

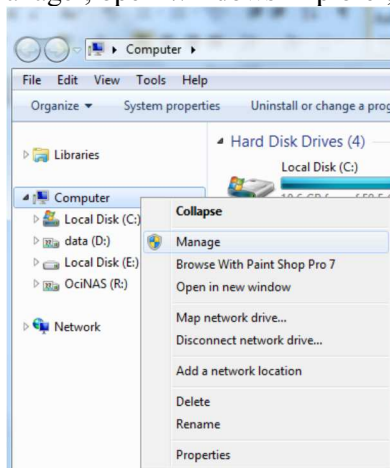
# Fundamentals of Microprocessor Electronics

## Programming MISKO using AVRDUDESS

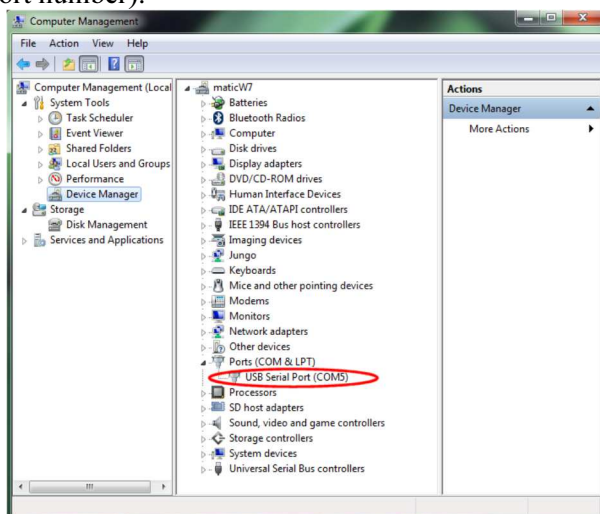
### Connecting MISKO

To connect MISKO to the PC use a standard USB-AB cable. MISKO communicates with the PC using the FT232 integrated circuit, which creates a virtual COM port on the PC. During the first connection the appropriate drivers are installed on the PC (automatically if internet connection is available). If the drivers are not loaded automatically, they can be found on the FTDI web page: <http://www.ftdichip.com/Drivers/VCP.htm>.

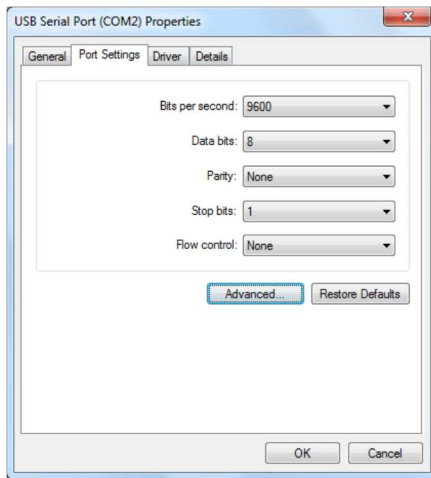
In order to be able to program MISKO we need to know on which COM port the MISKO is connected. The COM port number can be determined using the Device Manager. To open the device manager, open Windows Explorer, right click “Computer” and select “Manage in the pop-up menu.



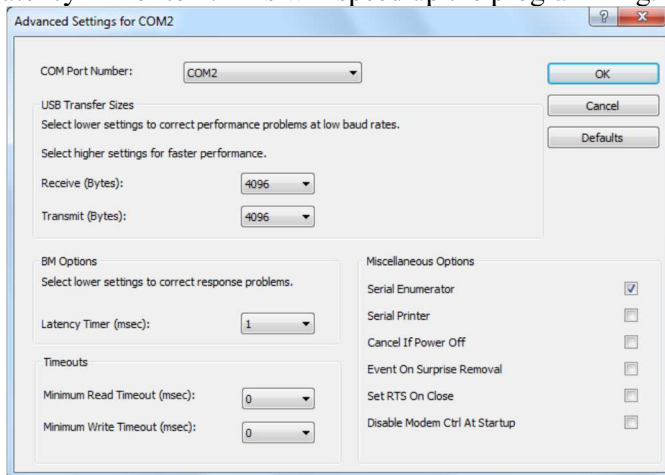
In the list on the left side click on the Device manager. In the Device manager expand the category “Ports (COM & LPT)”. MISKO will appear as “USB Serial Port (COMx)” (x is the designated COM port number).



