Titan H3 HD

Quick Start and Setup Guide

by Patrick Byars

IFLIGHT
USA REPAIR CENTER

Disclaimer and Safety Guidelines

1. Store the flight battery in a dry and ventilated place away from direct sunlight to prevent the battery from overheating.
2. To avoid possible injury and damage, please fly in good weather conditions and in a safe environment.
3. Please return as soon as possible when there is low battery or strong wind conditions.
4. Please ensure that the power system or other electronic components are soldered correctly, that the power supply works normally and the various components are not damaged before flying, otherwise it may cause the equipment to burn out and other losses or damage to equipment or property.
5. Make sure to operate the aircraft in an open space. Tall steel buildings, mountains, rocks, trees, etc. may interfere with the transmitter signal on the aircraft.
6. To prevent the remote controller from interfering with other wireless equipment, please turn off other WiFi devices.
7. Do not fly near sources of electromagnetic or radio interference. Sources of interference include, but are not limited too, WiFi hotspots, routers, Bluetooth devices, high voltage power lines, high voltage power stations, mobile phone base stations, and television broadcast towers. Otherwise, the wireless transmission performance of the aircraft may be affected by interference and cannot fly normally.
8. Please charge/discharge the battery to a storage voltage of about 3.85V when the battery is not in use.

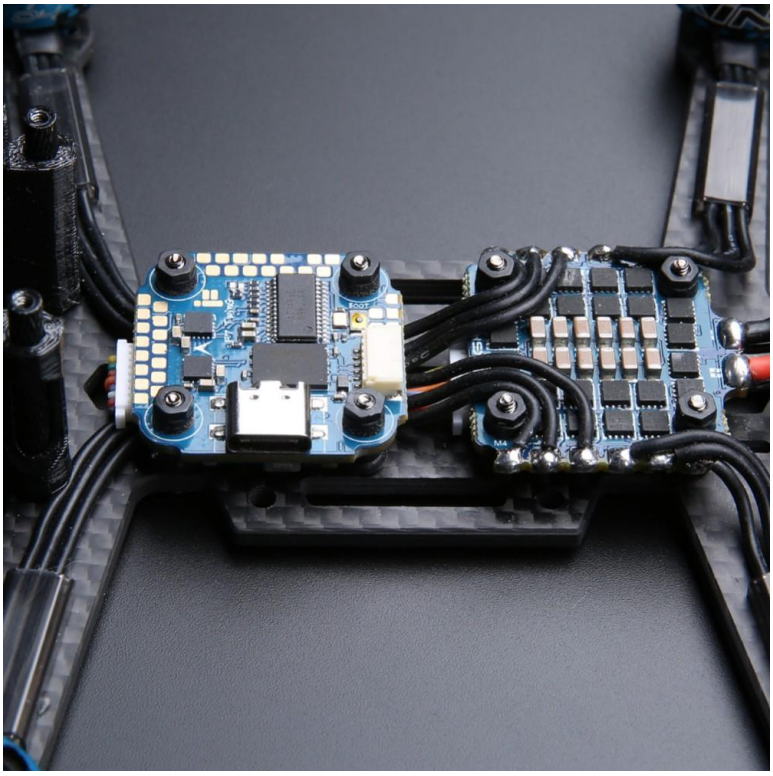
Caution:

1. Users should ensure that they have a sufficient level of understanding of the aircraft and are aware of all emergency response measures.
2. Users should have a flight plan and do not be reckless, impromptu to fly the aircraft.
3. Please respect the privacy of others when you use aircraft to record video.
4. Stay away from the rotating propellers and motors.
5. After landing, first stop the motor, then turn off the flight battery, and then turn off the remote controller.
6. Turn off power or take off the propellers to prevent motors from high-speed rotation before setting the remote controller channels, upgrading firmware, and setting parameters.

Quick Start

- The Titan H3 HD comes preconfigured and tuned with rates and PIDs and more.
- Only a few steps need to be performed to prepare for your maiden flight.
- Bind DJI Goggles and Transmitter to your Titan H3 HD.
- Understanding how your switches are setup.
- Arm and fly…
- Following the Quick Start chapter is a 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.

Accessing the F7 X-D and the Air Unit's USB-C to update Betaflight and the DJI Air Unit firmware



The Titan H3 features easy access to both the F7 SucceX-D Mini FC and the DJI Air Unit's USB-C Ports

How to bind your goggles and DJI transmitter to your new Titan H3 HD

- You will need your goggles and its power cable, your charged transmitter, and a lipo battery with a XT30 that is fully charged, the Titan H3 HD and a battery that is charged for it. Also a paperclip or blunt tool to push a recessed button.

- I recommend the iFlight Fullsend 4S, and up to 600-1000mah, with at least a 50C rating but the more C the better.

- I recommend using a iSDT Smart Charger hands down over almost any other. A wise investment.

- 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.

- Power up **Transmitter**, **Goggles** and **Titan H3 HD**.

- On your Titan H3 HD press the bind button with a paper clip (or like) after it has turned **green**. It will then turn **red**.

How to bind your goggles and DJI transmitter to your new Titan H3 HD (continued)

- Once the Air Unit 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 will hear the 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 of this next part.
- almost done… go to Air Unit 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" 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 done and bound!

After Binding: 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 H3 probably came configured with just one control that you can use (arm on SA) and set to Angle Mode on always.

After binding…

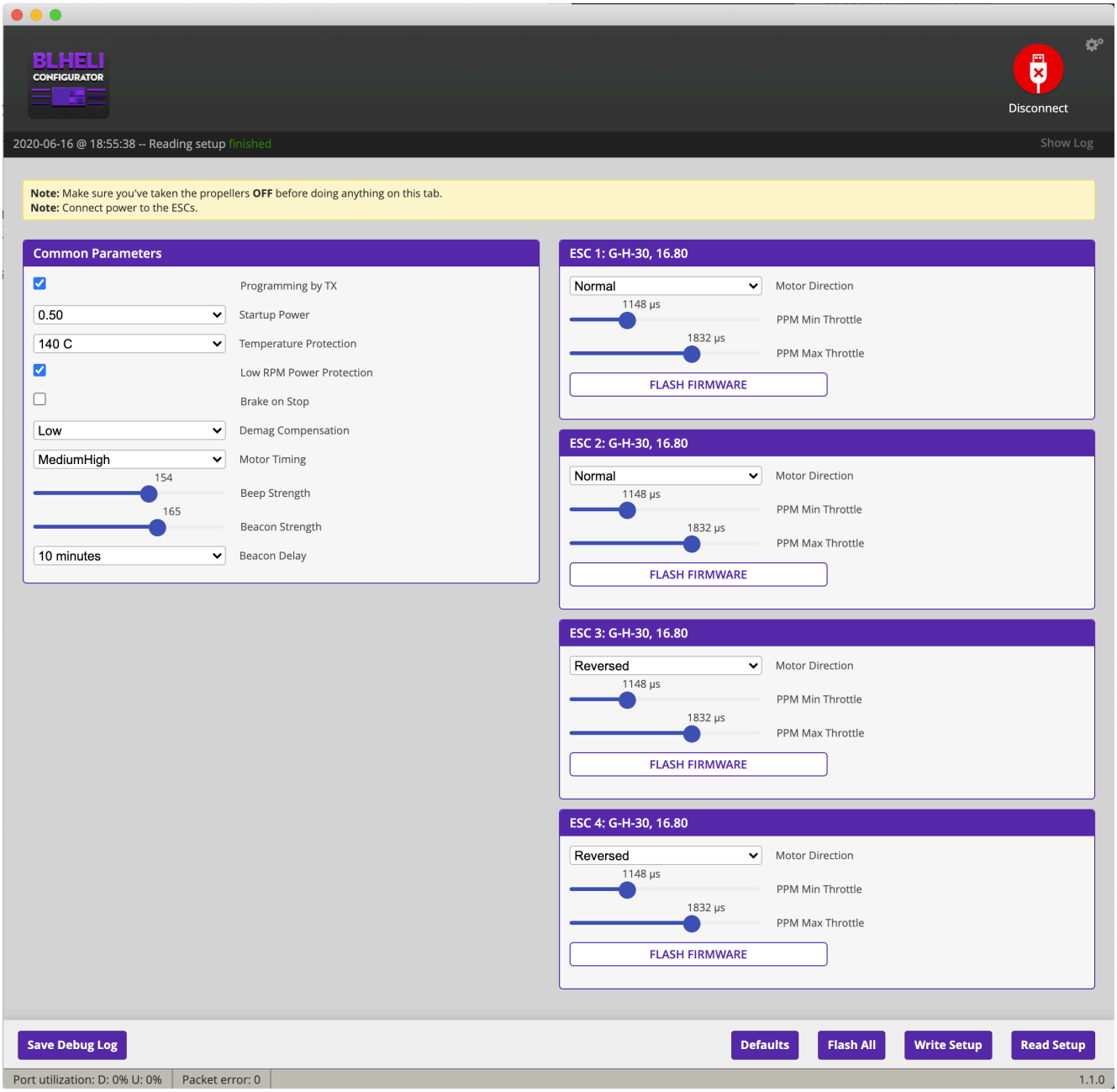
- Do not leave your Titan H3 running for a long time prior to take off. let it cool down first if needed.
- Once ready to fly, Power your transmitter and safe all switches in the up or off position. Check that the throttle is in fact at zero.
- SA is your Arm switch, move it all the way down to arm.
- 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 moving switch SA to up or off position, Congratulations! 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 DJI Air Unit

