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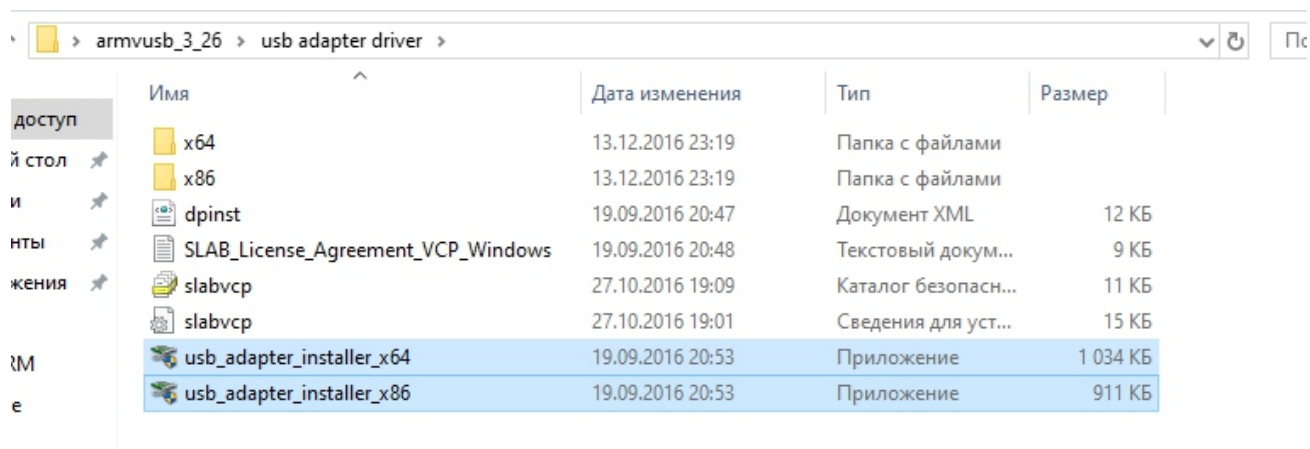
# **Arm-V**

## **usb** adapter

User manual

## Installing software and connecting the **Arm-V usb** adapter

- Install the usb adapter driver in accordance with the bit depth of your operating system. The drivers are located in the program folder :



- Install NET Framework 4 or higher, if it is not already installed on your PC

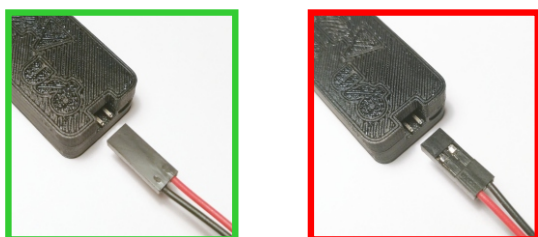
<https://www.microsoft.com/ru-ru/download/details.aspx?id=17851;>

- restart your pc.

ATTENTION: Do not connect the Arm-V usb adapter to a charged drive. Connecting the Arm-V usb adapter to the Arm-V pro in the wrong polarity will cause the Arm-V pro to start shooting (the green LED will light up - a shot), this will not damage it. When the Arm-V usb adapter is connected to Arm-V pro, disconnecting the adapter from the computer or turning off the computer will cause Arm-V pro to start shooting. First unplug the adapter from Arm-V pro.

ATTENTION: When connected to Arm-V ETU and Arm-V Desire in the wrong polarity, there will be a sound indication from your motor.

- connect the wire with the smooth side of the connector to the side with the text Arm-V usb adapter;

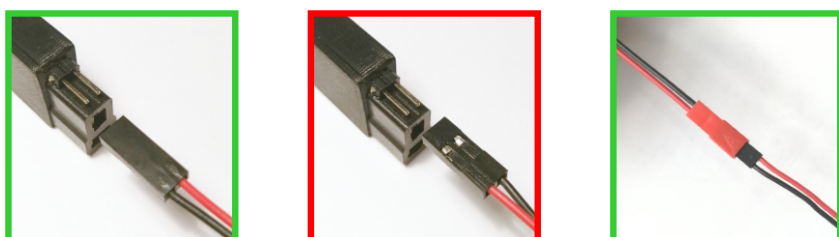


- connect the Arm-V usb adapter to the PC;

- connect the Arm-V pro, Arm-V ETU or Arm-V Desire to the battery;

- for Arm-V pro, connect the wire with the smooth side out;

- for Arm-V ETU and Arm-V Desire, connect the wire with the smooth side to the smooth side of the mating part (side without a protrusion);



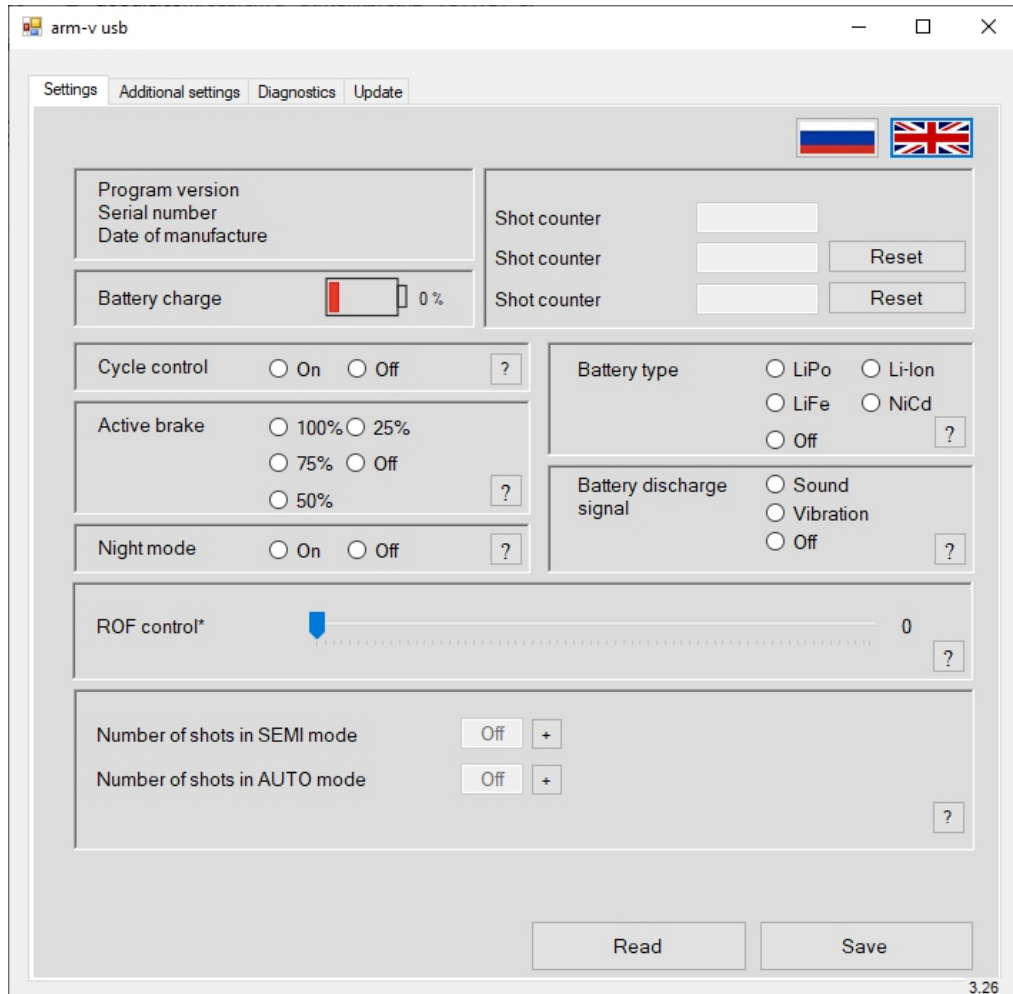
- connect the power cable of the motor to Arm-V pro if necessary;

- run the armvusb program.

# Arm-V

## Settings

When you start the program, the following window will open:



Near each function you will find a button “?”, When clicked, the program will give you a brief help on the operation of this function. After all the settings have been set, click the “Save” button to write them to Arm-V pro, Arm-V ETU or Arm-V Desire.

