How to upgrade Marlin Firmware on Artillery Hornet Printer.

1) Download Marlin Firmware for Hornet from my github https://github.com/mjrama/Marlin

1.1) If you find any bug or issue that is not present in the stock firmware, please open an issue on the github so I can try to figure out why it is happening

2) Download and install VSCode

2.1) Install plataformio and Marlin Auto Build plugins

2.2) For this steps please follow the instrucctions located here https://marlinfw.org/docs/basics/install_platformio_vscode.html

2.3) If you are able to build Marlin following those steps, you are 1 step ahead to Succeed!!!

3) Download and install STM32CubeProgrammer (https://www.st.com/en/development-tools/stm32cubeprog.html)

3.1) This program will be used to upload the firmware to the printer, we will use DFU mode for that.

3.2) Plataformio has dfu-util that in theory should work to upload the firmware to the printer, but I wasn't able to make it work. STM32CubeProgrammer is the official software from ST to upload data to STM32 microcontrollers (artillery ruby board has an STM32F401 microcontroller)

4) Disconnect your Printer from Mains voltage, **you will not need to connect it to Mains until the end of this tutorial, power to the board will be through the USB port**. Open the back of your printer

4.1) You will need 1 Phillips #2 screwdriver and your hands

4.2) Remove the 3 screws located on the bottom of the printer

Photo taken from https://www.cnckitchen.com/blog/artillery-hornet-3d-printer-first-look

4.3) Using your hands carefully remove the cover

4.4) Inside you will find the Artillery Ruby board

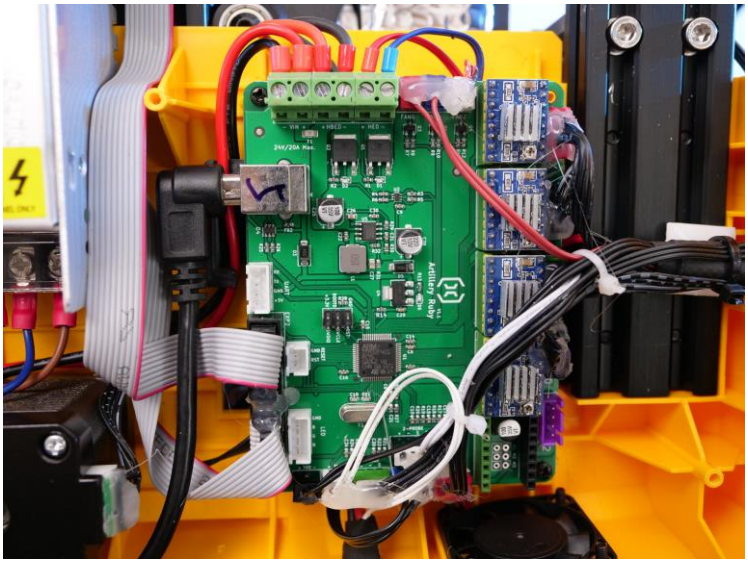


Photo taken from https://www.cnckitchen.com/blog/artillery-hornet-3d-printer-first-look

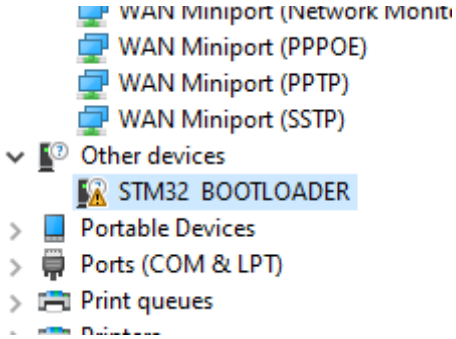
4.5) In the board you will find a 2x3 pin header, and in that header 2 pins labeled “BOOT0” and “3.3V”

4.6) To enter DFU mode you will have to connect those 2 pins, you could do this via a jumper or connect those 2 pins to a switch.

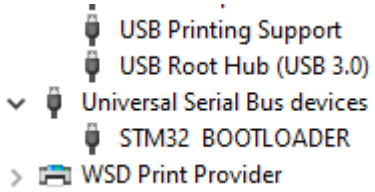
4.6.1) If you use the switch option (It is what I recommend), you can route it to the back of the printer (or anywhere you want) and close the case. Using the switch you can enter DFU mode whenever you want, without opening the printer again.

