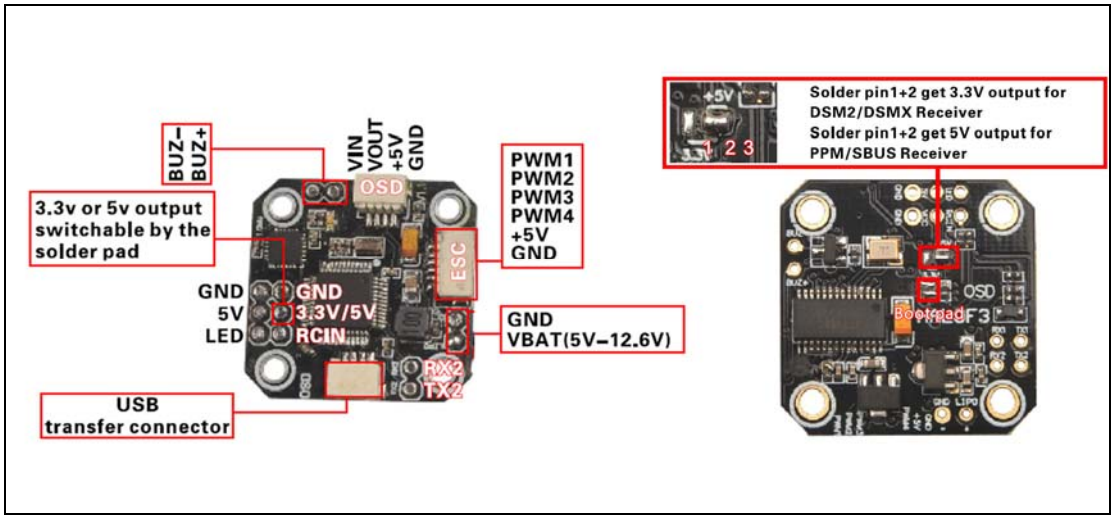
Minicube F3 v1.1 6DOF flight controller quick user guide

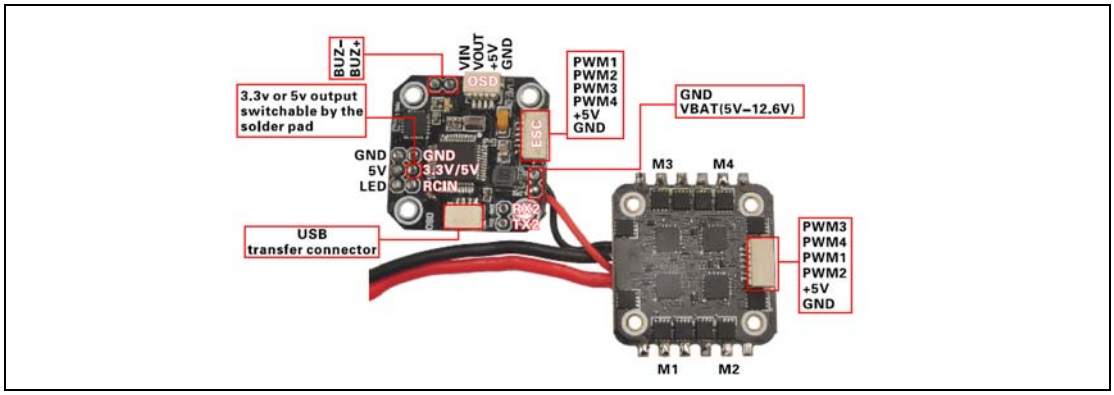
Feature:

1. 27x27mm board with 20mm mounting M2.5 holes.
2. Next-generation STM32 F3 processor
3. Low-noise MPU-6000 SPI-bus gyro chip for faster acquisition of gyro data.
4. Pass-through ESC-BLHELI/BLHELI-S programming and configure with UART1.
5. Battery voltage monitor.
6. Supports direct connection of SBus, SumD, Spektrum1024/2048,
Ibus receivers. No external inverters required (built-in).
7. Dedicated SAT receiver solder pad with 3.3v(Switchable)
8. Dedicated PPM receiver input with 5V power.
9. Integrated LC-Power Filter
10. Telemetry support.
11. LED strip support.
12. Buzzer port for audible warnings and notifications.
13. Flashing via USB or serial port.
14.Support Betaflight 3.1 Dshot150/300/600 available.
15.Integrate Betaflight OSD(Batt voltage, RSSI , Artificial Horizon , Fly mode , -Flytime, Craft name etc.)

