Appendix 1: Maqueen Plus Firmware Burning Tutorial - MakeCode

This tutorial is a guide for users to update Maqueen Plus firmware. If your Maqueen Plus still is in warranty, you can also send it to DFRobot for a free update. Please contact our customer service team for more details.

Check Firmware Version

1. Load Maqueen Plus library to MakeCode:
https://github.com/DFRobot/pxt-DFRobot-Maqueenplus

2. Check version information using micro:bit.
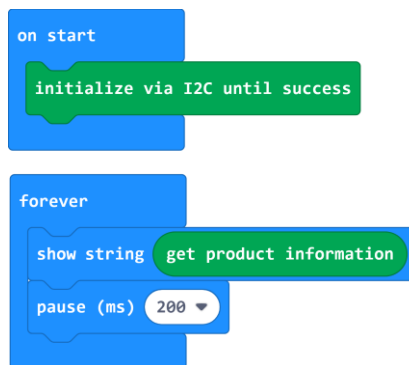
    Get firmware version

3. If the displayed version is "MBT0021-EN", it means that your Maqueen Plus firmware needs to be updated. "EN-V1.4" is the latest one.

New Firmware Function Description

After your Maqueen Plus firmware is updated, the revolution of the wheel can be obtained and cleared. The related blocks of MakeCode are shown below:

MakeCode
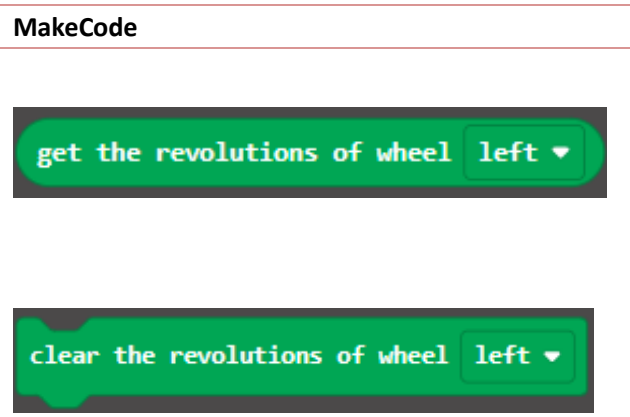
Preparation

Maqueen Plus with the old firmware	Male-to-Female Dupont Wire Jumper Cable
	 MBT0021-EN-V1.4.hex
Tool: ST-LINK/V2	New Firmware
Burning Software ： https://www.st.com/zh/development-tools/stvp-stm32.html	

Firmware Burning

1. Get Firmware File

The new firmware is in the file "Appendix 1-Firmware Burning Tutorial", as shown below. If you cannot find it, please contact DFRobot customer service team.
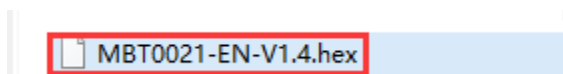
2. Connect ST-LINK/V2 to Maqueen Plus

Firmware burning pins have been reserved on the bottom of Maqueen Plus, as shown in the red box of the image 2-1 below. Connect ST-LINK/V2 to Maqueen Plus with male-to-female Dupont wires as instructed in chart 1.

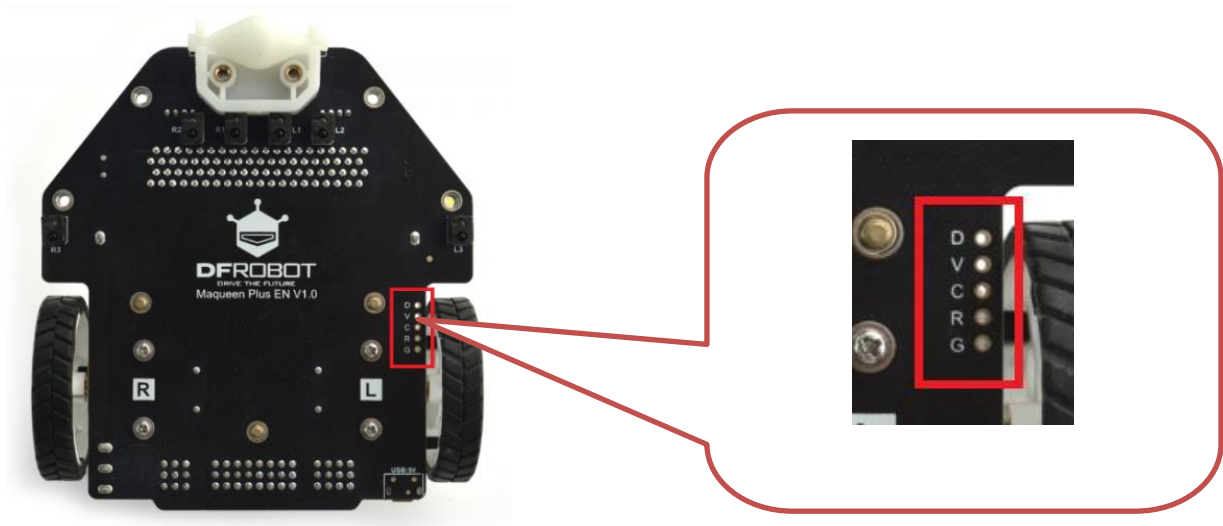| Maqueen Plus	ST-LINK/V2
D	SWDIO
V	VCC
C	SWCLK
R	RST
G	GND

