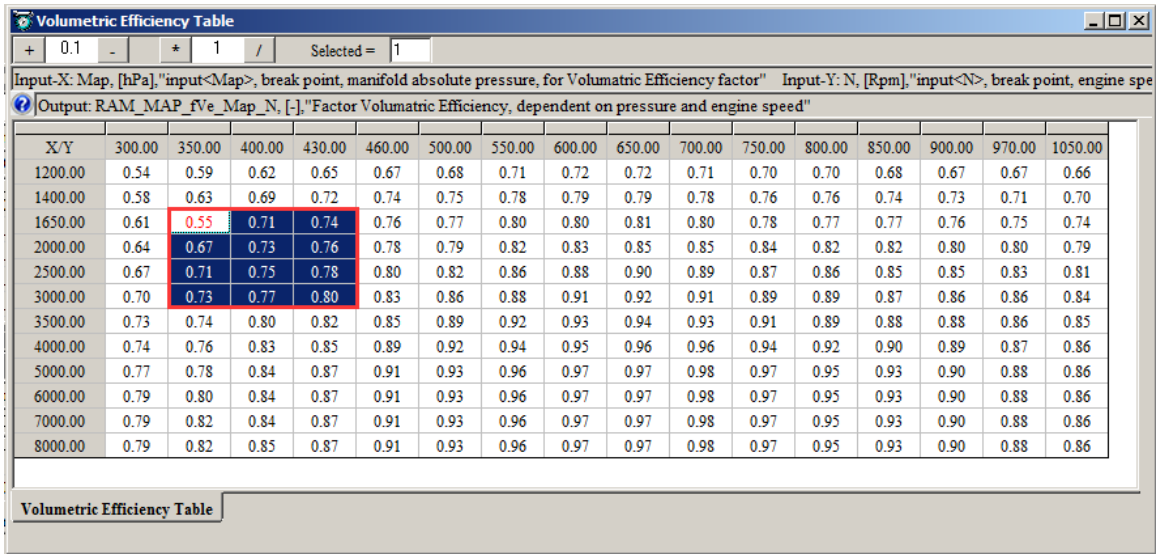
And if you want to decrease the value, click" - " button



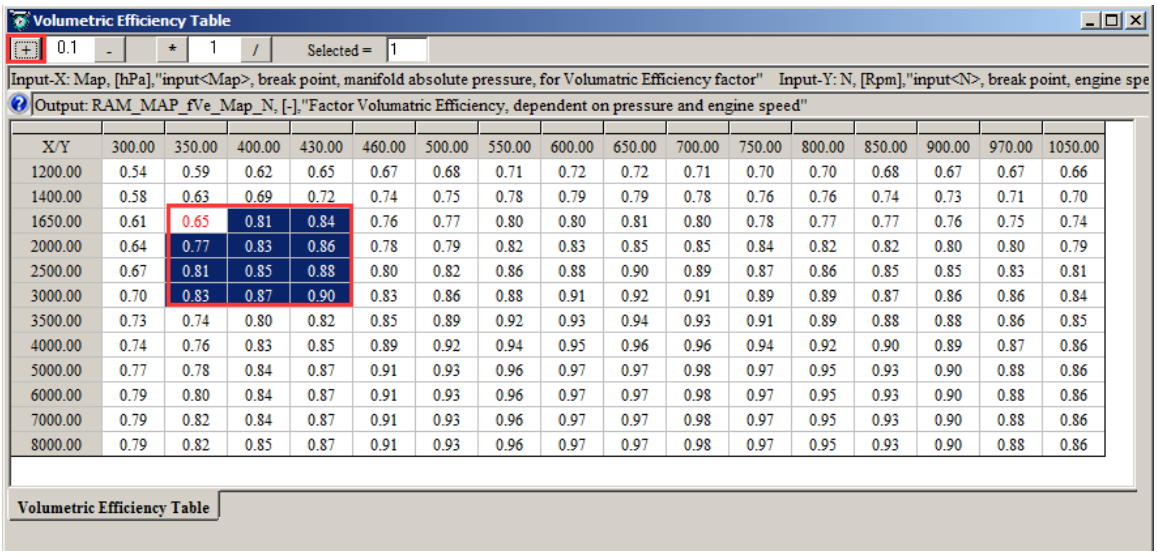
X/Y	300.00	350.00	400.00	430.00	460.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	970.00	1050.00
1200.00	0.54	0.59	0.62	0.65	0.67	0.68	0.71	0.72	0.72	0.71	0.70	0.70	0.68	0.67	0.67	0.66
1400.00	0.58	0.63	0.69	0.72	0.74	0.75	0.78	0.79	0.79	0.78	0.76	0.76	0.74	0.73	0.71	0.70
1650.00	0.61	0.55	0.71	0.74	0.76	0.77	0.80	0.80	0.81	0.80	0.78	0.77	0.77	0.76	0.75	0.74
2000.00	0.64	0.67	0.73	0.76	0.78	0.79	0.82	0.83	0.85	0.85	0.84	0.82	0.82	0.80	0.80	0.79
2500.00	0.67	0.71	0.75	0.78	0.80	0.82	0.86	0.88	0.90	0.89	0.87	0.86	0.85	0.85	0.83	0.81
3000.00	0.70	0.73	0.77	0.80	0.83	0.86	0.88	0.91	0.92	0.91	0.89	0.89	0.87	0.86	0.86	0.84
3500.00	0.73	0.74	0.80	0.82	0.85	0.89	0.92	0.93	0.94	0.93	0.91	0.89	0.88	0.88	0.86	0.85
4000.00	0.74	0.76	0.83	0.85	0.89	0.92	0.94	0.95	0.96	0.96	0.94	0.92	0.90	0.89	0.87	0.86
5000.00	0.77	0.78	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
6000.00	0.79	0.80	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
7000.00	0.79	0.82	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
8000.00	0.79	0.82	0.85	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86

Note: You also can tune more than one cell together by using the buttons.

Choose the area of cells, then click the + or - button.

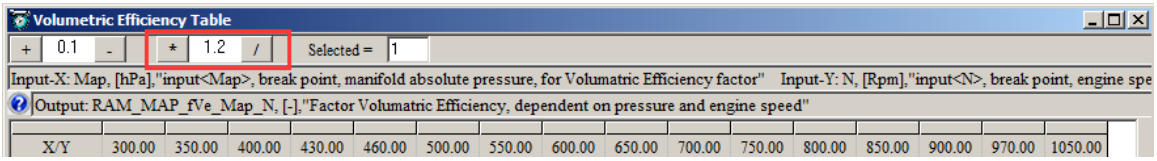


X/Y	300.00	350.00	400.00	430.00	460.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	970.00	1050.00
1200.00	0.54	0.59	0.62	0.65	0.67	0.68	0.71	0.72	0.72	0.71	0.70	0.70	0.68	0.67	0.67	0.66
1400.00	0.58	0.63	0.69	0.72	0.74	0.75	0.78	0.79	0.79	0.78	0.76	0.76	0.74	0.73	0.71	0.70
1650.00	0.61	0.55	0.71	0.74	0.76	0.77	0.80	0.80	0.81	0.80	0.78	0.77	0.77	0.76	0.75	0.74
2000.00	0.64	0.67	0.73	0.76	0.78	0.79	0.82	0.83	0.85	0.85	0.84	0.82	0.82	0.80	0.80	0.79
2500.00	0.67	0.71	0.75	0.78	0.80	0.82	0.86	0.88	0.90	0.89	0.87	0.86	0.85	0.85	0.83	0.81
3000.00	0.70	0.73	0.77	0.80	0.83	0.86	0.88	0.91	0.92	0.91	0.89	0.89	0.87	0.86	0.86	0.84
3500.00	0.73	0.74	0.80	0.82	0.85	0.89	0.92	0.93	0.94	0.93	0.91	0.89	0.88	0.88	0.86	0.85
4000.00	0.74	0.76	0.83	0.85	0.89	0.92	0.94	0.95	0.96	0.96	0.94	0.92	0.90	0.89	0.87	0.86
5000.00	0.77	0.78	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
6000.00	0.79	0.80	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
7000.00	0.79	0.82	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
8000.00	0.79	0.82	0.85	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86



X/Y	300.00	350.00	400.00	430.00	460.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	970.00	1050.00
1200.00	0.54	0.59	0.62	0.65	0.67	0.68	0.71	0.72	0.72	0.71	0.70	0.70	0.68	0.67	0.67	0.66
1400.00	0.58	0.63	0.69	0.72	0.74	0.75	0.78	0.79	0.79	0.78	0.76	0.76	0.74	0.73	0.71	0.70
1650.00	0.61	0.65	0.81	0.84	0.76	0.77	0.80	0.80	0.81	0.80	0.78	0.77	0.77	0.76	0.75	0.74
2000.00	0.64	0.77	0.83	0.86	0.78	0.79	0.82	0.83	0.85	0.85	0.84	0.82	0.82	0.80	0.80	0.79
2500.00	0.67	0.81	0.85	0.88	0.80	0.82	0.86	0.88	0.90	0.89	0.87	0.86	0.85	0.85	0.83	0.81
3000.00	0.70	0.83	0.87	0.90	0.83	0.86	0.88	0.91	0.92	0.91	0.89	0.89	0.87	0.86	0.86	0.84
3500.00	0.73	0.74	0.80	0.82	0.85	0.89	0.92	0.93	0.94	0.93	0.91	0.89	0.88	0.88	0.86	0.85
4000.00	0.74	0.76	0.83	0.85	0.89	0.92	0.94	0.95	0.96	0.96	0.94	0.92	0.90	0.89	0.87	0.86
5000.00	0.77	0.78	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
6000.00	0.79	0.80	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
7000.00	0.79	0.82	0.84	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86
8000.00	0.79	0.82	0.85	0.87	0.91	0.93	0.96	0.97	0.97	0.98	0.97	0.95	0.93	0.90	0.88	0.86

2) Multiply and divided by



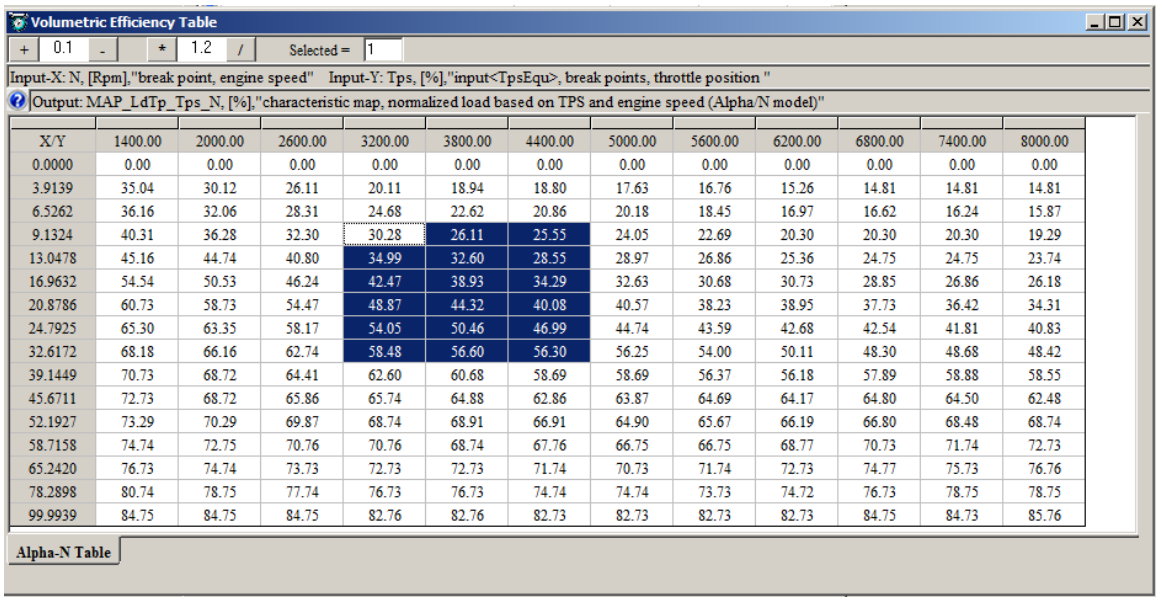
X/Y	300.00	350.00	400.00	430.00	460.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	970.00	1050.00

This is the same to the Plus or Minus function, it is to multiply or divided by the factor that you input.

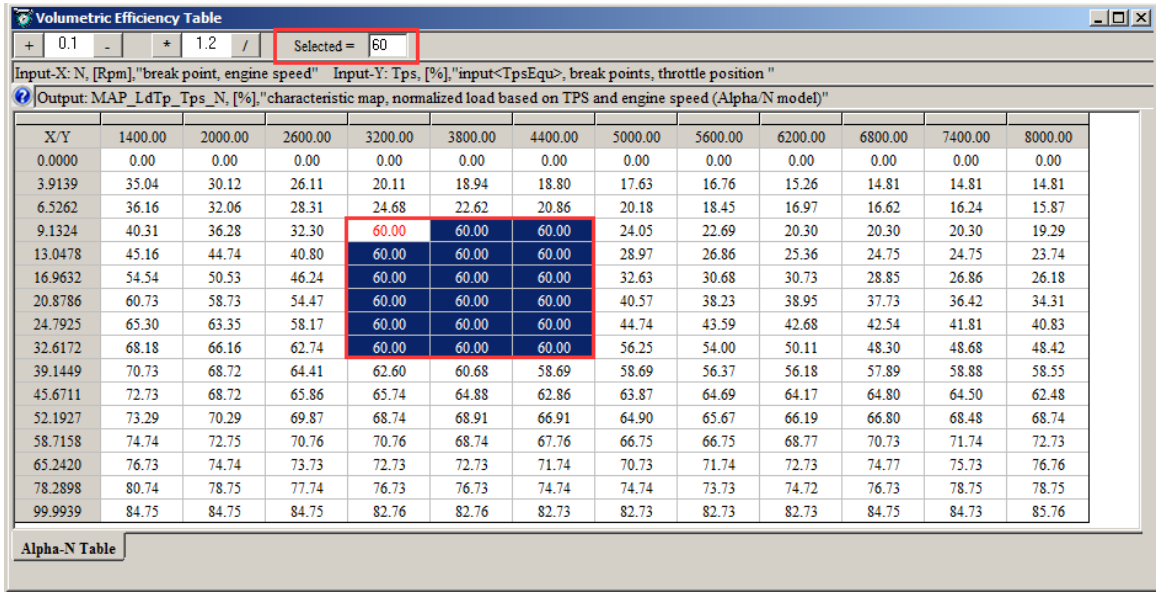
3) Be equal

This is used to change the value of cell to be one constant value.

Choose the cell or area of cells you want to change, and then input the value which you want in the box, then press the Enter button of keyboard to finish it.



X/Y	1400.00	2000.00	2600.00	3200.00	3800.00	4400.00	5000.00	5600.00	6200.00	6800.00	7400.00	8000.00
0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.9139	35.04	30.12	26.11	20.11	18.94	18.80	17.63	16.76	15.26	14.81	14.81	14.81
6.5262	36.16	32.06	28.31	24.68	22.62	20.86	20.18	18.45	16.97	16.62	16.24	15.87
9.1324	40.31	36.28	32.30	30.28	26.11	25.55	24.05	22.69	20.30	20.30	20.30	19.29
13.0478	45.16	44.74	40.80	34.99	32.60	28.55	28.97	26.86	25.36	24.75	24.75	23.74
16.9632	54.54	50.53	46.24	42.47	38.93	34.29	32.63	30.68	30.73	28.85	26.86	26.18
20.8786	60.73	58.73	54.47	48.87	44.32	40.08	40.57	38.23	38.95	37.73	36.42	34.31
24.7925	65.30	63.35	58.17	54.05	50.46	46.99	44.74	43.59	42.68	42.54	41.81	40.83
32.6172	68.18	66.16	62.74	58.48	56.60	56.30	56.25	54.00	50.11	48.30	48.68	48.42
39.1449	70.73	68.72	64.41	62.60	60.68	58.69	58.69	56.37	56.18	57.89	58.88	58.55
45.6711	72.73	68.72	65.86	65.74	64.88	62.86	63.87	64.69	64.17	64.80	64.50	62.48
52.1927	73.29	70.29	69.87	68.74	68.91	66.91	64.90	65.67	66.19	66.80	68.48	68.74
58.7158	74.74	72.75	70.76	70.76	68.74	67.76	66.75	66.75	68.77	70.73	71.74	72.73
65.2420	76.73	74.74	73.73	72.73	72.73	71.74	70.73	71.74	72.73	74.77	75.73	76.76
78.2898	80.74	78.75	77.74	76.73	76.73	74.74	74.74	73.73	74.72	76.73	78.75	78.75
99.9939	84.75	84.75	84.75	82.76	82.76	82.73	82.73	82.73	82.73	84.75	84.73	85.76

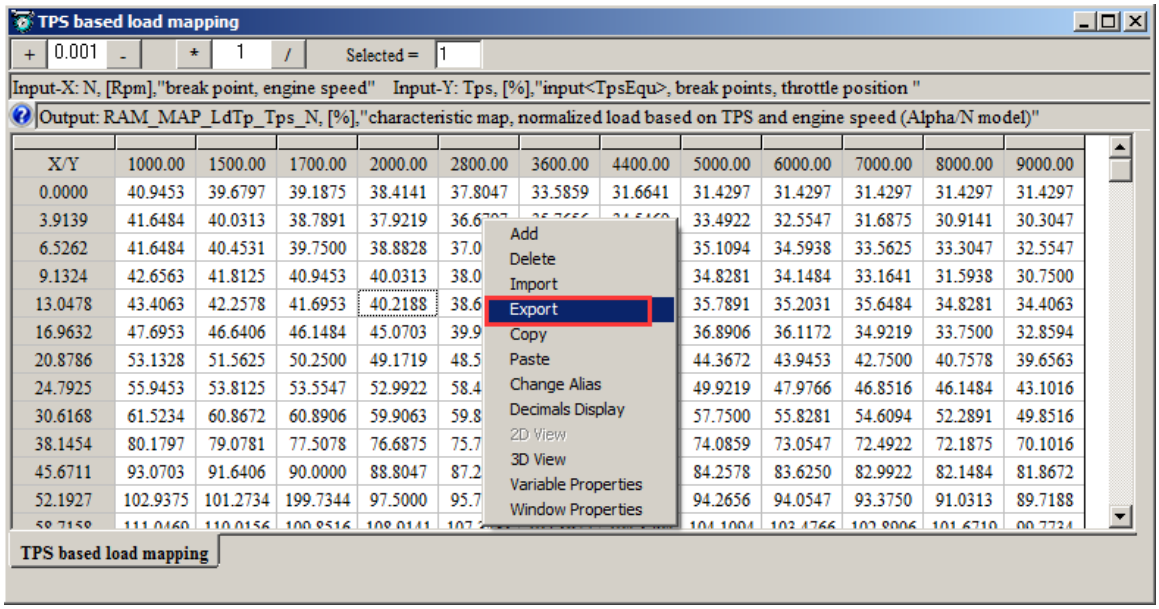


X/Y	1400.00	2000.00	2600.00	3200.00	3800.00	4400.00	5000.00	5600.00	6200.00	6800.00	7400.00	8000.00
0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.9139	35.04	30.12	26.11	20.11	18.94	18.80	17.63	16.76	15.26	14.81	14.81	14.81
6.5262	36.16	32.06	28.31	24.68	22.62	20.86	20.18	18.45	16.97	16.62	16.24	15.87
9.1324	40.31	36.28	32.30	60.00	60.00	60.00	24.05	22.69	20.30	20.30	20.30	19.29
13.0478	45.16	44.74	40.80	60.00	60.00	60.00	28.97	26.86	25.36	24.75	24.75	23.74
16.9632	54.54	50.53	46.24	60.00	60.00	60.00	32.63	30.68	30.73	28.85	26.86	26.18
20.8786	60.73	58.73	54.47	60.00	60.00	60.00	40.57	38.23	38.95	37.73	36.42	34.31
24.7925	65.30	63.35	58.17	60.00	60.00	60.00	44.74	43.59	42.68	42.54	41.81	40.83
32.6172	68.18	66.16	62.74	60.00	60.00	60.00	56.25	54.00	50.11	48.30	48.68	48.42
39.1449	70.73	68.72	64.41	62.60	60.68	58.69	58.69	56.37	56.18	57.89	58.88	58.55
45.6711	72.73	68.72	65.86	65.74	64.88	62.86	63.87	64.69	64.17	64.80	64.50	62.48
52.1927	73.29	70.29	69.87	68.74	68.91	66.91	64.90	65.67	66.19	66.80	68.48	68.74
58.7158	74.74	72.75	70.76	70.76	68.74	67.76	66.75	66.75	68.77	70.73	71.74	72.73
65.2420	76.73	74.74	73.73	72.73	72.73	71.74	70.73	71.74	72.73	74.77	75.73	76.76
78.2898	80.74	78.75	77.74	76.73	76.73	74.74	74.74	73.73	74.72	76.73	78.75	78.75
99.9939	84.75	84.75	84.75	82.76	82.76	82.73	82.73	82.73	82.73	84.75	84.73	85.76

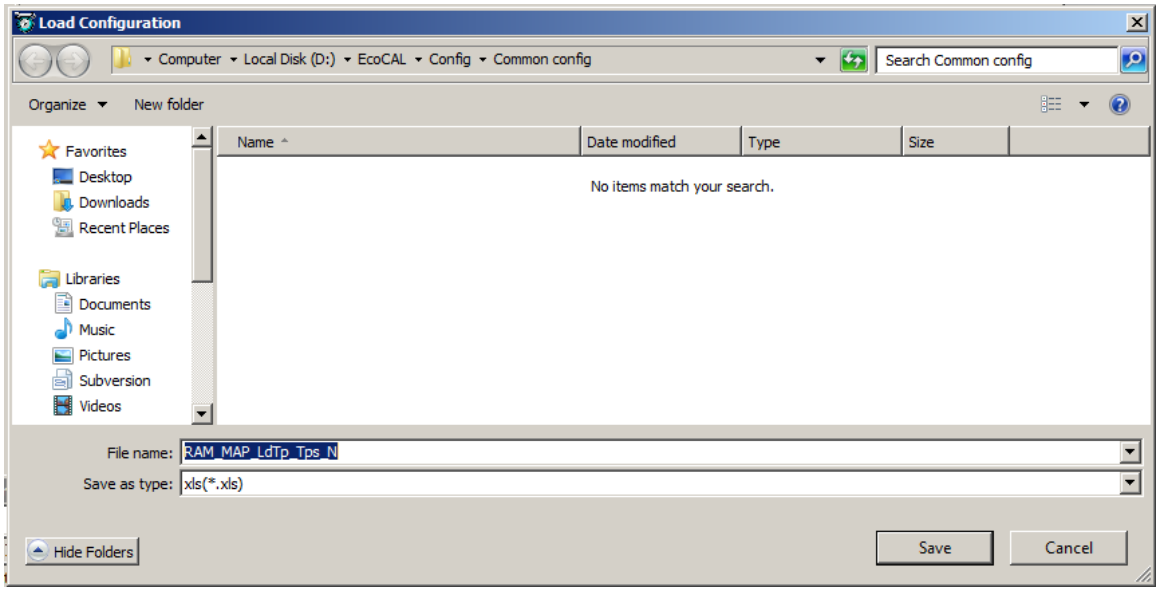
3.3.3 Export / Import Calibration Data for tuning

You can also do data export to Excel sheet, and modified the data in Excel. After finishing the modification, you can import data back to EcoCAL. This is most useful for Curve and Map tables.

Right-Click the parameter window, select the **Export** option.



The program will pop-up a "save as" dialog window.



If you click **save**, the program will save an **xls** file and open it in Excel. The default name of the xls file is the calibration label name.

And the xls file will be opened automatically.

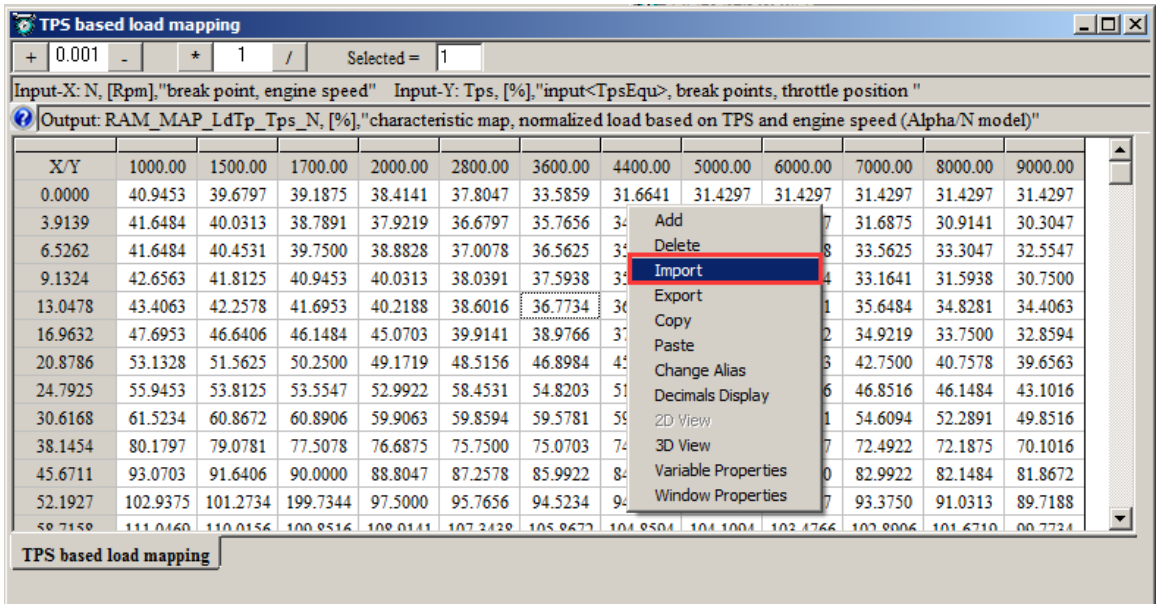
S12

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	RAM_MAP_LdTp_Tps_N [Output: RAM_MAP_LdTp_Tps_N, [%],"characteristic map, normalized load based on TPS and engine speed (Alpha/N model)"]														
2	Input-X: N, [Rpm],"break point, engine speed" Input-Y: Tps, [%],"input<TpsEqu>, break points, throttle position "														
3															
4	X/Y	1000	1500	1700	2000	2800	3600	4400	5000	6000	7000	8000	9000		
5	0	40.9453	39.6797	39.1875	38.4141	37.8047	33.5859	31.6641	31.4297	31.4297	31.4297	31.4297	31.4297		
6	3.9139	41.6484	40.0313	38.7891	37.9219	36.6797	35.7656	34.5469	33.4922	32.5547	31.6875	30.9141	30.3047		
7	6.5262	41.6484	40.4531	39.75	38.8828	37.0078	36.5625	35.7656	35.1094	34.5938	33.5625	33.3047	32.5547		
8	9.1324	42.6563	41.8125	40.9453	40.0313	38.0391	37.5938	35.8828	34.8281	34.1484	33.1641	31.5938	30.75		
9	13.0478	43.4063	42.2578	41.6953	40.2188	38.6016	36.7734	36.7266	35.7891	35.2031	35.6484	34.8281	34.4063		
10	16.9632	47.6953	46.6406	46.1484	45.0703	39.9141	38.9766	37.8516	36.8906	36.1172	34.9219	33.75	32.8594		
11	20.8786	53.1328	51.5625	50.25	49.1719	48.5156	46.8984	45.5859	44.3672	43.9453	42.75	40.7578	39.6563		
12	24.7925	55.9453	53.8125	53.5547	52.9922	58.4531	54.8203	51.9141	49.9219	47.9766	46.8516	46.1484	43.1016		
13	30.6168	61.5234	60.8672	60.8906	59.9063	59.8594	59.5781	59.1563	57.75	55.8281	54.6094	52.2891	49.8516		
14	38.1454	80.1797	79.0781	77.5078	76.6875	75.75	75.0703	74.4375	74.0859	73.0547	72.4922	72.1875	70.1016		
15	45.6711	93.0703	91.6406	90	88.8047	87.2578	85.9922	84.9844	84.2578	83.625	82.9922	82.1484	81.8672		
16	52.1927	102.9375	101.2734	199.7344	97.5	95.7656	94.5234	94.4531	94.2656	94.0547	93.375	91.0313	89.7188		
17	58.7158	111.0469	110.0156	109.8516	108.9141	107.3438	105.8672	104.8594	104.1094	103.4766	102.8906	101.6719	99.7734		
18	65.242	120.1641	119.1094	118.0781	117.0703	115.8281	114.0938	113.5547	112.5938	111.4922	110.1797	109.3828	107.4375		
19	78.2898	126.1875	124.9219	123.8672	122.5781	121.125	119.9297	118.1016	117.0938	116.0625	114.2813	111.3047	109.7578		
20	99.9939	147.7031	146.6016	145.5	144	142.3125	140.2031	139.9219	155.0391	153.9375	152.1094	144.9844	139.875		
21															

