## Notes:

1.The receiver signal will be unstable while the MSP(Connect to Betaflight) Connection established
2.The PID loop frequency must be 2kHZ at this firmware version, will update soon .

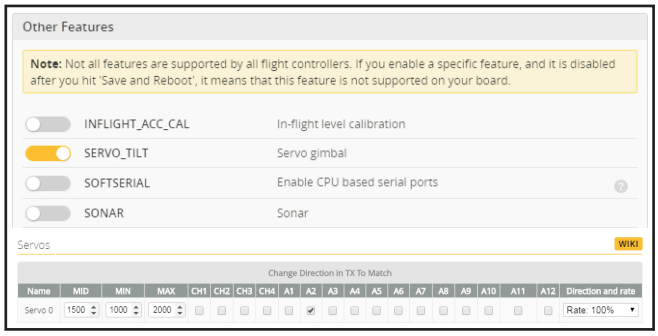
## Specifications

| |
|---|
| Brand:Eachine |
| Model: Vwhoop90 |
| Item Name: 1S Brushless whoop 2in1 FPV Racing Drone |
| Size:155mm*120mm*30mm |
| Weight:32.3g(without battery) |
| Fly Weight:39g(with Original 3.8v 250mah Lipo battery) |

| Components | Quantity | Part. NO. |
|---|---|---|
| Vwhoop90 Frame x1 | 1 | VW901 |
| Crazybee F3 Flight controller (Option Frsky or Flysky or DSM2/DSMX) | 1 | VW902 |
| SE0802 KV19000 Brushless motor x4 | 4 | VW903 |
| 5.8G 25mw 40ch VTX&Camera x1 | 1 | VW904 |
| 4.3g Servo x 1 | 1 | VW905 |
| Propeller cw+ccw x4 | 4 | VW906 |
| 3.8v 250mah 30C/60C lipo battery x 3 | 3 | VW907 |
| USB charger x1 | 1 | VW908 |

## Setup Servo:

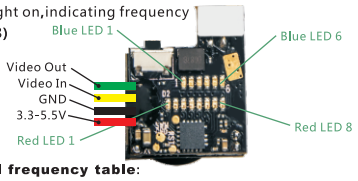
Enable SERVO_TILT and Set A2(AUX2) channel to match Servo 0, and use a three position switch of your transmitter to match the A2 channel to control the Servo




## VTX Bands and Channels setup

Blue LED1 and Red LED1 light on,indicating frequency 5865MHZ(BAND1 and CH1)
Blue LED1 and Red LED2 light on,indicating frequency 5865MHZ(BAND1 and CH2)

Blue LED1 and Red LED1 light on,indicating frequency 5865MHZ(BAND1 and CH1)
Blue LED1 and Red LED2 light on,indicating frequency 5845MHZ(BAND1 and CH2)
Blue LED6 and Red LED8 light on,indicating frequency 5600MHZ(BAND6 and CH8)

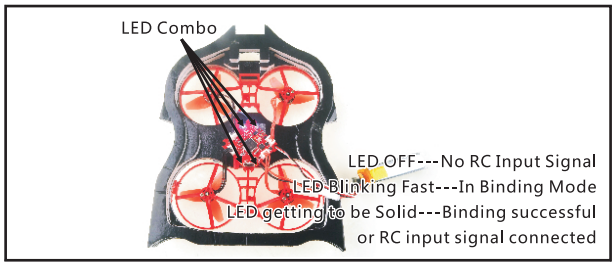


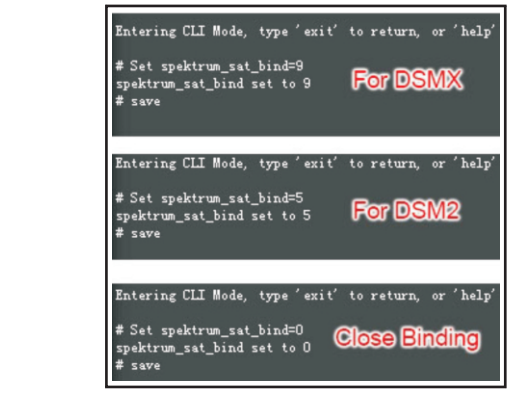

**Frequency and channel frequency table:**

| FR \ CH | CH1 | CH2 | CH3 | CH4 | CH5 | CH6 | CH7 | CH8 |
|---|---|---|---|---|---|---|---|---|
| Band1 | 5865M | 5845M | 5825M | 5805M | 5785M | 5765M | 5745M | 5725M |
| Band2 | 5733M | 5752M | 5771M | 5790M | 5809M | 5828M | 5847M | 5866M |
| Band3 | 5705M | 5685M | 5665M | 5665M | 5885M | 5905M | 5905M | 5905M |
| Band4 | 5740M | 5760M | 5780M | 5800M | 5820M | 5840M | 5860M | 5880M |
| Band5 | 5658M | 5695M | 5732M | 5769M | 5806M | 5843M | 5880M | 5917M |

