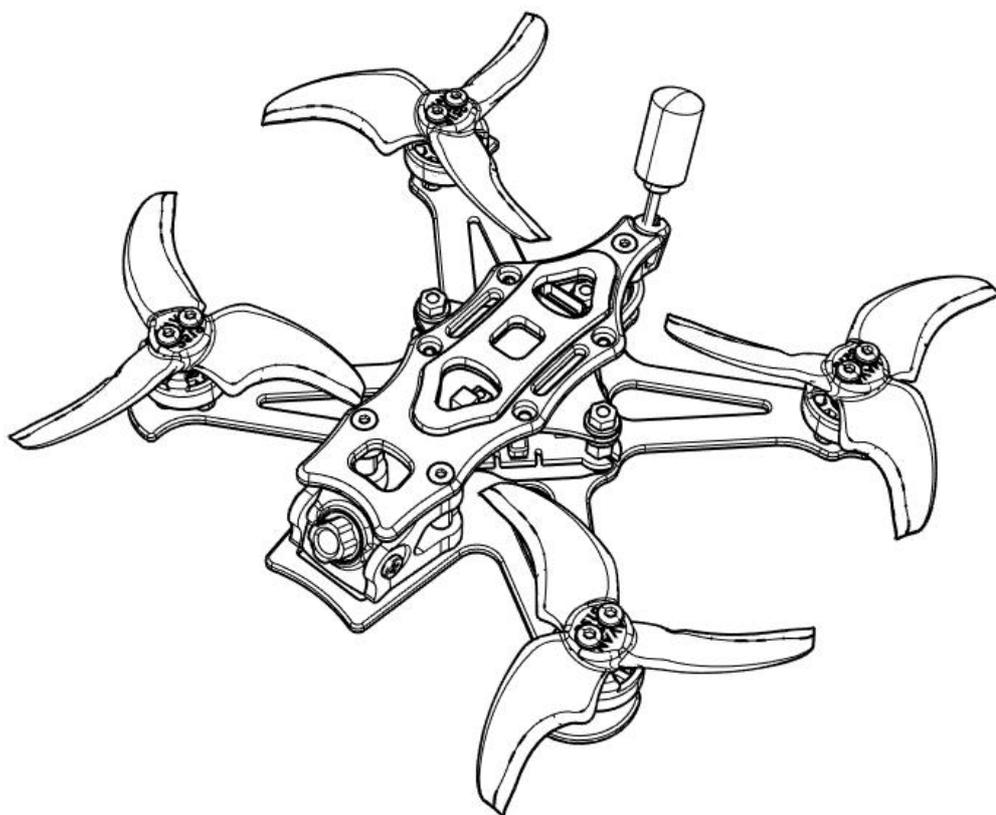


Tinyhawk III Plus Freestyle

TINY **HAWK** **III PLUS** *Freestyle*



Thanks for purchasing the Tinyhawk III Plus Freestyle.
Please follow the instruction manual to assemble and configure your Tinyhawk III Plus Freestyle.

Design in California, Made in China

Disclaimer:

1. Please read this 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 recommended that children under 18 years old be supervised by adults.
4. Please read the user manual and warnings carefully.
5. Before each flight, ensure the battery is fully charged, power connections are secure, and do not fly around crowds, children, animals, or objects.
6. Our Tinyhawk III Plus Freestyle comes equipped with an open-source flight controller and electronic speed controller to meet the needs of FPV enthusiasts upgrading their quadcopters.
7. EMAX is not responsible for any direct or indirect damages or injuries resulting from the use of this product.

Important Notes:

1. Please 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 strong electromagnetic environments.
4. Do not use this product in adverse conditions such as wind, rain, lightning, snow, etc.
5. Do not use this product if you have physical or mental illnesses, dizziness, fatigue, or if you are under the influence of alcohol or drugs.
6. Do not modify or use unauthorized EMAX parts and accessories.
7. Support:
8. For updates or technical support, please visit the emax-usa.com or emaxmodel.com website.

Tinyhawk III Plus Freestyle -RTF HD

Tinyhawk III Plus Freestyle(HD)	
Wheelbase	110mm
Maximum appearance size	LxWxH=100x104x22 mm
Weight	65.5g(without battery)
Motor	12025-7000KV
propeller	AVAN Rush 2.5寸
Main control board	STM32F411 (100MHz) main control Integrated 4-in-1-6A-8 bit electrical regulation, input voltage 1-2S On board ELRS (2.4G) receiver (SPI communication)
Camera	HDZERO Nano Lite Camera
Image transmission	HDZero whoop Lite 0/25mW/200mW
Battery	1S HV 650mAh
E8 Transmitter (ELRS-2.4G)	
Maximum appearance size	LxWxH=150x140x45mm
Weight	260g(without battery)
Number of channels	8
Agreement	ELRS-2.4G
Operating Frequency	2.4GHz (2400-2483.5MHz)
Power	10mW/25mW/50mW/100mW
Battery	1800mAh Lithium Ion Battery
Charging System	Built-in USB 1A linear lithium-ion battery charging system
working voltage	3.7-4.2V
External interface	Type-C, 3.5mm audio interface (wired coach interface)
Other	Support simulator, support joystick calibration, support switching between left and right hands, support firmware update (USB mode), support adjustable power Supports adjustable send/return rates, and supports changing binding keys
Transporter II HD	
Maximum appearance size	LxWxH=145 x 155 x 92mm
Weight	425g(without battery)
Resolution	720*1080
Display Size	4.45"

Battery	Built in a 2200mAh 2C lithium battery
Voltage	3.7-4.2V
Operating Frequency	5.8GHz (5658-5945MHz)
Charging System	Turn on 5V/3A, turn off 5V/1A charging system
DVR	Suggest using 8-32GB memory TF card (C10 high-speed TF card) Recording formats TS, MOV

Tinyhawk III Plus Freestyle -RTF (Analog)

Tinyhawk III Plus Freestyle(Analog)	
Wheelbase	110mm
Maximum appearance size	LxWxH=100x104x22 mm
Weight	62.5g(without battery)
Motor	12025 7000KV
propeller	AVAN Rush 2.5"
Main control board	STM32F411 (100MHz) main control Integrated 4-in-1-6A-8 bit electrical regulation, input voltage 1-2S On board ELRS (2.4G) receiver (SPI communication)
Camera	RunCam Nano 6
Image transmission	32-bit 40CH open source image transmission Power: 0/25mW/100mW/400mW
Battery	1S HV 650mAh
E8 Transmitter(ELRS-2.4G)	
Maximum appearance size	LxWxH=150x140x45mm
Weight	260g (without battery)
Number of channels	8
Agreement	ELRS-2.4G
Operating Frequency	2.4GHz (2400-2483.5MHz)
Power	10mW/25mW/50mW/100mW
Battery	1800mAh Lithium Ion Battery
Charging System	Built-in USB 1A linearLithium-ion battery charging system
working voltage	3.7-4.2V
External interface	Type-C, 3.5mm audio interface (wired coach interface)
Other	Support simulator, support joystick calibration, support switching between left and right hands, support firmware update (USB mode), support adjustable power Supports adjustable send/return rates, and supports changing binding keys
Transporter II	
Maximum appearance size	LxWxH=155x100x90mm
Weight	398g (without battery)

Resolution	480x800
Display Size	4.3"
Battery	Built in 1300mAh lithium-ion battery
Voltage	3.7V-4.2V
Operating Frequency	5.8GHz (5658-5945MHz)
Charging System	Built-in USB 1A linear lithium-ion battery charging system
DVR	Maximum support for memory 32G TF card File format AV size: VGA/D1/HD (optional)

Tinyhawk III Plus Freestyle -RTF HD

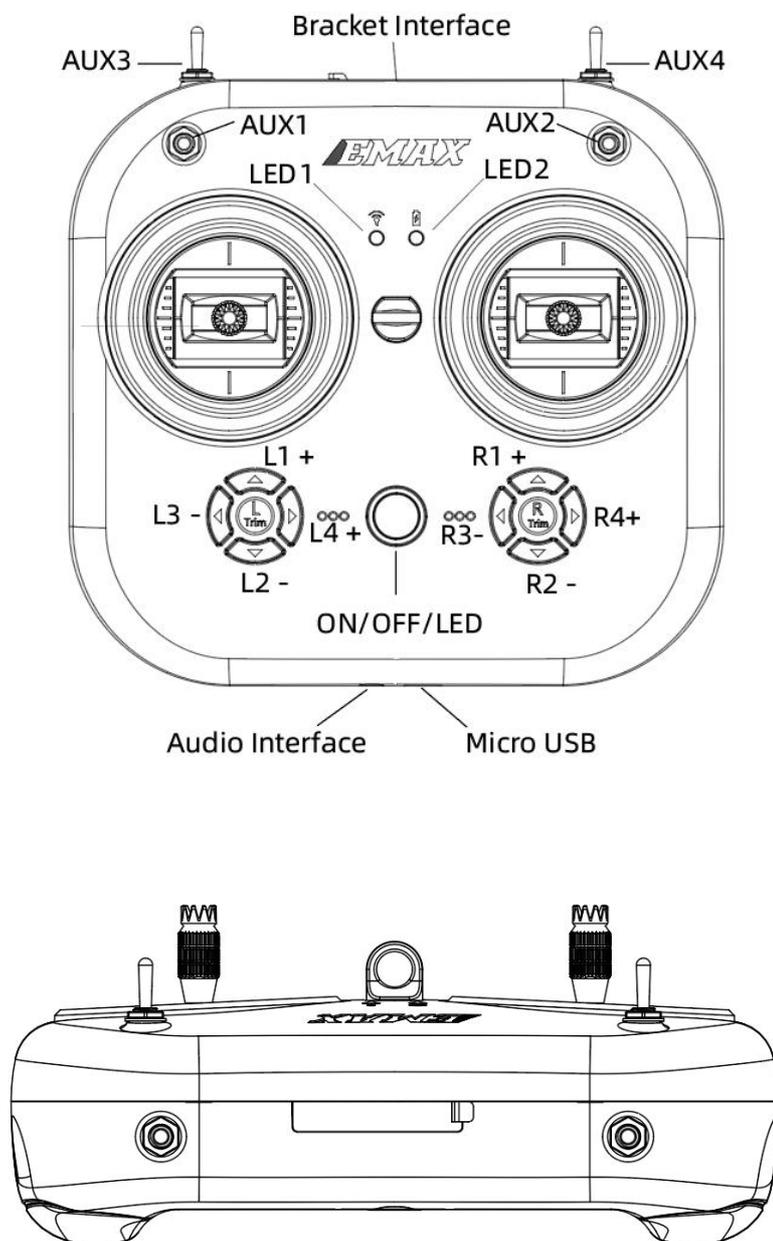
- 1.Tinyhawk III Plus Freestyle×1
- 2.EMAX E8 Transmitter(ELRS-2.4G)×1
- 3.EMAX Transporter II HD×1
- 4.EMAX 1s HV 650mAh×1
- 5.Charger×1
- 6.Propeller.....(2XCW, 2XCCW)
- 7.Other accessory×1

Tinyhawk III Plus Freestyle -RTF (Analog)

- 1.Tinyhawk III Plus Freestyle×1
- 2.EMAX E8 Transmitter(ELRS-2.4G)×1
- 3.EMAX Transporter II×1
- 4.EMAX 1s HV 650mAh×1
- 5.Charger×1
- 6.Propeller.....(2XCW, 2XCCW)
- 7.Other accessory×1

1.E8 Transmitter(ELRS-2.4G)

1.1 E8 Transmitter(ELRS-2.4G)



1.2E8 Transmitter(ELRS-2.4G)

- Product Model: EMAX E8 Transmitter (ELRS-2.4G);
- Weight: 260g (without battery);
- Dimensions: LWH = 150x140x45mm;
- Channels: 8 (configurable channels);
- 2.4G System: SX1280 transmission module;

Frequency Range: 2.4GHz (2400MHz-2483.5MHz);
Transmission Rate: 50Hz/150Hz/250Hz/500Hz;
Telemetry Rate: OFF/1:2/1:4/1:8/1:16/1:32/1:64/1:128;
Power Output: 10mW/25mW/50mW/100mW;
Operating Voltage/Current: 3.7-4.2V/170mA;
Battery: 1800mAh 18650 battery;

Charging System: Type-C compatible, built-in 1A linear lithium-ion battery charging system;

External Interfaces: Type-C interface, 3.5mm audio interface (wired trainer interface);

Other Features: Supports simulators, joystick calibration, left/right-hand switch, firmware updates (via USB), adjustable power output, adjustable transmission/telemetry rates, support for changing binding keys.

1.3 E8 Transmitter (ELRS-2.4G) Operation:

1.3.1 Binding & Unbinding

Entering Binding Mode for E8 Transmitter (ELRS-2.4G): Start by powering on the E8 Transmitter (ELRS-2.4G). Then, simultaneously press the "L4+" and "R3-" buttons and hold for 1 second. A sound prompt will be heard, and the central indicator light will alternate between green and red flashes, indicating that the transmitter has entered Binding Mode. Entering Unbinding Mode for E8 Transmitter (ELRS-2.4G): Begin by powering on the E8 Transmitter (ELRS-2.4G). If it's already successfully bound to the flight controller, then simultaneously press the "L4+" and "R3-" buttons and hold for 1 second. A sound prompt will be heard, and the central indicator light will alternate between green and red flashes, signifying that the transmitter has been unbound from the flight controller.