4.7) With “BOOT0” and “3.3V” connected, you can now connect your printer to your computer via the USB port on the side of the printer. If everithing worked ok, the LCD on the print will show nothing (or it will freeze, both are OK)

4.7.1) If you are using Windows and you see this under device manager, **please go to step 5.**



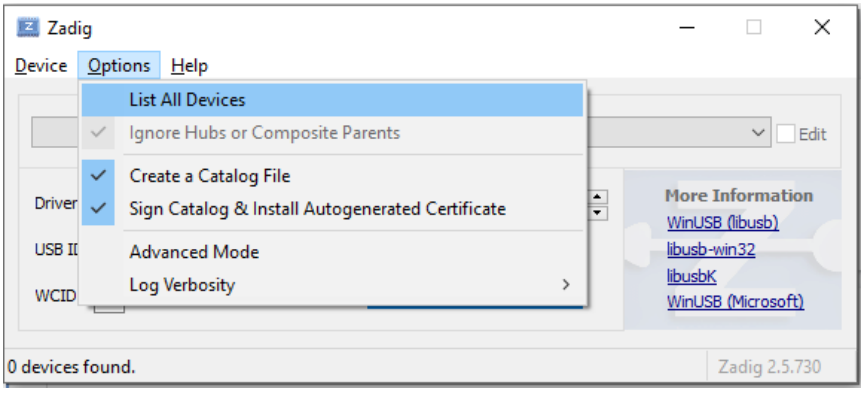
4.7.2) If you are using Windows and you see this under device manager, **you can go directly to step 6.**



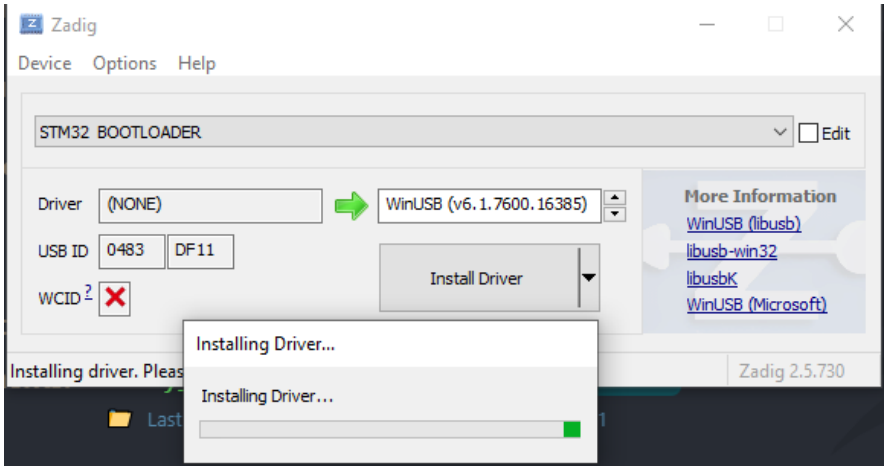
5) Fixing the unknow device in device manager

5.1) Download Zadig’s USB driver software from here https://zadig.akeo.ie/

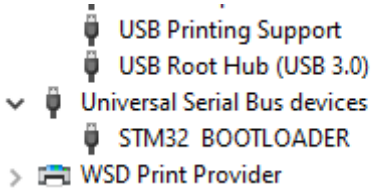
5.2) Open the downloaded software and under options tab press “List all Devices”



5.3) You should be able to find “STM32 BOOTLOADER” in the list now. Select it, and install the WinUSB driver (This will take some minutes)