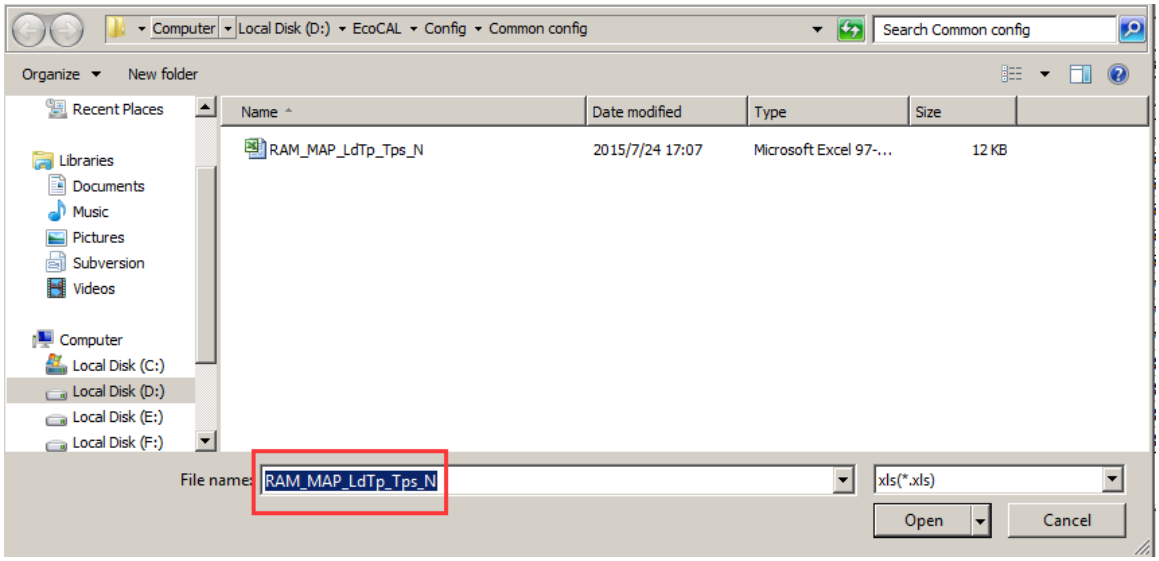
It is recommended to modify your curve and map tables in Excel, and smoothen them in Excel and then imported back to EcoCAL. And when you finish tuning, please save it.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	RAM_MAP_LdTp_Tps_N [Output: RAM_MAP_LdTp_Tps_N, [%],"characteristic map, normalized load based on TPS and engine speed (Alpha												
2	Input-X: N, [Rpm],"break point, engine speed" Input-Y: Tps, [%],"input<TpsEqu>, break points, throttle position "												
3													
4	X/Y	1000	1500	1700	2000	2800	3600	4400	5000	6000	7000	8000	9000
5	0	45	45	39.1875	38.4141	37.8047	33.5859	31.6641	31.4297	31.4297	31.4297	31.4297	31.4297
6	3.9139	47	47	38.7891	37.9219	36.6797	35.7656	34.5469	33.4922	32.5547	31.6875	30.9141	30.3047
7	6.5262	49	49	39.75	38.8828	37.0078	36.5625	35.7656	35.1094	34.5938	33.5625	33.3047	32.5547
8	9.1324	51	51	40.9453	40.0313	38.0391	37.5938	35.8828	34.8281	34.1484	33.1641	31.5938	30.75
9	13.0478	53	53	41.6953	40.2188	38.6016	36.7734	36.7266	35.7891	35.2031	35.6484	34.8281	34.4063
10	16.9632	55	55	46.1484	45.0703	39.9141	38.9766	37.8516	36.8906	36.1172	34.9219	33.75	32.8594
11	20.8786	53.1328	51.5625	50.25	49.1719	48.5156	46.8984	45.5859	44.3672	43.9453	42.75	40.7578	39.6563
12	24.7925	55.9453	53.8125	53.5547	52.9922	58.4531	54.8203	51.9141	49.9219	47.9766	46.8516	46.1484	43.1016
13	30.6168	61.5234	60.8672	60.8906	59.9063	59.8594	59.5781	59.1563	57.75	55.8281	54.6094	52.2891	49.8516
14	38.1454	80.1797	79.0781	77.5078	76.6875	75.75	75.0703	74.4375	74.0859	73.0547	72.4922	72.1875	70.1016
15	45.6711	93.0703	91.6406	90	88.8047	87.2578	85.9922	84.9844	84.2578	83.625	82.9922	82.1484	81.8672
16	52.1927	102.9375	101.2734	199.7344	97.5	95.7656	94.5234	94.4531	94.2656	94.0547	93.375	91.0313	89.7188
17	58.7158	111.0469	110.0156	109.8516	108.9141	107.3438	105.8672	104.8594	104.1094	103.4766	102.8906	101.6719	99.7734
18	65.242	120.1641	119.1094	118.0781	117.0703	115.8281	114.0938	113.5547	112.5938	111.4922	110.1797	109.3828	107.4375
19	78.2898	126.1875	124.9219	123.8672	122.5781	121.125	119.9297	118.1016	117.0938	116.0625	114.2813	111.3047	109.7578
20	99.9939	147.7031	146.6016	145.5	144	142.3125	140.2031	139.9219	155.0391	153.9375	152.1094	144.9844	139.875

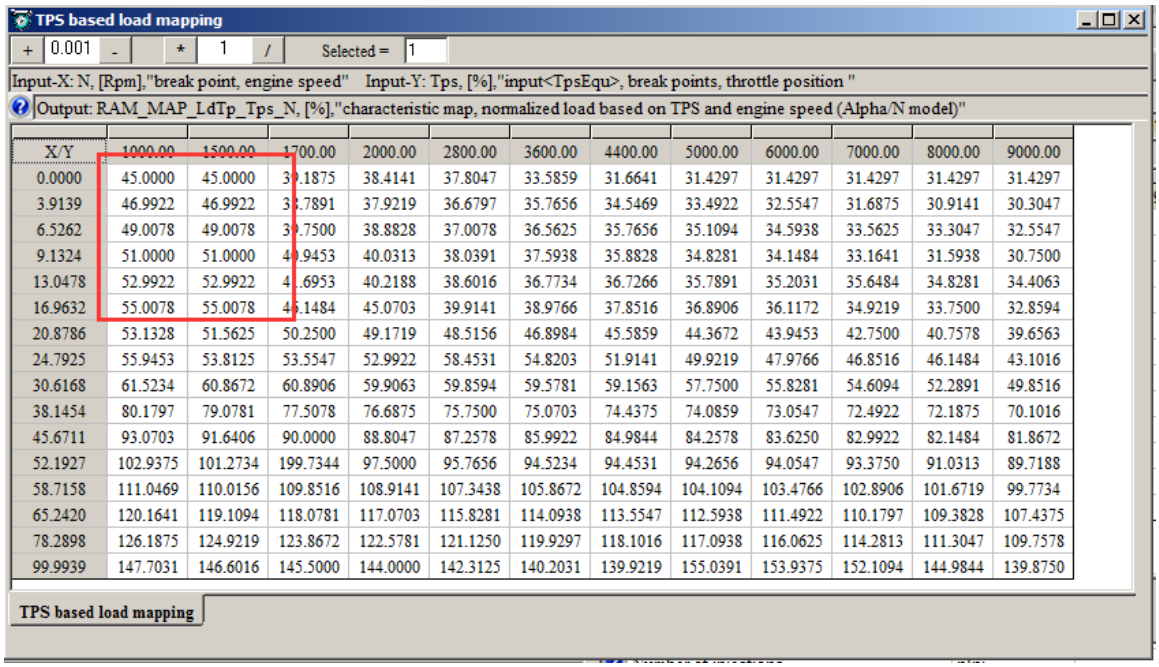
If you want to import just edited calibration tables, Right-Click the parameter window, select the **Import** option.



Import the **CSV** file you just modified.



The modified cells will show as **"red"**.



X/Y	1000.00	1500.00	1700.00	2000.00	2800.00	3600.00	4400.00	5000.00	6000.00	7000.00	8000.00	9000.00
0.0000	45.0000	45.0000	39.1875	38.4141	37.8047	33.5859	31.6641	31.4297	31.4297	31.4297	31.4297	31.4297
3.9139	46.9922	46.9922	38.7891	37.9219	36.6797	35.7656	34.5469	33.4922	32.5547	31.6875	30.9141	30.3047
6.5262	49.0078	49.0078	39.7500	38.8828	37.0078	36.5625	35.7656	35.1094	34.5938	33.5625	33.3047	32.5547
9.1324	51.0000	51.0000	40.9453	40.0313	38.0391	37.5938	35.8828	34.8281	34.1484	33.1641	31.5938	30.7500
13.0478	52.9922	52.9922	41.6953	40.2188	38.6016	36.7734	36.7266	35.7891	35.2031	35.6484	34.8281	34.4063
16.9632	55.0078	55.0078	46.1484	45.0703	39.9141	38.9766	37.8516	36.8906	36.1172	34.9219	33.7500	32.8594
20.8786	53.1328	51.5625	50.2500	49.1719	48.5156	46.8984	45.5859	44.3672	43.9453	42.7500	40.7578	39.6563
24.7925	55.9453	53.8125	53.5547	52.9922	58.4531	54.8203	51.9141	49.9219	47.9766	46.8516	46.1484	43.1016
30.6168	61.5234	60.8672	60.8906	59.9063	59.8594	59.5781	59.1563	57.7500	55.8281	54.6094	52.2891	49.8516
38.1454	80.1797	79.0781	77.5078	76.6875	75.7500	75.0703	74.4375	74.0859	73.0547	72.4922	72.1875	70.1016
45.6711	93.0703	91.6406	90.0000	88.8047	87.2578	85.9922	84.9844	84.2578	83.6250	82.9922	82.1484	81.8672
52.1927	102.9375	101.2734	199.7344	97.5000	95.7656	94.5234	94.4531	94.2656	94.0547	93.3750	91.0313	89.7188
58.7158	111.0469	110.0156	109.8516	108.9141	107.3438	105.8672	104.8594	104.1094	103.4766	102.8906	101.6719	99.7734
65.2420	120.1641	119.1094	118.0781	117.0703	115.8281	114.0938	113.5547	112.5938	111.4922	110.1797	109.3828	107.4375
78.2898	126.1875	124.9219	123.8672	122.5781	121.1250	119.9297	118.1016	117.0938	116.0625	114.2813	111.3047	109.7578
99.9939	147.7031	146.6016	145.5000	144.0000	142.3125	140.2031	139.9219	155.0391	153.9375	152.1094	144.9844	139.8750

Note: when you finish the data changed, please save it as one new CAL file.

Please read the flowing chapter for how to save the new CAL files.

3.3.4 On-the-fly Calibration

On-the-fly calibrations are something must to have when tuning the engine on the dyno, so that you can make you calibration changes taking effect immediately by hit a "ENTER" key. No need to "Burn to ECU" or reprogram the ECU. Only by this way, you can keep the engine running without interrupted and at the same time find the sweet spots of the certain operating conditions. And you can tune your fuel / spark maps very quickly.

But the drawback of the "on-the-fly" calibrations is to use a lot of memory of ECU. Basically any calibration data you want to do "on-the-fly" changes, you must double or even triple the size of the memory for that set of data. That would significantly increase the ECU cost.

We have a compromise to do this: only make certain critical calibration maps as "on-the-fly" capable. And most other non-critical calibrations, which are seldom changed by customers, stay the old way.

Mainly for most customers, the calibrations that need to be tuned for their engines are basic Fuel maps (VE table, TPS-load table), Spark maps, and some supplemental fuel/spark characteristic curves.

You can also use "**Save as**" feature at "File" menu to save your new calibrations to a new CAL file. And later on load it into ProCAL.

At this moment the below calibration maps, curves, and values are made "on-the-fly" capable:

RAM_MAP_LdTp_N_Tps; RAM_MAP_fVe_Map_N; RAM_MAP_Iga_N_Ld

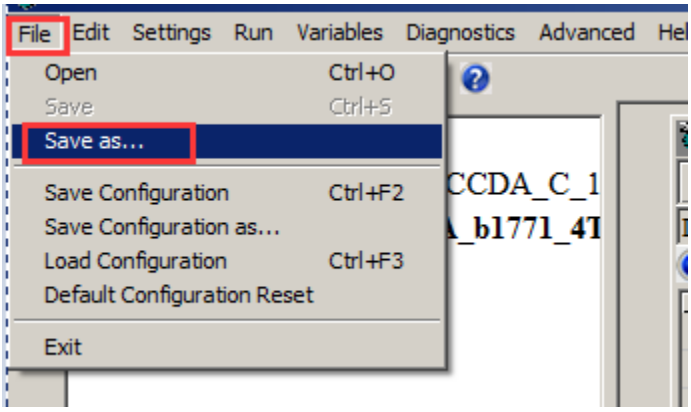
RAM_CUR_fAst_TmSta; RAM_CUR_fWmp_Tm; RAM_VAL_fFlApp

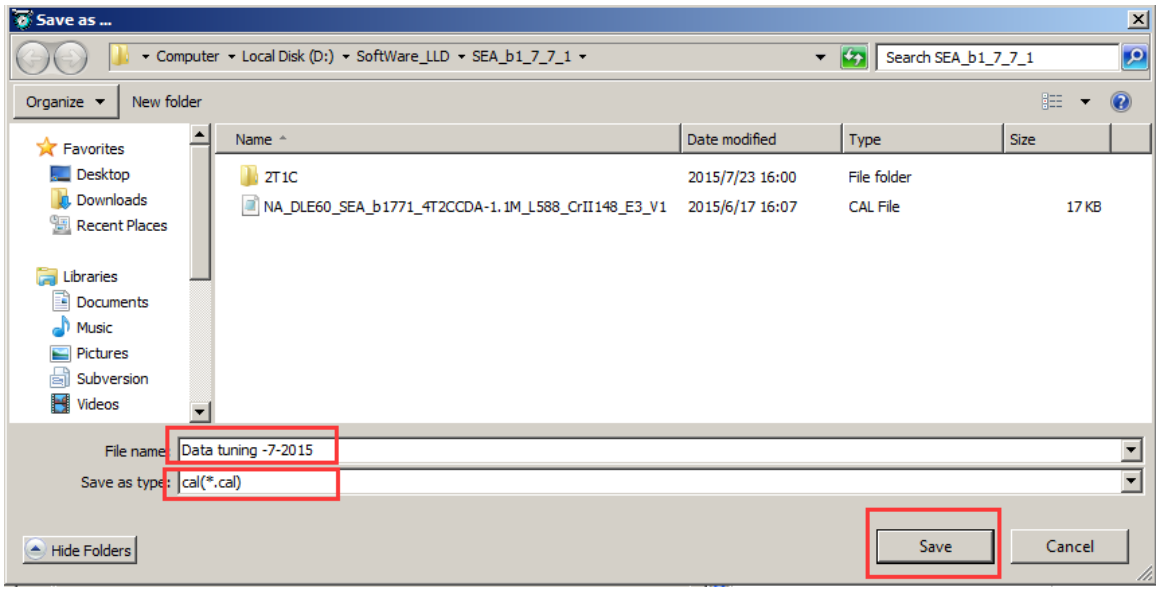
You can add the calibration variables in EcoCAL.

3.4 Save as calibration data file

When you finish EFI tuning or do some fine tuning, please save the tuning data before you exit the EcoCAL, otherwise, you will lost the tuning that you did.

Go to menu->File->Save as





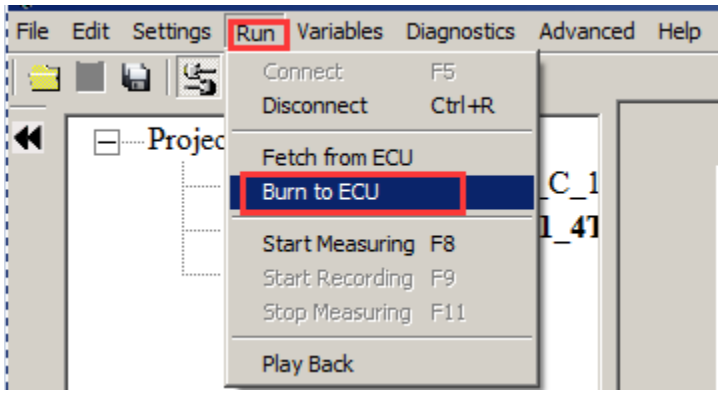
You can save it as the new calibration CAL file.

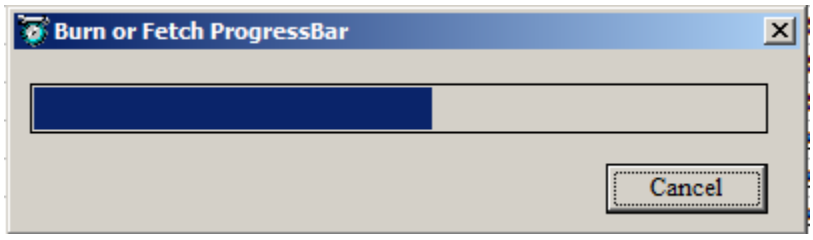
3.5 Burn to ECU and Fetch from ECU

3.5.1 Burn the CAL file to ECU

When you finish the data tuning, you want to see the performance of engine, please burn the data to ECU, then ECU will use the data that you changed to control the engine.

Connect to ECU first, and then click the “burn to ECU “button to burn the CAL file or data changed to ECU.





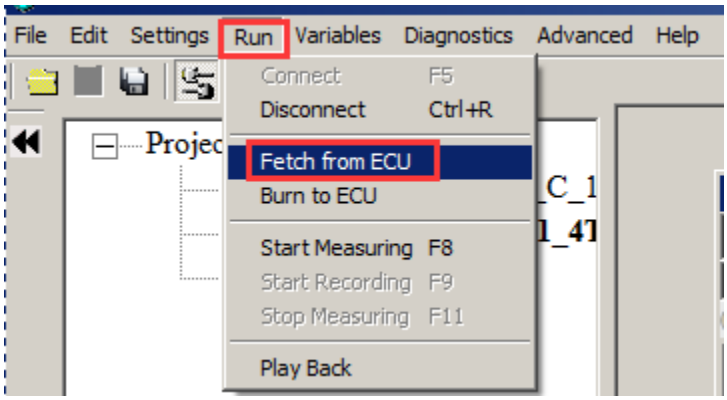
When burn to ECU successfully, you will hear the noise of fuel pump working.

Note: make sure your 12V battery is healthy, before you do any "burn to ECU" or "fetch from ECU"!
During the upload or download, users are not allowed to do any operations to the EFI system.
Do not turn off the ECU power or disconnect the serial cable before the upload/download is finished

3.5.2 Fetch the CAL file from ECU

Sometimes, maybe you want to know which version of Calibration data is in ECU or you forget the change that you did, you can fetch the data from ECU to compare.

Connect ECU only; Go to menu->Run->Fetch from ECU

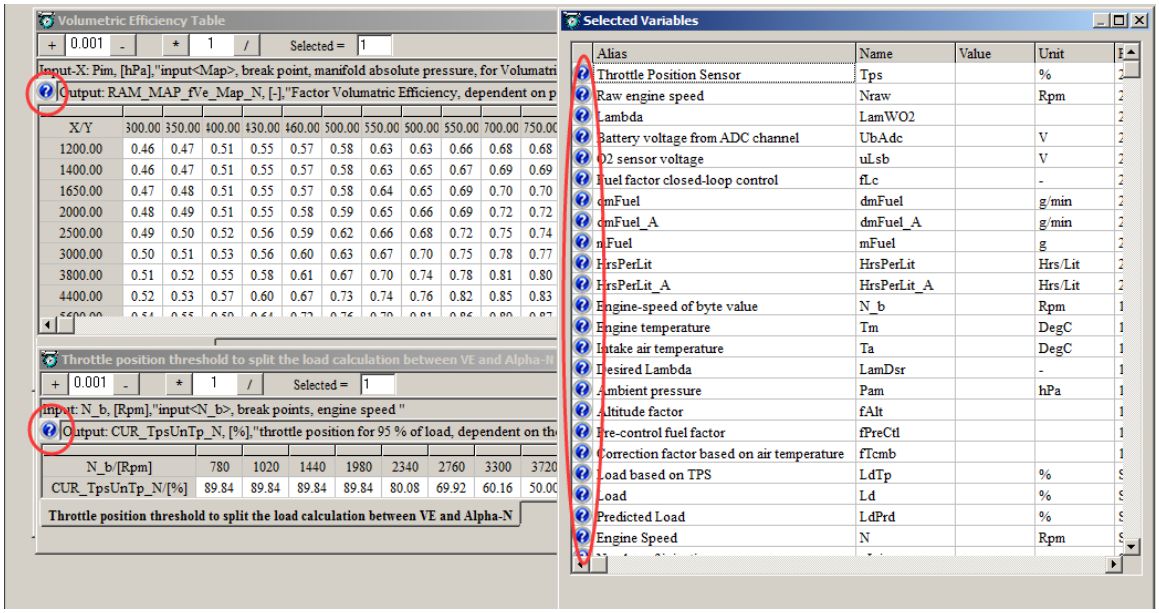


Save it as CAL file.

Chapter 4 Tuning help and support

4.1 Pop-up the Help and support window

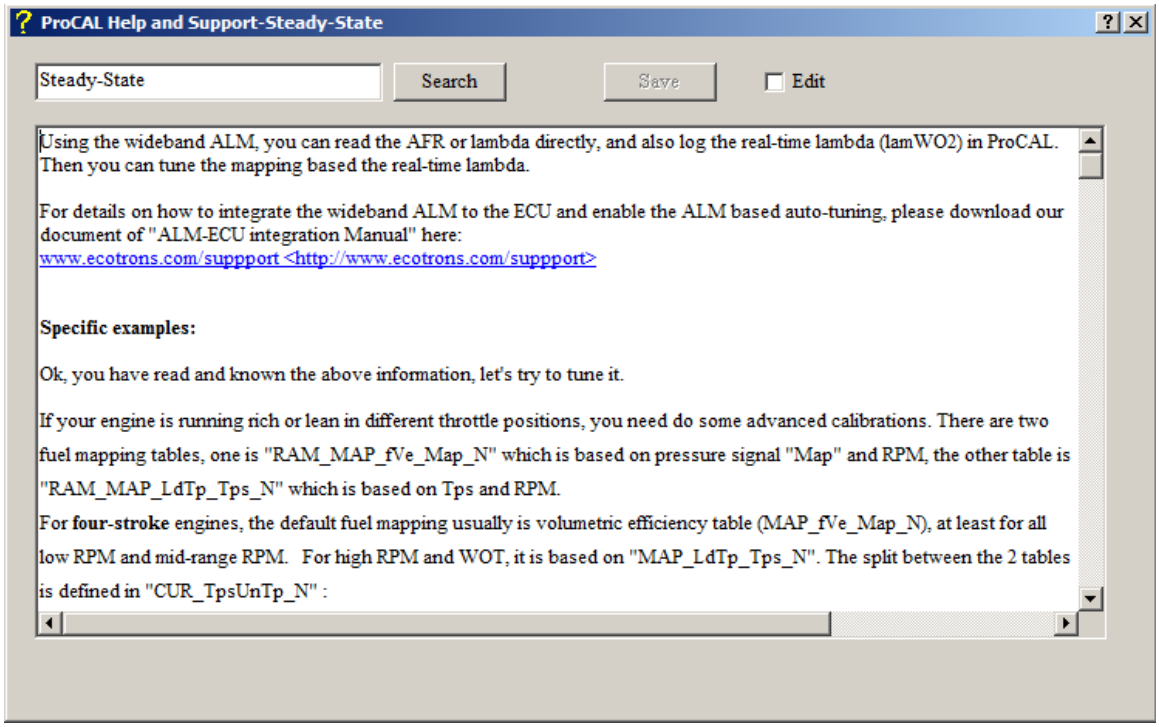
In EcoCAL, there are many marks in the window, you can click this to get the details of calibration variables and measure variables, and you can get the method of tuning and the meaning of measure variables.



There is also help for each layer; you can click the main  in EcoCAL to get the layer help.

In different layer, the help document is also different.

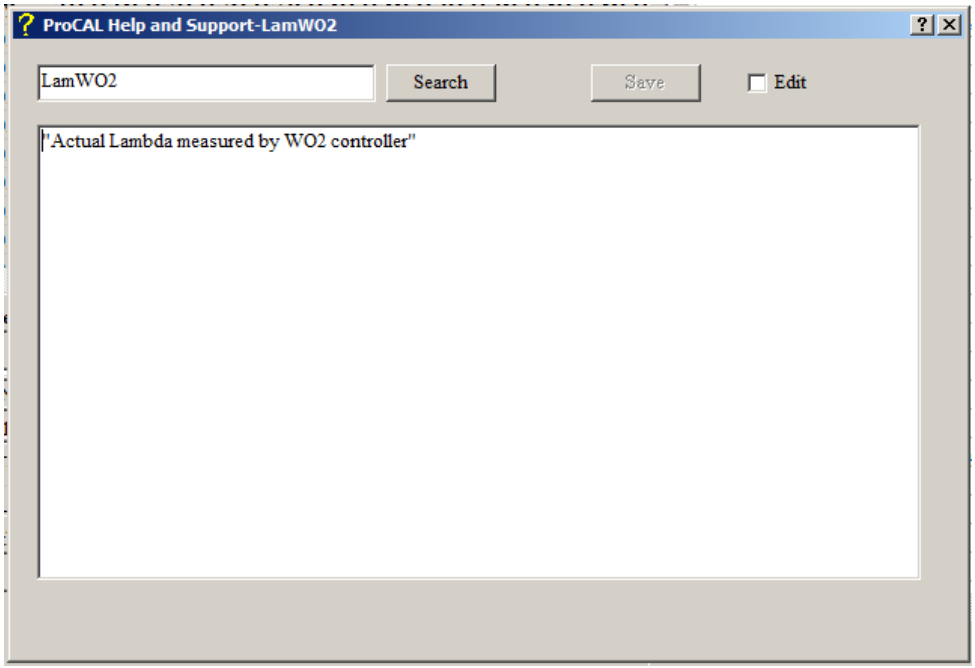
For example, in the “Steady-State” layer window, click the  button, the help and support window will pop-up.



4.2 Edit the Help and support window

You also can edit the content by yourself for easy to read based on your own understand.

First, click the  button to open the Help and support window,

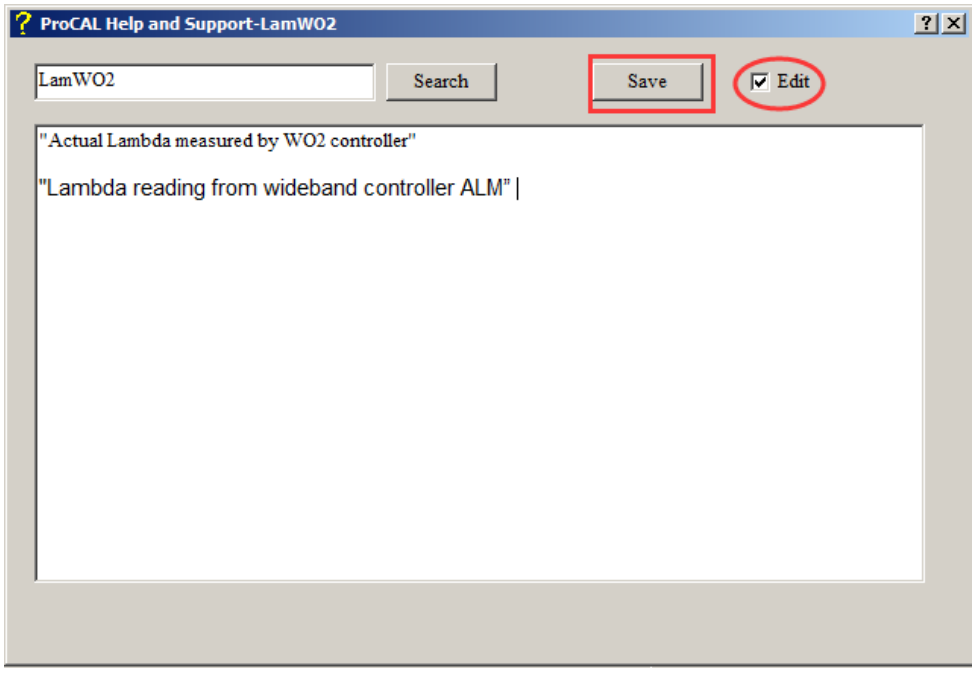


Then choose the Edit option, from 

to 

, then you can edit the content by yourself.

For example, add the “Lambda reading from wideband controller ALM” content.



After finishing, please click “Save” to save the change, otherwise, the change will be lost.

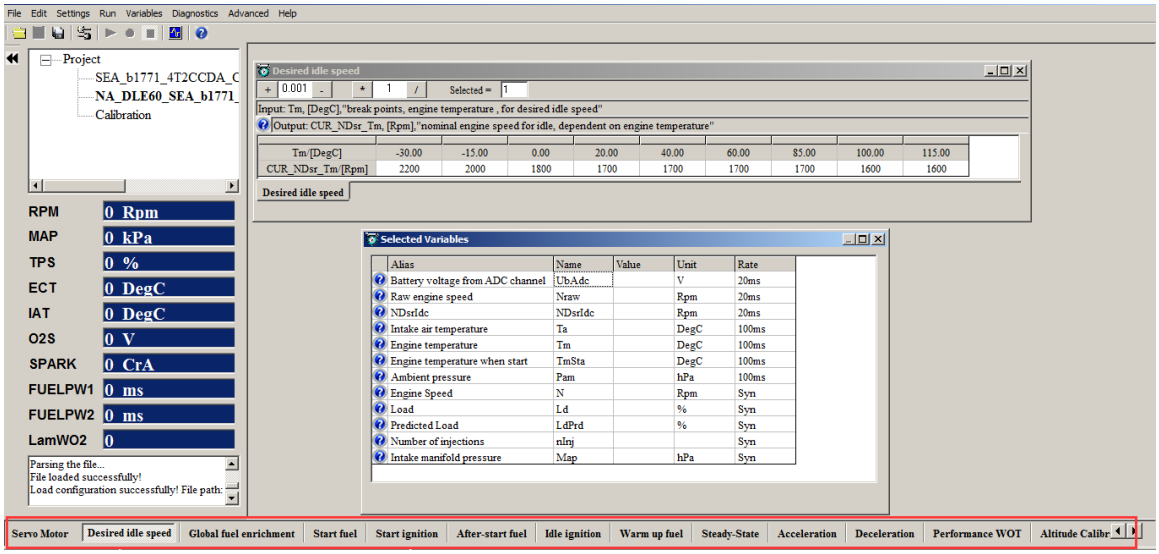
Chapter 5 Advanced operation of EcoCAL

5.1 EcoCAL setting in Customers’ demand

EcoCAL supports custom design; you can set the window as your demand.

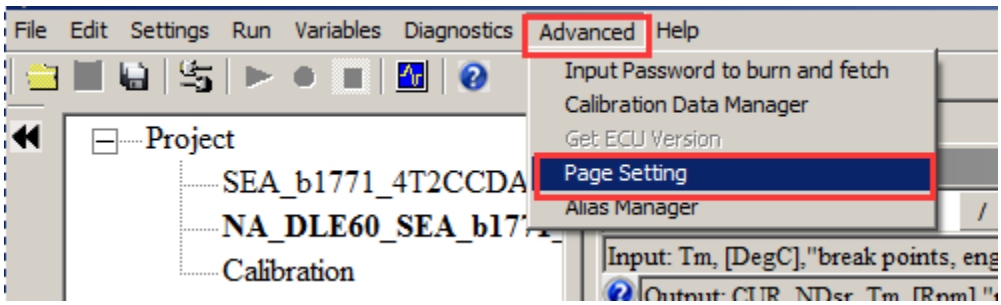
5.1.1 Page setting

In the default page setting of EcoCAL, you can see there are many pages, for example “Desired idle speed”, “Start fuel”, “Start ignition”,…, etc, they are the named “layer”.

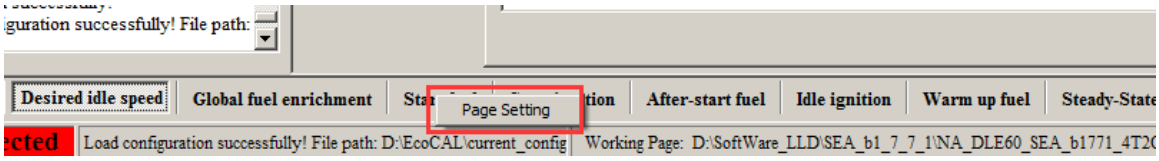


You can add or delete the layer as you want, for example, you don't want the "Servo motor" layer, you can delete it, if you want to add the "Custom Calibration" layer, you can add the layer and re-set it as you want the calibration variables, measure variables, etc.

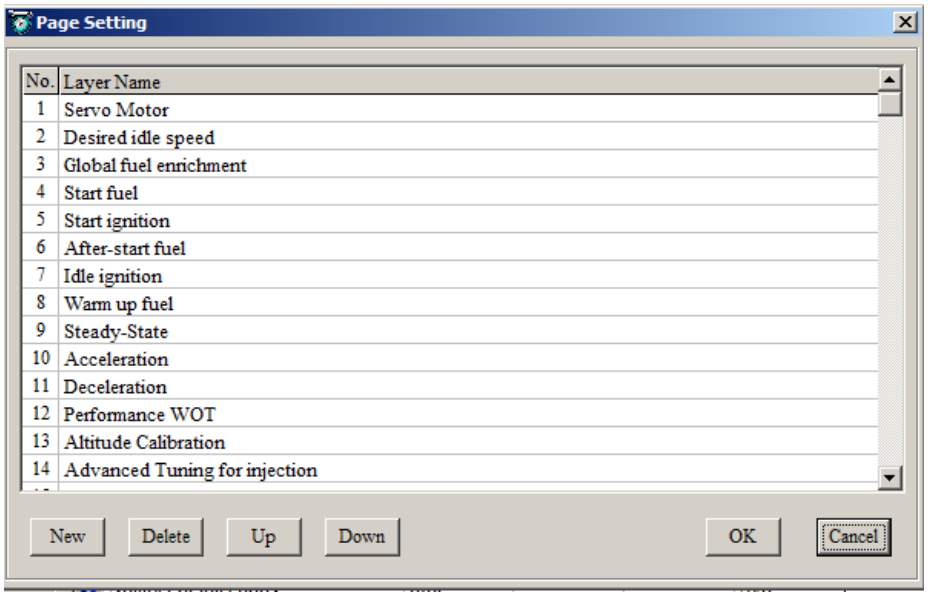
Go to menu->Advanced->Page setting, the page setting window will pop-up.



Note: you also can right click on the layer label, and then click the "Page setting", the window will pop-up.

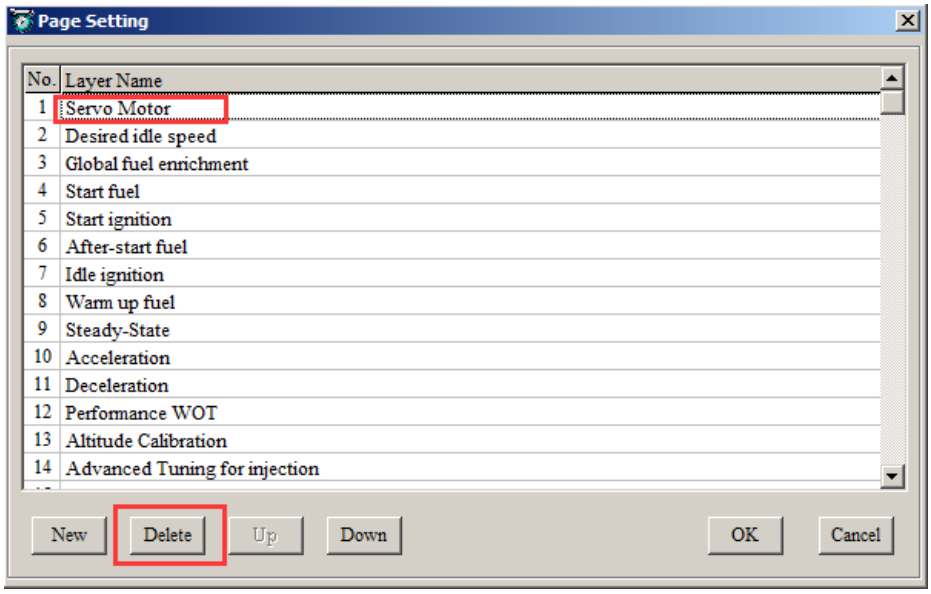


Page setting window:

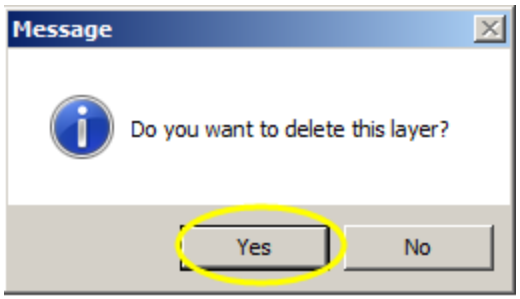


How to delete the layer?

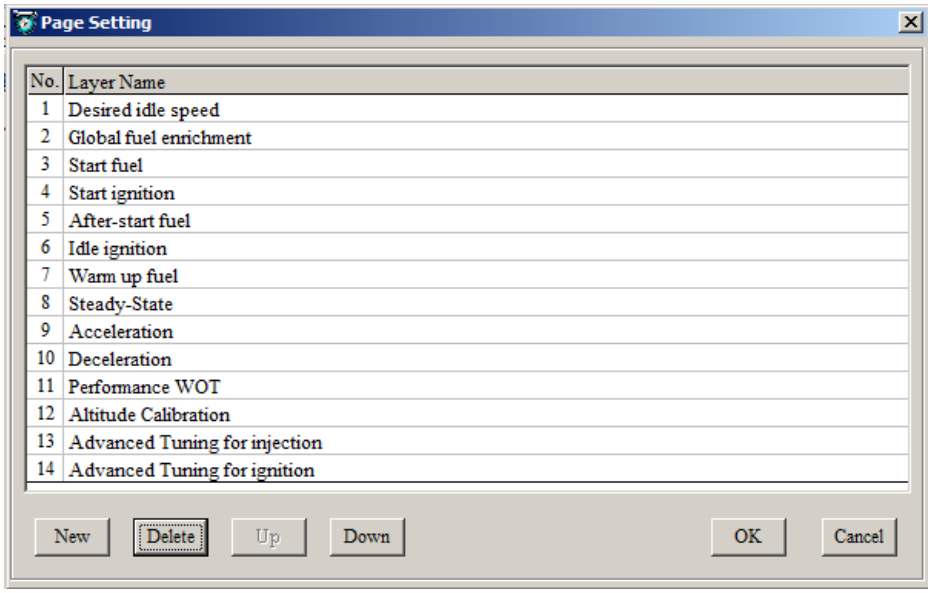
First, click the label to choose it, then click “Delete”, for example, delete the “Servo motor” layer,



When you click the “Delete” button, there is one message window to ask you whether you want to delete the layer, choose “Yes”, the layer will be deleted.

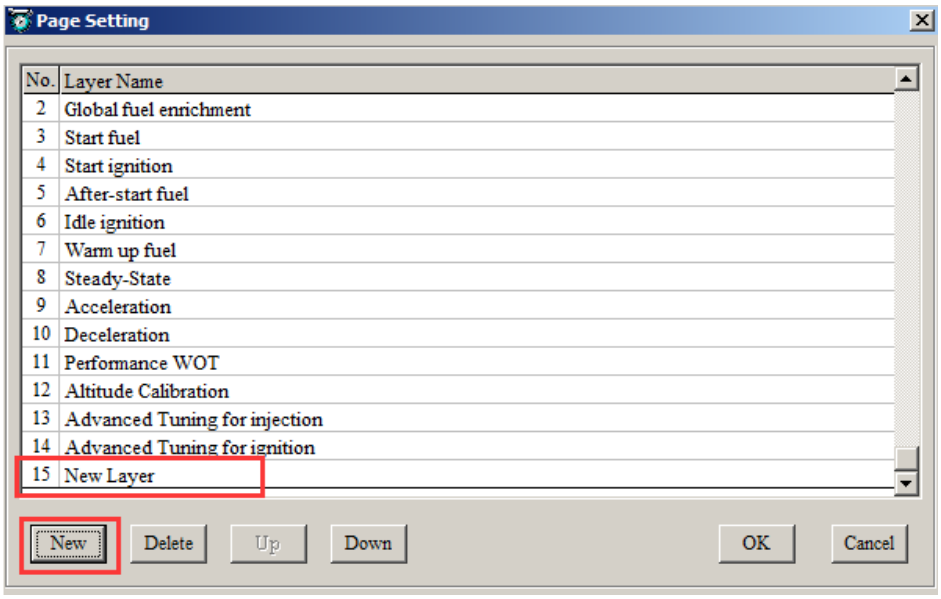


Then you can see there is no “Servo motor” layer in display.

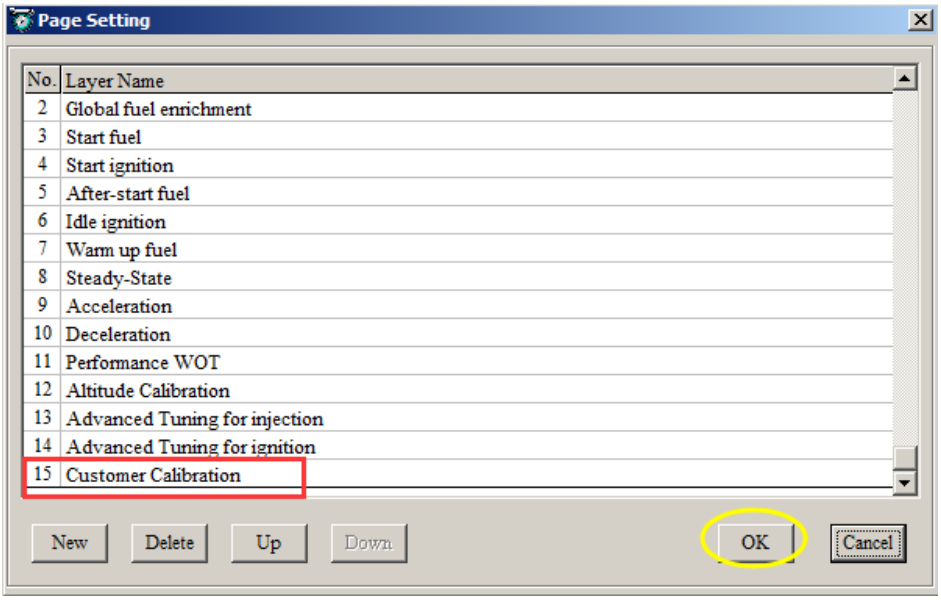


How to add one new layer?

Click the “New” button to set up one new layer.

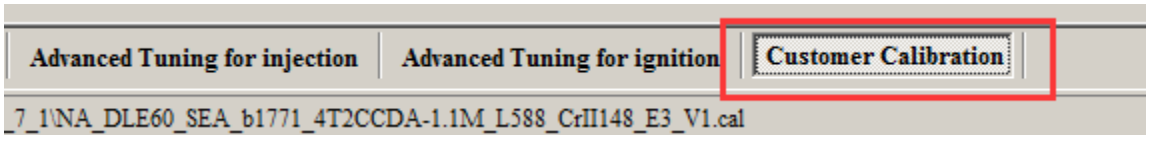


Double click the “New Layer” words, input the word as you want to re-name it, there, we re-name it be “Custom Calibration”, then press the Enter button of keyboard to finish it.

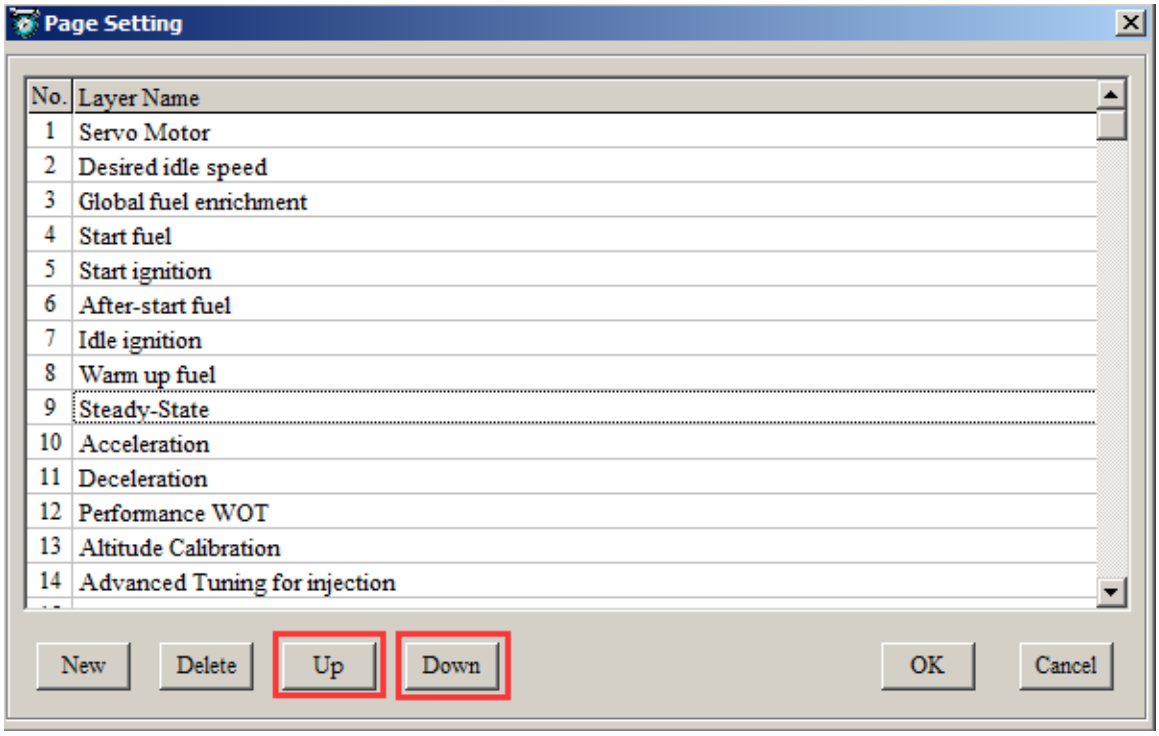


After finishing, click “OK”.

Then you can see there is the new “Customer Calibration” layer in the window.



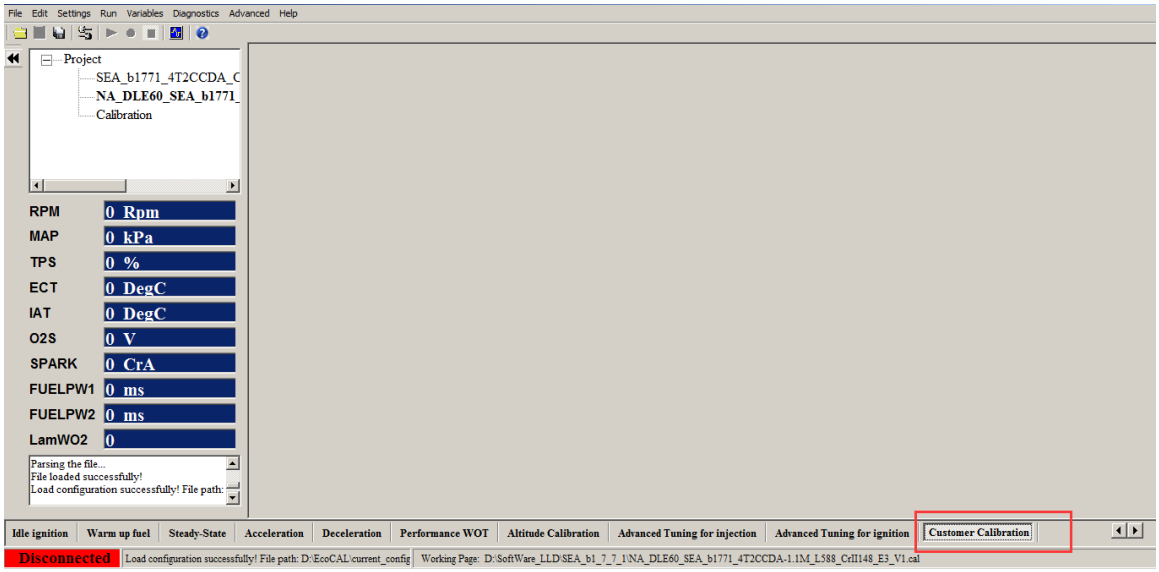
You can use the “Up” and “Down” button to de change the display order of layers.



5.1.2 Layer setting

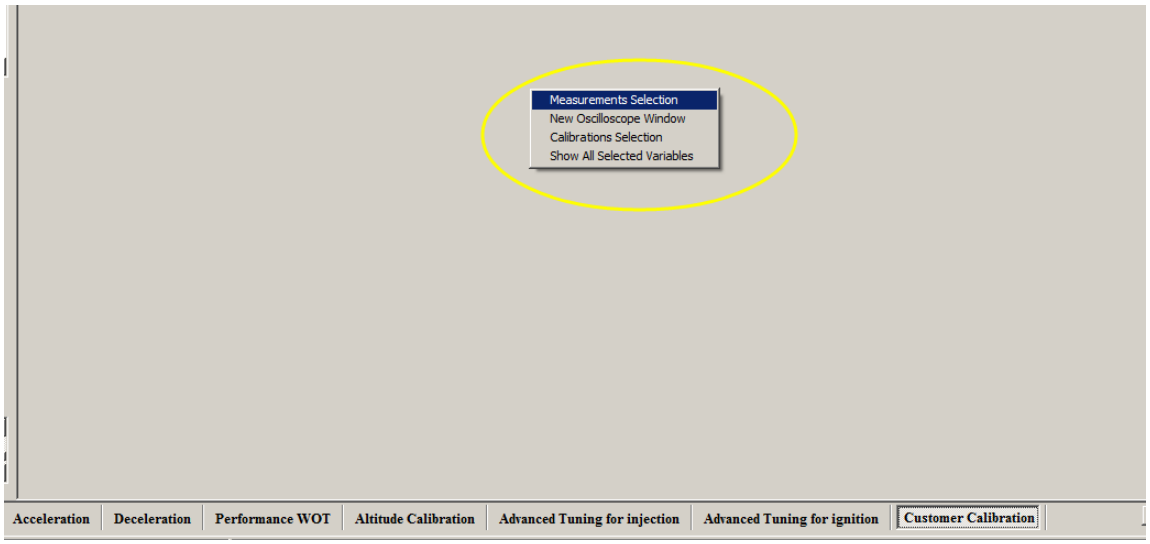
You can edit the Layer showing via adding calibration variables and measured variables.

First, click the layer that you want to edit, for example, “Customer Calibration” layer.



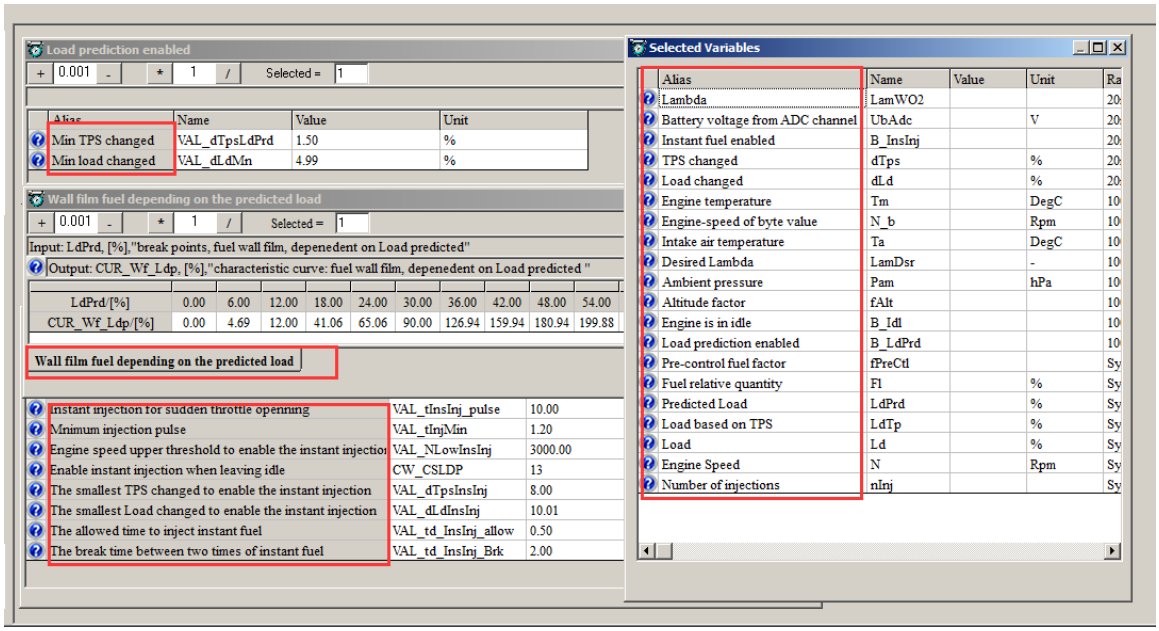
Right click on the window, there some menu you can choose, to set this layer.

About add Calibration variables and measure variables, please read the chapter 5 and chapter 6.



5.1.3 Alias setting

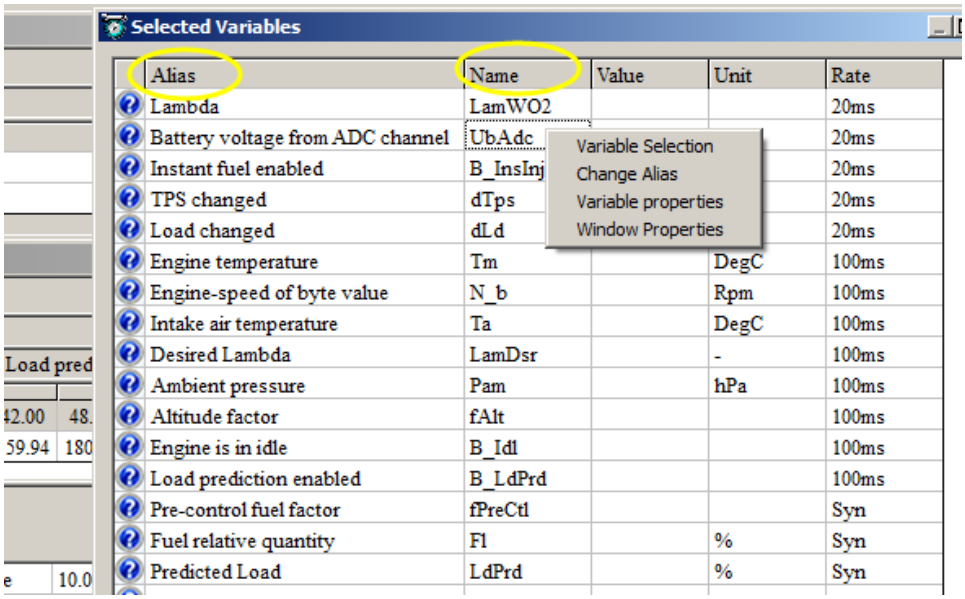
Maybe you don't know the meaning of calibration variables and measured variables, we have set the alias of variables in default, and you also can edit it for easy reading and remembering.