## Update

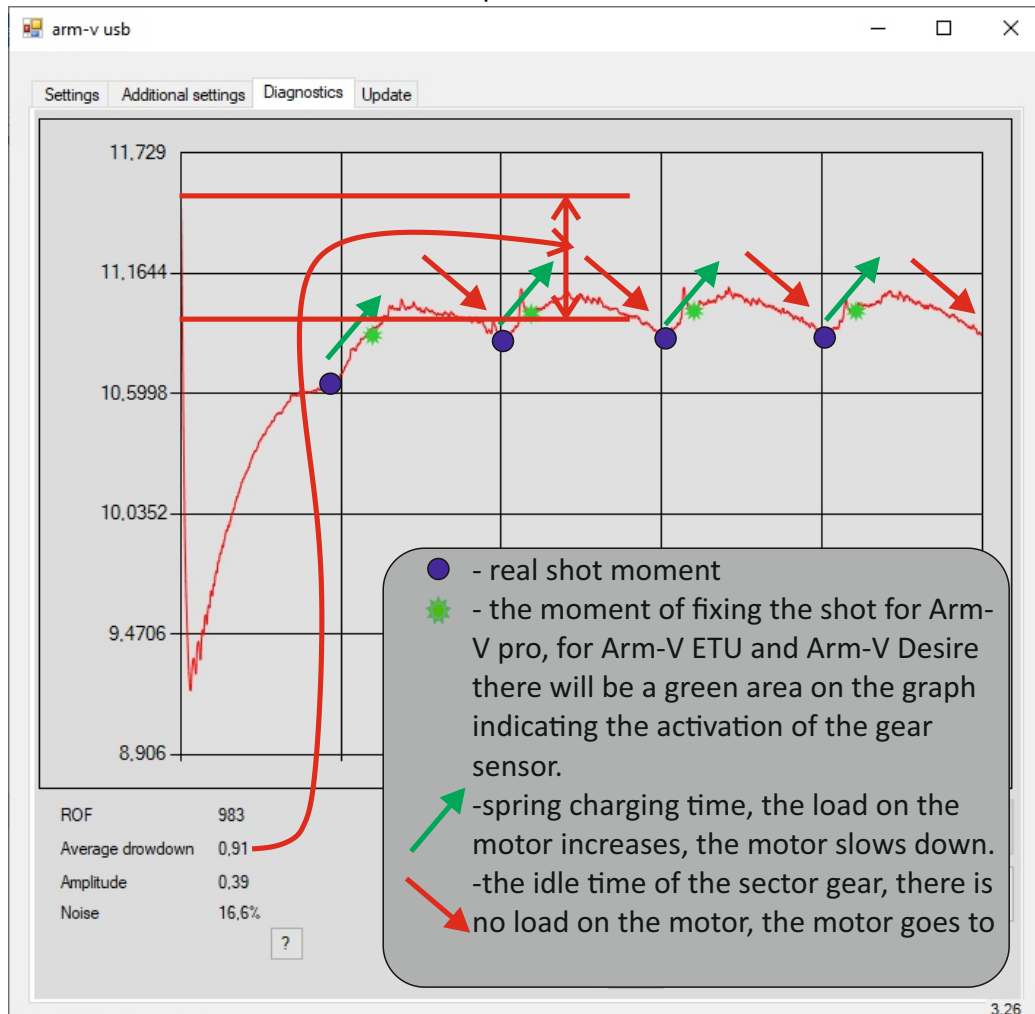
An information window on the availability of firmware updates for your Arm-V pro, Arm-V ETU or Arm-V Desire will appear when the program starts, if it is available in this version of the software for your computer. You can check the relevance of computer software on our website:

<https://arm-v.ru/manual/>

When you click on the button “Switch Arm-V pro, Arm-V ETU or Arm-V Desire to update mode”, the device will switch to update mode, in which all its functionality will be unavailable. To exit this mode you need to update the firmware automatically, load it manually or click on the button to exit the update mode. If you have a failure during the update, reboot the device by disconnecting it from the battery and run the program again. Since the device is in update mode, the program will immediately go to the appropriate tab, where you need to repeat the update process.