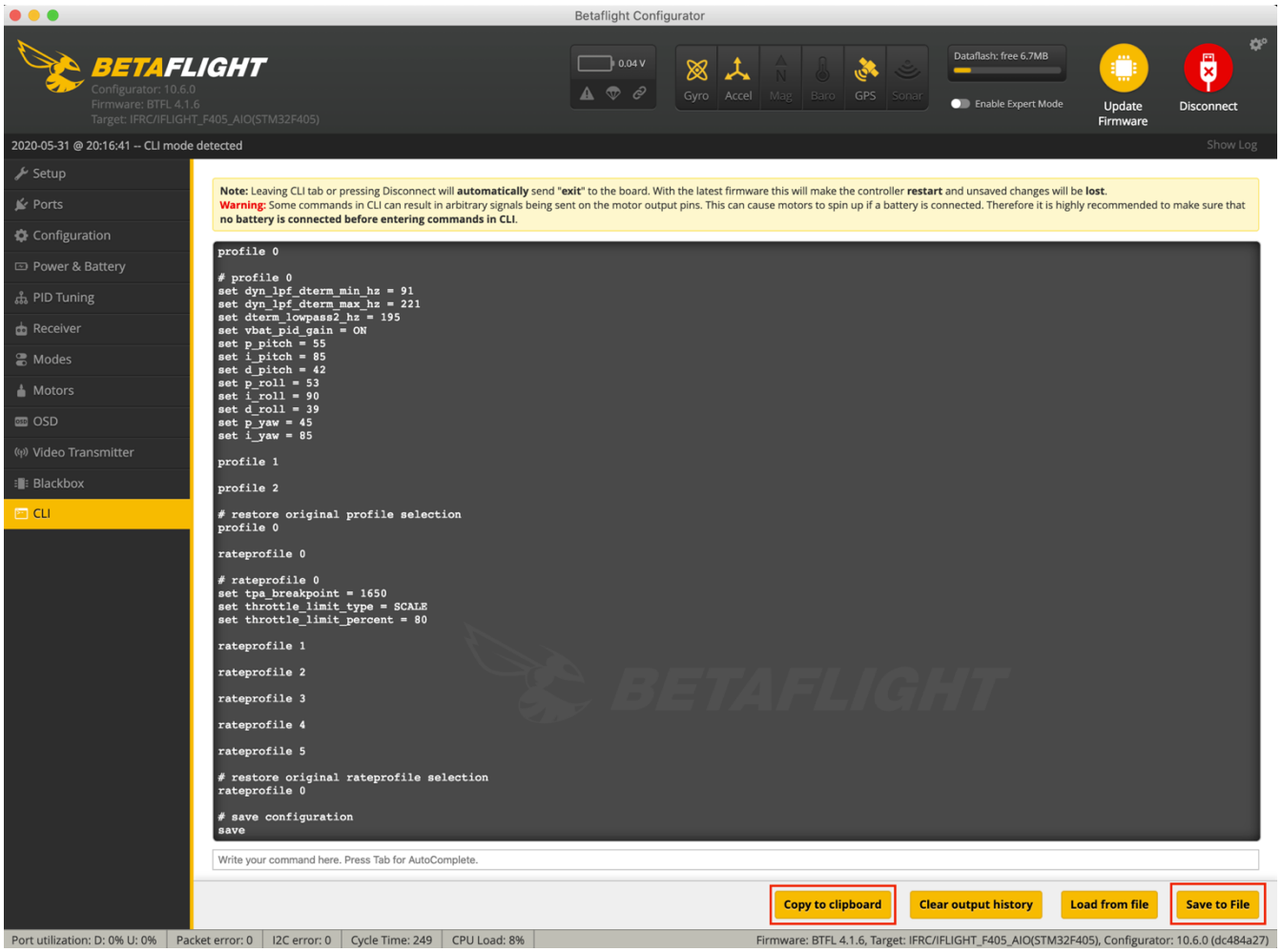
- Download the DJI Assistant 2 (DJI FPV Series) and install on to your computer (if not already done).
- The Air Unit can overheat quickly without airflow from flight, prepare everything and load the DJI Assistant 2 and then power up your Titan H3 HD, and lastly plug in the USB-C and when the Air Unit is discovered, click it and follow the instructions to update firmware if necessary. When finished, unplug the battery, and unplug the USB-C and let the AU cool down now that you have the latest DJI FPV firmware for your Air Unit before moving on to the Flight Controller. I put a small desk fan in front of my quads when working with the powered (props off always).
- 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.

Your Titan H3 HD BNF comes pre setup with the latest BLS firmware 16.80 (currently) you don't need to do anything. Yeah!

- Should you want to update or have a newer version it is easy to do with BLHeli Configurator (not to be confused with BLHELI32, your H3 is running BLS firmware
- I recommend turning up beep and signal volume for startup and lost craft

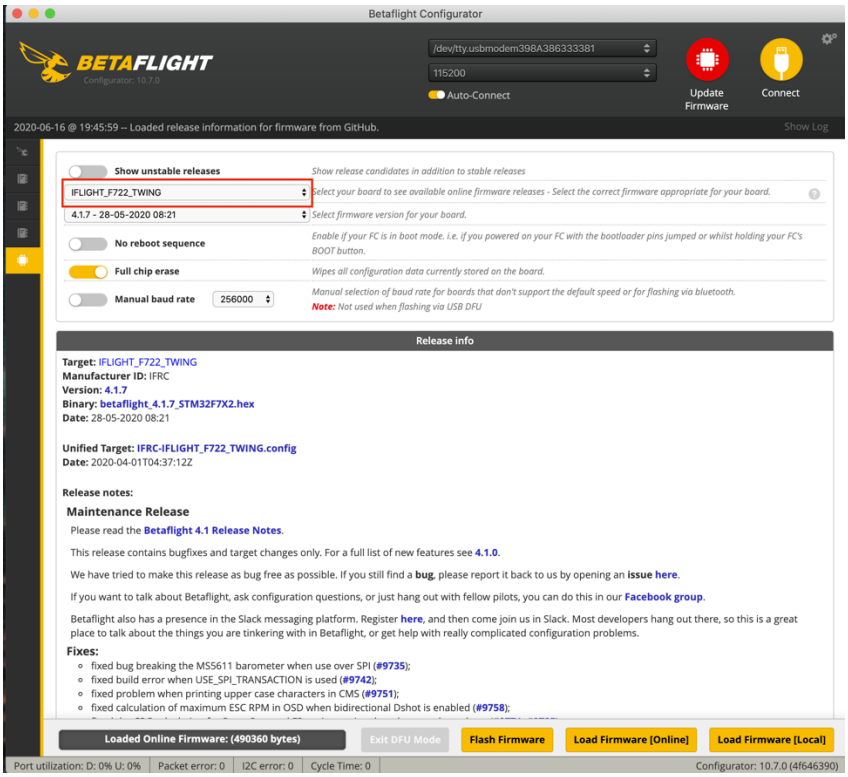


Updating Betaflight to the latest version and complete setup including RPM filtering continued…

