

Variators of the ignition timing Microluch.

Description of the setup program Microvar.exe.

Communication with the computer.

To connect the computer with the variator, it is necessary to connect the variator and a computer (UART-USB) with an interface cable.

To do this, use the standard interface cable of the gas injection controller.



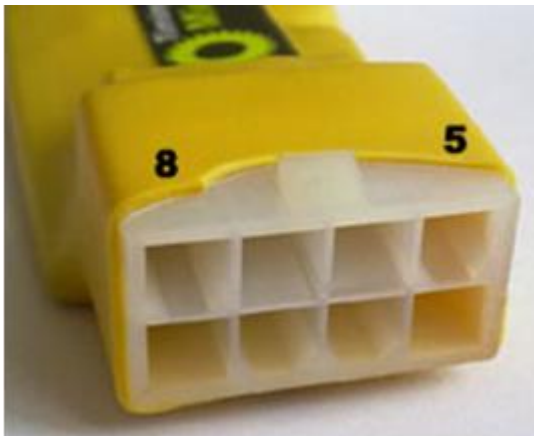
Interface variator connector:

8 - transmission from the variator in levels 0-5V.

7 - plus 12V from the variator for the interface

6 - general

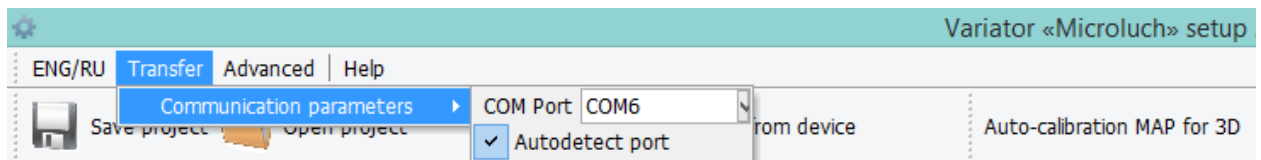
5 - reception for the variator in levels 0-5V.



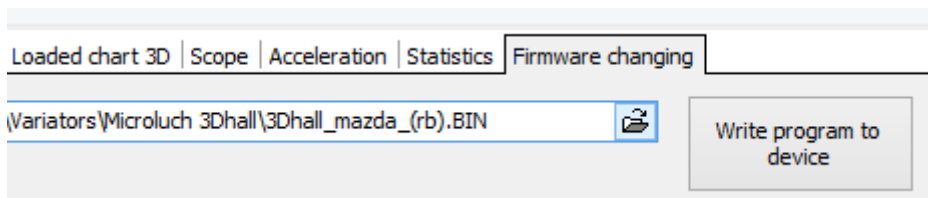
First connect the interface, and then run the program!

In the "Transfer" item of the main menu, select in the "Communication parameters" "Autodetect port" and the program will automatically establish a connection with the unit when it is started. Or select the correct COM port number by yourself.

Communication with the variator is established if the RPM values are displayed in the current parameter windows, and there is no red "No answer" text in the lower field of the program window.



Replacing variator firmware:



To write programs to the variator that work with a specific disk option of car, connect the computer to the variator, run the setup program and go to the "Firmware changing" tab.

Select the program by clicking on the "open folder" symbol.

