

Features
AIO Flight controller with Serial ELRS Receiver and 5.8G Openvtx
Super light 1S 65mm Brushless whoop only 17.7g
Equipment with the lightest brushless motors-SE0702 only 1.46gram
FX17-B 1/3 CMOS 800TVL Camera awesome footage
Smooth and powerful
Compatible for 1S Lipo/LIHV
2.4G Serial ELRS receiver could flash single ELRS firmware

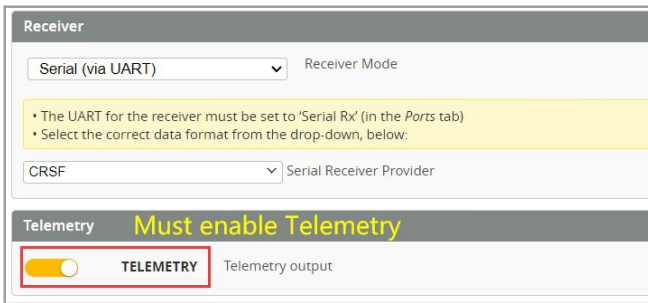
Specifications
Brand Name: Happymodel
Item Name: Mobula6 2024 1S 65mm ultra light micro FPV Whoop
Wheelbase: 65mm
Size: 81mm*81mm*37mm
Weight: 17.7g

Package Includes	Item Name	Qty
	Mobula6 2024 1S 65mm whoop Drone Frame +Canopy	1
	SuperX ELRS AIO 5-IN-1 Flight controller	1
	SE0702 KV28000 brushless motor	4
	Gemfan 1208-3 31mm tri-blade propellers(4cw+4ccw)	1
	FX17-B 1/3 CMOS 800TVL camera NTSC 4:3	1
	Onboard 5.8G 25mw-400mw VTX	1
	Spare canopy	1
	Propeller disassemble tool	1
	Screw driver	1

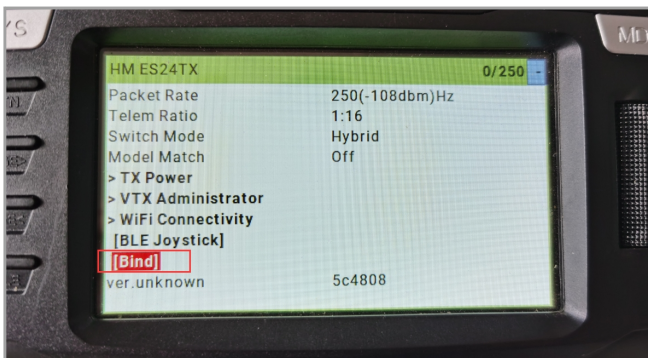
**BIND PROCEDURE VIDEO FOR YOUR REFERENCE**

Bind procedure video for your reference :<https://bit.ly/3UwEbed>

1) Supply power to the flight controller by plug USB, then immediately unplug USB when the RGB LED turned on, and then repeat one time again. When the FC is powered on for the third time, the RGB LED light will start to double-flash, which means that the onboard uart receiver enters into the binding mode

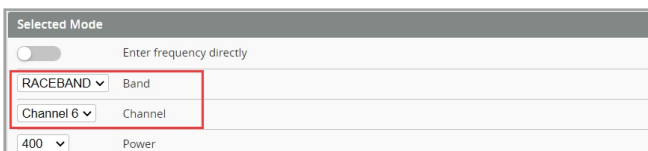


2) Please make sure your ExpressLRS tx module firmware is v3.x.x. And go to ExpressLRS.lua from "TOOLS" menu of your radio transmitter. Then hit [Bind] to binding with the onboard ExpressLRS receiver. The RGB LED should be blinking slowly first then turn to solid, that means binding was successfully.  
 3)"Telemetry" from receiver tab must enable for this flight controller

