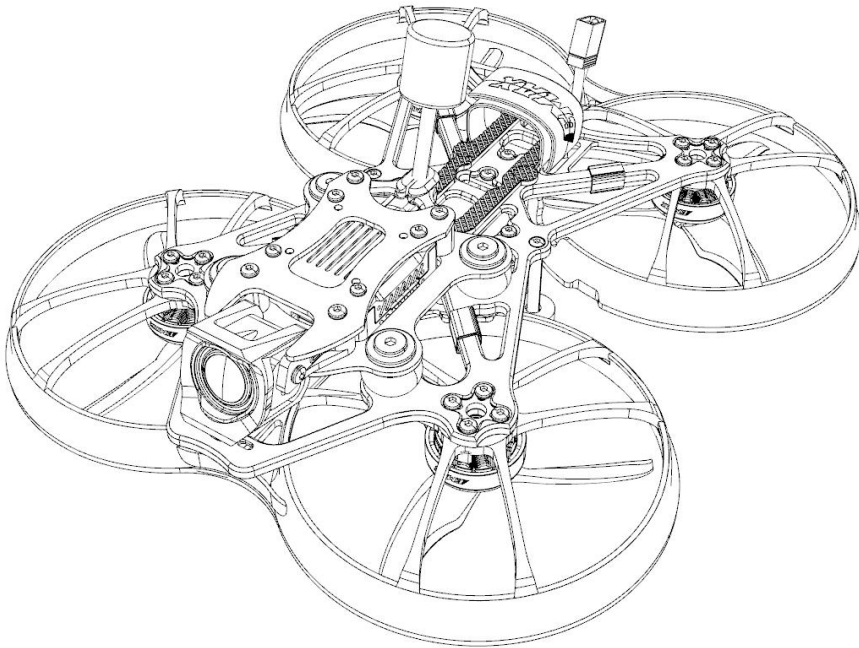


CineHawk

# CINEHAWK

This manual is suitable for CINEHAWK 3.5" models



Design in California, Made in China

## **Disclaimer**

1. Please read the disclaimer carefully before using this product.
2. By using this product, you agree to this disclaimer and indicate that you have read this product carefully.
3. This product is not suitable for people under the age of 18, it is strongly recommended that children under the age of 18 receive adult supervision.
4. Please read the instruction manual and warnings carefully.
5. Before each flight, make sure the battery is fully charged and the power connection is firm. Do not fly around crowds, children, animals or objects.
6. Our Cinehawk is equipped with an open source flight controller and electronic speed controller to meet the needs of FPV enthusiasts to upgrade quadcopters.
7. EMAX is not responsible for any damage or injury caused directly or indirectly by using this product.

## **Precautions**

1. Please follow the instructions to correctly assemble and operate this product;
2. Please fly in a safe area away from crowds;
3. Do not use this product in a strong electromagnetic environment;
4. Do not use this product in harsh environments (such as wind, rain, lightning, snow, etc.);
5. If you have physical or mental illness, dizziness, fatigue, or cannot use this product under the influence of alcohol or drugs;
6. Do not modify or use other unapproved EMAX parts and accessories.

## **support**

**Please visit [emax-usa.com](http://emax-usa.com) or [emaxmodel.com](http://emaxmodel.com) for updates or technical support.**

