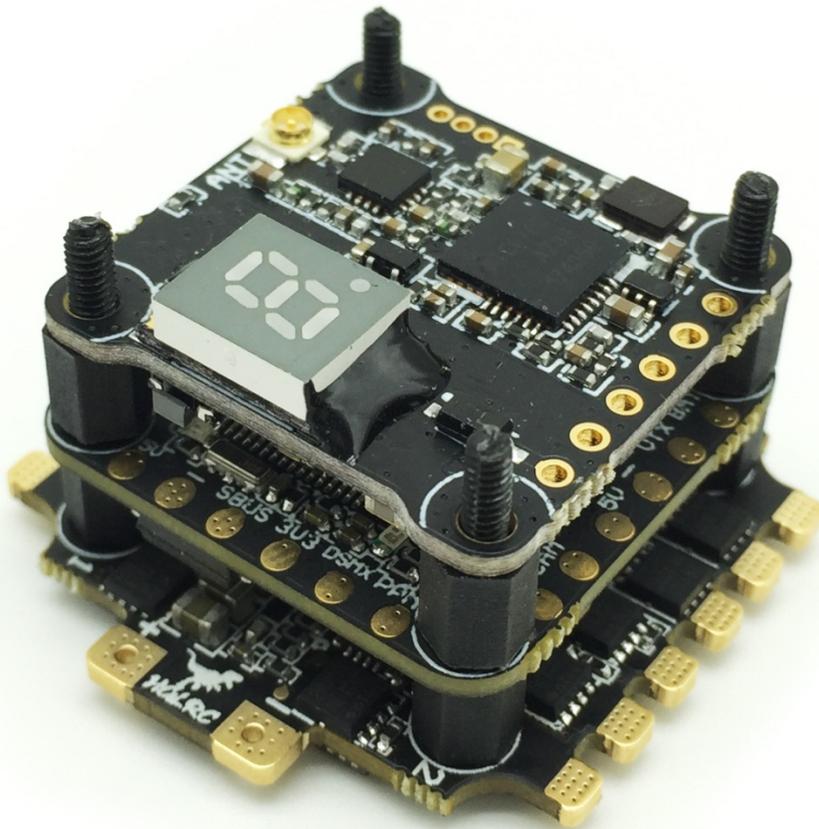


HGLRC XJB-F428-TX20.V2 STACK

Manual





Specifications

- **Micro F4 Flight Control Board (D-Shot Version)**

- MPU: MPU6000-SPI
- CPU: STM32F405RGT6, dual 8K.
- Black Box: Flash 16M
- Input Voltage: 2-5S Lipo
- Built-in Betaflight OSD to adjust PID
- BEC Output: 5V@3A
- Size: 25x25mm board, 20mm mounting holes (M2)
- Weight:3.7g
- Support SBUS/PPM/DSMX receiver

- **28A 2-4S Blheli_S BB2 4 in 1 ESC**

- Input Voltage: 2-4S Lipo battery
- Constant Current: 28A
- Peak Current: 35A
- BEC Output: NO
- Firmware: BLheli_S 16.5
- Size: 27x27mm (main board)
- 32x32mm (including pad)
- Installing Hole: 20x20mm, M2

- Weight: 4.7g
- CPU: SILABS EFM8BB2 48MHZ
- MOS Tube: TOP QUALITY MOSFET
- Firmware: Betaflight 16.5
- Support Damped Mode, Oneshot125, Oneshot42, Multishot, Dshot150, Dshot300, Dshot600, forward and reverse

- **XJB-TX20-V2.0 Mini FPV Transmitter**

- Output power: PIT/25mW/100mW/200mW/350mW switchable
- Control mode:BFOSD control(RX)/button
- BAT: 7-26V,BEC 5V-1A
- 240mA----350mW
- Video system: NTSC/PAL
- Antenna: IPEX
- Frequency: 5.8GHz 6 bands 48 channels, with Raceband: 5362-5945 MHZ
- Size: 24*24mm(L*W),Hole:20*20mm
- Weight: 2.5g

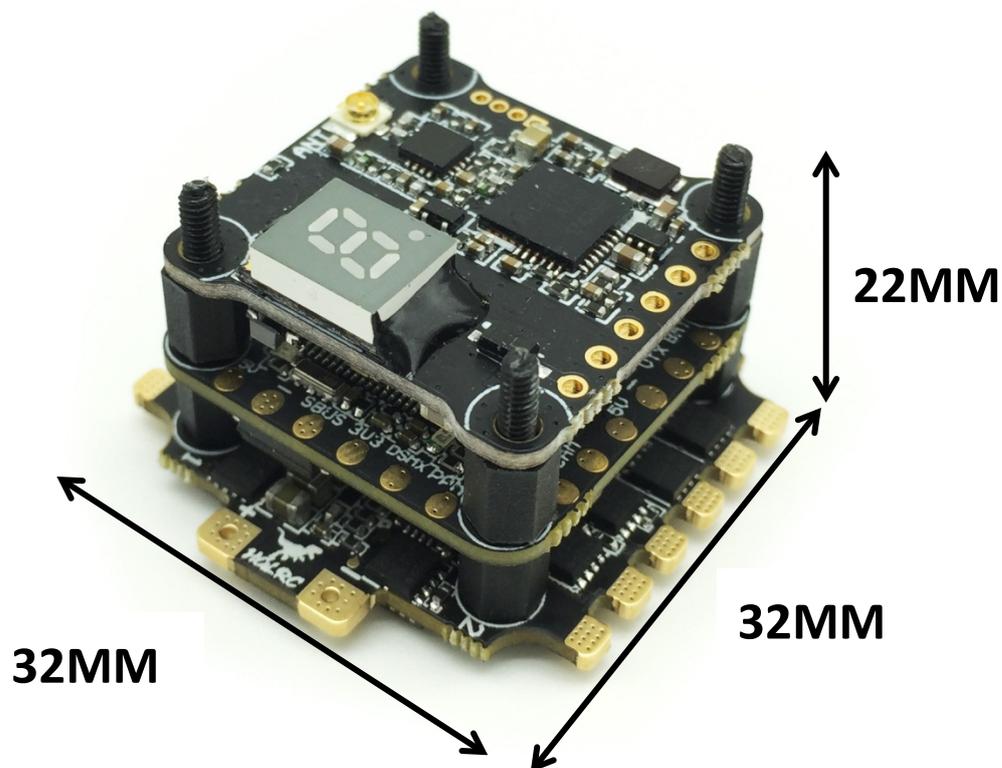
Warning:

Please read the cautions as follows, otherwise stability of your flight controller cannot be ensured, your flight controller will even get damaged.

- Keep focus on the polarity. Check carefully before power supply.
- Cut off the power when you connect, plug and pull anything.

- Don't connect 5V or electrical power interfaces, otherwise your flight controller will catch fire.
- The refresh rate of PID and Gyroscope is up to 8K.

Flight control characteristics



Technical Parameters:

Size: L*W*H=34*32*22MM

Master: STM32F405 GRT6

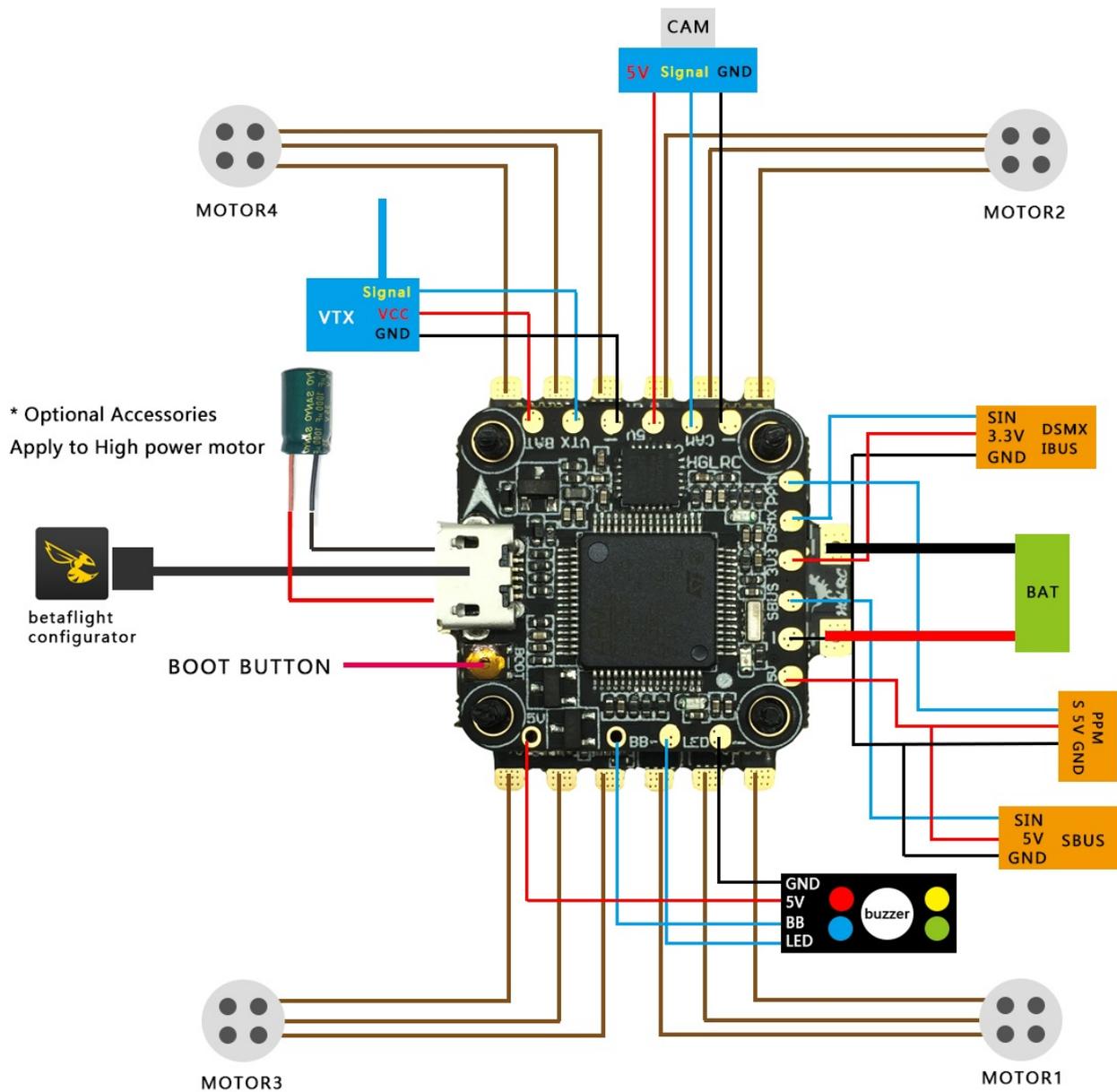
Voltage: 2-4S Lipo support

MAX Current: 140A

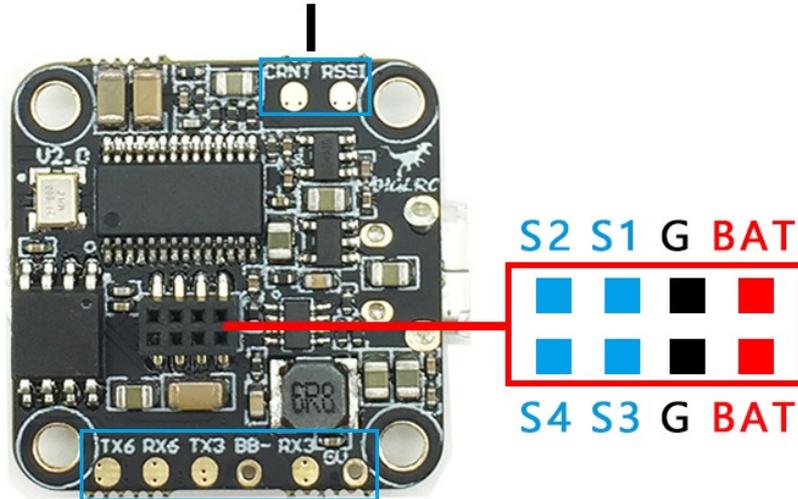
5v bec: 3A

Net weight: 10.9g (exclude wire)