Chart 1

Figure 2-1

3. Burning Software Configuration

1) Click the icon " " to open the software to enter the interface like image 3-1 when the installation is completed.
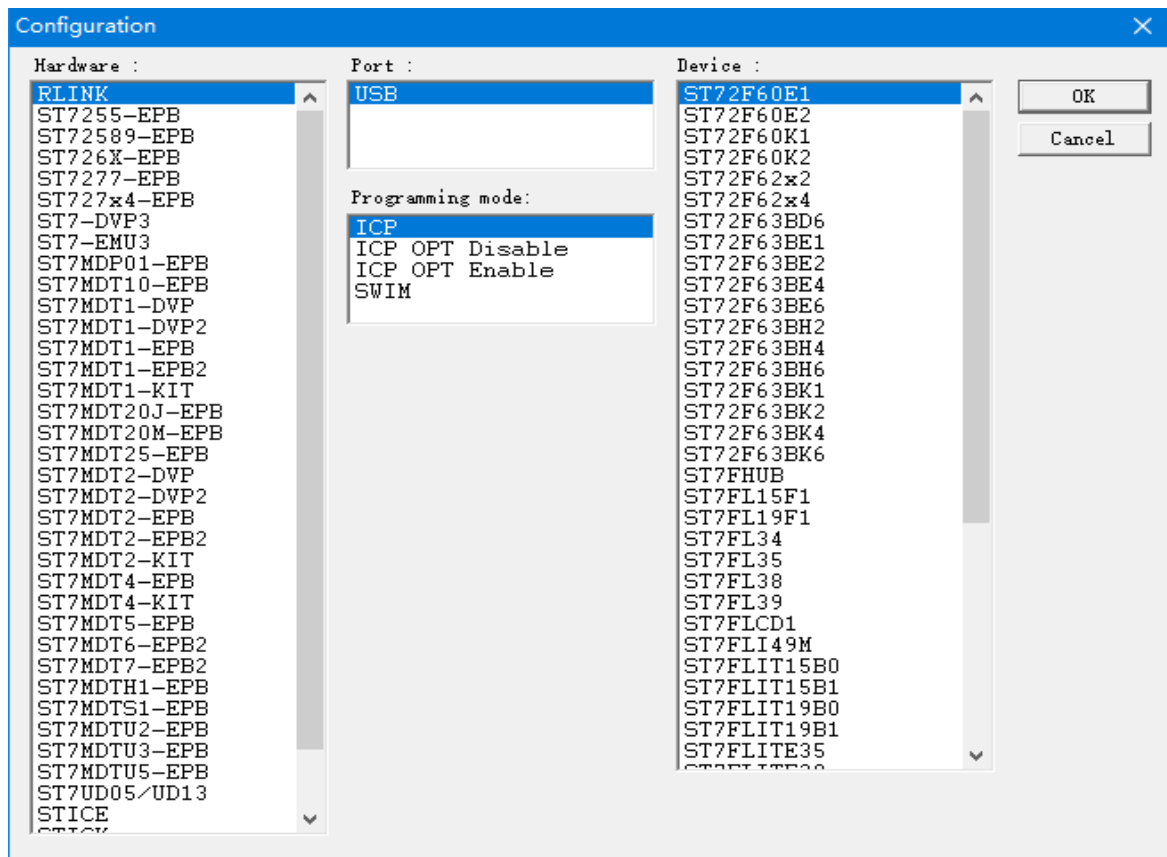
Figure 3-1