The words in red area are alias of variables, you can re-edit it or add new alias.

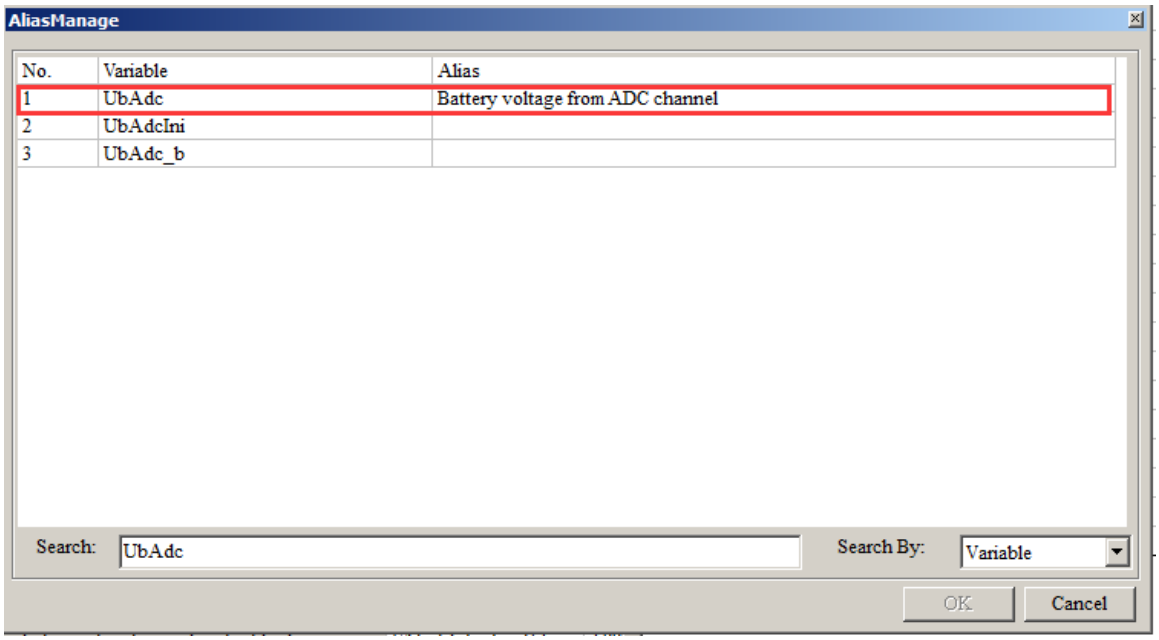
How do edit the alias?

First, choose the variable name that you want to change, and then right click.



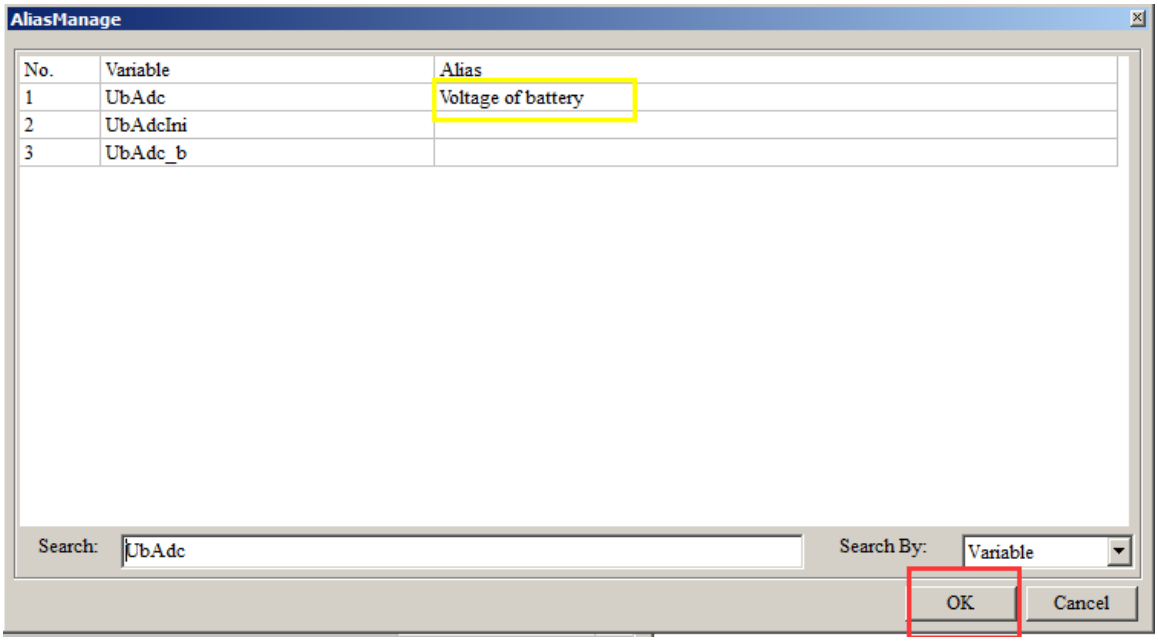
Here, we change the alias of UbAdc, the current Alias is “Battery voltage from ADC channel”

Then click “Change Alias”, the window will pop-up,

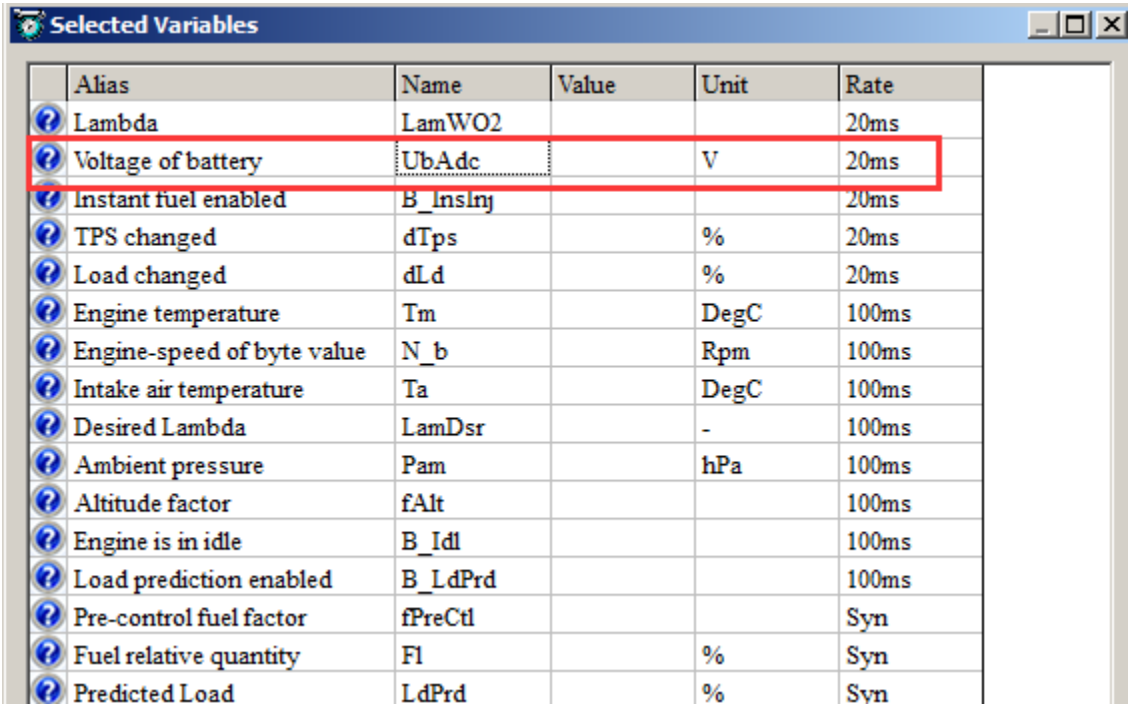


Double click the Alias, then input the words that you want to change, for example, “Voltage of battery”, then press the Enter button of keyboard to finish it.

Then, click “OK”

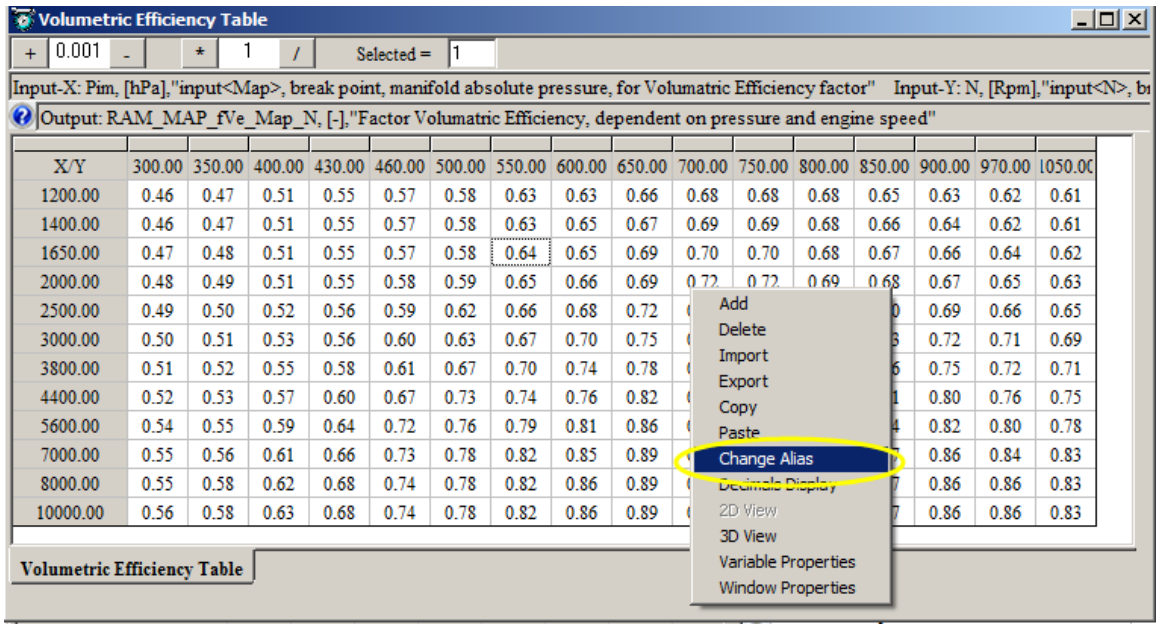


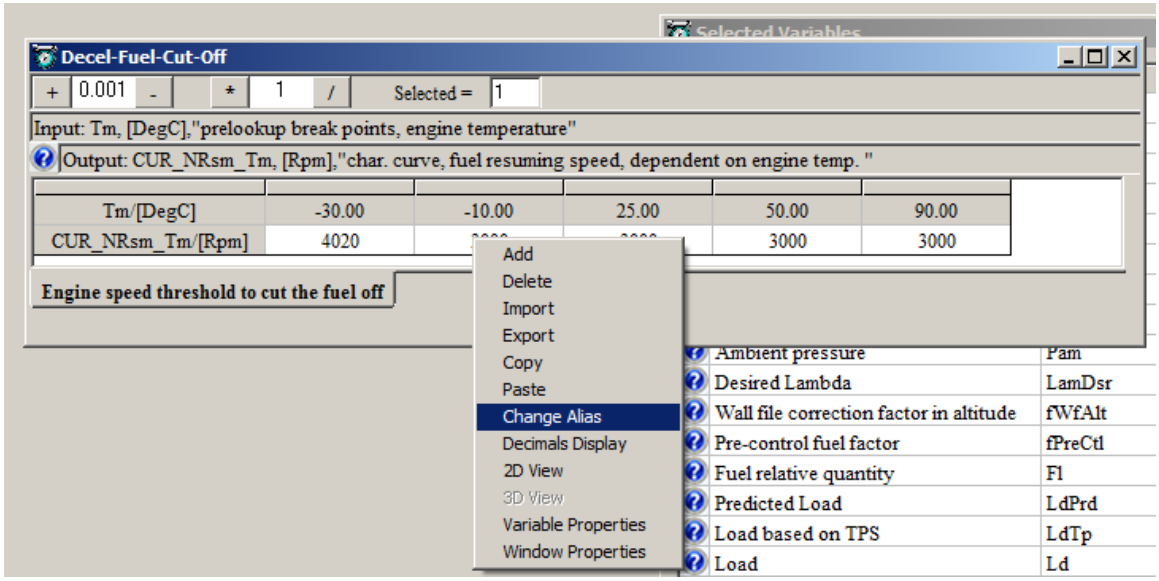
So, we can see the Alias of UbAdc is changed.



Note: when you change the Alias of variables, the Alias of same variable will be changed in all layers.

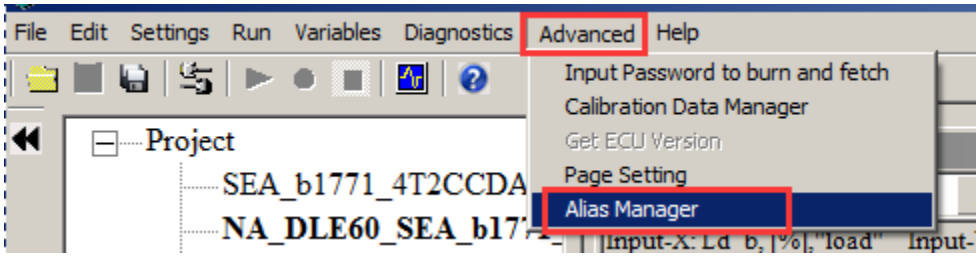
Note: If you want to change the Alias of MAP and CUR variables, you need right click on the table, then to choose “Change Alias”.

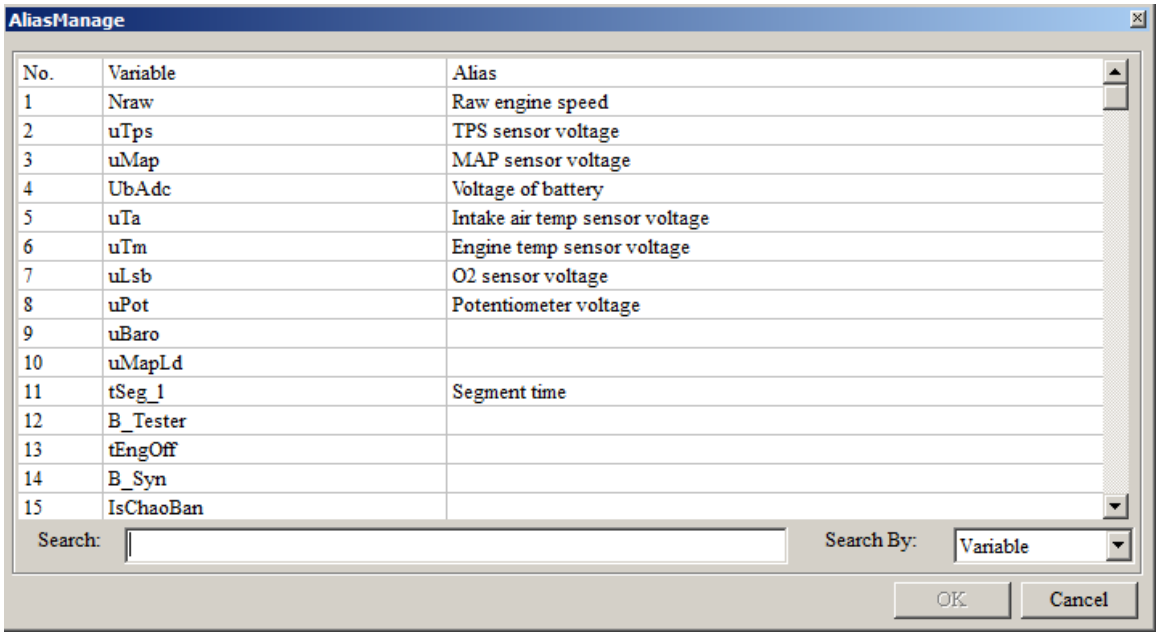




Note: You can change and manage the alias of all variables at the same time

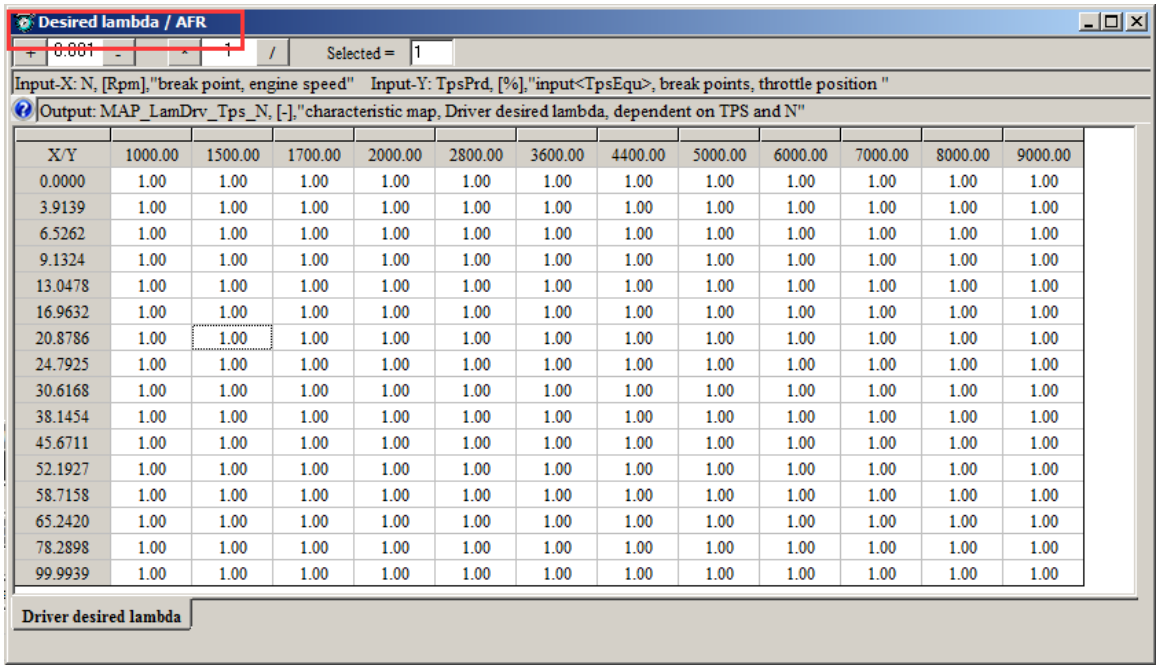
Go to menu->Advanced->Alias Mange, when you finish it, click “OK”.



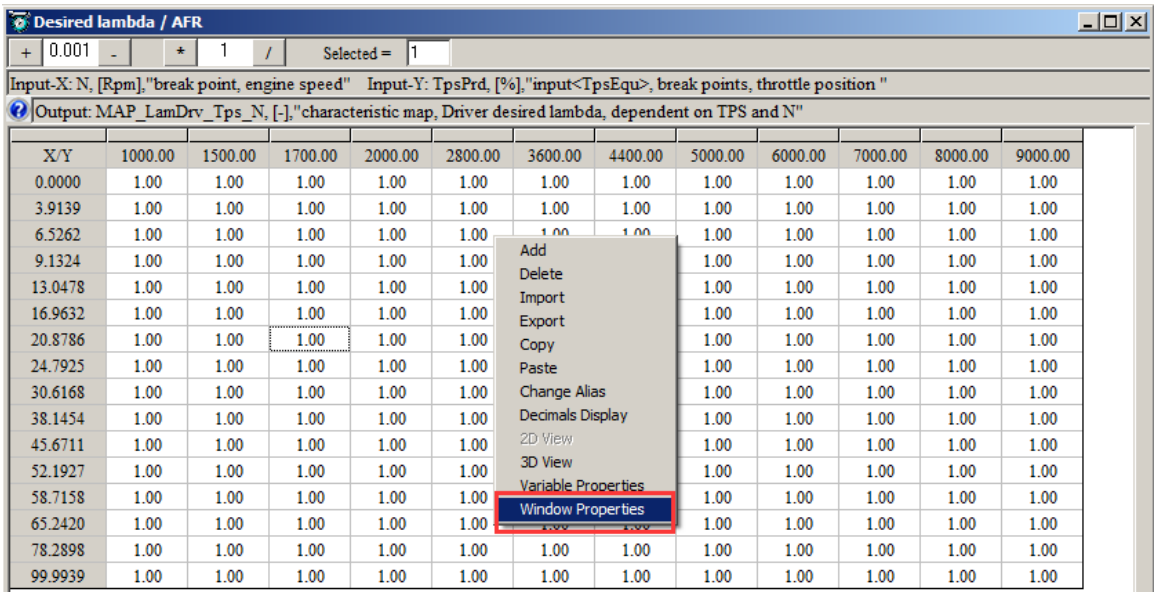


5.1.4 Window setting

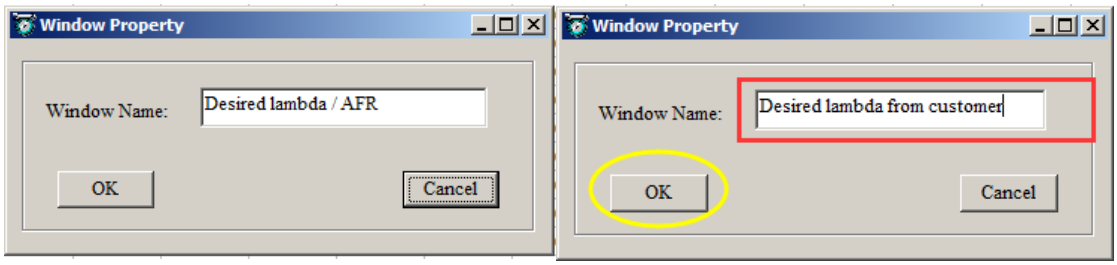
You also can change the name of different window in different layers, for example, the name of following window is “Desired lambda /AFR”, now we change it to be “Desired lambda from customer”



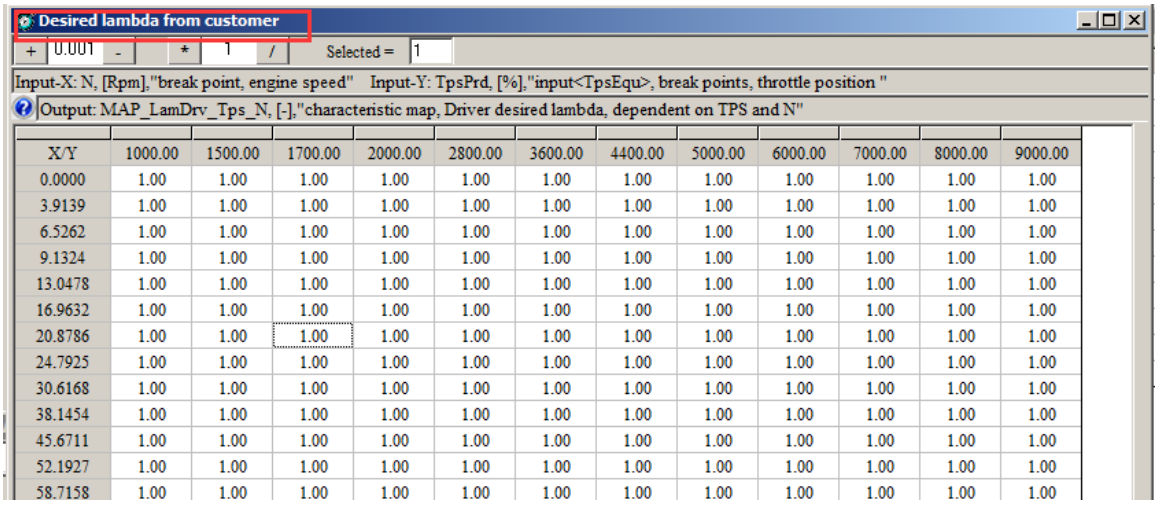
Right click on the window, and choose “ Window Properties”



A little window pop-up, change the stock words to be “Desired lambda from customer”, and then click “OK”.



Then, the name of window is changed as you want.

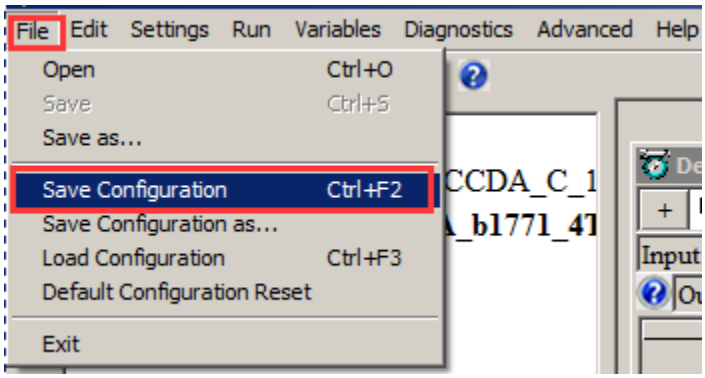


Note: the method to change other windows is the same.

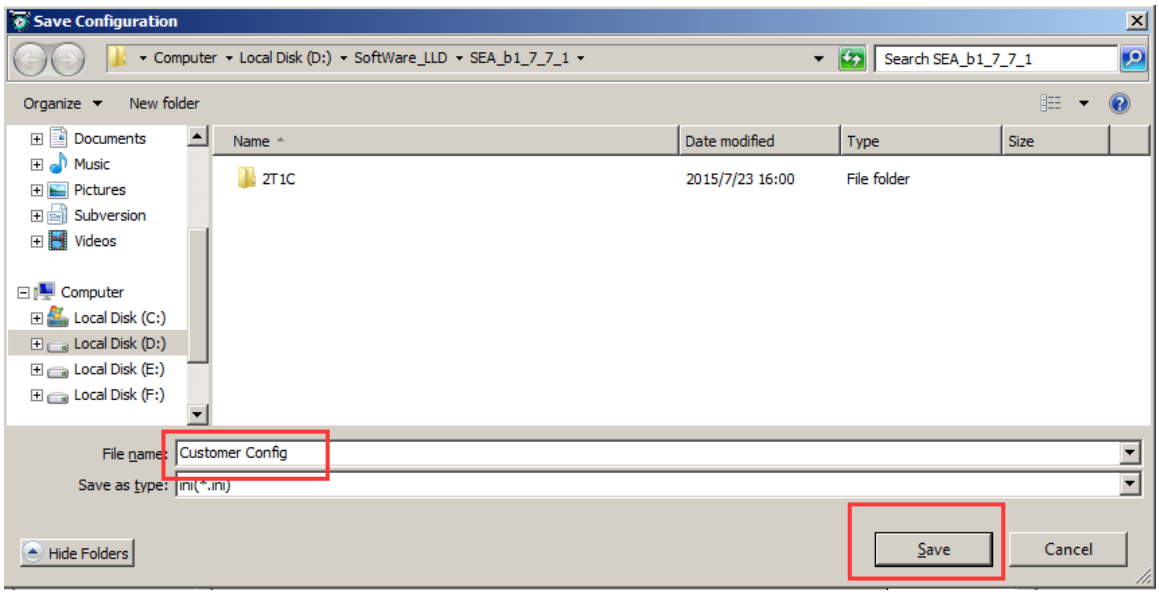
5.1.5 Save configuration

When you re-set the window by using above methods, you can save the settings as one new configuration, so you can save it, and use it when you want.

Go to menu->File->Save Configuration as

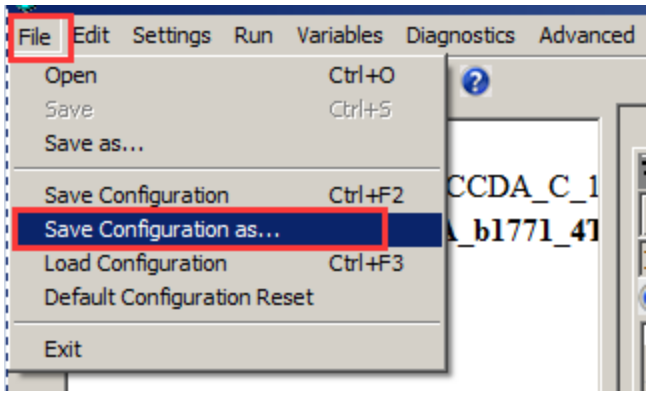


Then, name the new configuration file, “Customer Config”, and then click “Save”.



You also can save the setting based on the current loading configuration.

