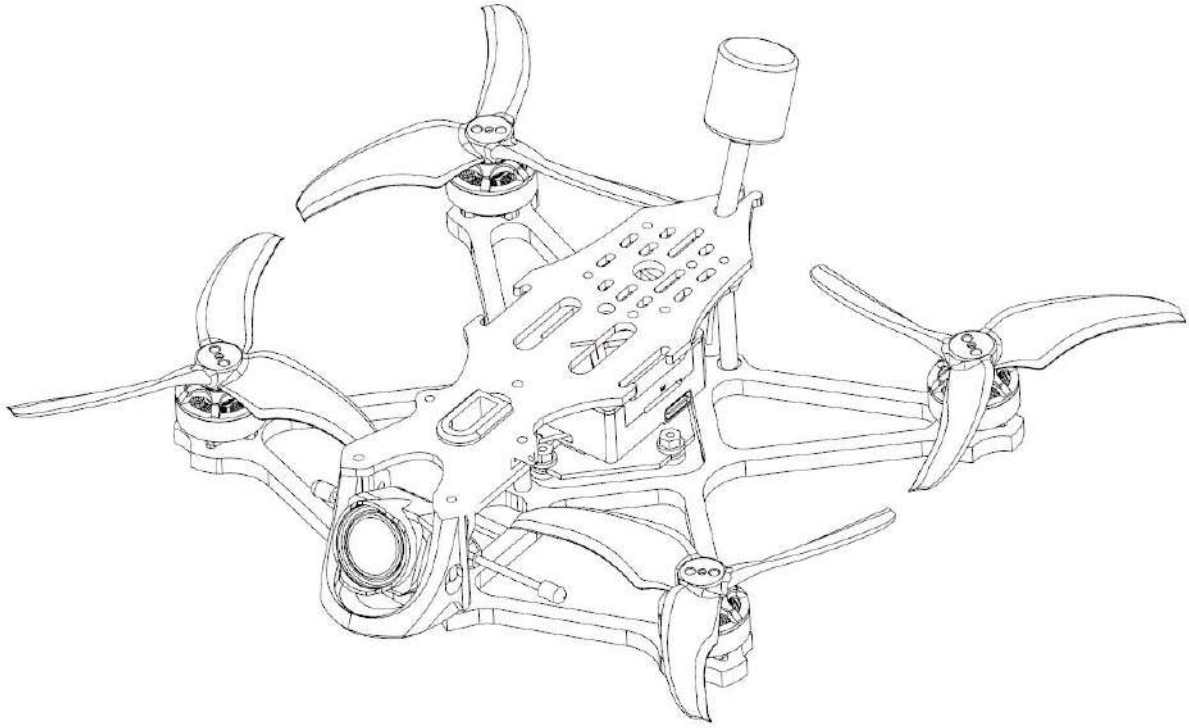
BABYHAWK O3



Design in California, Made in China

Disclaimer:

1. Please read the disclaimer carefully before using this product.
2. By using this product, you indicate your agreement with this disclaimer and confirm that you have read this product carefully.
3. This product is not suitable for individuals under 18 years old. It is strongly advised that children under 18 years old use this product under adult supervision.
4. Please read the user manual and warnings carefully.
5. Before each flight, ensure the battery is fully charged and the power connections are secure. Do not fly around crowds, children, animals, or objects.
6. Our Babyhawk O3 is equipped with open-source flight controllers and electronic speed controllers to meet the upgrade needs of FPV enthusiasts.
7. EMAX bears no responsibility for any damage or harm, whether direct or indirect, caused by the use of this product.

Important Notes:

1. Assemble and operate this product correctly according to the instructions.
2. Fly in a safe area away from crowds.
3. Do not use this product in areas with strong electromagnetic interference.
4. Do not use this product in adverse conditions such as strong winds, rain, lightning, snow, etc.
5. If you have physical or mental illnesses, dizziness, fatigue, or if you are under the influence of alcohol or drugs, do not use this product.
6. Do not modify or use unauthorized EMAX parts and accessories.

Support:

For updates or technical support, please visit the websites emax-usa.com or emaxmodel.com.