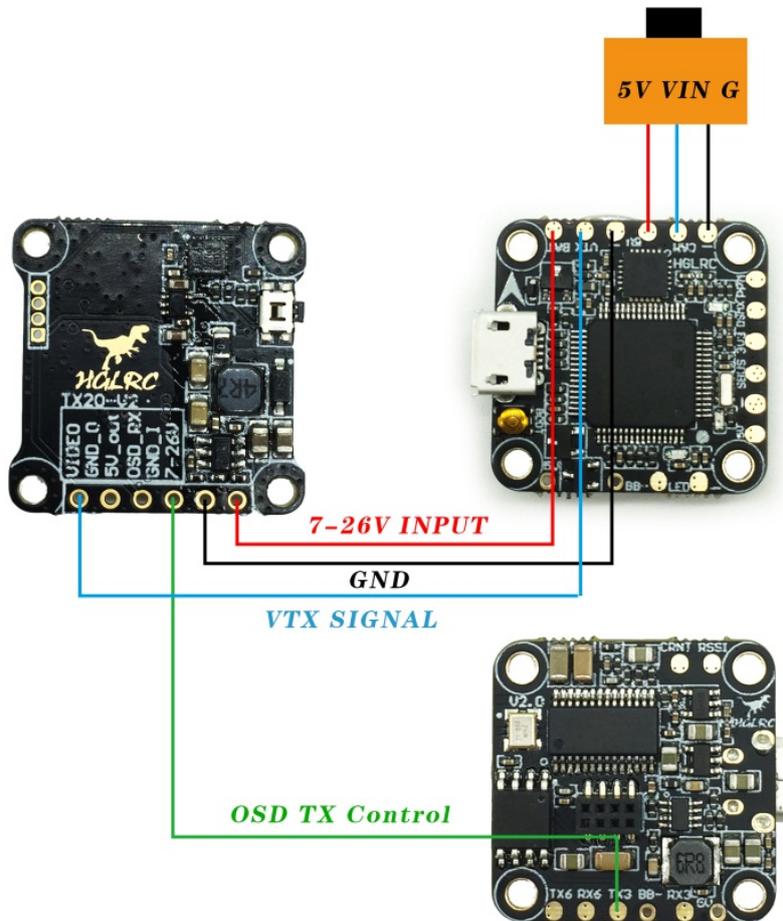
Wiring Diagram



CURRENT-RSSI



TX6-RX6-TX3-BB-RX3-5V



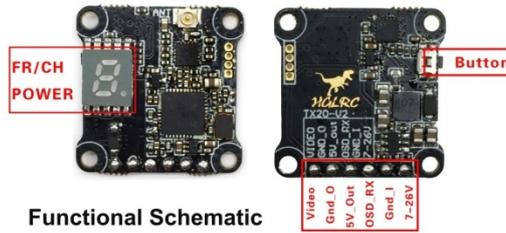
TX20-V2 VTX Summary

TX20-V2 VTX is simulated 5.8G ISM band transmission with stable output power, long transmission distance and strong power filter. It can ensure that the image has no snowflake, no stripes under the maximum throttle situation. Meanwhile, TX20-V2 VTX has remote frequency point control of remote control OSD interface, does not interfere with fellows when powered on, and support 8 people above flying at the same time super function.

TX20-V2 Product Description

Features:

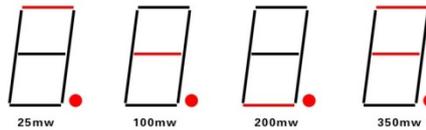
- Stable output power, long-distance transmission:
 - ≥ 0.5km@25mW, ≥ 0.8km@100mW, ≥ 1km@200m, ≥ 1.5km@350mW (with original antenna);
- 4 gears transmit power: 25mW/100mW/200mW/350mW; 48 frequency points output, and has E group, F group, 8 competition frequency using at the same time without interference;
- Fast frequency lock, does not interfere with fellows when powered on;
- With self-test output power function;
- Full format video format: NTSC / PAL;
- Wide input voltage range, low power consumption: 7V ~ 26V, +12V/240mA@350mW;
- Small size: 24mm×24mm×1.2mm; Mounting hole size 20mm×20mm;
- Light weight: ≤ 3.5g (antennas not included);



Functional Schematic

Frequency and power control method:

- Betaflight firmware;
- Button frequency control: Short press once to change channel number CH (CH1-CH8), long press for 2 seconds and then short press to change frequency group FR (A-F);
- Button power control: Long press button for 6 seconds and then short press button to change power level 25mW / 100mW / 200mW / 350mW; (please see details as the picture shown on the right: Power switching instruction)
- Power instructions: (check details below)



Power schematic					
	25mw	100mw	200mw	350mw	0mw Fault
Power indicator light	1 flash 3-secs stop	2 flash 3-secs stop	3 flash 3-secs stop	4 flash 3-secs stop	light always on

Precautions for use:

- Make sure output terminal is installed antenna before it is powered;
- Input voltage must be within the specified range (7V~26V) and keep + - right;
- Please choose antenna with good VSWR and DB if you replace, to get far transmission distance;
- Pay attention to static electricity protection during transportation and installation.

Frequency table:								
	CH1	CH2	CH3	CH4	CH5	CH6	Ch7	Ch8
A	5865	5845	5825	5805	5785	5765	5745	5725
b	5733	5752	5771	5790	5809	5828	5847	5866
E	5705	5685	5665	5645	5885	5905	5925	5945
F	5740	5760	5780	5800	5820	5840	5860	5880
r	5658	5695	5732	5769	5806	5843	5880	5917
L	5362	5399	5436	5473	5510	5547	5584	5621

Frequency and channel frequency table:

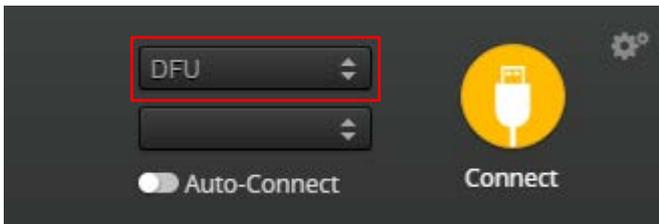
FC firmware FLASH and Settings

FC firmware FLASH

1.Long Press BOOT buttons, connect USB, The system automatically install the driver



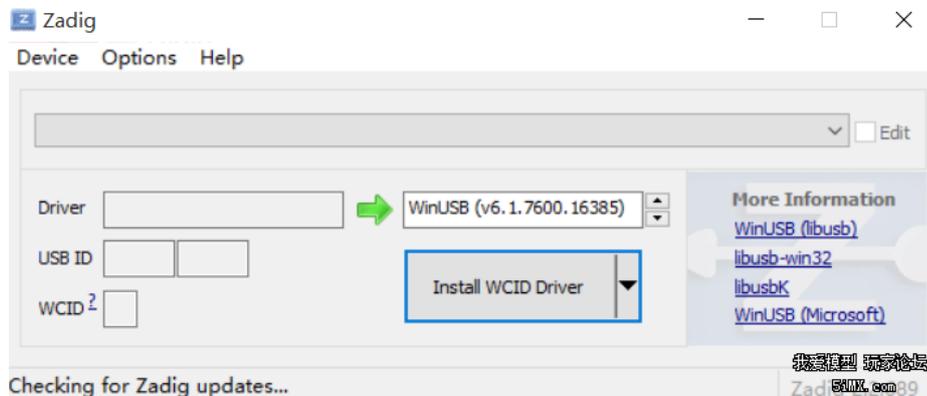
2.open betafight configurator, enter DFU mode



