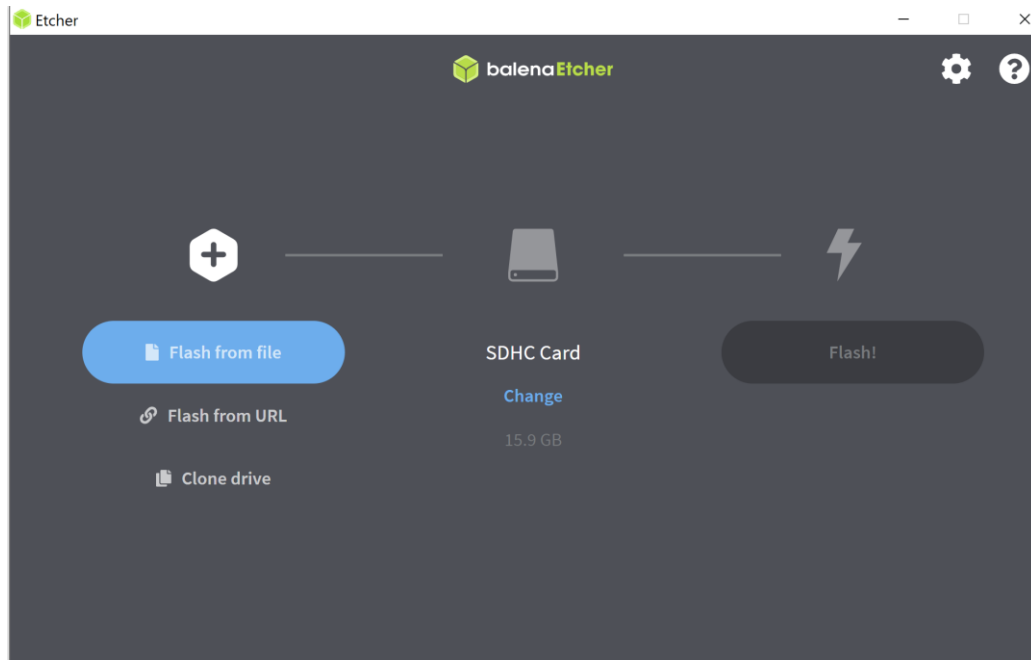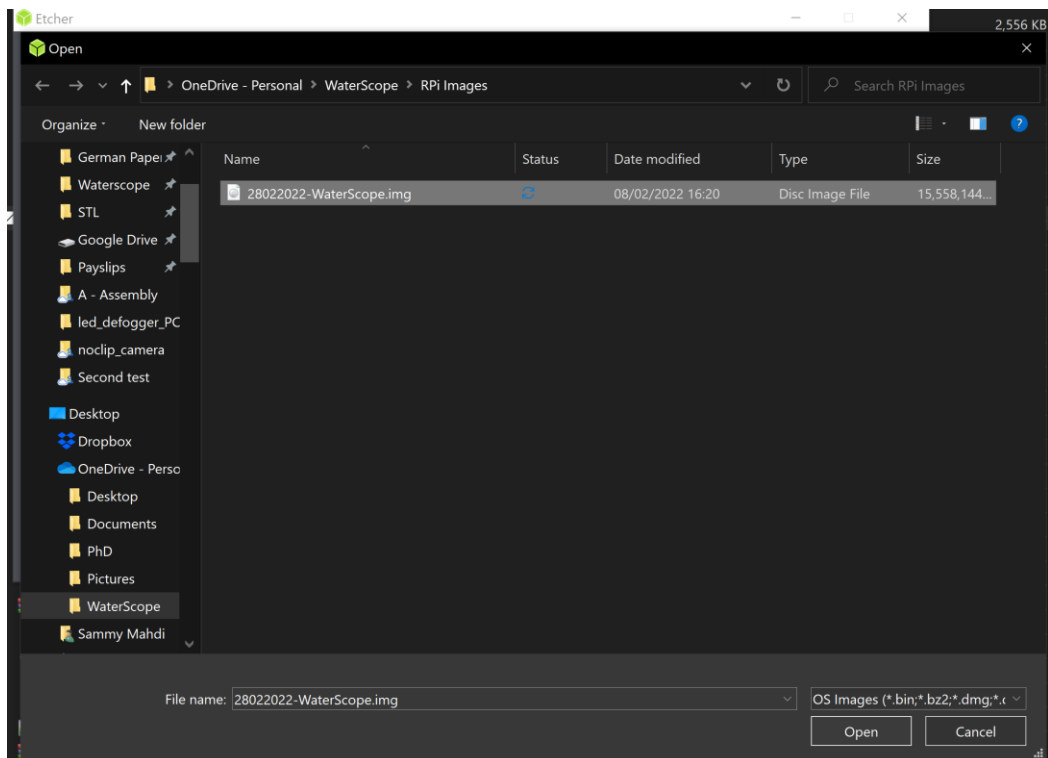# WaterScope Firmware/Software programming v1
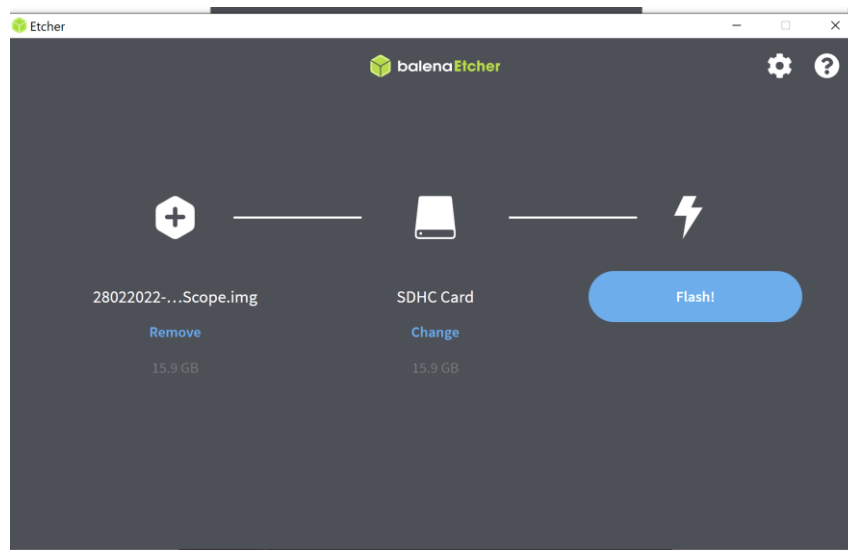
## Raspberry Pi SD card flashing