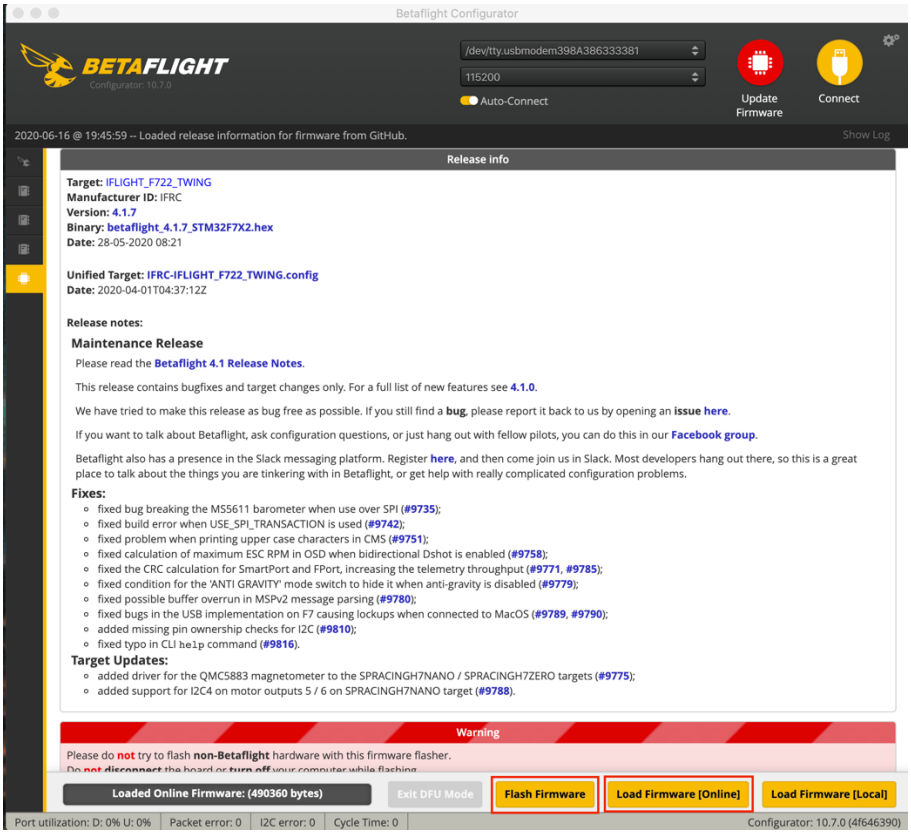


- Next let's save all your settings that are different than the default values with the DIFF command in the CLI.
- Clear the screen with the button "Clear output history" and type "**DIFF ALL**" and then enter. The command executes (this can be done with the gui now too) then click the button **"copy 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.

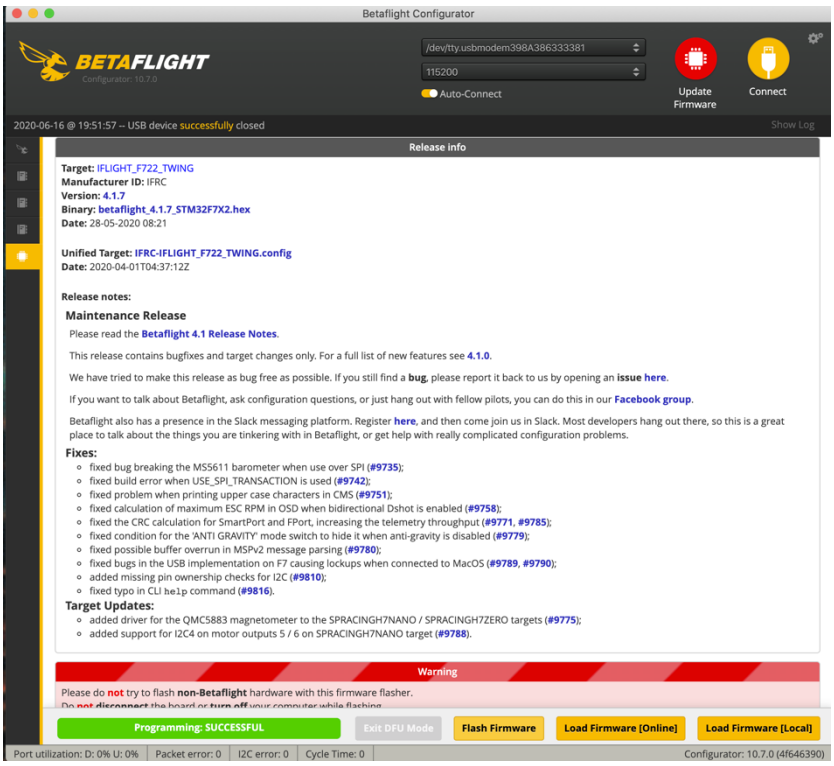
Updating Betaflight to the latest version continued…



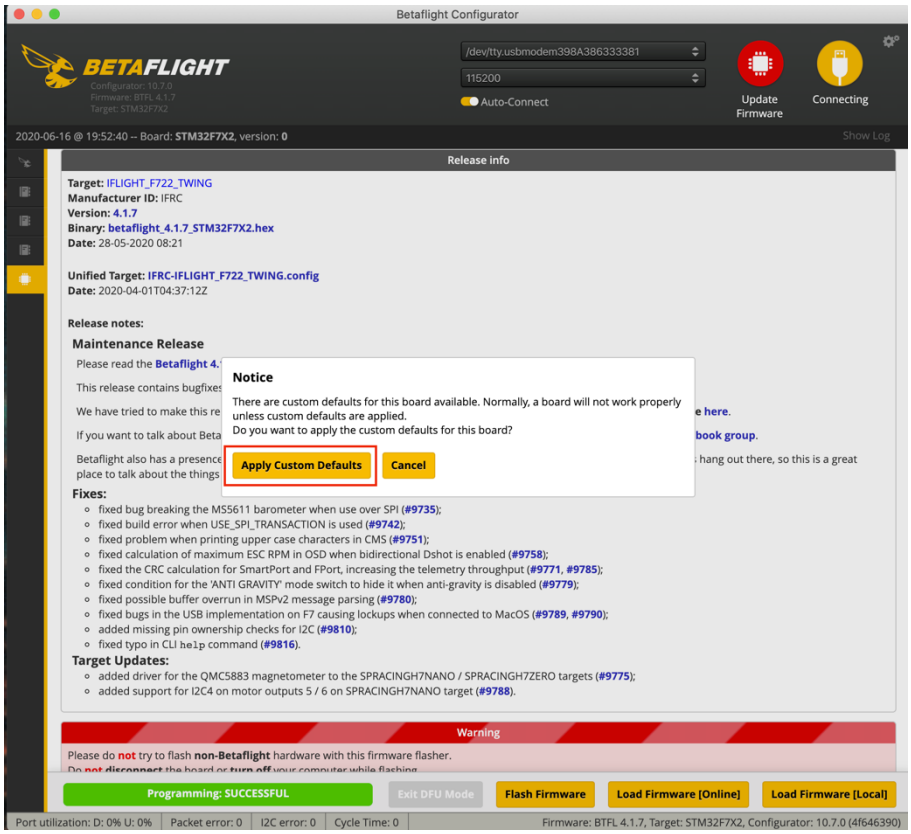
- You should be in the Firmware Flasher section.
- Select the FLIGHT_F722_TWING (IFRC) target and the latest betaflight (as of today 4.1.5).
- Click “Load Firmware online” button.
- Click the Flash Firmware button.



Updating Betaflight to the latest version continued…



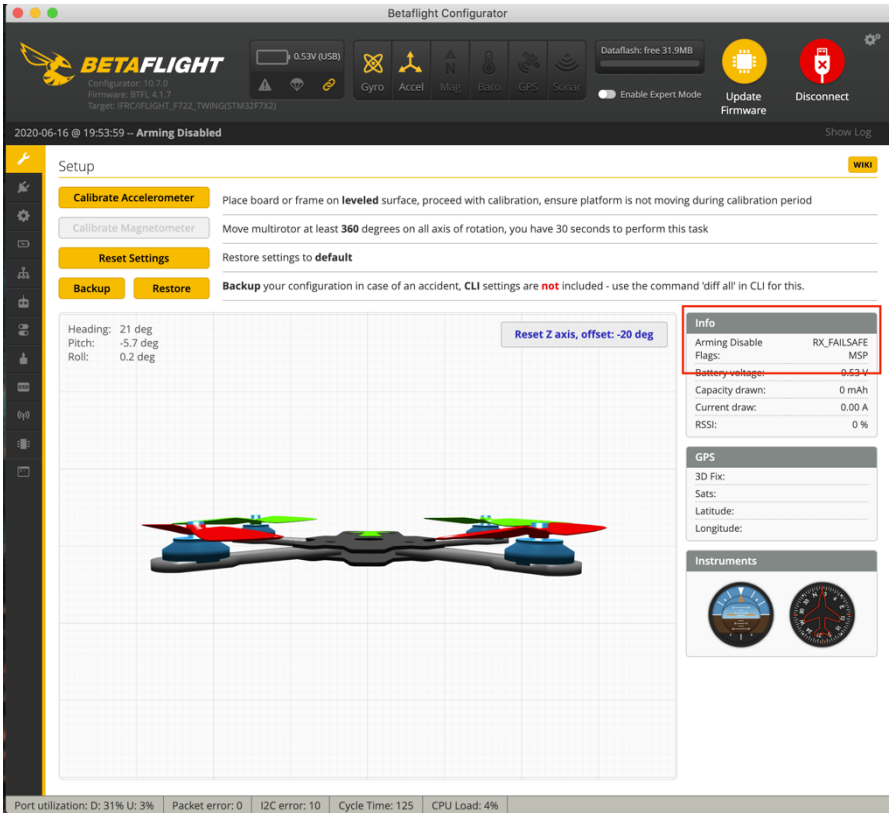
You are not done yet….