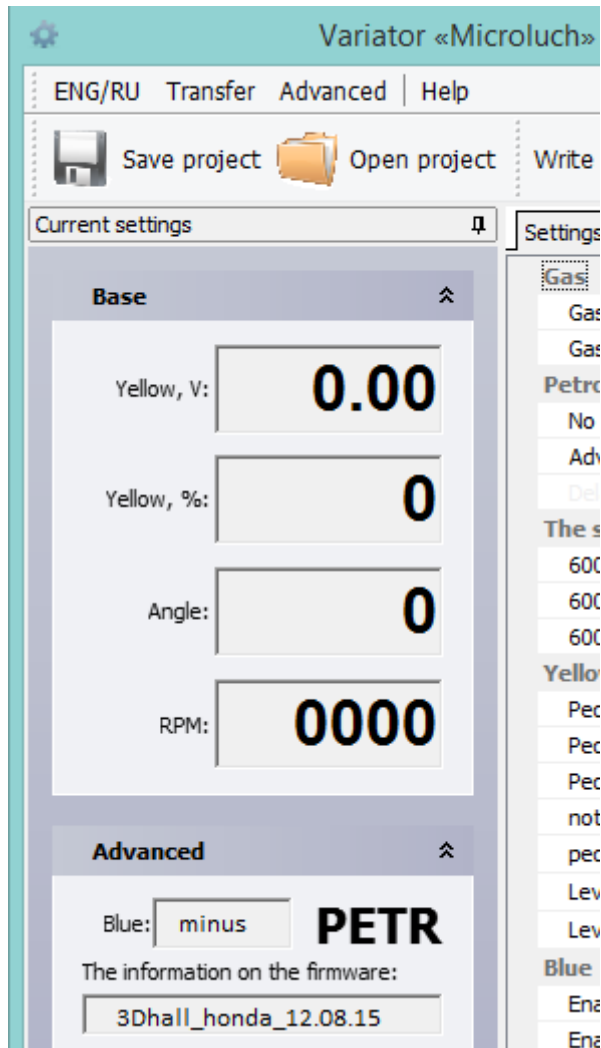
Click on the "Write program to device" button, press the confirmation, and wait for the inscription in the lower part of program window "Programming completed".

Changing firmware only on a muffled engine.

Reprogramming the variator, which is not responding.

It may be that the variator stops programming. In this case, you need to remove from the variator plus power, select the program, press the "Write program to device" button, confirm, and then apply power to the variator.

Displays current settings.



In the mode of operation of the engine on gasoline, the current parameters are displayed in black numbers, when the mode of operation on gas is on - blue.

Yellow, V - voltage on the yellow wire.

Yellow,% - voltage on the yellow wire in %.

Angle - the current angle of advance.

RPM - current revolutions per minute.

Blue - the state of the blue wire (plus, minus, not connected)

Information about the firmware - the name of the program into the variator.

Settings.

Write to device		Load from device		Auto-calibration MAP for 3D	
Settings Draft 3D Interpol Loaded chart 3D Scope Acceleration Statistics Firmware changing					
Gas					
Gas 2D				<input type="checkbox"/>	
Gas 3D				<input checked="" type="checkbox"/>	
Petrol					
No correction				<input checked="" type="checkbox"/>	
Advance				<input type="checkbox"/>	
Delay				<input type="checkbox"/>	
The scale RPM 3D					
600 - 2200				<input type="checkbox"/>	
600 - 3800				<input checked="" type="checkbox"/>	
600 - 7000				<input type="checkbox"/>	
Yellow					
Pedal, voltage Up				<input type="checkbox"/>	
Pedal, voltage Down				<input type="checkbox"/>	
Pedal or MAP, 3D				<input checked="" type="checkbox"/>	
not connected				<input type="checkbox"/>	
pedal threshold, V		1,00			
Level, for 0%, V		0,13			
Level, for 100%, V		4,61			
Blue					
Enable correction as plus				<input checked="" type="checkbox"/>	
Enable correction as minus				<input type="checkbox"/>	
Delay, sec		005			
Advanced					
speed increase of the angle		low			
speed decrease of the angle		higt			
Any1		10			
Any 2, V		0,00			
Password read and write to the device					

Buttons.

Write to device - writes settings and graphs to the device.

Load from device - reads the installation and graphics from the variator to the computer.

MAP Auto-Calibration for 3D - opens an interactive window with a description of actions for automatically linking the yellow wire to the MAP sensor levels. If a ready-made project is used, first open the project and then perform the auto-calibration, then "Write to device".

Gas.

Select the type of timing graph for gas.

Petrol.

The choice of the type of timing for gasoline and the choice of the need for timing or latency (for some firmware).

RPM 3D scale.

In order to be able to work accurately with low-, medium- and high-speed motors, an appropriate scale of revolutions is chosen. The scale is valid only for 3D graphics.

If the current revolutions exceed the upper limit of the scale, the advance value for these revolutions will be the same as in the cell at the scale boundary.