1. Download and install "Balena Etcher"
2. Insert empty SD card into the computer and open "Balena Etcher"



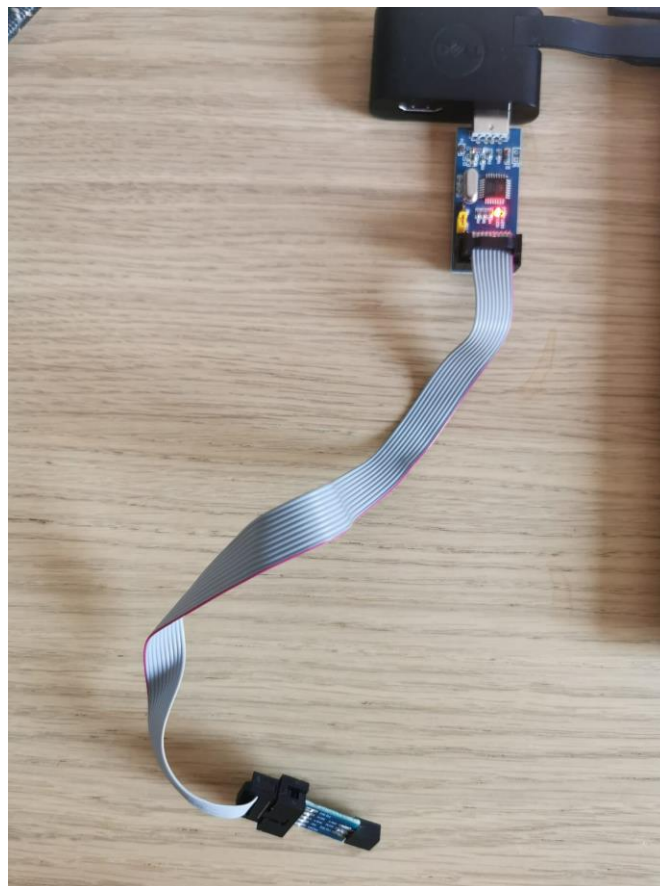3. Select the latest WaterScope image i.e. (28022022_WaterScope.img)

4. Press "Flash" and wait for the process to finish (~5 min)



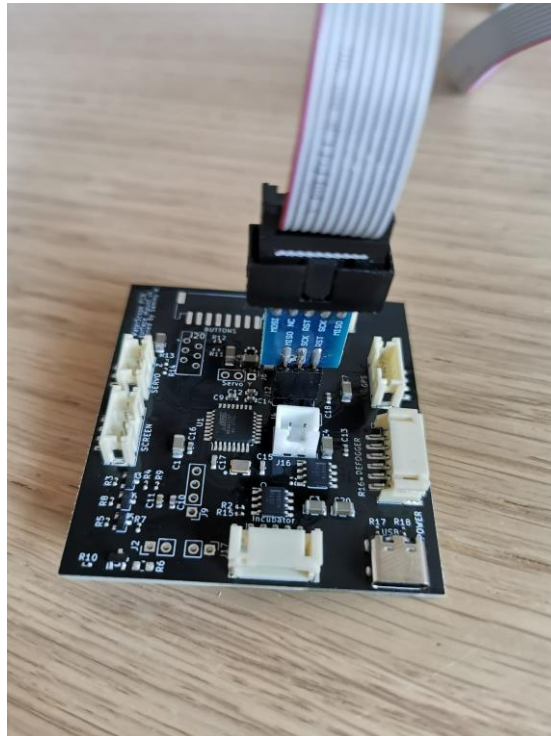## Programming the PCB firmware

1. Insert programmer into the USB port and install USBAsp driver if using for the first time.

2. Insert programmer into PCB as shown



3. Open terminal and go the WaterScope firmware folder



4. Burn the fuses with:

**avrdude -C avrdude.conf -v -p atmega328p -c usbasp-clone -Pusb -e -U lock:w:0x3F:m -U efuse:w:0xFD:m -U hfuse:w:0xDE:m -U lfuse:w:0xFF:m**

5. Burn firmware with:

**avrdude –c usbasp-clone -p m328p -u -U flash:w:rtc_dual_36.hex:i**

6. Check that the programming is complete: