

protoXTM FPV



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2.4GHz Controller w/ 4.5 Inch Video Screen
Proto-X FPV HD Quadcopter
LiPo Flight Battery
USB Charge Cord
Spare Rotor Blades (2 Gray, 2 Black)
Memory Card
USB Memory Card Reader
Sun Shield
Rotor Blade Replacement Wrench

SPECIFICATIONS

Size: 4.53" [115 mm] (distance between diagonal motors)
Blade Length: 2.2" [55 mm]
Flying Weight: 2oz [58g]
Radio: 4 Channel 2.4GHz w/4.5" video screen
Gyro: 3 Axis Gyro & 3 Axis Accelerometer
Camera: 1280 x 720P HD, 30 FPS, 120 FOV (field of view)
Battery: 650 mAh 1S LiPo
Charger: USB Charge Cord

REQUIRES

Four AA 1.5V alkaline batteries
USB Output Jack

ESTES
Control

PLEASE READ THROUGH THIS MANUAL BEFORE OPERATING.

Thank you for purchasing the Estes Proto-X FPV (First Person Video) HD Quadcopter. We want the time you spend with your new RC product to be fun and successful so please fully read the manual. If for any reason you think this RC model is not for you, return it to your place of purchase immediately. Your dealer cannot accept returns on any model after final assembly or after your product has been operated.

SAFETY PRECAUTIONS

Improper use of this product could result in serious injury. Be aware of your personal safety and safety of others as you operate your model. We recommend beginners learn to fly with the help of an experienced pilot.

- Adult supervision required.
- Changes or modifications to this product not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.
- Do not alter or modify the model, as doing so may result in an unsafe or un-flyable model.
- Do not touch the spinning blades or fly over another person's head.
- Keep your face and body as well as all spectators away from the rotors whenever the battery is connected.
- Maintain a safe pilot-to-helicopter distance while flying.
- Stay clear of buildings, trees and power lines. AVOID flying in or near crowded areas. DO NOT fly close to people, children or pets.
- You must check the operation of the model before every flight to ensure that it is structurally sound.
- Your Proto-X FPV should not be considered a toy, but rather a small, working model. If not operated correctly, the model could possibly cause injury to you or spectators and damage to property.
- The Proto-X FPV has parts that rotate and move at high speeds which in itself poses a certain degree of danger. Please be mindful of this as you operate your model.
- Choose a wide open space with minimal obstructions and do not operate your model near buildings or crowds of people, high voltage power lines or trees.
- Improper use may cause damage to people or property.
- Your Proto-X FPV is powered by a Lithium-Polymer (LiPo) battery. To avoid risk of fire damage use ONLY the provided charger and avoid charging your model on a combustible surface.
- If you do not plan on flying your Proto-X FPV for a week or more, store the battery approximately 50% charged (one and one half hour charge time from a fully depleted battery) to maintain best battery performance.
- Never get your Proto-X FPV wet or operate in the rain.

90-DAY LIMITED WARRANTY

PLEASE DO NOT RETURN YOUR PRODUCT TO THE STORE

Estes will repair or replace factory defects for 90 days from the date of purchase. This warranty specifically does not cover crash damage, misuse or abuse. To make a warranty claim, please contact our product support team at **1-217-398-8970 option 6** or e-mail us at **helihotline@hobbico.com**

If requested by Product Support, please send your defective product to:

Hobby Services
3002 N Apollo Dr., Suite #1
Champaign, IL 61822

Please include a note about the problem, your contact information, and a copy of the receipt.

This warranty applies only if the product is operated in compliance with the instructions and warnings provided with each model. Estes assumes no liability except for the exclusive remedy or repair of parts as specified above. Estes shall not be liable for consequential or incidental damages. Some states do not allow the exclusion of consequential or incidental damages so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

FCC STATEMENT AND INDUSTRY CANADA NOTICE

1. This device complies with Part 15 of the FCC Rules and RSS-210 of Industry Canada. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Remark: This device is in accordance with the digital device grade B limitation and the 15th regulation of FCC. This limitation requires reasonable anti-interference protection around the residence. The device can transmit radio waves during use and can interrupt the mobile communication without proper installment. Interruption will occur for special devices. If the device does interrupt the radio or television, please turn the device off and then turn it on to adjust. Below are some resolutions for your reference:

- Move the receiving antenna
- Enlarge the distance between the device and receiver

- Try to not connect the device and the receiver on the same circuit
- Ask for professional help from experts

3. This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of Industry Canada.

BATTERY PRECAUTIONS

This Proto-X FPV uses a lithium polymer (LiPo) battery. Follow these precautions to ensure safe and trouble-free operation.