## Diagnostics

Arm-V pro, Arm-V ETU or Arm-V Desire let you diagnose your drive. When you click on the “Make test shots” button, the drive will start to shoot and a few seconds after it stops, a schedule will appear in the program by which you can evaluate the condition of the internal parts of the drive.



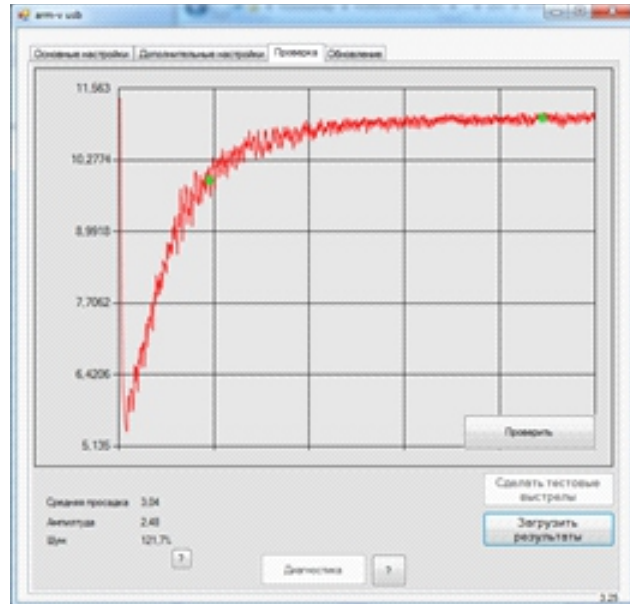
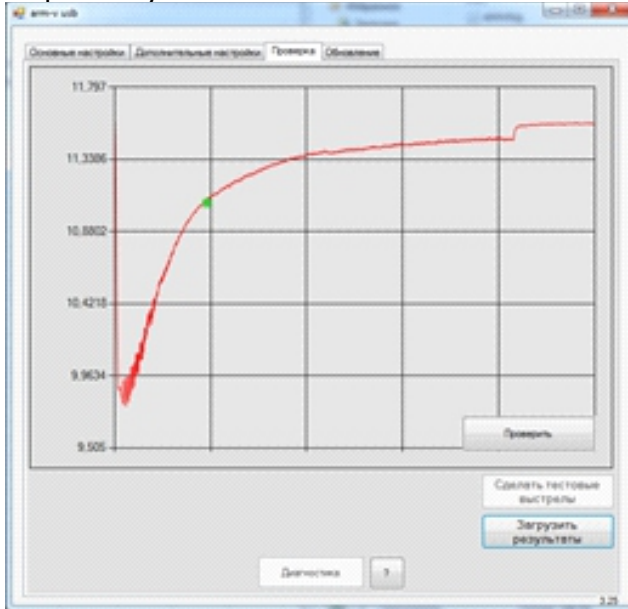
First of all, we analyze the average drawdown. With a large current consumption (load), voltage is drawn on the battery. That is what we see on the chart. The battery has a current output, to calculate it you need to multiply the battery capacity by the current recovery coefficient (usually it is about 20C, if you have 2 values through a hyphen, you need to take the first one). For example, 1500mah \* 20C = 30A. The average engine consumption is shown in the table:

Average motor consumption			
	Torque up	basic	High speed
7.4V	20A-30A	30A-40A	40A -50A
11.1V	30A-40A	40A-50A	60+A

Under normal load on the battery, the average drawdown should not exceed 2V. If you have an average drawdown of more than 2V, this means that the battery is operating in overload mode. Further analysis of noise (uneven rotation of the motor) does not make sense, since in overload mode, all noise increases significantly and distorts the actual picture. The battery will heat up, swell, and with average drawdown values of about 5V there is a serious risk of fire. battery.

