

yobuddy
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AMC 1.5~EZ - Programming Guide

All Credit Goes to Igor Fermevc
This is a re-edit of Igor Fermevc manual

X-Sim is a Free Motion Simulator Software Written By Martin Wiedenbauer

Atmel micro-controller needs to be programmed (FLASHED) before the AMC board will serve its purpose. There are many different ways of transferring the program code into the micro-controller (MC) but we will use "PonyProg" software. In order to use this software, you need to download it from http://downloads.sourceforge.net/ponyprog/PonyProg_V207c.zip (version for Windows!).

After succesfull instalation of programming SW, you will need a SERIAL COMMUNICATION PORT on your PC. If you have an older generation PC, this port is found on the back side of PC case (see fig.1). On newer PCs, there's a chance that you wont have integrated communication port, and you must use USB to SERIAL adapter (see fig.2).

fig.1

classic serial port (DB9 male)



fig.2



If you need USB to SERIAL converter shown in fig. 2, it is recomended to use one that is based on "FTDI chip" (this chip is inside, so you probably wont be able to see it, but check for it on the product package or in product specifaion found online.



It is highly recomended **not to** use "Prolific chip" type of adapters, or very cheap ones from unknown manufacturers! These adapters are not working properly with PonyProg SW!

In some cases, a serial port connector can be found somewhere on the motherboard. It is a classic serial port, but you need to plug extension cable with metal bracket and mount it on PCs rear panel (see fig.3). Check your motherboard manual before opening the PC case.

fig.3



Before going further, we need to check the settings for serial port (COM port) on our PC.
Using "Hardware or Device Manager" search for "Ports" and highlight the one you want to use (if more than one). Right click on it and choose "Properties". Use the fig. 4 and match your settings as shown.

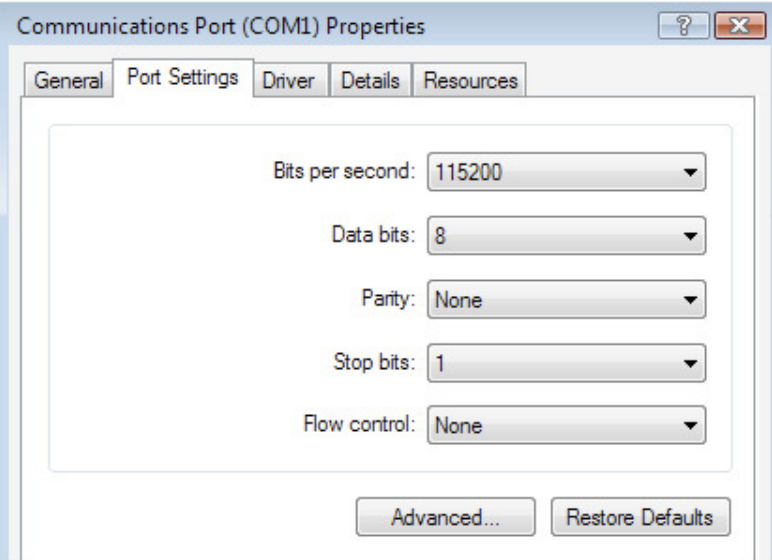


fig. 4

All MS Windows have similar COM port settings page. You need to set only the basic parameters, there's no need to go into advanced settings. Just select the proper COM port number if you have more than one.

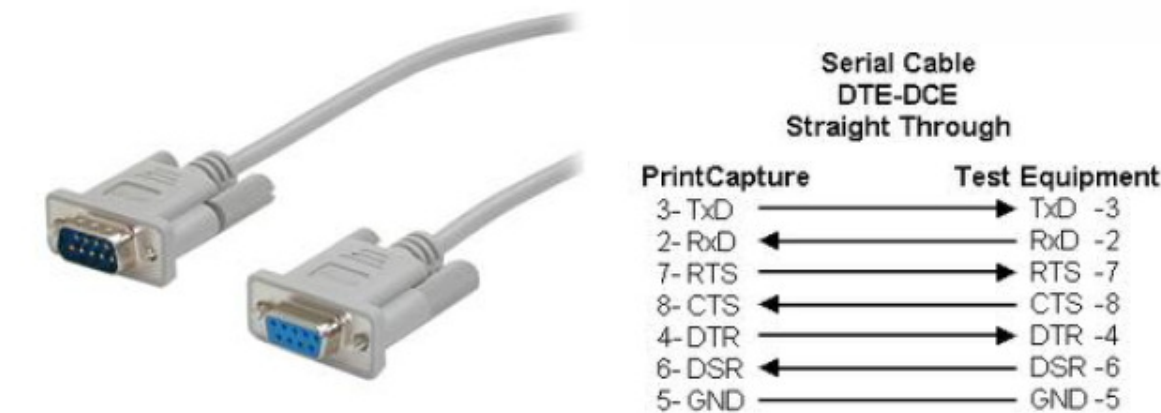
If you have a PCI modem card installed you should see COM3 in your list - don't use this!