1.3.2 Button Functions

Pressing the Power Switch: Powers on the transmitter and enters ELRS protocol mode. The mode indicator light will be a solid red.

Pressing the Power Switch and "L3-" Simultaneously: Powers on and enters calibration mode.

Simultaneously Pressing "L4+" and "R3-": Enters binding mode.

Pressing "R4+" and then Simultaneously Pressing the Power Switch (when in the powered-off state): Enters serial port flashing mode.

1.3.3 Fine-Tuning

Each joystick has corresponding fine-tuning buttons. These buttons adjust the directions controlled by each joystick. A sound prompt will be heard each time an adjustment is made. When adjusted to the center position, a longer sound prompt will be heard. When the joystick is centered, the aircraft hovers. Adjust the fine-tuning buttons for pitch and roll to achieve a stable hover without needing joystick adjustments.

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1.3.4 Joystick Calibration

The E8 Transmitter (ELRS-2.4G) comes pre-calibrated, but recalibrating can help address some issues. With the E8 Transmitter (ELRS-2.4G) turned off, simultaneously press the "L3-" button and the power button while powering on. Wait for the central indicator light to illuminate and transition from rapid flashing to slow flashing. Push each joystick of the E8 Transmitter (ELRS-2.4G) to its maximum position in all four directions: up, down, left, and right. Press the "L3-" button, a sound prompt will be heard, exiting the calibration mode, and the E8 Transmitter (ELRS-2.4G) will power up normally.

1.3.5 Left/Right Hand Switching

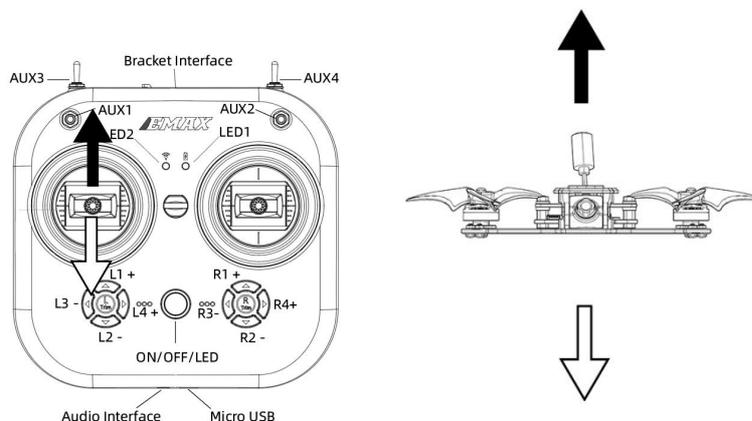
Remove the screws and open the rear cover of the E8 Transmitter (ELRS-2.4G). On the left side of the board, there's a toggle switch. Set the switch to "L" (left-hand throttle mode) or "R" (right-hand throttle mode). Swap the positions of the joysticks accordingly (the 6-pin wires connecting the joysticks to the mainboard do not need to be changed).

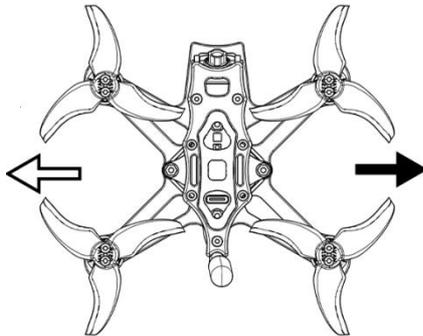
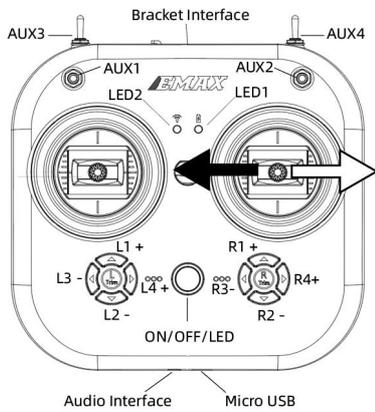
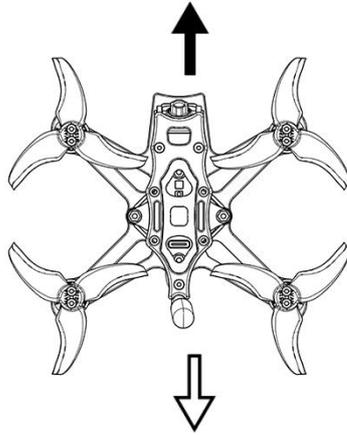
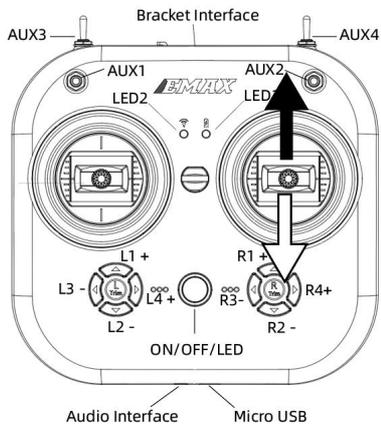
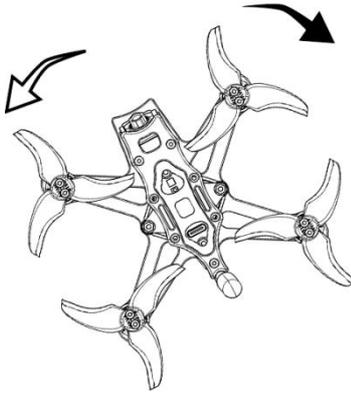
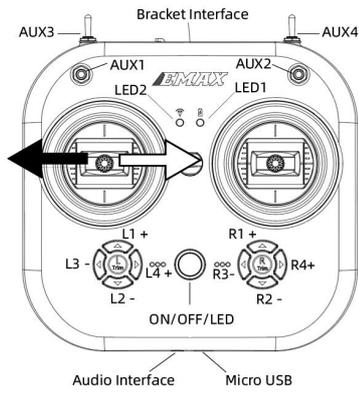
Left Hand Mode: In E8 Transmitter (ELRS-2.4G) left side joystick controls Tinyhawk III Freestyle throttle and yaw; right side joystick controls Tinyhawk III Freestyle pitch and roll.

Right Hand Mode: In E8 Transmitter (ELRS-2.4G) left side joystick controls Tinyhawk III Freestyle pitch and roll; right side joystick controls Tinyhawk III Freestyle throttle and yaw.

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Schematic diagram of the left and right-handed joysticks (the picture shows the left-handed mode, and of the joystick control reversed in the right-handed mode)





1.3.6 Trainer Port & Simulator

Insert one end of a 3.5mm male-to-male cable into the trainer port (3.5mm audio interface) and the other end into a simulator (sold separately) to output corresponding channel values. Insert a Type-C data cable into the transmitter to output corresponding channel values.

1.3.7 Battery & Charging

The E8 Transmitter (ELRS-2.4G) is compatible with a single 18650 battery with an operating voltage range of 4.2V-3.7V. When reinstalling the battery, slide the battery compartment cover backwards. Install the battery with the correct polarity (negative end on the side with the spring in the battery compartment). Ensure the battery compartment cover aligns perfectly and push it forward until it locks. If the battery is installed incorrectly, charging and powering on might not work properly. Charge the transmitter using the bottom Type-C port. The power charging indicator light states are as follows:

Solid red light: Charging in progress

Solid green light: Charging complete Note: Use a 5V-1A adapter and a Type-C cable for charging. An alarm might sound when the voltage is low (3.7V); ensure timely charging.

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Regenerate



E8 Transmitter(ELRS) Instructions for using the serial port upgrade tool



1.4.1 Firmware Update To perform a firmware update

follow these steps:

Press and hold the "R4+" button, then press and hold the power button. A sound prompt will play, the mode indicator light will flash green, and the central indicator light will remain solid green. This puts the transmitter in serial flashing mode.

Connect the transmitter to your computer using a Type-C data cable.

Open the EMAX Serial Update Tool on your computer.

(1) Identify the COM port number and select it. (2) Click "Open Port." (3) Click "Choose File" and select the firmware file you want to update. (4) Wait a few seconds; when the transfer progress reaches 100%, the transmitter will shut down automatically, indicating a successful firmware update.

Note: If the COM port is not recognized, try changing the data cable, repeating steps (1) and (2), clicking "Refresh Port," or unplugging and re-plugging the Type-C data cable.

1.4.2 Power Switching, Changing Telemetry/Transmission Rates



To switch power output and change telemetry/transmission rates, follow these steps:

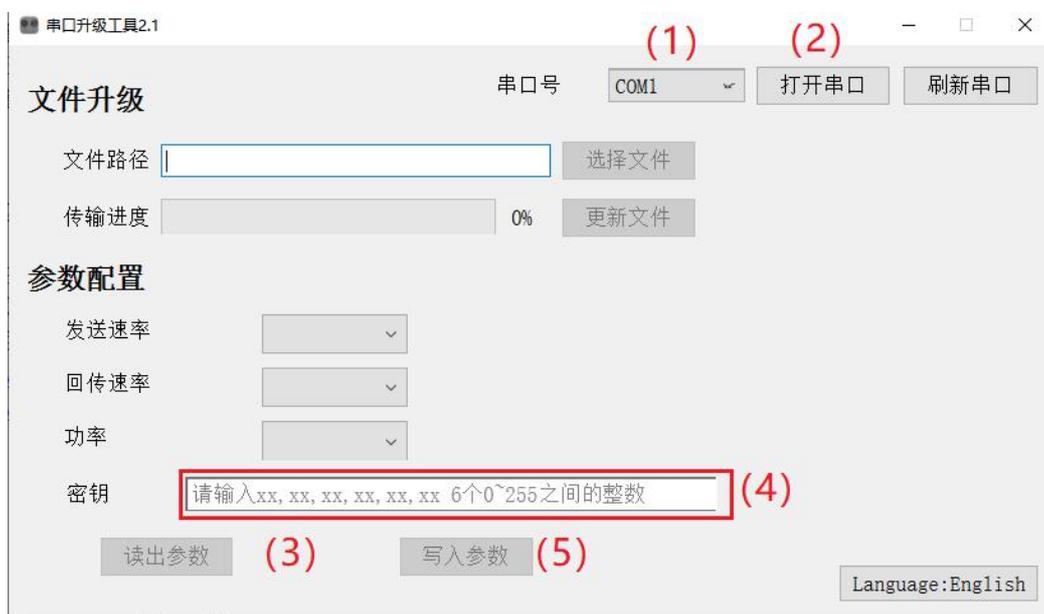
(1) Identical to the first step in the firmware update process.

(2) Identical to the second step in the firmware update process.

(3) In the parameter configuration section, click "Read Parameters." This will display all the current parameters set on the transmitter.

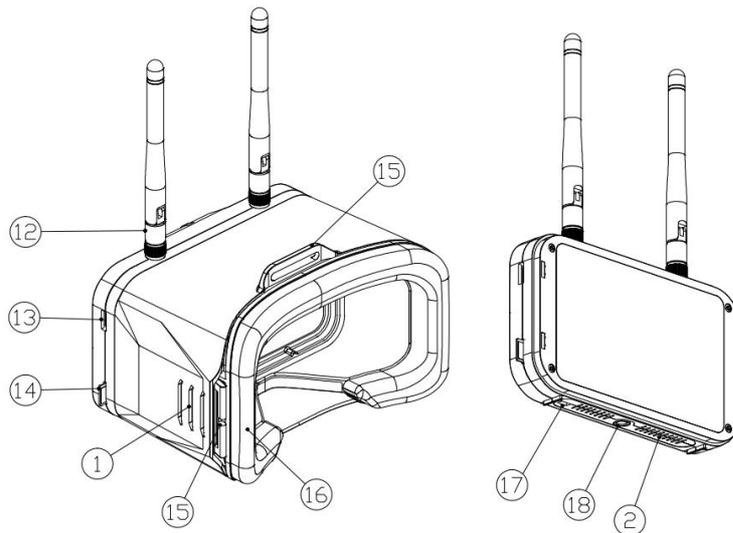
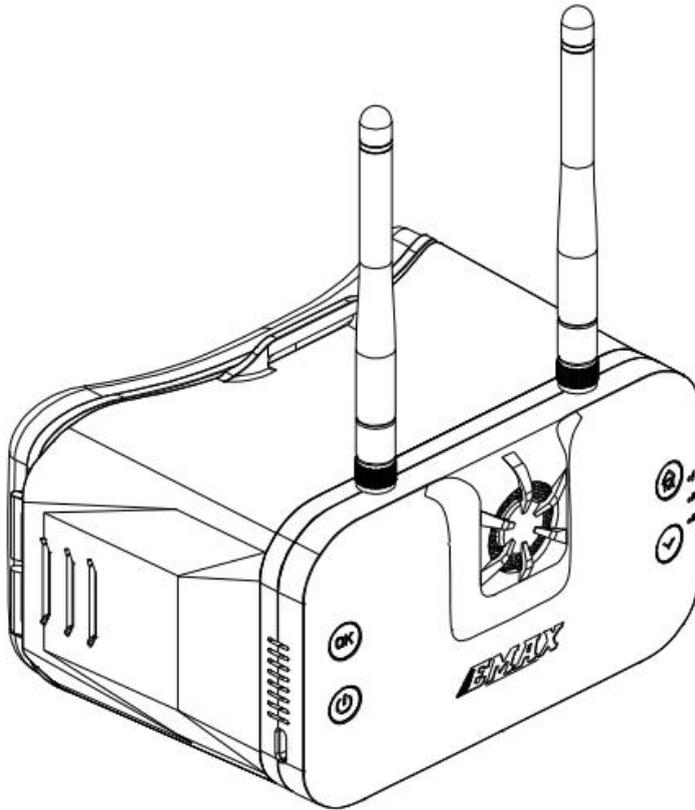
Locate the options for transmission rate, telemetry rate, power, etc. Click the corresponding dialog box and choose the appropriate parameters.

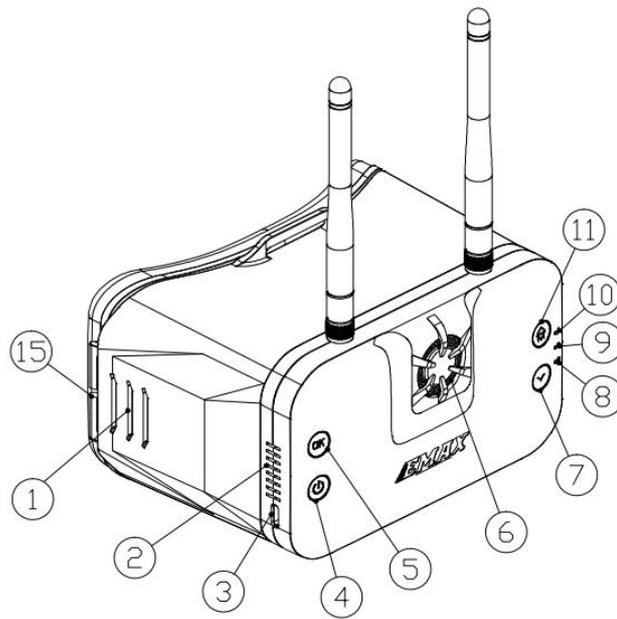
Write the parameters. Once the writing is complete, you will see a confirmation message. Power off the transmitter and power it back on to apply the changes.



2. Transporter II HD

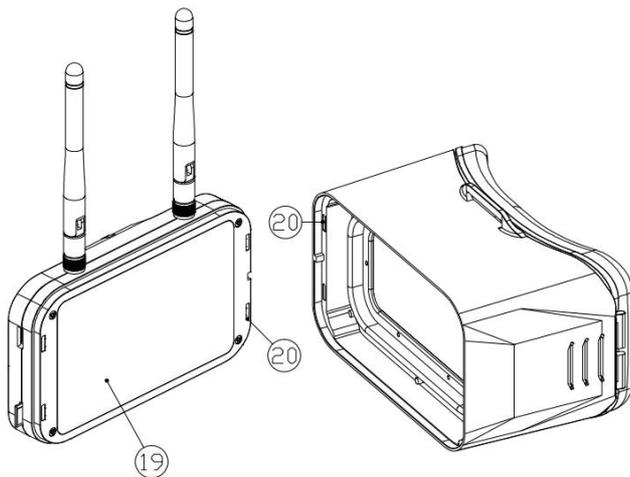
2.1 Transporter II HD



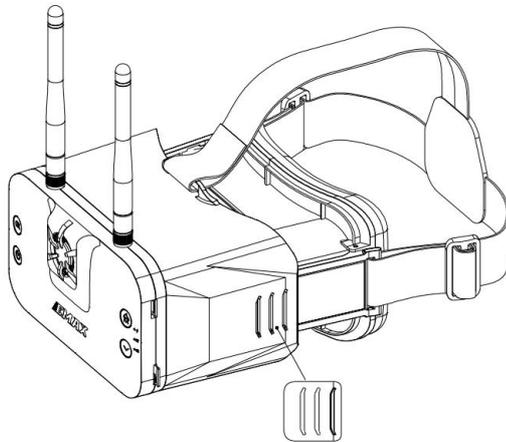
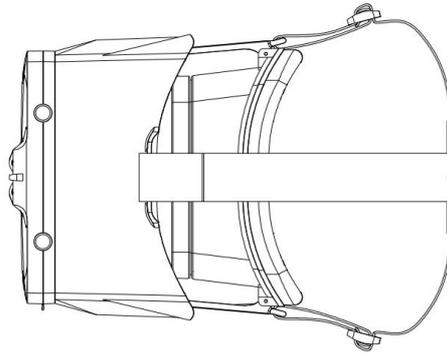
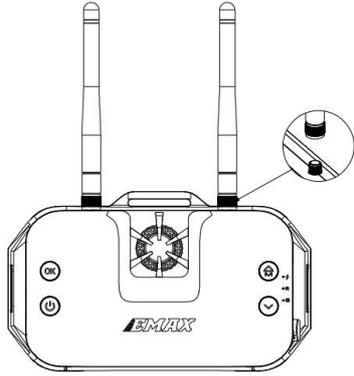


1. Distance adjustment card slot
2. Ventilation port
3. TYPE-C charging port
4. On/Off button
5. Confirm button
6. Fan
7. Down button
8. Firmware update indicator light
9. Recording indicator light
10. Charging indicator light
11. Up/menu button

12. Antenna
13. Firmware upgrade connection port
14. TF (microSD) card connector
15. Headband Hanging Hole
16. Face sponge
17. Boot switch
18. External connection port
- 19 Display screen
20. Magnet



Flight goggles consist of two main components: the display module and the main body shell. These can be combined together using magnets or separated as needed.



There are three distance adjustment slots, allowing for three different distances to be set. When adjusting, please ensure that the distance adjustment slots on the left and right sides are kept consistent.

2.2 Specifications for the Transporter II HD:

Weight: Approximately 425g (including headband and antennas)

Dimensions: 145 x 155 x 92mm (excluding antennas) 145 x 155 x 190mm (including antennas)

Screen Size: 4.45 inches

Screen Resolution: 720 x 1080

Operating Frequency: 5658-5917MHz (R1-R2-R3-R4-R5-R6-R7-R8-F2-F4, a total of 10 channels)

Antenna: Built-in 2 linear antennas with 3dB gain, compatible with other SMA head antennas

DVR Function: Recommended to use 8-32GB TF cards (C10 high-speed TF cards), recording format in TS, MOV

Battery: Built-in 2200mAh-2C lithium battery

Charging System: DC/5V charging (charge at 5V 3A when turned on, charge at 5V 1A when turned off)

External Power Function: Can be connected to an external power source of 5V 3A (insufficient current might cause insufficient power supply)

Warning: Do not use an external power source or power adapter with a voltage greater than 5V, as it might cause damage to the product!

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2.3.1 Button Functions

Up/Menu Button: In SCAN mode, long press to enter preview mode, then long press again to access the menu bar mode. In preview mode, short press to cycle through channels (R1-R2-R3-R4-R5-R6-R7-R8-F2-F4). In the menu bar mode, short press to increase options, long press to exit the current mode. In playback video selection mode, long press to exit the current mode. In playback video mode, short press to rewind the video.

Please refer to the manufacturer's user manual for more detailed instructions on using the Transporter II HD goggles and its various functions.

SCAN mode

Preview mode 1 (no video signal)

Preview mode 2 (with video signal)



Down Button: In preview mode, short press to cycle through channels (R1-R2-R3-R4-R5-R6-R7-R8-F2-F4). In preview mode, long press to display the brightness bar. Short press the Down button to decrease screen brightness, and short press the Up button to increase screen brightness. Long press the Down button again to close the brightness bar. In the menu bar mode, short press to decrease options. In playback video mode, short press to play the video forward.

Confirm Button: Short press to confirm selections. In preview 2 and manual recording mode, long press to enter manual recording mode, and long press again to stop recording (During recording: Recording indicator light flashes green, screen recording dot remains red).

Power Button: Long press to power on and enter SCAN mode. Long press again to power off. (In powered-on state, recording indicator light is solid green).

TYPE-C Charging Port: DC/5V charging (Recommended: 5V 3A charging in powered-on state, 5V 1A charging in powered-off state). Can be connected to an external power source with 5V 3A (Insufficient current may cause inadequate power supply).

Warning: Do not use an external power source or power adapter with a voltage higher than 5V, as it may result in damage to the product.

Firmware Update Connection Port: (For updating firmware of VTX, camera, etc.)

Boot Switch: (Note: Keep the switch on the left during normal use.)

TF (microSD) Card Slot: Recommended for use with 8-32GB TF cards (Class 10 high-speed TF cards).

Antenna Connection Port: SMA-KY (external thread, internal hole).

Charging Indicator Light: (Charging status - red light is solid; Full charge status - green light is solid).

Recording Indicator Light: (Powered-on status - green light is solid; Recording status - green light flashes; During firmware update - green light is solid).

Firmware Update Indicator Light: (During firmware update - green light is solid; During Boot update - green light is solid).

Please refer to the manufacturer's user manual for detailed instructions on using the Transporter II HD goggles and its various functions.

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2.3.2 System Settings Menu

Scan: Displays the current channel (R1-R8, F2, F4 - a total of 10 channels).

Playback: Accesses the video playback function (displays video count and available TF card capacity).

Format SD-Card: Formats the TF (microSD) card.

Record Mode: Sets the recording mode (Automatic/Manual).

Record Format: Chooses the recording format (MOV/TS format).

Record OSD: Specifies whether to keep the on-screen display (OSD) during recording (Yes/No).

Auto Scan: Enables or disables the auto-scan feature.

About: Displays version information and manufacturer details.

2.3.3 DVR Function

(1) Automatic Recording Mode When the HD goggles meet the following conditions: 1.1 - Valid video signal (not a black screen) 1.2 - Available space on the TF (microSD) card is over 200MB And video signal is connected upon powering on, the goggles will automatically enter the automatic recording mode. During this mode, the "Recording Indicator Light" will flash green, and the "Screen Recording Dot" will remain red, indicating that the goggles are in recording mode.

(2) Manual Recording Mode When the HD goggles meet the following conditions: 2.1 - Valid video signal (not a black screen) 2.2 - Available space on the TF (microSD) card is over 200MB And video signal is connected upon powering on, long-press the "Confirm Button" to enter the manual recording mode. Similar to automatic recording, the "Recording Indicator Light" will flash green, and the "Screen Recording Dot" will remain red, indicating that the goggles are in recording mode. Long-press the "Confirm Button" again to stop recording. During this state, the "Recording Indicator Light" will remain solid green, and the "Screen Recording Dot" will be lit in gray.

Note: When the TF (microSD) card is full, the DVR recording will automatically stop, but real-time video output will not be affected. If no TF (microSD) card is inserted or if there is insufficient memory, video recording will not occur.

Note: When the TF (microSD) card is full, DVR recording will automatically stop, while real-time video output remains unaffected. If no TF card is inserted or the memory is insufficient, video recording will not occur.

2.3.4 TF (microSD) Card Before use, please format the card:

Format using the "Format" option in the HD Goggles system settings menu (recommended).

If formatting on a computer, choose "File System" as "FAT32" and "Allocation Unit Size" as "64KB."

It's recommended to use an 8-32GB TF card with a minimum write speed of C10.

Note: When formatting is required for the TF card, it's advised to use the "HD Goggles Format" option for formatting.

2.3.5 Screen Brightness Adjustment

In preview mode (including Preview 1 (no video signal) and Preview 2 (with video signal)):

Long press the "Down Button" to display the brightness bar.

Short press the "Down Button" to decrease screen brightness.

Short press the "Up Button" to increase screen brightness.

Long press the "Down Button" again to close the brightness bar.

2.3.6 Video Playback Function In the system settings menu, select the "Playback" option. Short press the "Confirm Button" to enter "Video Playback Selection Mode." Select a video and short press the "Confirm Button" to play the video, entering "Video Playback Mode."

Short press the "Up/Menu Button" to play the video in reverse.

Short press the "Down Button" to play the video forward.

Short press the "Confirm Button" to pause the video playback.

During this time, long press the "Up/Menu Button" to return to "Video Playback Selection Mode."

Long press the "Up/Menu Button" again to return to the "System Settings Menu Mode."

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2.4 Transporter II HD Firmware Update

2.4.1 Firmware Update (Regular Update)

Follow these steps for the update:

Format the TF (microSD) Card: Power off the HD Goggles and format the TF card.

Extract Firmware: On your computer, extract the Emax Transporter II HD firmware update package to the root directory of the TF card.

Insert TF Card: Insert the TF card into the HD Goggles, power on the goggles. At this point, both the "Recording Indicator Light" and "Firmware Update Indicator Light" will be solid green. Wait for the prompt message "Success" or similar. Once the lights turn off, the update is successful.

Note:

During the update, ensure that the HD Goggles have a stable power supply. Ensure that the "Boot Switch" is on the left side as shown in the diagram.