## Binding procedure

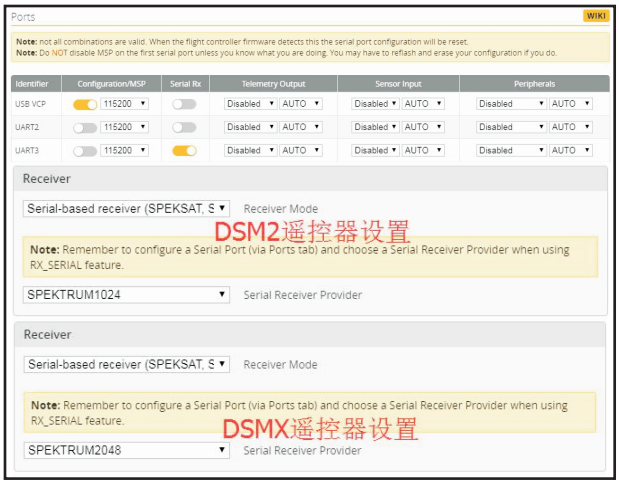
(1)Connect Crazybee F3 DSM2/DSMX Version to computer and open Betaflight configurator, From CLI tab type: "set spektrum_sat_bind = 9" for DSMX radio or "set spektrum_sat_bind = 5" for DSM2 radio
(2)Type "save" and after Flight controller reboot remove USB cable (=Power off the board)
(3)Wait a second and reconnect the USB cable. After cold start satellite led combo on the backside of the board (2 red led+2 white led) should start blinking and transmitter should be turned on while pressing the bind button
(4)After binding satellite LED combo 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 flight controller is repowered again.



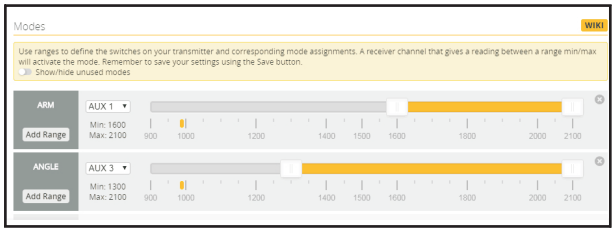

## Receiver configuration

We have configured the DSM2/DSMX receiver for the Vwhoop 90 before shipping. If you flashed the firmware ,Please setup as the following steps: Enable Serial_RX for UART3, then select RX_SERIAL from the RECEIVER Mode and set the Serial Receiver Provider to be Spektrum1024 for DSM2 radio and Spektrum2048 for DSMX Radio in Betaflight Configurator.



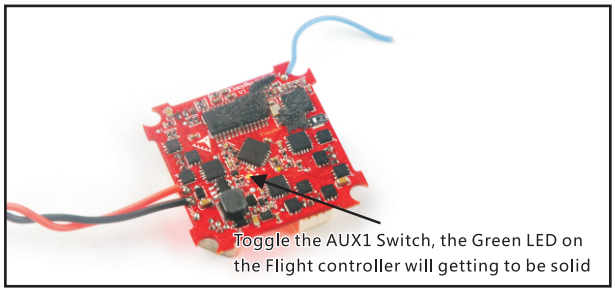

## Arm/Disarm the Motor

1. The Default Arm/Disarm switch for Vwhoop 90 is AUX1(Channel 5),and you can also customize it with Betaflight Configurator.

