iH2 HD Whoop

Quick Start and Setup Guide

by Patrick Byars

IFLIGHT
USA REPAIR CENTER

Quick Start

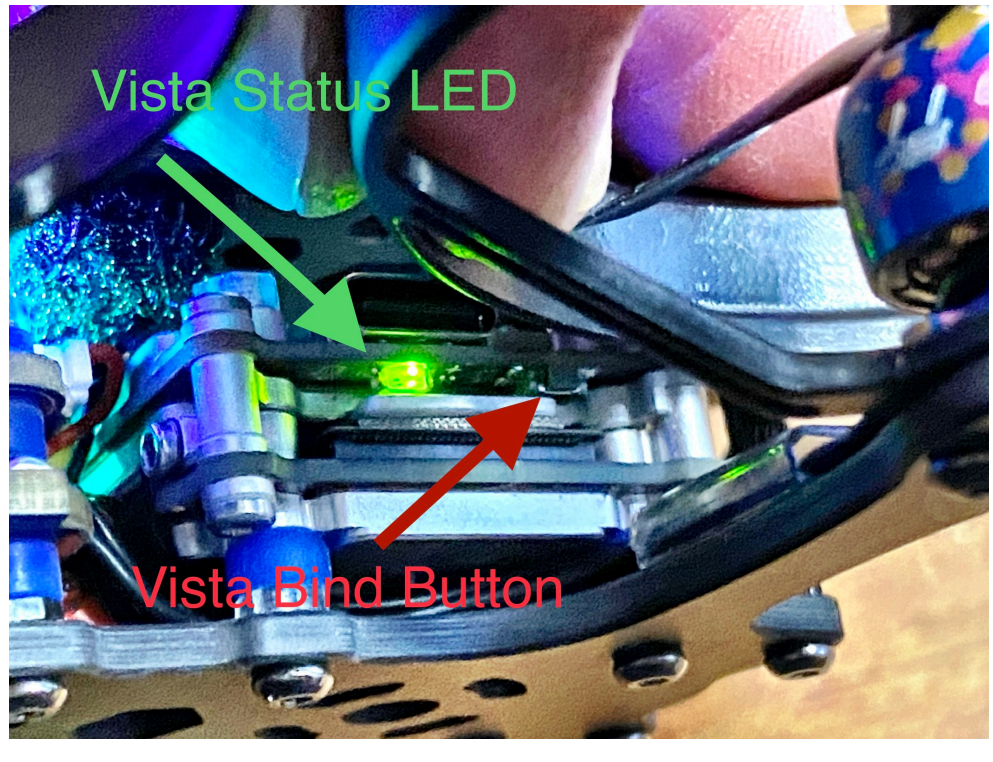
- The IH2 HD Whoop comes preconfigured and tuned with rates and PIDs and more.
- Only a few steps need to be performed to prepare for your maiden flight.
- Remove the ducts on the side with the USB connectors
- Bind DJI Goggles and Transmitter to your IH2 HD Whoop.
- Understanding how your switches are setup.
- Arm and fly…
- Following the Quick Start guide is the full Setup Guide including how to back up your settings, update the firmware, configure the ESCs with BLHeli32 Configurator, and in betaflight setup all pages including mode switches, rates, PIDs and RPM filtering and more but you don't need any of that for now, just #SendIt

Accessing the FC and the Vista Air Unit Lite's USB(s) to update Betaflight and the DJI Air Unit firmware

- Props off!
- Remove the 16 prop screws and set aside.
- gently turn over and remove the 8 screws holding the motor and duct from the two motors in from the USB-C ports.
- you can now move the duct aside safely and plug into the USB and USB-C ports.

How to bind your goggles and DJI transmitter to your new **iH2 HD Whoop**

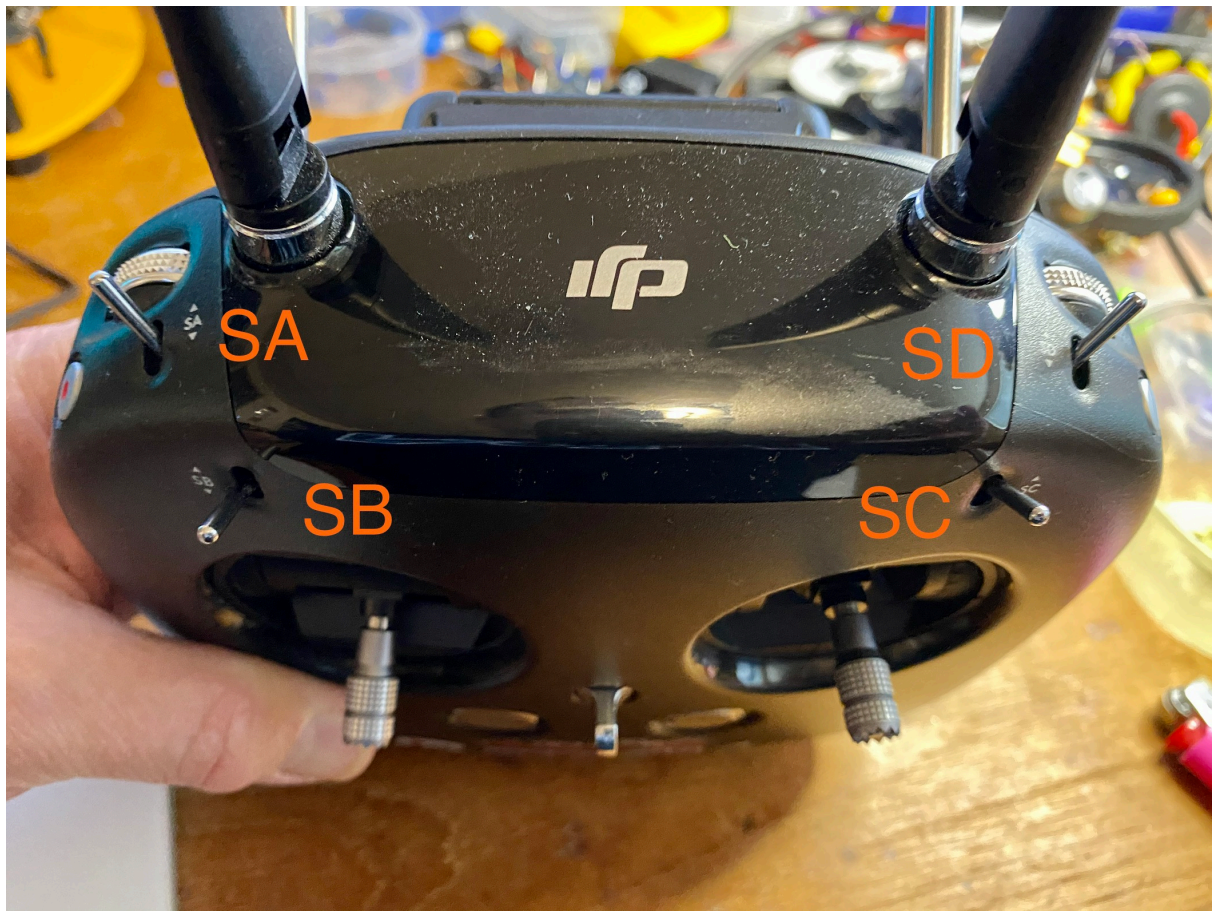
- You will need your goggles and its power cable, your charged transmitter, and a lipo battery with a XT30 that is fully charged, the **iH2 HD Whoop** and a battery that is charged for it. Also a blunt paperclip or fine point blunt tool to push the recessed bind button.
- I recommend the iFlight Fullsend 450 mah 2 & 3S as well as the 600-700 size.
- Power up Transmitter, Goggles and iH2 HD.
- If you will not be flying the next day or so, only charge your batteries to the **Storage level** (see your charger's instructions) or always do this - it will serve you well) and place in a fire safe place. Before flight, charge (or balance charge) to full taking care to adjust if LiHV or LiPo along with number of cells and mAh etc.
- On your **iH2 HD Whoop** press the bind button after it has turned **green**. It will then turn **red**.



How to bind your goggles and DJI transmitter to your new Cinebee HD2 (continued)

- Once the Vista Status LED is red, go to your DJI FPV goggles and find the recessed red button under where the battery cable connects to the goggles and press once, wait to hear beeps, then you'll hear air unit respond with beeps and note that the goggles now have video.
- Next we need to bind the transmitter but if you are using a different transmitter and receiver like FrSky or TBS Crossfire, follow that products instructions to bind instead.
- almost done… go to Vista air unit lite again, the LED should have turned green again. Press again with paperclip or blunt not sharp tool, and get the red light. Go to the transmitter (controller) and do the "three finger salute" (my words not DJI or iFlight) by pressing once these three buttons all at the same time. It will start to beep and then you will hear the confirming beeps.

Your DJI Transmitter



- Go to your goggles and set protocol correctly. On goggles, find the 5 way button/joystick Menu button. Press it, then choose Settings, then Device, and then Protocol. Make sure it says **"SBUS BAUD FAST".** Next back up a menu or two to the settings menu and go to Display, OSD settings make sure **Custom OSD** settings is on.

- Standard convention for transmitters is all switches should be in up or the forward position which is off when you power off and on the transmitter, this is sometimes called the safe position.

- Your **iH2 HD Whoop** probably came configured with just one control that you can use (arm on SA) and set to Angle Mode on always.

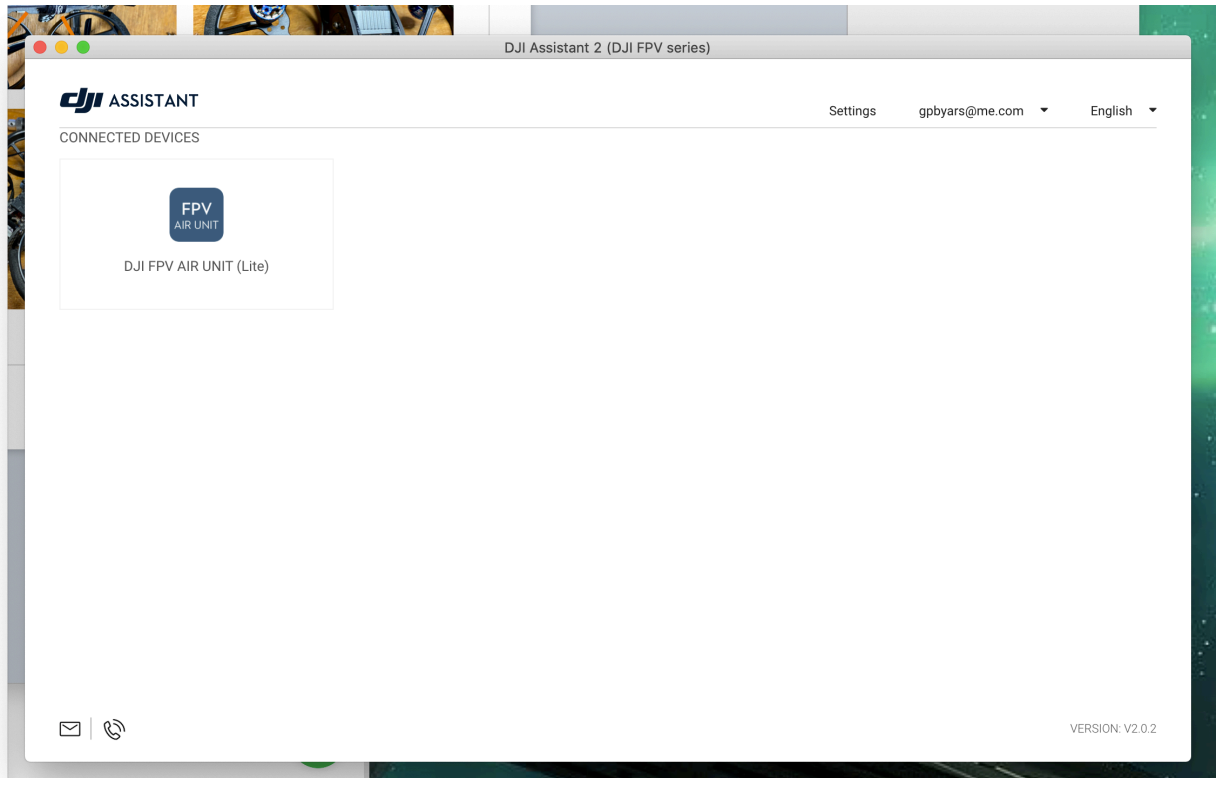
After binding...

- Do not leave your **iH2 HD Whoop** running for a long time prior to take off. let it cool down first if needed.
- Once ready to fly, Power your transmitter and safe all switches in the up or off position. Check that the throttle is in fact at zero.
- SA is your Arm switch, move it all the way down to arm.
- If you don't have your goggles on put them on (unless just flying line of sight (LOS)) and move SA to the down or on position. To take off raise the throttle slowly but not too slowly, you want a smooth take off so give it some gas.
- To land locate the spot you want to land and come in slow and in steady forward and downward motion. Land and move throttle to zero and disarm by move switch SA to up or off position, Congratulaions!

  Don't forget to disconnect battery from qaud, unplug goggles and turn off transmitter once done flying.
- Following the Quick Start guide is the full Setup Guide including how to back up your settings, update the firmware, configure the ESCs with BLHeli32 Configurator, and in betaflight setup all pages including

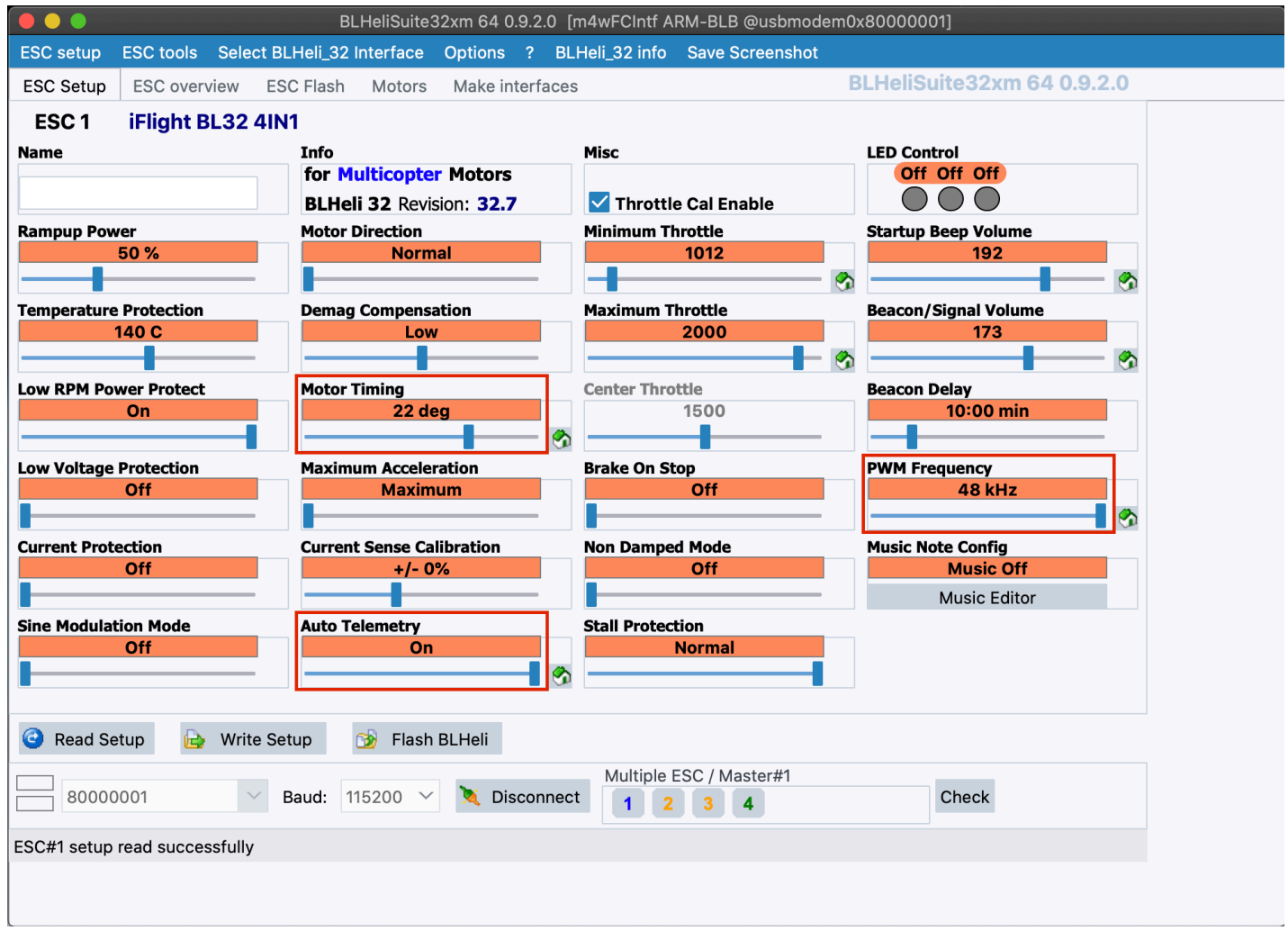
  mode switches, rates, PIDs and RPM filtering and more but you don't need any of that for now, go fly! #SendIt

Updating your Caddx Vista DJI Air Unit Lite



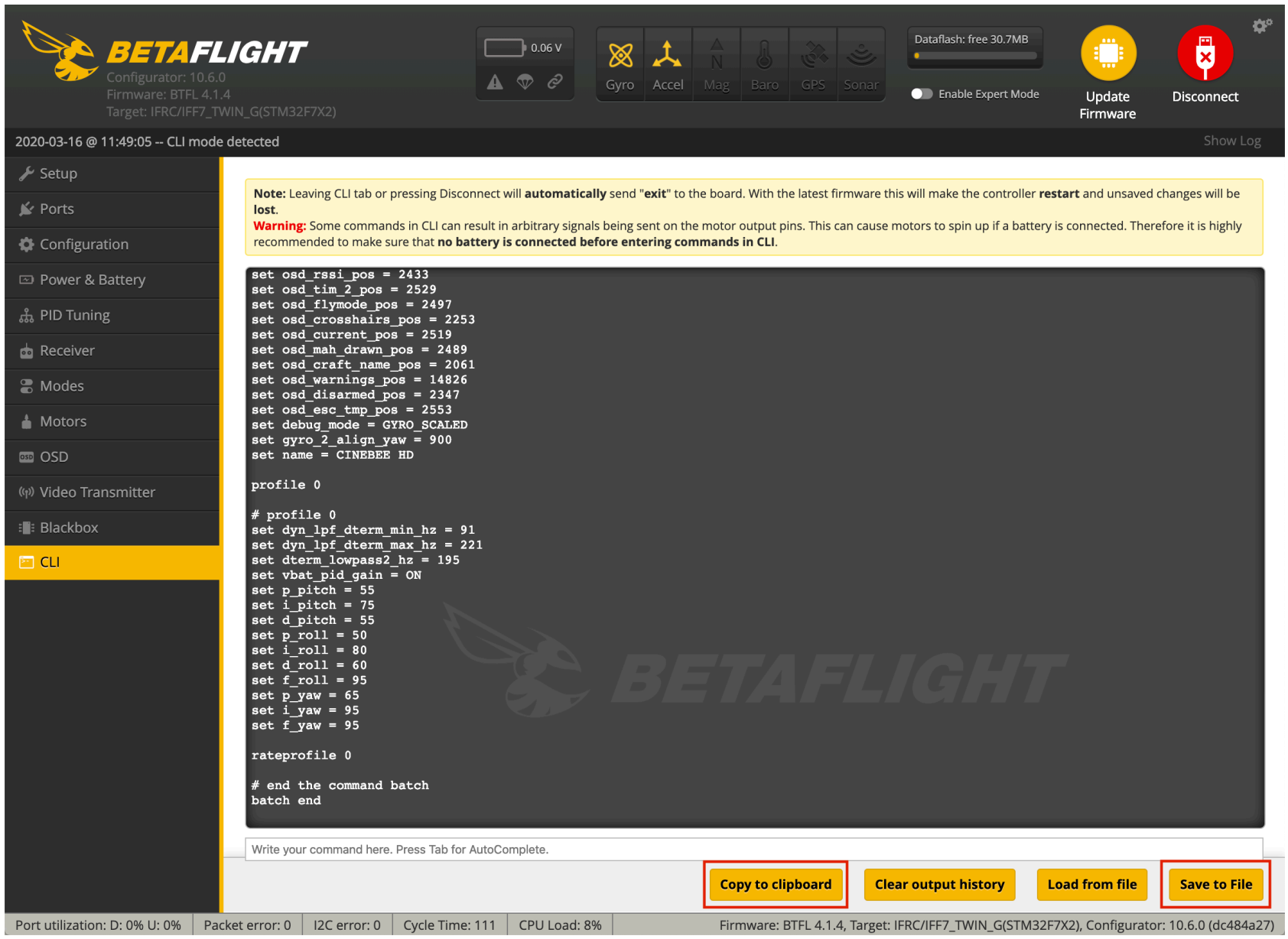
- The update procedure is the same as the original AU (air unit).
- Download the DJI Assistant 2 (DJI FPV Series) and install on to your computer (if not already done).
- The AU lite can overheat quickly without airflow from flight, prepare everything and load the DJI Assistant 2 and then power up your iH2 HD, and lastly plug in the USB-C and when the Air Unit Lite is discovered, click it and follow the instructions to update firmware if necessary. When finished unplug the battery, and un plug the USB-C and let the AU lite cool down now that you have the latest DJI FPV firmware for your Air Unit lite before moving on to the Flight Controller.
- Note: If the version downloaded does not match the version in your goggles and or transmitter, you should update those also so that all are on the same version.

Updating Betaflight to the latest version and setting up RPM filtering and Bidirectional Dshot (but first we should check the BLHELI32 ESC settings with BLHeliSuite32 configurator app)



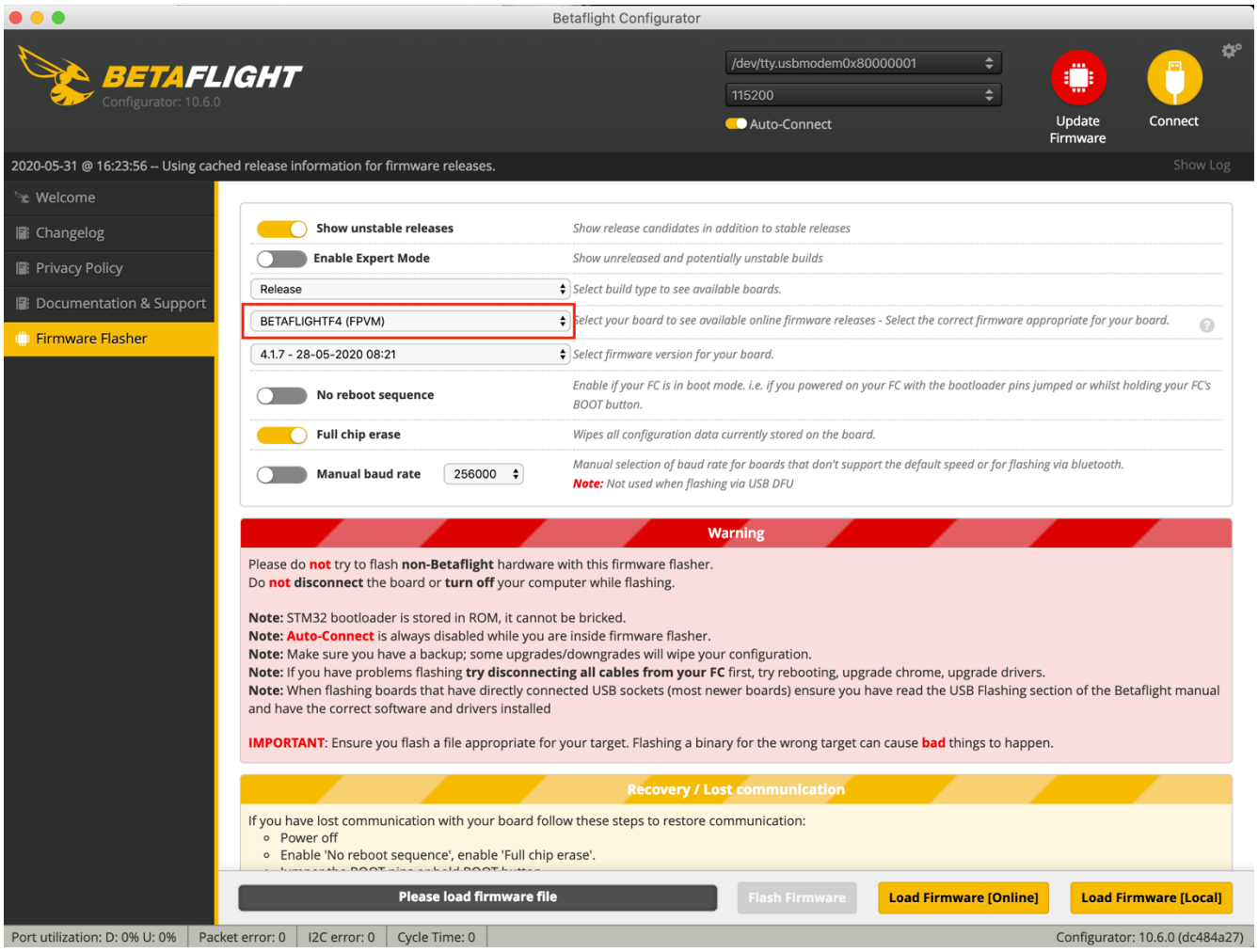
- We want to have BLHeli32 setup for BiDirectional DShot which requires ver 32.7 or later. Let's check the settings (and these need to be set for new parts) in BLHELI32 (from Oscar Liang's excellent guide on this subject FYI).
- Auto Telemetry is optional as is the beep and signal volume for startup and lost craft recovery settings.
- PWM Frequency: 48KHz for freestyle; Default (or higher) for racing.
- Motor Timing: Set to Auto (or 22 as shown) for freestyle.
- This is also where you can change the motor direction, instead of swapping wires at the motor.

Updating Betaflight to the latest version and complete setup including RPM

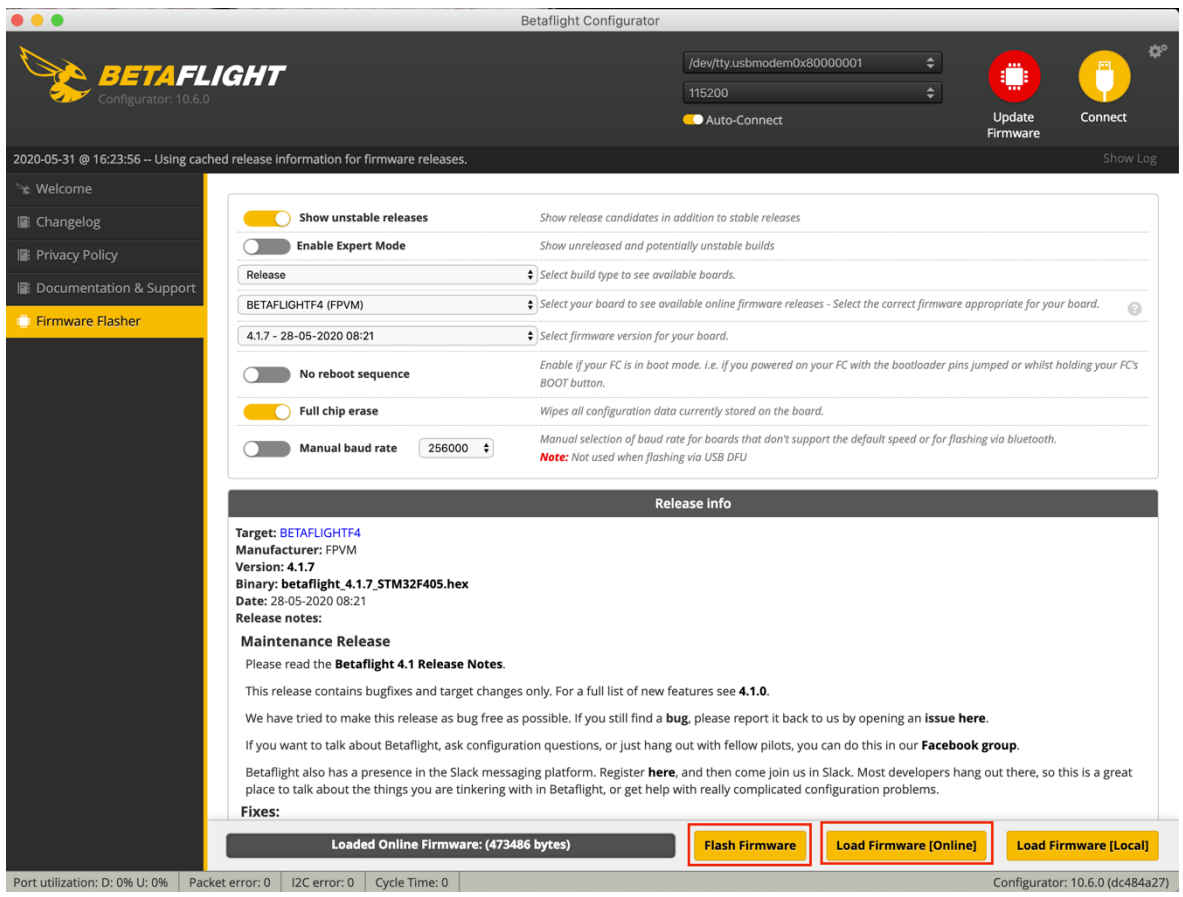


- Next let's save your settings that are different than the default values with the DIFF command in the CLI.
- Clear the screen with the button for that and type **DIFF** (not diff all or dump all, we will be getting the "all" part of the settings after connecting for the first time as don't want to mingle or overwrite them. Good setup hygiene practices 😉) and then enter. The command executes (this can be done with the gui now too) now click the **button "copy to clipboard"**. Also click **save to file button** and save where you can find it again later. But the clipboard is what we need right now.
- Next Click the **Update Firmware** round yellow button in the top right.

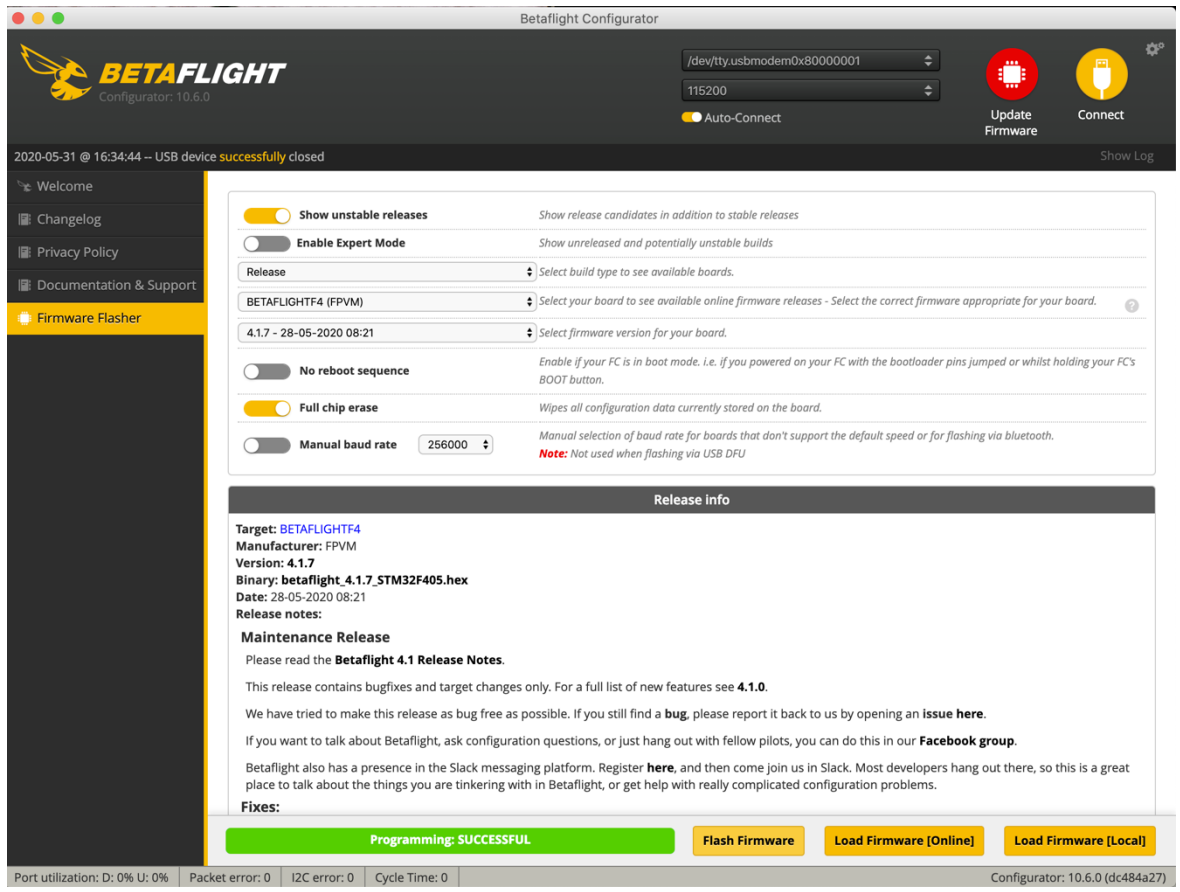
Updating Betaflight to the latest version continued…

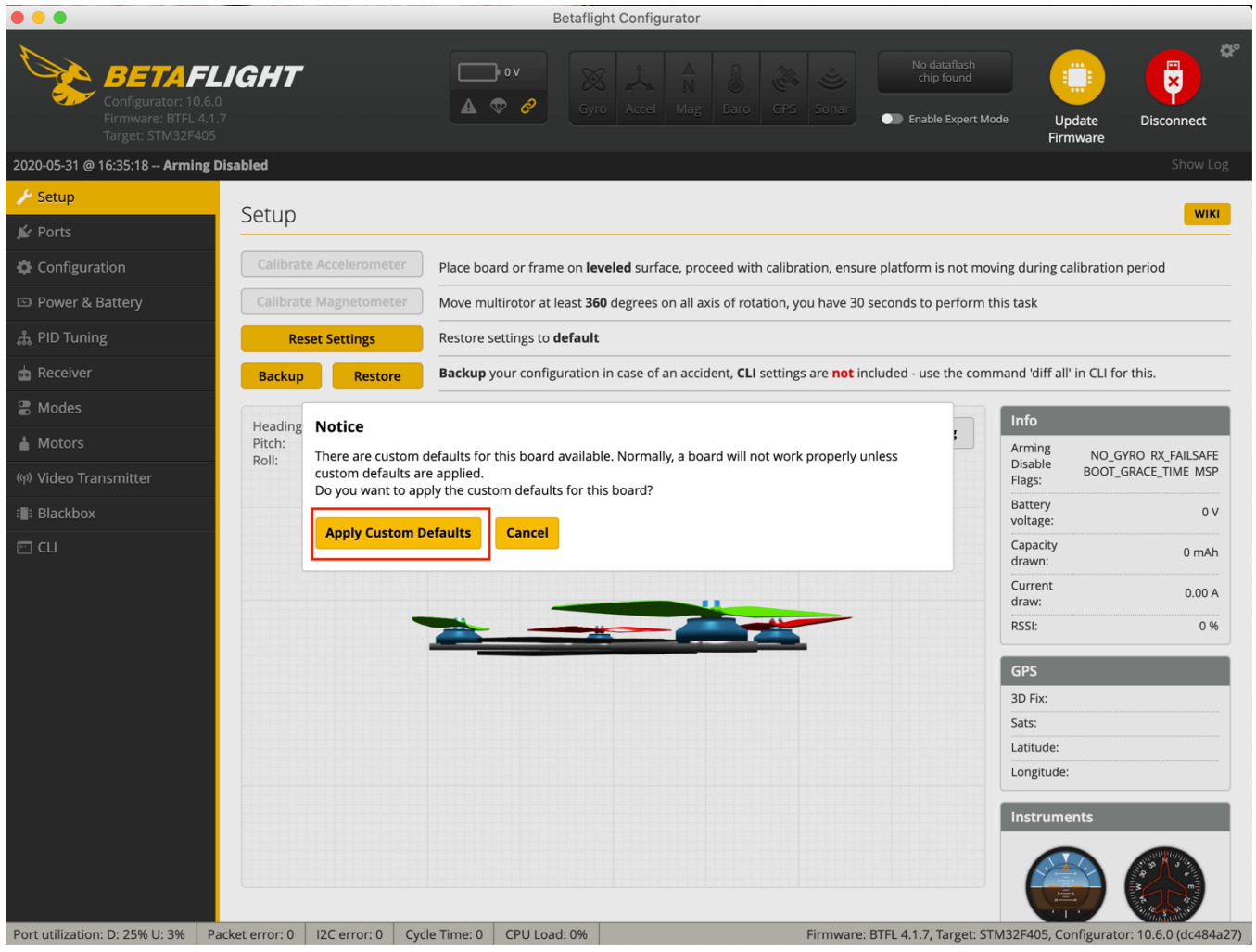


- You should be in the Firmware Flasher section.
- Select the IFF7_TWIN_G (IFRC) target and the latest betaflight (as of today 4.1.5).
- Click “Load Firmware online” button.
- Click the Flash Firmware button.



