

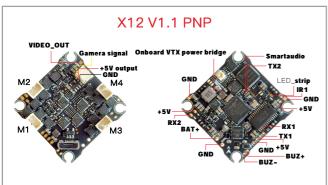
Features
X12 5-IN-1 AIO flight controller built-in 2.4G ELRS V2.0 and OPENVTX
VTX Power up to 400mw
Support ELRS V3.0 (Need to upgrade firmware)
Powerful EX1103 KV11000 motors
CaddxFPV Ant FPV camera
Recommend 2S 350mah/450mah/550mah/650mah battery (Not include)
Battery tray size: Maximum support for batteries with a width of
approximately 17mm and a height of approximately 13mm

Specifications	
Brand Name: Happymodel	
Item Name: Bassline 2S 2inch Micro FPV toothpick drone	
Wheelbase: 90mm	
Size: 115mm*115mm*40mm	
Analog version Weight: 40gram	

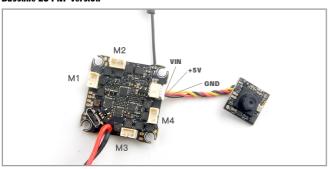
Package includes	
Item Name	Qty
Bassline 2inch frame and canopy	1
Option1: X12 ELRS V2.1 flight controller built-in SPI ELRS 2.4G receiver	Ī
Option2: X12 Frsky V2.1 flight controller built-in SPI Frsky 2.4G receiver	۱.
Option3: X12 Flysky V1.0 flight controller built-in SPI Flysky 2.4G receiver	1
Option4: X12 PNP V1.1 flight controller without onboard receiver	
EX1103 KV11000 brushless motor	4
Gemfan toothpick 2023 tri-blade propellers(4cw+4ccw)	1
Caddx ANT 1200TVL Camera	1
Onboard 5.8G Openvtx Omw~400mw VTX	1
Canopy for 14mmx14mm camera	1

### FLIGHT CONTROLLER CONNECTION DIAGRAM





### Bassline 2S PNP version



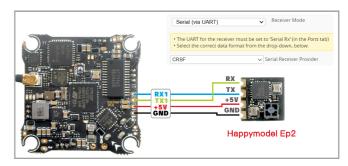
## RECEIVER WIRING DIAGRAM AND SETTINGS

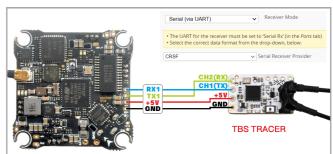
Ports								
Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.  Note: Do NOT disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.								
Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals			
USB VCP	115200 🗸		Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO			
			Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO			
UART1	115200 🗸							

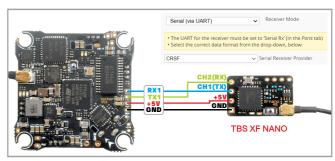
\*RX1/TX1/+5V/GND pads could be used for External Serial Based RX like ELRS Receiver ,TBS Tracer or CRSF Nano

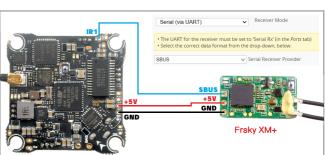
\*IR1/+5V/GND pads could be used for External SBUS receiver like XM/XM+/AC900/RXSR

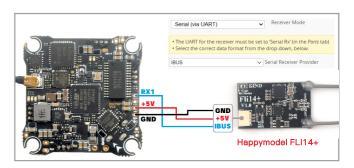
\*Need to enable Serial RX for UART1 and select correct receiver protocol





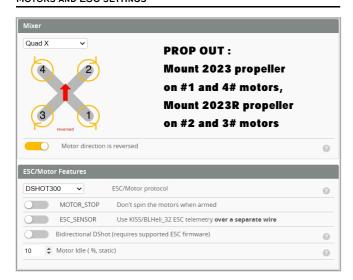








#### MOTORS AND ESC SETTINGS



#### **DEFAULT PID AND FILTER SETTINGS**

	<b>P</b> roportion		Integral	D Max	Derivative	
Basic/Acro						
ROLL	4	15 \$	92 ‡	33 \$	33 ‡	150 \$
PITCH	4	17 💠	96 \$	33 \$	33 ‡	156 \$
YAW		15 \$	92 🗘	0 \$	0 \$	150 \$
Mode: RPY ▼	0		Low	Default	High	3
Damping D Gain						2
Tracking P & I Gain						· ·
Stick Response FF Gain						9
Dynamic Damping D Ma						0
Drift - Wobble I Gain	1 15					9
Pitch Damping Pitch:Roll I						· ·
Pitch Tracking Pitch:Roll P, I & F						9
Master Multiplier	: 1					2

				0
Gyro Filter Multiplier: 1				0
D Term Filter Multiplier: 1		•		0
Profile independent Filter Settings	OFF ~	Profile dependent Filter Settings		ON ~
Gyro Lowpass Filters	0	D Term Lowpass Filters		0
Gyro Lowpass 1	0	D Term Lowpass 1		0
Gyro Lowpess 2  135 © Static Cutoff Frequency [Hz]  PT2 V Filter Type	0	DYNANIC   Mode  75  Min Cutoff Frequency [H  150  Max Cutoff Frequency [I-  5  Dynamic Curve Expo		
Gyro Notch Filters	0	PT1 V Filter Type		
Gyro Notch Filter 1	0	D Term Lowpass 2		0
Gyro Notch Filter 2	0	150 □ Static Cutoff Frequency   PT1 ▼ Filter Type	H2]	
Gyro RPM Filter	0	D Term North Filter		0
Gyro RPM Fiter  3 © Gyro RPM Fiter Harmonics Number  100 © Gyro RPM Fiter Min Frequency (Hz)	9	D Term Notch Filter  You Lowpess Filter		0
Dynamic North Filter	9	Yaw Lowpass Filter		
Dynamic North Filter				
1 © Notch Count	0			
500 C Q factor	0			
150 D Min Frequency (Hz)	0			
600 D Max Frequency (Hz)	0			

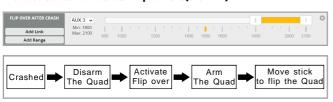
## VOLTAGE AND CURRENTS METER SETTINGS

Voltage Meter		
		110 🕏 Scale
Battery	0.6 V	10 🗘 Divider Value
		1 Dultiplier Value
Amperage Met	er	
Battery	0.00 A	470 🕏 Scale [1/10th mV/A]
battery	0.00 A	0

# "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 AUX3(Channel7)



#### VTX BANDS AND CHANNELS SETUP

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	5880N
RACEBAND	5658M	5695M	5732M	5769M	5806M	5843M	5880M	5917N
LOWRACE	5333M	5373M	5413M	5453M	5493M	5533M	5573M	5613W

1. Plug USB to Bassline 2S Frsky then we should Go to Betaflight CLI type the  $\,$ 

command

Set vtx\_band=3

Set vtx\_channel=1

sav

This command will change the vtx channel to 5705

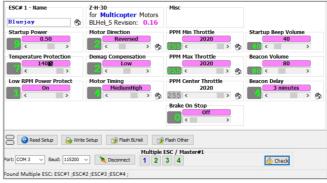


2.Disarm the Bassline 2S Frsky and then move the stick of the transmitter THR MID YAW LEFT PITCH UP to enter OSD Menu Enter to Features then enter to VTX

#### SA to set VTX Band and channel



# ESC SETTINGS



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 "CRAZYBEEF4DX", 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