Table of Contents

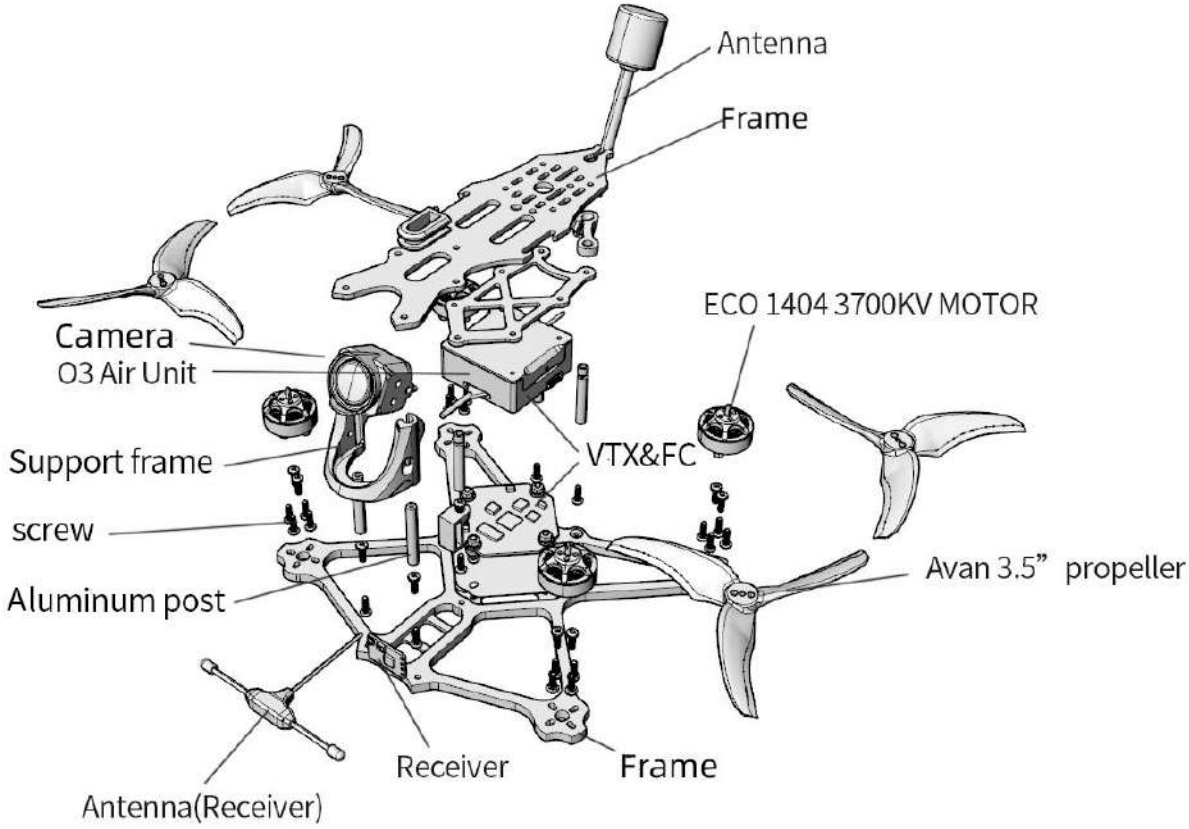
Product Specifications

Babyhawk O3	
Wheelbase (excluding propellers))	155mm
Maximum Dimensions (excluding propeller blades):	L*W*H=147*142*33mm
Weight (excluding battery):	195g
Motors:	ECO1404-3700KV
Propellers:	Avan 3.5 inch Propeller
Battery (not included)	Supports 4S battery
Main Board	EMAX F411 AIO STM32F411 (100MHz) main controller Integrated 4-in-1 8-bit 25A ESC
Receiver	EMAX ELRS_2.4G_RX Receiver
Camera	O3 Air Unit (included in package)
Video Transmitte	O3 Air Unit (included in package)

Product List

Babyhawk O3..... x1
Propellers.....x3 CW & x3 CCW
Screwdriver x1
Instruction Manual Website Card x1