Updating Betaflight to the latest version

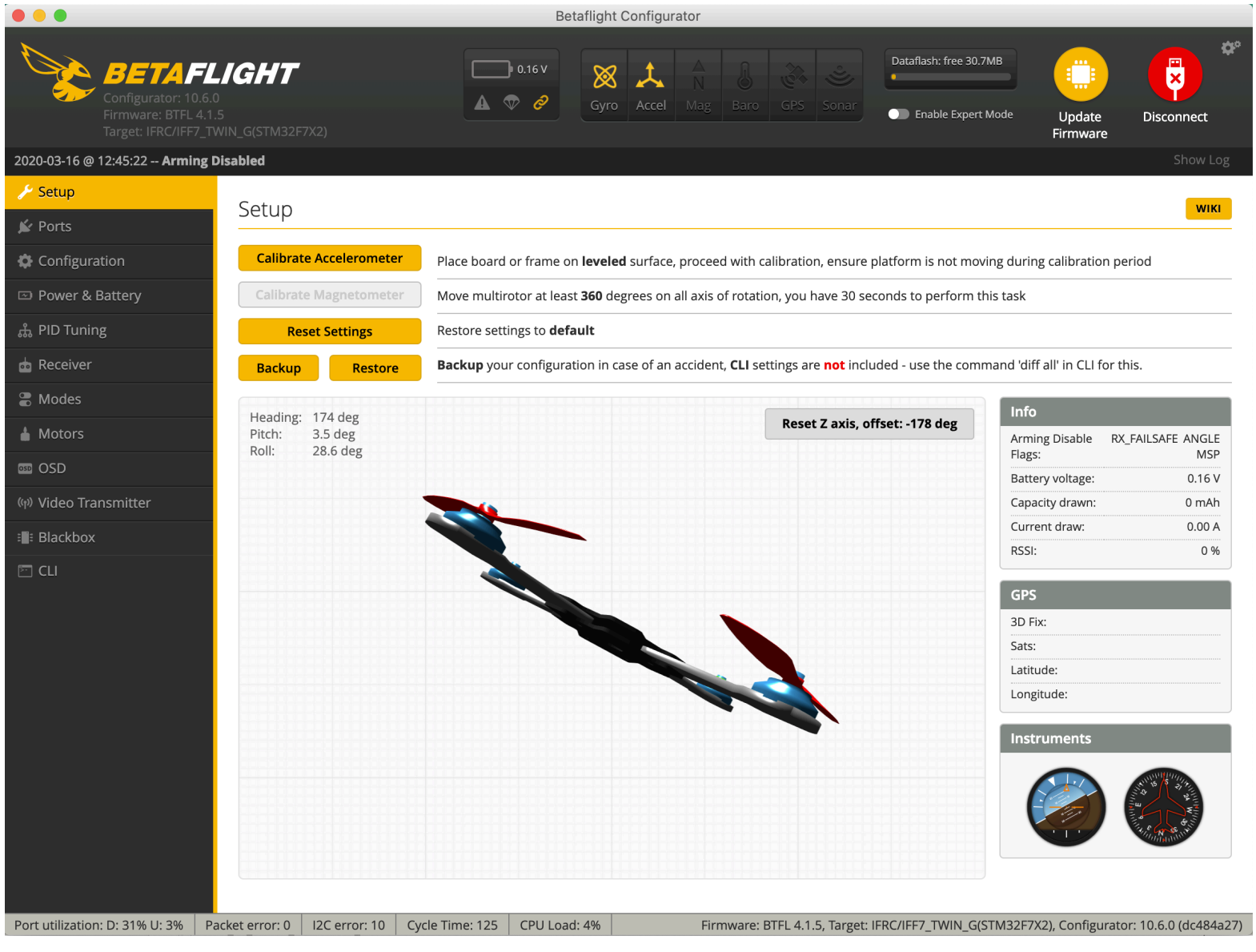




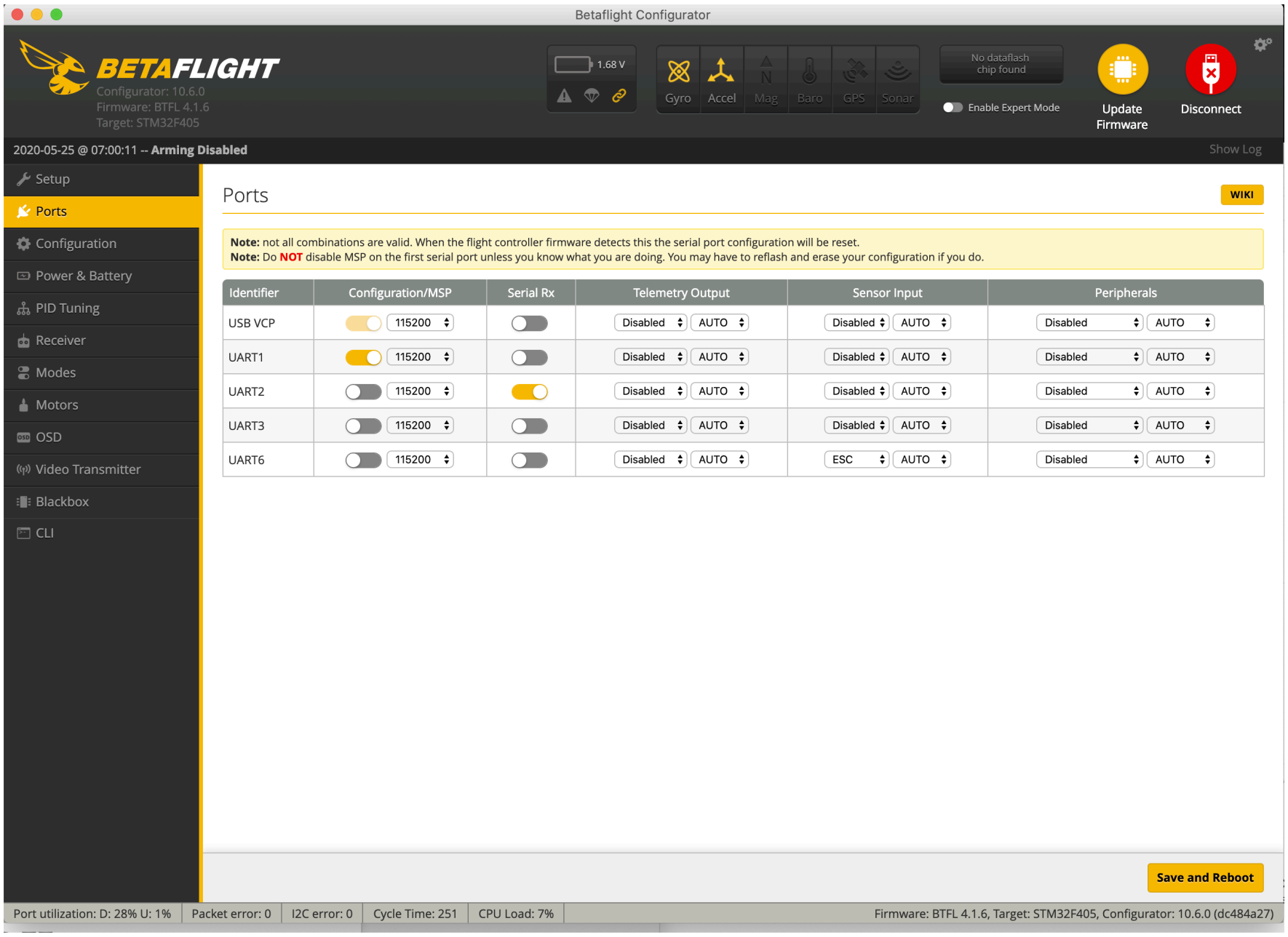
- After updating, click connect. Note if not doesn't reboot, simply unplug USB-C from FC and plug back in.
- Click Apply Custom Defaults button - very important. The FC reboots. Note that you now have Gyro's and correct peripherals.
- Go back to the CLI and if you copied the prior config to the clipboard do a paste (Control-V) and hit enter. If you saved to a file use the new load from file and then the execute button like shown.
- Type save and enter (unless the script did it for you when you did the execute command) and your FC reboots and now has your prior settings.
- Last thing …but before putting the ducts back on… Go to the CLI and save this work with another Diff and save to a file 😀

Betaflight setup for **iH2 HD Whoop** (Setup page)

- Let's review each page in Betaflight to see if correctly setup. Everyone is different and setups vary. For this guide I am using my current settings for my personal **iH2 HD Whoop**.
- This is probably the most useful and overlooked screens in Betaflight. for example if you cannot figure out why it won't arm, come here while connected with props off and check the "Arming Disable Flags" on the right here. But right now we have two important tasks to perform.
- First, Use the Reset the Z axis button and tilt etc thew quad, does it move the same way on screen as in real life? If not we will later at the Config BF screen need to set the Yaw axis value (hint might need -90).
- Second, is it level? If it is and looking good stop here, but if not you will need to find the most level spot near your PC. Use a level gauge or a smartphone app to find the best spot and put your quad there. Then hit the calibrate Accelerometer button.

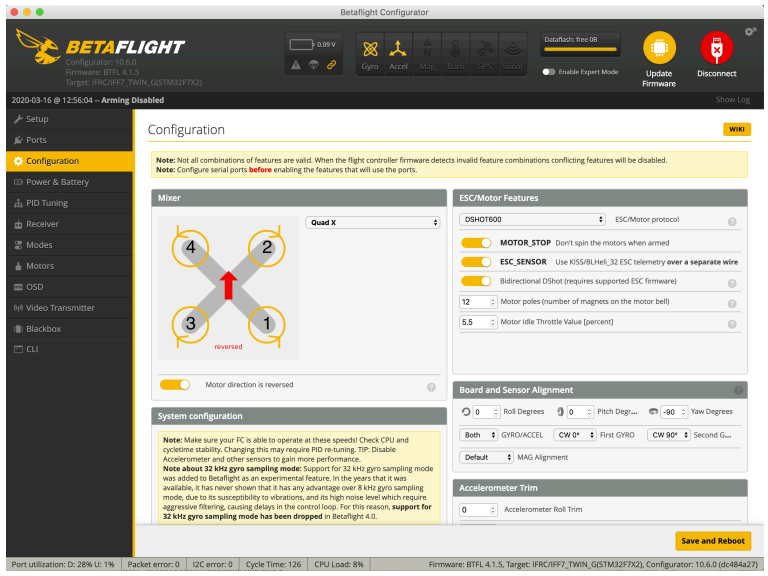


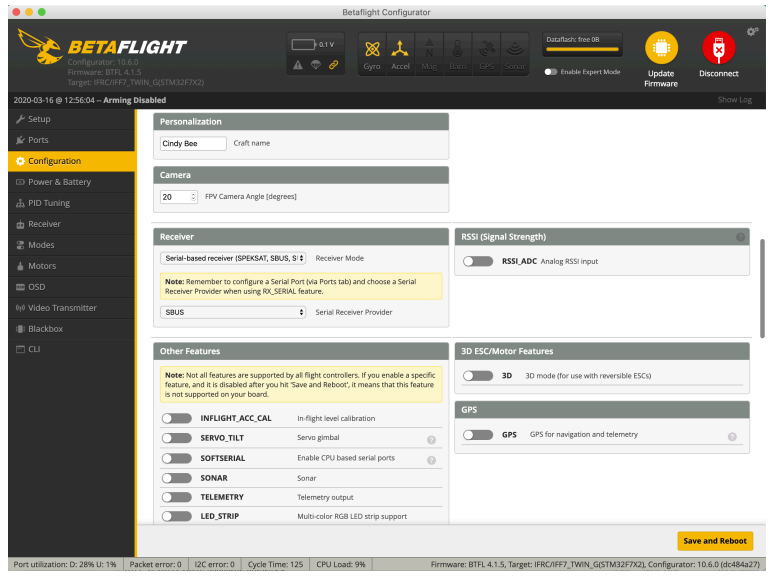
Betaflight setup for **iH2 HD Whoop** (Ports page)