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2.4.2 Firmware Update (Boot Mode)

If the HD Goggles cannot start up normally (for example, the fan is running but there's no image output), switch to Boot mode for firmware update. Follow these steps:

Format the TF (microSD) Card: Power off the HD Goggles and format the TF card.

Extract Firmware: On your computer, extract the Emax Transporter II HD firmware update package to the root directory of the TF card.

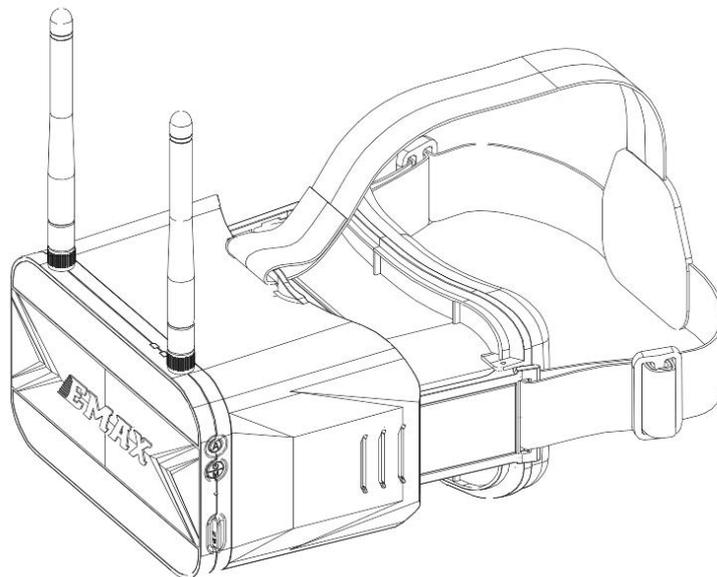
Switch to Boot Mode: Slide the "Boot Switch" to the right side, as shown in the diagram.

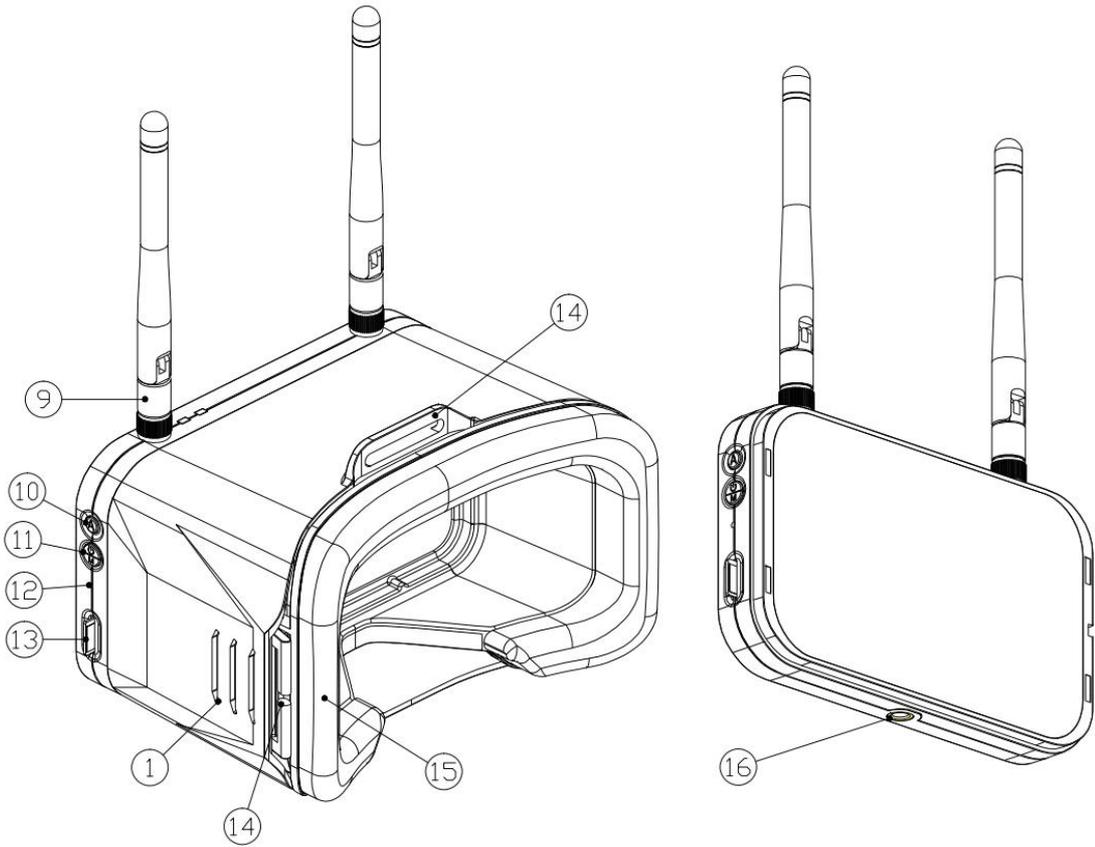
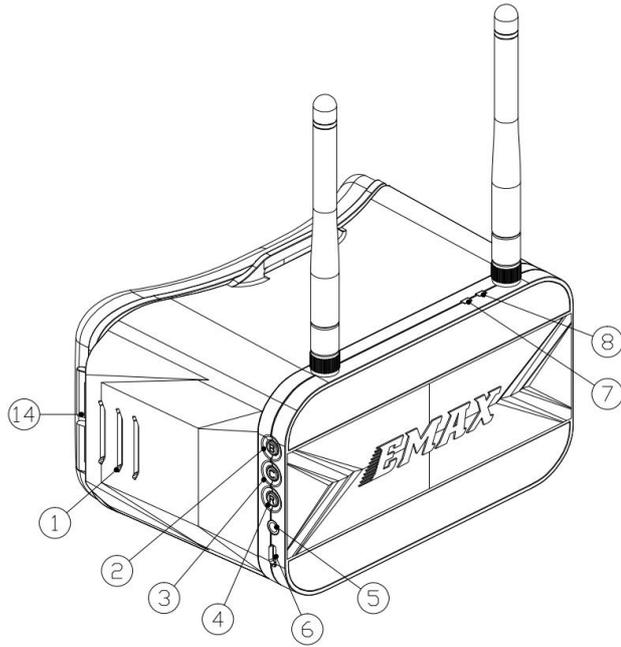


By following these steps, you can update the firmware in Boot mode when the HD Goggles fail to start up properly.

3. Transporter II

3.1 Transporter II





1. Distance Adjustment Slot
2. Frequency Band Switch Button
3. Channel Switch Button
4. Recording Button
5. Audio Interface
6. Micro USB Port
7. Recording Indicator Light
8. Charging Indicator Light
9. Antennas
10. Auto Search Button
11. Power On/Off (Long Press) & Menu Button (Short Press)
12. Reset Button
13. SD Card Slot
14. Head Strap Attachment Hole
15. Sponge Pad
16. External Bracket Connection Port

Feel free to reach out if you have any more questions or need further assistance!

Regenerate

Note: To operate the Transporter II correctly, please perform the following steps: Install the provided antennas onto the SMA connectors. When wearing the goggles, make sure to separate the antennas from the USB power cable used for charging.

3.2 Transporter II Specifications

Maximum Dimension (excluding antennas, folded state): LxWxH = 155x100x90mm

Weight (excluding battery): Approximately 398g (including head strap and antennas)

Screen Resolution: 480x800

Display Screen Size: 4.3 inches

Battery: Built-in 1300mAh lithium-ion battery

Operating Voltage: 4.2V-3.7V

Operating Frequency: 5.8GHz frequency band (5658MHz-5945MHz)

Charging System: Built-in USB 1A linear lithium-ion battery charging system

DVR: Supports up to 32GB TF card, compression format MJPEG, file format AV

Recording Size: VGA/D1/HD (Three modes available)

Record Time: Off/3 minutes/5 minutes/10 minutes (Selectable)

Note: To operate the Transporter II correctly, perform the following steps: Attach the provided antenna to the SMA connector and separate the antenna from the USB power cable when wearing the goggles.

3.2 Transporter II Specifications

Maximum Dimensions (excluding antenna, folded state): LxWxH = 155x100x90mm

Weight (excluding battery): Approximately 398g (including headband and antenna)

Screen Resolution: 480 x 800

Display Screen Size: 4.3 inches

Battery: Built-in 1300mAh lithium-ion battery

Operating Voltage: 4.2V-3.7V

Operating Frequency: 5.8GHz frequency band (5658MHz-5945MHz)

Charging System: Built-in USB 1A linear lithium-ion battery charging system

DVR: Supports up to a 32GB TF card, MJPEG compression format, AV file format

Recording Resolutions: VGA/D1/HD (three modes available)

Recording Time: Off/3 minutes/5 minutes/10 minutes (selectable)

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3.3 Transporter II Operation

3.3.1 Video Channel Selection

Transporter II features a frequency band selection button labeled as "B" and a channel selection button labeled as "C." These two buttons allow you to manually choose the correct frequency band and channel. While cycling through frequency bands/channels, the channel number and frequency will be displayed in the upper-left corner of the screen.

Frequency Band Selection Button (B): Each short press switches to the next frequency band in the order of A, B, E, F, R. For example, if the current frequency band is E, the first short press of the B button will switch to the E frequency band, the second short press will switch to the F frequency band, and the third short press will switch to the R frequency band. This cycling continues.

Channel Selection Button (C): Each short press switches to the next channel among the 8 available channels. This cycle continues.

Note: Make sure that the Tinyhawk III Plus Freestyle is powered on. When cycling through channels, ensure that you select the correct channel and frequency band.

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FR \ CH	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	
A	5865	5845	5825	5805	5785	5765	5745	5725	MHz
B	5733	5752	5771	5790	5809	5828	5847	5866	MHz
E	5705	5685	5665	—	5885	5905	—	—	MHz
F	5740	5760	5780	5800	5820	5840	5860	5880	MHz
R	5658	5695	5732	5769	5806	5843	5880	5917	MHz

Note:

Before adjusting parameters, you must press and hold the CH button or FR button for 3 seconds.

Ensure that the Tinyhawk III Plus Freestyle is powered on. When cycling through channels, using the video goggles of the Tinyhawk III Plus Freestyle will make it easier to identify the correct channel.

Important: Please ensure that the Transporter II is on the correct channel matching the Tinyhawk III Plus Freestyle. The selected frequency band and channel of the Tinyhawk III Plus Freestyle will be displayed in the upper-left corner of the screen.

3.3.3 Automatic Video Channel Search

Transporter II has an automatic search function labeled as "A" to help locate the channel where the Tinyhawk III Plus Freestyle is transmitting. Power on the Tinyhawk III Plus Freestyle first, then press the "A" button on the Transporter II to initiate the automatic search mode. This mode will scan through all channels and select the one with the best video reception. Once all channels have been searched, the best channel number, frequency group, and frequency will be displayed in the upper-left corner of the screen.

Warning: If multiple Tinyhawk III Plus Freestyle drones (or other drones with video transmission) are operating simultaneously, using this function might result in selecting the wrong drone's channel. We recommend manually selecting the correct channel to prevent incorrect matching.

3.3.4 Recording On and Off

To Start Recording: While the DVR is operational, short press the right-side R button. A solid red dot will appear at the upper-middle of the screen, and the DVR's red LED will stay solidly lit. After a moment, the red dot on the screen will start blinking, and the DVR's red LED will also start blinking, indicating that recording has started.

Please note that the previous content you mentioned appears to be about the Transporter II HD and its operations. If you have any specific questions or if there's anything else you'd like to know, feel free to ask our customer service.

To Stop Recording: When the DVR is in recording mode, short press the R button. Recording will stop, and the red dot on the screen will disappear. The DVR's red LED will turn off.

Setting Record Duration: To set the recording duration, press the screen/card record parameter settings, then short press the right-side B/C button to choose from options: 3 minutes, 5 minutes, 10 minutes, or Off.

3.3.5 Card Record Parameter Settings

Short press the left-side M button to access the screen/card record parameter settings menu (TF card needs to be purchased separately).

Press the left-side M button again to choose the screen/card record parameter settings submenu. Each press of the left-side M button selects the next submenu.

Short press the right-side B/C button to select suitable parameters.

3.3.6 Screen Parameter Settings

Press the single button "M" to open the menu, where you can adjust brightness, contrast, saturation, and language.

Inside the menu, press the "M" button once to select the next menu option.

The currently selected menu will be highlighted, and you can use the "B" and "C" buttons to adjust the increment and decrement.

If no button input is detected, the menu will automatically close after 3 seconds.

3.3.7 Battery & Charging

The Transporter II comes with a pre-installed 1300mAh lithium-ion battery. If you need to reinstall or replace the battery, please contact us or seek assistance on our official website. Do not attempt to open the back cover on your own to avoid damaging the product.

Charging and Battery Status:

To charge the Transporter II, use a 5V-1A adapter along with a micro-USB cable. After inserting the USB cable, the charging indicator light will show the following statuses:

Solid red light: Charging in progress

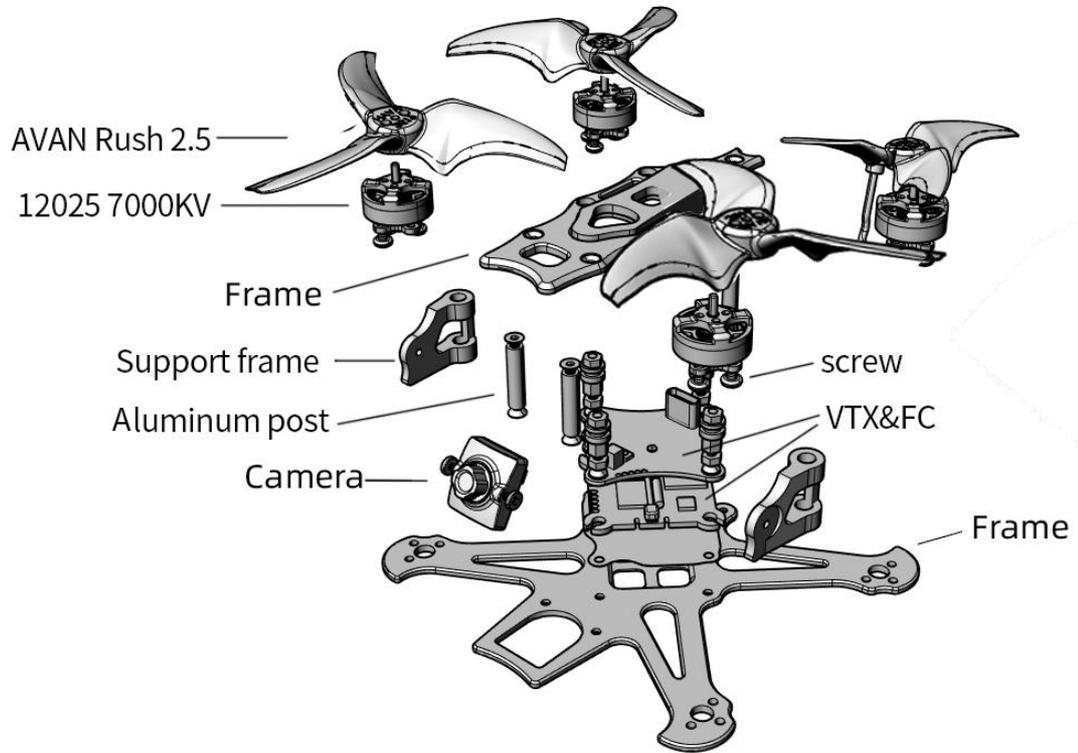
Solid green light: Charging complete

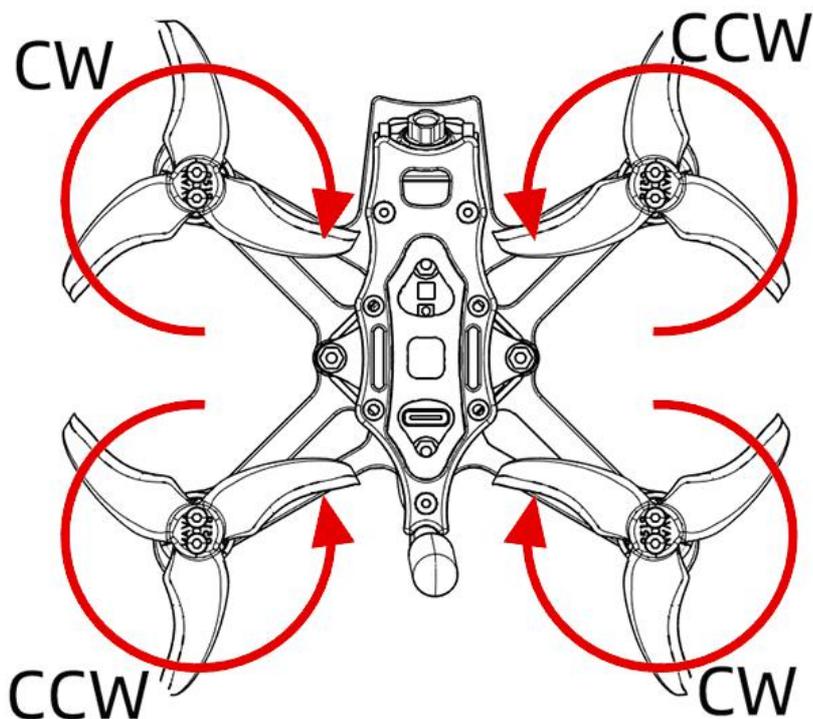
Note: The Transporter II's screen displays the battery level in the upper-right corner. When the screen shows "Low Battery," please charge the device promptly. If not charged, the Transporter II will shut down within two minutes.

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4. Tinyhawk III Plus Freestyle

4.1 Tinyhawk III Plus Freestyle





4.3 Tinyhawk III Plus Freestyle

The Tinyhawk III Plus Freestyle comes with two camera versions:

(1) HD Camera Version The HD camera version uses the RunCam HDZERO Nano Lite camera.

(2) Analog Camera Version The analog camera version uses the RUCAM Nano 6 camera.

4.4 Tinyhawk III Plus Freestyle Video Transmission

The Tinyhawk III Plus Freestyle offers two versions of video transmission:

(1) HD Digital Video Transmission The HD digital video transmission version uses the HDZero Whoop Lite system and is paired with the HD camera version.

(2) 32-bit Open Source Analog Video Transmission The 32-bit open-source analog video transmission version is paired with the analog camera version.

4.4.1 HD Digital Video Transmission (HDZero Whoop Lite)

The HD digital video transmission is facilitated by the HDZero Whoop Lite system.

For more detailed instructions on using the HDZero Whoop Lite system, refer to its instruction manual.

4.4.2 EMAX 32-bit Analog Video Transmission

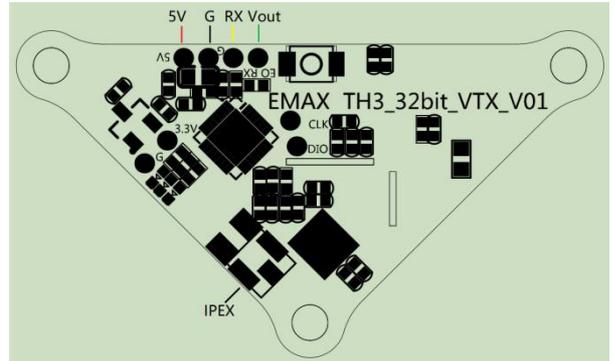
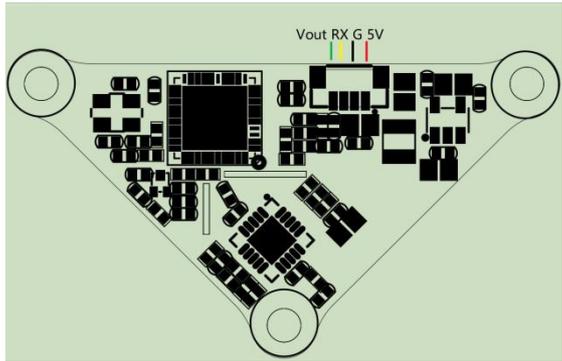
The specifications of the 32-bit analog video transmission are as follows:

Frequency: 5.8GHz, 40 channels

RF Power: 0mW / 25mW / 100mW / 400mW

Power Input: 5V

Other: Supports Smartaudio protocol, can update VTX firmware via the flight controller.



4.5 Changing Video Transmission Settings

The default video transmission setting for the Tinyhawk III Plus Freestyle is R:4:25mW. If you wish to change it, follow these steps:

Open the Betaflight Configurator software.

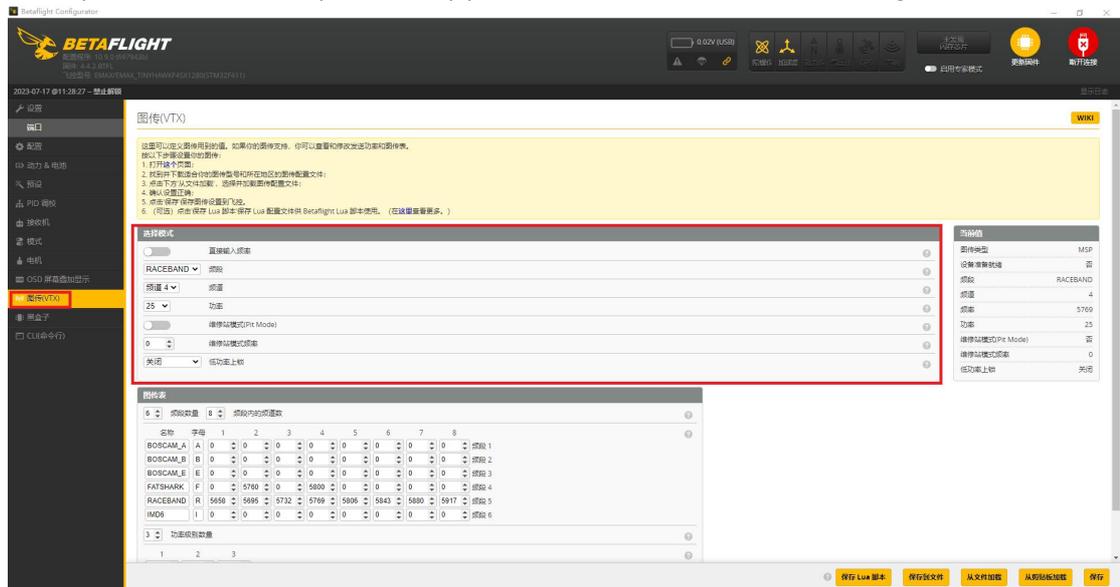
Locate the video transmission settings.

Modify the desired settings, including frequency, channel, power, and low power lock.

After making the changes, click "Save."

Restart the drone. The new settings will take effect.

Note: The low power lock function ensures that the video transmission operates at low power until unlocked. Once unlocked, the transmission operates at the set power level. This process applies to both the HD and analog versions.



4.6 Changing OSD Settings

(1)The Tinyhawk III Plus Freestyle comes with preconfigured OSD settings. If you wish to change them, follow these steps using the Betaflight Configurator software:

Open the Betaflight Configurator software.

Locate the OSD (On-Screen Display) settings.

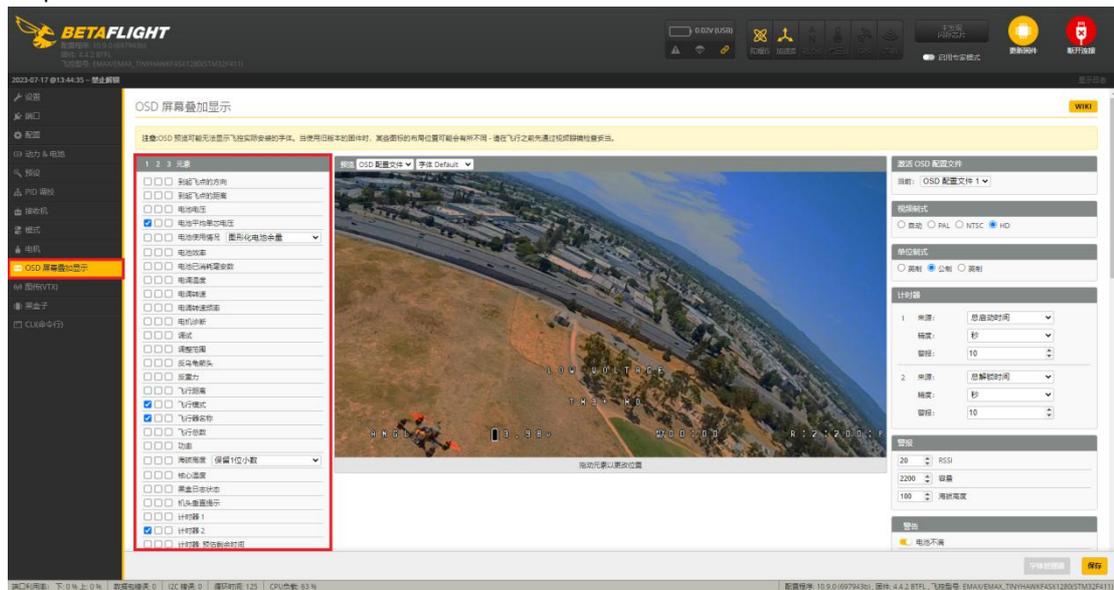
Adjust the OSD settings according to your preferences for character display on your video goggles.

After making the changes, click "Save."

Restart the drone. The new OSD settings will take effect.

This process is applicable to both the HD and analog versions of the Tinyhawk III Plus Freestyle.

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(2) Changing VTX Settings through Betaflight OSD

The Tinyhawk III Plus Freestyle comes equipped with SmartAudio, which is pre-configured. The SmartAudio for the analog video transmitter is on UART2 TX, and for the digital video transmitter, it's on UART1. Power on the Tinyhawk III Plus Freestyle, video goggles, and remote control.

Follow the on-screen prompts to enter the main setup menu. With the throttle stick centered, yaw stick to the left, and pitch stick up (THROTTLE MID + YAW LEFT + PITCH UP), you'll enter the OSD parameter adjustment menu.