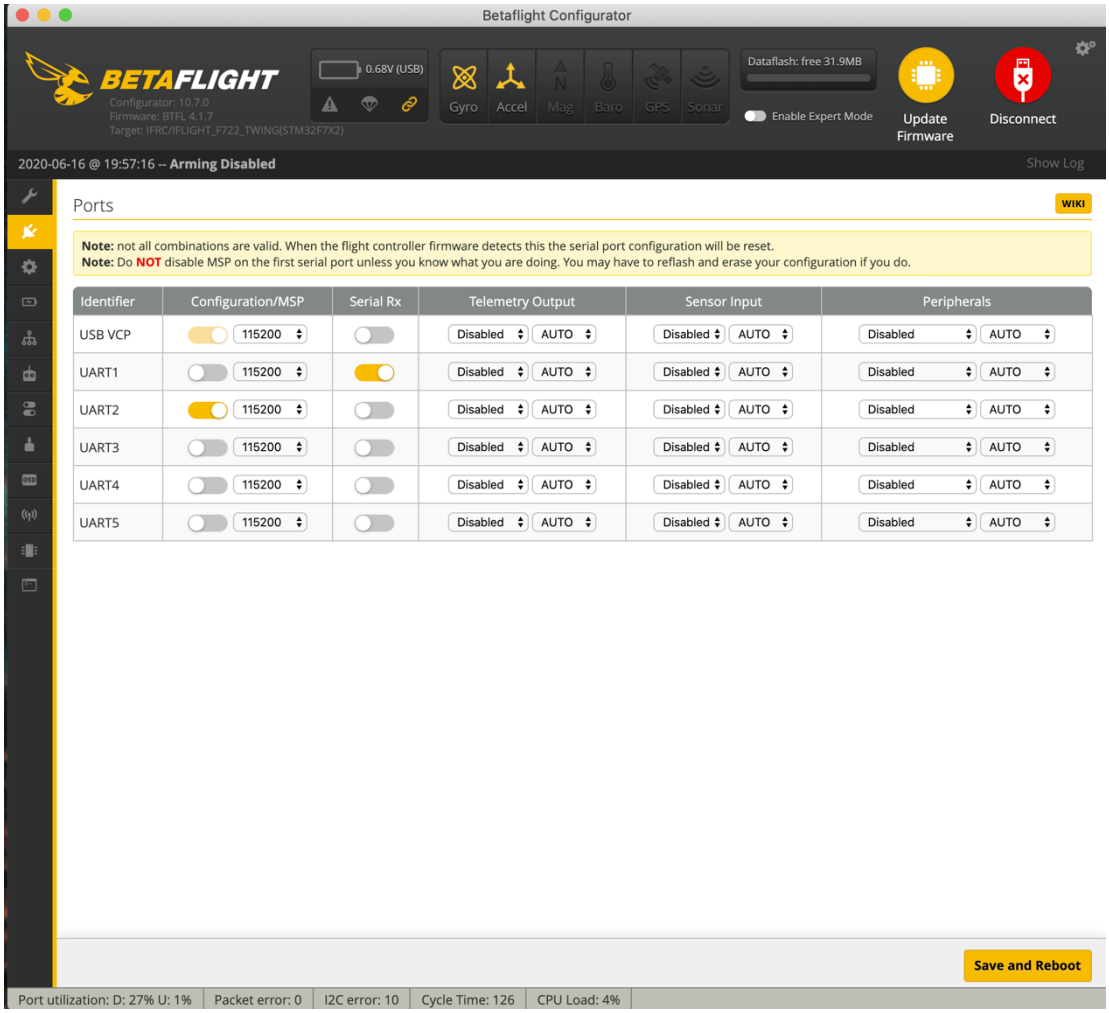
Be sure to click the “Apply Custom Defaults” button

Betaflight setup for Titan H3 HD (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 Titan H3 HD.
- Setup page: 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 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.

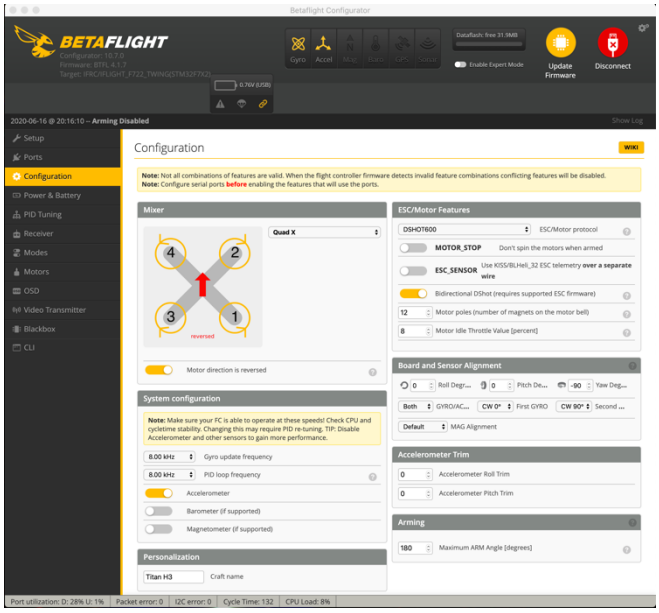


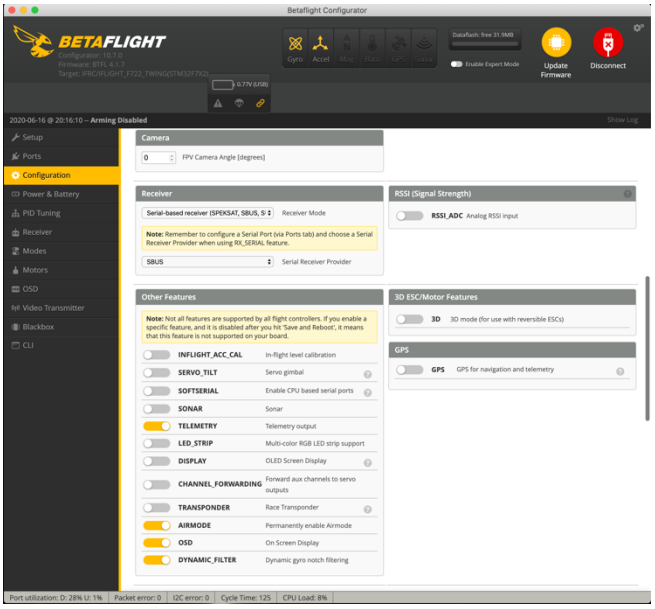
Betaflight setup for Titan H3 HD (Ports page)

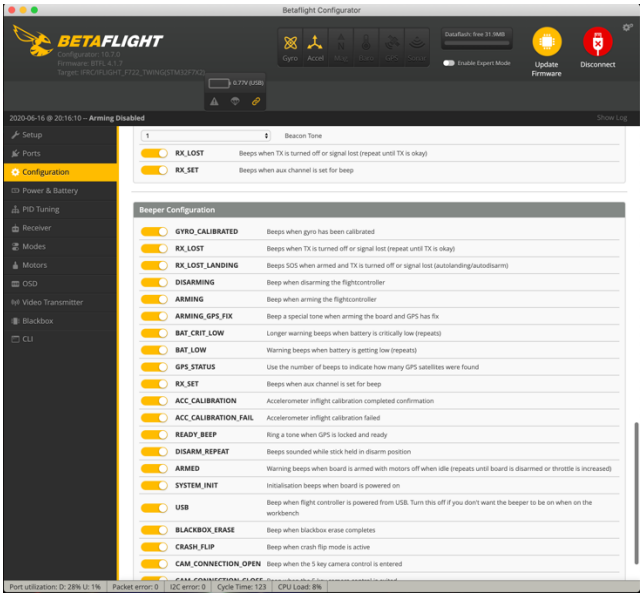


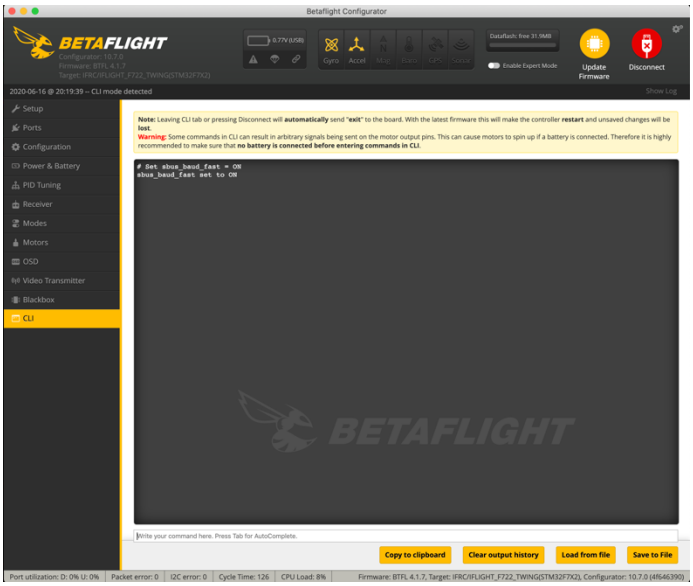
- Verify you are setup like this if using the DJI transmitter:
- Serial Rx switch is set for UART1.
- MSP switch is set for UART2 (serial connection to Air Unit but as a master serial Port or MSP).