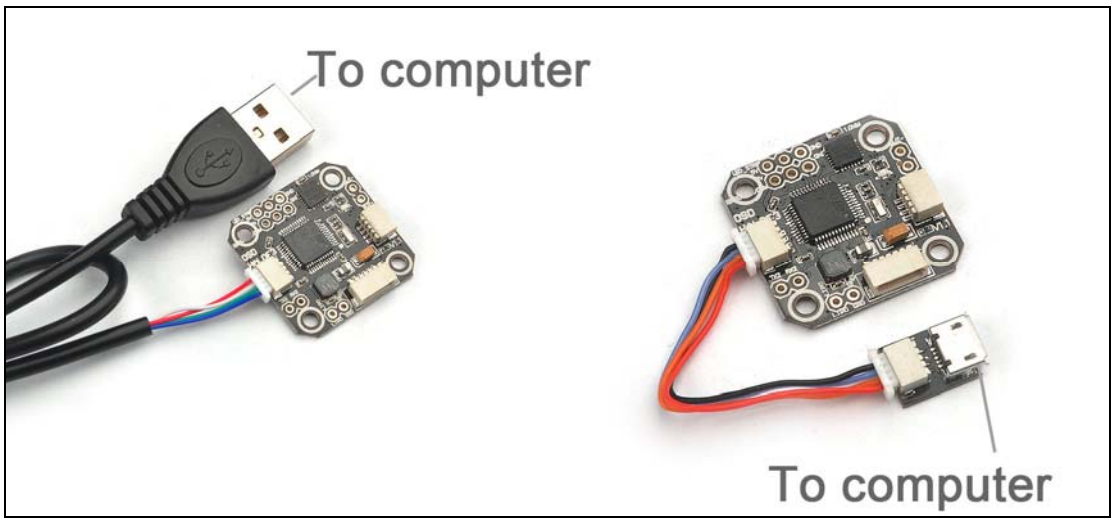
Pins connection diagram:



Minicube F3 power connection with Minicube 4 in 1 ESC

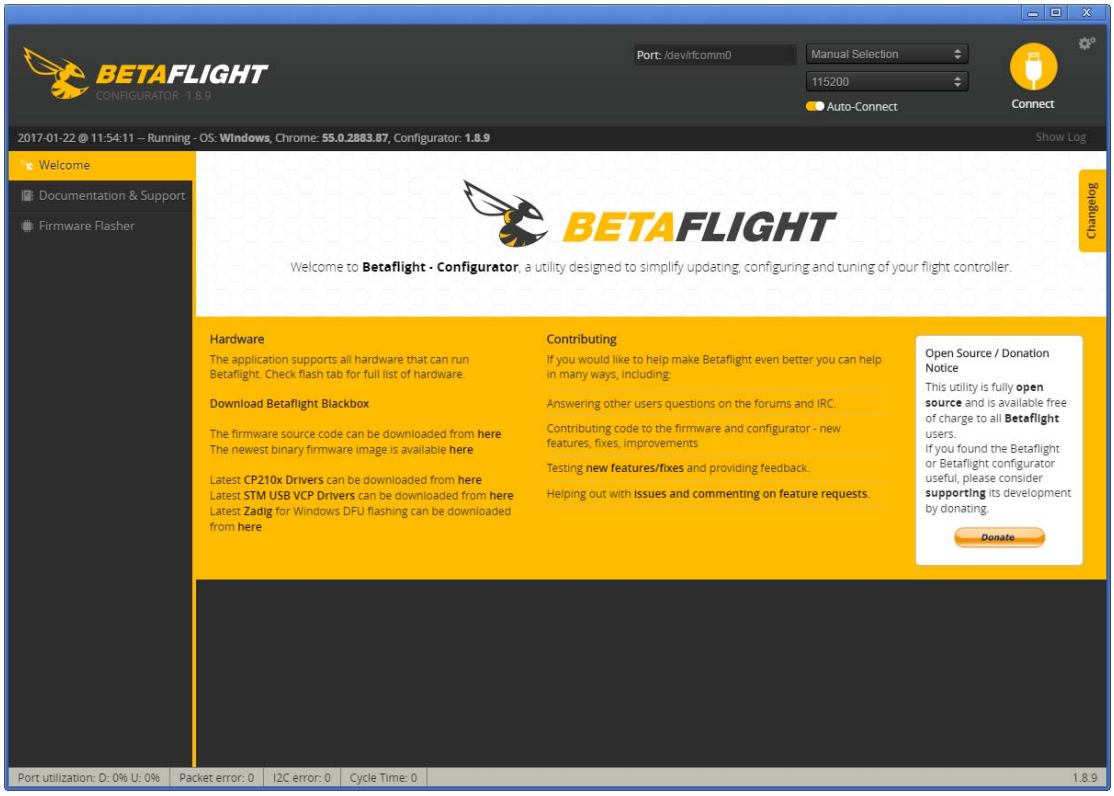


MiniCUBE F3 V1.1 Connection to computer



Getting start:

1. Install latest STM32 Virtual COM Port Driver
http://www.st.com/web/en/catalog/tools/PF257938
2. Install and launch the Cleanflight Configurator tool
https://chrome.google.com/webstore/detail/betaflight-configurator/kdaghagfopacdngbohiknlhcocjccjao?utm_source=chrome-ntp-icon (you need to open this link in Google Chrome. If you don't have Google Chrome, download and install this first)
3. Connect the flight controller to the computer via USB cable.
4. Select the correct COM port if it is not automatically detected.
5. Click connect, verify that communication is established (Fig 1).



Software:

The Mini cube F3 flight controller runs the Open-source Betaflight flight control (FC) software . The newest version is Betaflight 3.1 which supports DSHOT very well .

HEX Firmware target:

https://github.com/betaflight/betaflight/releases/download/v3.1.0-RC10/betaflight_3.1.0_OMNIBUS.hex

Bin Firmware target: OMNIBUS.BIN from

http://andwho.sytes.net:8080/job/BorisB_BetaFlight/

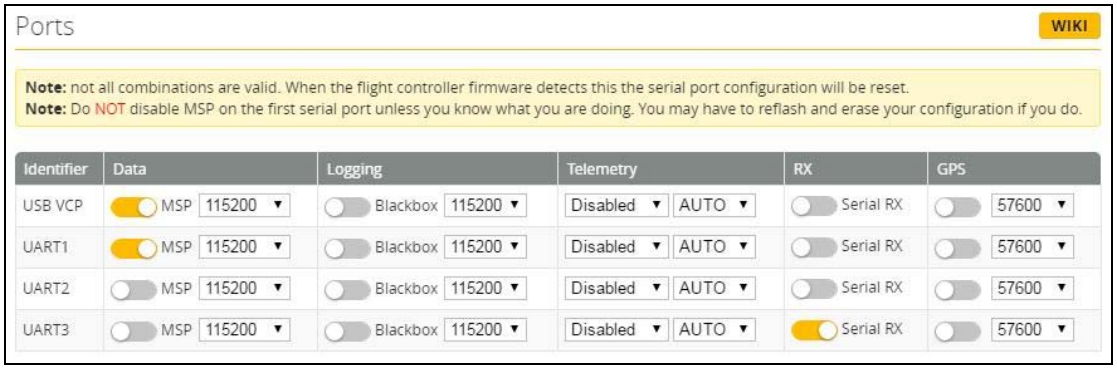
DFUSE tools:

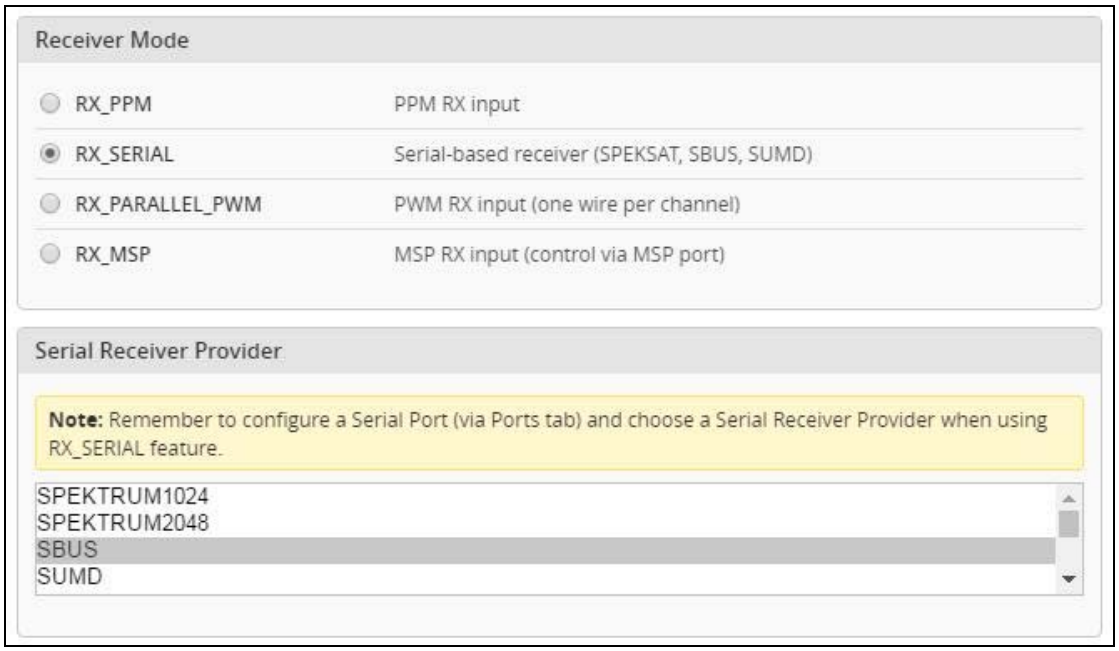
http://www.st.com/zh/development-tools/stsw-stm32080.html DFUMODE to flash firmware should first Connect the boot pad and install the STM32 Bootloader driver.