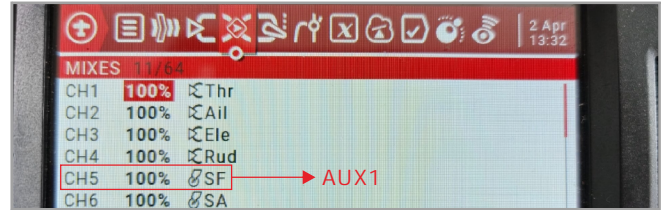
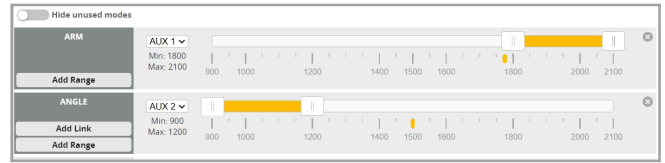


**ARM/DISARM THE MOTOR**

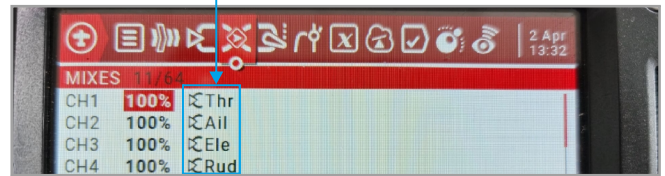
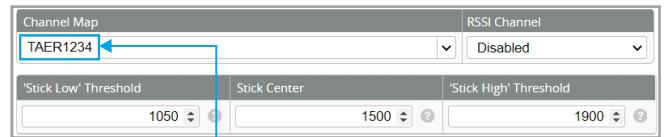
1)Turn on your radio transmitter and connect the battery to the Mobula6 2024 1S . Then place Mobula6 2024 1S horizontally on the ground.  
 2)Prepare your goggles, and match the channel with the VTX\_table



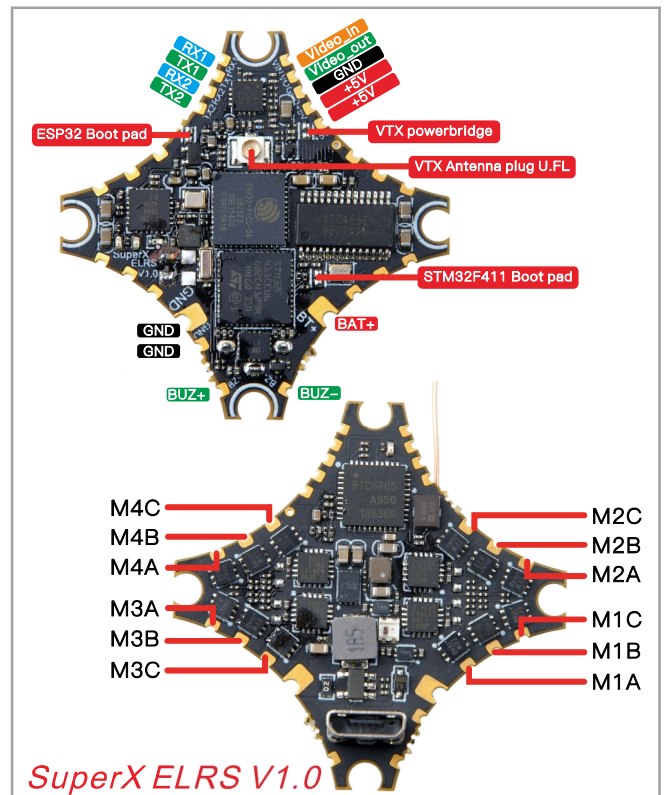
3)The default ARM/DISARM switch was set to "AUX1", usually it's Channel5 of your radio. You can customized a switch for AUX1(Channel5). Then Toggle Aux1 switch to arm the motors, The green LED on the top side of the flight controller would get solid once armed ,happy flying .



4)Please make sure the MIXES of your radio settings is match the Channel Map of betafight settings,otherwise it won't be able to armed. The default channel map is "TAER1234", you can also set it to "AETR1234" if necessary.



**FLIGHT CONTROLLER CONNECTION DIAGRAM**



Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200	Disabled	AUTO	Disabled	AUTO
UART1	115200	Disabled	AUTO	Disabled	AUTO
UART2	115200	Disabled	AUTO	Disabled	AUTO

\*RX2/TX2/+5V/GND pads could be used for External Serial Based equipment.