Betaflight setup for Titan H3 HD (Config page(s))





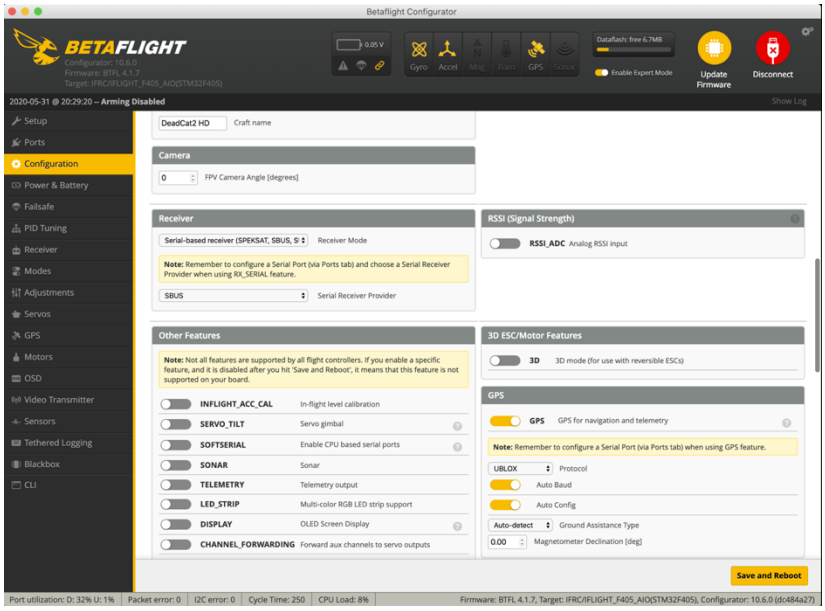


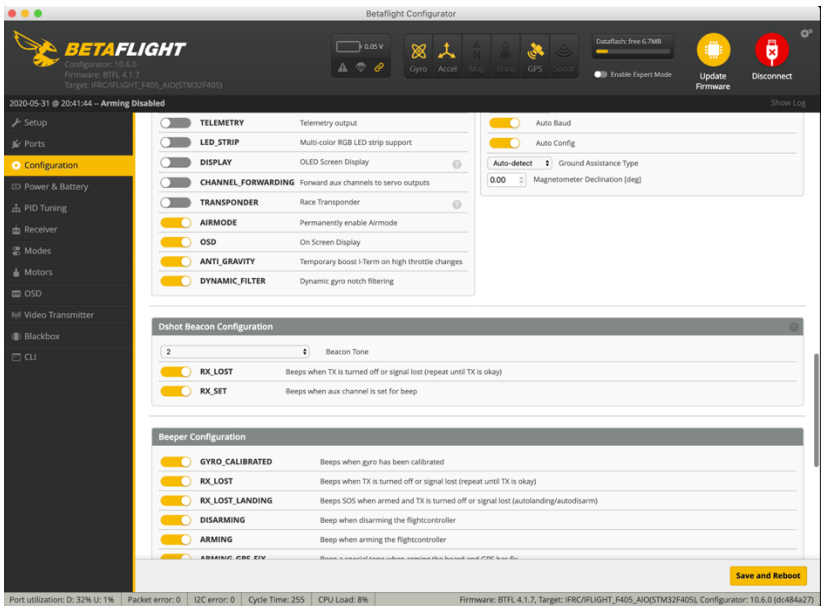


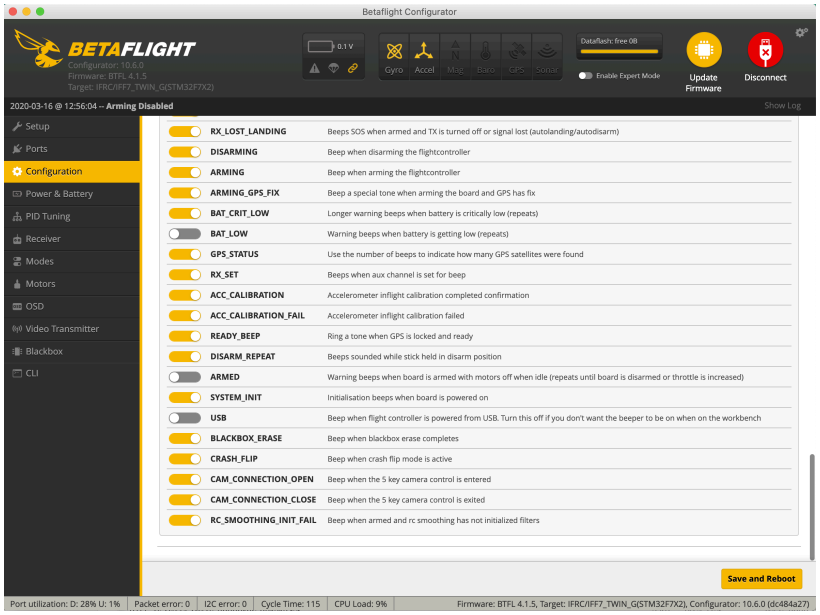
- Lot's of stuff here: check that the motor direction switch is set to **Reversed**.
- ESC Motor Features: **DSHOT600** is selected, and **BiDirectional Dshot** is set to On. 8K/8K Gyro update frequency and PID loop Frequency.
- **Motor poles** should be set to **12**.
- If on the setup page the quad didn't tilt the same way moved it, you can adjust it here (set **Yaw Degrees**).
- As part of the config page when I get to the Sbus setting, for now, a CLI command must be set, got othe CLI page, "**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**".

Betaflight setup for Titan H3 HD (Closer look at config pages)

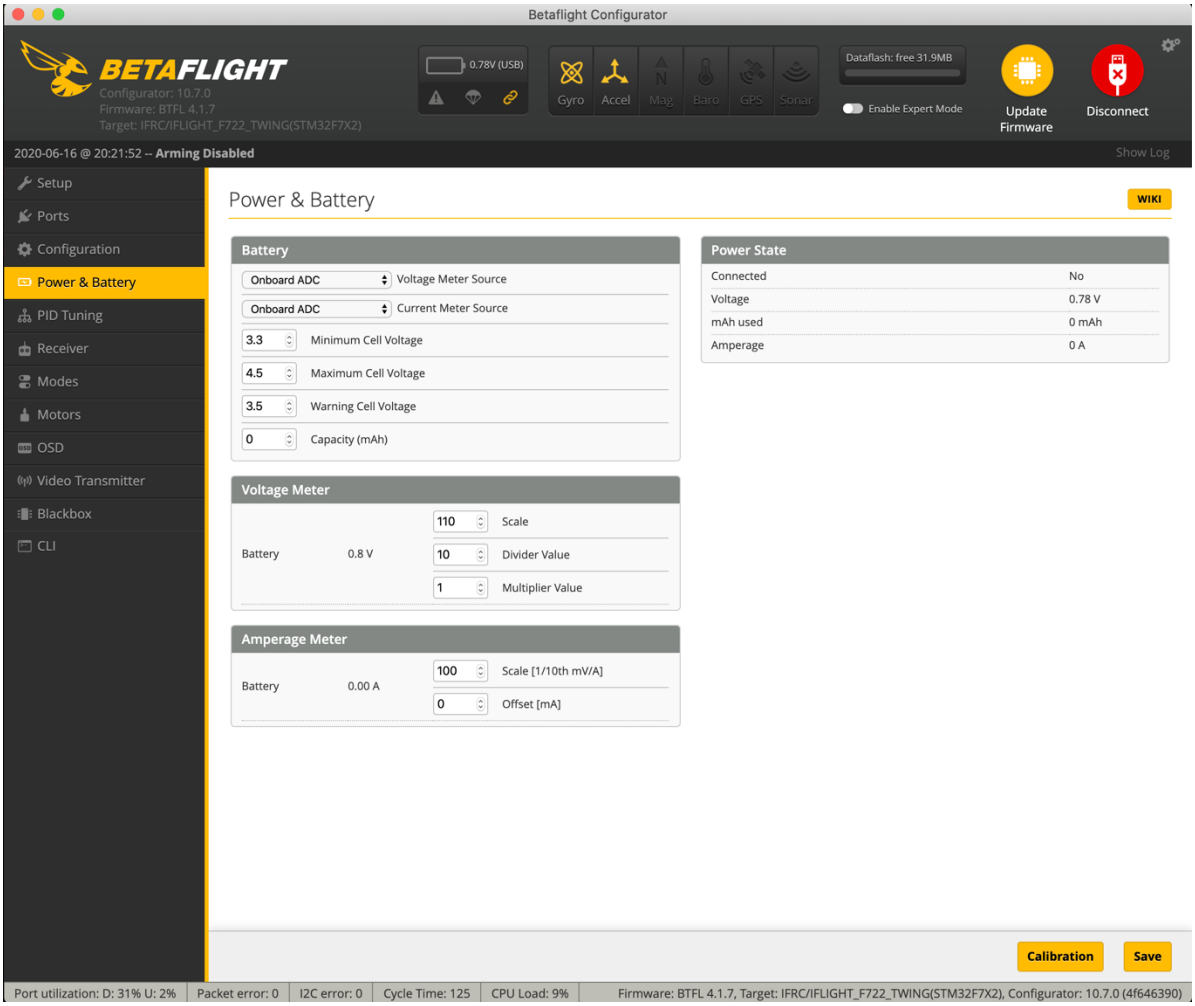
- Turn off soft serial if it is set
- RX_Lost is optional.
- But set switch **RX_Set** to on, we have Dshot so we can use the motors to provide a beep. Useful to tell if transmitter is communicating (make it beep, better than the arm switch) and in lost craft recovery.
- I turn off Bat_Low, as you cannot 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.
- Air Mode is configured to be always on here.