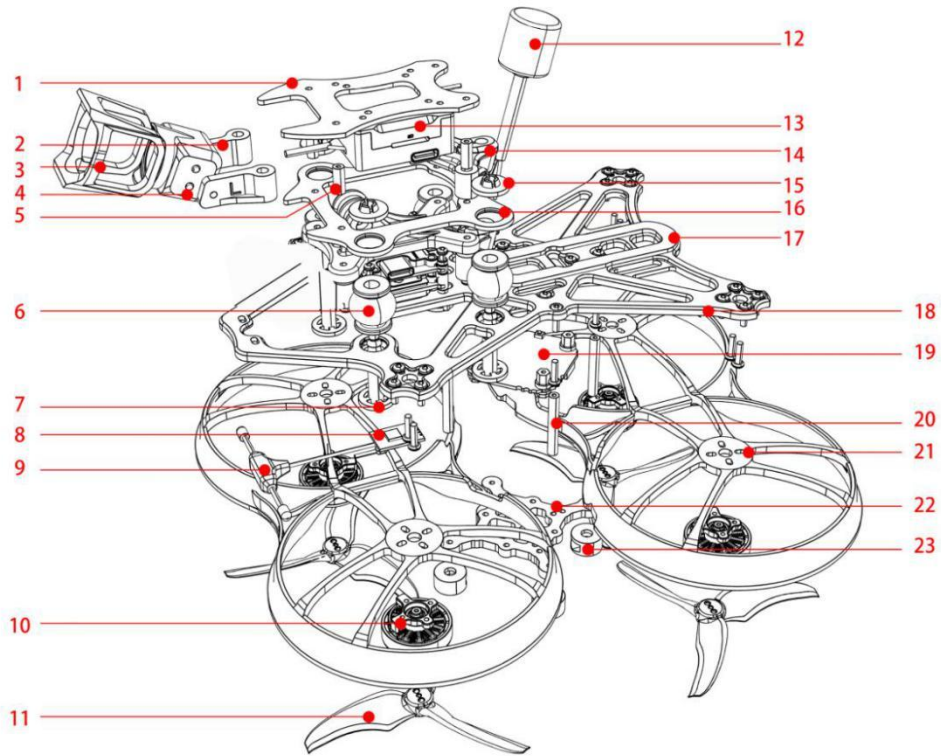
## 1. Product specification

CINEHAWK (3.5 Inch)	
<b>Diagonal Wheelbase</b> (Without propeller)	151mm
<b>Maximum size of Drone</b> (Without propeller)	L*W*H=221*193*65mm
<b>Drone weight</b> (Without battery)	236±2g
<b>Motor</b>	ECOII-2004(3000KV)
<b>Propeller</b>	Avan3.5*2.8*3 Propeller 3
<b>Battery</b> (Batteries need to be purchased by yourself)	4S
<b>Main board</b>	EMAX F411 AIO (F4、4 IN 1 25A electric regulator (8-bit) integrated board)
<b>Receiver</b>	EMAX ELRS_2.4G_RX
<b>Camera</b>	O3 Air Unit
<b>ANTENNA/VTX</b>	O3 Air Unit