Zadig software downloaded to a computer, it is a run file

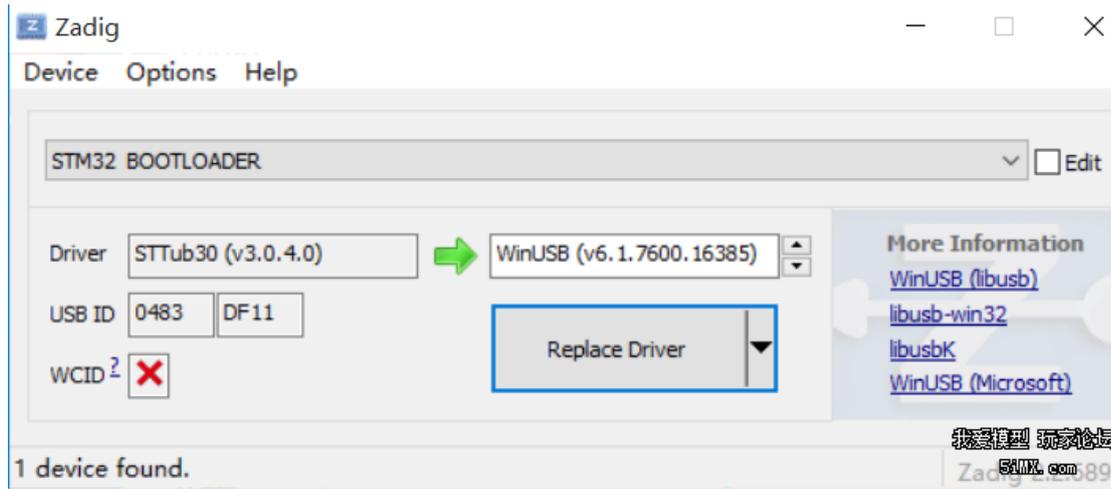


3.Double-click on the run

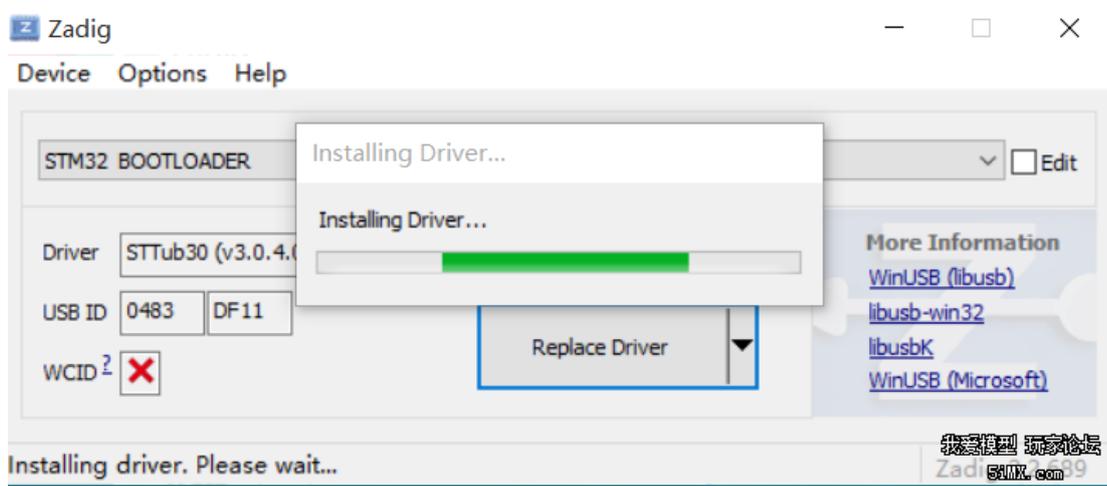




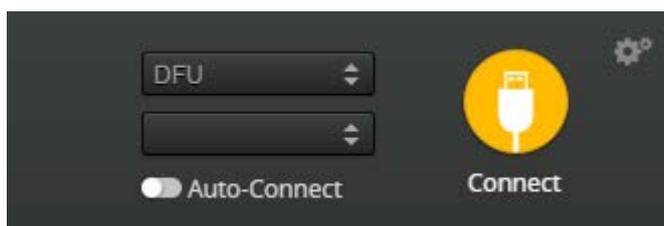
4. Click the Options, select List All Devices after the diagram below



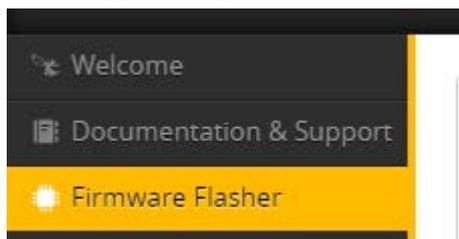
5. Click Replace Driver



At this point automatically to computer load driver. Now open betaflight tuning software, automatic loading good drive, betaflight software will display in the joint the diagram below:



6. betaflight configurator, select "Firmware Flasher",





7. Don't open the Settings

No reboot sequence

Full chip erase

Manual baud rate

Show unstable releases

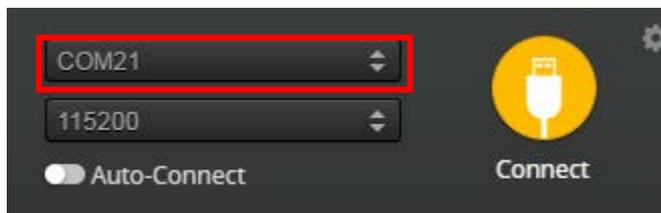
8. click "Load Firmware[Local]" Select the firmware "betaflight_3.1.*-3.2.*_OMNIBUSF4.hex" (The firmware version according to the actual situation)



9. click "Flash Firmware", progress bar "Programming:SUCCESSFUL" Finish!



10. Betaflight Automatically assigned port, click "Connect" Enter setup interface (Different computer COM)



F4 Flight control parameter Settings

1、FC horizontal , The acceleration of calibration

Heading: 356 deg
Pitch: -0.6 deg
Roll: -2.4 deg

2、2.4G sbus receiver:open UART1 RX, IRC TRAMP is UART3 TX, ESC telemetry is UART6 RX, then click “save and reboot”(Each set needs to be saved)

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	<input type="checkbox"/> 115200	<input checked="" type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	IRC Tramp AUTO
UART6	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	ESC AUTO	Disabled AUTO

Save and Reboot

Note: click save after will jump to the startup screen, reconnect!

3.choice of receiver SBUS mode

Serial-based receiver (SPEKSAT, S) Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.

SBUS Serial Receiver Provider

4. Open the voltage current detection

Power & Battery

Battery

ESC Sensor Voltage Meter Source

None Current Meter Source

3.3 Minimum Cell Voltage

4.3 Maximum Cell Voltage

3.5 Warning Cell Voltage

0 Capacity (mAh)

Voltage Meter

ESC Combined	0 V
ESC Motor 1	0 V
ESC Motor 2	0 V
ESC Motor 3	0 V
ESC Motor 4	0 V

5. Open the ESC_SENSOR, osd, article LED lights set (choose) as required

Other Features

Note: Some of the features of the firmware are not shown in this list any more, because they have been moved to other places in the configurator.