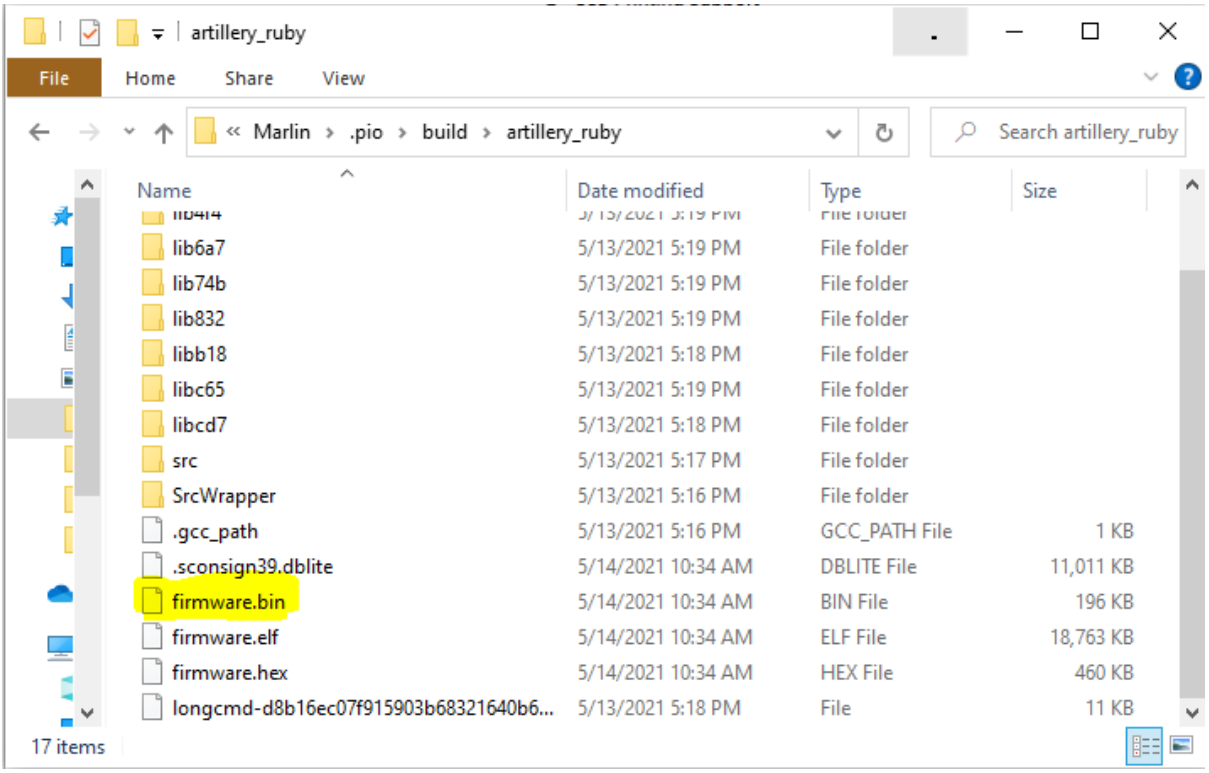


5.4) Now, under device manager, you should see this:



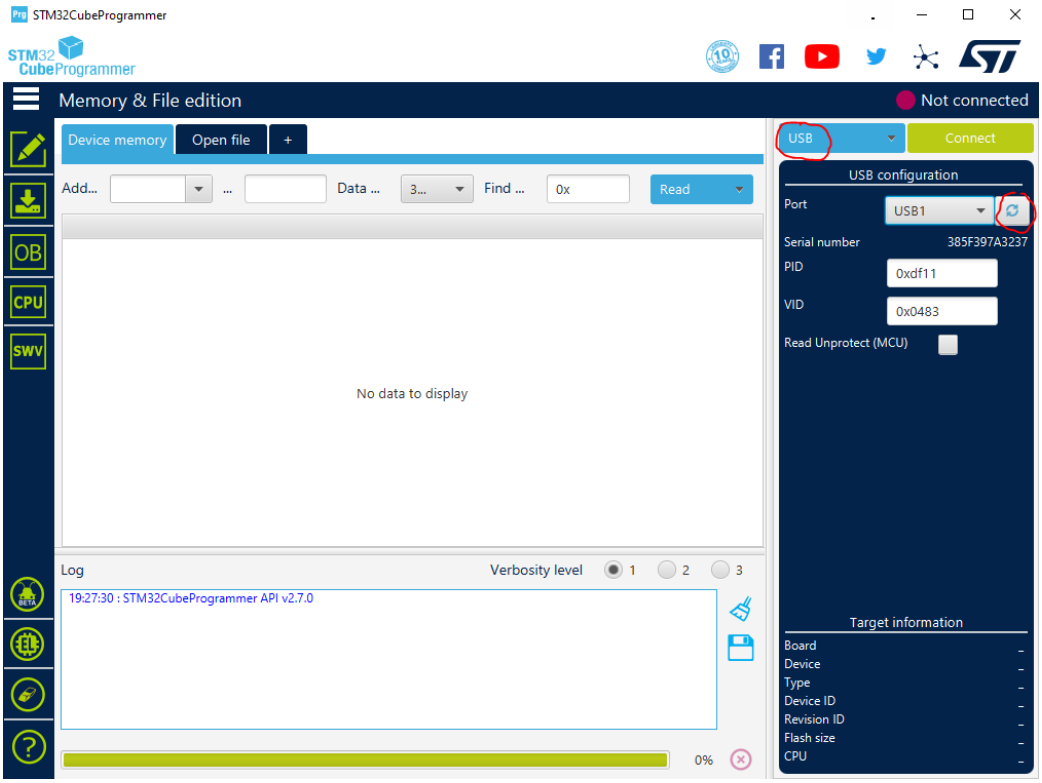
6) Now we are ready to upload the firmware to the printer!