Receiver Configurations

1. SBUS Receiver:

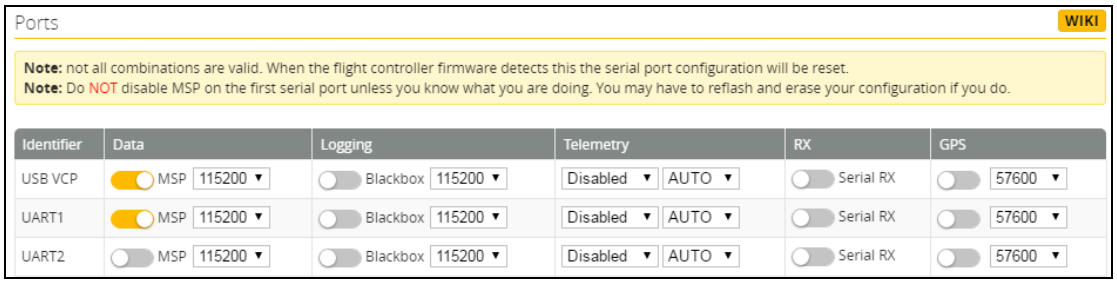
Connect your SBUS receiver to [RCIN +5V GND] port; Enable Serial_RX for UART3 from the Port tab in Betaflight configurator, then select RX_SERIAL from the RECEIVER Mode and set the Serial Receiver Provider to be SBUS in Betaflight Configurator.

