

Features

AIO 4IN1 Crazybee F4 Lite flight controller built-in 5.8G VTX
Extreme light 1S 65mm Brushless whoop only 20g
Runcam Nano3 The lightest 1/3 CMOS 800TVL Camera
Smooth and powerful
Compatible for 1S Lipo/LiHV
Camera Angle adjustable

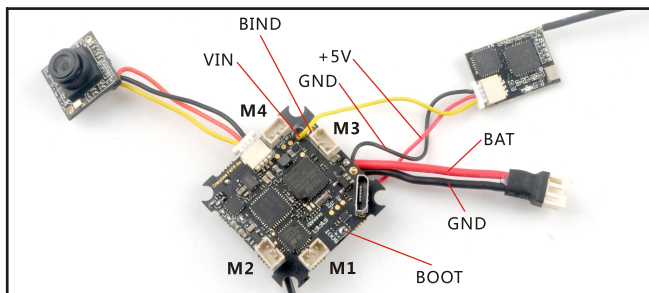
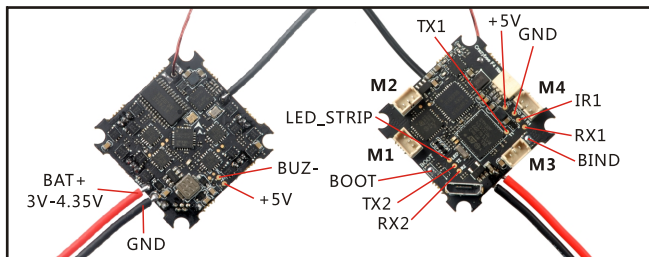
Specifications

Brand Name: Happymodel
Item Name: Mobula6 1S 65mm Brushless whoop drone BNF version
Wheelbase: 65mm
Size: 80mm*80mm*37mm
Weight: 20g
Receiver option:
Internal SPI Frsky version (Compatible with ACCST D8/D16, Recommend D8 mode)
Internal SPI Flysky version(Compatible with AFHDS and AFHDS-2A Flysky transmitter)
External DSM2/DSMX protocol satellite receiver (Compatible Spektrum DSM2/DSMX radio)
Motor speed option:
SE0802 KV25000(Race Edition)
SE0802 KV19000(Regular Edition)

Package includes

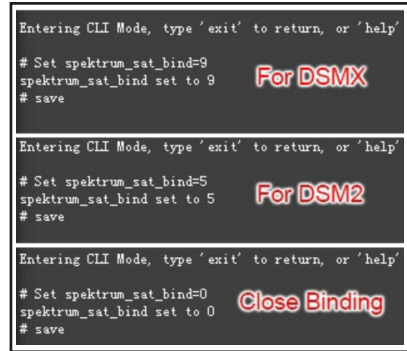
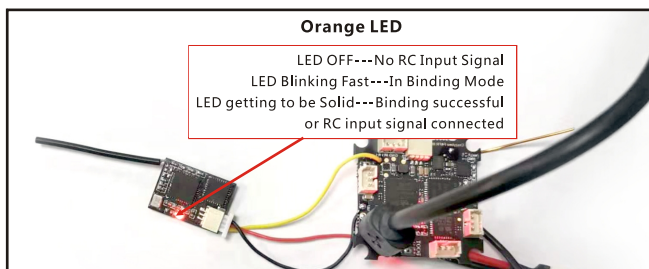
| Item Name | Qty |
|--|-----|
| Mobula6 1S 65mm whoop Drone Frame | 1 |
| SPI Receiver Option1: Crazybee F4 Lite FC built-in Frsky SPI D8 RX | 1 |
| SPI Receiver Option2: Crazybee F4 Lite FC built-in Flysky SPI RX | |
| External DSMX receiver option3: Crazybee F4 Lite FC +DSM2/X receiver | |
| SE0802 KV19000 or KV25000 brushless motor | 4 |
| Gemfan 1219-3 Propellers(4cw+4ccw) | 1 |
| Runcam Nano3 1/3 CMOS 800TVL camera | 1 |
| 5.8G 25mw 40ch vtx (Flight controller built-in) | 1 |
| 1S 300mah 30C LiHV Battery | 4 |
| 1S Lipo/LiHV USB Charger | 1 |
| Propeller disassemble tool | 1 |