6.1) If you already compiled Marlin firmware you will find the binary file that we need to upload under <path_to_your_Marlin_installation>\Marlin\.pio\build\artillery_ruby if not, go ahead and compile it

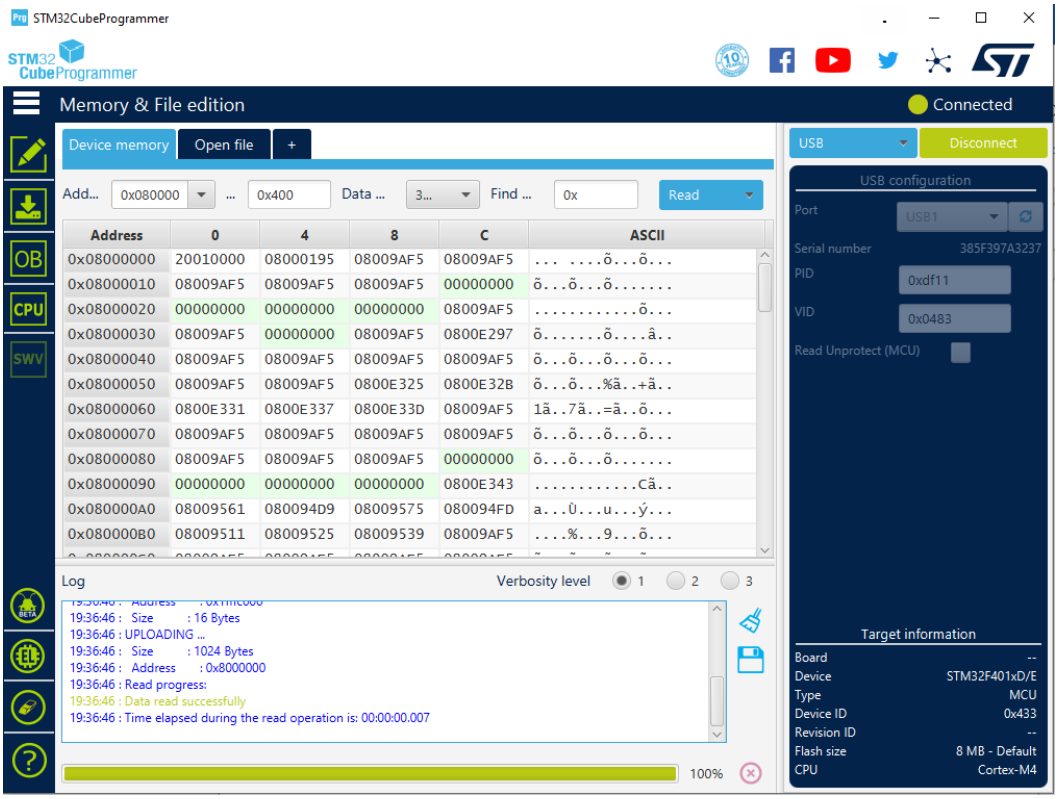


6.2) Open STM32CubeProgrammer

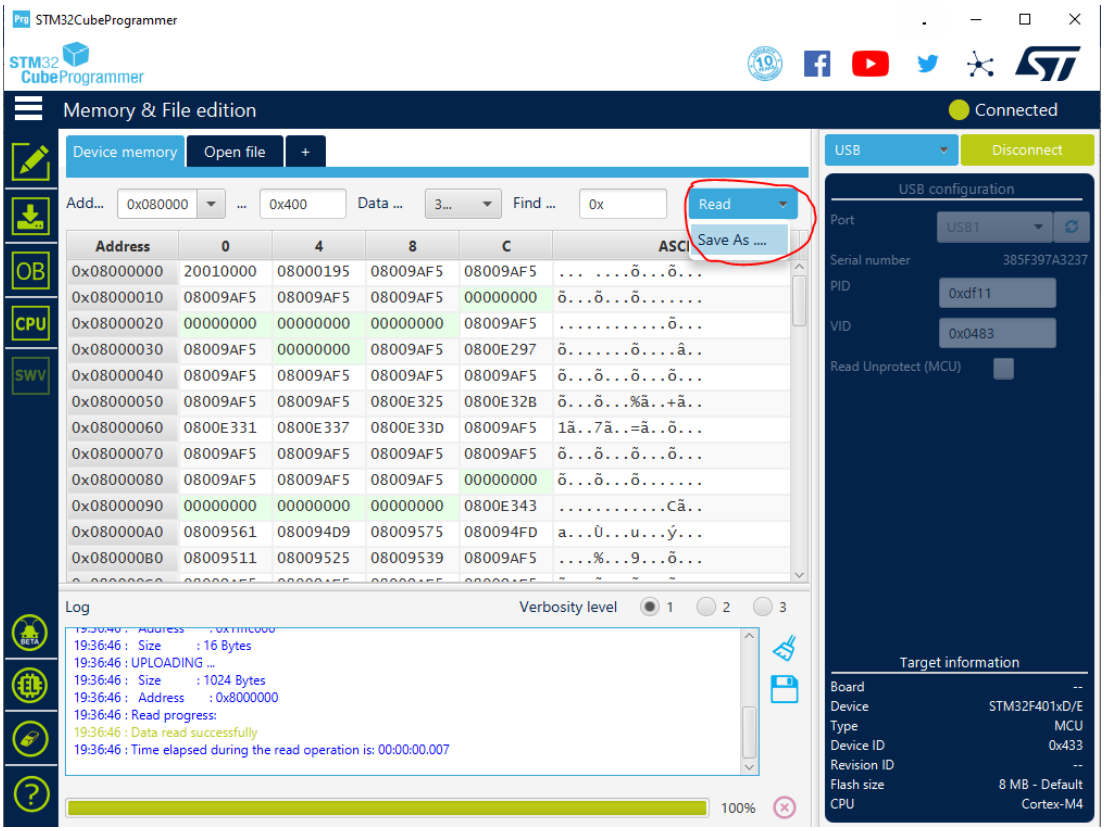
6.3) On the right side of the software you have to select USB and then press the refresh button, if everything is OK you should see something like this