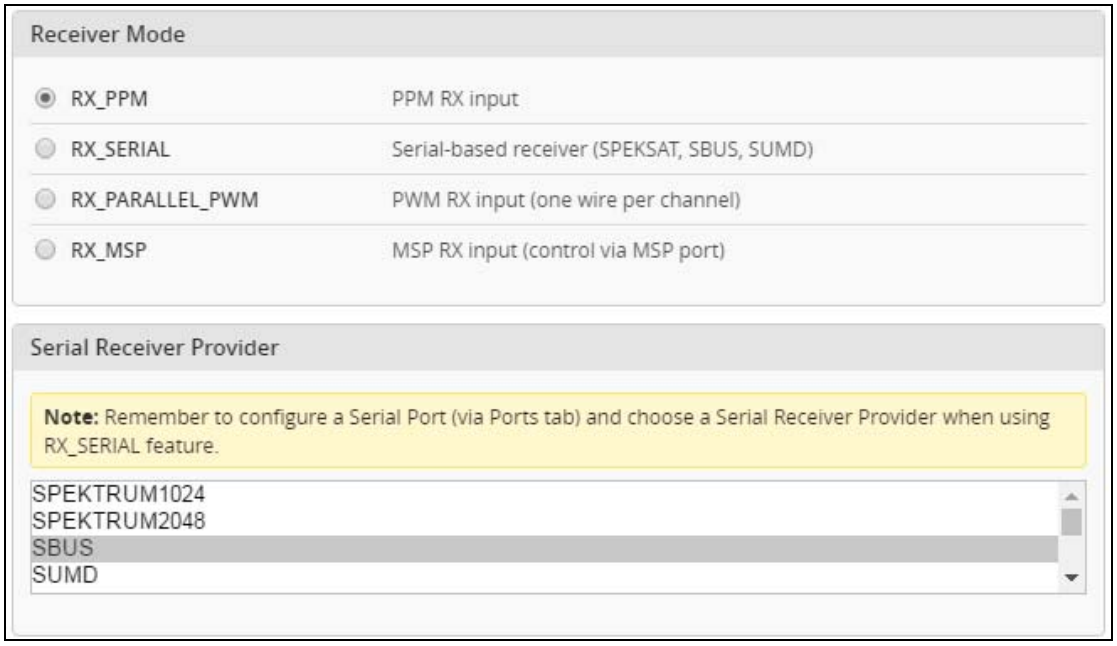




2. PPM Receiver:

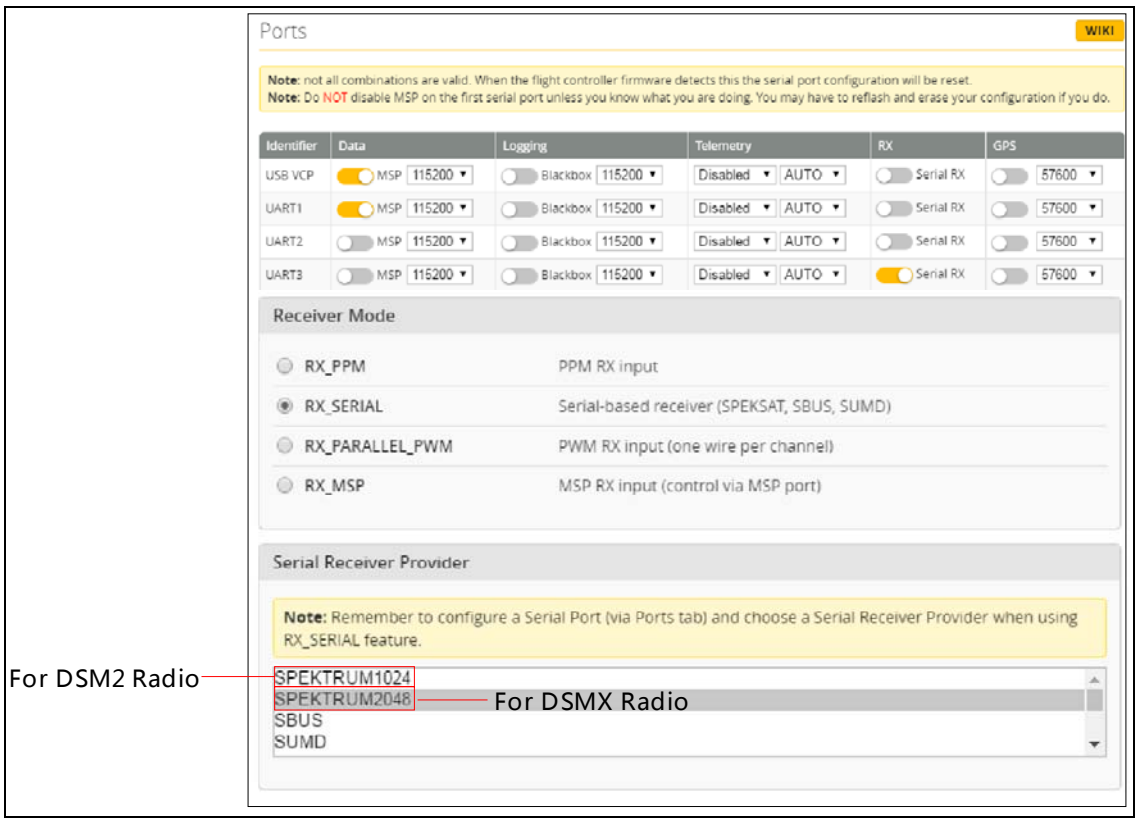
Connect your PPM receiver to [RCIN +5V GND] port and then set the Receiver Mode to RX_PPM from the configuration in Betaflight configurator.





3. Spektrum Satellite DSM2/DSMX or Receiver

Connect your DSM2/DSMX receiver to [RCIN +3.3V GND] port; Solder the power switchable pins(pin1+pin2) from the bottom side of the flight controller to get 3.3v output for the receiver; Enable Serial_RX for UART3 from the Port tab in Betaflight configurator, then select RX_SERIAL from the RECEIVER Mode and Select SPEKTRUM1024 for DSM2 Radio; Select SPEKTRUM2048 for DSMX Radio in Betaflight Configurator.