Attention - it is necessary to choose a scale before creating a map, the subsequent switching of the scale is not automatically taken into account by the program.

Yellow.

- If you select the "not connected" mark, the yellow wire is ignored, select this mode only for the 2D advance chart, without the pedal. The remaining levels of yellow do not matter.
- If the pedal is used to turn off the advance when the pedal is released (for example, for the 2nd generation gas systems), connect the yellow wire to the pedal, build a 2D graph, select the pedal voltage "rising- up" or "falling-down" and set the value for "pedal threshold" . This is the threshold at which the advance is activated, it acts on gas and gasoline.
- If the yellow wire is connected to the pedal or MAP, and you need to build a 3D advance graph, select the "pedal or MAP, 3D" mark and set the voltage level, in volts, for 0% and 100% of the voltage on the yellow wire. Values in volts can be read in the "current settings" in the left column of the program.

Blue.

Select the correct voltage polarity on the valve to enable advance.

Delay - the parameter determines the delay in seconds from the moment the gas valve is turned on until the beginning of the advance. Set a time longer than the time of a smooth transition from gasoline to gas.

Additionally.

To see the hidden additional features of the settings for this firmware - write to the variator necessary firmware and click "read from device".

Set the value of the speed increase of the angle (for most firmware):

- standard (algorithm and speed previous generations of programs),
- slow, medium and high.

Smaller engine volumes require a low speed increase and a high decrease, powerful engines require high speeds.

"Other 1", "Other 2" - settings for parameters that can be used by some non-standard device firmware. For example:

- "Duration output pulse "- for 3Dhall_gentra firmware sets the pulse duration from 20 to 100 μ s, which is important for pulse crankshaft.

Password read and write to the device.

You can, to protect the settings and the schedule loaded into the device, use a password.

If you write to the device settings with a password, then when you try to read settings from this device, with a different password, the message "Wrong password" is displayed.

If you try to write to the device, with the settings and password already saved, another setting with a different password, the program displays the message "Wrong password! Write the settings to the device? "And, upon confirmation, writes the new settings with a new password, destroying the previous data.

The password can contain from 1 to 8 characters.

If you write an empty password - 8 spaces, then the settings will be read by any other user, as without a password.

Writing a program (firmware) occurs without a password.

Schedule setting "Gas 2D».

The 2D gas graph is a graph of the advance angle and RPM.

The graph can contain from 1 to 10 values of angles and turns.