Flight controller connection diagram



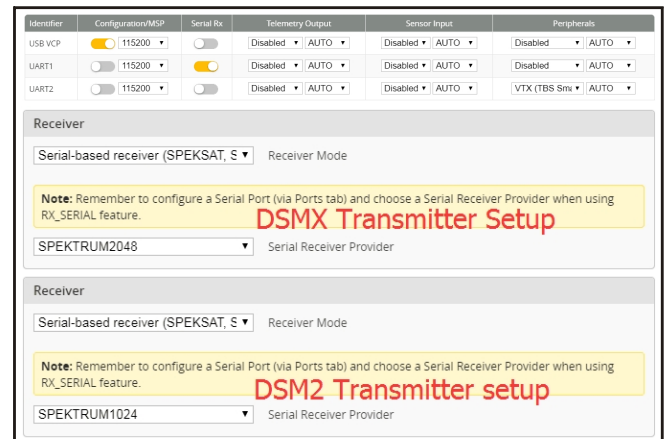
Binding procedure

- (1)Connect Crazybee F4 Lite 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 the orange LED on the receiver should start blinking and transmitter should be turned on while pressing the bind button
- (4)After binding the orange LED on the receiver 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.



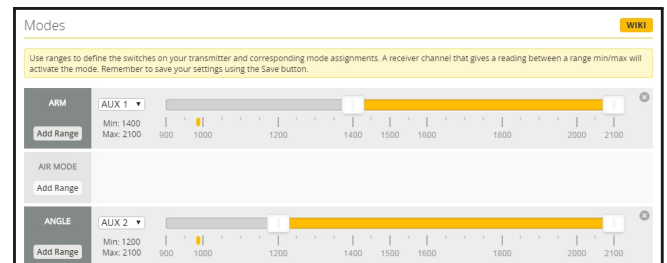
Receiver configuration

We have configured the DSM2/DSMX receiver for the Mobula6 before shipping. If you flashed the firmware ,Please setup as the following steps: Enable Serial_RX for UART1, 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 Mobula6 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 assign.



- 3.The default channel map for Mobula6 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 Mobula6 level before arming .Be careful and enjoy your flight now !



VTX Bands and Channels setup

Frequency and channel frequency table:

| FR | CH | CH1 | CH2 | CH3 | CH4 | CH5 | CH6 | CH7 | CH8 |
|----------|----|-------|-------|-------|-------|-------|-------|-------|-------|
| Band1(A) | | 5865M | 5845M | 5825M | 5805M | 5785M | 5765M | 5745M | 5725M |
| Band2(B) | | 5733M | 5752M | 5771M | 5790M | 5809M | 5828M | 5847M | 5866M |
| Band3(E) | | 5705M | 5685M | 5665M | 5645M | 5625M | 5605M | 5585M | 5565M |
| Band4(F) | | 5740M | 5760M | 5780M | 5800M | 5820M | 5840M | 5860M | 5880M |
| Band5(R) | | 5658M | 5695M | 5732M | 5769M | 5806M | 5843M | 5880M | 5917M |

There are 2 ways to switch the vtx channels:

1.If we need to use Channel 5705 then we should Go to Betaflight CLI,type the command:

Set VTX_band=3

Set VTX_channel=1

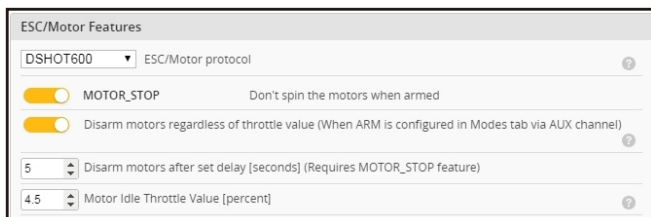
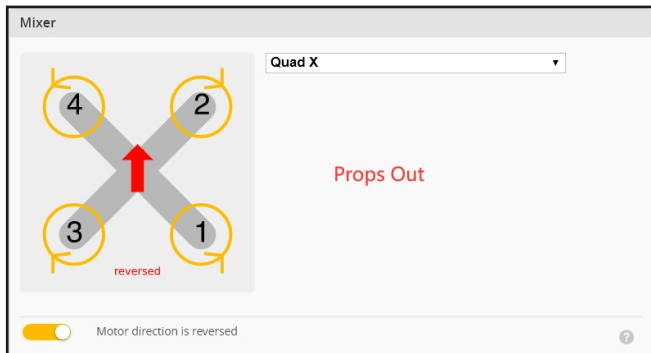
save