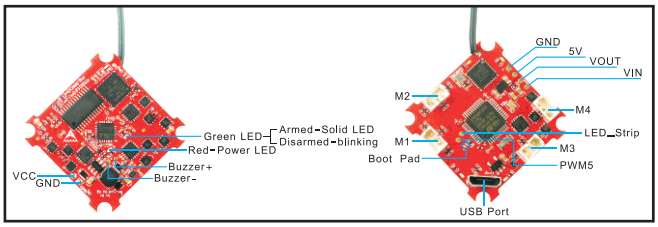


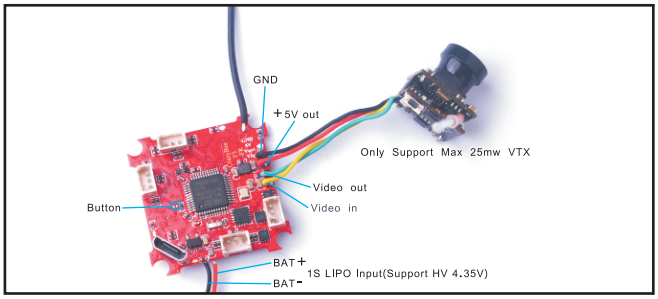

2.For most of Spektrum radio the default channel 5 is Gear switch and you can also customize it. Use DX9 for example, Go to menu and select System setup ,then choose Channel ssign.

3.The default channel map for Vwhoop 90 DSM2/X version is TAER1234, please make sure your transmitter is matched, otherwise it will can't be armed. Toggle the AUX1 Switch ,the Green LED on the flight controller will getting to be solid, this indicates the motor was armed . And also you can found "Armed" displayed on your FPV Goggles or the FPV Monitor. Please make sure keep the Vwhoop 90 level before arming .Be careful and enjoy your flight now !

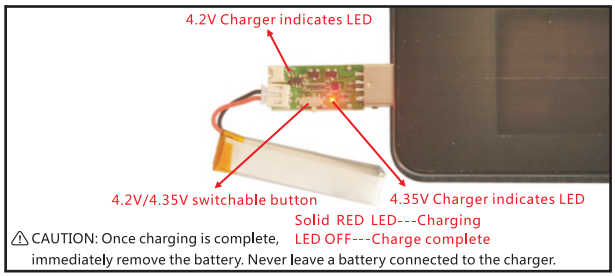


## Flight controller connection diagram

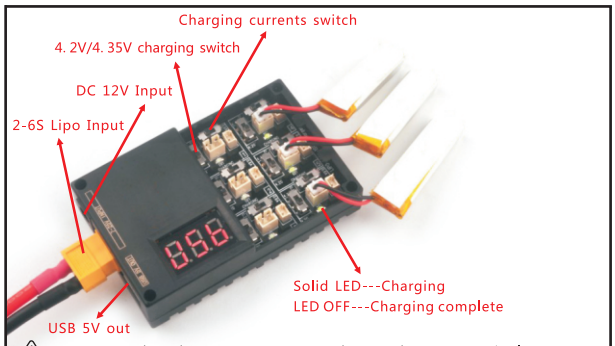



## Charger the Lipo Battery

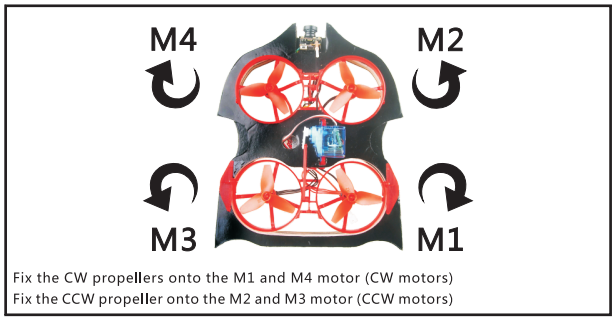



⚠ CAUTION: Once charging is complete, immediately remove the battery. Never leave a battery connected to the charger.

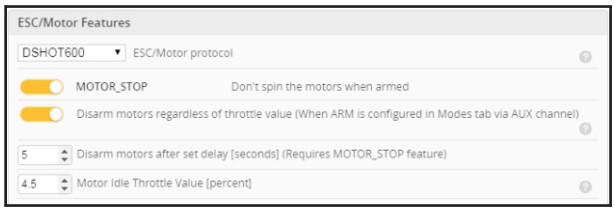



⚠ Ports are numbered 1-6. Do not put more than one battery on a single port. For example: do not insert one battery on the Picoblade 1.25 plug and another on the same port with the PH 2.0 plug.