### 1.1 Product List

1. CINEHAWK .....X1
2. Propeller.....X1CW&1CCW
3. Screwdriver ..... X1

## 2.CINEHAWK Structure Diagram

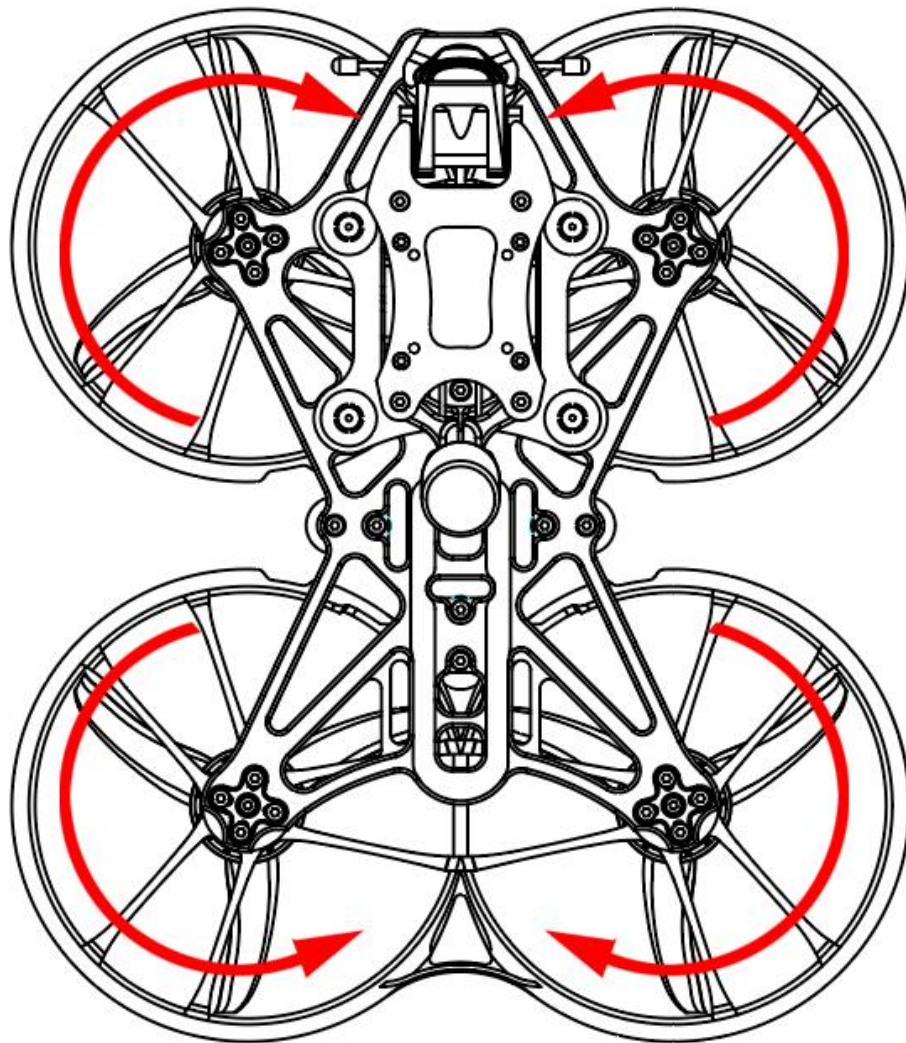


- |  |  |
|--|--|
| 1.Top frame                            | 12. 03 Air Unit antenna                  |
| 2. 03 Air Unit Camera bracket          | 13.03 Air Unit Image transmission system |
| 3. 03 Air Unit Camera protective cover | 14. Antenna bracket                      |
| 4. 03 Air Unit Camera                  | 15.Damping fixing screw                  |
| 5. M2*9 Aluminum screw post            | 16.Damping frame                         |
| 6.Damping ball                         | 17.non-slip mat                          |
| 7.Damping fixing screw                 | 18.frame                                 |
| 8.ELRS 2.4G receiver                   | 19.Main control board                    |
| 9.ELRS 2.4G antenna                    | 20.M2*25 Aluminum screw post             |
| 10.2004KV3000 motor                    | 21.Protective cover                      |
| 11.Avan 3.5*2.8*3propeller             | 22.Bottom frame                          |
|  | 23.door mat                              |

## 2.1 Propeller orientation and installation

Cinehawk propellers have two directions of rotation: clockwise (CW) and counterclockwise (CCW). When buying a set of propellers, buy 2 clockwise and 2 counterclockwise.

When installing the propeller, first push the propeller into the motor, then tighten the appropriate screws and fix it, and finally check whether the installed propeller is in the same direction as the propeller shown in the figure below.