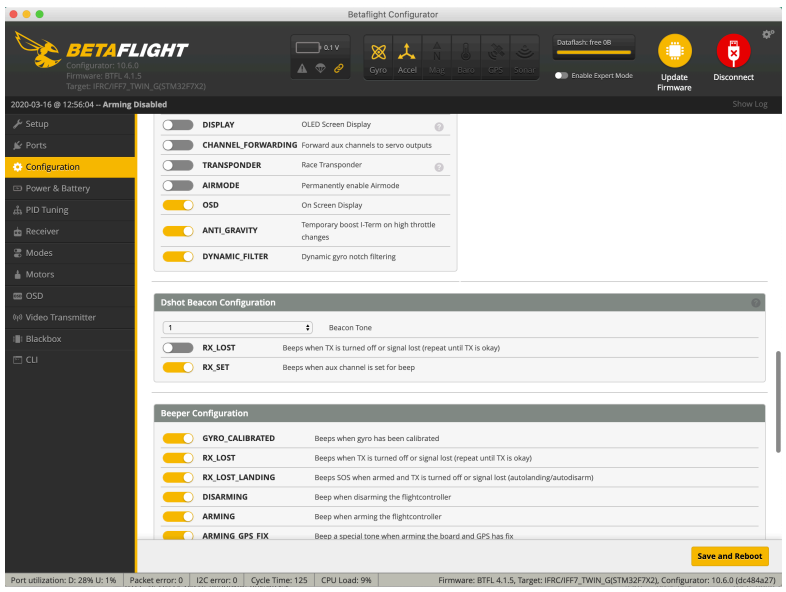


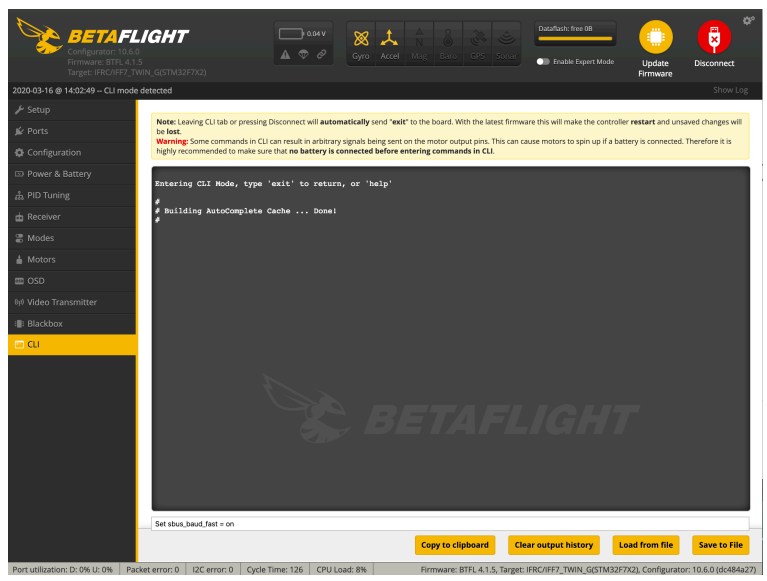
- Verify you are setup like this if using the DJI transmitter:
- Serial Rx switch is set for UART2.
- MSP switch is set for UART1 (serial connection to Air Unit but configured as a master serial Port or MSP).
- ESC Sensor Input is set for UART5 (optional).

• Suggested changes to Betaflight setup for **iH2 HD Whoop** (Config page(s))





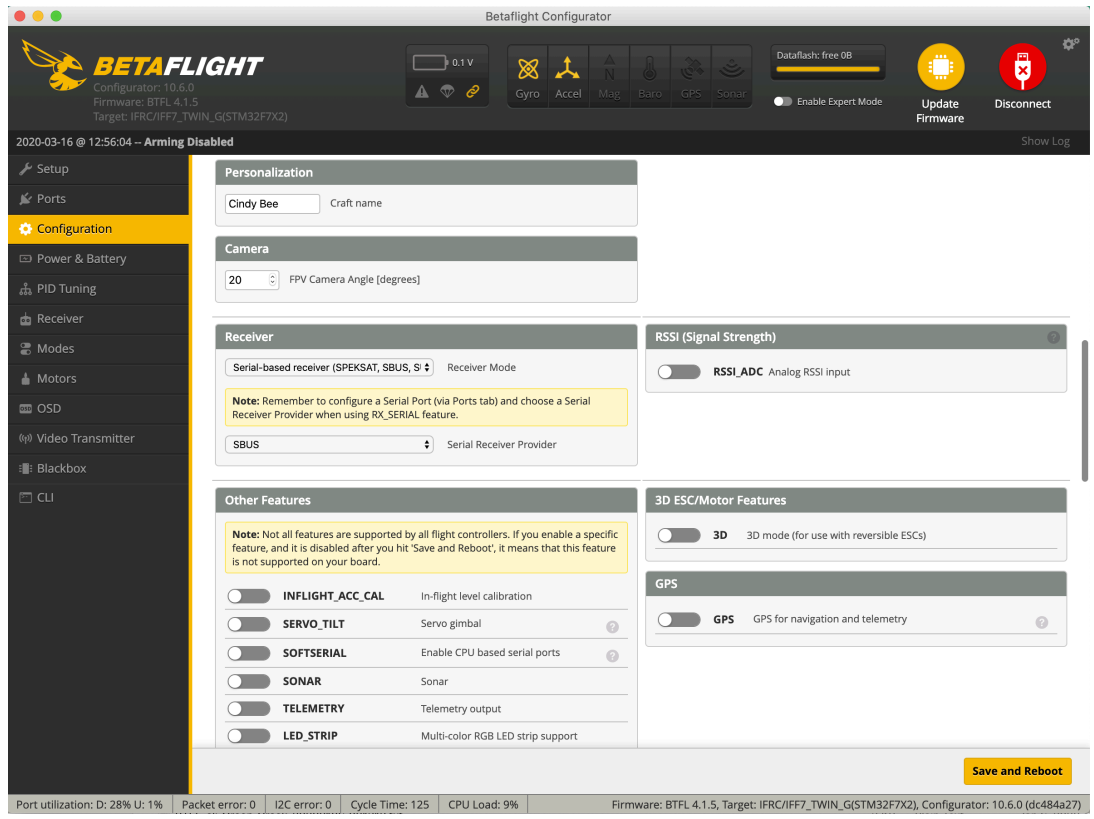


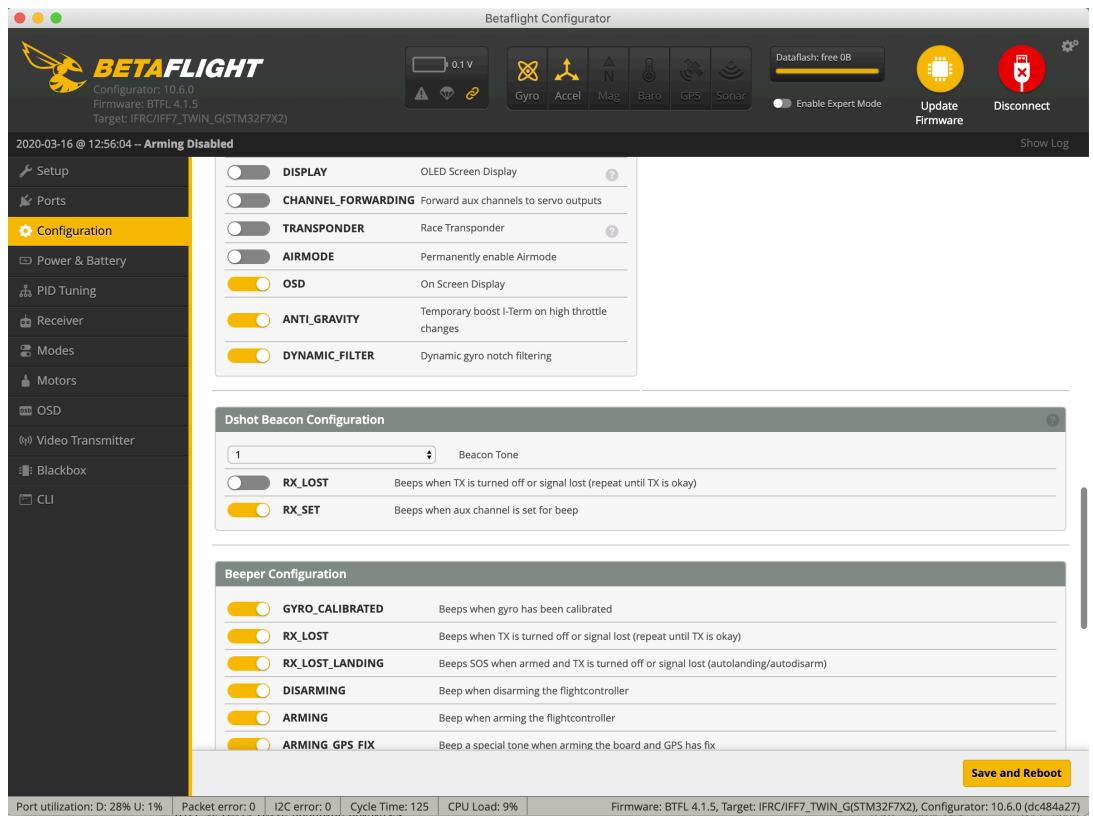


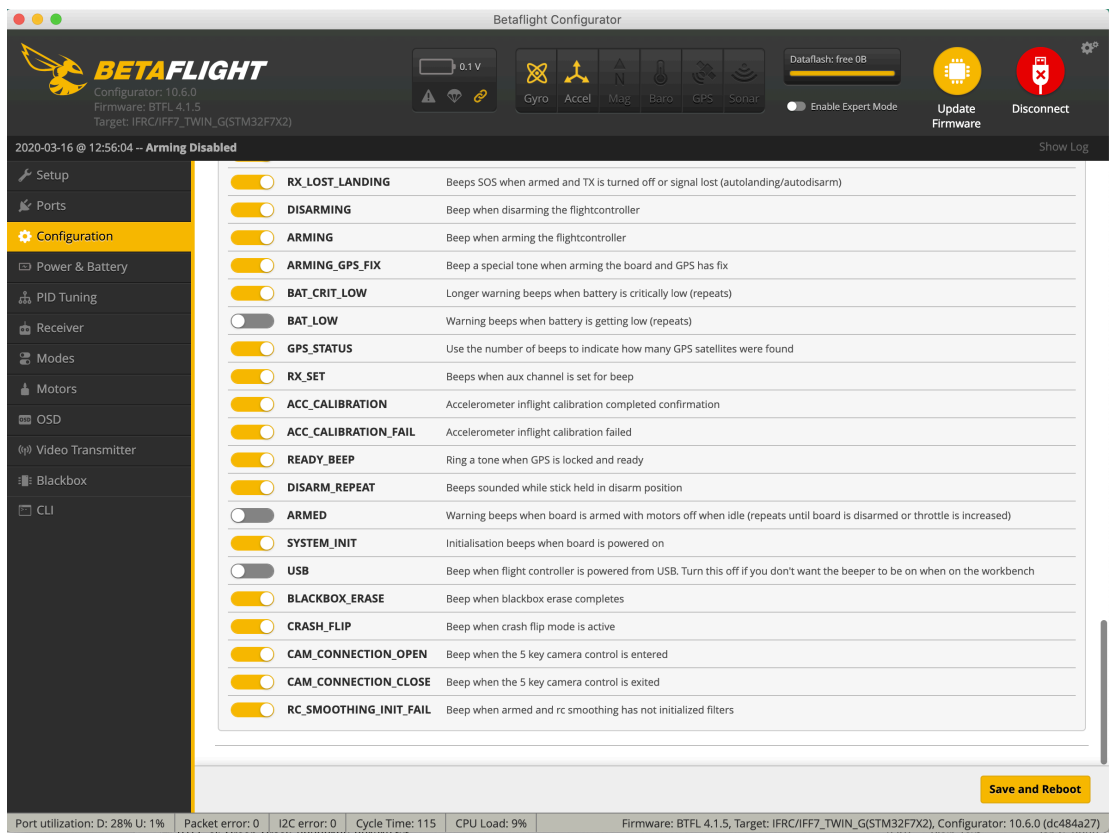
- Lot's of stuff here: check that the motor direction switch is set to **Reversed**.
- ESC Motor Features: **DSHOT600** is selected, **Motor Stop** if following my setup (will use in modes page), **ESC Sensor** and BiDirectional Dshot switches are all set to **on**. Motor poles should be set to **12**.
- If on the setup page the quad didn't tilt the same way you moved it, you can adjust it here (my setup has **-90 set for Yaw Degrees**).
- As part of the config page when I get to the Sbus setting, for now, a CLI command must be set, "**Set sbus_baud_fast = on**". And then "save".
- Later you should check to see if protocol is set right in your Goggles. On goggles, Go to **Menu, Settings, Device, Protocol**. Make sure it says "**SBUS BAUD FAST**"