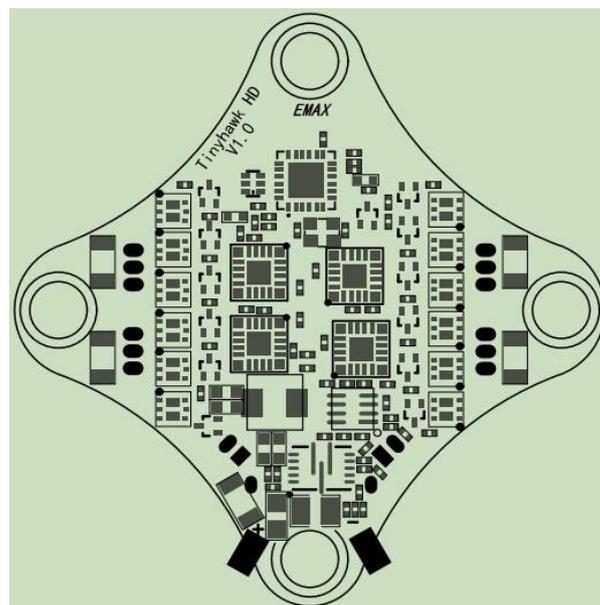
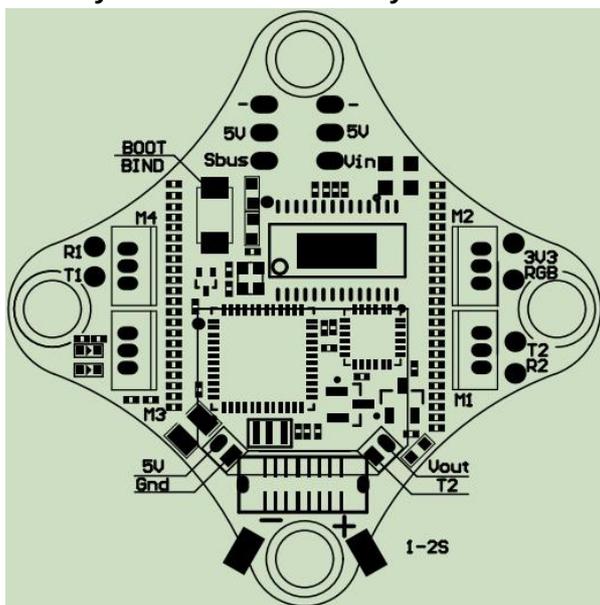
In the menu interface, use pitch (up/down) to navigate and select menu options. Move the cursor to "FEATURES" and use the roll (left/right) stick to proceed to the next menu. Use the pitch stick to move the cursor to "VTX SA" and then pull the roll stick to the right to enter the VTX configuration menu.

Within the VTX SA menu, you can configure BAND, CHANNEL, and POWER. Move the pitch stick to navigate the cursor up and down to select the desired VTX options. Once the parameters are set, move the cursor to "SET" and then rotate the stick to the right to enter "SET" and select "YES." Rotate the stick to the right again to save the settings.

In the VTX SA menu, move the cursor to "CONFIG" to enter the submenu. Move the cursor to "PIT FMODE" and pull the roll stick to the right to turn

5. Tinyhawk III Plus Freestyle- AIO

5.1 Tinyhawk III Plus Freestyle-AIO



The Tinyhawk III Plus Freestyle's receiver is an onboard ELRS (2.4G) receiver. The RF module used is SX1280, employing SPI communication. It features a ceramic antenna (with a gain of 3dB) and operates within the frequency range of 2400-2480MHz. The receiver protocol used is CRSF, and its protocol version is ELRS V3.0.



5.2.2 Binding the Tinyhawk III Plus Freestyle with the E8 Transmitter (ELRS-2.4G)

Binding, or pairing, is the process of connecting the receiver and transmitter. One receiver can be bound to only one transmitter, while one transmitter can be bound to multiple receivers.

The Tinyhawk III Plus Freestyle included in the RTF kit is already bound to the E8 Transmitter (ELRS-2.4G). If needed, follow these steps to bind (assuming you haven't changed the binding key):

Enter Binding Mode on the Flight Controller:

Power on the Tinyhawk III Plus Freestyle.

Press and hold the bind button on the flight controller until the blue LED starts flashing and then becomes solid. This indicates the binding mode is active.

Enter Binding Mode on the E8 Transmitter (ELRS-2.4G):

Turn on the E8 Transmitter (ELRS-2.4G).

Simultaneously press and hold the "L4+" and "R3-" buttons for about 1 second.

The central LED on the transmitter will alternate between green and red flashing, indicating it's in binding mode.

Binding Confirmation:

Observe the blue LED on the Tinyhawk III Plus Freestyle flight controller. It will change from solid to flashing.

Simultaneously press the "L4+" and "R3-" buttons on the E8 Transmitter (ELRS-2.4G) again.

The blue LED on the Tinyhawk III Plus Freestyle flight controller will go from flashing back to solid, confirming the successful binding.

Exit Binding Mode:

Disconnect the battery from the Tinyhawk III Plus Freestyle to power it off and exit binding mode.

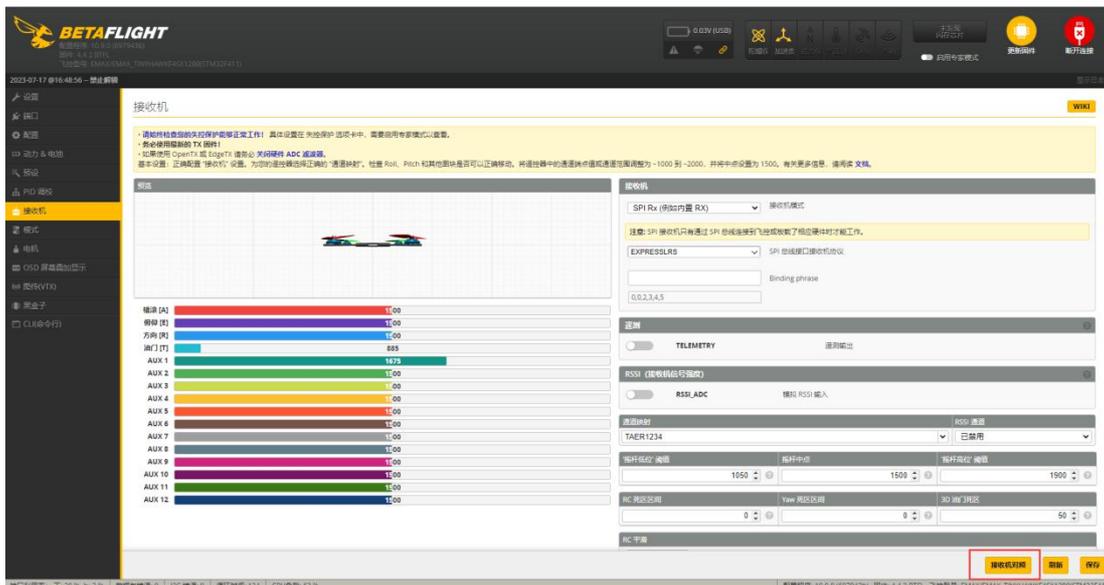
Note: You don't need to repeat the binding process between the transmitter and receiver unless you change either of the devices.

Alternative Binding Method for Tinyhawk III Plus Freestyle:

You can use the Betaflight Configurator CLI command to put the receiver into binding mode. In the CLI tab, type the command `bind_rx` and press Enter. The receiver will enter binding mode.

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(2) You can also enter the Betaflight Configurator, go to the receiver section, and click on the receiver bind button to enter binding mode.



Using the Betaflight Configurator software and the EMAX serial upgrade tool, you can separately read the current binding keys of the aircraft and the remote control. You have the option to write the aircraft's binding key to the remote control using the EMAX serial upgrade tool or write the remote control's binding key to the flight controller using the Betaflight Configurator software.

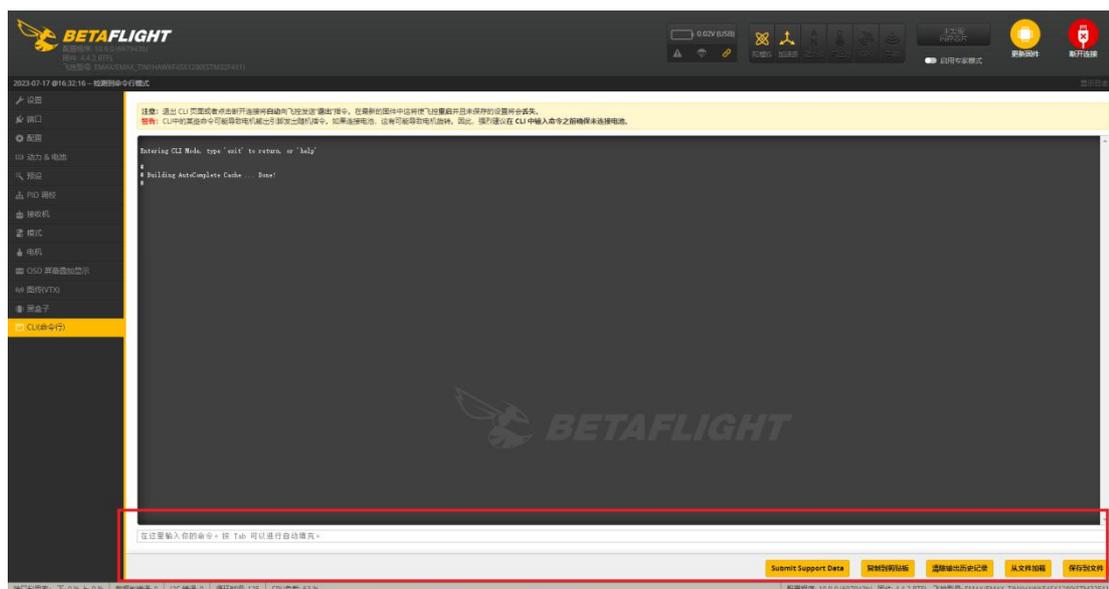
To change the flight controller's binding key through the Betaflight Configurator software, follow these steps:

Open the Betaflight Configurator software.

Use the following command in the command line, replacing with your desired binding key values (using 0, 1, 2, 3, 4, 5 as examples):

Click "Save."

Press Enter, and wait for the flight controller to reboot and re-enter the Betaflight Configurator. This indicates a successful modification of the binding key.



5.3 Tinyhawk III Plus Freestyle Electronic Speed Controller (ESC)

The Tinyhawk III Plus comes with a built-in 4-in-1 8-bit 6A Electronic Speed Controller (ESC).

Key specifications of the ESC are as follows:

Maximum peak current: 6.7A

Microcontroller unit (MCU): EFM8BB21F16G

Input voltage range: 1-2S (1-cell to 2-cell LiPo batteries)

ESC firmware version: JESC_SH90_48_2_3.HEX

Supported signal protocols: D-Shot150, D-Shot300, D-Shot600, Multishot, OneShot125, PWM

5.4 Tinyhawk III Plus Freestyle Flight Controller

The flight controller of the Tinyhawk III Plus Freestyle is equipped with the following features:

Microcontroller unit (MCU): STM32F411CEU6 operating at 100MHz

Motion processing unit (MPU): ICM20689 or ICM42688 (connected via SPI)

On-Screen Display (OSD): Supports AT7456E OSD for real-time information display

Power input: Compatible with 1-2S LiPo batteries

Beeper (BB) support: Provides audible notifications

Programmable RGB LED support: Allows for customizable lighting effects

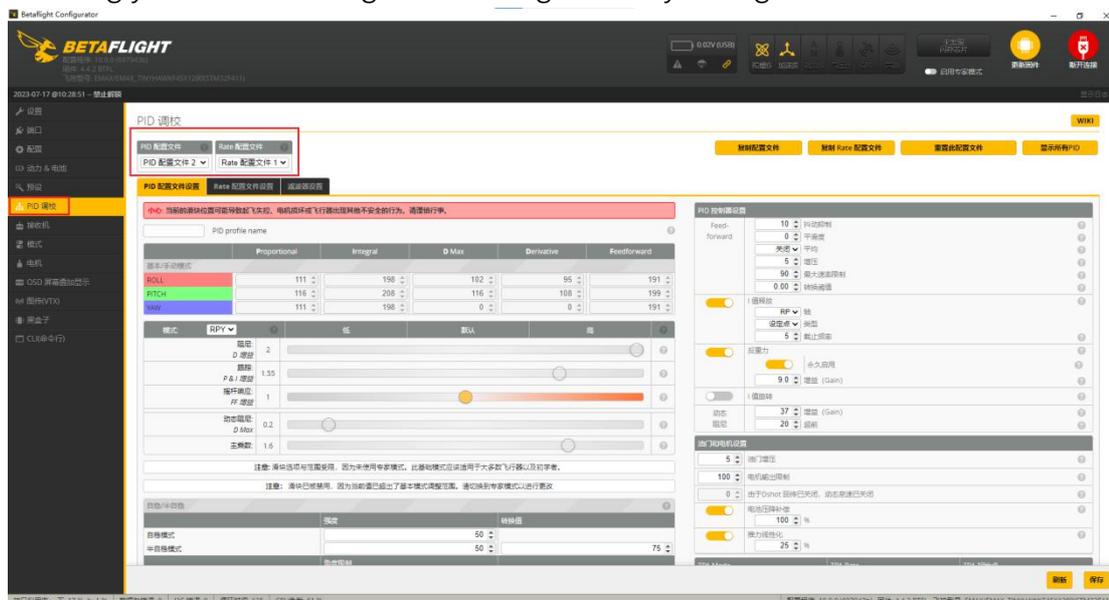
Dual UART ports: 2 serial communication ports (UART1/UART2)

On-board 5V/2.5A BEC (Battery Eliminator Circuit) and 3.3V/300mA BEC

Firmware: Pre-loaded with EMAX_TINYHAWKF4SX1280 firmware

PID configuration profile 1 is tailored and optimized for the Tinyhawk III Plus Freestyle using the 2x provided Emax 1s HV 650mAh battery. It's designed for both indoor and outdoor flying control, offering the ultimate flight control experience. This profile is specifically designed for optimal indoor flight control using 2x Emax 1s HV 650mAh battery.

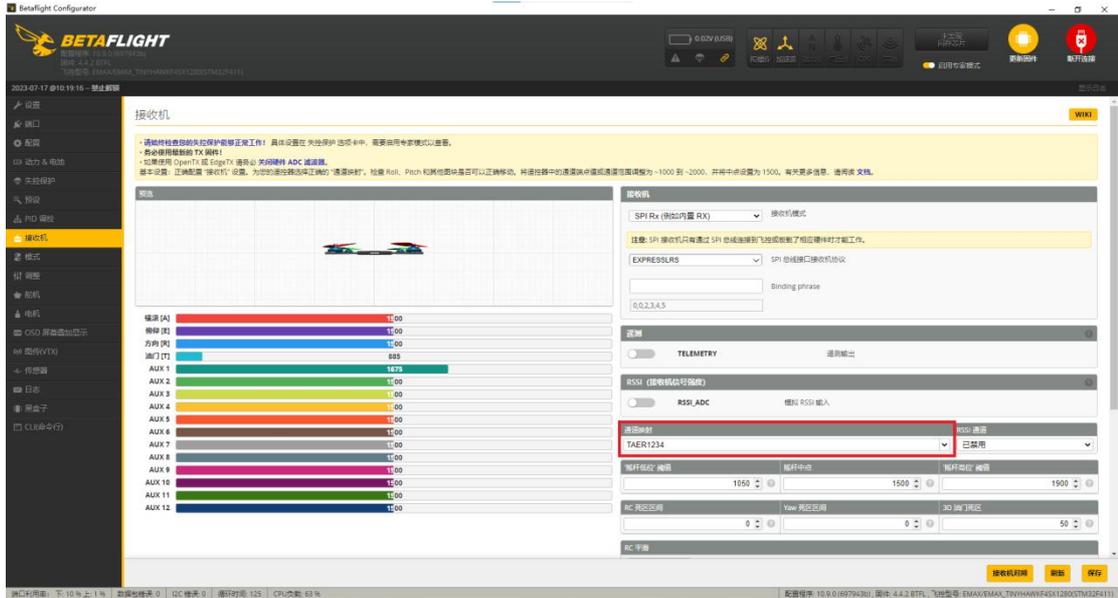
These configurations have undergone meticulous professional tuning. EMAX strongly recommends against making arbitrary changes to these values.



5.6 Adjusting Channel Settings via Betaflight Configurator Software

The Betaflight Configurator software can be used to modify the programming settings of the Tinyhawk III Plus Freestyle. Both the Betaflight Configurator and flight controller firmware can be obtained from <https://github.com/betaflight/>.

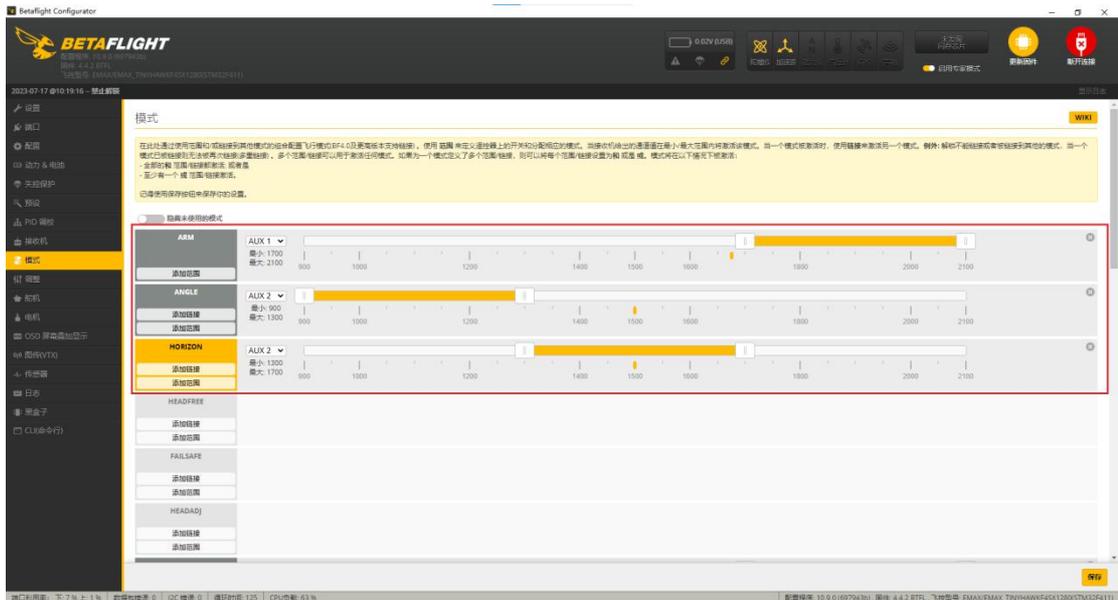
The Tinyhawk III Plus Freestyle comes preconfigured with the TAER1234 channel mapping.



Taking the E8 Transmitter (ELRS-2.4G) as an example:

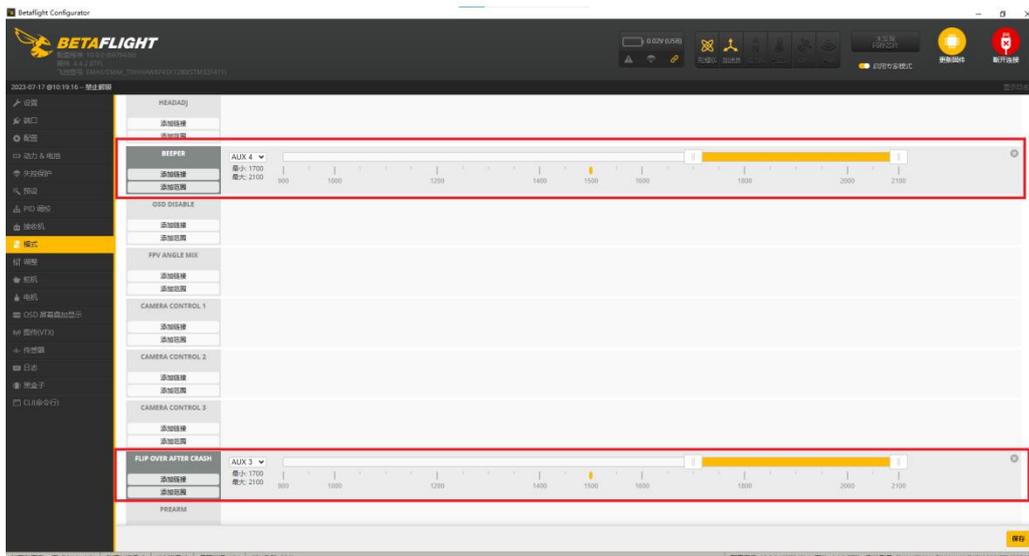
AUX 1 is a 3-position switch and serves as the Arm switch.

AUX 2 is a 3-position switch and functions as the flight mode switch, with positions for Acro (Manual), Horizon (Semi-stabilized), and Angle (Stabilized) modes.



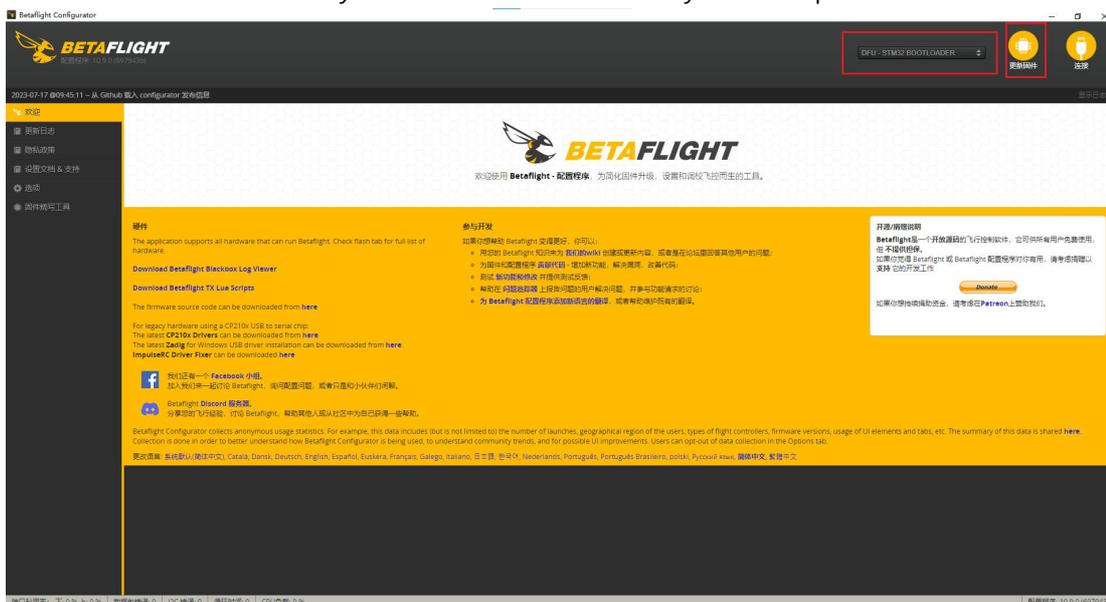
AUX 3 is a 2-position switch and is configured as the Flip Over After Crash mode.

AUX 4 is a 2-position switch and is configured as the Beeper. Follow the above instructions to configure your E8 Transmitter (ELRS-2.4G) or make these changes in the Betaflight Configurator.

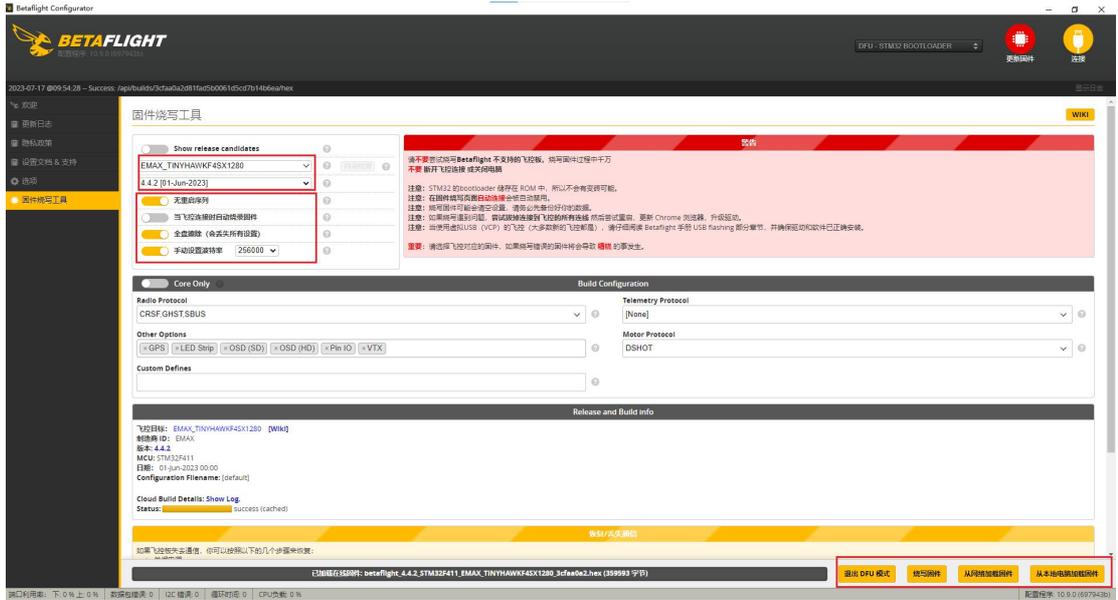


5.7 Flashing Firmware for Flight Controller:

First, locate the Boot button on the flight controller mainboard. While holding down the Boot button, connect the flight controller to your computer using a Type-C cable to enter DFU mode. Then, click on the "Update Firmware" option. If you encounter issues entering DFU mode, please check the data cable and ensure that the necessary drivers are installed on your computer.



- (1) Choose "EMAX_TINYHAWKF4SX1280, 4.4.2" as the firmware and select a manual baud rate of 256000 from the dropdown menu.
- (2) Select either "Load Firmware from the Internet" or "Load Firmware from Local Computer" and wait for the download to complete.
- (3) Finally, click on "Flash Firmware" and wait a few seconds for the flashing process to complete.