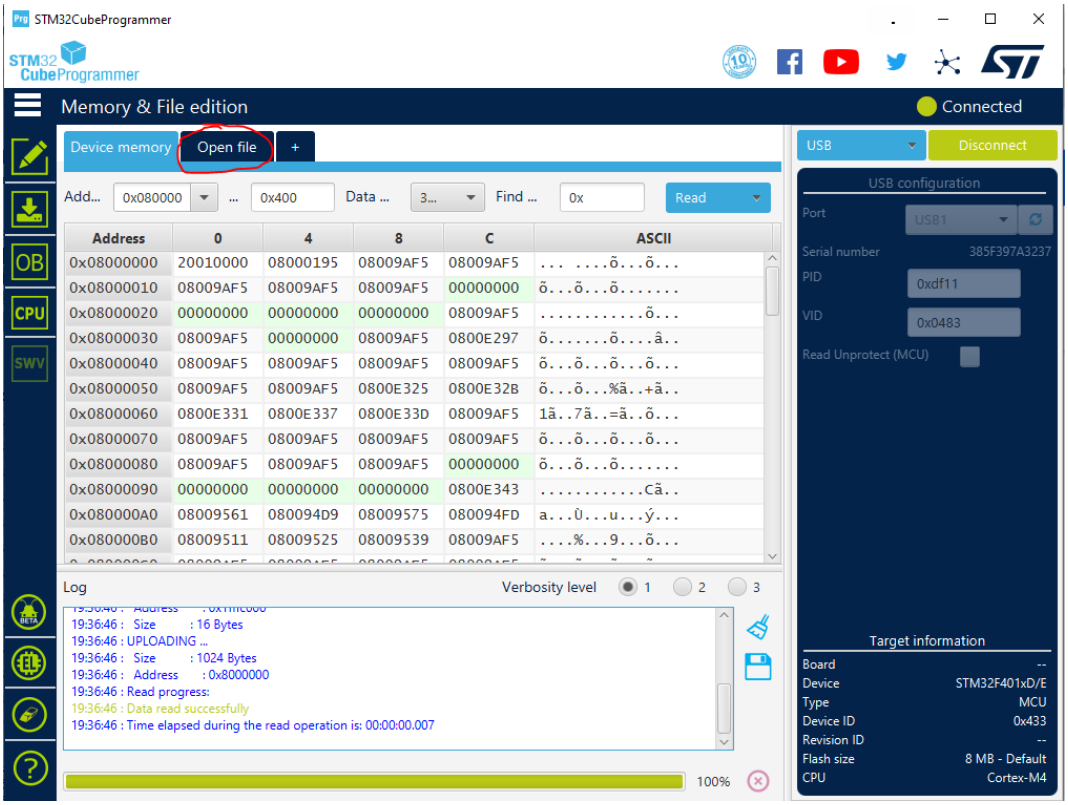
6.4) Now press the connect button, it will read the memory of your microcontroller, you will see something like this (your code will note be the same as mine, because I already change it)



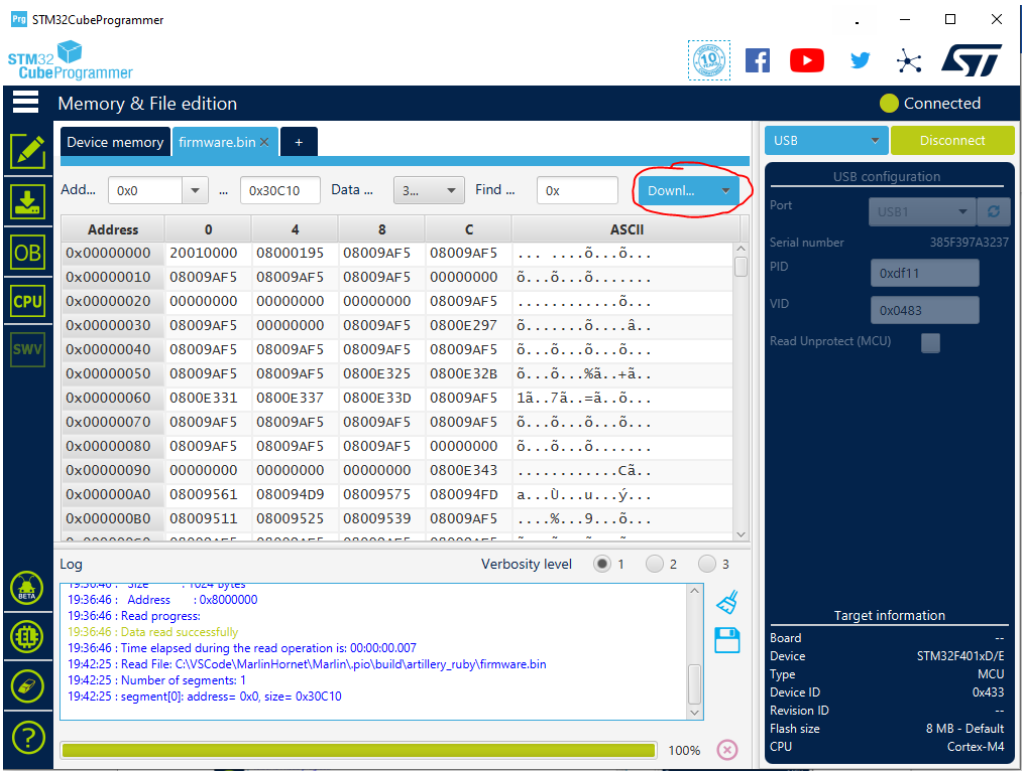
6.4.1) Press the down arrow next to “Read” and press “Save as” this will save a binary file of your stock configuration if you want to go back.