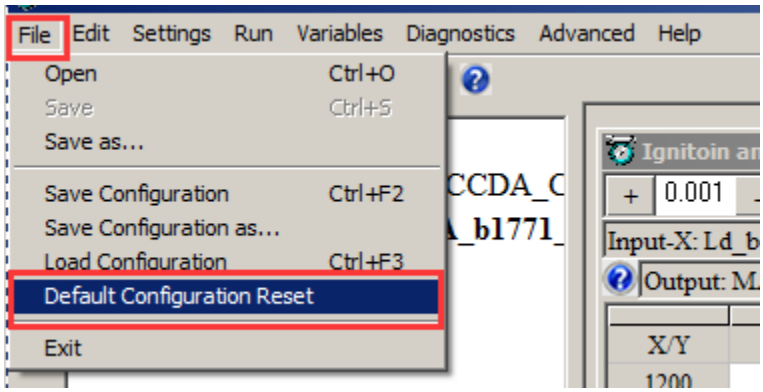
Go to menu->File->Save Configuration as



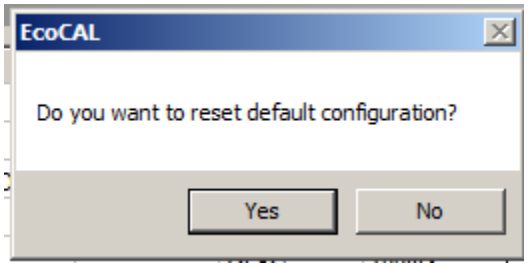
5.1.6 Reset default configuration

If you don't want to use the page configuration setting after you change much, you can use this to reset to be default configuration of EcoCAL.

Go to menu->File->Default configuration Reset



Then, click "Yes"



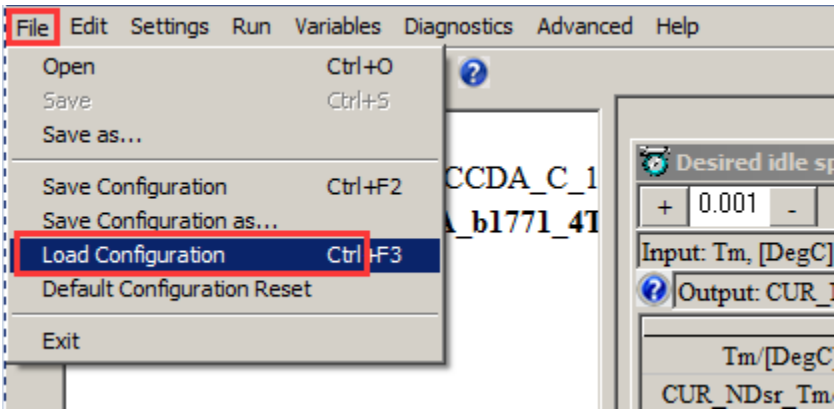
The current setting is the default configuration setting.

5.1.7 Load configuration

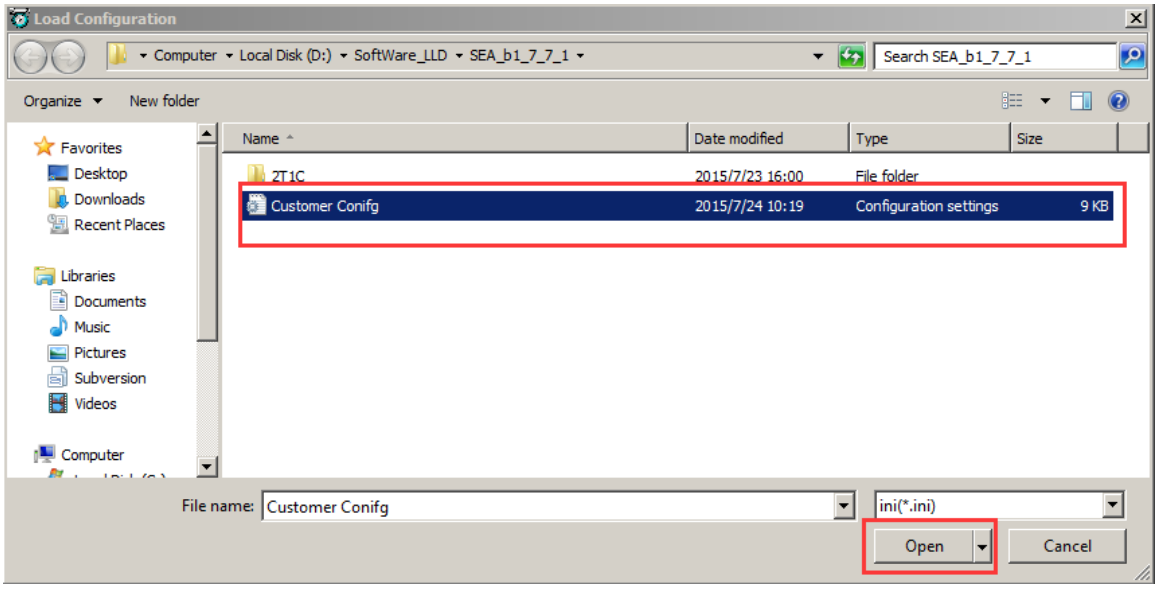
Sometimes, we will send the page configuration based on your custom EFI system for your tuning purpose. So you can load the configuration.

You also can load the configuration that you saved.

Go to menu->File->Load configuration



Choose the configuration file then click “Open”.



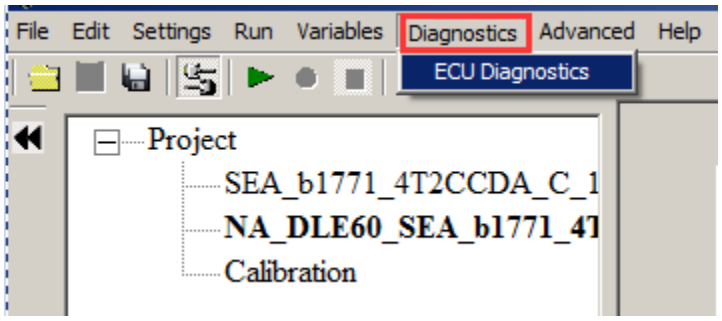
5.2 Diagnostics

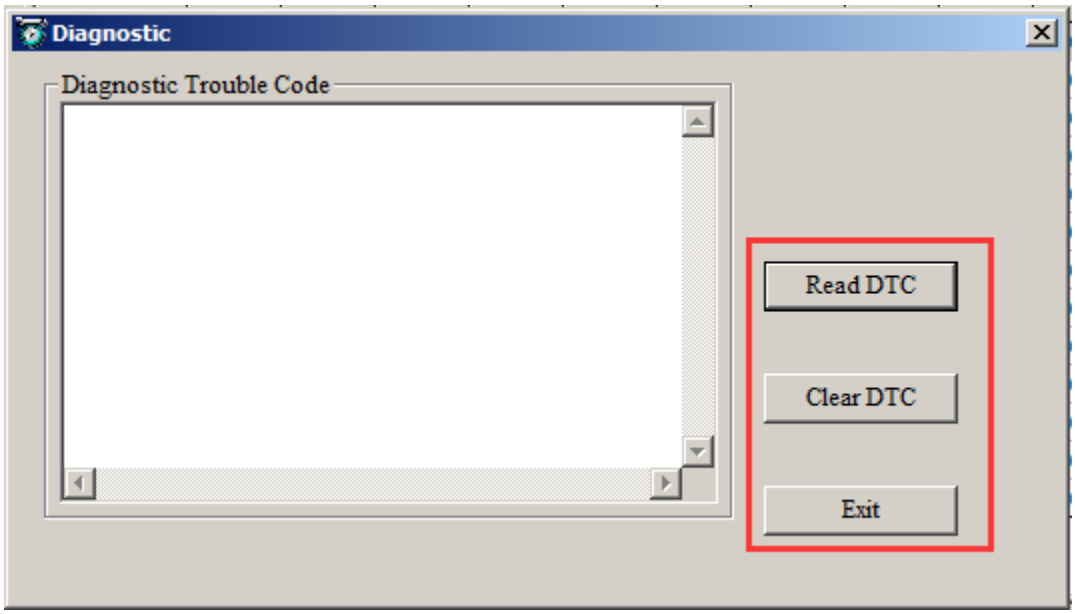
5.2.1 Read the DTC of EFI

When you connect ECU to laptop successfully, you can run the diagnostics window to read the DTC, if there is something wrong, you can see the message in the diagnostics window.

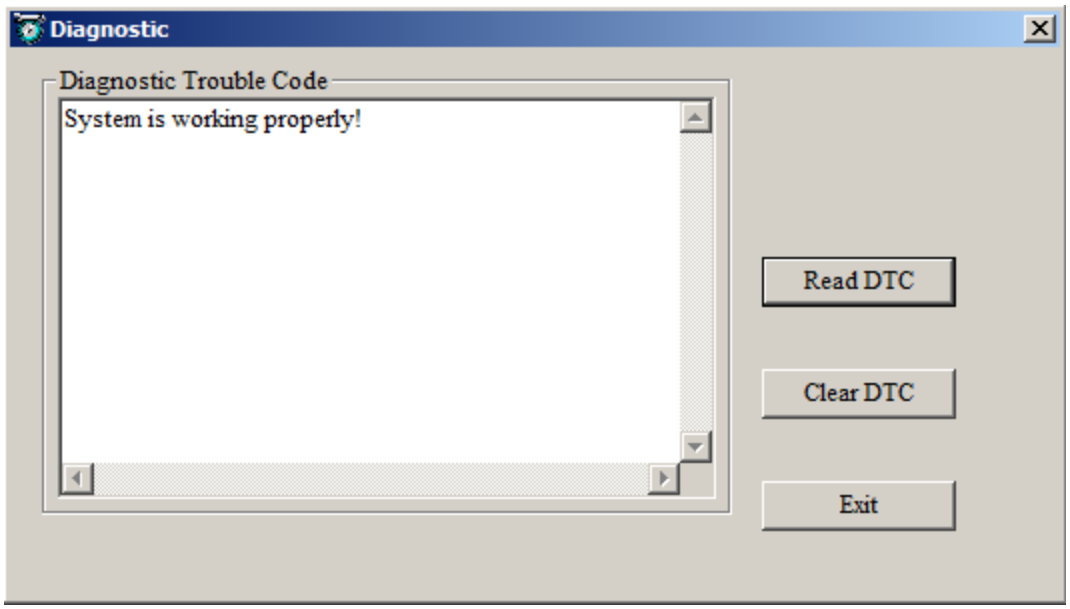
Note: The diagnostics window only wills pop-up when the ECU is connected. If the ECU is not connected, you can't click the button to pop-p the window.

Go to menu->Diagnostics->ECU Diagnostics

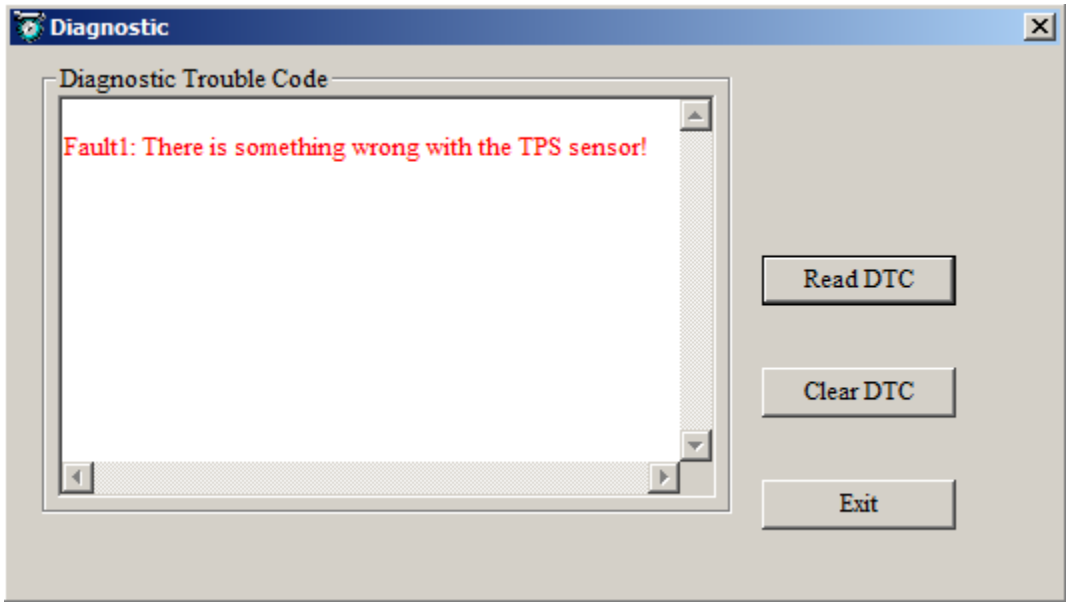




Click Read DTC, if all are right, the message will be "System is working properly!"



If there is something wrong in EFI, the fault message will be shown; you need to check the part of EFI.



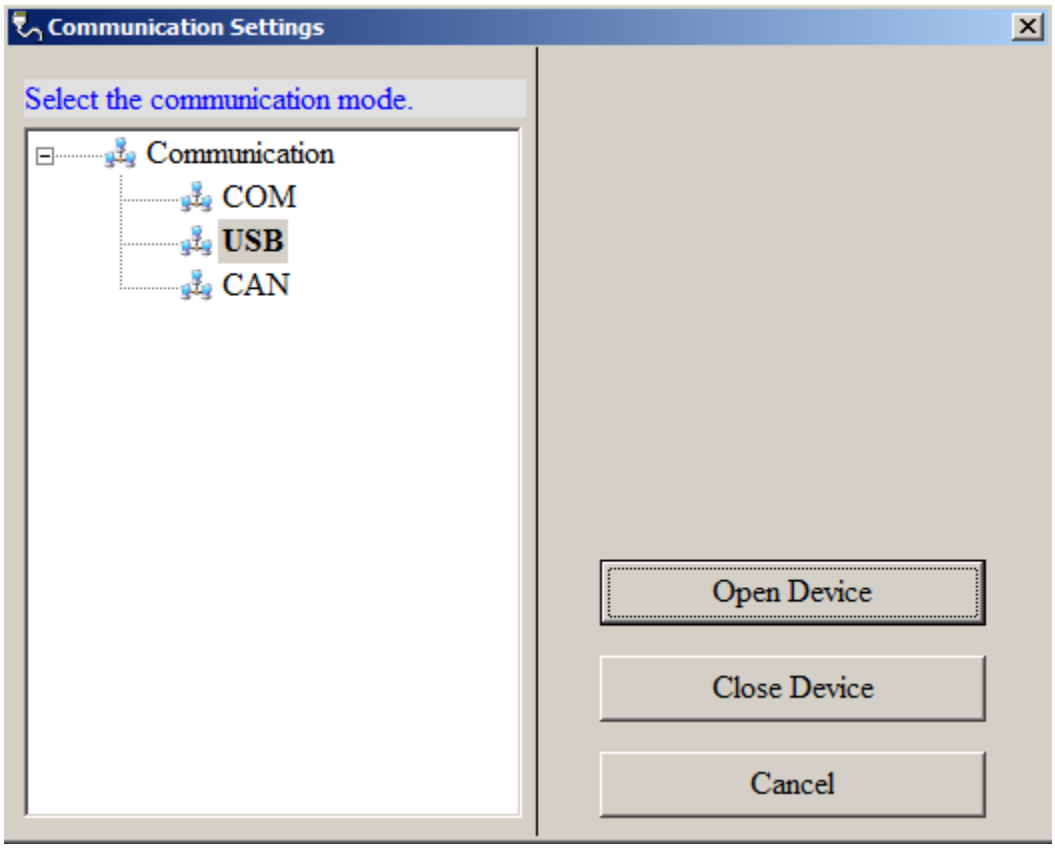
If you have fixed the issue, you can click “Clear DTC” to clear DTC code.

Click “Exit” to exit the Diagnostic window.

5.2.2 Failed to connect to ECU

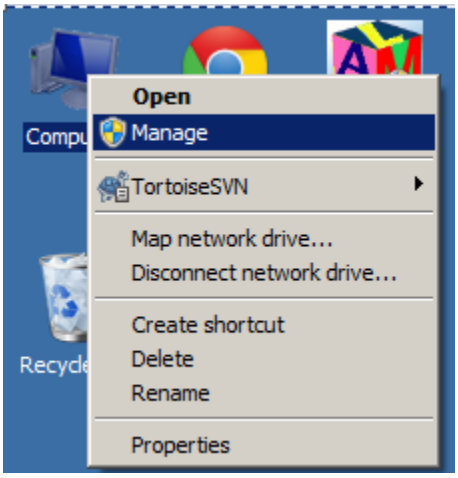
If you can’t connect to ECU, please do following steps to fix it.

1. Is the ECU power is ON? (The fuel pump will run for a few seconds when you key-on).
2. Do you have the latest and greatest EcoCAL version?
3. If you are running EcoCAL in Win Vista, have you set EcoCAL in "Win XP compatibility" mode? (Refer to the manual on how to do that).
4. Are you connecting the computer to the ECU via a built-in COM port or USB adaptor?
5. If you use a built-in COM port of the computer, please go to "**setting → communication settings**" and select COM port.
6. If you use an USB adaptor, is it made by ECOTRONS? If yes, you need to go to "**setting → communication settings**" and select USB.
7. If you use an USB adaptor from a third party, you need to select COM port and manually set the COM port number.

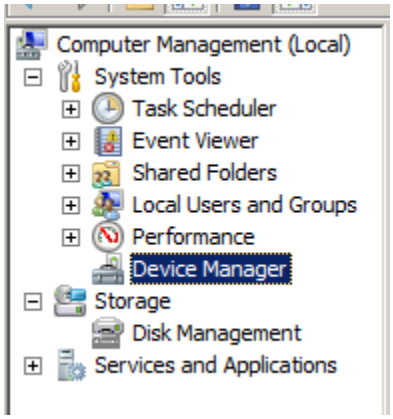


How to manually set the COM port:

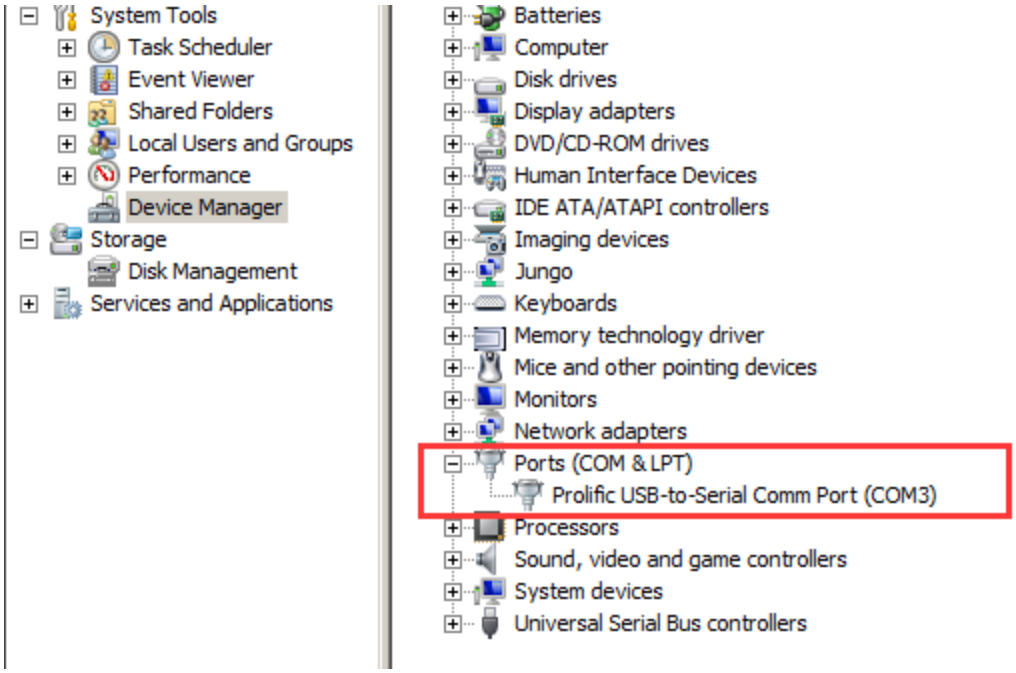
1) Find out the virtual COM port # from USB to RS232 converter, by going to "My Computer", right click and select "Mange".



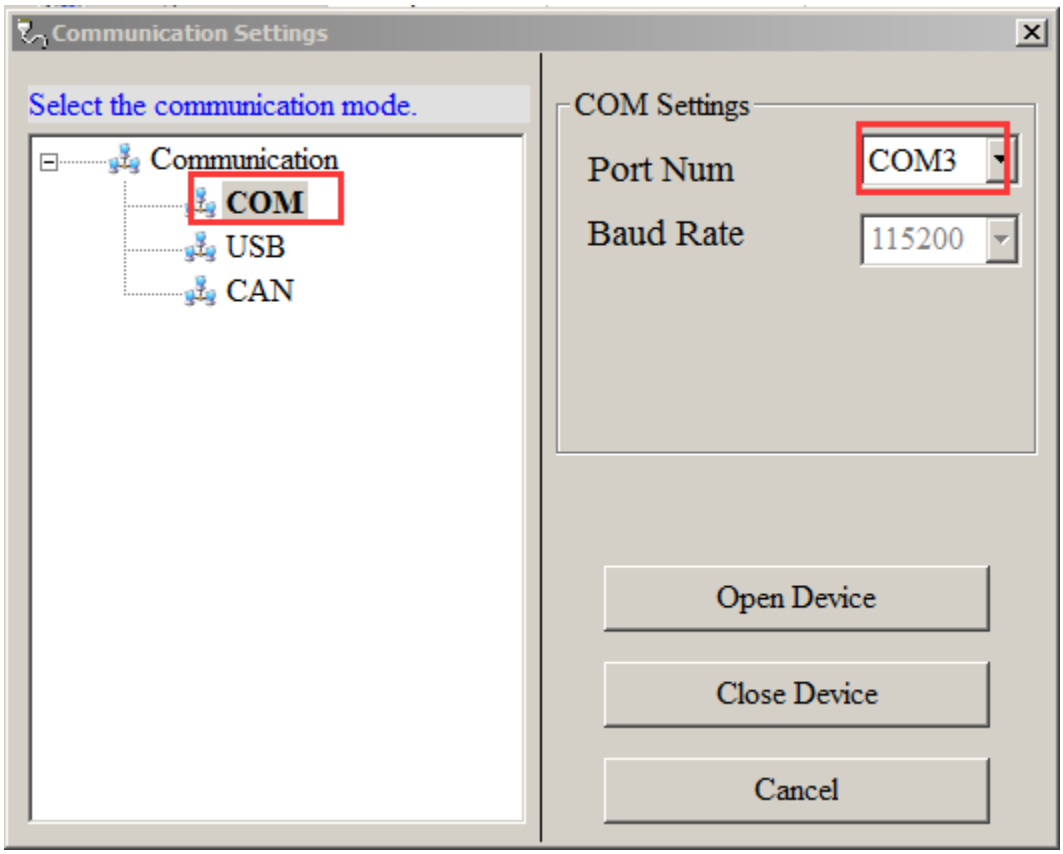
2) Then click "Device Manager" tab.



3) You will get the below window:



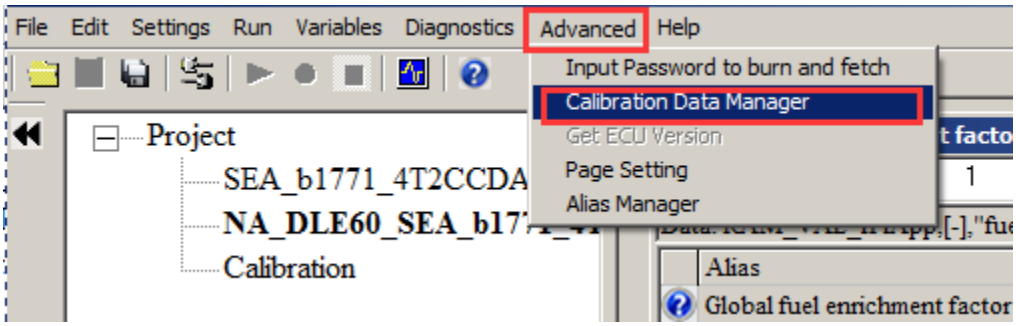
4) Find the virtual COM port #, and write it down. Then start the EcoCAL:
5) Go to m**enu->Settings->Communication settings**"; you will get the below window, select the COM port # you wrote down. And "**OK**".

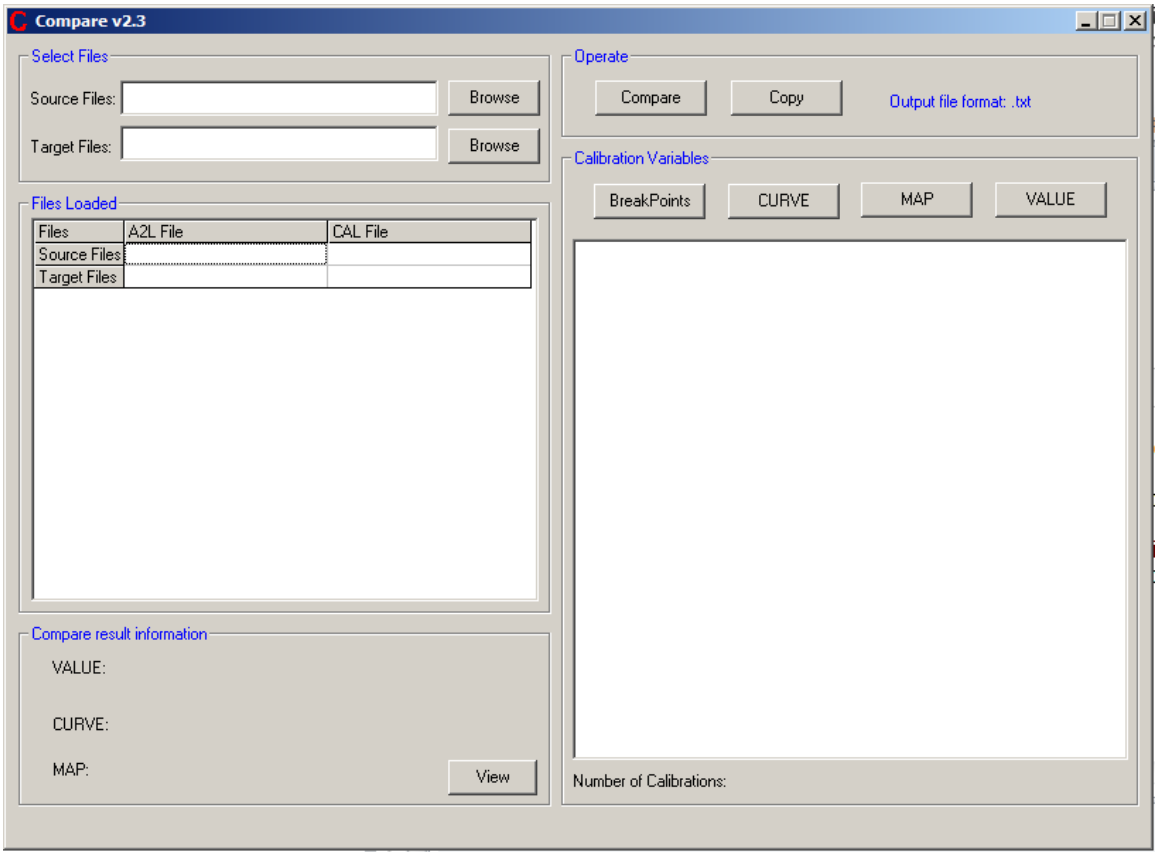


5.3 Advanced function of EcoCAL

5.3.1 Calibrations Data manger

Go to menu->Advanced->Calibration Data Manger





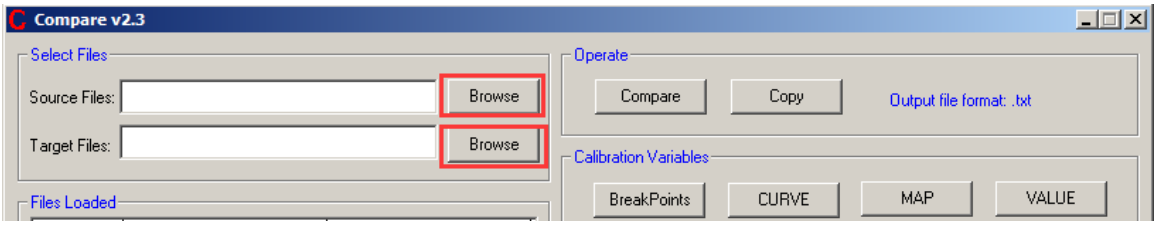
How to compare and copy files?

