

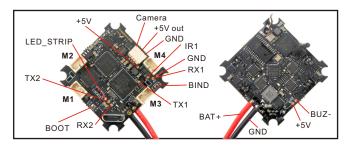
Features
AIO 4IN1 Crazybee F4 Lite flight controller built-in 5.8G VTX
Extreme light 1S 65mm Brushless whoop only 20g
Runcam Nano3 The lightest 1/3 CMOS 800TVL Camera
Smooth and powerful
Compatible for 1S Lipo/LIHV
Camera Angle adjustable

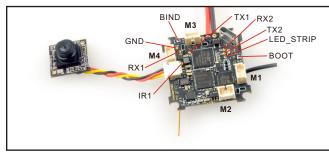
Specifications
Brand Name: Happymodel
Item Name: Mobula6 1S 65mm Brushless whoop drone BNF version
Wheelbase: 65mm
Size: 80mm*80mm*37mm
Weight: 20g
Receiver option:
Internal SPI Frsky version (Compatible with ACCST D8/D16, Recommend D8 mode)
Internal SPI Flysky version(Compatible with AFHDS and AFHDS-2A Flysky transmitter)
Internal SPI DSM2/DSMX version(Compatible with Spektrum DSM2/DSMX radio)
Motor speed option:
EX0802 KV25000(Race Edition)
EX0802 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	
SPI Receiver Option2: Crazybee F4 Lite FC built-in Flysky SPI RX	1
SPI Receiver Option3:CrazybeeX DXS V1.0 built-in DSM2/DSMX SPI RX	
EX0802 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

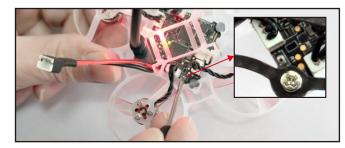




# **Binding procedure**

1. Betaflight 4.3.0 version(Original custom firmware out of box) binding procedure:Plug the usb to power up for the Mobula6, then press and hold the bind button for a second, the red LED on the bottom of the flight controller will blinking fast, this indicate the receiver is in bind mode

2. Another simple way to bind with SPEKTRUM Radio or Multi protocol module with DSM2/DSMX protocol: Plug the usb to power up for the Mobula6, then open Betaflight configurator and move to the CLI command, then type "bind\_rx", the red Led on the bottom of the flight controller will blinking fast, this indicate the receiver is in bind mode. Make your radio transmitter get into bind mode. The red Led should getting to be solid or blinking slowly if bind successful.



## Happymodel Mobula6 1s Brushless whoop DSM2/DSMX version

Entering CLI Node, type 'exit' to return, or 'help' # Building AutoComplete Cache ... Done! # build\_rx # build\_rx



#### **Receiver configuration**

Please set Receiver mode to be SPI RX Support from the Configuration tab of the Betaflight Configurator, then Select SPEKTRUM protocol for the SPI Bus Receiver provider, don't enable Serial RX since the CrazybeeX DXS Flight controller is integrated SPI BUS Receiver.

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 •	Disabled • AUTO •
UART2	115200 •		Disabled • AUTO •	Disabled • AUTO •	VTX (TBS Smi · AUTO ·
SPI R	X support		<ul> <li>Receiver Mode</li> </ul>		
	K support				
		will only wo	Receiver Mode     Receiver Mode     Add      Add	re is on board or connect	ted to an SPI bus.

## 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 ssign.



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	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 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 • AUTO •	Disabled • AUTO •	Disabled • AUTO •
UART1	115200 •		Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
UART2	115200 •		Disabled • AUTO •	Disabled • AUTO •	VTX (TBS Smi · AUTO ·



Mixer type and ESC/motor protocol

Mixer		
4 2	Quad X	
3 reversed	Props Out	
Motor direction is reversed		0
ESC/Motor Features		

DSHC	DT300	<ul> <li>ESC/Motor protocol</li> </ul>	0
0	MOTOR_STOP	Don't spin the motors when armed	
0	ESC_SENSOR	Use KISS/BLHeli_32 ESC telemetry over a separate wire	
	Bidirectional DSho	t (requires supported ESC firmware)	0
12	Motor poles (number)	per of magnets on the motor bell)	0
5.5	Motor Idle Throttle	Value [percent]	0

## Default PID setting

	D Min feature is o	and and its parameter			
		Proportional 🔞	Integral 🕜	Derivative 🕜	Feedforward 🔞
Basic//	Acro				/ / /
ROLL		90 \$	110 \$	35 \$	90 ;
РІТСН		90 \$	110 \$	37 ‡	95 :
YAW		95 💲	100 ‡	0 \$	90 ;
) Controll	er Settings Feedforward transition				
Controll	Feedforward transition				
Controll					
0 Controll 0 0 20 0 5 0	Feedforward transition Acro Trainer Angle Limit	(			л.
0 Controll 0 0 20 0 5 0	Feedforward transition Acro Trainer Angle Limit Throttle Boost	(			
0 Controll 0 ¢ 20 ¢ 5 ¢ 0 ¢	Feedforward transition Acro Trainer Angle Limit Throttle Boost Dynamic Idle Value (* 11	(			
0 Controlla 0 ↓ 20 ↓ 5 ↓ 0 ↓ 0 ↓	Feedforward transition Acro Trainer Angle Limit Throttle Boost Dynamic Idle Value (* 11 Absolute Control	t DO RPM]			

#### ESC Check and Flash firmware

-1.Download New release Blhelisuite from: <u>https://www.mediafire.com/folder/dx6kfaasyo24l/BLHeliSuite</u> 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 bellowing step :

Recycle Bin Recycle Bin Recyc	s )) onics Virtual COM Port (COM I game controllers			199 Driver   Details   Bits per second:   96 Data bits:   8	00 ¥
Mvanced Settings for COM436	nnection problems.			X Parity: No Stop bits: 1 OK v control: No Cancel Advance	ne I
Beceive Buffer: Low (1)		High (14	(14)		
COM Port Number: COM256					OK Cancel

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 "S-H-50"

SiLabs ESC Setup	ESC overv	iew M	otors	Make interfaces	s		
ESC# 1 - Name		S-H-50 Firm for Multicop BLHel_S Revis	ter Motor	rs			
Startup Power	> ®	Motor Directio		PPM Min Th	1148	Startup Beep V	
Temperature Prote	ection >	Demag Compe		PPM Max T	1832	Beacon/Signal	
Low RPM Power P On <	rotect	Motor Timing Med <	ium >	PPM Center	1488	Beacon Delay	nutes >
		Flash fir	mware	Brake On St	Off C	lick check to se letails of the 4in	
Read Setup	🕞 Write S	ietup 🔗 Flas	h BLHeli	🎲 Flash Other			
rt: COM 3 🗸 Bau	d: 115200 🗸	Disconne		ple ESC / Master	¥1	d Check	2

#### 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 F4DXS" ,<br/>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.

	Options Help		
STM32	BOOTLOADER		• Edit
Driver	STTub30 (v3.0.4.0)	🧰 WinUSB (v6. 1. 7600. 16385)	Hore Information WinUS8 (libusb)
USB ID	0483 DF11		ibusb-win32
WCID 2	×	Replace Driver	WinUSB (Microsoft)

## "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)

Add Link Max 2100	
Add Range 900 1000 1200 1400 1500 1600 1800 2000	2100