2.Disarm the Mobula6 and then move the stick of the transmitter(THR MID+YAW LEFT+PITCH UP)to enter OSD Menu,Enter to Features,then enter to VTX SA to set VTX Band and channel

| Identifier | Configuration/MSP | Serial Rx | Telemetry Output | Sensor Input | Peripherals |
|------------|--|--|------------------|--------------|-------------------|
| USB VCP | <input checked="" type="checkbox"/> 115200 | <input checked="" type="checkbox"/> Disabled | Disabled | Disabled | Disabled |
| UART1 | <input checked="" type="checkbox"/> 115200 | <input checked="" type="checkbox"/> Disabled | Disabled | Disabled | Disabled |
| UART2 | <input checked="" type="checkbox"/> 115200 | <input checked="" type="checkbox"/> Disabled | Disabled | Disabled | VTX (TBS Sm) AUTO |



Mixer type and ESC/motor protocol



Default PID setting

| PID Settings | Proportional | Integral | Derivative | Feedforward | RC Rate | Super Rate | Max Vel (deg/s) | RC Expo |
|--------------|--------------|----------|------------|-------------|---------|------------|-----------------|---------|
| Basic/Acro | | | | | | | | |
| ROLL | 80 | 25 | 80 | 100 | 1.00 | 0.70 | 667 | 0.00 |
| PITCH | 80 | 25 | 80 | 100 | 1.00 | 0.70 | 667 | 0.00 |
| YAW | 90 | 90 | 0 | 100 | 1.00 | 0.70 | 667 | 0.00 |



ESC Check and Flash firmware

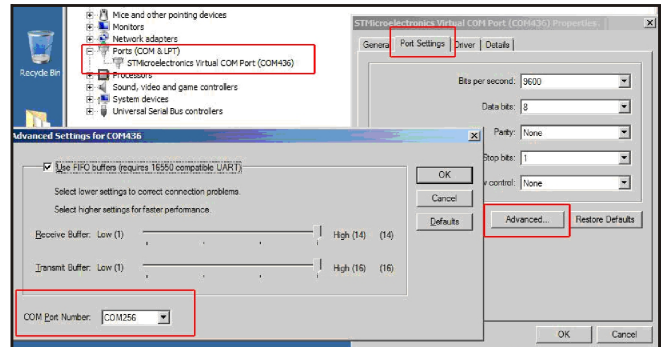
1.Download New release BLHeliSuite from:

<https://www.mediafire.com/folder/dx6kfaasyo24l/BLHeliSuite>

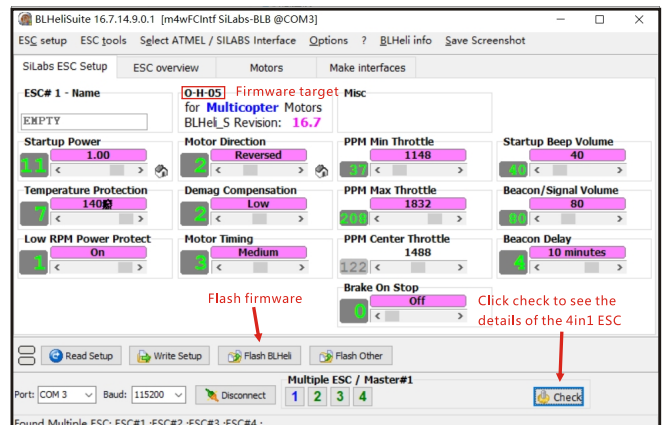
2.Plug the usb and connect the flight controller to computer



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 following 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-H-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)

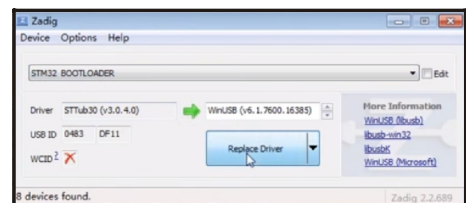
3.Open Betaflight configurator and choose firmware target "Crazybee F4 DX" ,then select the firmware version.

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 get 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.



"Flip over after crash" procedure

Set one channel of your radio transmitter to activate the Flip over function in the Mode tab of Betaflight configurator.

The default Switch for Activate "Flip" is AUX4(Channel8)