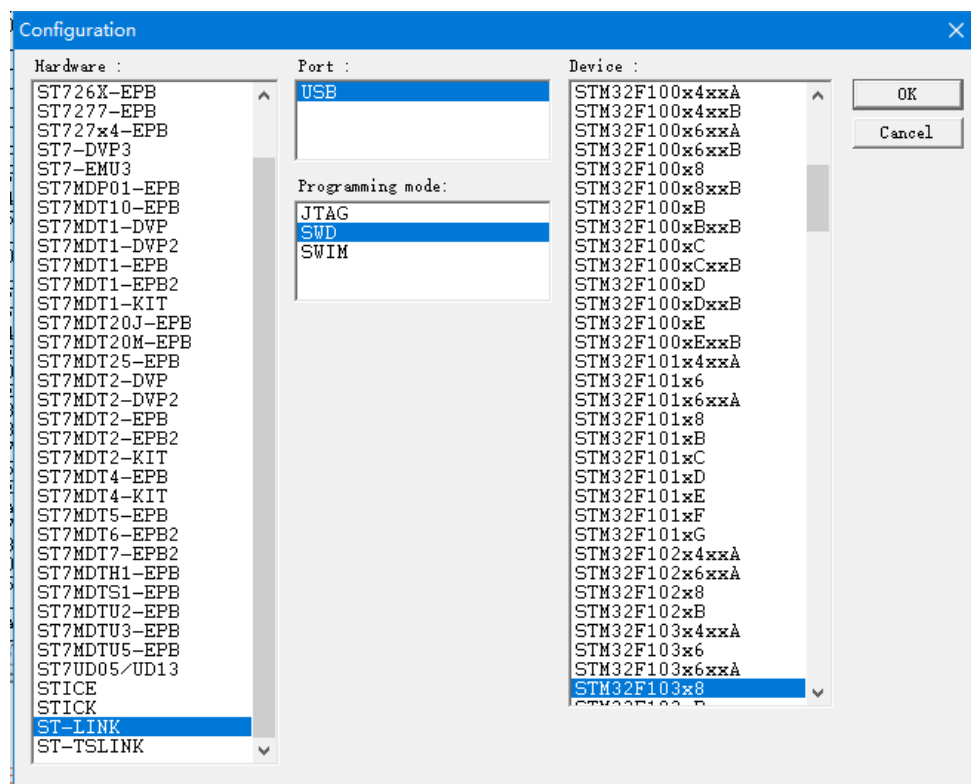2) Select ST-LINK in Hardware; Port ->USB; Programming Mode->SWD; Device->STM32F103x8. As seen below:

Figure 3-2

3) Click OK to enter the following interface.
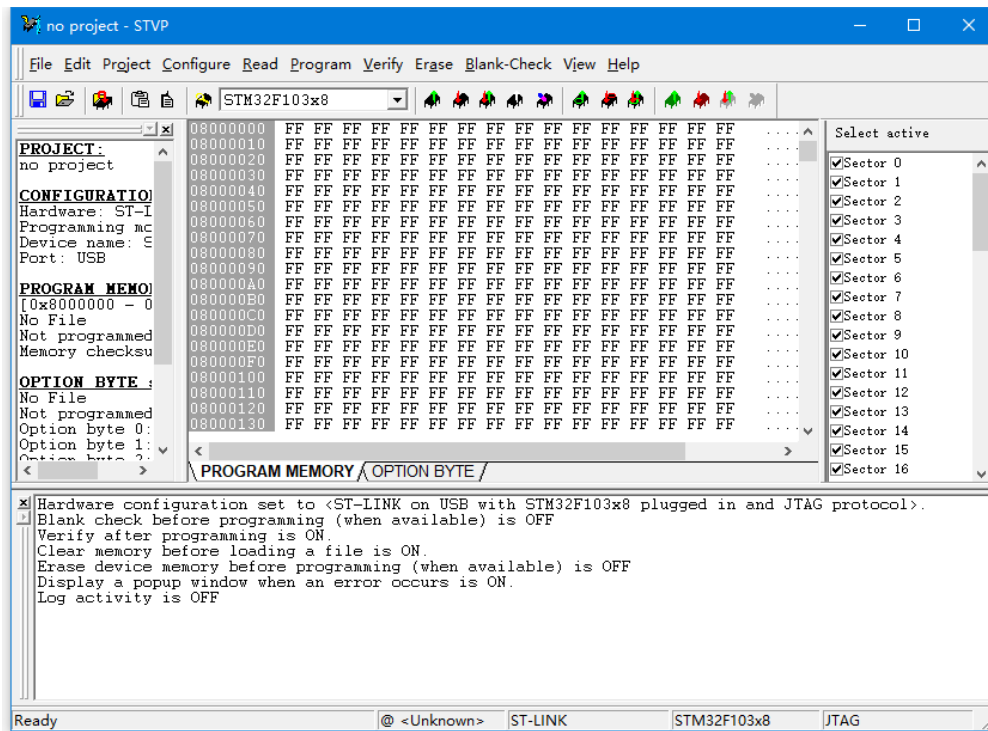