5.8 Flashing Flight Controller Parameters:

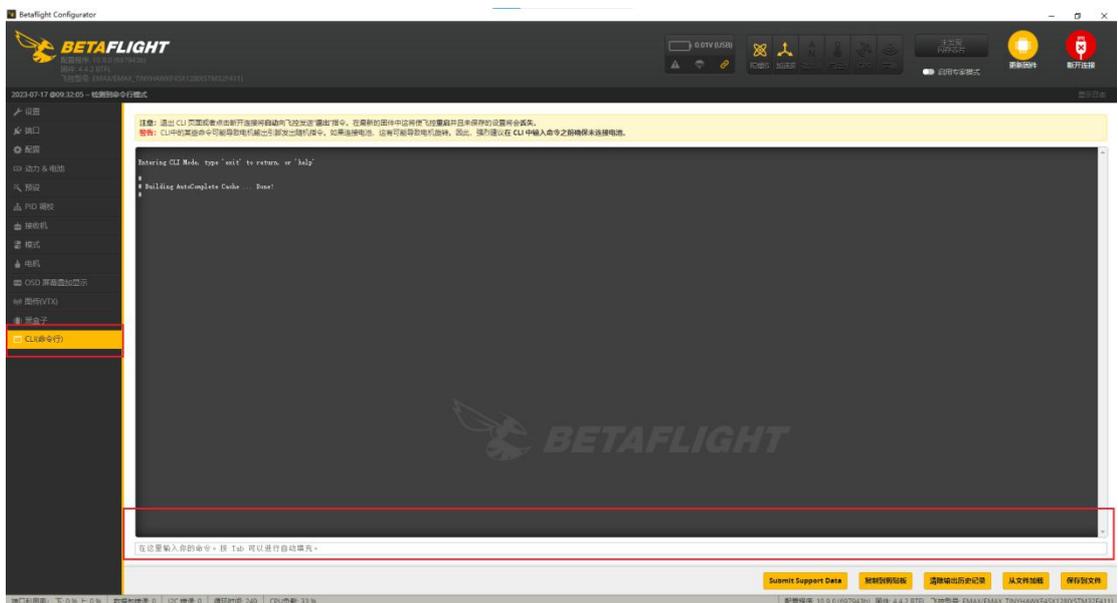
Download the latest CLI Dump file from <https://emax-usa.com/>.

Open the CLI Dump file in a text editor and copy all the text.

Paste the settings into the command bar in the Betaflight Configurator.

Press Enter to execute the commands.

After completing these steps, reconnect to the Betaflight Configurator, and the Tinyhawk III Plus Freestyle will have its settings restored to default.



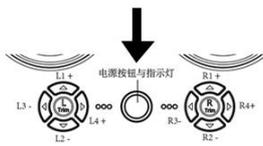
6. Flying the Tinyhawk III Plus Freestyle

Before flying upon startup, please ensure you've familiarized yourself with flight controls. Fly cautiously and operate in open and controlled areas.

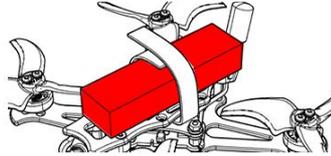
Start by powering on the remote control and video goggles, ensuring the goggles are on the correct video channel. Turn on the Tinyhawk III Plus Freestyle by sliding the battery into the battery tray and connecting the power. Once the battery is in place, set the Tinyhawk III Plus Freestyle on a level, stable surface to allow for calibration.

Calibration takes a few seconds, and after that, the Tinyhawk III Plus Freestyle is ready to fly. With a fully charged battery, it can fly for about 4 minutes. When the battery voltage drops to 3.2V, land the Tinyhawk III Plus Freestyle promptly. Continuing to fly beyond this point can severely damage your battery, an action that EMAX does not recommend.

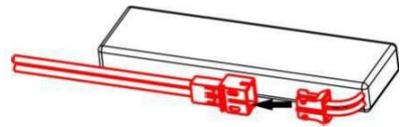
1. Turn on Transmitter



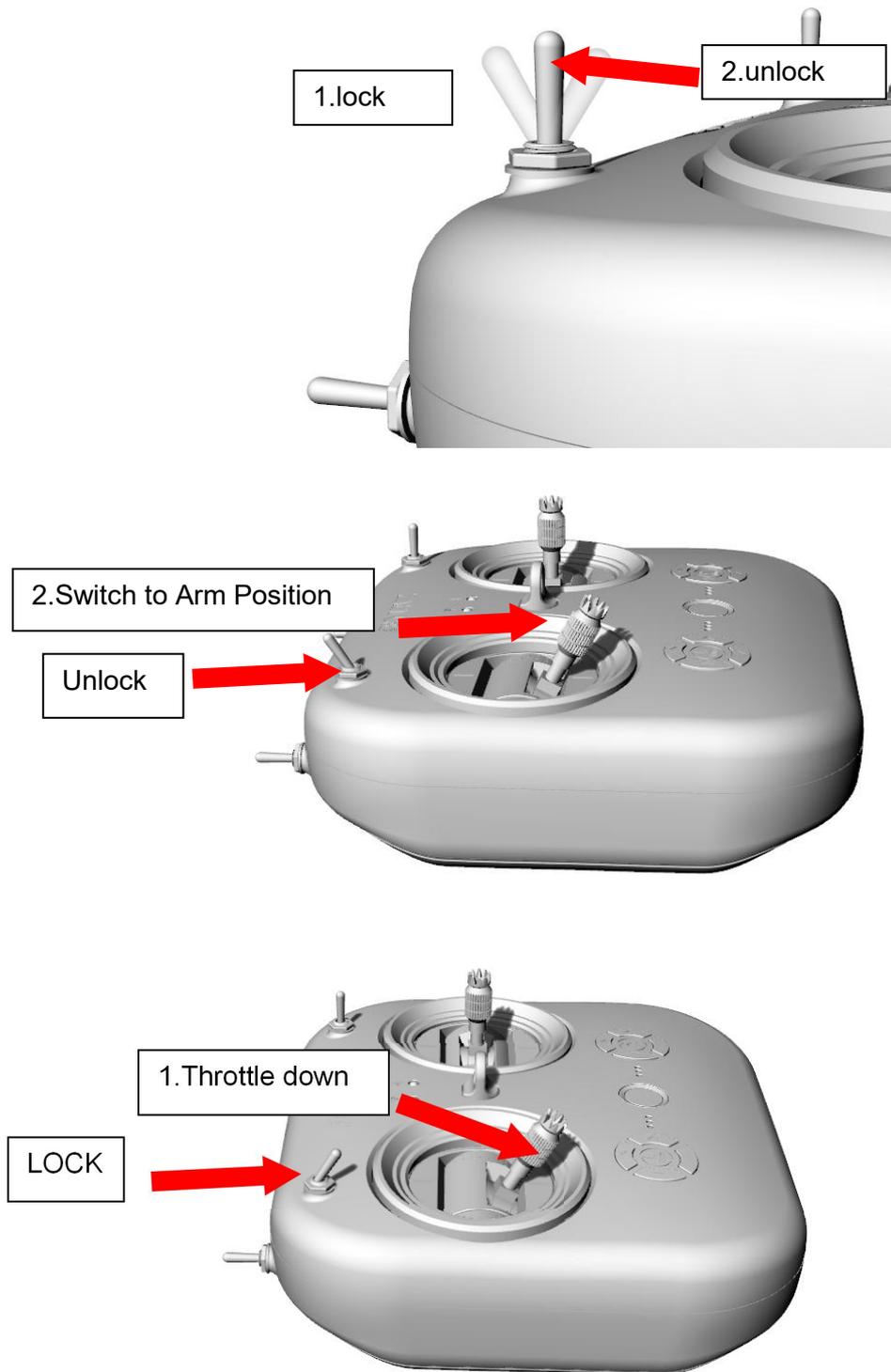
2. Install Battery



3. Connect Battery



6.1Unlock



Unlocking refers to setting the Tinyhawk III Plus Freestyle into a flight-ready state. When the Tinyhawk III Plus Freestyle is first powered on, the propellers won't spin until it's unlocked.

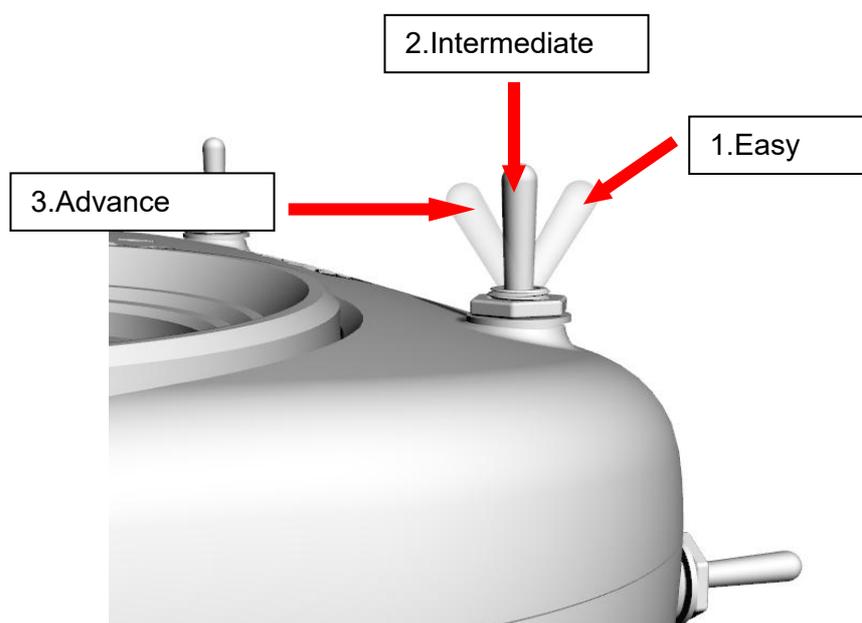
1. Move the throttle to the bottom position to control the aircraft. Wait for the red light on the flight controller to stop blinking and the blue light to stay solid, indicating that the aircraft calibration is complete and it's ready.

2. Then, move the left switch on the E8 Transmitter (ELRS-2.4G) to the third position upward to unlock.

3. When the Tinyhawk III Plus Freestyle is successfully unlocked, you will see the propellers start spinning.

Note: When a collision occurs with the Tinyhawk III Plus Freestyle, stop flying immediately. Failing to halt the flight promptly could result in damage to the Tinyhawk III Plus Freestyle. Before handling the Tinyhawk III Plus Freestyle, make sure to move the switches to the locked position.

6.2 Flight Modes



The Tinyhawk III Plus Freestyle has three flight modes:

Simple Mode (Stabilized Mode ARM): This is a basic flight control mode where the maximum angle of the Tinyhawk III Plus Freestyle is limited during flight to help restrict speed and make flying easier. In this mode, the aircraft's control is attitude-based. Pitch and roll inputs from the transmitter control the pitch and roll angles of the aircraft. For instance, a 20-degree roll input on the stick translates to a 20-degree roll angle for the Tinyhawk III Plus Freestyle.

Intermediate Mode (Horizon Mode): This mode has a higher angle limit for faster flight. Attitude control remains the same. The only difference is that at the endpoints of pitch and roll stick inputs, the aircraft will flip in that direction.

Advanced Mode (Acro Mode): This mode gives you full control over the aircraft. There are no angle limits anymore, and control is rate-based. This means that control inputs from the sticks set a rotation rate around the respective axis.

Straight Flight

To learn how to pilot the Tinyhawk III Plus Freestyle, start by flying it within line of sight (without wearing video goggles). Power on the Tinyhawk III Plus Freestyle and place it in a safe and open area. Start the Tinyhawk III Plus Freestyle and use the left stick to raise the throttle to hover. Begin by attempting to maintain a stable altitude. Control the throttle pitch with your thumbs to control the elevation of the aircraft, allowing the Tinyhawk III Plus Freestyle to fly smoothly. It takes practice to become proficient, so repetition is necessary to achieve mastery.

6.3 Advanced Flying - First-Person View (FPV) Flight

Once you have a certain level of operational proficiency in flying, you can try flying using video goggles (FPV goggles). Make sure that the Tinyhawk III Plus Freestyle and the video goggles are on the same VTX channel. Choose a spacious and safe location. Apply the experience gained from regular flight of the Tinyhawk III Plus Freestyle to your operation. Use controlled throttle to maintain a slow and level flight, making it easier to learn FPV flying. As you gain more flying experience, you will be able to maneuver the Tinyhawk III Plus Freestyle in the air like driving a car.

The video goggles display information (OSD) from the Tinyhawk III Plus Freestyle camera's image feed. The OSD shows essential details such as flight time and battery voltage. Always keep an eye on these numbers during flight to gauge the remaining battery voltage. The Tinyhawk III Plus Freestyle can fly for a maximum of 4 minutes. Land the Tinyhawk III Plus Freestyle when the battery reaches 3.2V. It is not recommended to let the battery voltage drop below 3.2V, as this can damage the battery.

Warning: Maintain controlled altitude while flying, avoid making sudden stick movements, as it can make the aircraft difficult to control. Do not let the battery voltage drop below 3.2V. If you lose sight of the aircraft, activate the motors to produce a beeping sound to help locate the Tinyhawk III Plus Freestyle!

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



Warning: Please be aware of your surroundings. This product is not suitable for individuals under the age of 18. It contains small parts, so please keep it out of reach of children to avoid accidental swallowing.