If you need to use USB to SERIAL adapter, it will probably be shown as COM4, COM5, ...

Remeber this COM number! You'll need to set it in PonyProg later!

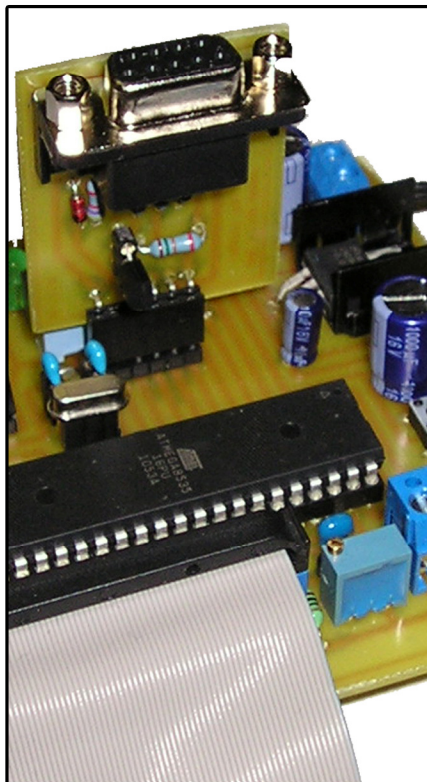
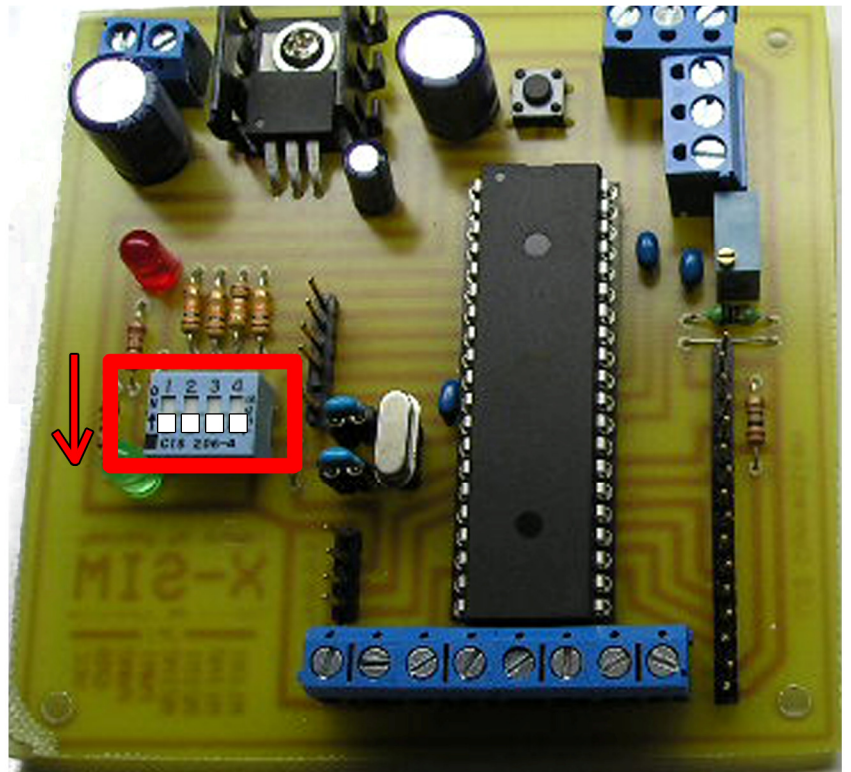
The last hardware part you'll need to perform the programming is the serial cable. This cable is called STRAIGHT SERIAL CABLE or SERIAL EXTENSION CABLE (see fig. 5 for detailes).

fig.5



 Notice one male, and one female connector!
Male connector goes to AMC, and female connectors goes to PC running PonyProg SW!