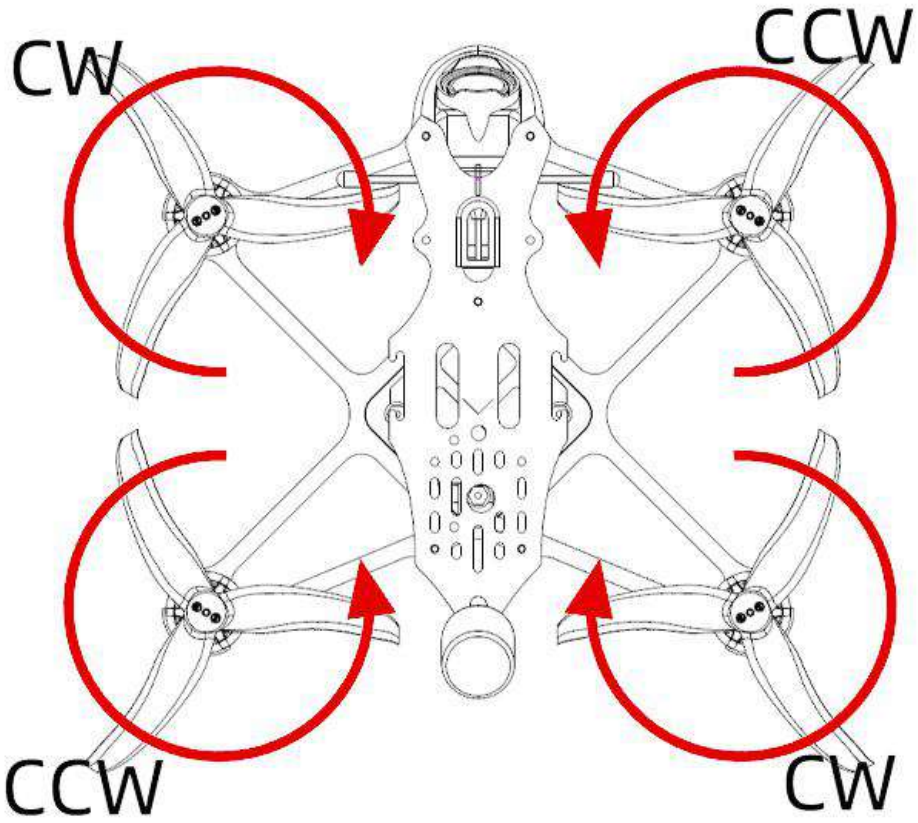
1. Diagram of Babyhawk O3 Structure



1.1 Propeller Orientation and Installation

The Babyhawk O3 propellers have two rotation directions: Clockwise (CW) and Counterclockwise (CCW). When purchasing a set of propellers, please buy 2 CW and 2 CCW propellers.

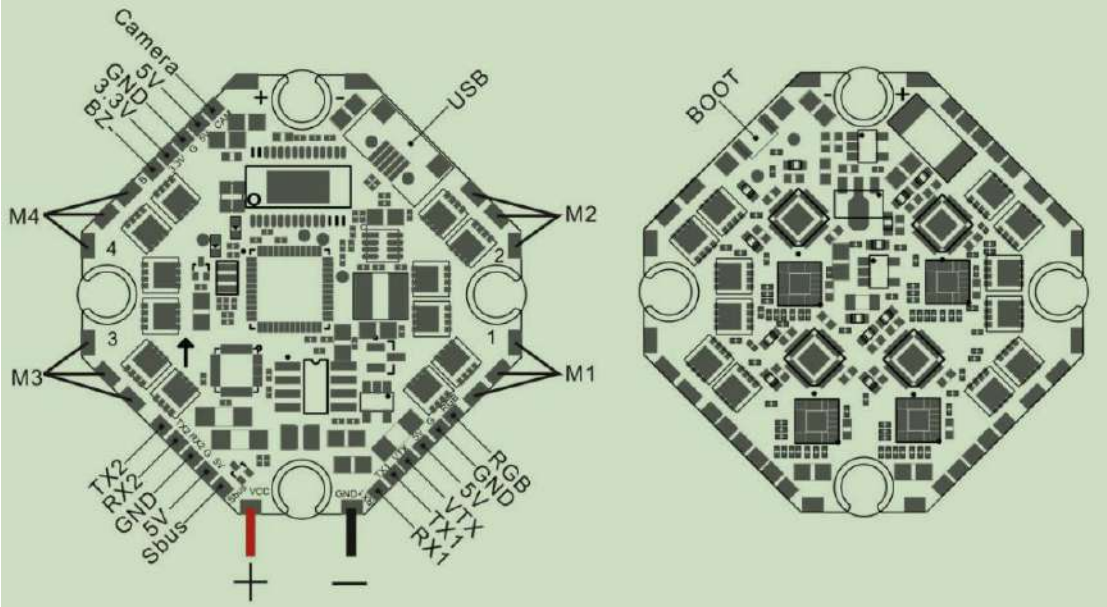
When installing the propellers, push them onto the motors first, then tighten the corresponding screws to secure them. Finally, check if the installed propellers match the orientation shown in the diagram below.



Note: If the propeller orientation is incorrect, it will directly affect the Babyhawk O3's ability to fly and be controlled properly. Please carefully inspect and verify the propeller orientation. Regularly check the tightness of the screws to ensure they remain secure during flight. Exercise caution and ensure safety when installing or removing propellers!

2.Babyhawk O3 FC

2.1 EMAX F411 AIO



1.

The diagram of the EMAX F411 AIO is as shown above. This circuit board includes:

Flight Controller Section:

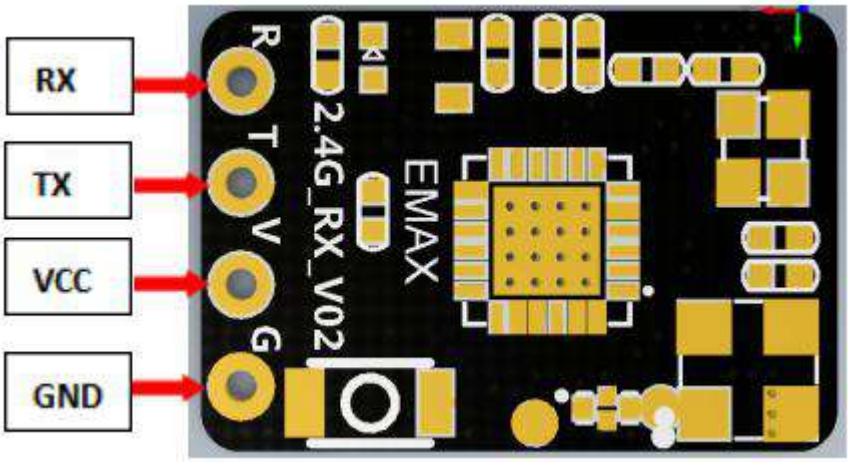
1. Processor: STM32F411CEU6 (100MHz), Firmware: EMAX_BABYHAWK_II_HD
2. Gyroscope: MPU6000 or BMI270 or ICM-42688-P (SPI Connection)
3. Supports Video Character Overlay (AT7456E)
4. Hardware UART Ports (UART1, UART2)
5. Micro USB or Type-C Interface
6. Supports Programmable RGB LED Strip, 5V Active Buzzer Support; Onboard Current Sensor, Black Box: 2M
7. Input Voltage: 4S, Output Voltage: 5V/2A, 3.3V/1A
8. Weight: 8.0g, Mounting Holes: 25.5mm*25.5mm

Electronic Speed Controller (ESC) Section:

1. MCU: EFM8BB2F16G
2. Firmware: BLS M_H_30-Rev16.7
3. Stable continuous output current of 25A, with a peak value of up to 30A
4. Input Voltage: 4S

3. EMAX ELRS_2.4G Receiver

3.1 EMAX ELRS_2.4G Receiver Diagram



The diagram of EMAX ELRS_2.4G_RX is as shown above. Receiver parameters:
Size: 11mm16mm3mm
Weight: 0.7 grams
Operating Voltage: 5V Operating Protocol: CRSF (Betaflight)
Minimum Receiver Refresh Rate: 25Hz
Maximum Receiver Refresh Rate: 500Hz
Antenna: Integrated chip antenna
RF Chip: SX1280IMLTRT
Main Control Chip: ESP8285
RF Frequency Band: 2.4GHz
ISM Type, RF Frequency Range: 2400MHz to 2500MHz

3.2 EMAX ELRS_2.4G Receiver Binding

The EMAX ELRS_2.4G receiver can be put into binding mode by power-cycling it three times. As EMAX has already connected the receiver with the flight controller, you can directly plug and unplug the battery three times in quick succession to enter binding mode. The red LED on the receiver will rapidly blink twice, indicating that the receiver is in binding mode. Then, make sure your RF TX module is also in binding mode and emitting binding pulses. If the red LED on the receiver remains solidly lit, it means the binding has been successful.

Note: EMAX ELRS_2.4G Receiver LED status indicators:
Double blinking: Binding mode
Slow blinking: No transmission signal received
Steady light: Transmission signal received
Fast blinking: WiFi upgrade mode

4. EMAX Babyhawk O3 Flight Controller Setup

The Babyhawk O3 flight controller comes pre-programmed and has been appropriately adjusted for optimal flight performance. For comprehensive adjustment and configuration settings (CLI dump file), please visit https://emax-usa.com/ to obtain the CLI dump file.

4.1 Adjusting Software Settings (Betaflight Configurator)

Betaflight Configurator can be used to modify programming settings on the Babyhawk O3 and to flash new firmware as needed.

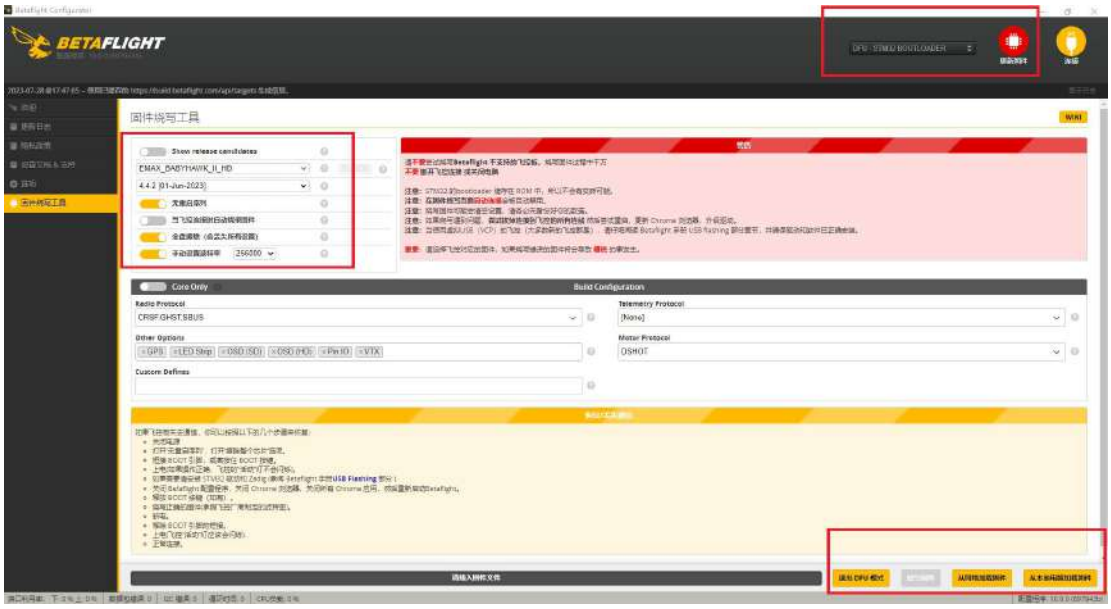
The Betaflight Configurator and flight controller firmware can be downloaded from https://github.com/betaflight/.

The Babyhawk O3 flight controller firmware is EMAX_BABYHAWK_II_HD.

EMAX has optimized parameters for the Babyhawk O3 to achieve excellent flight performance. Changing them could affect flight time, speed, control, motor heat, etc. EMAX strongly recommends not altering PID and firmware settings arbitrarily.

