

Features

AIO Flight controller with Serial ELRS Receiver
Compatible with HDZERO system
Equipment with the lightest brushless motors - SE0702 only 1.49gram
HDZERO NEW ECO VTX and Camera ready
Smooth and powerful
Compatible for 1S Lipo/LIHV
Onboard blackbox ready

Specifications

Brand Name: HAPPYMODEL & HDZERO CO -Brand
Model: Mobula6 ECO 2024
Frame wheelbase: 65mm
Weight: 23.16 gram without battery
Size: 81mm*81mm*45mm
Compatible with 1S Lipo battery or Lihv battery
Battery Plug: GNB A30

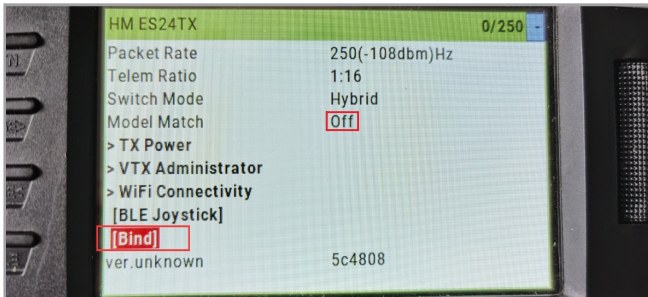
Package includes

Item Name	Qty
Mobula6 2024 1S 65mm whoop Drone Frame +Canopy	1
SuperX HD ELRS AIO flight controller	1
SE0702 KV28000 brushless motor	4
Gemfan 1208-3 31mm tri-blade propellers(4cw+4ccw)	1
HDZero ECO VTX	1
HDZero ECO Camera	1
Spare Canopy	1
Propeller disassemble tool	1
Screw driver	1

BIND PROCEDURE VIDEO FOR YOUR REFERENCE

Bind procedure video for your refrence : <https://bit.ly/3HNESZ8>

- 1) Supply power to the flight controller by plug USB, wait until the red LED onthe bottom of the FC is off, immediately turn off the power, and then repeat again the above steps. When the FC is powered on for the third time, the red LED light will start to double - flash which means that the RX enters 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 red LED should blinking slowly first then turn to solid, that means binding was successfully. If the redLED start to flash triple after binding ,please change Model Match tab value from "off" to "on" or from "on" to "off".



- 3) Check the receiver channel map and channel value is correct after bind successful. And Make sure the VTX band is "OFF" from the vtx administrator, sometimes it would affect VTX.

PORT AND RECEIVER SETTINGS

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USBVCP	115200	Off	Disabled / AUTO	Disabled / AUTO	Disabled / AUTO
UART1	115200	Off	Disabled / AUTO	Disabled / AUTO	VTX (MSP + D) / AUTO
UART2	115200	On	Disabled / AUTO	Disabled / AUTO	Disabled / AUTO

Serial (via UART) Receiver Mode

The UART for the receiver must be set to 'Serial Rx' (in the Ports tab)
Select the correct data format from the drop-down, below:

CRSF Serial Receiver Provider

ARM/DISARM THE MOTOR

- 1) Turn on your radio transmitter and connect the battery to the Mobula6 ECO 2024 whoop. Then place it horizontally on the ground.
- 2) Prepare your HDZERO goggles, and match the channel with the VTX_table

Selected Mode

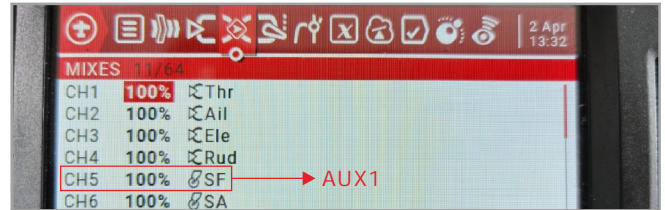
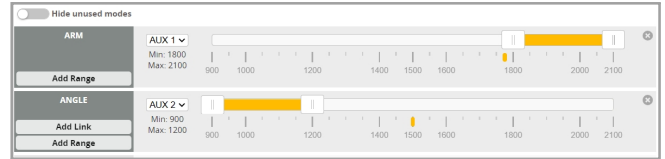
Enter frequency directly

RACEBAND Band

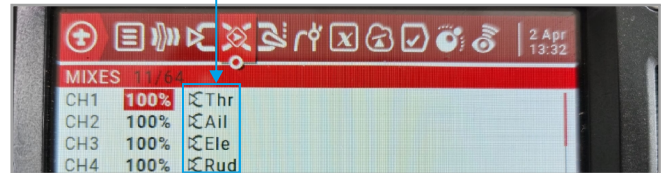
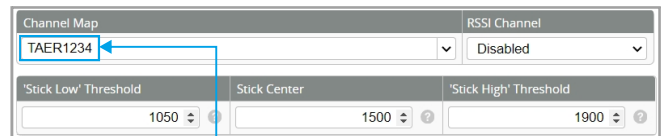
Channel 4 Channel

