

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

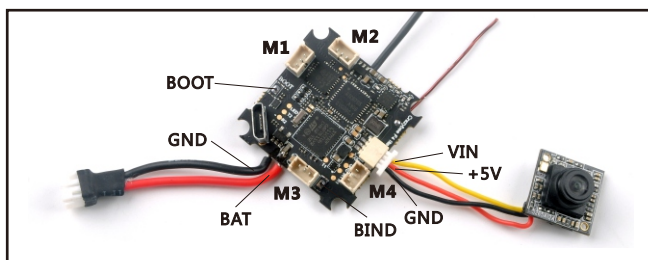
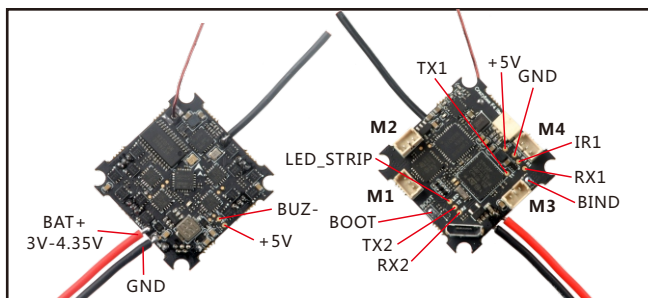
Specifications

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)
 Internal SPI DSM2/DSMX version (Compatible with DSM2/DSMX radio transmitter)
 Motor speed option:
 0802 KV25000 (Race Edition)
 0802 KV19000 (Regular Edition)

Package includes

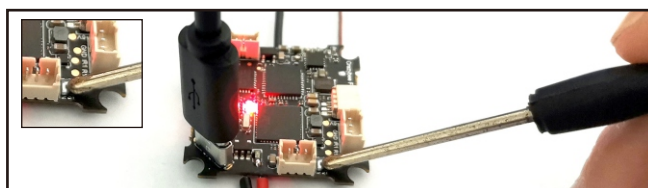
Item Name	Qty
Mobula6 1S 65mm whoop Drone Frame	1
SPI Receiver Option1: Crazybee F4 Lite FC built-in Frsky SPI D8 RX	1
SPI Receiver Option2: Crazybee F4 Lite FC built-in Flysky SPI RX	
SPI receiver option3: CrazybeeX DXS V1.0 FC built-in DSM2/X SPI RX	4
0802 KV19000 or KV25000 brushless motor	1
Gemfan 1219-3 Propellers (4cw+4ccw)	1
Runcam Nano3 1/3 CMOS 800TVL camera	1
5.8G 25mw 40ch vtx (Flight controller built-in)	4
1S 300mah 30C LiHV Battery	1
1S Lipo/LiHV USB Charger	1
Propeller disassemble tool	1

Flight controller connection diagram



Binding procedure

1. Powering the Mobula6 then the red LED at the bottom of the flight controller will be blinking slowly. And then press the bind button, the red LED will be getting to be solid, this indicates the receiver is in bind mode.



Plug the USB and go to the CLI command tab in the Betaflight configurator, then type "frsky_bind" (Betaflight 3.5.7 firmware), the red LED will be getting to be solid, and it means the receiver is in bind mode. For Betaflight 4.0.X the bind code is "bind_rx_spi" and for Betaflight 4.1.X or 4.2.X version the bind code is "bind_rx"

```

Entering CLI Mode, type 'exit' to return, or 'help'
#
# Building AutoComplete Cache ... Done!
# frsky_bind
Binding...
  
```

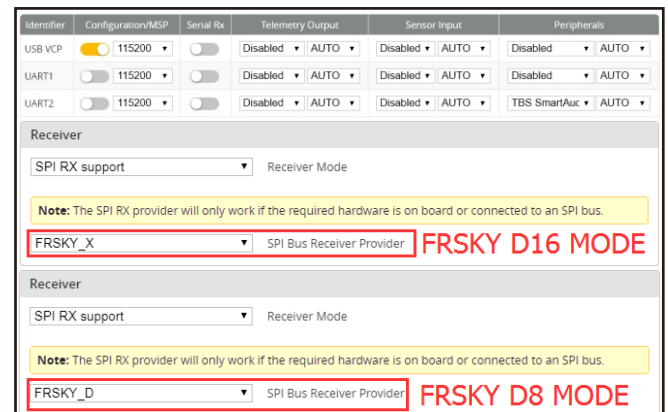
2. Turn on your Frsky Taranis transmitter, and move to BIND OPTION from SETUP MENU, Choose receiver mode D16 or D8 according to your Betaflight receiver configuration (Frsky_X = D16 mode, Frsky_D = D8 mode) we recommend use D8 mode



3. ENT [Bind] to binding with the Mobula6, the red LED at the bottom of the flight controller will be blinking slowly, this indicates binding successfully, and then exist binding mode of your Frsky transmitter, the red LED at the bottom of the flight controller will be getting to be solid again, this indicates working normal.