1) Open the software "Compare V2.3" first as above method.

2) Open the data file, to click "Browse" for opening file.

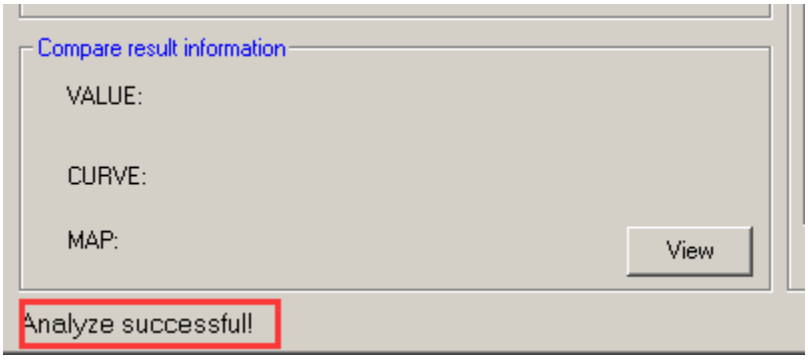
First, open the Source file (the file that you want to remain the same calibrated value by yourself)

Second, open the Target file (the file that replaced the some old variables value except your own calibrated value)



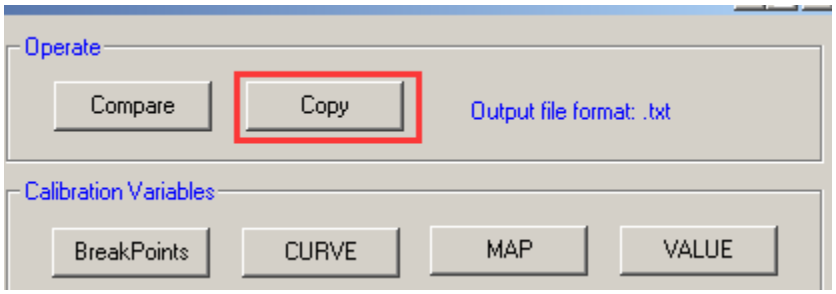
Wait for about ten seconds.

Note: If the file loaded successfully, lower left corner will pop up message "Analyze Successfully"

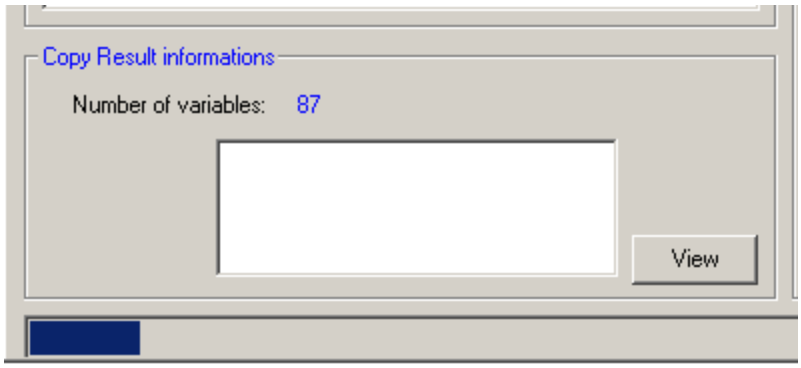


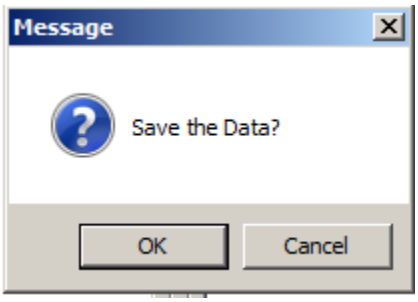
3) Copy the date file.

Click the" Copy "button, it will copy the file

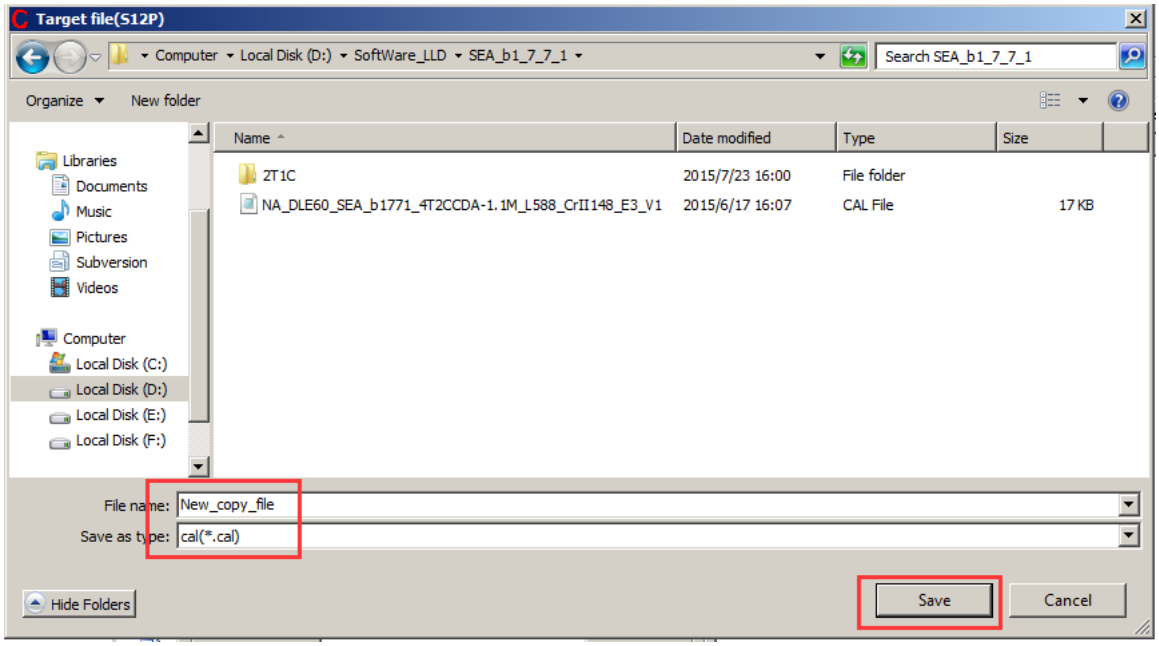


Precessing…





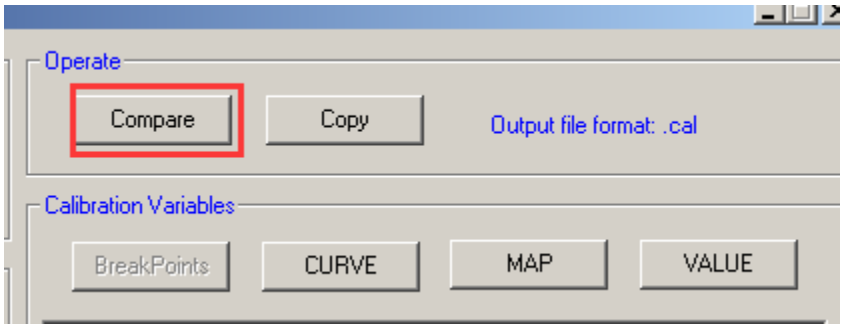
Click "OK" button and save the result (a new CALfile).

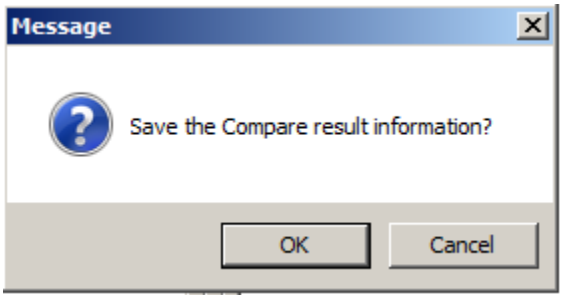


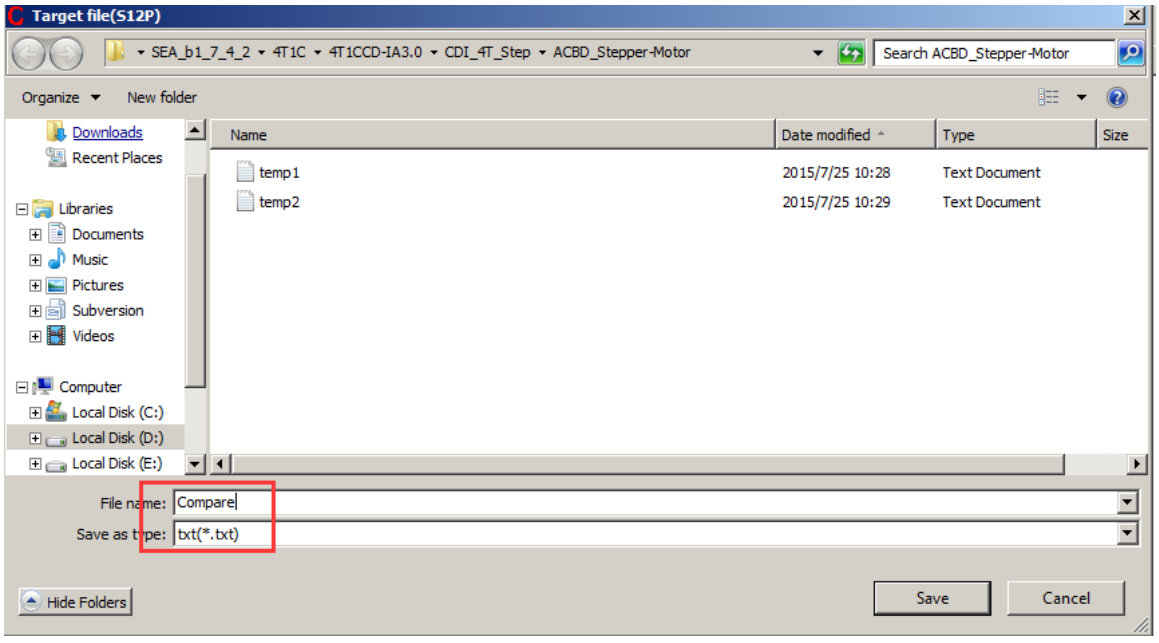
4) If you want to know whether the copy file is successfully you can compare the source file and the new saved file.

Using the above mentioned method to open the "Source file" that your own file and the "Target file" that the new saved file.

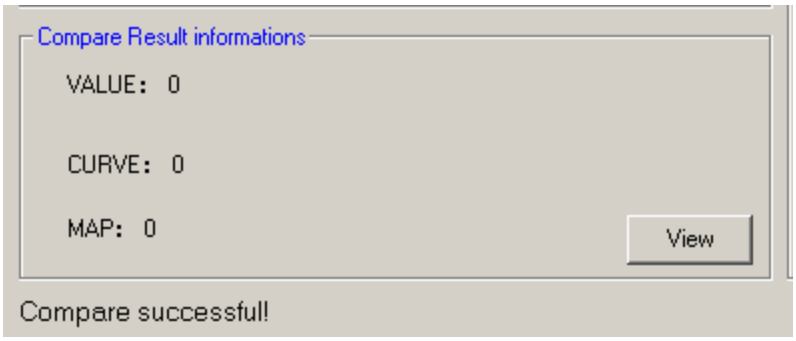
To click "Compare", button and save the compare result.





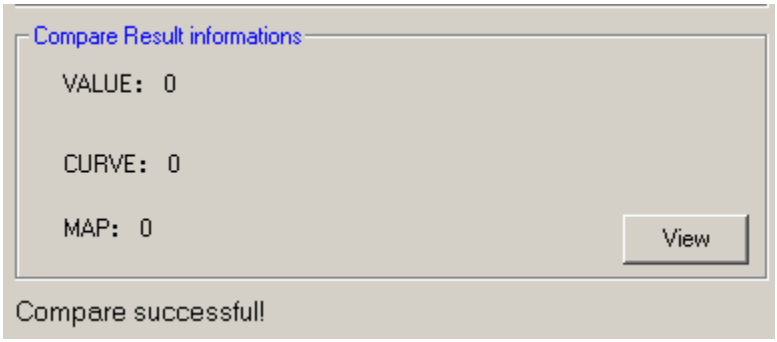


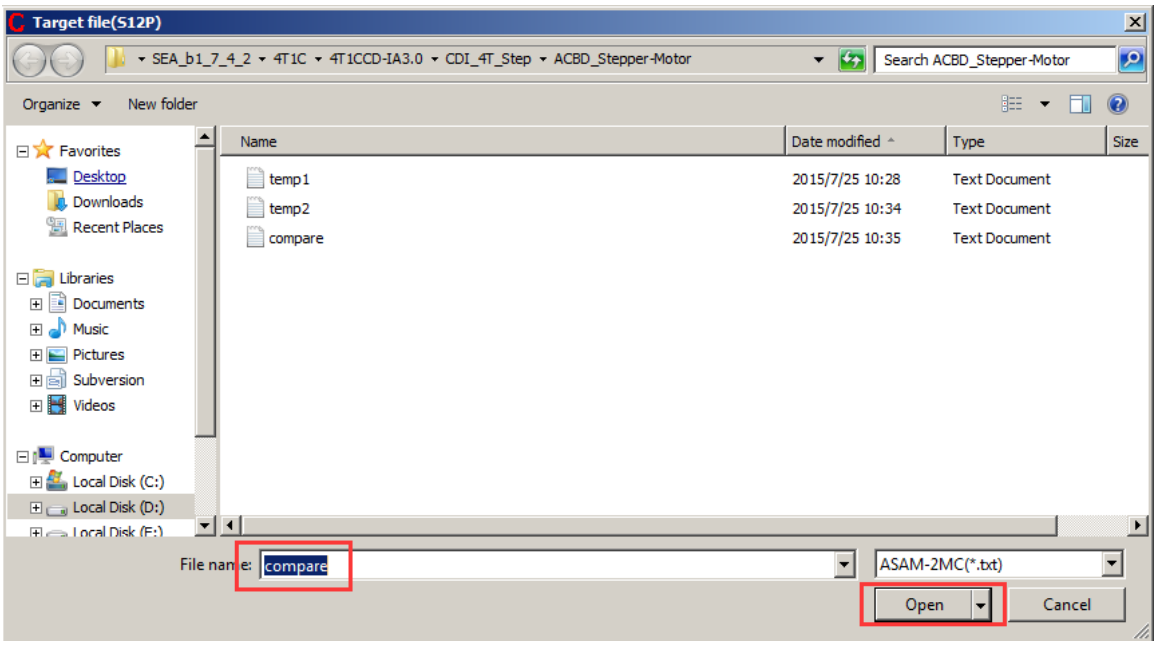
You can see the result through follow method.

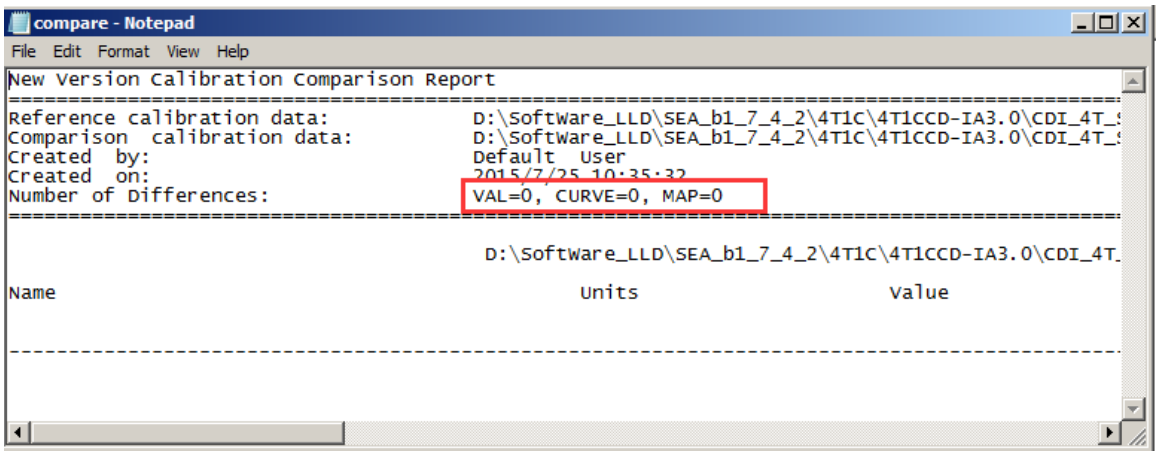


Note: if the result is 0, it means cope file is successfully.

Click" View" button to open the .txt file that just saved







If the number is 0, it means copy file successfully, you can use the new saved file to run you bike.

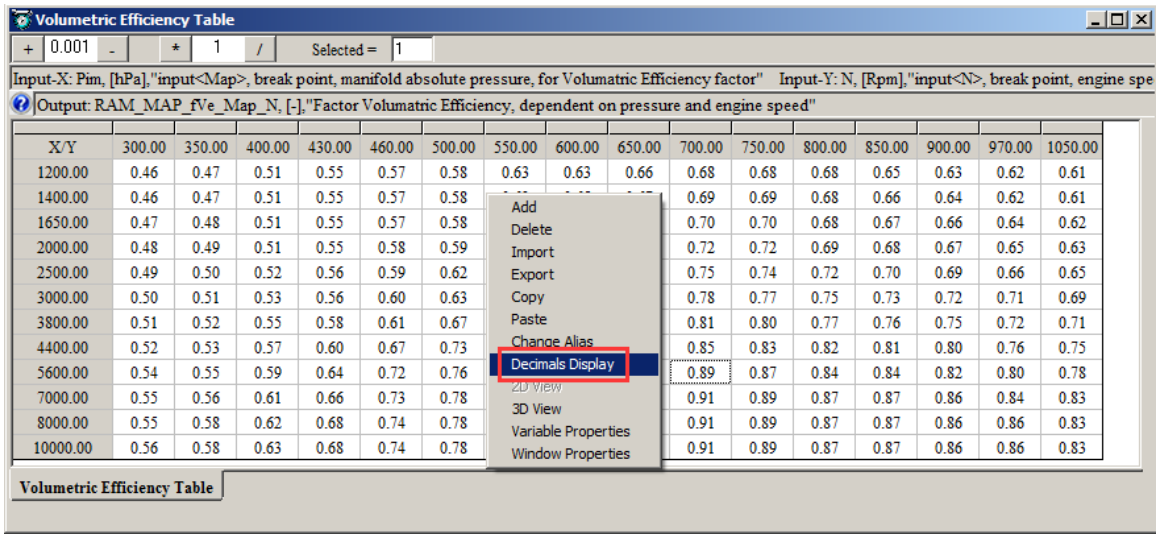
Message: also, you can use above method to copy or compare other files.

5.3.2 Decimals Display

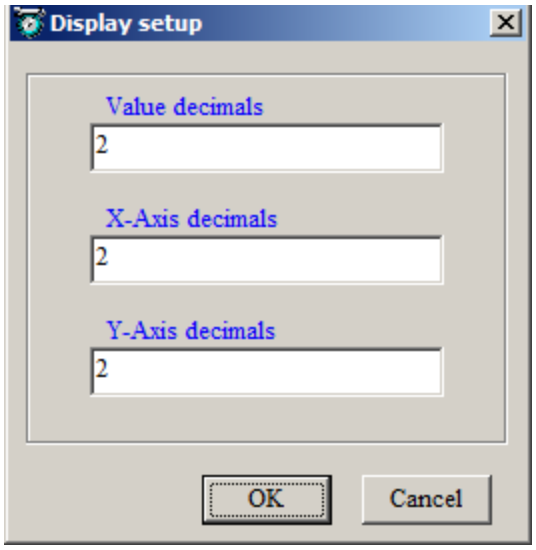
You can change the number of decimals of the values that are displayed in the variable window and calibration window.

For example:

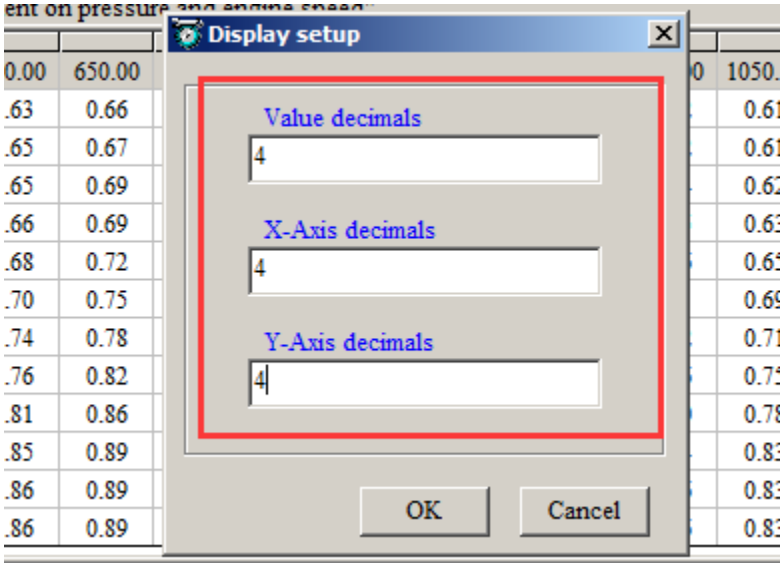
Right click on the window of calibration variables,



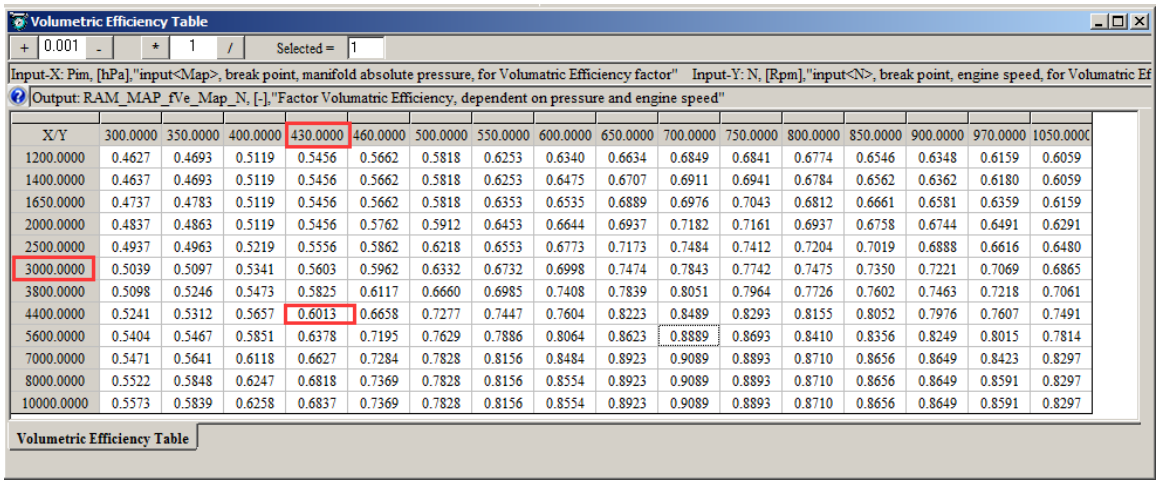
The “Display setup” window pops up,



You can set the decimals, then click OK,



Then, you can see the difference.

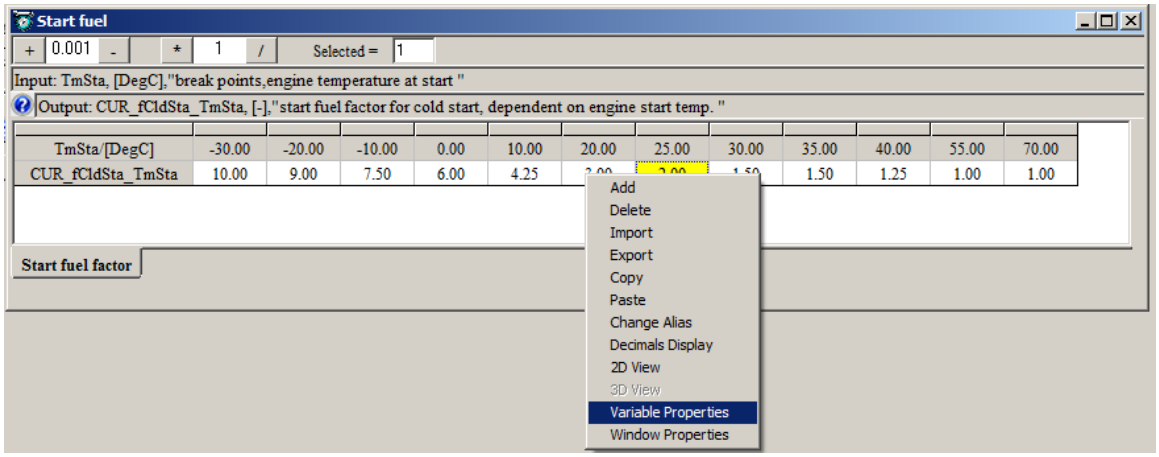


X/Y	300.0000	350.0000	400.0000	430.0000	460.0000	500.0000	550.0000	600.0000	650.0000	700.0000	750.0000	800.0000	850.0000	900.0000	970.0000	1050.0000
1200.0000	0.4627	0.4693	0.5119	0.5456	0.5662	0.5818	0.6253	0.6340	0.6634	0.6849	0.6841	0.6774	0.6546	0.6348	0.6159	0.6059
1400.0000	0.4637	0.4693	0.5119	0.5456	0.5662	0.5818	0.6253	0.6475	0.6707	0.6911	0.6941	0.6784	0.6562	0.6362	0.6180	0.6059
1650.0000	0.4737	0.4783	0.5119	0.5456	0.5662	0.5818	0.6353	0.6535	0.6889	0.6976	0.7043	0.6812	0.6661	0.6581	0.6359	0.6159
2000.0000	0.4837	0.4863	0.5119	0.5456	0.5762	0.5912	0.6453	0.6644	0.6937	0.7182	0.7161	0.6937	0.6758	0.6744	0.6491	0.6291
2500.0000	0.4937	0.4963	0.5219	0.5556	0.5862	0.6218	0.6553	0.6773	0.7173	0.7484	0.7412	0.7204	0.7019	0.6888	0.6616	0.6480
3000.0000	0.5039	0.5097	0.5341	0.5603	0.5962	0.6332	0.6732	0.6998	0.7474	0.7843	0.7742	0.7475	0.7350	0.7221	0.7069	0.6865
3800.0000	0.5098	0.5246	0.5473	0.5825	0.6117	0.6660	0.6985	0.7408	0.7839	0.8051	0.7964	0.7726	0.7602	0.7463	0.7218	0.7061
4400.0000	0.5241	0.5312	0.5657	0.6013	0.6658	0.7277	0.7447	0.7604	0.8223	0.8489	0.8293	0.8155	0.8052	0.7976	0.7607	0.7491
5600.0000	0.5404	0.5467	0.5851	0.6378	0.7195	0.7629	0.7886	0.8064	0.8623	0.8889	0.8693	0.8410	0.8356	0.8249	0.8015	0.7814
7000.0000	0.5471	0.5641	0.6118	0.6627	0.7284	0.7828	0.8156	0.8484	0.8923	0.9089	0.8893	0.8710	0.8656	0.8649	0.8423	0.8297
8000.0000	0.5522	0.5848	0.6247	0.6818	0.7369	0.7828	0.8156	0.8554	0.8923	0.9089	0.8893	0.8710	0.8656	0.8649	0.8591	0.8297
10000.0000	0.5573	0.5839	0.6258	0.6837	0.7369	0.7828	0.8156	0.8554	0.8923	0.9089	0.8893	0.8710	0.8656	0.8649	0.8591	0.8297

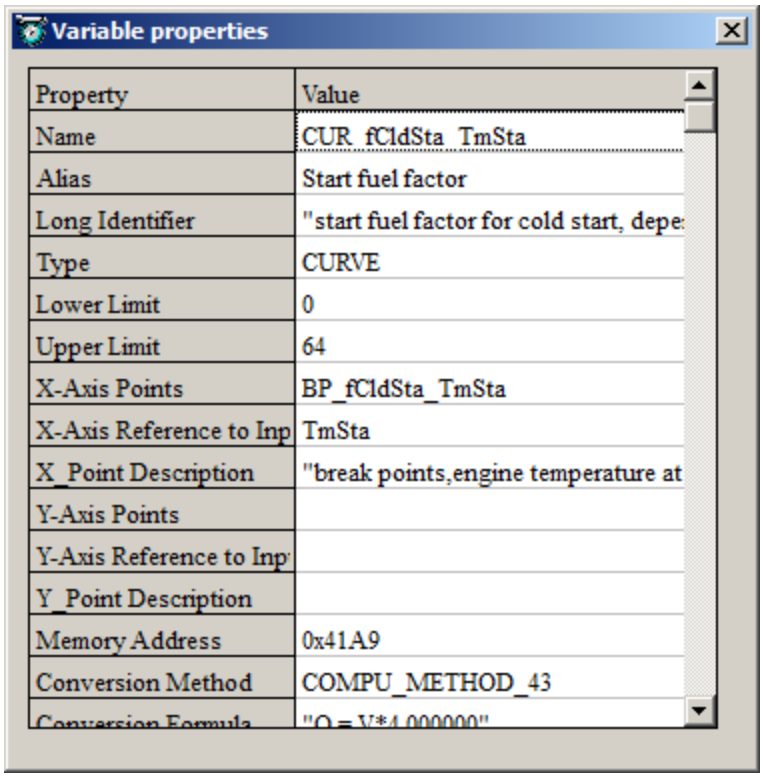
5.3.3 Signal/Parameters properties

The detailed properties of the variables (signals and parameter calibrations), can be viewed in the variable property window.