25 Power

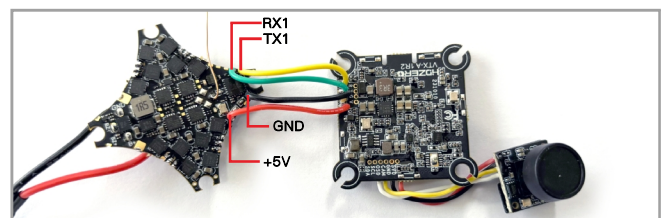
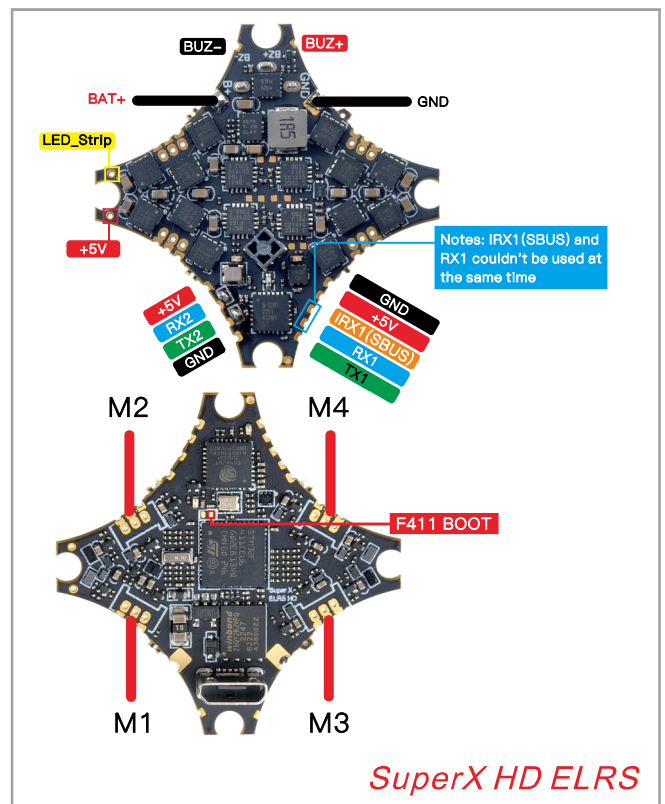
- 3) The default ARM/DISARM switch was set to "AUX1", usually it's Channel5 of your radio. You can customized a switch for AUX1(Channel5). Then Toggle Aux1 switch to arm the motors, The green LED on the top side of the flight controller would get solid once armed ,happy flying .



- 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



VOLTAGE AND CURRENTS METER SETTINGS

Voltage Meter

Warning: Values limited to 25.5V.

Battery	0 V	<input type="text" value="110"/> Scale	
		<input type="text" value="10"/> Divider Value	
		<input type="text" value="1"/> Multiplier Value	

Amperage Meter

Warning: Values limited to 63.5A.

Battery	0.00 A	<input type="text" value="470"/> Scale [1/10th mV/A]	
		<input type="text" value="0"/> Offset [mA]	

DEFAULT PID AND FILTER SETTINGS

	Proportional	Integral	D Max	Derivative	Feedforward
Basic/Acro					
ROLL	68	60	62	62	239
PITCH	71	63	67	67	249
YAW	68	60	0	0	239

Mode:	RPY	Low	Default	High
Damping: D Gains	2	[Slider]		
Tracking: P & I Gains	1.45	[Slider]		
Stick Response: FF Gains	1.9	[Slider]		
Dynamic Damping: D Max	0	[Slider]		
Drift - Wobble: I Gains	0.5	[Slider]		
Pitch Damping: Pitch-Roll D	0.95	[Slider]		
Pitch Tracking: Pitch-Roll P, I & FF	1	[Slider]		
Master Multiplier:	1.05	[Slider]		

Profile independent Filter Settings ON

Gyro Lowpass Filters

Gyro Lowpass 1

Gyro Lowpass 2
 Static Cutoff Frequency [Hz]
 Filter Type

Gyro Notch Filters

Gyro Notch Filter 1

Gyro Notch Filter 2

Gyro RPM Filter

Gyro RPM Filter
 Gyro RPM Filter Harmonics Number
 Gyro RPM Filter Min Frequency [Hz]

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
 Pitch Degrees
 Yaw Degrees

First
 CW
 First GYRO

Default

3.20 kHz Gyro update frequency

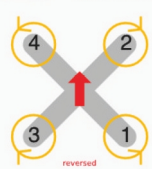
1.60 kHz PID loop frequency

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)

Maximum Startup Power (Protection)

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.