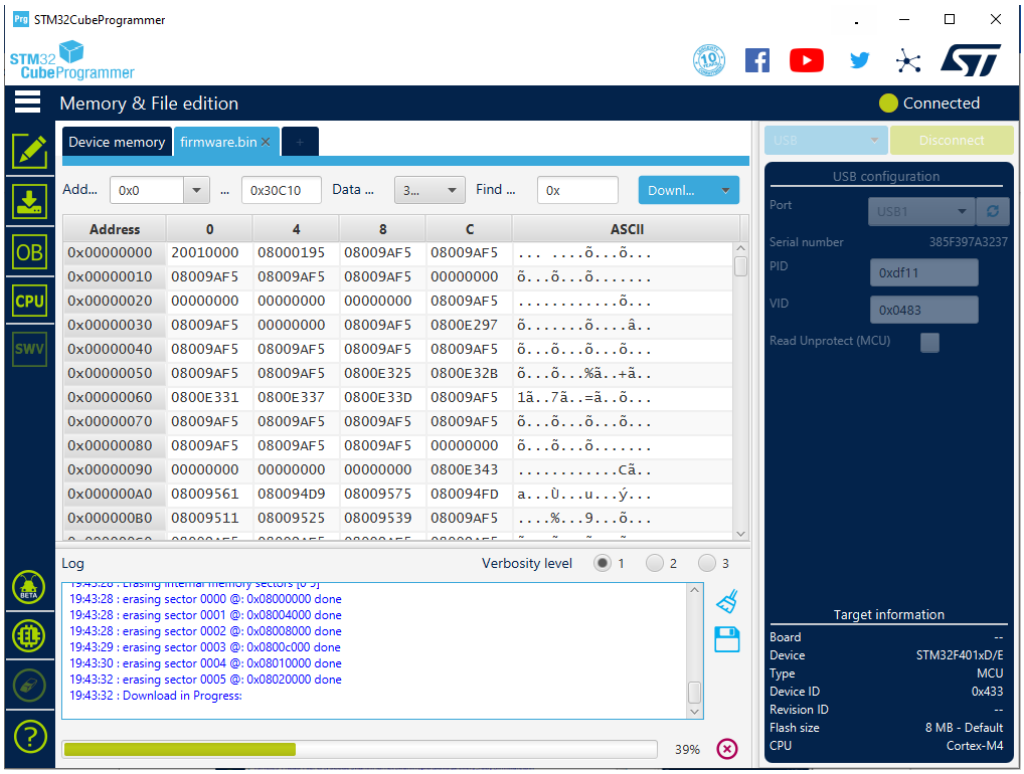
6.5) Now press “Open file” and select your binary file