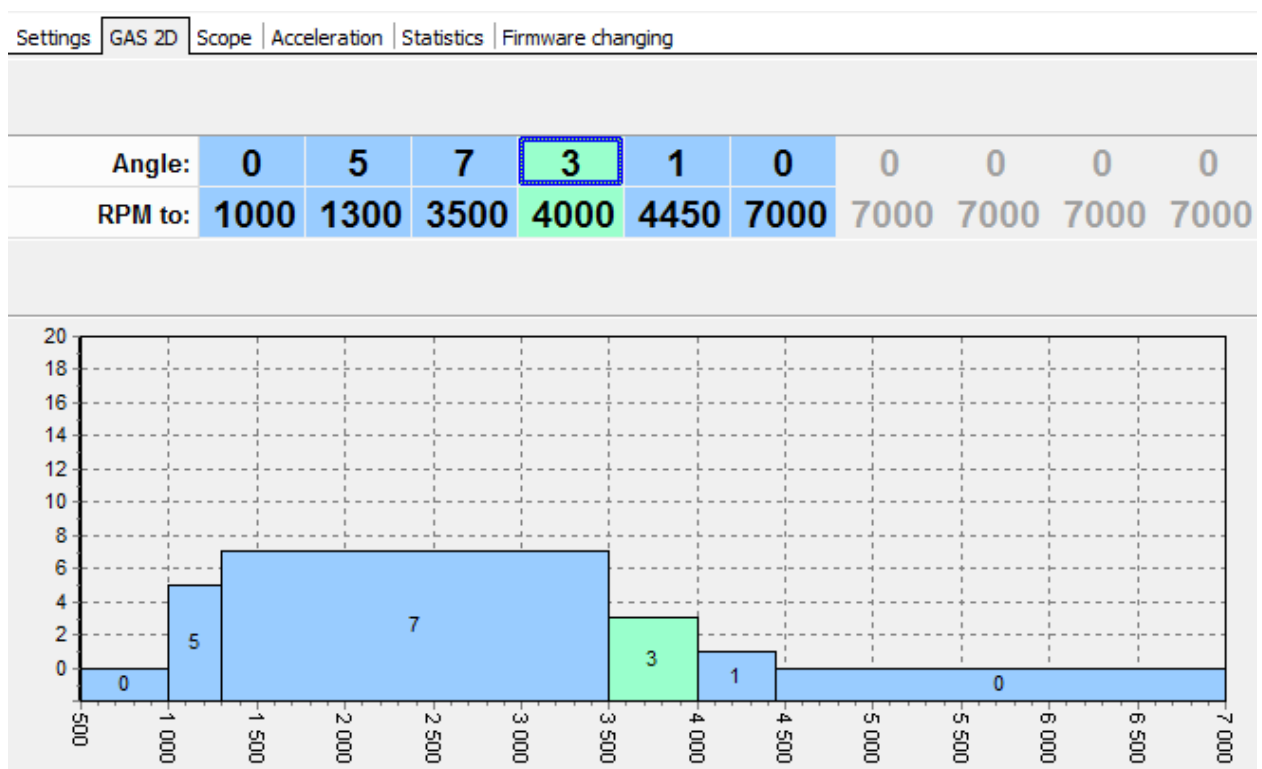
The minimum step is 1 degree, 50 turns.

Customization can be made either in the table or in the graph - they are interrelated.

The table cell and the column of the graph in which data can be edited are highlighted in green.

It is not necessary to fill all the cells, just fill in as many as you need.

How many cells will be filled, so many bars will be reflected in the graph.



Filling the table:

Left, right, up and down arrows - move along table cells and graph bars.

Select the first cell, press "Enter", enter the angle value from the keyboard, and again press "Enter". Repeat the action for the cell turns.

The same can be done by simultaneously pressing the "Ctrl" and Left, right, up and down arrows.

Ctrl and up or down arrows change the angle, and Ctrl and left and right arrows change the rpm value.

And you can drag the mouse (with the left button pressed) graph bars. The mouse drags in the selected, green, column the top and right walls - the angle and rpm.

Similarly, a timing graph is created for gasoline.

To load the graph into the variator, click the "Write to device" button.

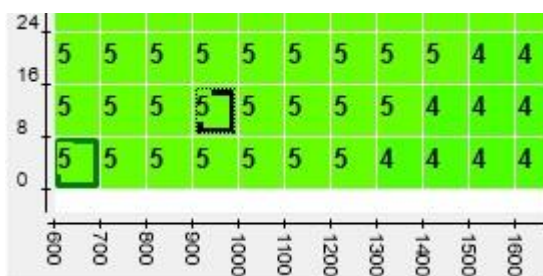
Setting the timing of the graph "Gas 3D".

Graph 3D gas is a graph of the advance angle on the gas, depending on the speed and the percentage of voltage on the yellow wire.

You can create a 3D graph in two ways:

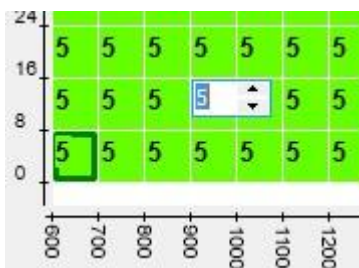
The first method is the direct entry of values into each cell of the "loaded chart 3D". The second method is interpolation (calculation of the missing) values listed in the "draft" cells.

Editing cells of the "loaded chart 3D."



The green frame shows the current position of the percent yellow wire and turns.

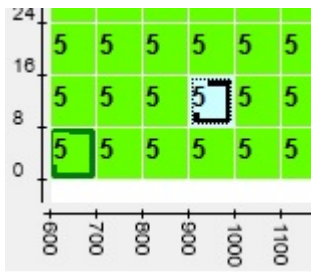
The black frame shows a cell in which you can edit the content. You can move the black frame with the arrows on the keyboard, or by clicking the mouse on the desired cell.



