Happymodel

Specifications

|	
Brand Name: Happymodel	
Item Name: Mobula7 HD 2-3S 75mm Brushless whoop drone	
Wheelbase: 75mm	
Size: 98mm*98mm*45mm	
Weight: 72g(with Original 3s 300mah Lipo battery)	

Package includes:

Item Name	Qty
Mobula7 V3 Frame	1
Option1: Crazybee F4FR V3.0 PRO FC built-in Frsky NON-EU RX	1
Option2: Crazybee F4FS V3.0 PRO FC built-in Flysky RX	1
Option3: CrazybeeF4 PRO V3.0 with external DSM2/X receiver	
Option4: Crazybee F4 V3.0 PRO FC no RX verion	
EX1102 KV9000 Motor	4
40mm propeller(4cw+4ccw)	1
Caddx Turtle v2+1080p 60fps DVR	1
Whoop_vtx 5.8G 40ch 25mw-200mw VTX	1
3S 11.4v 300mah 30C/60C battery	1
Propeller disassemble tool	1
Screwdriver	1

Flight controller connection diagram
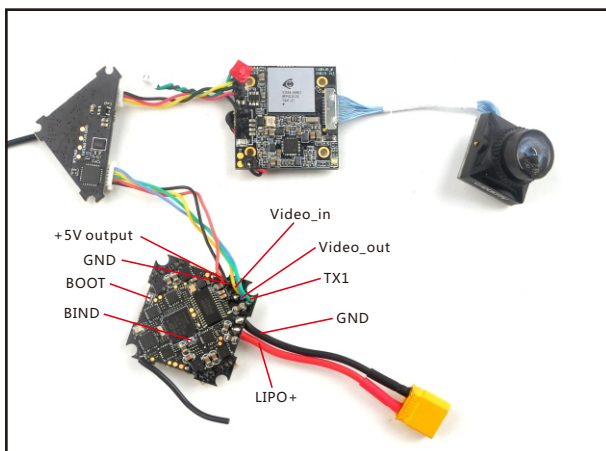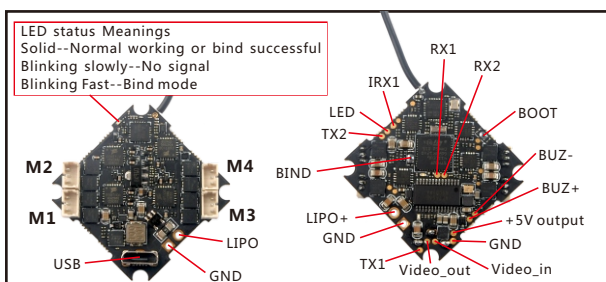
Binding procedure

1.Powering the Mobula7 HD then the red LED at the bottom of the flight controller will blinking slowly. And then press and hold the bind button for 2 seconds , the red led will blinking fast , this indicate the receiver is in bind mode.
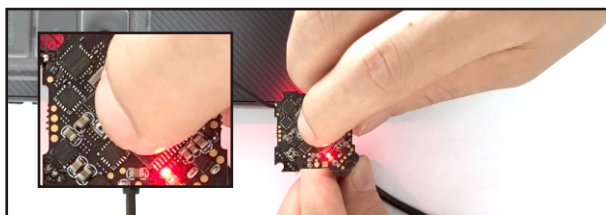
Another simple way to bind with the Flysky transmitter is : Plug the usb and go to the CLI command tab in the betaflight configurator, then type "bind_rx_spi" ,the receiver will getting into bind mode , and then make your Flysky transmitter to bind mode.


2.Turn on your Flysky transmitter, and Choose receiver mode AFHDS-2A or AFHDS according to your Betaflight receiver configuration(**A7105_Flysky_2A=AFHDS-2A, A7105_Flysky=AFHDS**)

3.ENT RX [BIND] to binding with the Crazybee F4 POR Flight controller, the LED Combo(2 red LED and 2 white LED) will getting to be solid on the flight controller ,this indicate binding successfully, the AFHDS-2A radio will auto exist the binding mode but the AFHDS radio should exist binding mode by yourself.
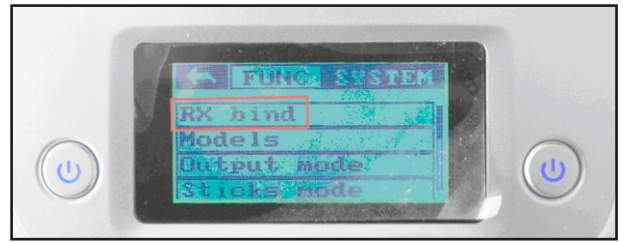