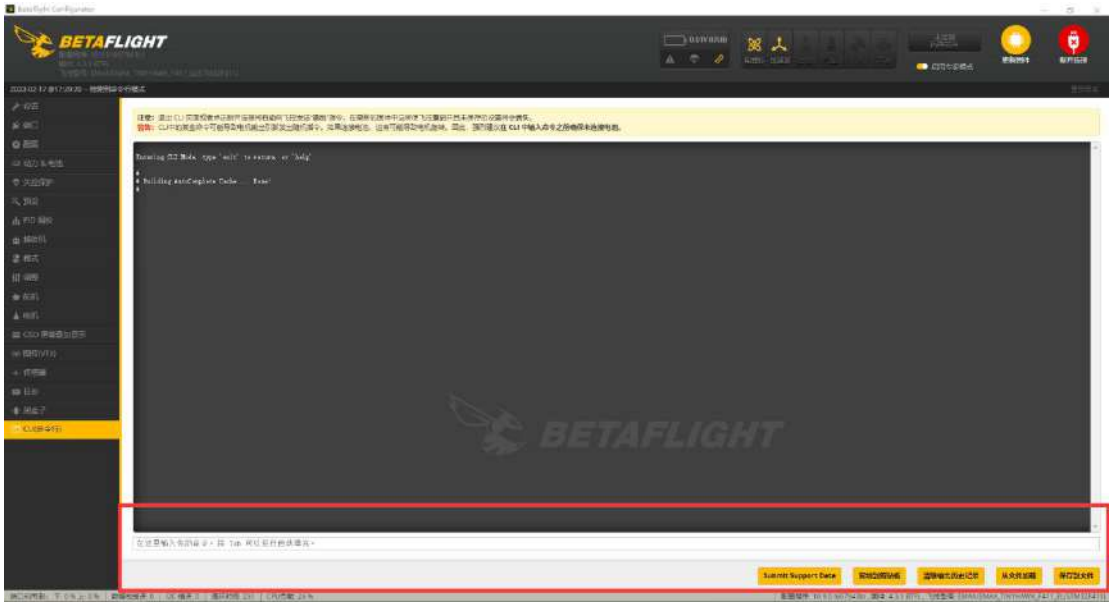
4.2 Reprogramming the Babyhawk O3 Flight Controller

1. Hold down the Boot button, then connect the flight controller to your computer using a Micro USB or Type-C data cable to put it in DFU mode.
2. Choose EMAX_BABYHAWK_II_HD as the target and select the firmware. Choose the manual baud rate of 256000 from the dropdown menu.
3. Choose "Load Firmware (Online)" to download the firmware.
4. Choose "Flash Firmware" to program the flight controller.



4.3 Restore Babyhawk O3 Default Settings

from https://emax-usa.com/ Download the latest CLI Dump file, open it in a text editor, copy all the text, paste the settings into the command bar, and press Enter. Once completed, Babyhawk O3 will reconnect to Betaflight.


BETAFLIGHT
Entering CLI Mode, type 'exit' to return, or 'help'
Building AutoComplete Cache ... Done!
BETAFLIGHT
Submit Support Data

5. Flying

Flying requires careful attention and should be conducted in open, controlled areas. Prior to flying, make sure you've learned how to control the flight.

5.1 Babyhawk O3 Flight

Start by turning on your remote controller and FPV goggles. Connect the 4S battery to the Babyhawk O3 using the power cable. Once connected successfully, place the Babyhawk O3 on a level surface. The calibration process takes a few seconds. After calibration, you can start flying the Babyhawk O3. During flight, if the battery voltage drops to 14.4V, it's recommended to stop flying the Babyhawk O3 to avoid damaging the battery.

5.2 Arming

When you insert the battery into the Babyhawk O3, the propellers won't spin until you arm it. To arm, first move the throttle stick on the remote controller to the bottom position to prepare for arming. Then, flip the arm switch on the remote controller to arm the Babyhawk O3. The propellers will start spinning automatically. If a collision occurs, disarm the aircraft immediately. Failure to do so may result in damage to the Babyhawk O3.

5.3 Line of Sight Flight

Select an open area, connect the 4S battery to the Babyhawk O3, and arm it. Slowly increase throttle to maintain a constant altitude, and practice hovering and maintaining control of the Babyhawk O3.

5.4 FPV Flight

Ensure the Babyhawk O3 and FPV goggles are on the same channel and have a clear flight area. Similar to line of sight flight, arm the drone and increase throttle to maintain a controlled, constant altitude while flying forward. Gradually move forward to make FPV flying easier. On your FPV goggles' screen, you can see important information like aircraft parameters, flight time, and battery voltage. These can also be set and modified in Betaflight.

Always prioritize safety, and remember that flying in FPV mode requires more attention and practice due to limited visual cues.

Note: Please comply with the laws and regulations of your local jurisdiction while using this product. Use the product responsibly within the bounds of local laws and regulations. Do not arbitrarily modify product parameters or power settings. By purchasing this product, the user acknowledges these responsibilities and agrees to operate the device lawfully. EMAX disclaims any responsibility for users who violate government regulations regarding the purchase and/or use of this product.

Thank you for purchasing our product! Have a great time flying!

Warning：

Please be mindful of your surroundings. Not for use by individuals under 18 years old. Contains small parts; keep out of reach of children and be cautious of swallowing hazards.