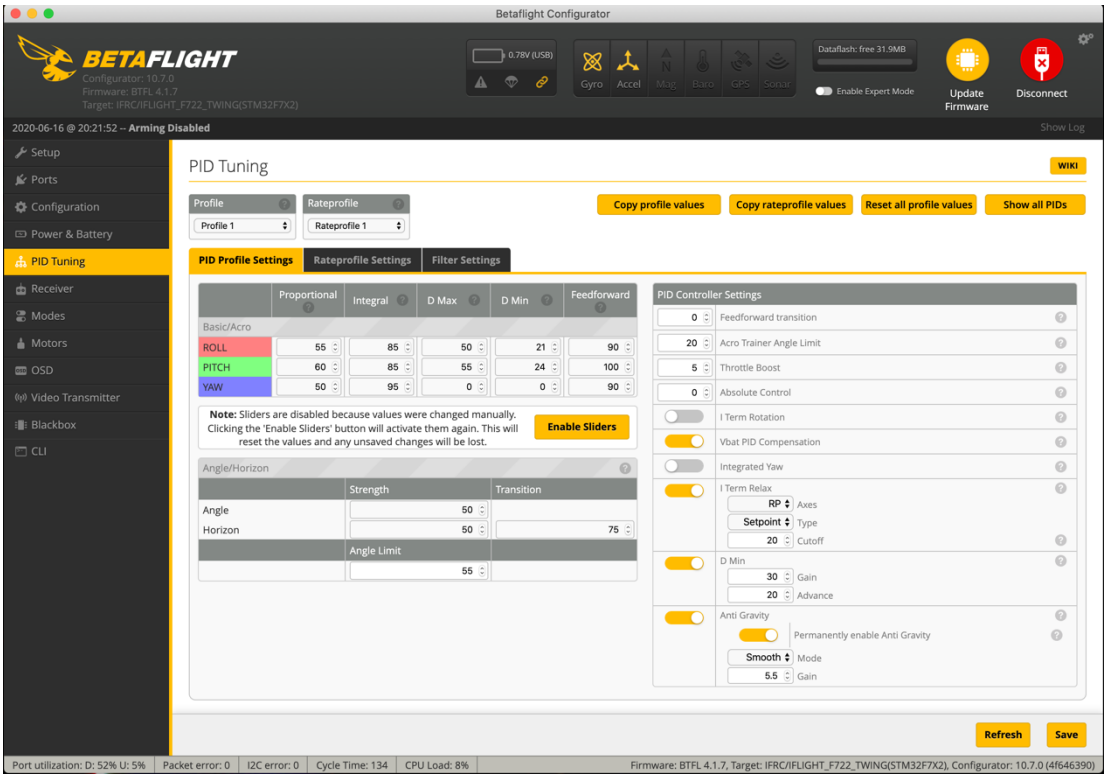


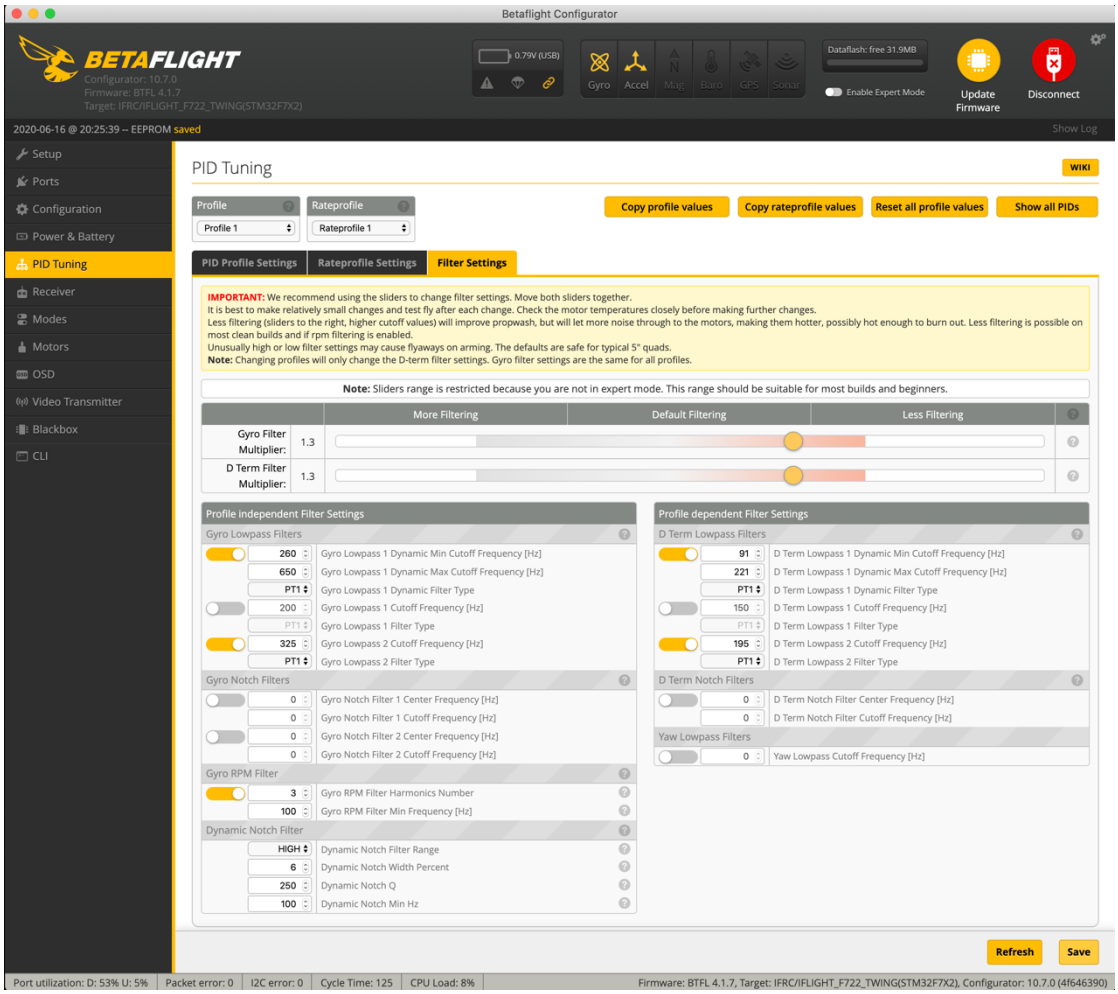
Betaflight setup for Titan H3 HD (Power & Battery page)



