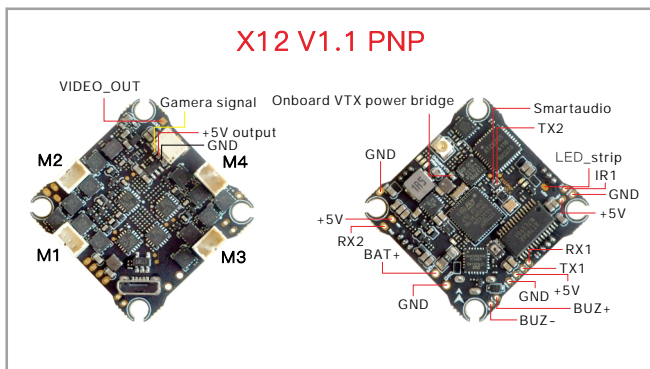
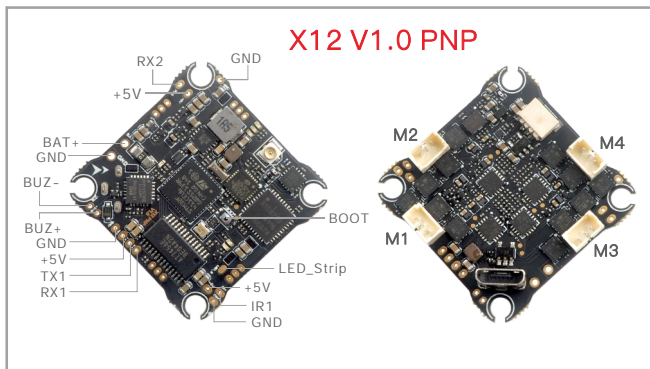


Features
X12 5-IN-1 AIO flight controller built-in 2.4G ELRS V2.0 and OPENVTX
VTX Power up to 400mw
Support ELRS V3.0 (Need to upgrade firmware)
Powerful EX1103 KV11000 motors
CaddxFPV Ant FPV camera
Recommend 2S 350mah/450mah/550mah/650mah battery (Not include)
Battery tray size: Maximum support for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

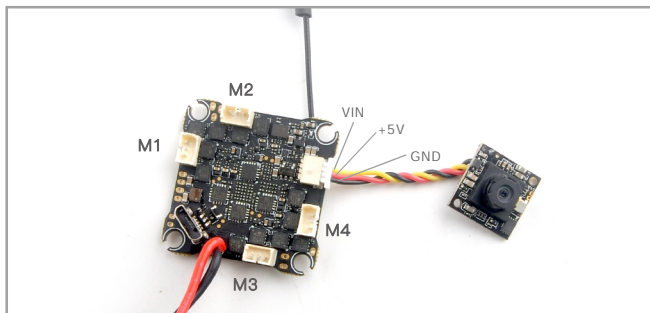
Specifications
Brand Name: HappyModel
Item Name: Bassline 2S 2inch Micro FPV toothpick drone
Wheelbase: 90mm
Size: 115mm*115mm*40mm
Analog version Weight: 40gram

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	1
Option2: X12 Frsky V2.1 flight controller built-in SPI Frsky 2.4G receiver	
Option3: X12 Flysky V1.0 flight controller built-in SPI Flysky 2.4G receiver	
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 0mw-400mw VTX	1
Canopy for 14mmx14mm camera	1