Figure 3-3

4) If you entered the interface above but the hardware was not set as required, you can click the red box in Figure 3-4 to reconfigure it.
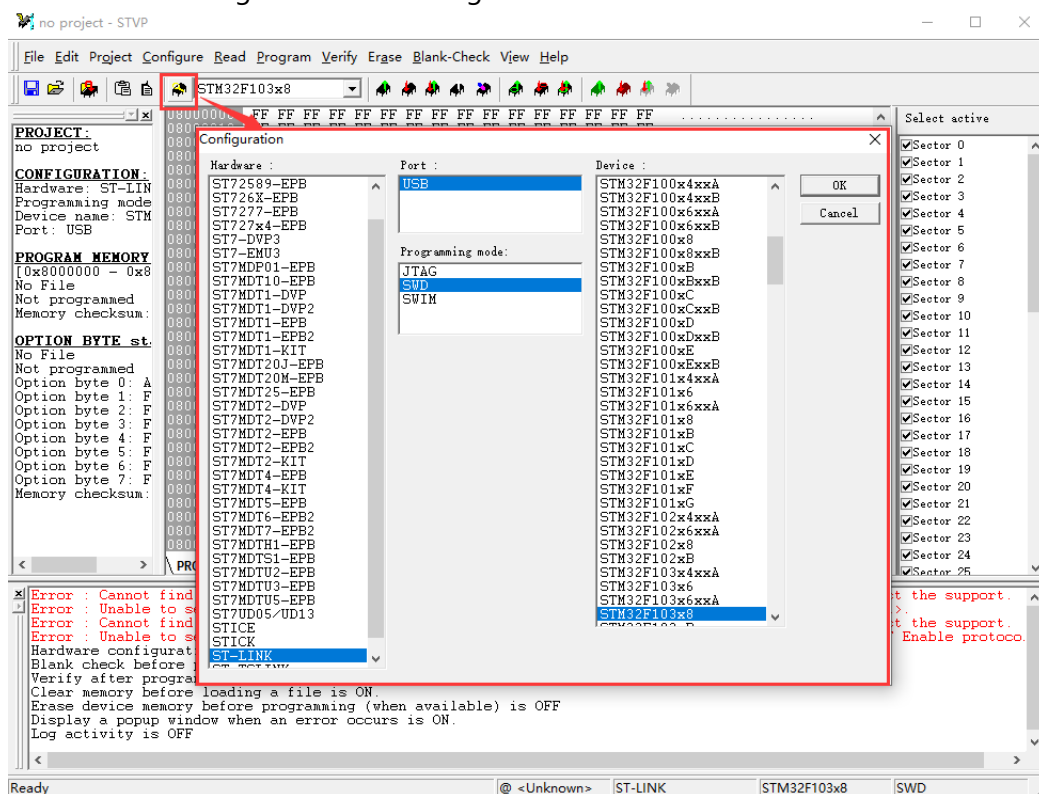