## Mixer type and ESC/motor protocol

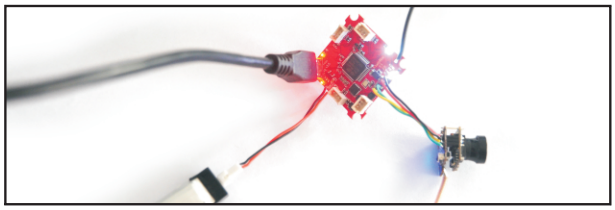



Fix the CW propellers onto the M1 and M4 motor (CW motors)
Fix the CCW propeller onto the M2 and M3 motor (CCW motors)

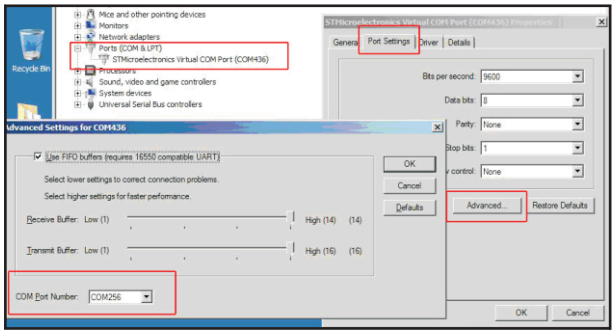



## ESC Check and Flash firmware

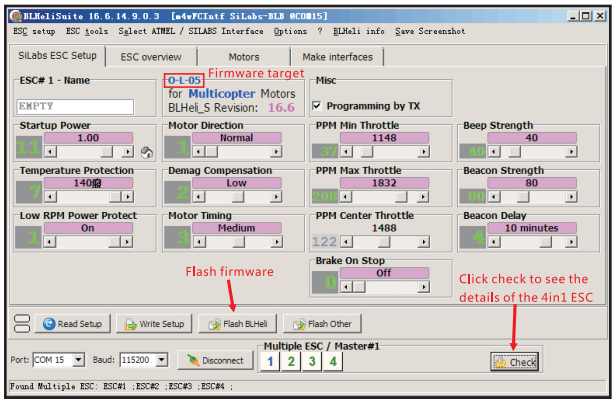
1.Download New release Blhelisuite from:
https://www.mediafire.com/folder/dx6kfaasyo24l/BLHeliSuite
2.Connect the CRAZYBEE flight controller to computer and power for it with 1S Lipo battery



3.Open the Device Manager of your computer, find the Ports, please make sure the Com port Serial Number is under 255, otherwise it will can't connect to the BLHELISUITE. You can change the port serial number like the bellowing step :

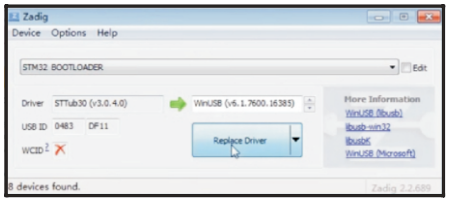



4.Open the BLHELISUITE, Select SILABS BLHeli Bootloader (Cleanflight) from the third tab on the top side. Then Select the right Serial com port and Click connect. You can also Flash the new release BLHeli_s firmware via the BLHELISUITE, the firmware Target is "O-L-05"

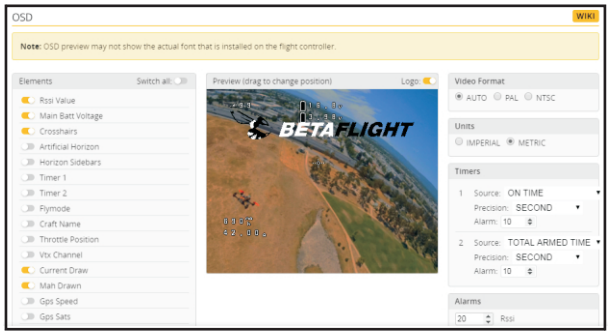



## Flight controller firmware update

1.Install latest STM32 Virtual COM Port Driver
http://www.st.com/web/en/catalog/tools/PF257938
2.Install STM BOOTLOAD Driver (STM Device in DFU MODE)
3.Open Betaflight configurator and choose firmware target "Crazybeef3DX",then select the firmware version.
4.There are 2 ways to get in DFU Mode: 1). solder the boot pad and then plug USB to computer 2). loading betaflight firmware and hit "flash", then it will getting into DFU Mode automatically.
5.Open Zadig tools to replace the drivers from STM32 Bootloader to WINUSB Driver.
6.Reconnect the flight controller to the computer after replace driver done , and open Betaflight Configurator, loading firmware and flash.




*We will update the firmware for Crazybee F3 and release to our website in time.

## Betaflight OSD Configurations

Connect the flight controller to the computer , open Betaflight Configurator , move to the OSD option, then you can configure the layout of the OSD.