**Odrivetool Firmware Manual Update**

This is used for firmware change and update if we want to customize the original firmware.

Go to this page to see instructions and links

<https://docs.odriverobotics.com/developer-guide>

1. Installations

a. make

<https://www.youtube.com/watch?v=taCJhnBXG_w>

b. Tup

Download the latest version and copy the file somewhere in C, then add that directory into Environment Path, for instance directory of C:\Users\swang\AppData\Roaming\tup\tup-latest

c. ARM Compiler

Download an exe file and install. Add directory to Environment Path, for instance C:\Program Files (x86)\GNU Tools Arm Embedded\9 2019-q4-major\bin

d. ARM GDB or GNU MCU Eclipse’s Windows Build Tools

Follow the manual install here, then add to environment path, for instance C:\Users\swang\AppData\Roaming\xPacks\windows-build-tools\xpack-windows-build-tools-4.2.1-2\bin

<https://xpack.github.io/windows-build-tools/install/>

e. OpenOCD

Follow the manual install here, then add to environment path, for instance

C:\Users\swang\AppData\Roaming\xPacks\OpenOCD\0.10.0-15\bin

<https://xpack.github.io/openocd/install/>

2. After changing all the code, run ‘make’ command in git bash or command prompt under the Firmware folder. This should build the firmware and generate bin/elf/hex file inside the build folder.

If error occurs, check the directory in Environment Path. If still has error, git clone the Odrive firmware again.

3. Before flashing the new firmware, save the configuration by command ‘odrivetool backup-config beetleConfig.json’ in the bash or cmd.

4. Switch the button on ODrive board to DFU, repower the board, set the driver for “STM32 BOOTLOADER” to libusb-win32, then run ‘odrivetool dfu build/ODriveFirmware.hex’ command. This should flash the new firmware to the board.

5. Restore the configuration ‘odrivetool restore-config beetleConfig.json’

6, Another Odrive firmware download method using STM32 CubeProgrammer DFU tool:

Download the tool [here](https://www.st.com/en/development-tools/stm32cubeprog.html). You will need to make an account with ST to download the tool.

Install the tool.

Force the ODrive into DFU by switching the button on the ODrive board.

Launch the tool.

Under “Memory & File edition”, there are two tabs called “Device memory” and “Open file”. Click “Open file” and choose the ODrive firmware hex file that you downloaded or compiled.

In the top right, there is a dropdown menu containing the different methods to connect to an STM32 device. Choose “USB”.

Under “USB configuration”, a USB port should be automatically selected and the ODrive serial number should be present next to “Serial number.”

Click “Connect” above “USB configuration”.

Click the tab with the name of your firmware file (example: BeetleFirmware.hex) if it is not already selected.

Click “Download” to flash your ODrive with the firmware. Your ODrive is now flashed!

Close STM32CubeProgrammer.

Turn off the power to the ODrive and set the DIP swtich back to RUN mode.