Set all of the
Switch Settings to
the OFF position
in order to flash
the AMC 1.5~EZ



Plug in your
Programmer~EZ into
the programming
header on your AMC
1.5~EZ

Top of the programmer
faces the ATMEGA
chip!

PonyProg2000

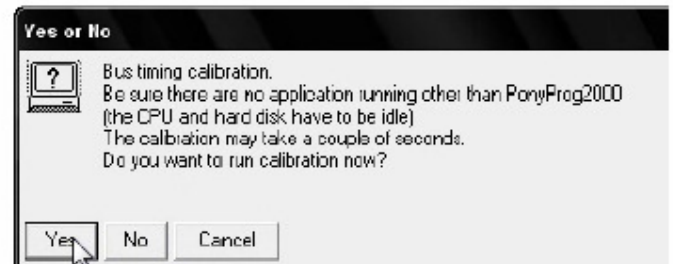
Assuming you have managed to setup the "Pony" application, start it and click OK in the welcome screen.



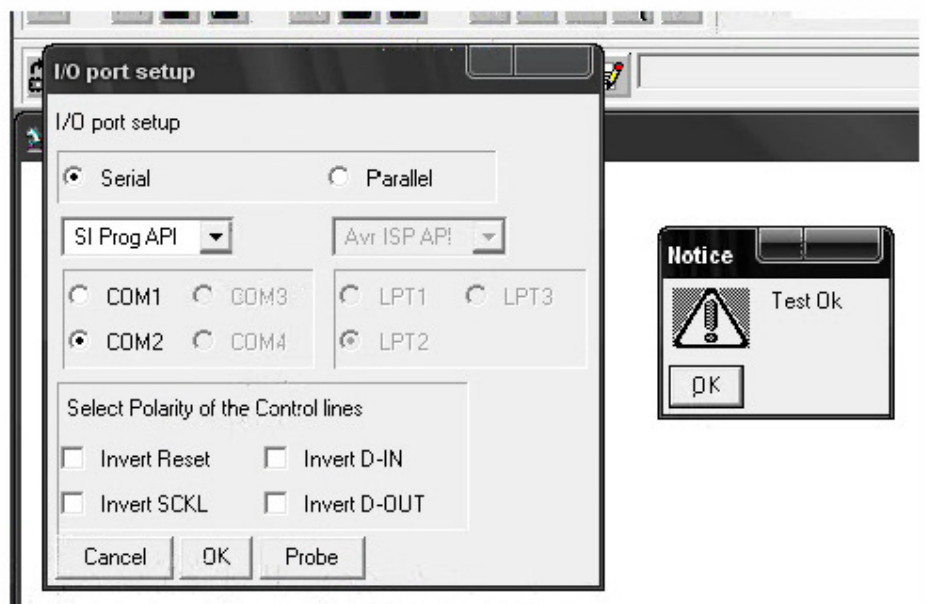
In the menu bar, click on **SETUP**, then **CALIBRATION**.



In the popup window click **YES**. After a couple of seconds, you should see **Calibration OK** notice window. Click **OK** and proceed to next step.

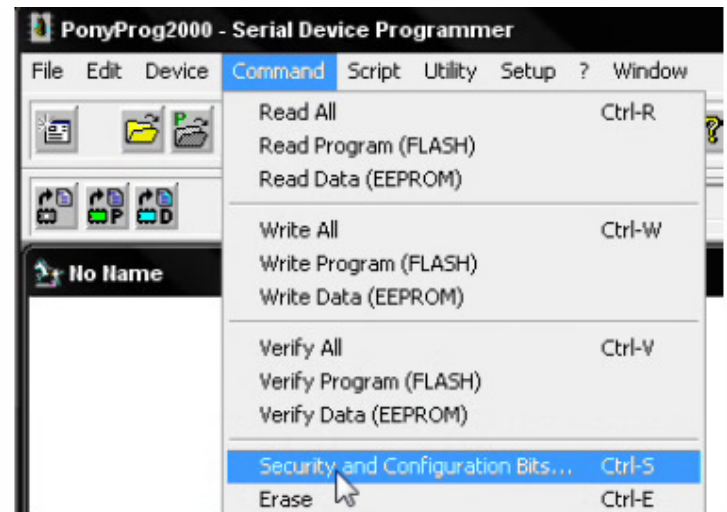


Click on **SETUP**, then **INTERFACE SETUP**, select "SI PROG API" radio button, and choose the COM port number that you are using. Click on **PROBE** and after a couple of seconds, you should see **TEST OK** notice window. Close the setup window by clicking **OK**.