**VOLTAGE AND CURRENTS METER SETTINGS**

**Voltage Meter**

**Warning:** Values limited to 25.5V.

Battery: 0 V

Scale: 110

Divider Value: 10

Multiplier Value: 1

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**Amperage Meter**

**Warning:** Values limited to 63.5A.

Battery: 0.00 A

Scale [1/10th mV/A]: 1175

Offset [mA]: 0

**DEFAULT PID AND FILTER SETTINGS**

	Proportional	Integral	D Max	Derivative	Feedforward
<i>Basic/Acro</i>					
ROLL	56	95	42	31	132
PITCH	59	100	43	32	137
YAW	56	95	0	0	132

Mode:	RPY	Low	Default	High
Damping: D Gains	1			
Tracking: P & I Gains	1.2			
Stick Response: FF Gains	1.05			
Dynamic Damping: D Max	1			
Drift - Wobble: I Gains	0.95			
Pitch Damping: Pitch/Roll D	0.9			
Pitch Tracking: Pitch/Roll P, I & FF	1			
Master Multiplier:	1.05			

**Gyro Lowpass Filters**

Gyro Lowpass 1

Mode: DYNAMIC

Min Cutoff Frequency [Hz]: 300

Max Cutoff Frequency [Hz]: 550

Filter Type: PT1

Gyro Lowpass 2

Static Cutoff Frequency [Hz]: 500

Filter Type: PT2

**Gyro Notch Filters**

Gyro Notch Filter 1

Gyro Notch Filter 2

**Gyro RPM Filter**

Gyro RPM Filter

Gyro RPM Filter Harmonics Number: 3

Gyro RPM Filter Min Frequency [Hz]: 100

**Dynamic Notch Filter**

The dynamic notch filter is disabled. In order to use it, please make sure the PID loop frequency is set to at least 2Khz in the 'Configuration' tab.

Dynamic Notch Filter

**BOARD AND SENSOR ALIGNMENT AND FREQUENCY SETTINGS**

**Board and Sensor Alignment**

Roll Degrees: 0 Pitch Degrees: 0 Yaw Degrees: 0

First: GYRO/ACCEL CW 0° First GYRO

MAG Alignment: Default

Gyro update frequency: 3.20 kHz

PID loop frequency: 1.60 kHz

**MOTORS AND ESC SETTINGS**

**Mixer**

QUAD X

Motor direction is reversed

Mount 1208 propellers to Motor1 and Motor4  
Mount 1208R propellers to Motor2 and Motor3

Reorder motors Motor direction

**ESC/Motor Features**

DSHOT300 ESC/Motor protocol

MOTOR\_STOP Don't spin the motors when armed

ESC\_SENSOR Use KISS/BLHeli\_32 ESC telemetry **over a separate wire**

Bidirectional DShot (requires supported ESC firmware)

12 Motor poles (number of magnets on the motor bell)

5.5 Motor Idle (% , static)

**BLUJAY ESC SETTINGS**

**Common Parameters**

Minimum Startup Power (Boost): 1100

Maximum Startup Power (Protection): 1200

140 C Temperature Protection

22.5° (MediumHigh) Motor Timing

Low Demag Compensation

9x RPM Power Protection (Rampup)

In order to motors spin smoothly , need to change the ESC Min Startup power to "1100" and Max Startup power to "1200"

**VTX BANDS AND CHANNELS SETUP**
**VTX band/channel/power\_level settings:**

There 3 ways to change vtx channel band and power , ELRS vtx administrator

1).Go to Video transmitter menu ,then choose correct Band ,Channel and power level that you needed.

RACE Band

Channel 4 Channel

400 Power

Pit Mode

0 Pit Mode frequency

2).Disarm the Mobul6 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



3).Enter into ExpressLRS.lua then choose VTX administrator menu; Change Band, channel value, power level that you needed and then final Send vtx . Some times need to cycle power for the drone to make it effective.

RM Zorro 0/250

Packet Rate 250Hz(-108db)

Telem Ratio 1:8 (2421bps)

Switch Mode

Model Match

TX Power (100mW)

VTX Administrator

WiFi Connectivity

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RM Zorro 0/250

Band R

Channel 8

Power Lvl 5

Pit mode Off

[Send VTx]

[---BACK---

Change Band, Channel value to your goggles matched value and change Power Lvl to 5

Click Send to VTX