Figure 3-4

5) Maqueen Plus comes with firmware protection, so you have to remove the previous firmware before burning a new one into it. Switch to OPTION BYTE, and click the red button in the image below.
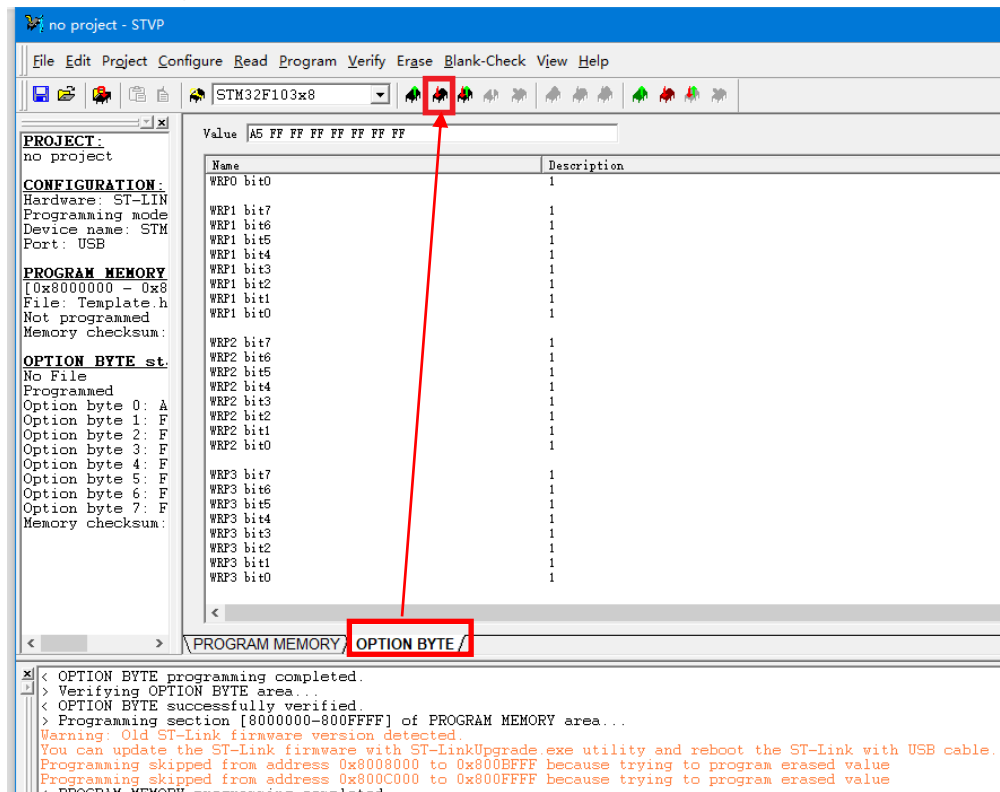

Figure 3-5

6) The following information will appear after removing the old firmware. Now switch the interface to PROGRAM MEMORY.
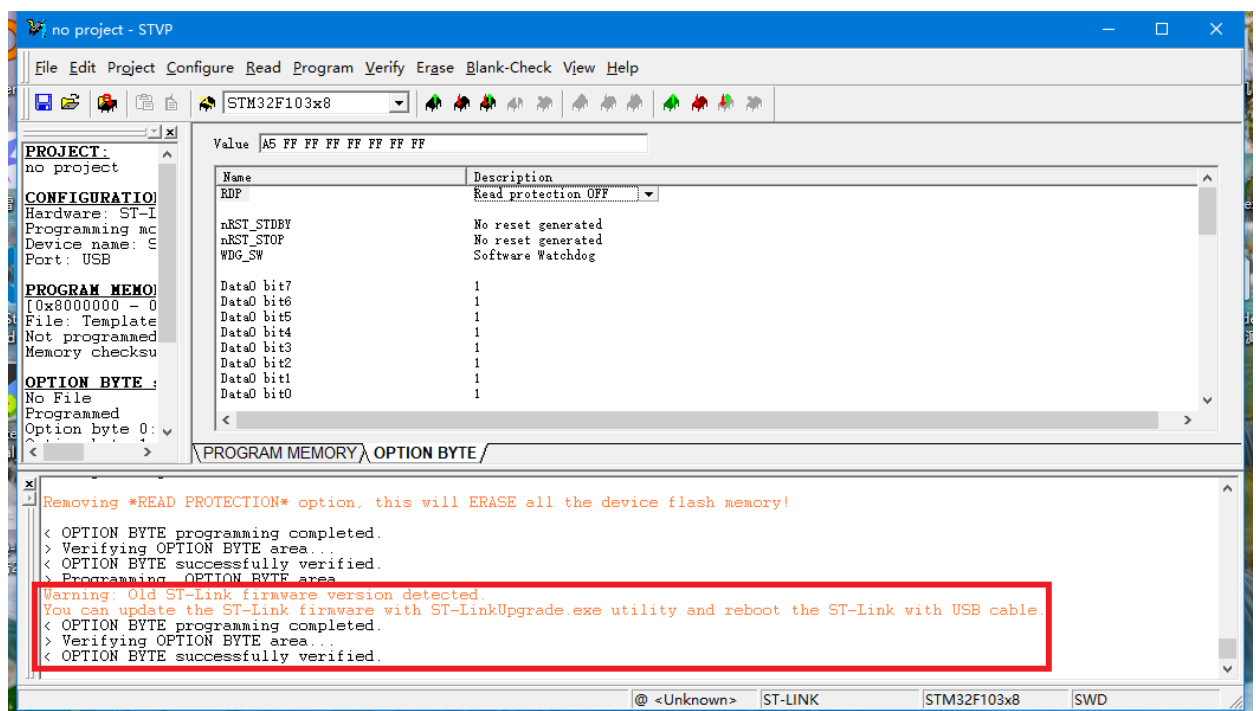
Figure 3-6

