Features
X12 ELRS Pro v1.1 5-IN-1 AIO flight controller built-in 2.4G ELRS V3.0 and OPENVTX
VTX Power up to 400mw
ELRS V3.0 (Default), could flash elrs firmware for the receiver by wifi
EX1103 KV110000 motors
CaddxFPV Ant FPV camera
Smooth and powerful
Compatible for 1S-2S Lipo/LIHV battery
Recommend 2S 450mah/550mah/650mah battery (Not include)

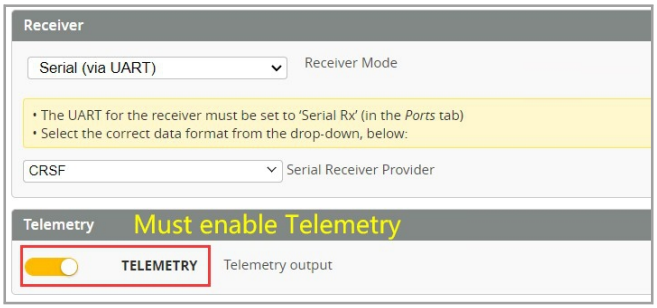
Specifications
Brand Name: Happymodel
Item Name: Mobula8 UART ELRS 2S 85mm Micro FPV whoop drone
Wheelbase: 85mm
Size: 120mm*120mm*50mm
Weight: 43g
Receiver option:
2.4GHz UART EXPRESLRS

Package Includes	
Item Name	Qty
Mobula8 Frame	1
X12 ELRS pro V1.1 AIO flight controller	1
EX1103 KV11000 brushless motor	4
Gemfan Hurricane 2023 tri-blade propellers(4cw+4ccw)	1
Caddx ANT 1200TVL Camera	1
Onboard 5.8G Openvtx 0mw~400mw VTX	1
Canopy for 14mmx14mm camera	1
Screw driver	1

Bind procedure video for your refrence

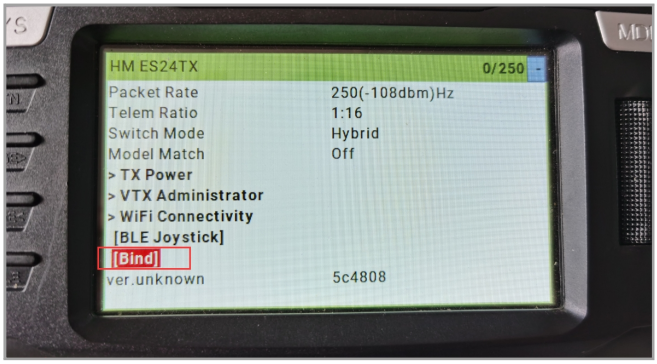
Bind procedure video for your refrence :https://bit.ly/47qGOBu

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 blinking slowly first then turn to solid, that means binding was successfully.

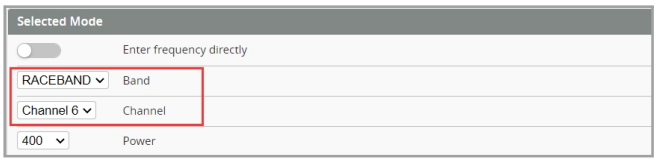
3)"Telemetry" from receiver tab must enable for this flight controller



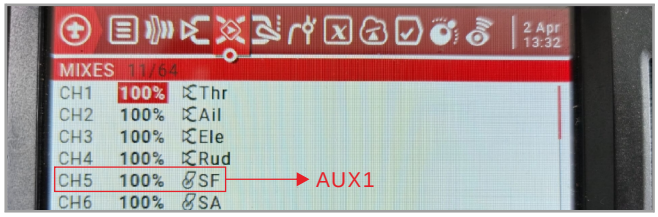
Arm/Disarm the Motor

1)Turn on your radio transmitter and connect the battery to the Mobula8 2S . Then place Mobula8 2S horizontally on the ground.

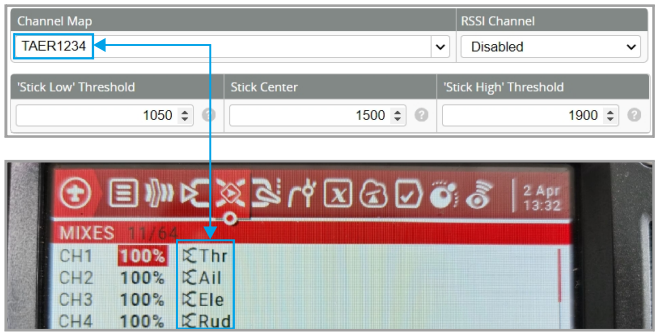
2)Prepare your goggles, and match the channel with the VTX_table