Config pages continued

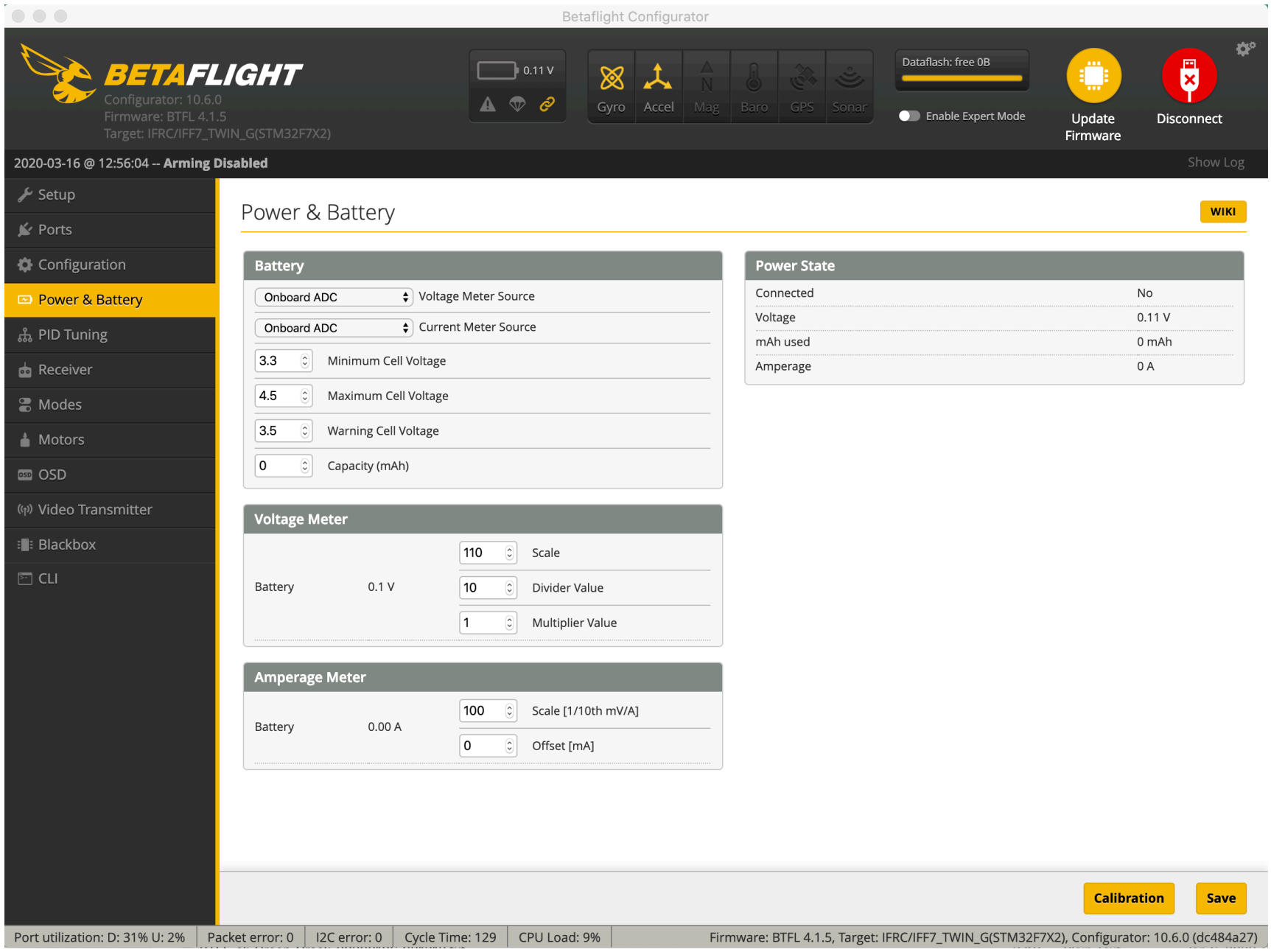
- Turn off soft serial if it is set, as well as display and if following my setup, Airmode always on should be set to **off** (turned on in modes page).
- RX_Lost is optional.
- But set switch RX_Set to on, we have Dshot so we can use the motors to provide a beep. Useful to tell if transmitter is communicating (make it beep, better than the arm switch) and in lost craft recovery.
- I turn off Bat Low, as you cannot hear it while flying. Bat Critical is on so if after landing the battery is very low and needs a charge soon so it doesn't go below the voltage one can recharge from.
- Armed is unnecessary and wastes power. Turn it and the USB one off as they only annoy lol.





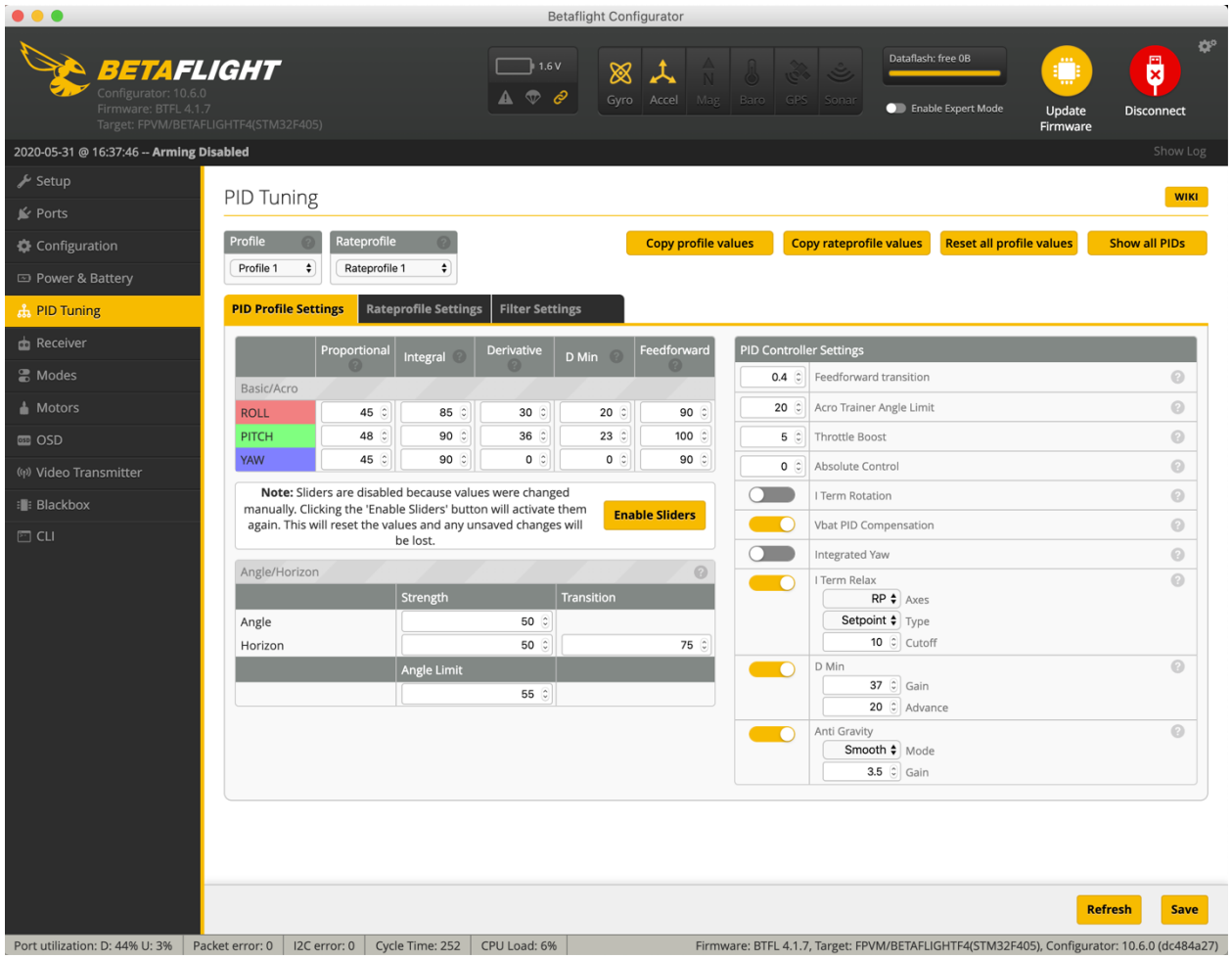


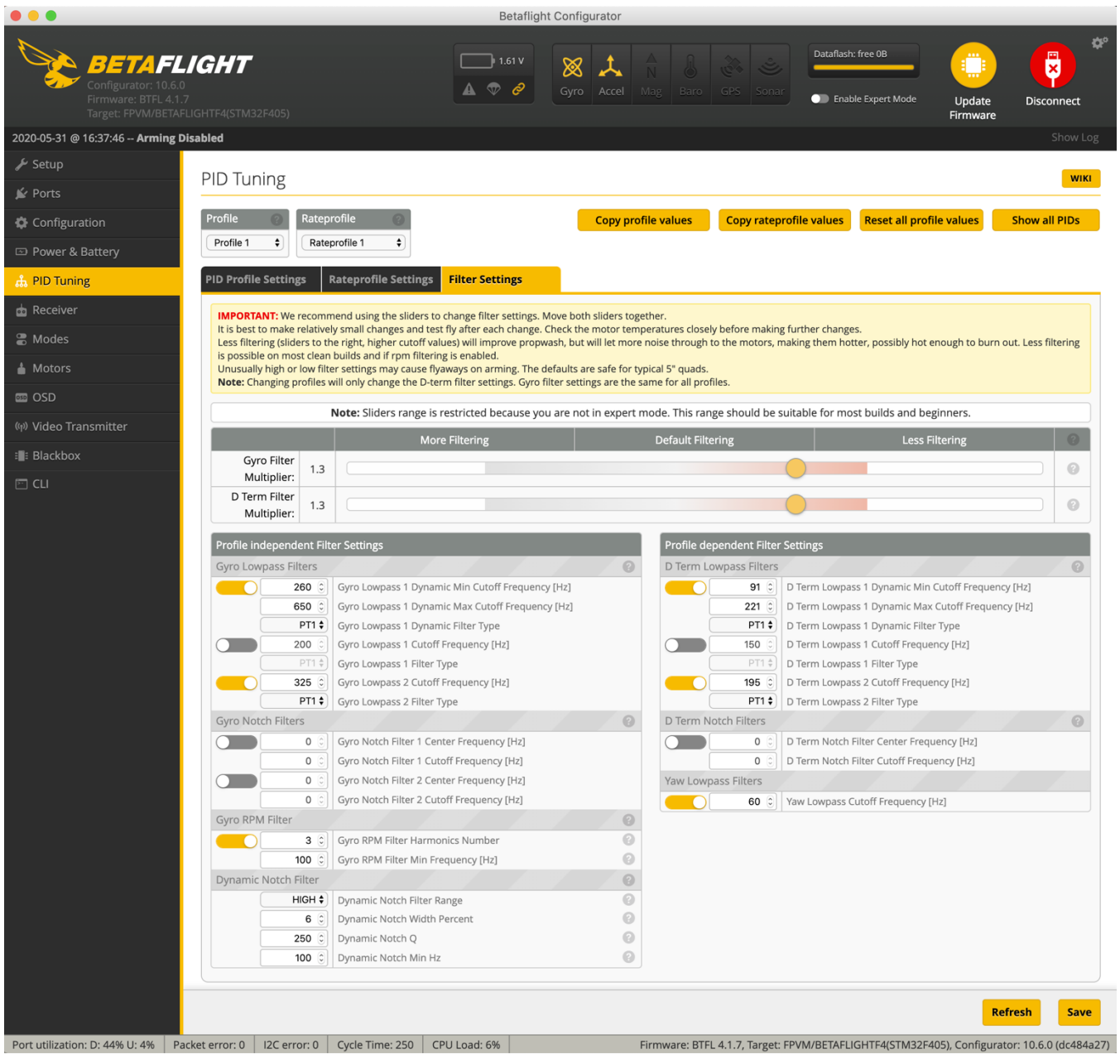
Betaflight setup for **iH2 HD Whoop** (Power & Battery page)



- Defaults are fine for the **iH2 HD Whoop**.
- You can now calibrate your power but for now ignore
- (will add to this guide re this function later).