### FLIGHT CONTROLLER CONNECTION DIAGRAM



Bassline 2S PNP version



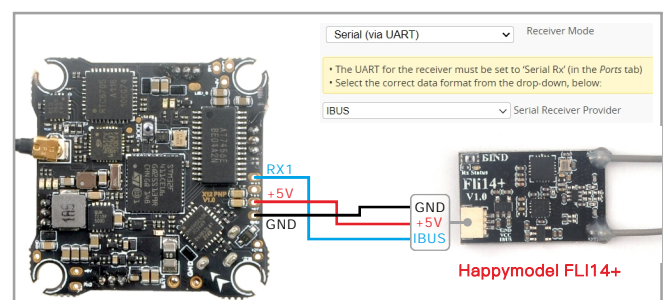
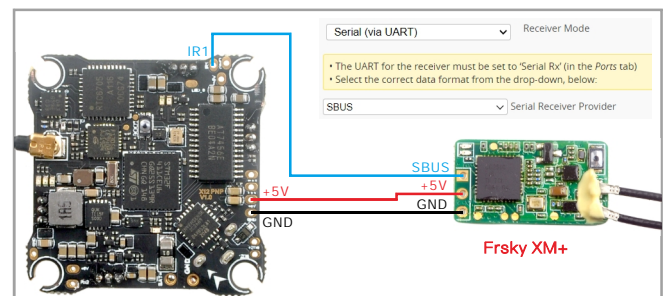
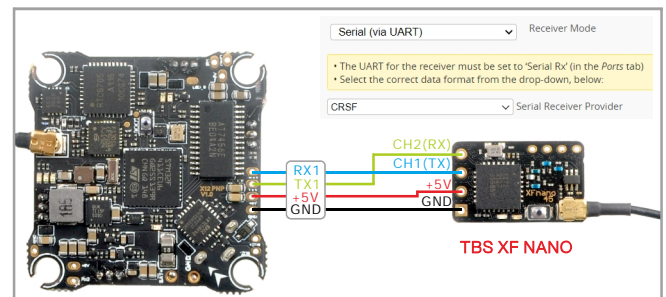
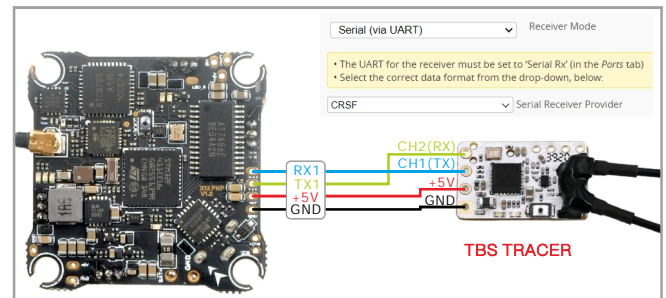
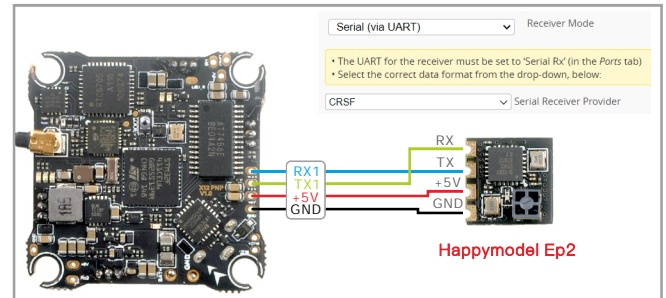
### RECEIVER WIRING DIAGRAM AND SETTINGS

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200	Disabled	AUTO	Disabled	AUTO
UART1	115200	Enabled	Disabled	AUTO	Disabled
UART2	115200	Disabled	Disabled	AUTO	VTX (TBS Sm)

\*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



## VTX BANDS AND CHANNELS SETUP

PROP OUT :  
Mount 2023 propeller  
on #1 and 4# motors,  
Mount 2023R propeller  
on #2 and 3# motors

The screenshot shows the 'Filter Settings' window with the following configuration:

- Filtering:** 'Solo Filtering' and 'Less Filtering' tabs are visible. 'Eggs Filter Multiplier' is set to 1. 'D Term Filter Multiplier' is set to 1.
- Profile independent Filter Settings:** Set to 'OFF'.
  - Eggs Loopwax Filters:** Off.
    - Eggs Loopwax 1:** Off.
    - Eggs Loopwax 2:** On.
      - L50: Static Cutoff Frequency [Hz]
      - L50: Static Cutoff Frequency [Hz]
      - PT1: Filter Type
  - Eggs Notch Filters:** Off.
    - Eggs Notch Filter 1:** Off.
    - Eggs Notch Filter 2:** Off.
  - Eggs RPM Filter:** Off.
  - Eggs RPM Filter:** Off.
  - Eggs RPM Filter Harmonics Number:** 3
  - Eggs RPM Filter Min Frequency [Hz]:** 100
  - Dynamic Notch Filter:** Off.
    - Notch Count: 1
    - Q factor: 500
    - L50: 150
    - Max Frequency [Hz]: 600
- Profile dependent Filter Settings:** Set to 'ON'.
  - D Term Loopwax Filters:** On.
    - D Term Loopwax 1:** On.
      - DYNAMIC: Mode
      - L50: Static Cutoff Frequency [Hz]
      - L50: Static Cutoff Frequency [Hz]
      - Q factor: 5
      - Dynamic Curve Logo: PT1
    - D Term Loopwax 2:** Off.
      - L50: Static Cutoff Frequency [Hz]
      - L50: Static Cutoff Frequency [Hz]
      - PT1: Filter Type
  - D Term Notch Filter:** Off.
  - D Term Notch Filter:** Off.
  - Base Loopwax Filter:** Off.
  - New Loopwax Filter:** Off.

## “FLIP OVER AFTER CRASH” PROCEDURE

```

graph LR
    A[Crashed] --> B[Disarm The Quad]
    B --> C[Activate Flip over]
    C --> D[Arm The Quad]
    D --> E[Move stick to flip the Quad]

```

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

This command will change the vtx channel to 5705

SA to set VTX Band and channel

## ESC SETTINGS

## FLIGHT CONTROLLER FIRMWARE UPDATE



Firmware and Dump file

Firmware and diff download