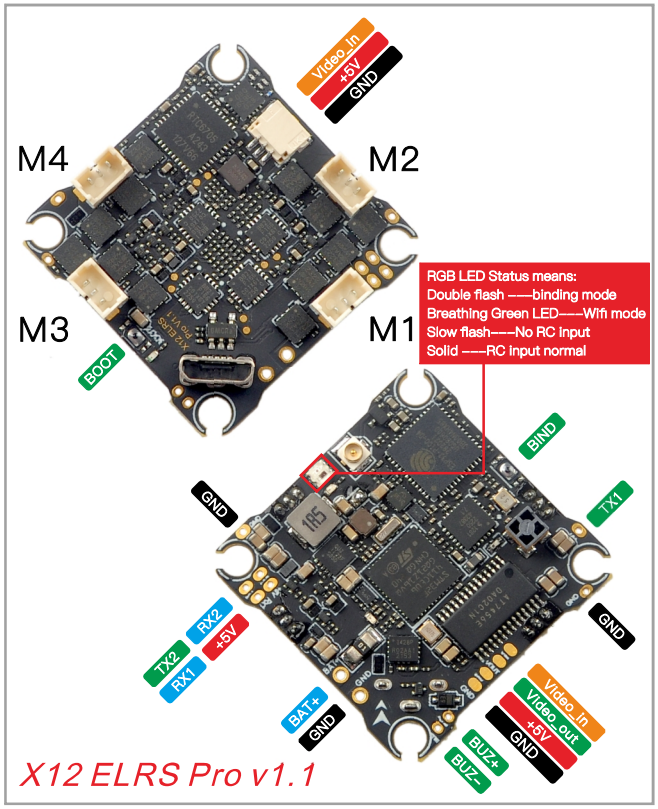
3)The default ARM/DISARM switch was set to "AUX1", usually it's Channel5 of your radio. You can customized a switch for AUX1(Channel5). Then Toggle Aux1 switch to arm the motors, the Red LED at the bottom of the flight controller would get solid once armed, happy flying.

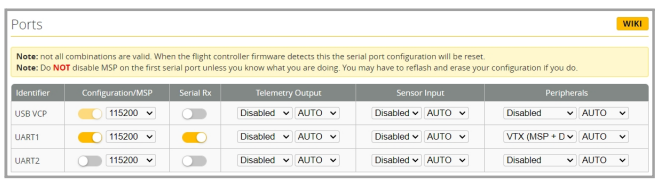


4)Please make sure the MIXES of your radio settings is match the Channel Map of betaflight settings,otherwise it won't be able to armed. The default channel map is "TAER1234", you can also set it to "AETR1234" if necessary.



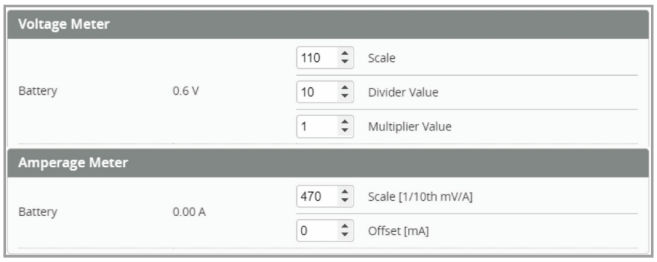
Flight controller connection diagram



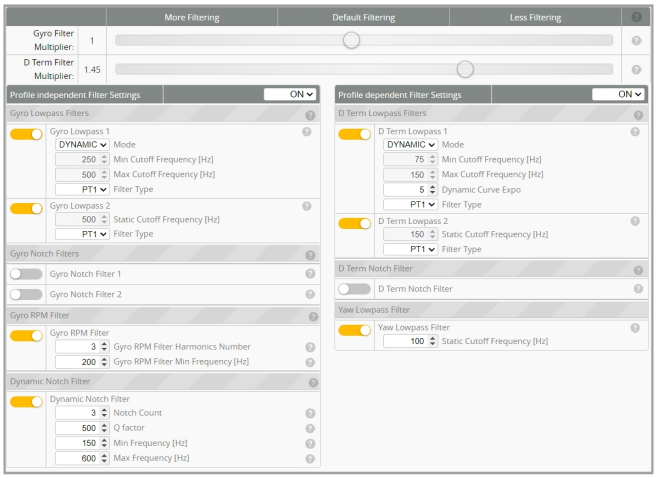


*RX2/TX2/+5V/GND pads could be used for External Serial Based equipment.