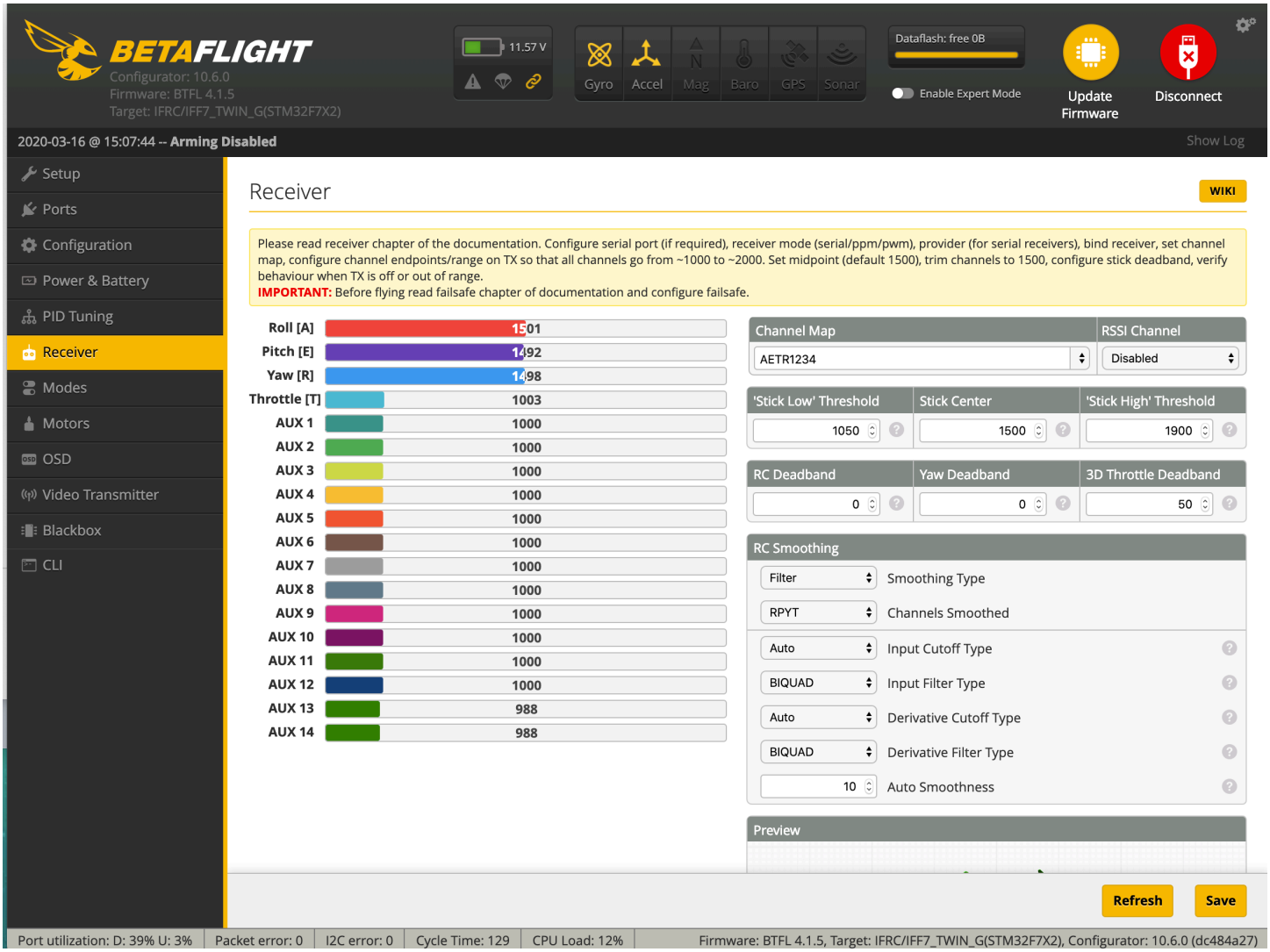
- Defaults are fine for the Titan H3 HD.
- You can now calibrate your power (need Digital Multimeter) but for now ignore unless there is a problem.

Betaflight setup for Titan H3 HD (PID Tuning page)





Betaflight setup for Titan H3 HD (Receiver page)

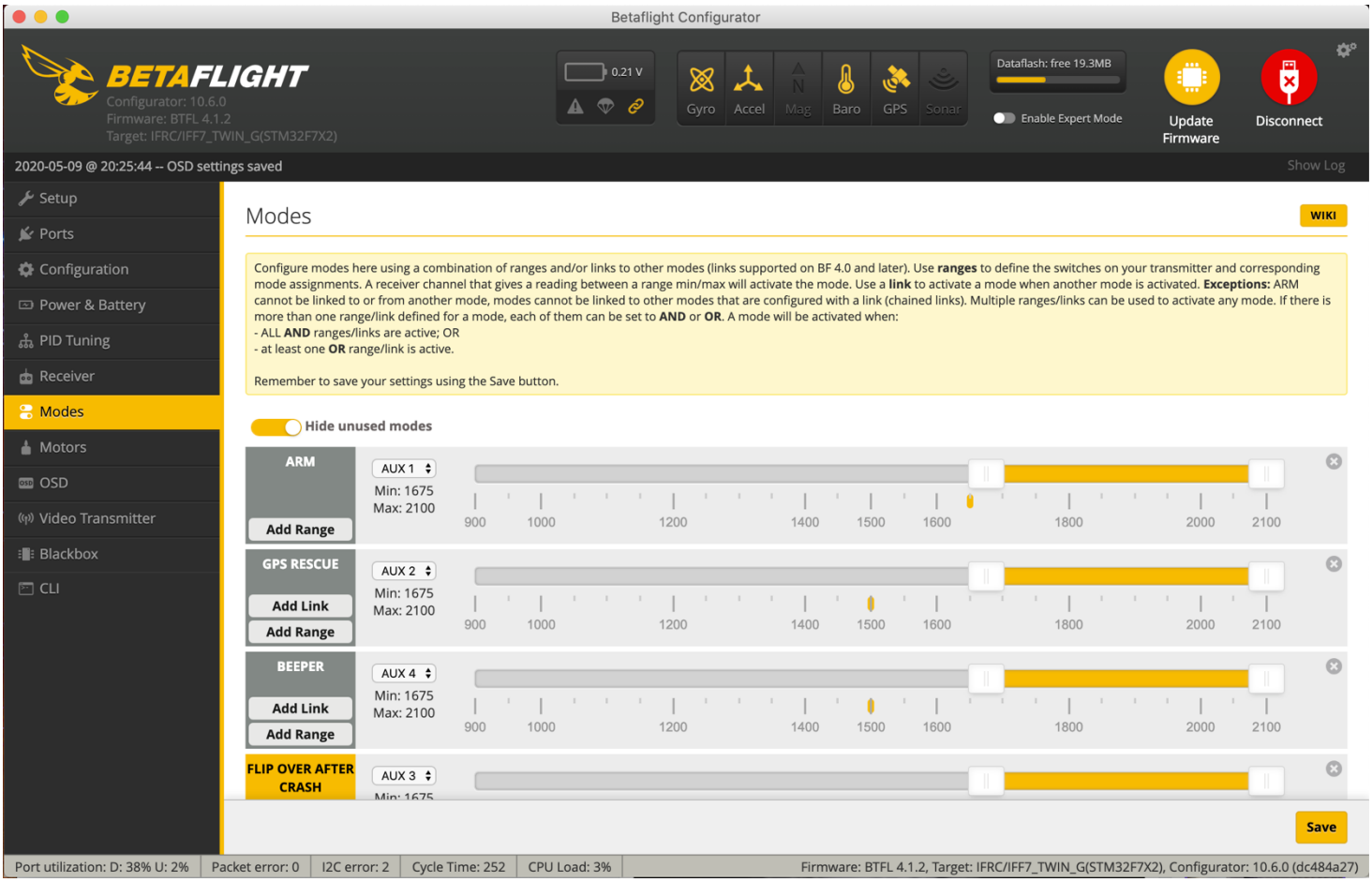


- Connect your Titan H3 HD to battery, power up your goggles and DJI Transmitter.
- With props off the Titan H3 HD and connected to transmitter as well as betaflight, verify the controls. Does the throttle work the correct control? Same for the rest and do the switches function and move the correct bars?
- 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 Titan H3 HD (Modes page)

- Your Titan H3 HD 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 that you can paste and run in the CLI (don't forget to save) from 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 Titan H3 HD which has been set as follows:
- Switch A (**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 B (**SB**) is GPS Recovery (will add instructions on adding GPS)
- 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 H3 (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.