Programming speed can be increased by changing the default virtual USB port settings. Double-click the “USB Serial Port (COMx)”. In the window that appears select “Port Settings” tab and click “Advanced...”.

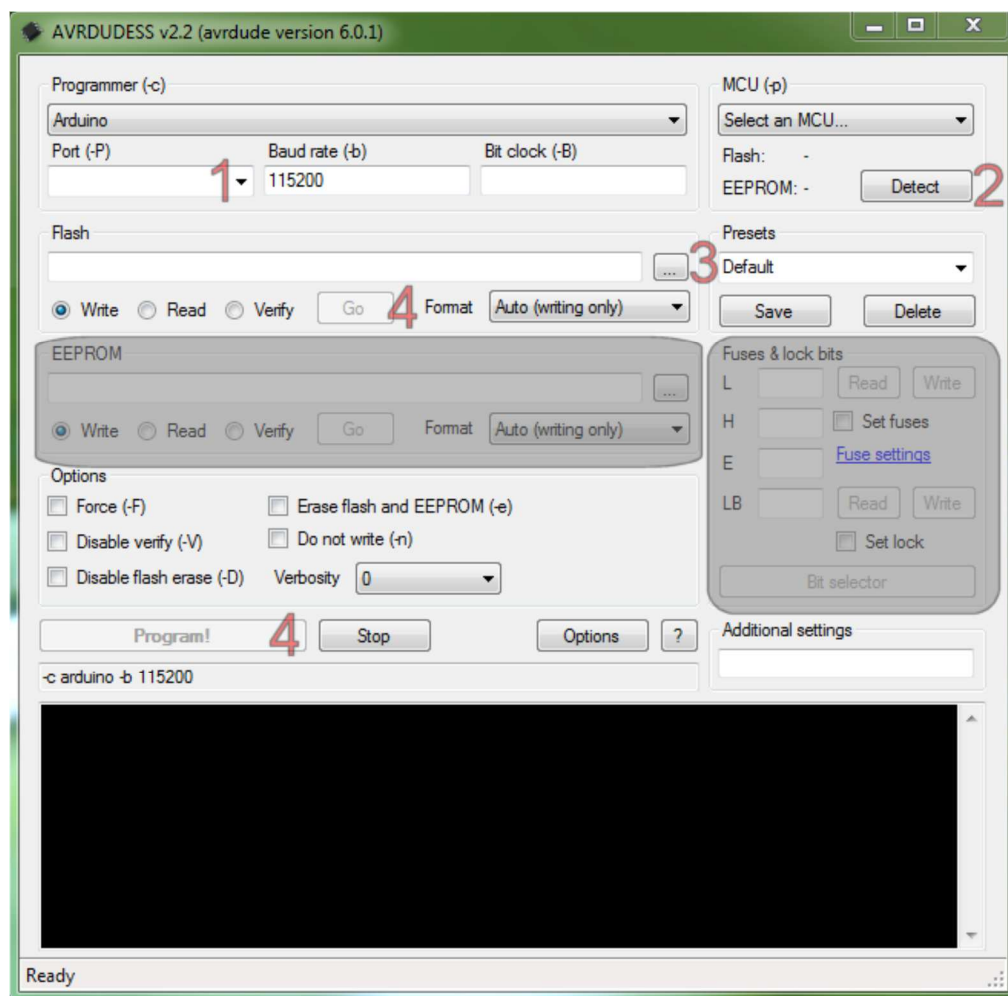


Here you can change the COM port number if you so desire and “Latency Timer (msec)”. Set Latency Timer to 1. This will speed up the programming.



After we finish changing the settings we close all the windows. Sometimes it is necessary to unplug and re-plug MINKO after the settings have been changed.

## AVRDUDESS



In the picture above the functions unsupported by MISO's bootloader are covered by grey rectangles. Numbers 1 to 4 mark necessary steps to program the MISO.

Programmer type and Baud rate are already set to the correct values "Arduino" and "115200" in the version that is available on our web page.

Step 1: Select the COM port number of MISO.

Step 2: Click "Detect". If ATmega324A or ATmega324PA is detected, bootloader works.

Step 3: Select the .hex file you wish to program.

Step 4: Click "GO" or "Program!"

Results of all actions are displayed in the black window at the bottom of the program window.

Program AVRDUDESS is a graphical user interface for the command line program AVRDUDE. In the field just above the black window a line of parameters for AVRDUDE is displayed according to the settings we have selected. This line can be used if we need to run AVRDUDE manually.