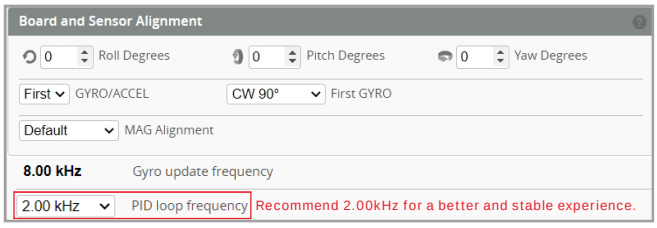
Voltage and Currents meter settings



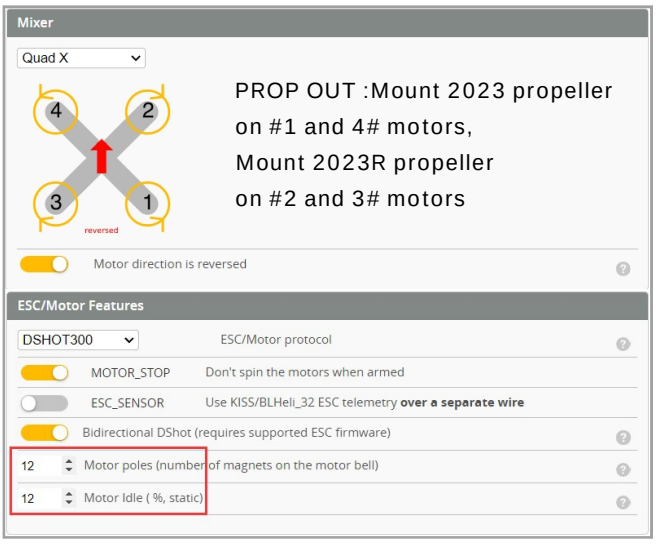
Default PID and Filter Settings



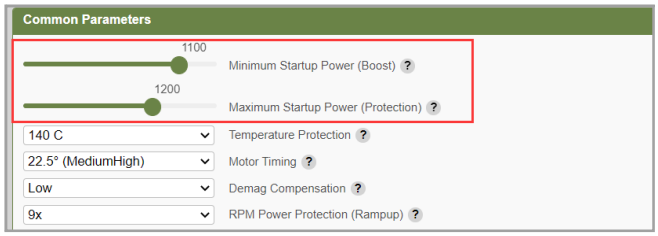
Board and Sensor Alignment and Frequency settings



Motors and ESC settings



Blujay ESC settings



If use 1s battery , sometimes motor maybe spin difficult, then need to change startup power like the picture shows.

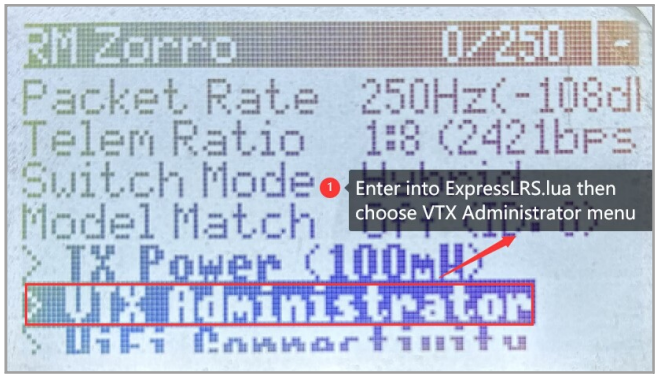
VTX Bands and Channels setup

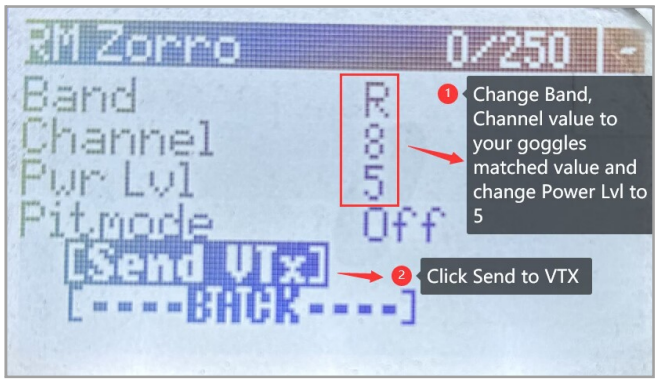
Frequency and channel frequency table:

FR \ CH	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
BOSCAM_A	5865M	5845M	5825M	5805M	5785M	5765M	5745M	5725M
BOSCAM_B	5733M	5752M	5771M	5790M	5809M	5828M	5847M	5866M
BOSCAM_E	5705M	5685M	5665M	5645M	5885M	5905M	5925M	5945M
FATSHARK	5740M	5760M	5780M	5800M	5820M	5840M	5860M	5880M
RACEBAND	5658M	5695M	5732M	5769M	5806M	5843M	5880M	5917M
LOWRACE	5333M	5373M	5413M	5453M	5493M	5533M	5573M	5613M

VTX Band/Channel/Power_Level settings:

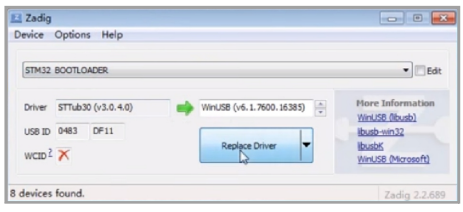
As the ELRS RX and VTX target of current firmware version for MSP VTX couldn't change power_level correctly . So we need to set vtx band/channel/power_level by VTX Administrator menu from ExpressLRS.LUA on your radio controller. You can also flash latest firmware to fix the issue once firmware updated . Please Check the following steps:





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 “STM32F411”,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.



Firmware and diff download