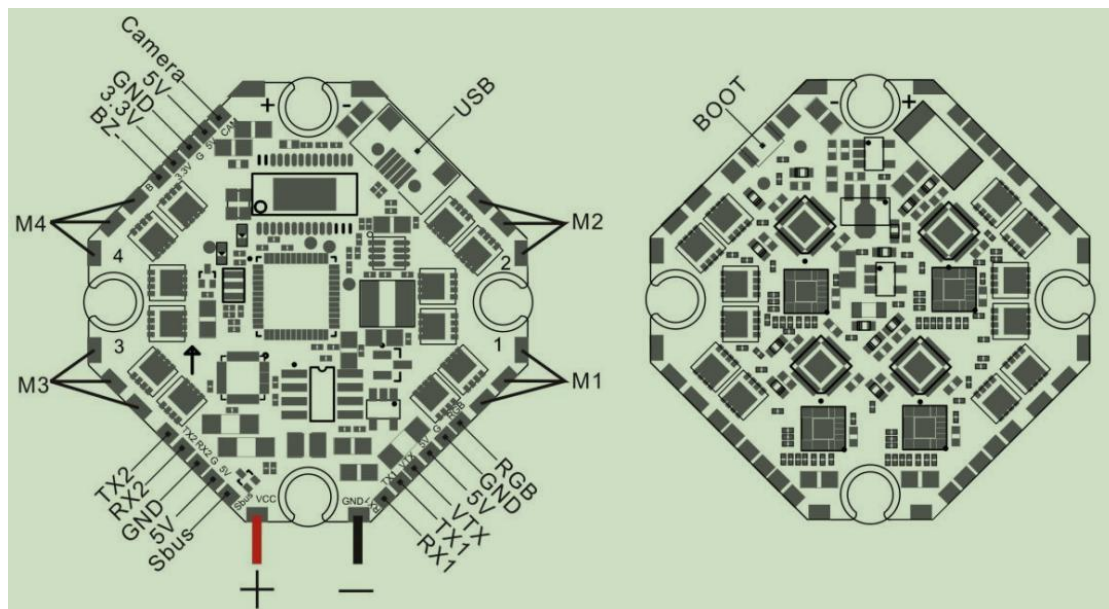


**Note:**

If the direction of the propeller is not correct, it will directly cause CINEHAWK to not be able to fly and control correctly, please check carefully and check whether the direction is correct. Please check the tightening of the screws regularly to ensure that they remain tight during flight.

### 3. CINEHAWK Flight Controller

#### 3.1 Schematic diagram and parameters of EMAX F411 AIO



The schematic diagram of EMAX F411 AIO is shown in the picture above, the board contains:

#### Flight control part:

1. Processor: STM32F411CEU6, firmware: STM32F411 (4.3.1)
2. Gyroscope: MPU6000 or BMI270 or ICM-42688-P (SPI connection)
3. Support video character overlay (AT7456E)
- 4.2 UART hardware serial ports (UART1, UART2), Micro USB or Type-C interface

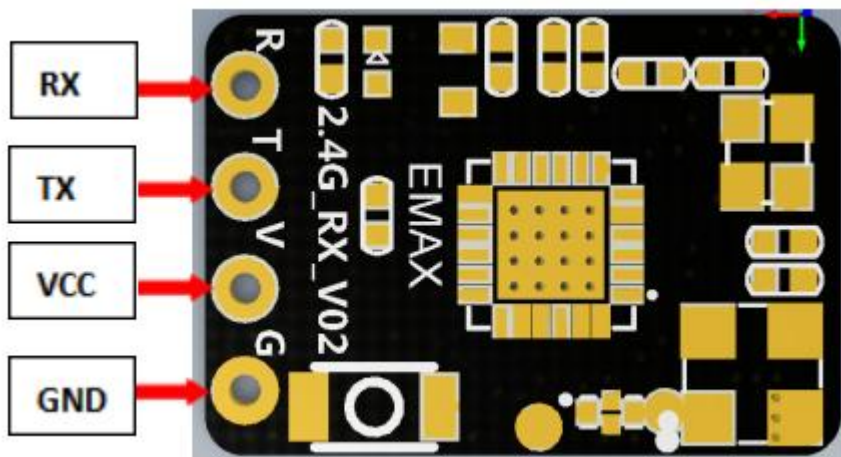
5. Support programmable RGB light strip, support 5V active buzzer
6. Onboard galvanometer, black box: 2M
7. Input voltage: 4S, output voltage: 5V/2A, 3.3V/1A, capacitance: 470uF/35V
8. Weight: 8.0g, installation hole 25.5mm\*25.5mm

**ESC part:**

1.4 in 1 25A ESC (8 bits), firmware BLS M\_H\_30-Rev16.16.7, stable and continuous output current of 25A, the highest peak value can reach 30A

## 4. EMAX ELRS\_2.4G receiver

### 4.1 EMAX ELRS\_2.4G Receiver Diagram & Parameters



The schematic diagram of EMAX ELRS\_2.4G\_RX is shown in the figure above, and the receiver parameters:

**Size:** 11mm\*16mm\*3mm

**Weight:** 0.7g

**Working voltage:** 5V

**Working Agreement:** CRSF(Betaflight)

**Minimum receive refresh rate:** 25Hz

**Maximum receive refresh rate:** 500Hz

**Antenna:** Integrated SMD Ceramic Antenna

**RF chip:** SX1280IMLTRT

**Main control chip:** ESP8285

**RF frequency band:** 2.4G

**ISM Type, RF Frequency Range:** 2400 MHZ To 2500 MHZ

## 4.2 EMAX ELRS\_2.4G receiver frequency binding

Power on the EMAX ELRS\_2.4G receiver 3 times to enter the binding state. Since EMAX has connected the receiver to the flight controller, it can enter the binding state by quickly plugging and unplugging the battery 3 times, and the red LED light of the receiver will quickly Blink twice, which means the receiver has entered the bonding mode, then make sure your RF TX module has also entered the bonding mode, and send a bonding pulse, if the red LED of the receiver is steady and always on, it means the bonding is successful .