Editing field by pressing "Enter"

You can edit the contents of a cell in two ways: by keyboard or mouse.

When you press "Enter", an additional edit field appears in which you can enter the numerical value of the cell contents directly, or use the keyboard buttons with the up and down arrows to change the number in the cell by one.



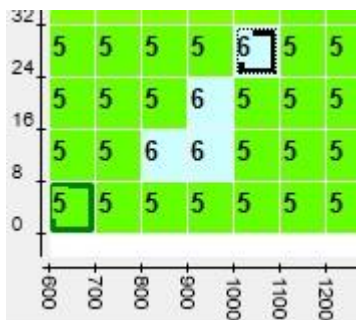
Editing field with double click

Editing with the mouse allows you to edit one or more cells at the same time.

To change the contents of the cell, click on it 2 times with the left mouse button.

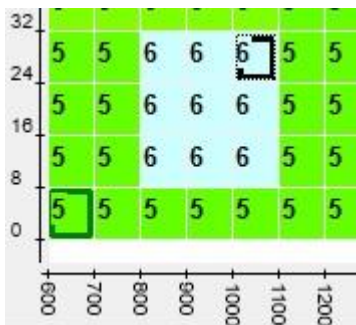
After that, use the mouse wheel or the "PgUp" or "PgDn" keyboard buttons to change the number in the cell by one.

To cancel the editing mode, press the right mouse button once.



Editing field when selecting multiple cells by double-clicking.

To transfer several arbitrarily located cells into edit mode, you need to select all the necessary cells with a double click.



To edit a square field, select with one mouse click the leftmost lower diagonal cell and click, with the "Shift" key, the top right one.

When multiple cells are selected, their contents will change synchronously by one, the mouse wheel, or the "PgUp" or "PgDn" keyboard buttons.

To cancel the editing mode, press the right mouse button once.

Sequence.

The green frame shows the current position of the percent yellow wire and turns.

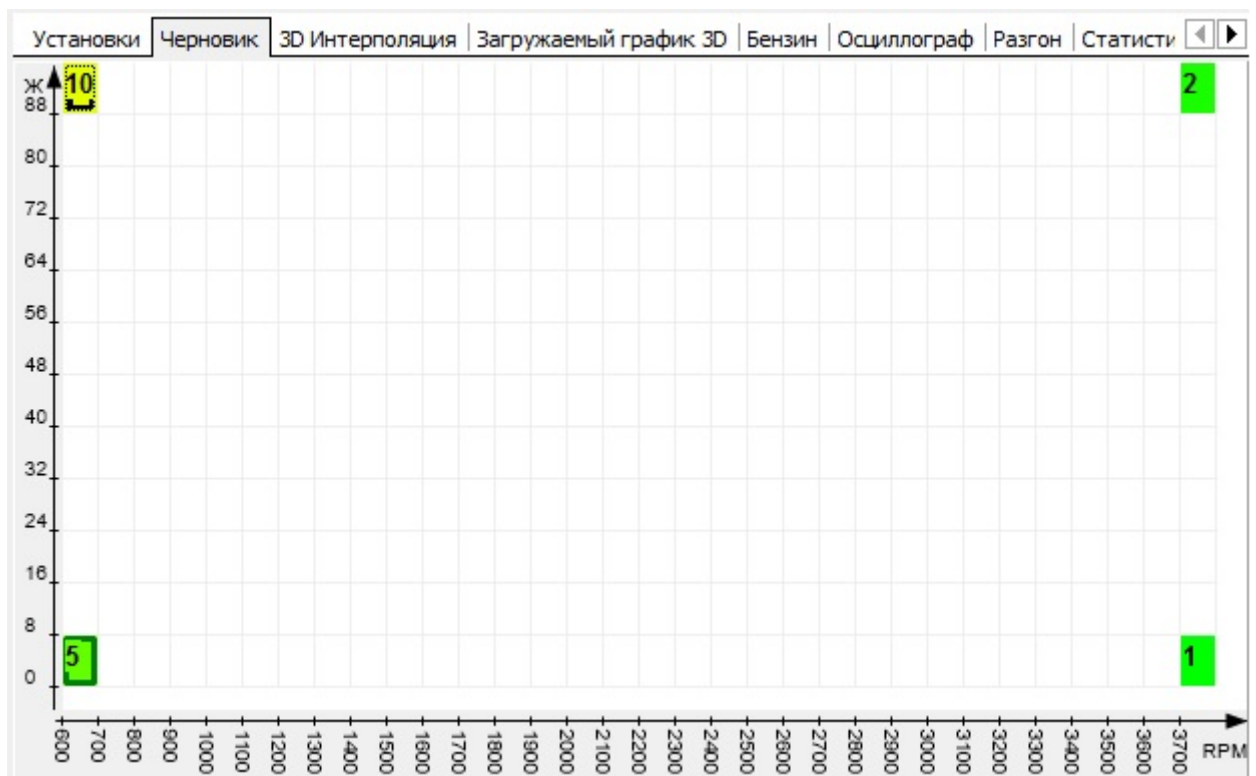
A sequence is used to observe the current and previous positions of the cells in motion.