The following reasons are possible for a large value of the average drawdown:

- 1 - Wrong battery selected. Calculate the current output of your battery and compare it with the average value for your motor.
- 2 - The battery has lost its capacity and its current output has decreased or it does not initially meet the declared characteristics. Repeat the test on a different battery.
- 3 - The motor is out of order. Check the idle motor - noise is allowed at the very beginning, but when the schedule goes straight it should be almost smooth. An example of a graph of a working and faulty motor, respectively.

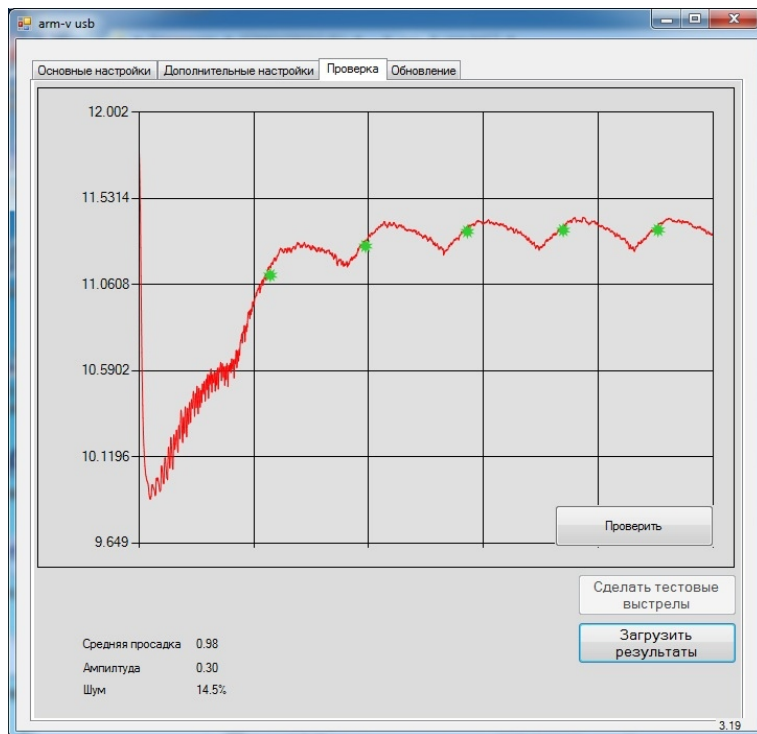


- 4 - Gears are pinched. Remove the piston and cylinder, assemble the gearbox, and tighten all screws. Try to rotate the gears through the cylinder window. They must rotate freely.

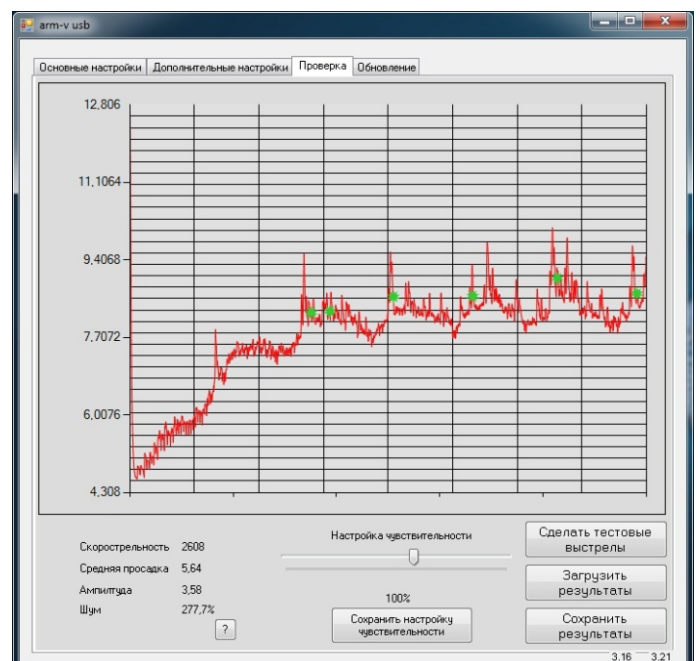
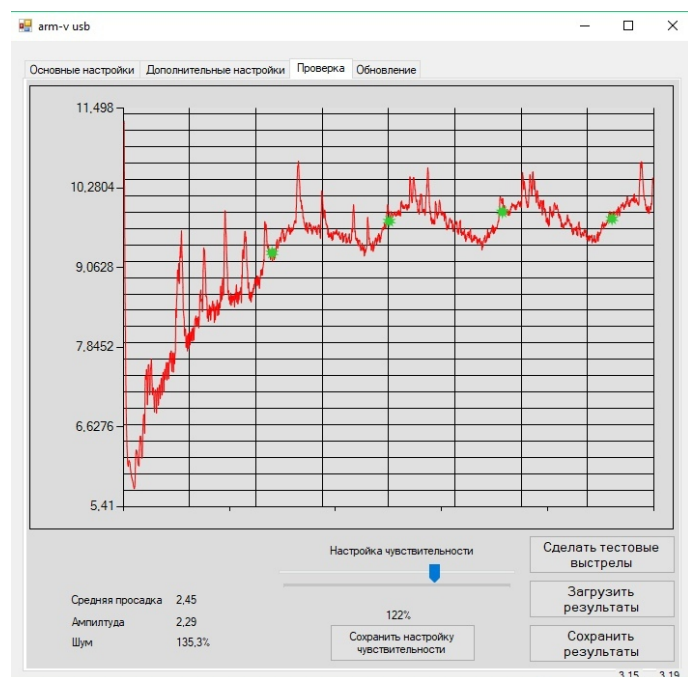
#### Shimming (noise)