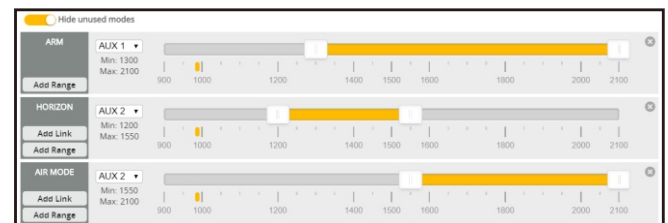
Receiver configuration

Please set Receiver mode to be SPI RX Support from the Configuration tab of the Betaflight Configurator, then select FRSKY_X Provider for FRSKY D16 MODE or Select FRSKY_D Provider for FRSKY D8 MODE, don't enable Serial RX since the CRAZYBEE Flight controller is integrated SPI BUS Receiver



Arm/Disarm the Motor

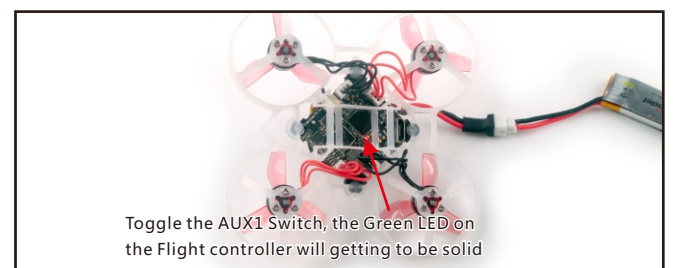
1. The Default Arm/Disarm switch for Mobula6 is AUX1 (Channel 5), and you can also customize it with Betaflight Configurator.



2. Turn on the Frsky transmitter (Use X9D+ as an example) and move to the MIXER interface, Set "SA" or "SB" switch etc. for Ch5 to ARM/DISARM the motor.



3. The default channel map for Mobula6 Frsky 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 be 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

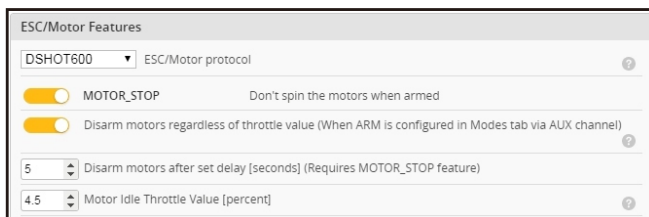
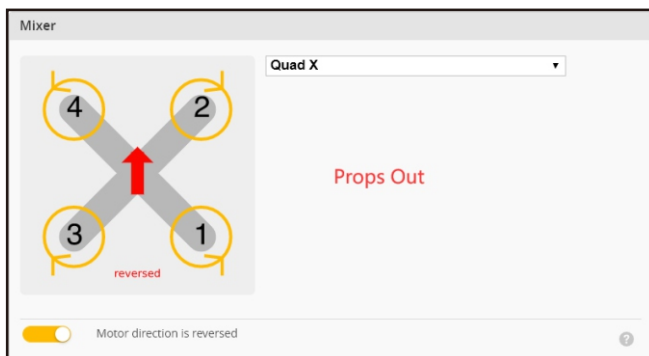
save

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	115200	Disabled	Disabled	Disabled	AUTO
UART1	115200	Disabled	AUTO	Disabled	AUTO
UART2	115200	Disabled	AUTO	Disabled	TBS SmartAuc



Mixer type and ESC/motor protocol



Default PID settings for Betaflight 3.5.7

PID Settings	Proportional	Integral	Derivative	Feedforward	RC Rate	Super Rate	Max Vol [deg/s]	RC Expo
Basic/Acro								
ROLL	85	100	85	140	1.00	0.70	662	0.00
PITCH	80	100	85	140	1.00	0.70	662	0.00
YAW	120	100	0	140	1.00	0.70	662	0.00



ESC Check and Flash firmware

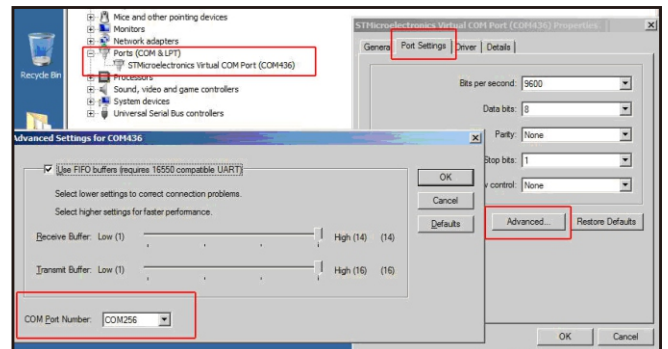
1.Download New release BLHeliSuite from:

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

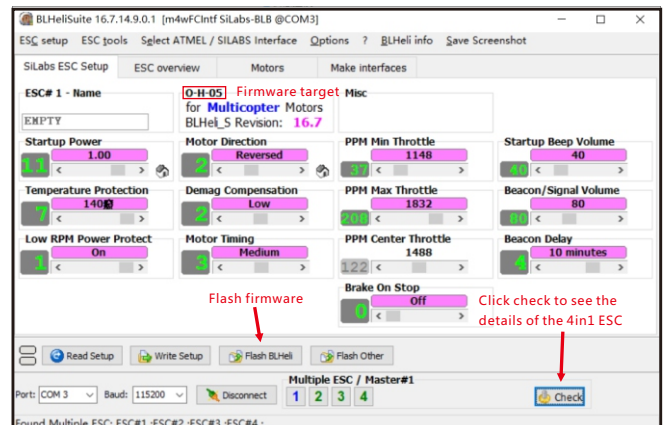
2.Plug the usb and connect the flight controller to computer



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>

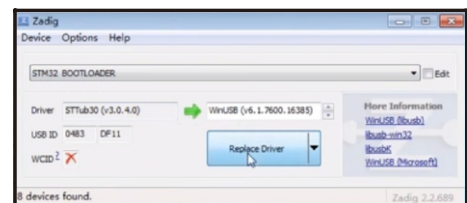
2.Install STM BOOTLOAD Driver (STM Device in DFU MODE)

3.Open Betaflight configurator and choose firmware target "Crazybee F4 FR", 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 betafight 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)