Right click on the variable; choose “Variable Properties”, the properties window will pop up.

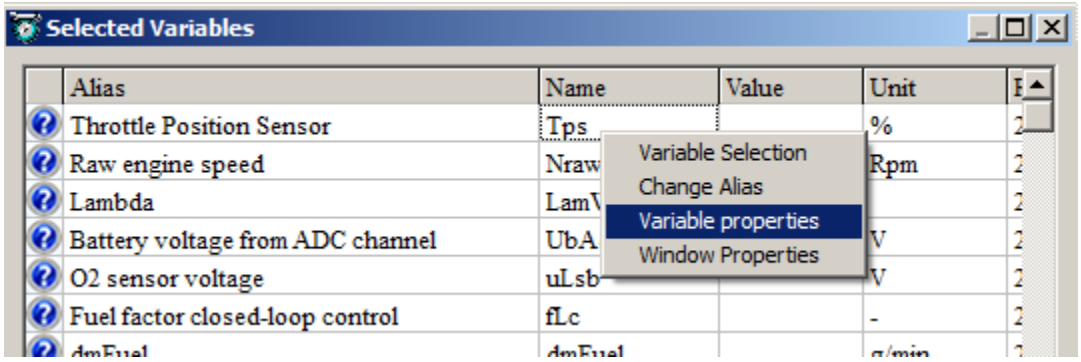


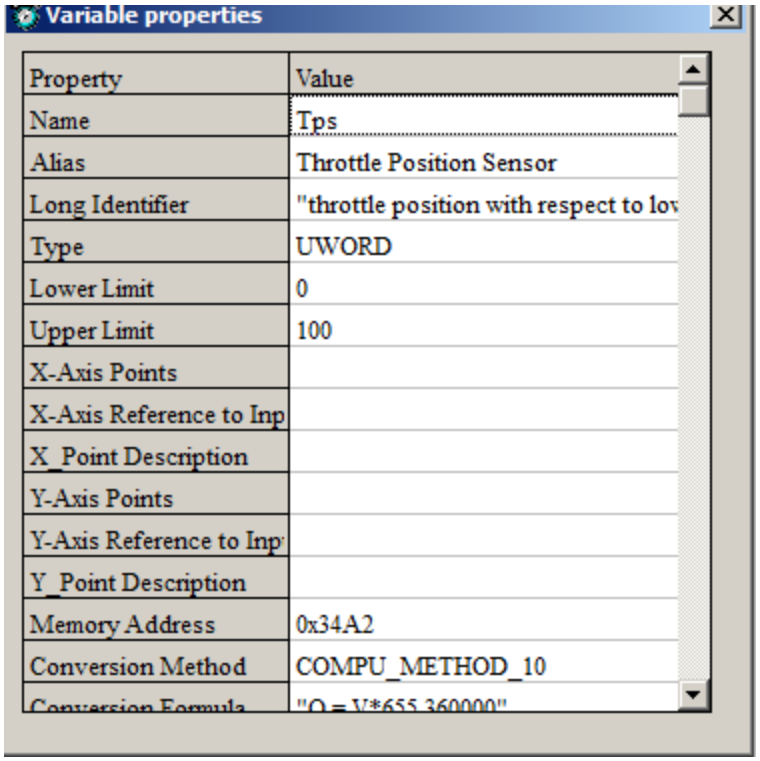
TmSta/[DegC]	-30.00	-20.00	-10.00	0.00	10.00	20.00	25.00	30.00	35.00	40.00	55.00	70.00
CUR_fCldSta_TmSta	10.00	9.00	7.50	6.00	4.25	2.00	2.00	1.50	1.50	1.25	1.00	1.00



Measure variables' properties:

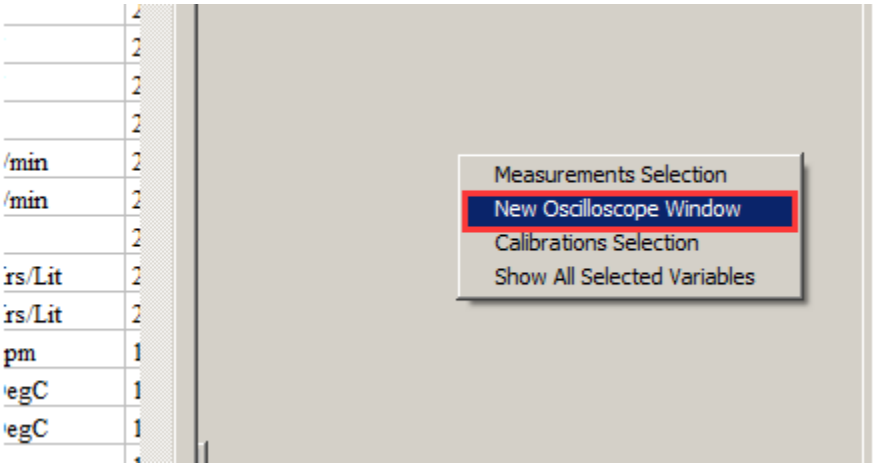
Choose the variable that you want to see, then right click, and choose "Variable Properties"



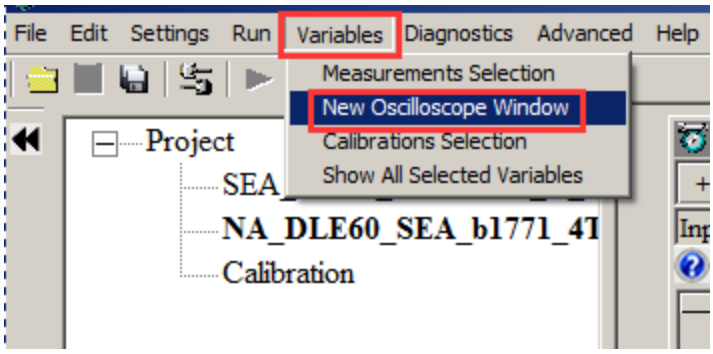


5.3.4 Virtual Oscilloscope

1) **Right click on the blank area of window, click "Calibration Selection"**

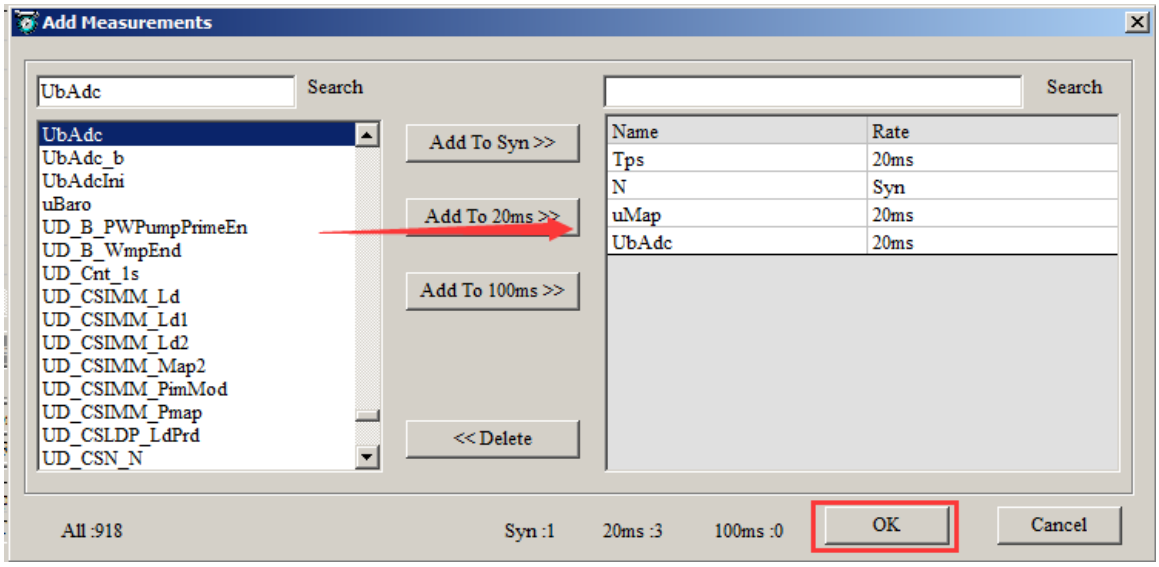


You also can go to menu->Variables->New Oscilloscope Window", to add the oscilloscope window.

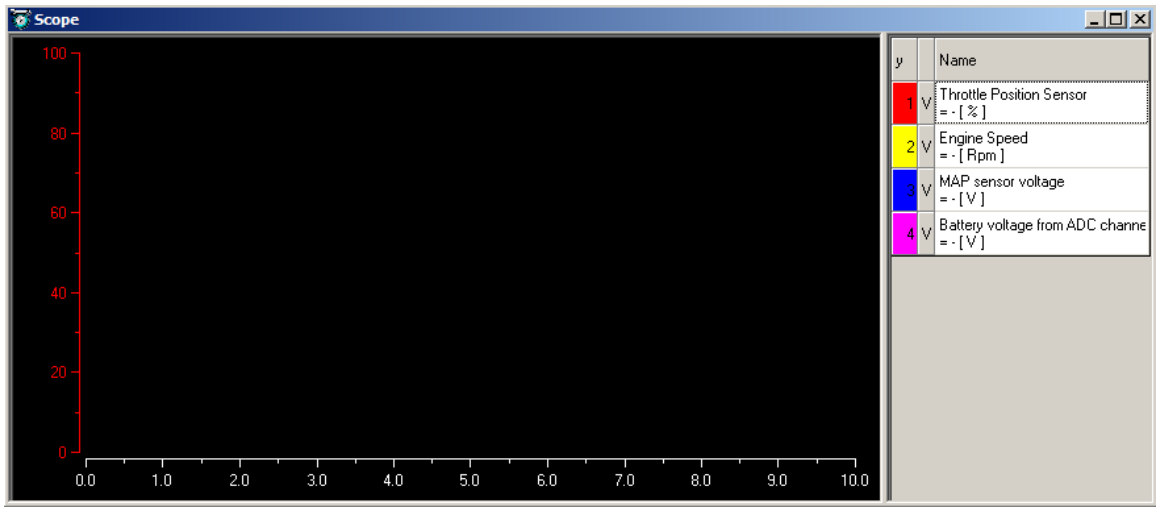


Note: You only can add one Oscilloscope in each layer.

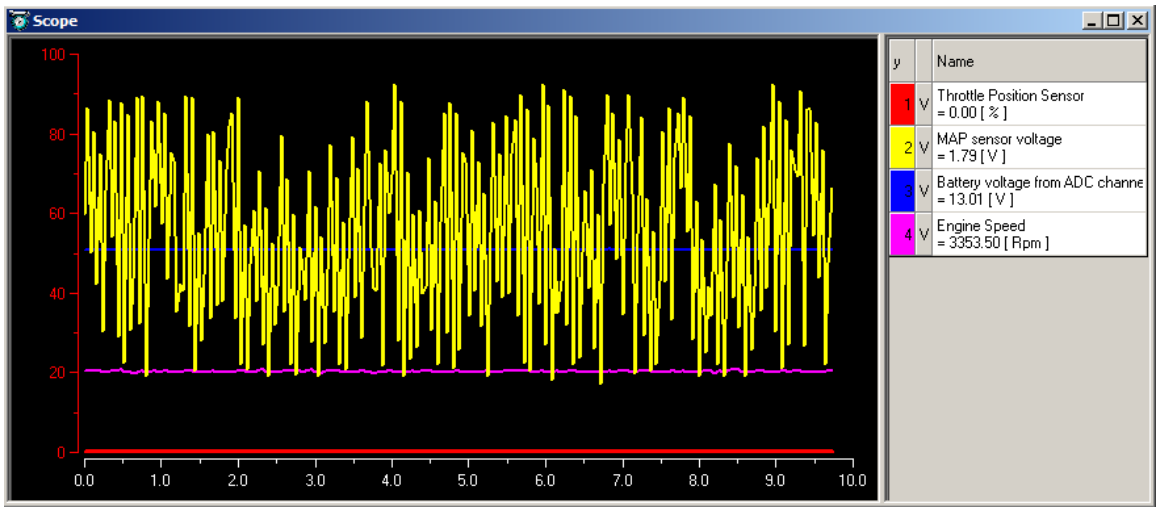
2) **Add the measured variables that you want to show in the Oscillscope window, here, we ass the "Tps", "N", "uMap", "UbAda" variables as example.**



3) **Click "OK", the Scope will pop up.**

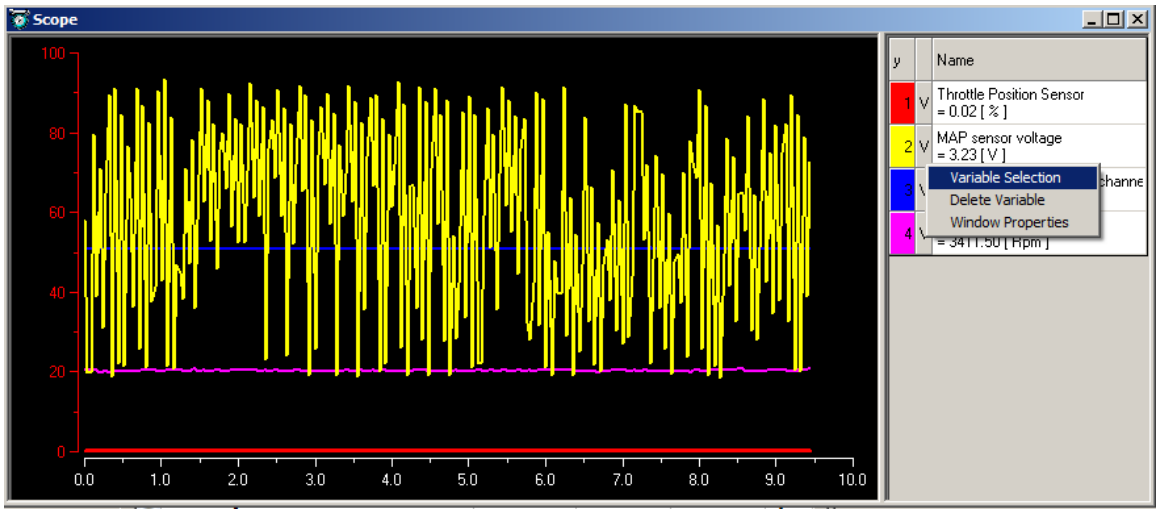


4) Connect to ECU, and start measuring, you can see the signal of variables.



5) You can add or delete the variable that you choose

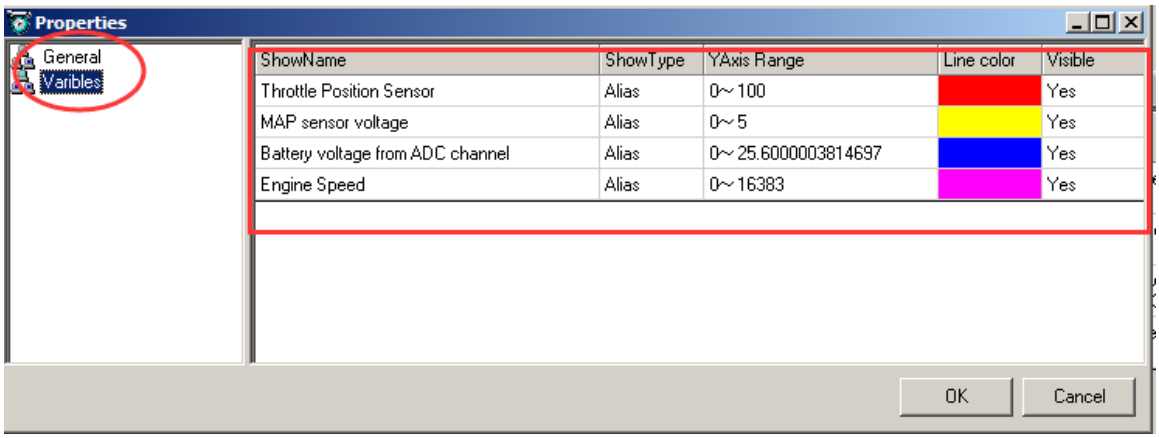
Right click on the scope window, and then add or delete the variables that you want.



Note: when you add the variable, you should stop measuring first.

6) You also can change the properties of scope window.

Right click on the scope window, and then click “Window Properties”. You can change the Max/ Min value of variable, the lines color, etc. Click “OK” when finished.



5.3.5 3D/2D view of maps

You can use this function to see the graph of calibration tables.

Right click on the table, then choose “3D View” or “2D View”, then you can see the graph.

You can use this function to check the table whether is smooth. If it is not smooth, you need to smooth the value of table.

Volumetric Efficiency Table

+ 0.001 - * 1 / Selected = 1

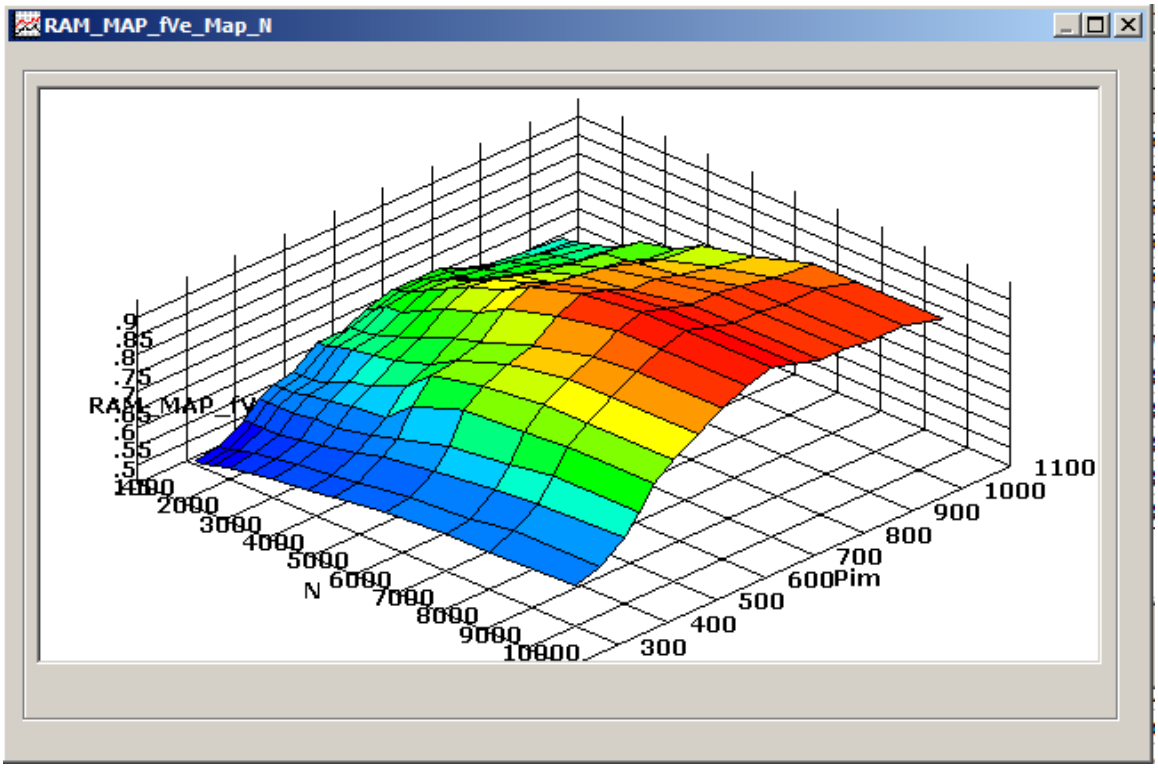
Input-X: Pim, [hPa],"input<Map>, break point, manifold absolute pressure, for Volumatric Efficiency factor" Input-Y: N, [Rpm],"input<N>, break point, engine spee

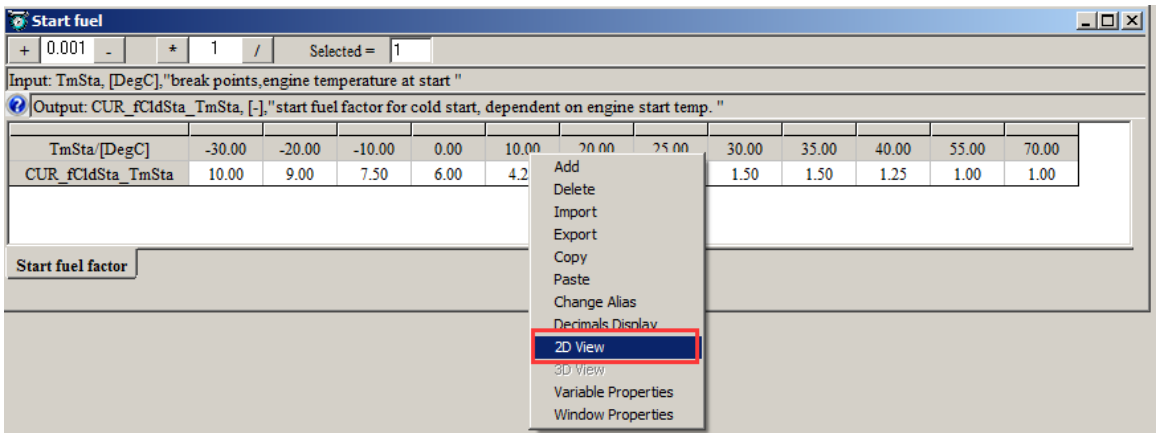
Output: RAM_MAP_fVe_Map_N, [-],"Factor Volumatric Efficiency, dependent on pressure and engine speed"

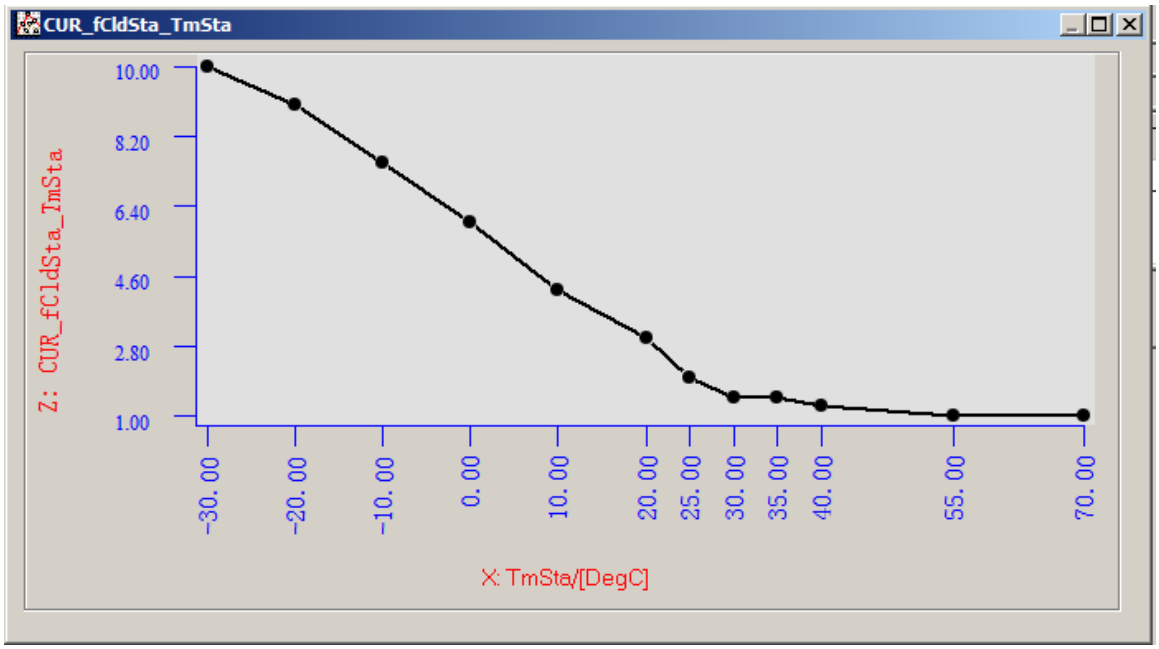
X/Y	300.00	350.00	400.00	430.00	460.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	970.00	1050.00
1200.00	0.46	0.47	0.51	0.55	0.57	0.58	0.63	0.63	0.66	0.68	0.68	0.68	0.65	0.63	0.62	0.61
1400.00	0.46	0.47	0.51	0.55	0.57	0.58	0.63	0.65	0.67	0.69	0.69	0.68	0.66	0.64	0.62	0.61
1650.00	0.47	0.48	0.51	0.55	0.57	0.58	0.64	0.65	0.69	0.70	0.70	0.68	0.67	0.66	0.64	0.62
2000.00	0.48	0.49	0.51	0.55	0.58	0.59	0.65	0.66	0.69	0.72	0.72	0.69	0.68	0.67	0.65	0.63
2500.00	0.49	0.50	0.52	0.56	0.59	0.62	0.			0.75	0.74	0.72	0.70	0.69	0.66	0.65
3000.00	0.50	0.51	0.53	0.56	0.60	0.63	0.			0.78	0.77	0.75	0.73	0.72	0.71	0.69
3800.00	0.51	0.52	0.55	0.58	0.61	0.67	0.			0.81	0.80	0.77	0.76	0.75	0.72	0.71
4400.00	0.52	0.53	0.57	0.60	0.67	0.73	0.			0.85	0.83	0.82	0.81	0.80	0.76	0.75
5600.00	0.54	0.55	0.59	0.64	0.72	0.76	0.			0.89	0.87	0.84	0.84	0.82	0.80	0.78
7000.00	0.55	0.56	0.61	0.66	0.73	0.78	0.			0.91	0.89	0.87	0.87	0.86	0.84	0.83
8000.00	0.55	0.58	0.62	0.68	0.74	0.78	0.			0.91	0.89	0.87	0.87	0.86	0.86	0.83
10000.00	0.56	0.58	0.63	0.68	0.74	0.78	0.			0.91	0.89	0.87	0.87	0.86	0.86	0.83

Add
Delete
Import
Export
Copy
Paste
Change Alias
Decimals Display
2D View
3D View
Variable Properties
Window Properties

Volumetric Efficiency Table





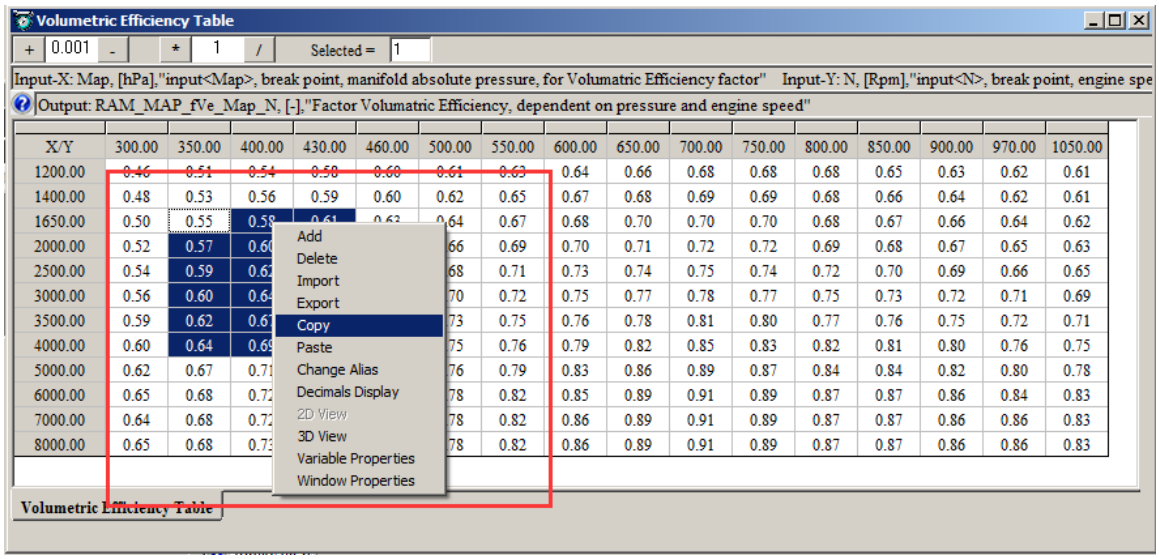


5.3.6 Cope/ Paste in tables

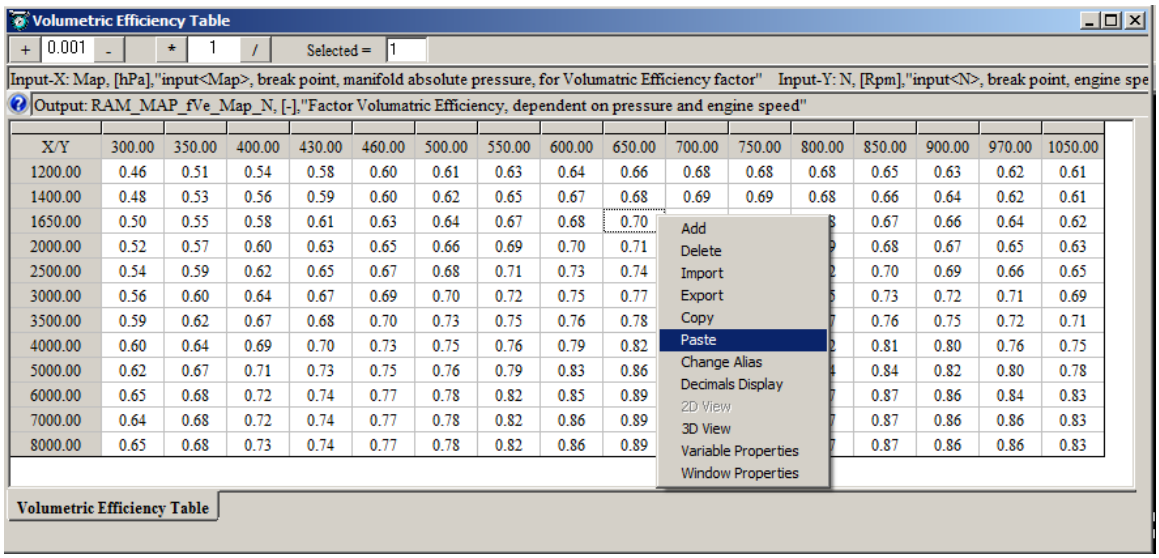
In EcoCAL, it supports the Copy and Paste function in CUR and MAP tables, the function is the same to Excel. You can copy the part of value then past it into the part of cells.