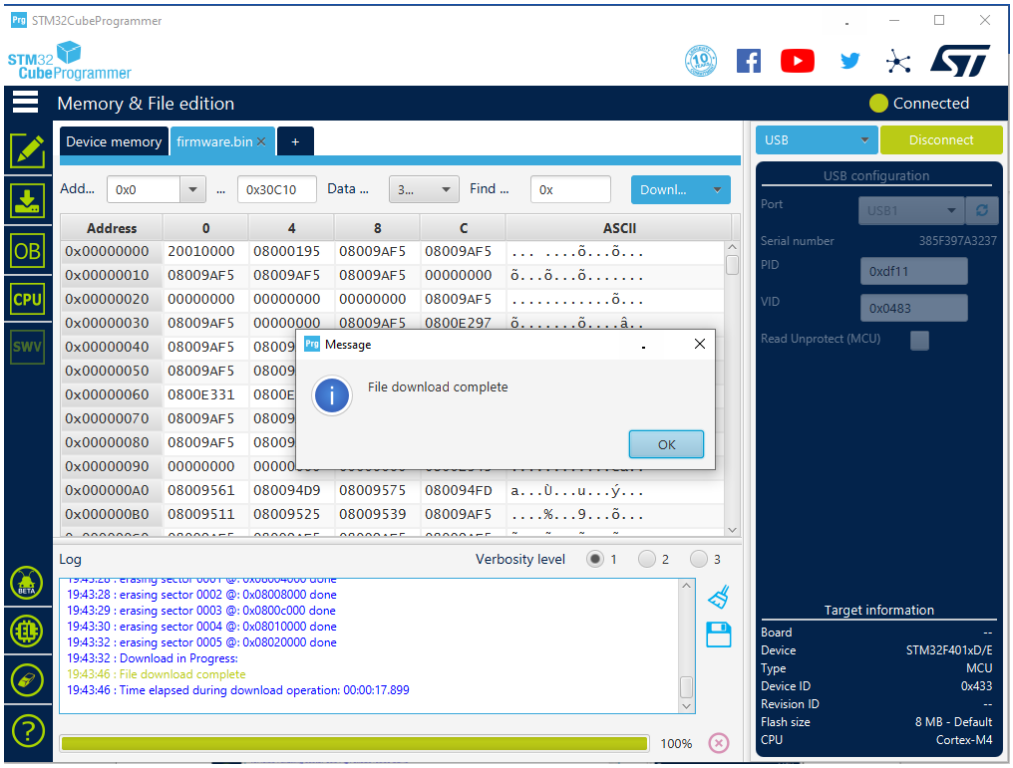


6.6) Now press the “Download” button



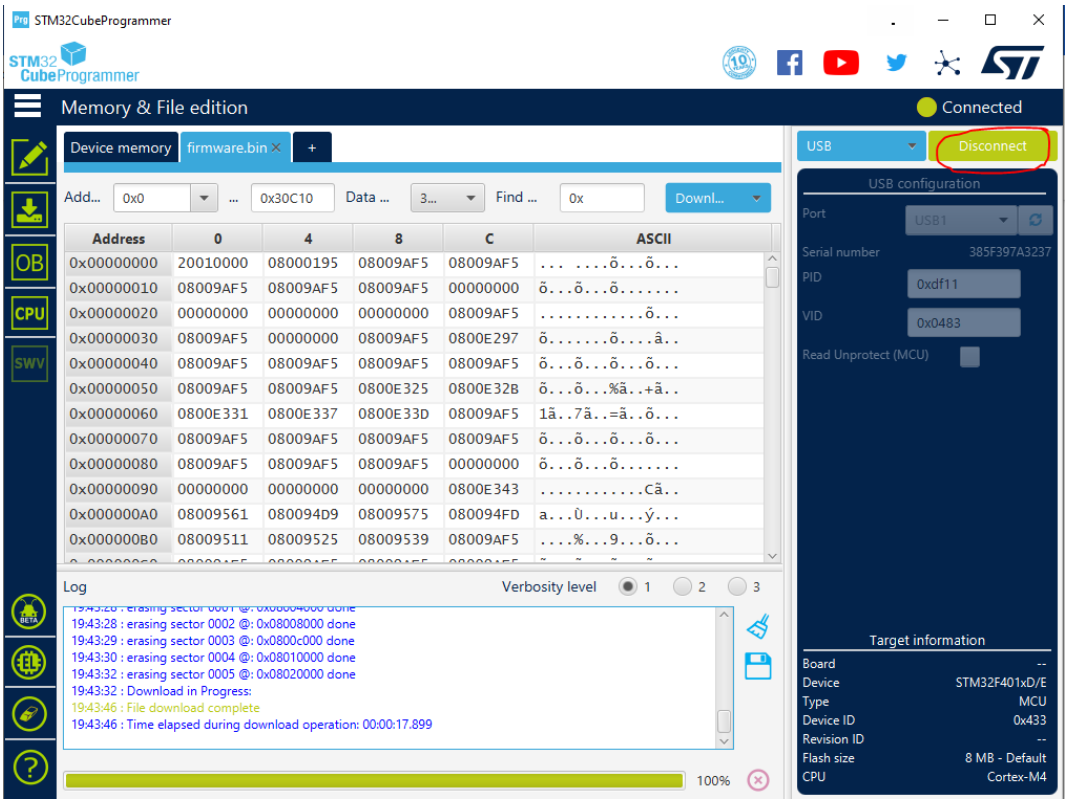
6.7) If everything is OK it will start to change your firmware





6.8) Congratulations, now you have your board with the new Firmware!!!

6.9) Disconnect your printer from the software



6.10) Unplug your USB cable

6.11) Disconnect the “BOOT0” from the “3.3V” pin

6.12) Connect your printer to Mains, turn it ON and Happy Printing!!