Spektrum satellite DSM2/DSMX Receiver binding procedure :

(1) Connect your receiver to the Minicube flight controller then Connect Minicube F3 to computer and open Betaflight configurator, From CLI tab type: "set spektrum_sat_bind = 9" for DSMX radio or "set spektrum_sat_bind = 5" for DSM2 radio

(2) Type "save" and after Flight controller reboot remove USB cable (=Power off the board)

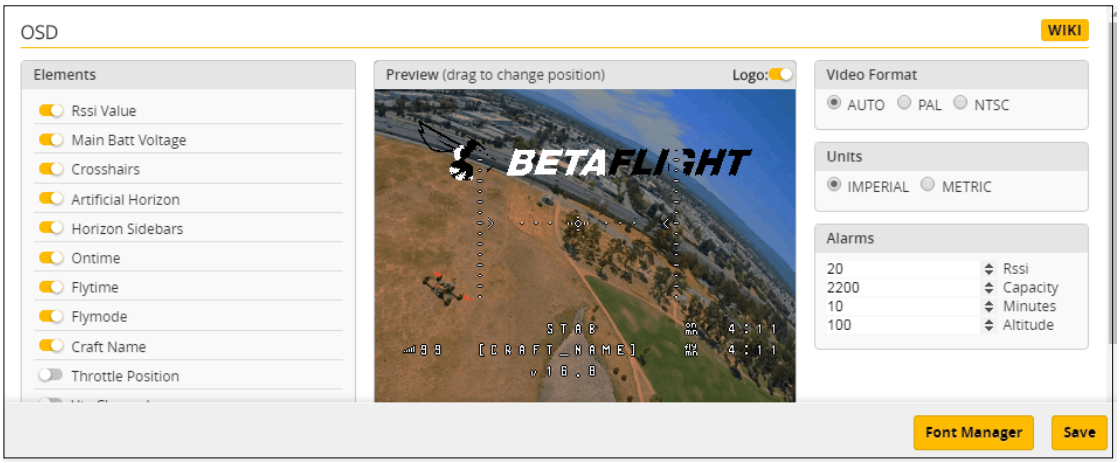
(3) Wait a second and reconnect the USB cable. After cold start satellite led(Orange color LED) should start blinking and transmitter should be turned on while pressing the bind button

(4) After binding satellite led should be solid. Connect Betaflight and use receiver tab to test that satellite is working correctly.

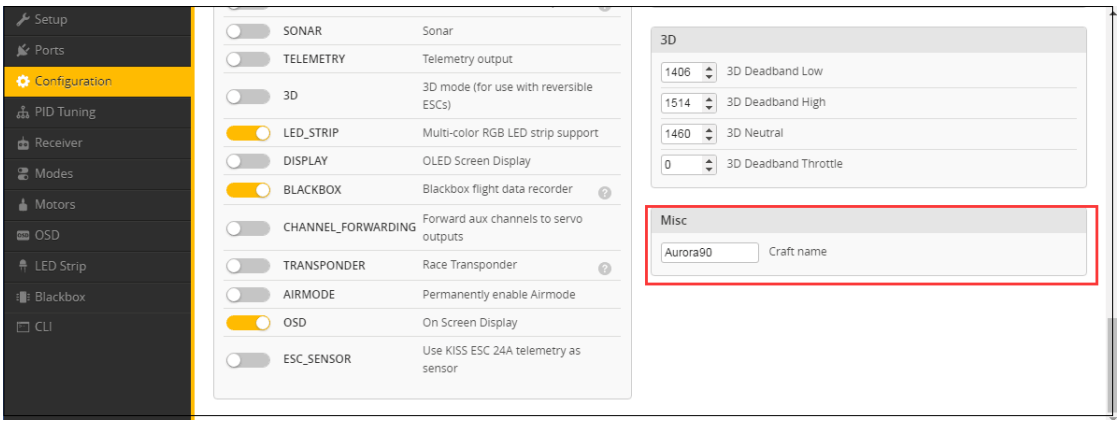
(5) Final step is to go to CLI tab and type "set spektrum_sat_bind = 0" and then type "save". This must be done so that satellite doesn't go back to binding mode when the Minicube F3 is repowered again.

Betaflight OSD Configurations:

1. Connect the Minicube F3 to the computer , open Betaflight Configurator , move to the OSD option, then you can configure the layout of the OSD.



2. Craft Name set is in configuration option



Useful Links:

https://github.com/betaflight/betaflight/wiki