Receiver configuration

Please set Receiver mode to be SPI RX Support from the Configuration tab of the Betaflight Configurator, then select A7105_Flysky_2A Provider for AFHDS-2A Protocol Radio transmitter or Select A7105_Flysky Provider for AFHDS Protocol Radio transmitter, don't enable Serial RX since the Crazybee F4 PRO Flight controller is integrated SPI BUS Receiver
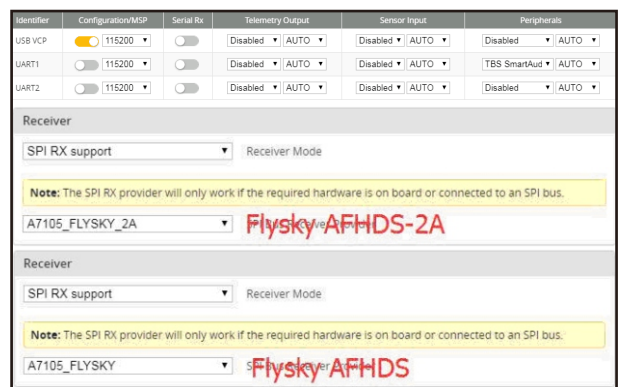

Arm/Disarm the Motor

1. The Default Arm/Disarm switch for Mobula7 HD is AUX1(Channel 5),and you can also customize it with Betaflight Configurator.
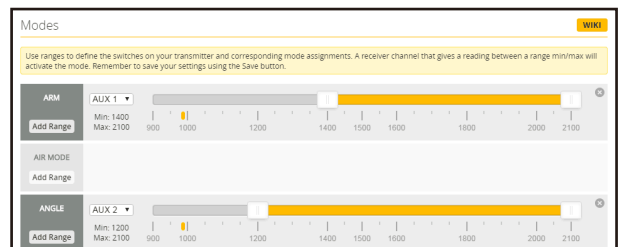
2. Set Arm/Disarm switch for your Flysky Radio: Move to the Aux.channels interface, Set "SWA" or "SWB" or "SWC" switch etc. for Ch5 to ARM/DISARM the motor.

3.The default channel map for Mobula7 HD Flysky version is AETR1234, 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 Mobula7 HD level before arming .Be careful and enjoy your flight now !

Toggle the AUX1 Switch, the Green LED on the Flight controller will getting to be solid
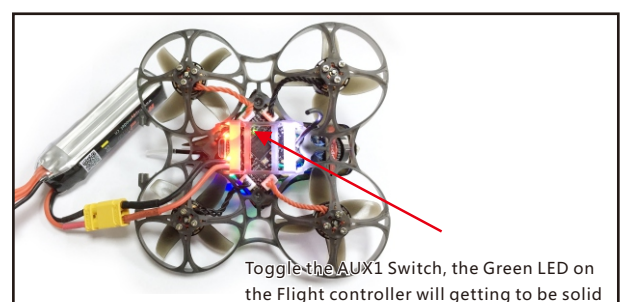
VTX Bands and Channels setup

Blue LED5 and Red LED8 light on,indicating frequency
5917MHZ(BAND5 and CH8)
Blue LED1 and Red LED2 light on,indicating frequency
5845MHZ(BAND1 and CH2)

- 100MW
- 25MW
- U.FL
- Switch Button
- Band LED — 1,2,3,4,5
- Cam_IN
- Channel LED — 8,7,6,5,4,3,2,1
- +5V out put
- GND
- 200MW
- Black GND
- Red +5V Input
- Green smart Audio
- Yellow Video_IN
- Blue Video_out
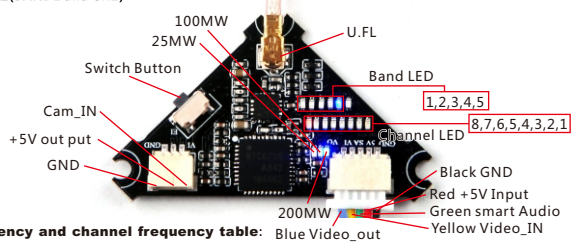
Frequency and channel frequency table:

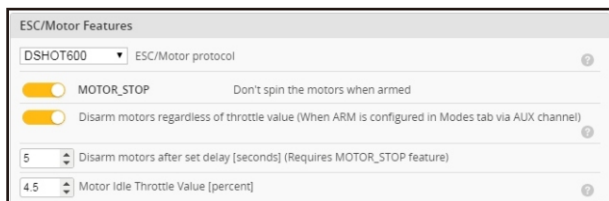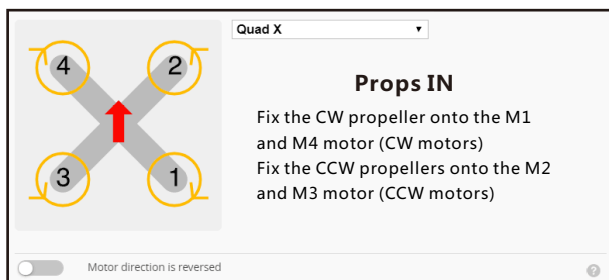| FR \ CH	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Band1(A)	5865M	5845M	5825M	5805M	5785M	5765M	5745M	5725M
Band2(B)	5733M	5752M	5771M	5790M	5809M	5828M	5847M	5866M
Band3(E)	5705M	5685M	5665M	5665M	5885M	5905M	5905M	5905M
Band4(F)	5740M	5760M	5780M	5800M	5820M	5840M	5860M	5880M
Band5(R)	5658M	5695M	5732M	5769M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

There are 3 ways to switch the vtx channels:

1. Long press the switch button to change the Band of the VTX, shorter press the switch button to change the channels of the VTX.