For example

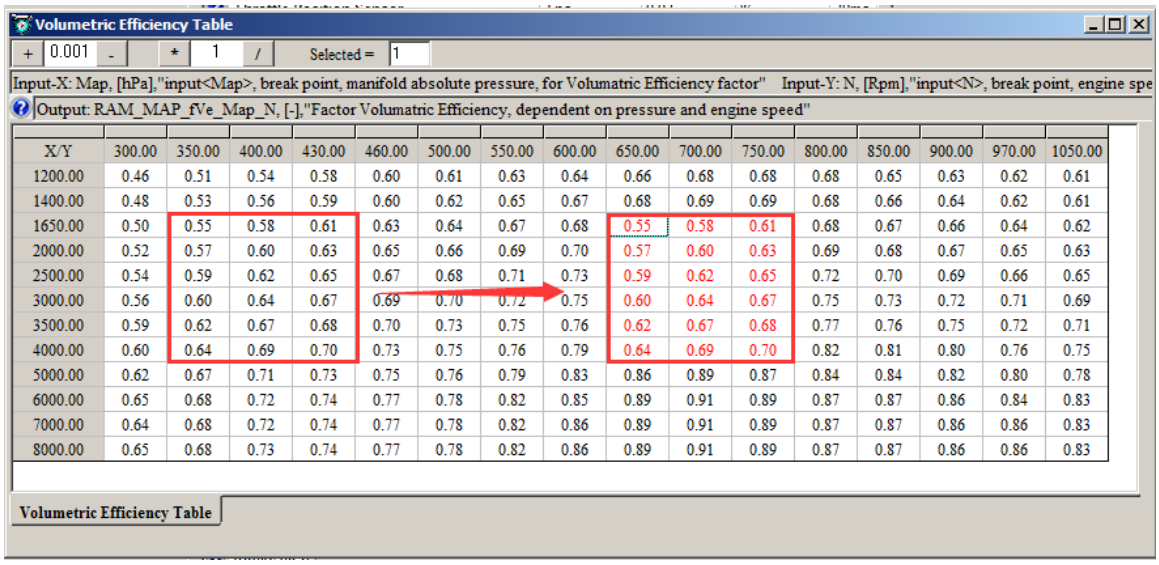
Move the mouse to choose the area of cell you want to copy, then right click, and click “Copy”,



Click the first cell of area you want to paste, then right click and click" Paste"



You can see the values of cells are changed.



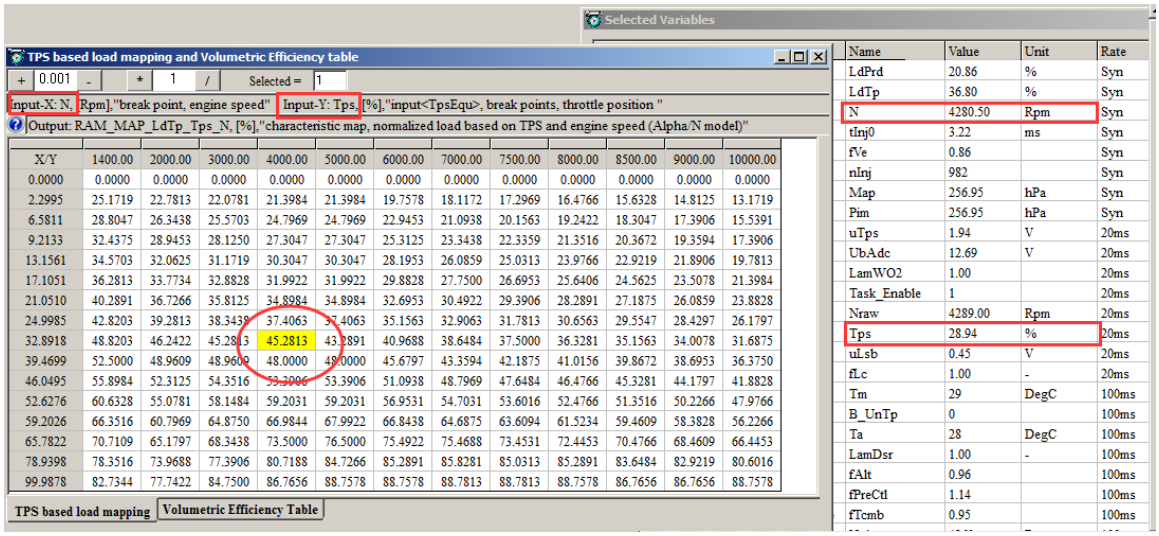
X/Y	300.00	350.00	400.00	430.00	460.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	970.00	1050.00
1200.00	0.46	0.51	0.54	0.58	0.60	0.61	0.63	0.64	0.66	0.68	0.68	0.68	0.65	0.63	0.62	0.61
1400.00	0.48	0.53	0.56	0.59	0.60	0.62	0.65	0.67	0.68	0.69	0.69	0.68	0.66	0.64	0.62	0.61
1650.00	0.50	0.55	0.58	0.61	0.63	0.64	0.67	0.68	0.55	0.58	0.61	0.68	0.67	0.66	0.64	0.62
2000.00	0.52	0.57	0.60	0.63	0.65	0.66	0.69	0.70	0.57	0.60	0.63	0.69	0.68	0.67	0.65	0.63
2500.00	0.54	0.59	0.62	0.65	0.67	0.68	0.71	0.73	0.59	0.62	0.65	0.72	0.70	0.69	0.66	0.65
3000.00	0.56	0.60	0.64	0.67	0.69	0.70	0.72	0.75	0.60	0.64	0.67	0.75	0.73	0.72	0.71	0.69
3500.00	0.59	0.62	0.67	0.68	0.70	0.73	0.75	0.76	0.62	0.67	0.68	0.77	0.76	0.75	0.72	0.71
4000.00	0.60	0.64	0.69	0.70	0.73	0.75	0.76	0.79	0.64	0.69	0.70	0.82	0.81	0.80	0.76	0.75
5000.00	0.62	0.67	0.71	0.73	0.75	0.76	0.79	0.83	0.86	0.89	0.87	0.84	0.84	0.82	0.80	0.78
6000.00	0.65	0.68	0.72	0.74	0.77	0.78	0.82	0.85	0.89	0.91	0.89	0.87	0.87	0.86	0.84	0.83
7000.00	0.64	0.68	0.72	0.74	0.77	0.78	0.82	0.86	0.89	0.91	0.89	0.87	0.87	0.86	0.86	0.83
8000.00	0.65	0.68	0.73	0.74	0.77	0.78	0.82	0.86	0.89	0.91	0.89	0.87	0.87	0.86	0.86	0.83

5.3.7 Highlight of table cells

When you tune the tables on the fly or you want to know which cell of tables is used, so we add the highlight function, when you add the Input-X and Input-Y variable in measured variables, the cell that used will be highlight.

Example #1:

RAM_MAP_LdTp_Tps, the Input-X is “N”, and the Input_Y is “Tps”, so we add the “N” and “Tps” variables in selected variables. When you start measuring, the “N” and “Tps” variables have value, and then the cell of table will be highlight.



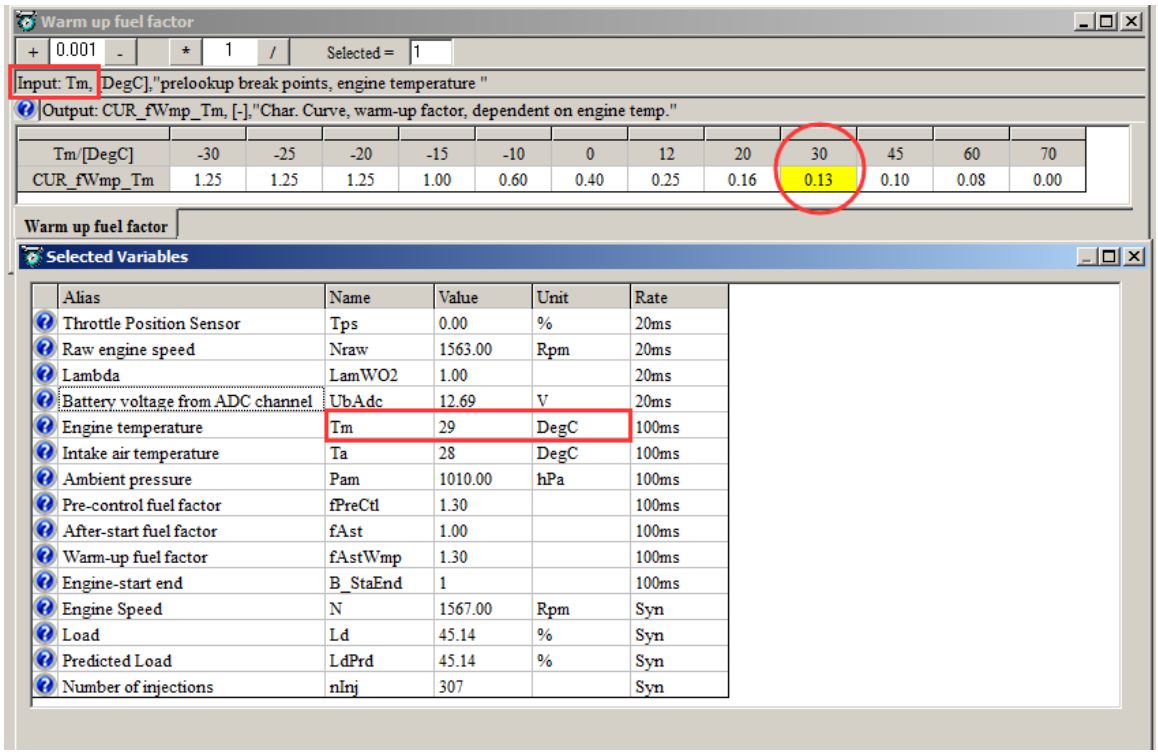
X/Y	1400.00	2000.00	3000.00	4000.00	5000.00	6000.00	7000.00	7500.00	8000.00	8500.00	9000.00	10000.00
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2.2995	25.1719	22.7813	22.0781	21.3984	21.3984	19.7578	18.1172	17.2969	16.4766	15.6328	14.8125	13.1719
6.5811	28.8047	26.3438	25.5703	24.7969	24.7969	22.9453	21.0938	20.1563	19.2422	18.3047	17.3906	15.5391
9.2133	32.4375	28.9453	28.1250	27.3047	27.3047	25.3125	23.3438	22.3359	21.3516	20.3672	19.3594	17.3906
13.1561	34.5703	32.0625	31.1719	30.3047	30.3047	28.1953	26.0859	25.0313	23.9766	22.9219	21.8906	19.7813
17.1051	36.2813	33.7734	32.8828	31.9922	31.9922	29.8828	27.7500	26.6953	25.6406	24.5625	23.5078	21.3984
21.0510	40.2891	36.7266	35.8125	34.8984	34.8984	32.6953	30.4922	29.3906	28.2891	27.1875	26.0859	23.8828
24.9985	42.8203	39.2813	38.3438	37.4063	37.4063	35.1563	32.9063	31.7813	30.6563	29.5547	28.4297	26.1797
32.8918	48.8203	46.2422	45.2813	45.2813	43.2891	40.9688	38.6484	37.5000	36.3281	35.1563	34.0078	31.6875
39.4699	52.5000	48.9609	48.9609	48.0000	48.0000	45.6797	43.3594	42.1875	41.0156	39.8672	38.6953	36.3750
46.0495	55.8984	52.3125	54.3516	53.3906	53.3906	51.0938	48.7969	47.6484	46.4766	45.3281	44.1797	41.8828
52.6276	60.6328	55.0781	58.1484	59.2031	59.2031	56.9531	54.7031	53.6016	52.4766	51.3516	50.2266	47.9766
59.2026	66.3516	60.7969	64.8750	66.9844	67.9922	66.8438	64.6875	63.6094	61.5234	59.4609	58.3828	56.2266
65.7822	70.7109	65.1797	68.3438	73.5000	76.5000	75.4922	75.4688	73.4531	72.4453	70.4766	68.4609	66.4453
78.9398	78.3516	73.9688	77.3906	80.7188	84.7266	85.2891	85.8281	85.0313	85.2891	83.6484	82.9219	80.6016
99.9878	82.7344	77.7422	84.7500	86.7656	88.7578	88.7578	88.7813	88.7813	88.7578	86.7656	86.7656	88.7578

Name	Value	Unit	Rate
LdPrd	20.86	%	Syn
LdTp	36.80	%	Syn
N	4280.50	Rpm	Syn
tInj0	3.22	ms	Syn
fVe	0.86		Syn
nInj	982		Syn
Map	256.95	hPa	Syn
Pim	256.95	hPa	Syn
uTps	1.94	V	20ms
UbAdc	12.69	V	20ms
LamWO2	1.00		20ms
Task_Enable	1		20ms
Nraw	4289.00	Rpm	20ms
Tps	28.94	%	20ms
uLsb	0.45	V	20ms
fLc	1.00	-	20ms
Tm	29	DegC	100ms
B_UnTp	0		100ms
Ta	28	DegC	100ms
LamDsr	1.00	-	100ms
fAlt	0.96		100ms
fPreCtl	1.14		100ms
fTcmb	0.95		100ms

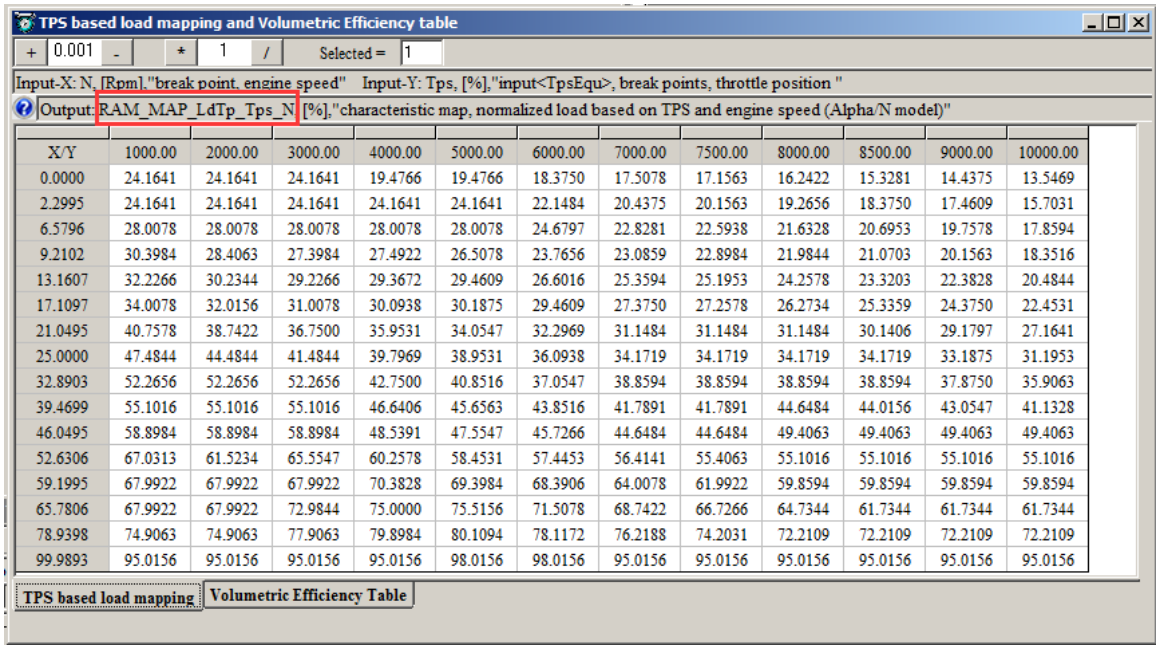
Example #2:

CUR_fWmp_Tm, the Input is “Tm”, so we add the “Tm” variable in selected variables.

You can see the highlight cell in the table.



Note: If the Input variable of table is not measured, the highlight will be disabled.



X/Y	1000.00	2000.00	3000.00	4000.00	5000.00	6000.00	7000.00	7500.00	8000.00	8500.00	9000.00	10000.00
0.0000	24.1641	24.1641	24.1641	19.4766	19.4766	18.3750	17.5078	17.1563	16.2422	15.3281	14.4375	13.5469
2.2995	24.1641	24.1641	24.1641	24.1641	24.1641	22.1484	20.4375	20.1563	19.2656	18.3750	17.4609	15.7031
6.5796	28.0078	28.0078	28.0078	28.0078	28.0078	24.6797	22.8281	22.5938	21.6328	20.6953	19.7578	17.8594
9.2102	30.3984	28.4063	27.3984	27.4922	26.5078	23.7656	23.0859	22.8984	21.9844	21.0703	20.1563	18.3516
13.1607	32.2266	30.2344	29.2266	29.3672	29.4609	26.6016	25.3594	25.1953	24.2578	23.3203	22.3828	20.4844
17.1097	34.0078	32.0156	31.0078	30.0938	30.1875	29.4609	27.3750	27.2578	26.2734	25.3359	24.3750	22.4531
21.0495	40.7578	38.7422	36.7500	35.9531	34.0547	32.2969	31.1484	31.1484	31.1484	30.1406	29.1797	27.1641
25.0000	47.4844	44.4844	41.4844	39.7969	38.9531	36.0938	34.1719	34.1719	34.1719	34.1719	33.1875	31.1953
32.8903	52.2656	52.2656	52.2656	42.7500	40.8516	37.0547	38.8594	38.8594	38.8594	38.8594	37.8750	35.9063
39.4699	55.1016	55.1016	55.1016	46.6406	45.6563	43.8516	41.7891	41.7891	44.6484	44.0156	43.0547	41.1328
46.0495	58.8984	58.8984	58.8984	48.5391	47.5547	45.7266	44.6484	44.6484	49.4063	49.4063	49.4063	49.4063
52.6306	67.0313	61.5234	65.5547	60.2578	58.4531	57.4453	56.4141	55.4063	55.1016	55.1016	55.1016	55.1016
59.1995	67.9922	67.9922	67.9922	70.3828	69.3984	68.3906	64.0078	61.9922	59.8594	59.8594	59.8594	59.8594
65.7806	67.9922	67.9922	72.9844	75.0000	75.5156	71.5078	68.7422	66.7266	64.7344	61.7344	61.7344	61.7344
78.9398	74.9063	74.9063	77.9063	79.8984	80.1094	78.1172	76.2188	74.2031	72.2109	72.2109	72.2109	72.2109
99.9893	95.0156	95.0156	95.0156	95.0156	98.0156	98.0156	95.0156	95.0156	95.0156	95.0156	95.0156	95.0156

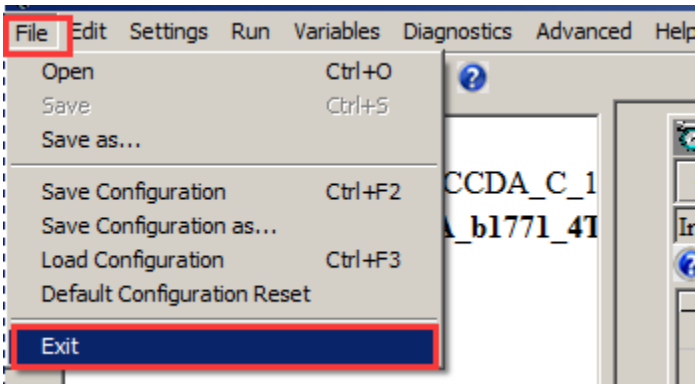
Chapter 6 Exit or Uninstall the EcoCAL

6.1 Exit EcoCAL

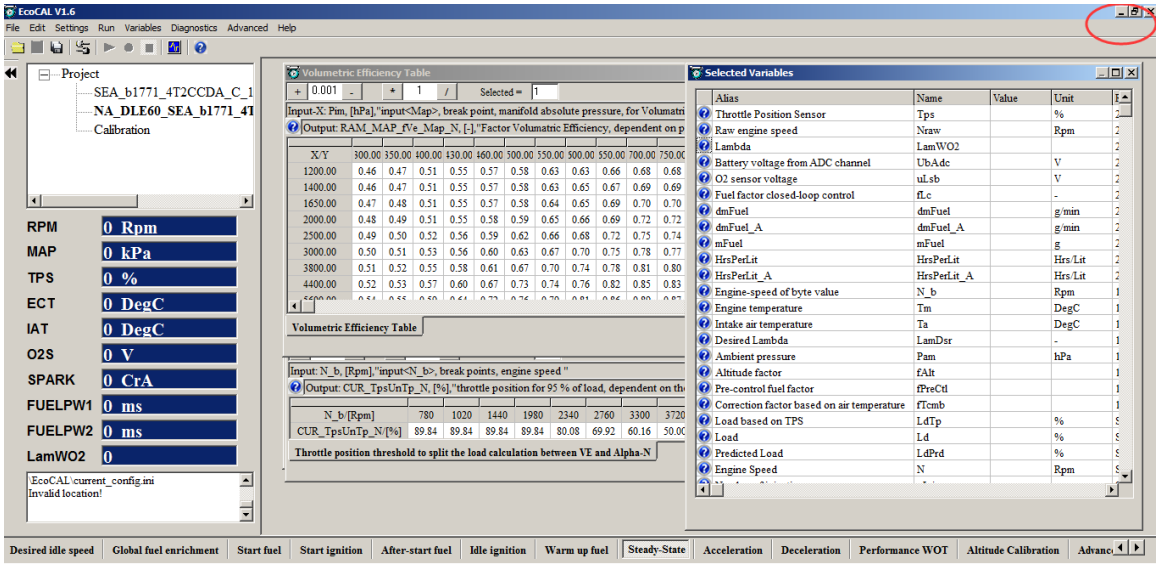
There are two ways to exit EcoCAL

1) Use the menu to exit the EcoCAL

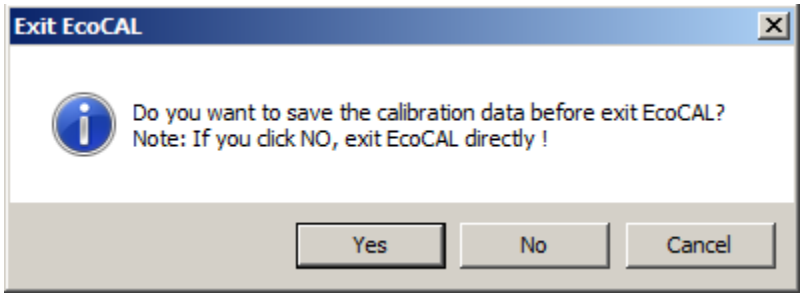
Go to menu->File->Exit



2) Close the EcoCAL directly on the upper right corner 



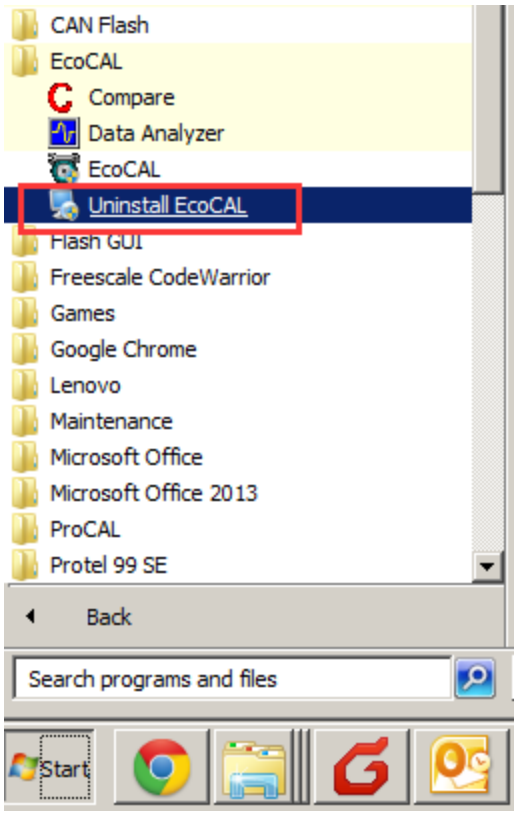
Note: If you have done some tuning and change, and you don't save it, the "Exot EcpCA" warning window will pop-up, please choose "Yes" or "No" or "Cancel" based on your demand.



6.2 Uninstall the EcoCAL

If you want to uninstall the EcoCAL, please click:

Start->All Programs->EcoCAL->Uninstall EcoCAL.


CAN Flash
EcoCAL
Compare
Data Analyzer
EcoCAL
Uninstall EcoCAL
Flash GUI
Freescale CodeWarrior
Games
Google Chrome
Lenovo
Maintenance
Microsoft Office
Microsoft Office 2013
ProCAL
Protel 99 SE
Back
Search programs and files
Start