Click on **COMMAND** in the menu bar, and then **SECURITY & CONFIGURATION BITS**, and click **READ**. Settings are read from AMC. You will see the window with factory default bits checked.

Without going into details about these bits, just follow the next step.



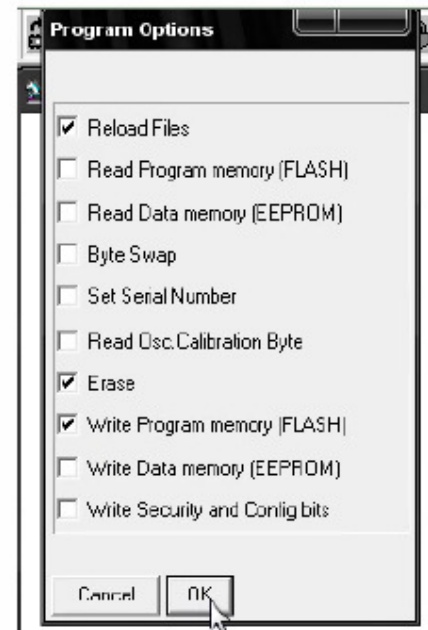
You will need to set the bits (fuses) in proper way, so match the selection of checkboxes as shown on the picture:

Click on **WRITE**, wait for process to finish, and click on **READ** to confirm the results. Click **OK** to close configuration window.



Click on **COMMAND** menu item and choose **PROGRAMM OPTIONS**.

Match the settings as shown in the picture and click **OK**.



In **FILE** menu item chose **OPEN PROGRAMM (FLASH) FILE...**



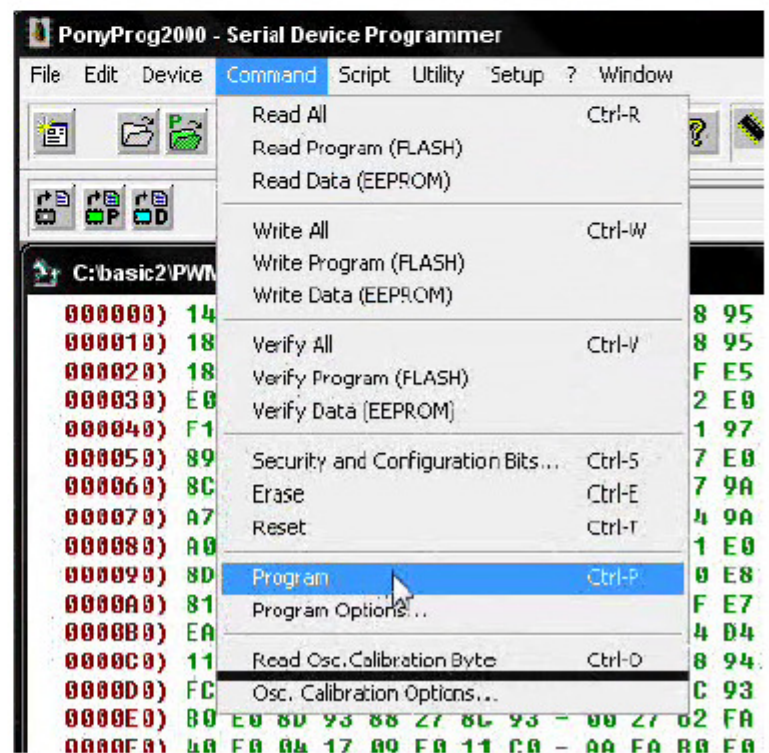
Browse for the firmware file **PWM_AMC15_2DOF_V1_CRYSTAL**.HEX** and select it, than click **OPEN**.

File will be loaded and you can see "raw" FW data. Click on **COMMAND** than chose **PROGRAMM**.