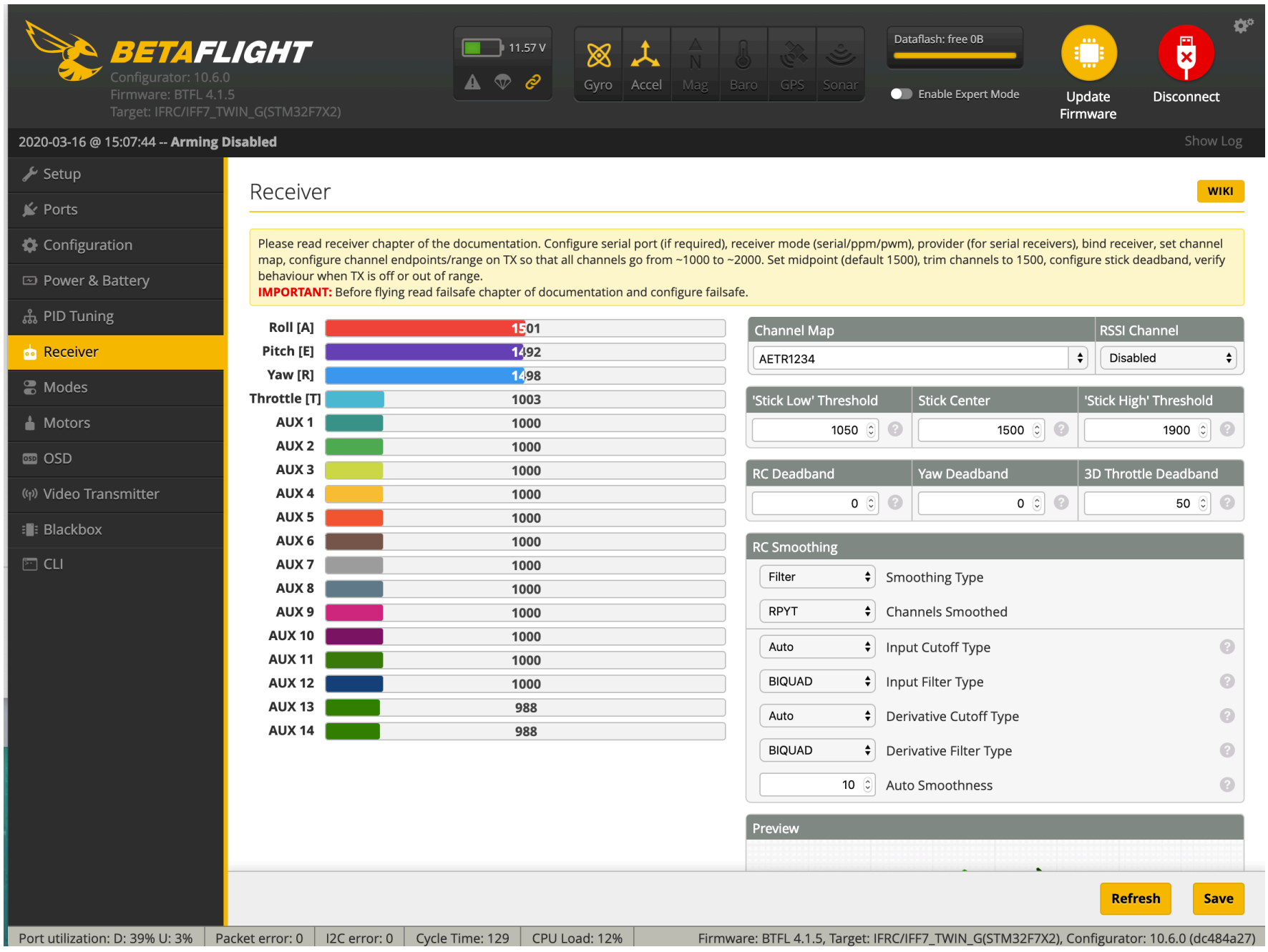
Betaflight setup for **iH2 HD Whoop** (PID Tuning page)





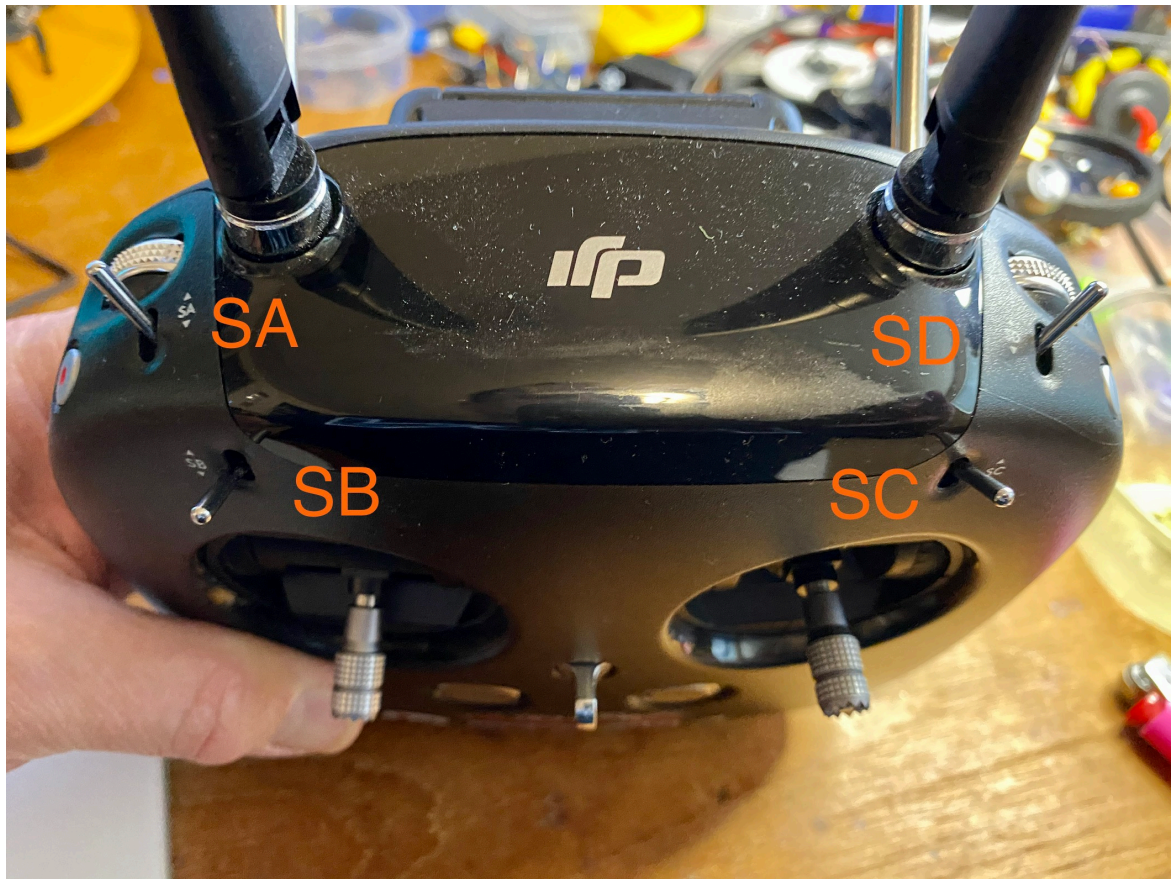
- PID's and rates shown here are default iFlight configuration values.

Betaflight setup for **iH2 HD Whoop** (Receiver page)



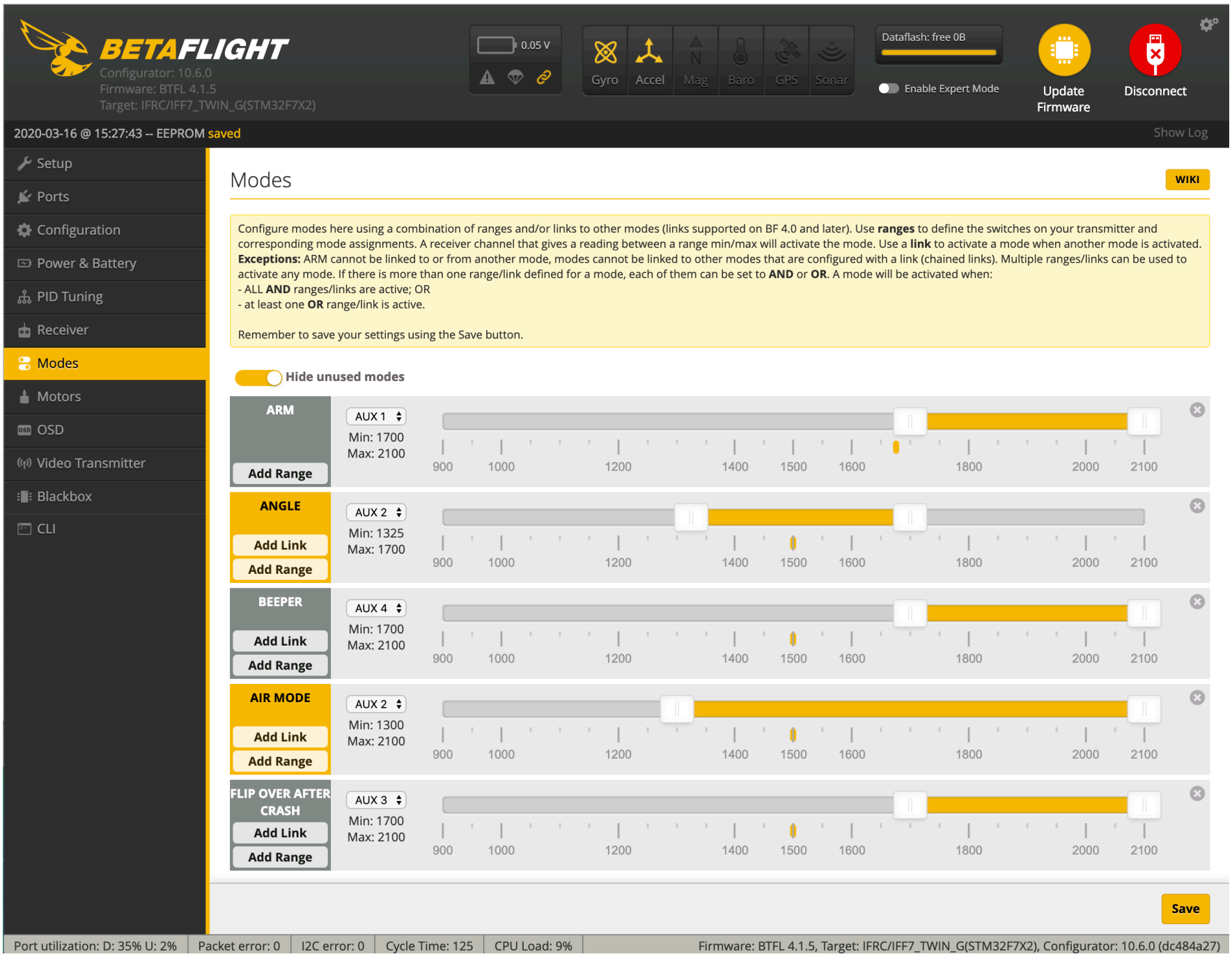
- Connect your **iH2 HD Whoop** to battery, power up your goggles and DJI Transmitter.
- With props off the **iH2 HD Whoop** and connected to transmitter as well as betaflight, verify the controls. Does the throttle work the correct control? Same for the rest and do the switches function?
- If the controls do not respond correctly you may need to change the setting that shows something different to “**AETR1234**” if using the DJI transmitter (Jumper T16 as well).