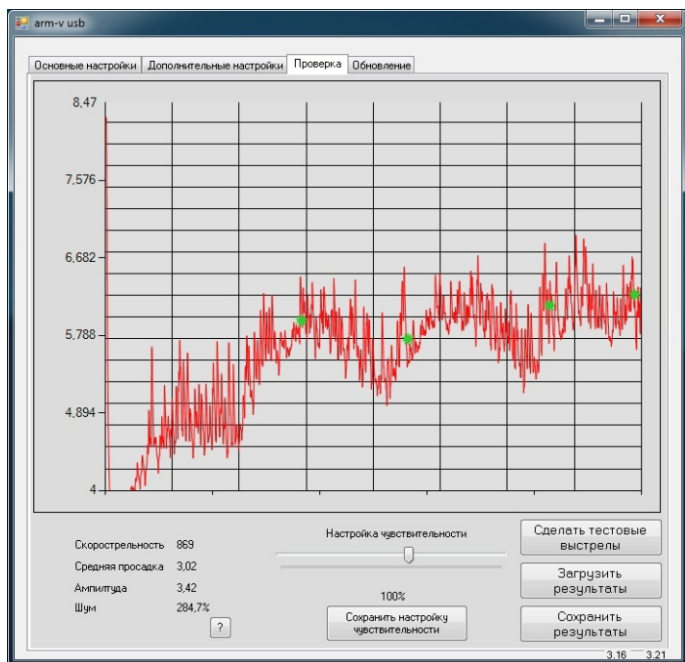
Gears should rotate evenly under load. If the gears rotate unevenly, then the force on the motor will constantly change, and this will be visible on the graph of the battery voltage. The program will display the calculated noise figures in% of the permissible norm. Those. if the noise indicators are up to 100% - then it can be used, if the indicators are more than 100% - then the probability of breakdown of the internal parts of the gearbox is high.

An example of a graph of a well-assembled drive. Power motor, battery 11.1 at 2500mah 25C, gears 100: 200 and spring SP140. On the graph we see that the drawdown of 0.98V is much less than the norm in 2V, the noise is only 14.5% and there are no surges on the graph.



If the noise and average drawdown are much higher than normal, then the graphs will look like this:





- To understand the reason for the big noise or characteristic bursts of the same type, use the following logic:
- problems in a pair of piston and sector gear will be only at the time of spring charging, so they do not affect idle time.
  - the motor pinion and the motor gear rotate the fastest, thus a pinched motor or improper shimming of the motor gear will cause noise with a high frequency, and noise with a low frequency will cause the central and sector gears.
  - the wrong sector gear for 2-3 tooth piston gives a characteristic surge on the graph at the time of idling to the spring cock.