**Note: The status display of the LED lights of the EMAX ELRS\_2.4G receiver:**

**When double flashing: code pairing mode**

**When flashing slowly: No transmission signal received**

**When it is always on: the transmission signal is received**

**Flashing: WIFI upgrade mode**



## 5. EMAX Cinehawk flight control settings

The Cinehawk flight controller is pre-programmed and properly tuned for optimal flight. For a complete file of tuning and configuration settings (CLI dump files), visit <https://emax-usa.com/> for CLI dump files.

### 5.1 Adjusting software settings (Betaflight Configurator)

Betaflight Configurator can be used to change programming settings on the Cinehawk and flash new firmware as needed.

Betaflight configurator and flight controller firmware can be downloaded at <https://github.com/betaflight/>. Cinehawk flight control firmware is STM32F411 (4.3.1).

EMAX has adapted an optimal parameter for Cinehawk, which can achieve excellent flight performance. After changing, it may affect flight time, speed, control and motor heating, etc., so EMAX strongly recommends not to change PID and firmware at will.

### 5.2 Cinehawk flight controller reprogramming

1. Press and hold the Boot button first, and then connect the computer with a Micro USB or Type-C data cable, so that the flight controller enters DFU mode.
2. Select STM32F411 as the target, then select firmware, and select a manual baud rate of 256000 in the drop-down menu.
3. Select Load Firmware (Online) to download the firmware.
4. Select the Flash firmware to program the flight controller.



## 6. Fly

Be careful when flying, and operate the flight in an open and controllable area. Before connecting the power to fly, please learn the flight control first

### 6.1 CINEHAWK Flight

First, turn on the remote control and video goggles. Connect the 4S battery to the Cinehawk via the power cable. Once the connection is successful, place the Cinehawk on a level surface and it will take a few seconds to calibrate. Then you can fly the Cinehawk. When the battery voltage reaches 14.4V during flight, please stop flying the Cinehawk. If you continue to fly, it will seriously damage the battery, and EMAX does not recommend such operation.

### 6.2 Unlocking

When the Cinehawk is powered by the battery, the propellers will not spin until unlocked. First, move the throttle of the remote control to the bottom position to put the Cinehawk in waiting mode for unlocking. Then turn on the unlock switch on the remote control to successfully unlock the Cinehawk and the propellers will start spinning automatically. If a collision occurs, immediately lock the aircraft. Failure to lock the aircraft in time may result in damage to the Cinehawk.

### 6.3 Visual Flight

Choose a relatively open environment, connect the 4S battery to the Cinehawk via the power cable once the connection is successful, unlock the Cinehawk, and then push the throttle to maintain a constant altitude, try to control the Cinehawk to hover as stable as possible.

### 6.4 FPV Flight

Make sure the Cinehawk and the video goggles are on the same channel and there is a clear flying area. The operation is the same as visual flight, except now flying forward while maintaining a controlled and constant altitude. It is easier to learn FPV flight by continuously moving forward.

On the video goggles screen, you can see important information about the aircraft parameters, flight time, battery voltage, etc., which can also be set and changed in Betaflight.

**Note:**

Please follow the laws and regulations in your area when using this product. Please use this product reasonably within the scope of local laws and regulations. Do not arbitrarily change the parameters, power, etc. of the product. By purchasing this product, the user understands these responsibilities and will operate the equipment legally. EMAX is not responsible for any user's violation of government regulations in purchasing and/or using this product.

**Thank you for purchasing our product! Enjoy your fly!**



**Warning:**

Warning: Please be aware of your surroundings. This product is not intended for use by individuals under 18 years old. It contains small parts, so keep it away from children to avoid the risk of ingestion.



**MADE IN CHINA**