Note: if the firmware removal failed, change RDP to "Read protection ON", then click " " to remove as shown below. Switch RDP to "Read protection OFF" after that.
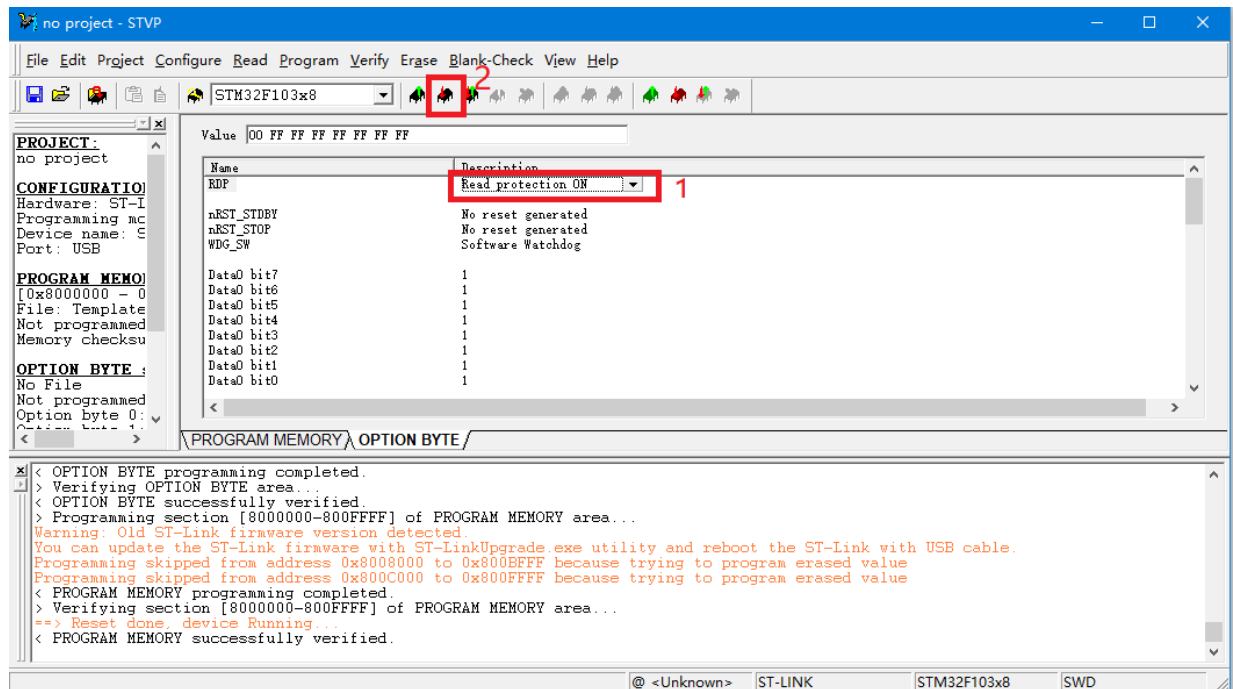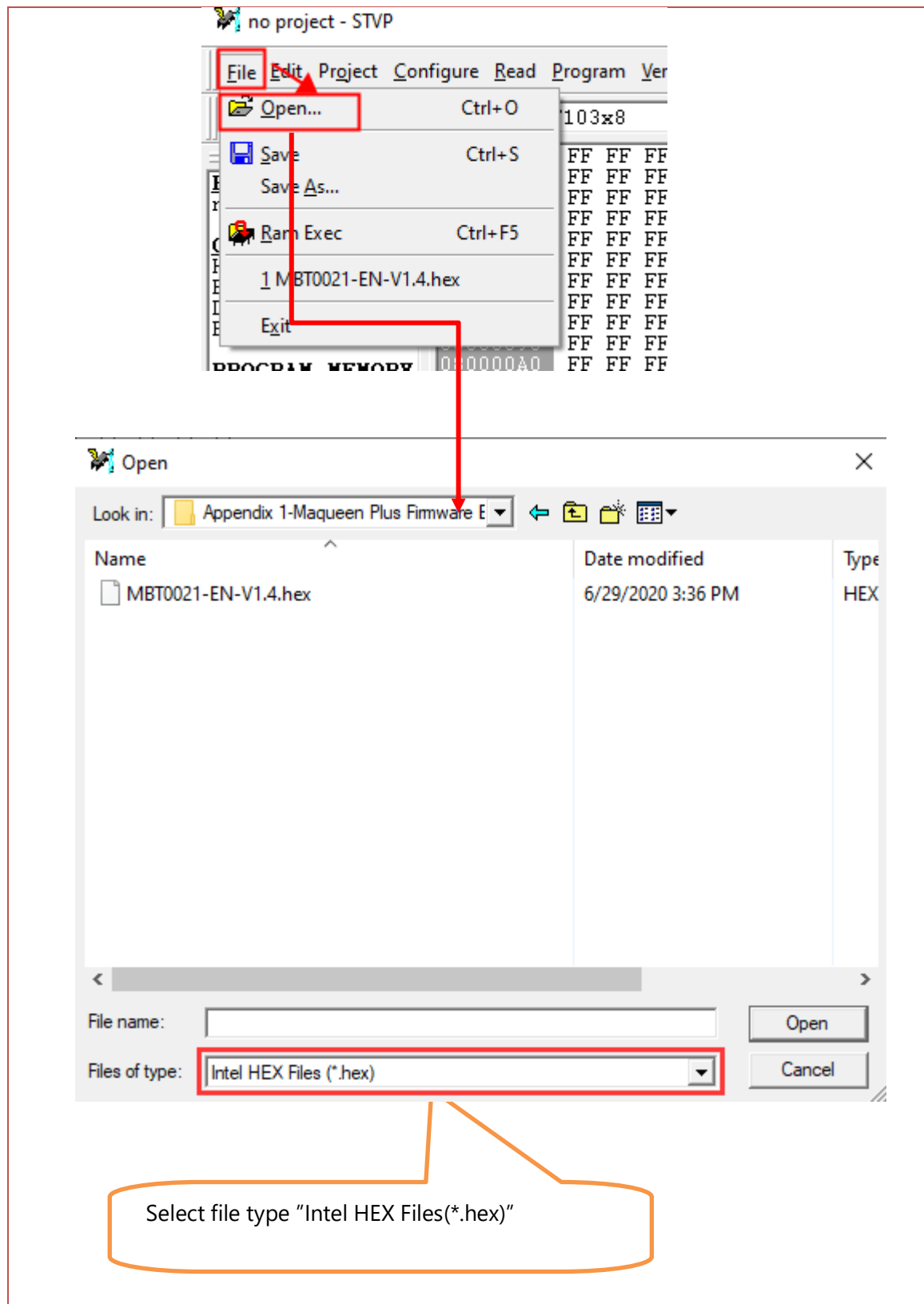

Figure 3-6-1

7) You can burn the new firmware into Maqueen Plus when all done. Click "File->open->MBT0021-EN-V1.4.hex (path location of new firmware)".

Select file type "Intel HEX Files(*.hex)"

8) The firmware will be auto-added into the burning tool after it is opened. Click the icon in the red box below to wait for the burning to complete.

Figure 3-8

9) After the firmware burning is completed, you can check the firmware version number again. If it is EN-V1.4 , then the firmware update is successful.