(Can't save ,it will lost the channel while re-power for the Mobula7 HD since the Smartaudio funciton enalbed)

2. Go to Betaflight CLI ,type the command:

Set vtx_band=3
Set vtx_channel=1
Set vtx_freq=5705
save

Notes: The vtx_freq should match the vtx_band and vtx_channle as the VTX Channel list shows.
For example, if you set vtx_freq=5732, you should set vtx_band=5 and vtx_channel=3

3. Enable Smartaudio for UART1, 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 ▼ AUTO ▼	Disabled ▼ AUTO ▼	Disabled ▼ AUTO ▼
UART1	115200 ▼		Disabled ▼ AUTO ▼	Disabled ▼ AUTO ▼	TBS SmartAud ▼ AUTO ▼
UART2	115200 ▼		Disabled ▼ AUTO ▼	Disabled ▼ AUTO ▼	Disabled ▼ AUTO ▼


```
- SMARTAUDIO -
F E1 5705 25
>BAND       RACEBAND
CHAN
(FREQ)           5658
POWER             25
SET
CONFIG
BACK
```

Mixer type and ESC/motor protocol

Quad X ▼

Props IN

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

Motor direction is reversed

ESC/Motor Features

DSHOT600 ▼ ESC/Motor protocol

- MOTOR_STOP — Don't spin the motors when armed
- Disarm motors regardless of throttle value (When ARM is configured in Modes tab via AUX channel)
- 5 — Disarm motors after set delay [seconds] (Requires MOTOR_STOP feature)
- 4.5 — Motor Idle Throttle Value [percent]

Default PID setting

	Proportional	Integral	Derivative	Feedforward	RC Rate	Super Rate	Max Vel [deg/s]	RC Expo
Basic/Acro								
ROLL	50	45	27	60	1.00	0.75	800	0.23
PITCH	50	50	30	60		0.75	800	
YAW	72	55	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.Connect the Crazybee F4 PRO flight controller to computer and power for it with 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 :
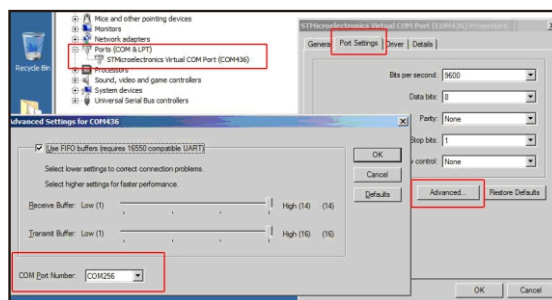

4.Open the BLHELISUITE, Select SILABS BLHeli Bootloader (Cleanflight) from the third tab on the top side. Then Select the right Serial com port and Click connect. You can also Flash the new release BLHeli_s firmware via the BLHEILISUITE, the firmware Target is "F-H-40"
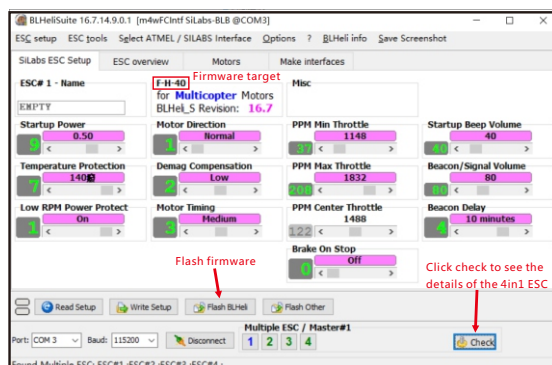

Flight controller firmware update

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 "CrazybeeF4FS" ,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.
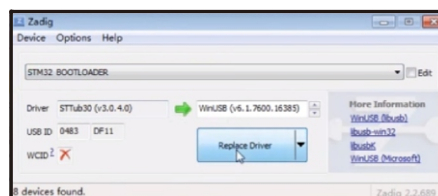
"Flip over after crash" procedure

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

Crashed ➡ Disarm The Quad ➡ Activate Flip over ➡ Arm The Quad ➡ Move stick to flip the Quad
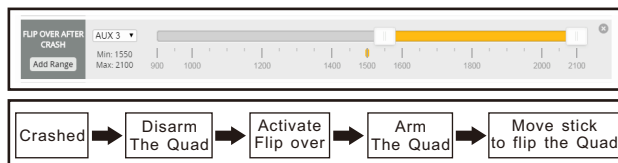
Notes:

1. Add external Sbus RX, Disable SPI RX---Connect SBUS wire to the IRX1 pad ---Enable Serial RX for UART1---Choose serial_based receiver and Sbus protocol

2. Add external Crossfire rx , use TX2 RX2 port

3. Breath light meanings : If the single cell voltage > 3.6v , the LED turn to green color, if the single cell voltage <3.3v the LED turn to red color .

4. No videos from Caddx turtle2 if just power from USB , need to connect the battery