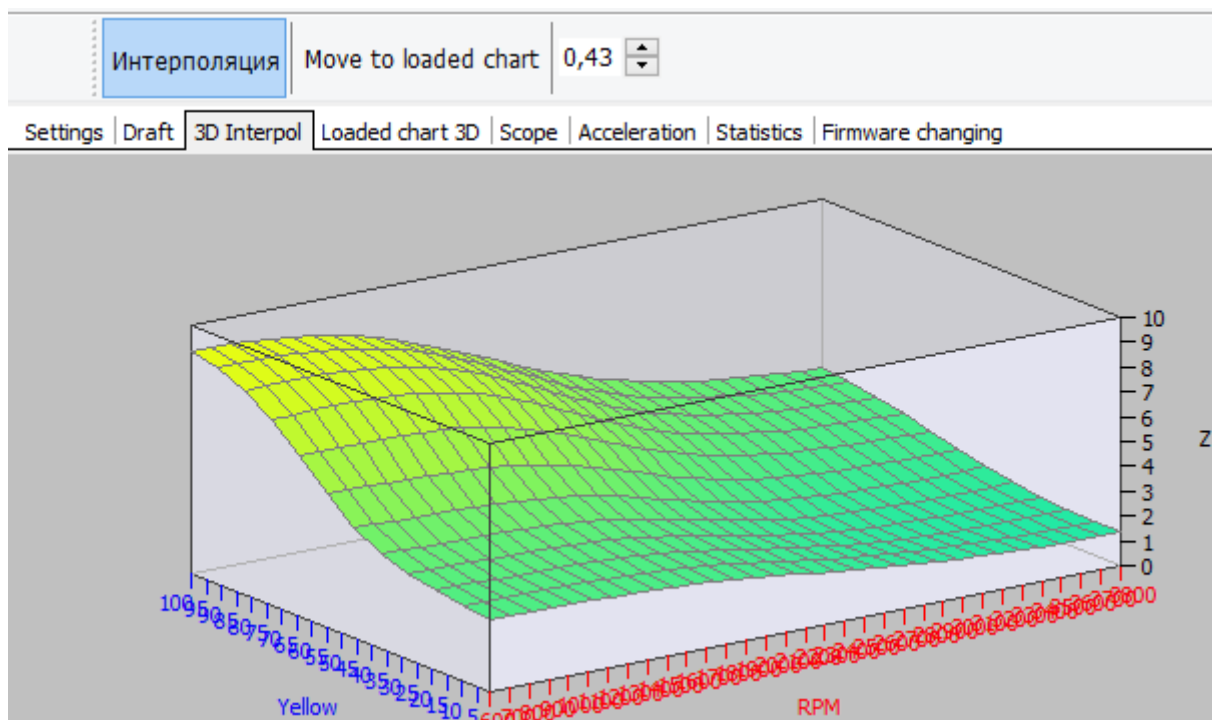
You can select the type of sequence and its presence in the Advanced menu at the top of the program.

Creation of "Loaded chart 3D " by interpolation of "draft" values.

Values in the "draft" cells are entered in the same ways as in the "Loaded chart 3D " cells.

It is necessary to enter the values not in all, but in the key cells of the "draft".





After entering the values in the key cells of the draft, go to the "3D interpolation" tab.

To get the values in the remaining cells, click the Interpolation button.

This 3D drawing can be rotated around any axis, using the mouse, click the left mouse button in the drawing field and drag the drawing with the mouse.

The scale of the picture can be changed by changing the number located to the right of the "transfer to loadable graph" button.

It may be necessary to carry out such operations several times (the entry in the cells of the draft is interpolation), until the drawing becomes similar to what one wants to receive.

To transfer the contents of the cells of the picture into the "Loaded chart 3D", press the "Transfer to loaded chart" button. Now, in the "Loaded chart 3D" tab, you can edit the necessary cells, or load the data of this graph into the variator by clicking the "Write to device" button.

The "Transfer to Draft" button allows transferring the loaded graphics data to a "draft", for example, in order to again correct the cells and interpolate.

It is important to know:

The values of the angle at speed below 500 is always 0 gr.

The values of the angle at revolutions from 500 to 600 correspond to the values of the leftmost row of cells.

The values of the angle at revolutions above the extreme value of the scale of the revolutions of the 3D graphics correspond to the values of the rightmost row of cells.

Save the project.

All data of the current work with all graphs are stored in the values file.

But if you want to save the debugged version on your computer, use the "save project" button. Before saving, make sure that the password in the "settings" is correct.

Projects are automatically saved in the Project folder.

Use the finished project.

When you open a saved project, its name is displayed in the upper frame of the window.

If you need to use a project made on another car, or a finished project, you must first "open the project" and then change the settings for the yellow wire.

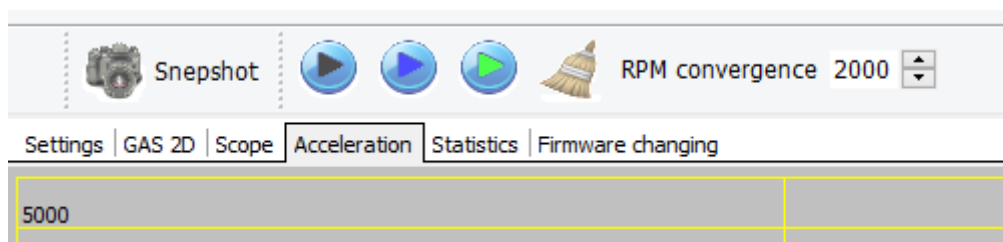
If the yellow wire is connected to the pedal, set the values for 0% (pedal released) and 100% (fully depressed pedal), or carry out the "MAP auto-calibration" procedure if the yellow is connected to the MAP sensor.

After that, you can "write to the device" project and save it under a new name for further customization.

Acceleration.

For a more accurate determination of the angle at medium speeds of 1000 - 3500, you can use acceleration charts, which show the process of change of turns in time. Such graphs draw only firmware with an index (r ...).

For the removal of acceleration graphs, three different-colored buttons are used, each of them draws a graph of its own color.



Get under way, having dispersed the engine to 1500 rpm in second gear and release the pedal, rolling in engine braking mode until it reaches 1000 rpm.

Press the black button and press the pedal to the stop, transfer if necessary, switch on the revolutions above 4000. The schedule is taken 5 seconds from the moment the button is pressed.

The black button can be used to remove the graph on gasoline, the blue and green buttons can be used to remove accelerations at different angles, until the maximum acceleration speed is reached. For example, I took the blue graph for 5 degrees, and the green one for 6, if at 6 degrees the graph is steeper, we leave it for comparison, and remove the next blue one for 7.

For cars with automatic gearbox - get under way, pedal to the floor.

To save graphs to a file, click the "snapshot" button.

To change the value of "RPM convergence" of graphs, change the number in the corresponding window. Turns "convergence" can be set to 2500 or 3000, the graphs are almost the same, and the difference in slope will be visible on the left side of the graphs from the center.

To save the acceleration graphics in the computer's memory, click the "Snapshot" button — the image with the name corresponding to the pressing time will be saved in the Pic folder of the "Variators" folder.

Below is a graph of the acceleration of the car with a 2.0 liter engine.



The black line of the chart, on petrol, is the coolest; it took the least time for the engine to spin up to high revs.

Sigiy schedule on gas 7 oz., Is close to gasoline, but it is clear that after the revolutions of 3500 it is necessary to change the angle settings.

Green graph on gas 0 gr., The smoothest.

Scope.

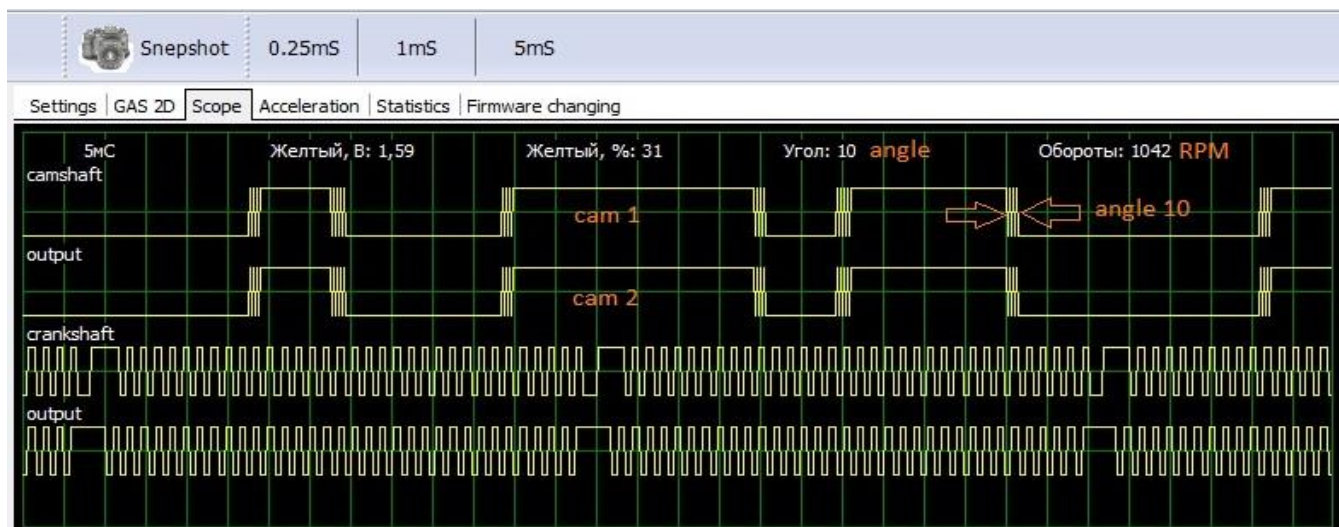
The waveform is used to determine the correct polarity of the connection to the inductive sensor and to determine the type of program.

The oscilloscope captures the signal at the moment the sweep button is pressed: 0.25 or 1 or 5 ms.

The input and output of the crankshaft signals is displayed on separate lines.

The input and output of the camshaft signals are displayed on the same line.

To save a picture in the computer's memory - press the "Snapshot" button - a picture with a name corresponding to the time of pressing will be saved in the Pic folder of the Variators folder.



Signaling:

The LED is inside and is visible from the side of the interface connector.

- The variator LED is on - the variator is in operation, the advance is on.
- The variator LED flashes slowly - the variator is in operation, the advance is turned off.
- Blinks frequently - an input signal error has been detected due to interference or incorrect polarity, or the variator program does not match the vehicle.
- The variator LED does not light - there is no power or the variator is faulty.

Jamper.

In case of problems along the way, disconnect the variator and turn on the dummy plug with jumpers instead.

All new firmware and a list of cars on the manufacturer's website: www.microluch.com