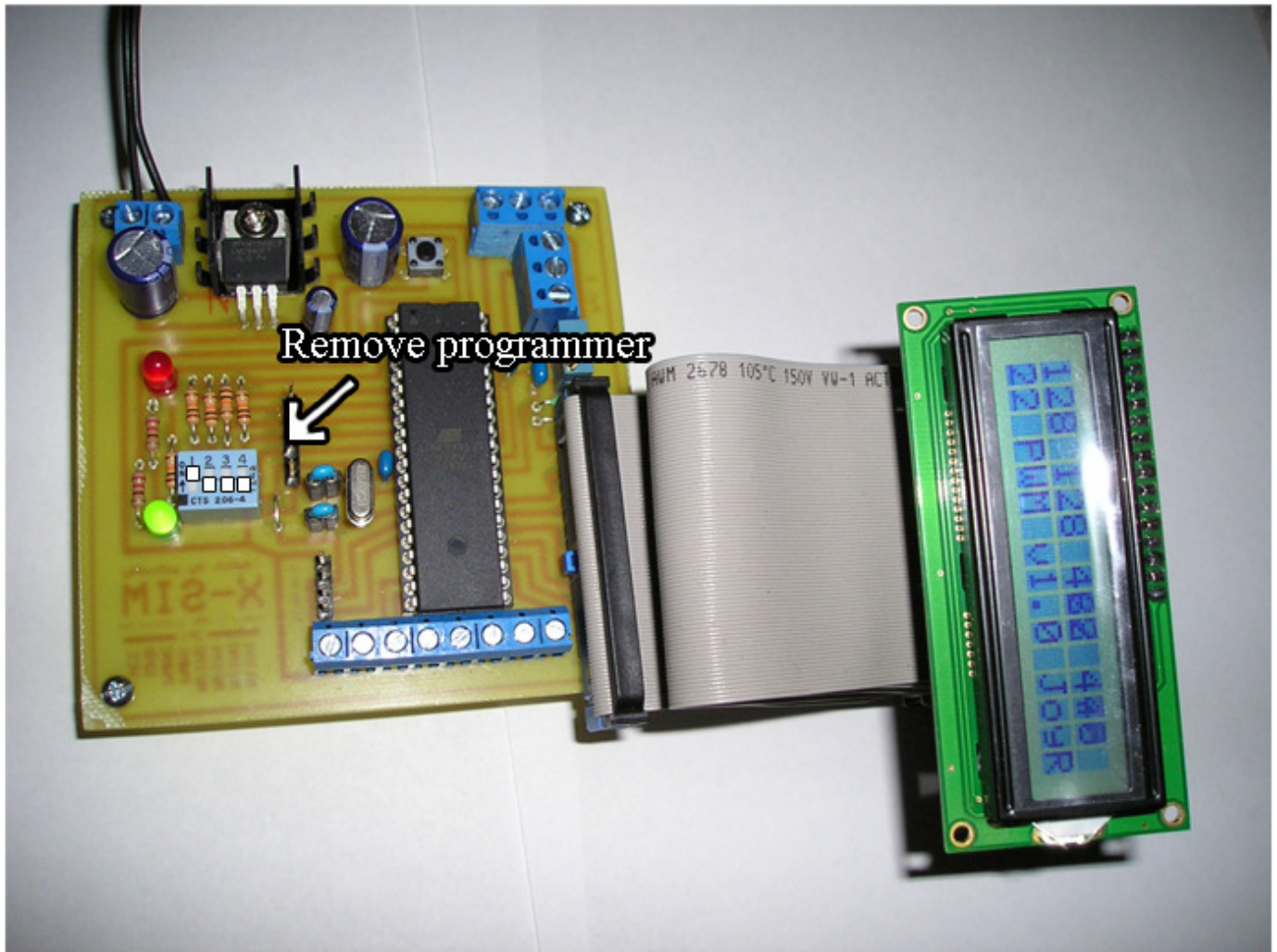
You'll see a window with information related to erasing , writing and verifying the data. Durring this process, RED LED on AMC board will be ON.

When the process is finished, you'll see "Program succesfull" message box, and AMC LCD should show the info about the firmware version. CLick OK to continue.

To be sure that flashing process is done properly, you can do the "read" proceure again.



As soon as the "program" (WRITE) procedure finishes, the red LED will go OFF, and you should see the starting of AMC program code, and finally there should be a FW version visible.



Now you should remove the Programmer , and turn ON dip switch 1, to be able to see tha status data.

You can press the "reset" switch to test the AMC starting procedure.

If you can see status data, and other information on LCD, you can proceed with connections for feedback potentiometers.

Programming Completed!