- INFLIGHT_ACC_CAL In-flight level calibration
- SERVO_TILT Servo gimbal
- SOFTSERIAL Enable CPU based serial ports ?
- SONAR Sonar
- TELEMETRY Telemetry output
- LED_STRIP Multi-color RGB LED strip support
- DISPLAY OLED Screen Display ?
- BLACKBOX Blackbox flight data recorder ?
- CHANNEL_FORWARDING Forward aux channels to servo outputs
- TRANSPONDER Race Transponder ?
- AIRMODE Permanently enable Airmode
- SDCARD SDCard support (for logging)
- OSD On Screen Display
- ESC_SENSOR Use KISS ESC 24A telemetry as sensor

After set up parameters on this page, save the Settings.

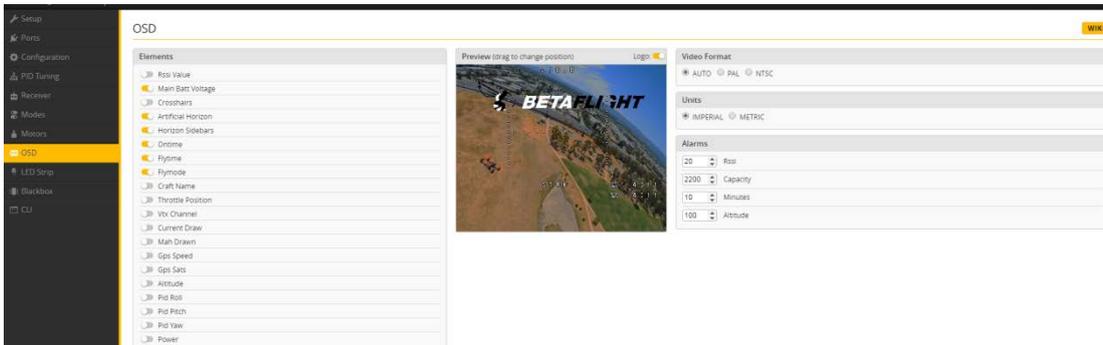
6. set up the function of remote control switch across the channel (below are for reference only)

Modes Wiki

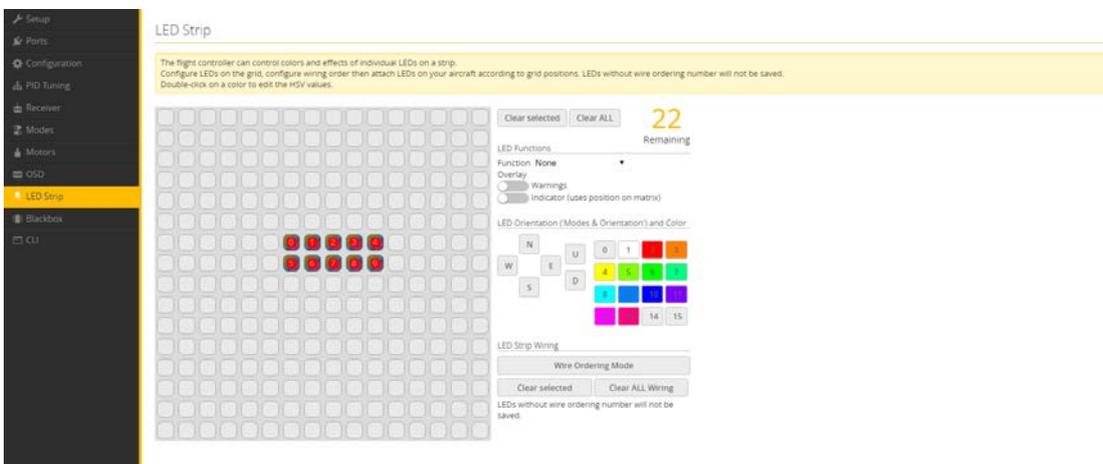
Use ranges to define the switches on your transmitter and corresponding mode assignments. A receiver channel that gives a reading between a range min/max will activate the mode. Remember to save your settings using the Save button.

ARM	AUX 1	
AIR MODE	AUX 2	
ANGLE	AUX 2	

7.the OSD Settings, according to the need to choose, drag the OSD schematic diagram of the parameters can be adjusted.



8.LED Strip configuration, set according to need



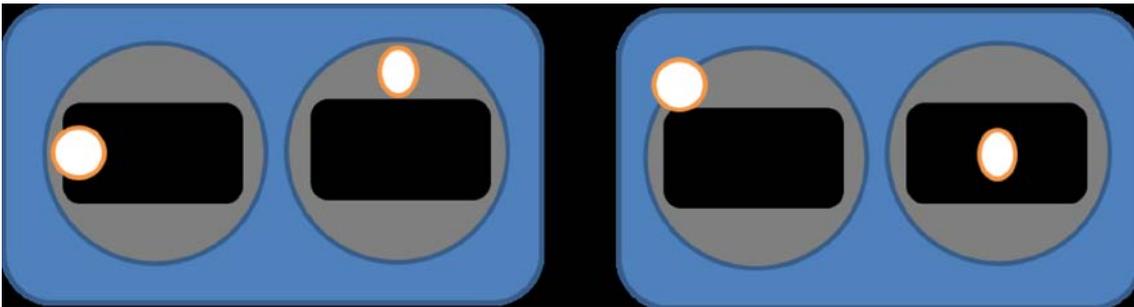
So far, flight control basic setup to finish.