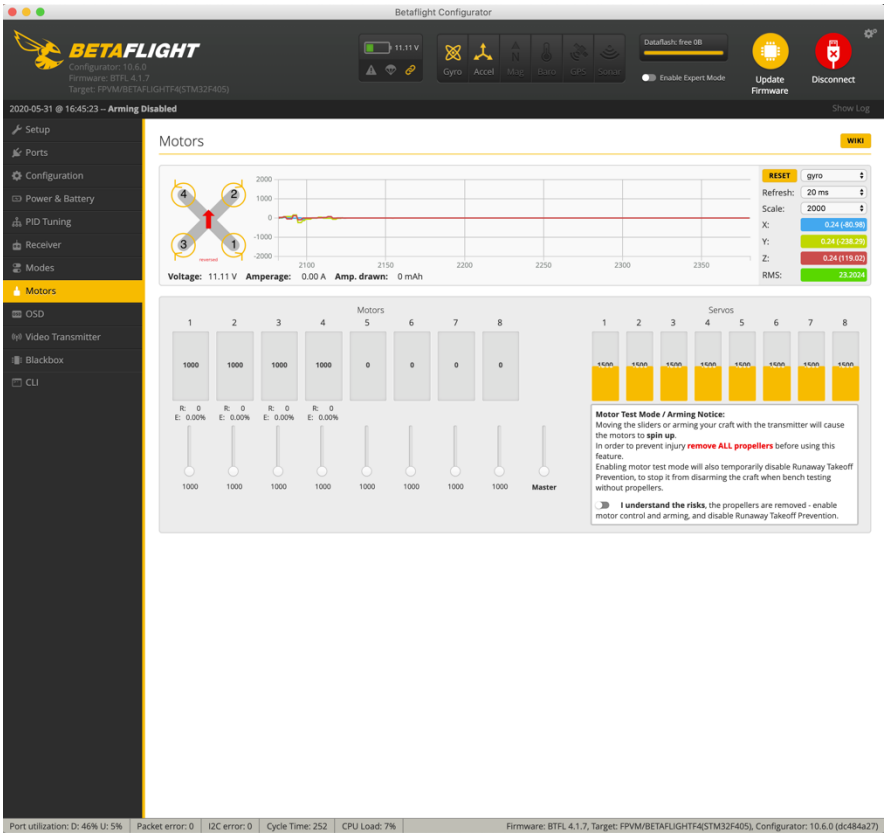
Betaflight setup for Titan H3 HD (Modes page continued)



- Copy and paste the following #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 😀 to setup.

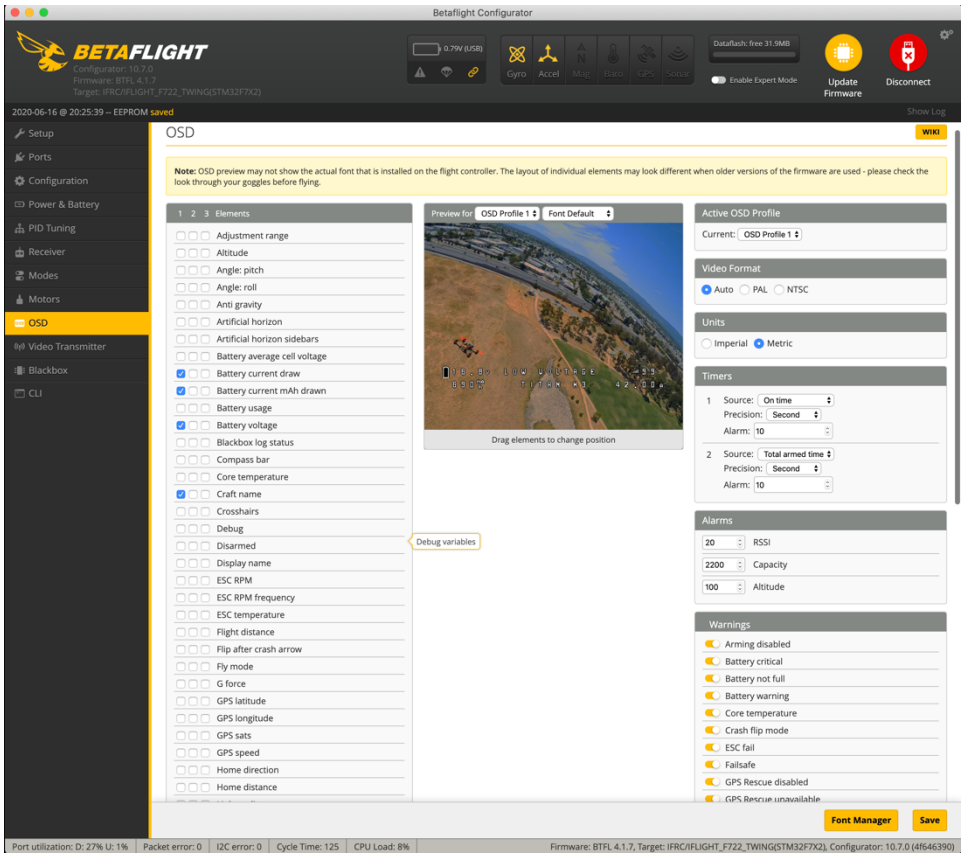
```
# aux
aux 0 0 0 1700 2100 0 0
aux 1 46 1 1700 2100 0 0
aux 2 13 3 1700 2100 0 0
aux 3 35 2 1700 2100 0 0
```

Betaflight setup for Titan H3 HD (Motors page)



- **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 Titan H3 HD (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_   set osd_warn_rssi = ON
set osd_warn_link_quality = ON
set osd_vbat_pos = 2402
set osd_rssi_pos = 2424
set osd_current_pos = 2453
set osd_mah_drawn_pos = 2434
set osd_craft_name_pos = 2443
set osd_warnings_pos = 14697

set osd_stat_total_time = ON
```

Titan H3 HD setup - wrap up

- Go back to the CLI in Betaflight and do a Diff again (you will thank me later).
- **Save** that Diff to a file! It is your new recovery point, give it a unique name.
- This guide is a living document and will be updated over time…

```
# name: Titan H3

# dma
dma pin B06 NONE
dma pin B07 NONE

# feature
feature -SOFTSERIAL
feature TELEMETRY

# beacon
beacon RX_LOST
beacon RX_SET

# serial
serial 0 64 115200 57600 0 115200
serial 1 1 115200 57600 0 115200

# led
led 0 6,13::CTOBVIW:0
led 1 7,13::CTOBVIW:0
led 2 8,13::CTOBVIW:0
led 3 9,13::CTOBVIW:0

# aux
aux 0 0 0 1700 2100 0 0
aux 1 1 1 900 2100 0 0

# vtxtable
vtxtable bands 6
vtxtable channels 8
vtxtable band 1 BOSCAM_A A FACTORY 5865 5845 5825 5805 5785 5765 5745 5725
vtxtable band 2 BOSCAM_B B FACTORY 5733 5752 5771 5790 5809 5828 5847 5866
vtxtable band 3 BOSCAM_E E FACTORY 5705 5685 5665 5645 5885 5905 5925 5945
vtxtable band 4 FATSHARK F FACTORY 5740 5760 5780 5800 5820 5840 5860 5880
vtxtable band 5 RACEBAND R FACTORY 5658 5695 5732 5769 5806 5843 5880 5917
vtxtable band 6 BAND_D D FACTORY 5362 5399 5436 5473 5510 5547 5584 5621
vtxtable powerlevels 5
vtxtable powervalues 25 100 200 400 600
vtxtable powerlabels 25 100 200 400 600

# master
set gyro_lowpass2_hz = 325
set dyn_notch_range = HIGH
set dyn_notch_width_percent = 6
set dyn_notch_q = 250
set dyn_notch_min_hz = 100
set dyn_lpf_gyro_min_hz = 260
set dyn_lpf_gyro_max_hz = 650
```

```
set acc_calibration = 0,-29,-39
set mag_hardware = NONE
set baro_hardware = NONE
set dshot_idle_value = 800
set dshot_bidir = ON
set motor_poles = 12
set align_board_yaw = -90
set vbat_max_cell_voltage = 450
set yaw_motors_reversed = ON
set small_angle = 180
set pid_process_denom = 1
set osd_warn_rssi = ON
set osd_warn_link_quality = ON
set osd_vbat_pos = 2402
set osd_rssi_pos = 2424
set osd_current_pos = 2453
set osd_mah_drawn_pos = 2434
set osd_craft_name_pos = 2443
set osd_warnings_pos = 14697
set gyro_2_align_yaw = 900
set name = Titan H3

profile 0

# profile 0
set dyn_lpf_dterm_min_hz = 91
set dyn_lpf_dterm_max_hz = 221
set dterm_lowpass2_hz = 195
set vbat_pid_gain = ON
set anti_gravity_gain = 5500
set p_pitch = 60
set i_pitch = 85
set d_pitch = 55
set f_pitch = 100
set p_roll = 55
set d_roll = 50
set p_yaw = 50
set i_yaw = 95
set d_min_roll = 21
set d_min_pitch = 24
set d_min_boost_gain = 30

profile 1

profile 2

# restore original profile selection
profile 0
```

```
rateprofile 0

# rateprofile 0
set thr_expo = 60

rateprofile 1

rateprofile 2

rateprofile 3

rateprofile 4

rateprofile 5

# restore original rateprofile selection
rateprofile 0

# save configuration
save
```