Betaflight setup for **iH2 HD Whoop** (Modes page)



- Your Cinebee probably came configured with just one control that you can use (arm on SA). Here I show a much more useful setup for the Modes (Aux Switches SA-SD). First is what switch does what and following that is the modes screen and the #aux settings you can paste and run in the CLI (don't forget to save) for my settings shown here
- Standard convention for transmitters is all switches should be in up or the forward position which is off when you power on (or off) the transmitter, this is sometimes called the safe position.
- Your three position switches SA, SB, SC, SD respond to their settings in the betaflight firmware in your Cinebee HD2 which has been set as follows:
- Switch B (**SA**) is your **Arm switch**, move to the bottom position to arm the Cinbee. Props will spin if in Air mode at this point.
- Switch A (**SB**) is your **Flight Mode** Switch: the default (all the way up) is plain **Acro** mode, the middle is **Angle** Stability mode position, and the bottom position is full **Acro** (with Air Mode and props will spin once armed) and is best for flips and rolls. More advanced pilots may want to flip this around so that Acro with Air Mode is default (switch in up position).
- Switch C (**SC**) is **Crash Recovery Arming mode** (a mouthful so its also known as turtle mode or turtle recovery mode. To use you must first disarm (SB is all the way up) then arm the Turtle (SC all the way down). Use your sticks to flip back over (see youtube videos on this subject to learn to use properly). Disarm Turtle Mode (SC all the way up). Now arm your Cinebee (SB all the way up) and fly home 😀 .
- Switch D (**SD**) is your **Beeper** that you enabled on the Config page**,** move switch SD down to the bottom position to use the motors to make sounds. Useful to confirm your transmitter is live as well as aid in lost craft recovery. Status beeps too.

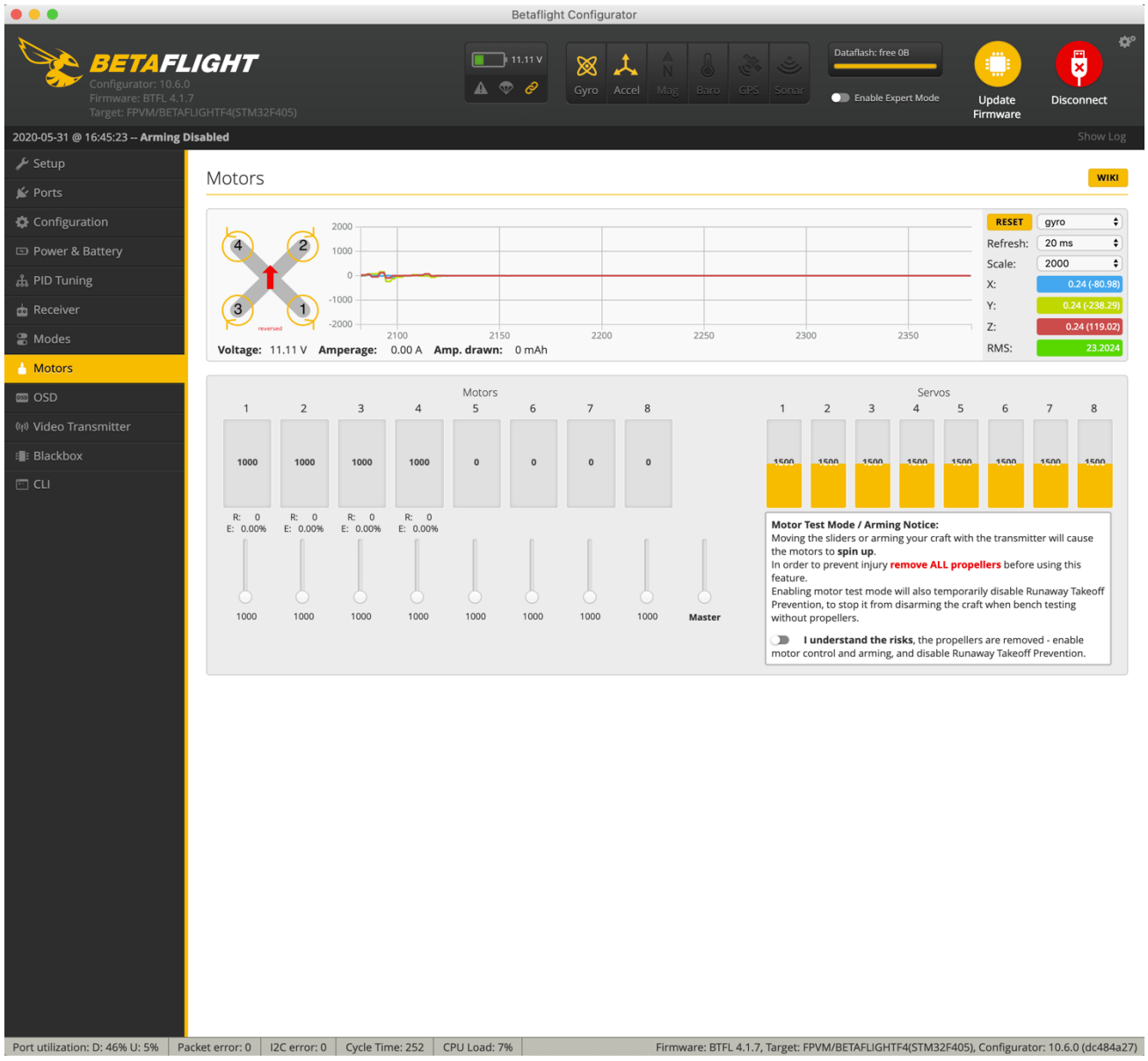
Betaflight setup for **iH2 HD Whoop** (Modes page continued)



- Copy and paste these # Aux settings to set the modes this way, paste into the CLI, hit enter and don't forget to click **save** button after.
- Or just use the Betaflight GUI 😀

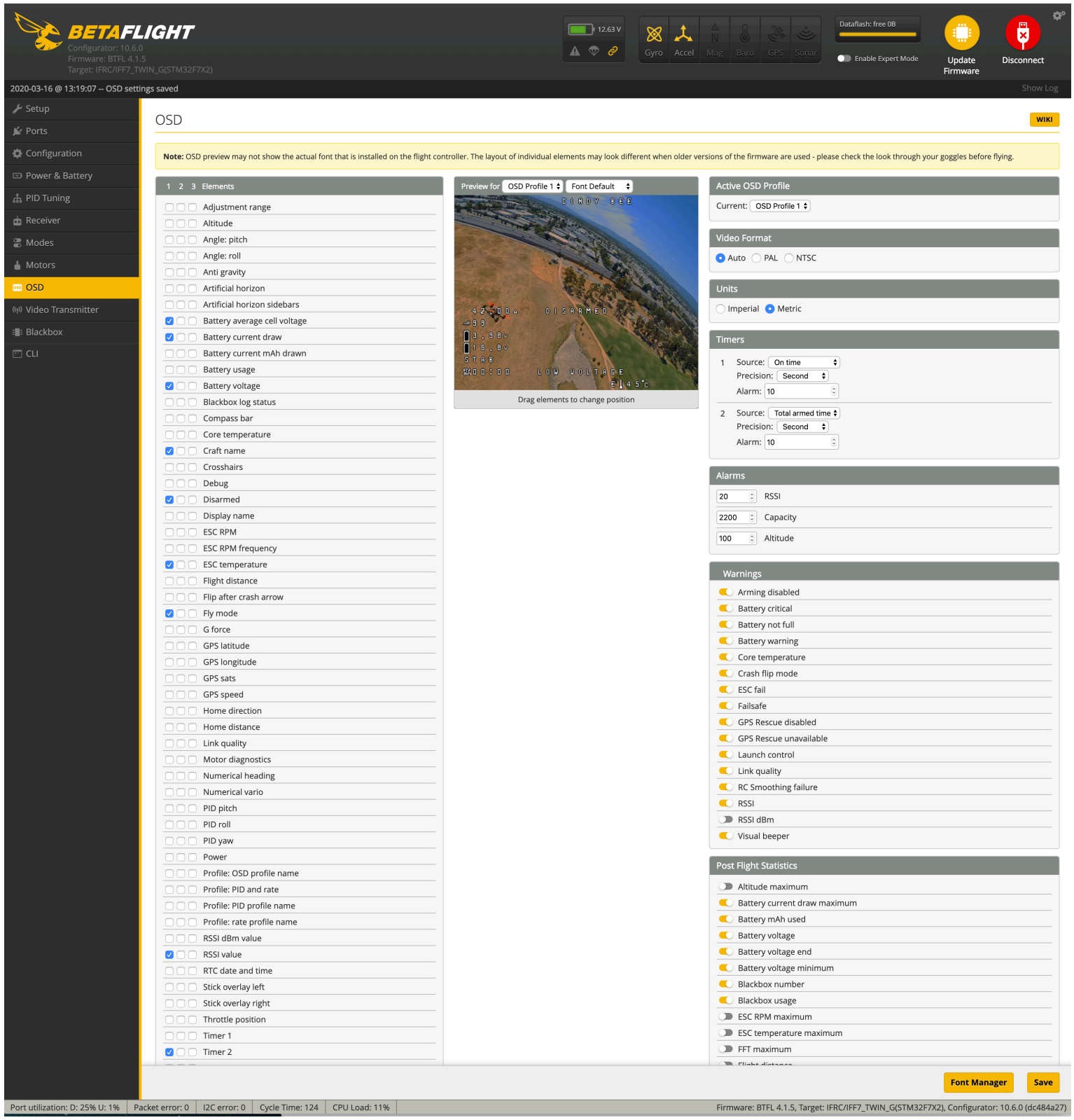
```
# aux
aux 0 0 0 1700 2100 0 0
aux 1 1 1 1325 1700 0 0
aux 2 13 3 1700 2100 0 0
aux 3 28 1 1300 2100 0 0
aux 4 35 2 1700 2100 0 0
```

Betaflight setup for **iH2 HD Whoop** (Motors



- **Props off**! or *Fingers off*! You have been warned lol. That's why the big message and a switch on this page. (flip that when stuck in MSP arming flag issue too)
- Note the direction shown for the motors and spin them slowly (just enough to spin) and verify each motor is spinning in the correct direction. If not, go back to BLHeli32 and correct (remember that setting?) then return here and test to verify.
- **DO NOT REV THE MOTORS**! Do not run up above 10-20% as you do NOT have the resistance from the props and the motors will quickly overheat and burn up.

Betaflight setup for **iH2 HD Whoop** (OSD page)



- Cut & Paste these to the CLI and then Save to quickly bring up these settings. Then edit and move around to your liking.

```
set osd_warn_rssi = ON
set osd_warn_link_quality = ON
set osd_vbat_pos = 2433
set osd_rssi_pos = 2369
set osd_tim_2_pos = 2497
set osd_flymode_pos = 2465
set osd_current_pos = 2337
set osd_mah_drawn_pos = 345
set osd_craft_name_pos = 2061
set osd_warnings_pos = 14794
set osd_avg_cell_voltage_pos = 2401
set osd_disarmed_pos = 2347
set osd_esc_tmp_pos = 2547
set osd_stat_endbatt = ON
set osd_stat_battery = ON
set osd_stat_max_g_force = ON
set osd_stat_total_time = ON
```

iH2 HD Whoop - wrap up

- Go back to the CLI in Betaflight and do a Diff again. Do a Diff All this time.
- **Save** that Diff All to a file! It is your new recovery point.
- This guide is a living document and will be updated over time…