Using The OSD

The XJB Micro F4 includes Betaflight OSD, which displays information like battery voltage and mAh consumed while you fly. In addition, the Betaflight OSD can be used to configure the quadcopter, making in-field adjustments and tuning more convenient.

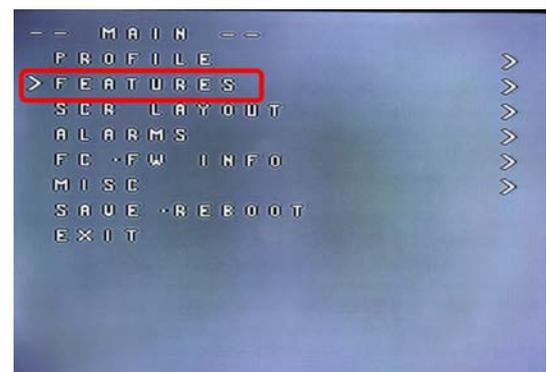
MODE2

MODE1



The graphics above show the stick command to bring up the OSD menu. The stick command is: throttle centered, yaw left, pitch forward. The exact stick command therefore depends on which mode your transmitter sticks are in.

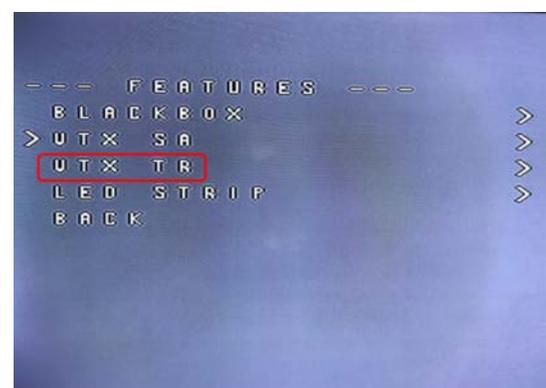
In the OSD menu, use pitch up/down to move the cursor between menu items. When a menu option has a > symbol to the right of it, this indicates that it contains a sub-menu. Roll-right will enter the sub-menu. For example, in the screen to the right, moving the cursor to “Features” and then moving the roll stick to the right will enter the “Features” sub-menu.



If you are using a video transmitter that supports remote configuration, enter the “Features” menu to configure the vTX. From there, enter either “VTX SA” if you are using SmartAudio (TBS Unify) or “VTX TR” if you are using IRC Tramp Telemetry.

To adjust PIDs, rates, and other tuning-related parameters, enter the “Profile” sub-menu.

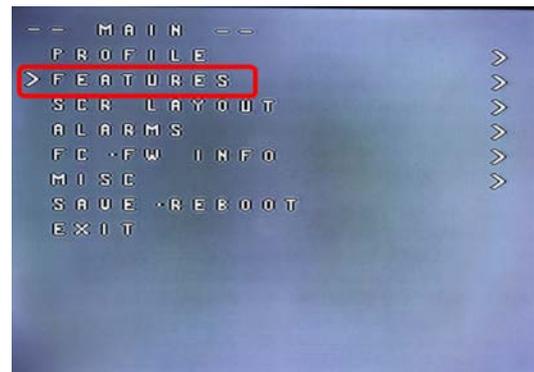
In the “Scr Layout” sub-menu, you can move the OSD elements (like battery voltage, mAh, and so forth) around on the screen.



The “Alarms” sub-menu lets you control when the OSD will try to alert you that battery voltage is too low or mAh consumed is too high.

When a parameter can be modified, the parameter's current value will be shown on the right-hand side of the screen. In this case, roll left/right will adjust the parameter up and down.

The screen to the right shows the current vTX settings. From here, you can change the frequency band, channel, and power level of the video transmitter. After making the changes, move the cursor to "Set" and press roll-right to confirm the settings.



F4 FC test

- can connect the computer to download firmware & adjustable parameters
- good connection test, after testing all functions
 - buzzer sound
 - OSD display is normal
 - Have a camera
 - The remote control can be unlocked
- if motor rotation
 - LED light