- Only use the included charger with the flight battery.
- Do not attempt to use this charger with NiCd or NiMH battery packs.
- Do not attempt to use a damaged battery.
- The battery must be recycled or disposed of properly.
- Do not leave the charger unattended while charging.
- Disconnect the battery and unplug the charger immediately if either becomes hot!
- Never allow the battery temperature to exceed 140° F [60° C].
- Never disassemble or modify pack wiring in any way or puncture cells.
- Do not place the charger or any battery on a flammable surface or near combustible materials while in use.
- Never charge inside a vehicle.
- Always disconnect the battery and remove the charger from the USB port when not in use.
- Do not attempt to charge a battery if it is swollen or hot.
- Land your model immediately when the low-battery LEDs flash. Recharge the battery before attempting another flight. A dangerous situation can occur when attempting to recharge an over-discharged battery!
- ALWAYS keep a supply of sand handy when charging. Dumping sand on the battery will extinguish a LiPo chemical fire.
- ALWAYS KEEP OUT OF REACH OF CHILDREN.

INSTALLING THE FLIGHT BATTERY



Install the flight battery from the back of the quad. Plug the battery in, paying careful attention to the plug orientation. Position the plug as shown in the picture or else unwanted vibration or flight conditions may occur.

CHARGING THE FLIGHT BATTERY



Plug the charge cable into any PC based USB port or USB adaptor.

Plug the free end of the USB charge cord into the back of the quad, making sure to follow the proper orientation of the plug.

The charger LED will light when charging and go out when complete (charge time approximately 2.5 hours).

INSTALL TRANSMITTER BATTERIES

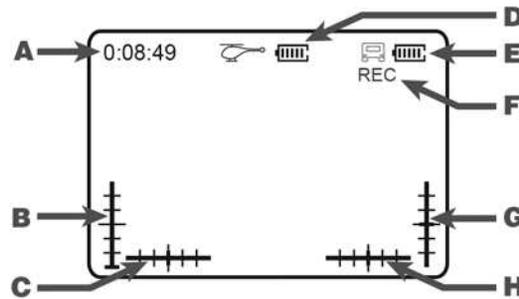


Remove the transmitter's back cover and install 4 AA batteries into the battery holder, following the battery diagram located inside the battery tray.

TRANSMITTER MAIN MENU

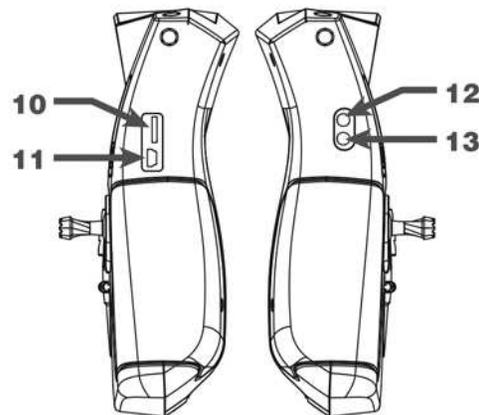
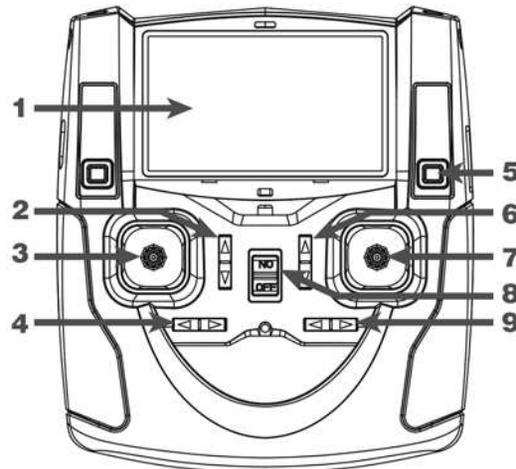
LCD SCREEN

- A** Timer
- B** Throttle Trim
- C** Rudder Trim
- D** Quad Battery Voltage
- E** Transmitter Battery Voltage
- F** Recording
- G** Elevator Trim
- H** Aileron Trim



TRANSMITTER

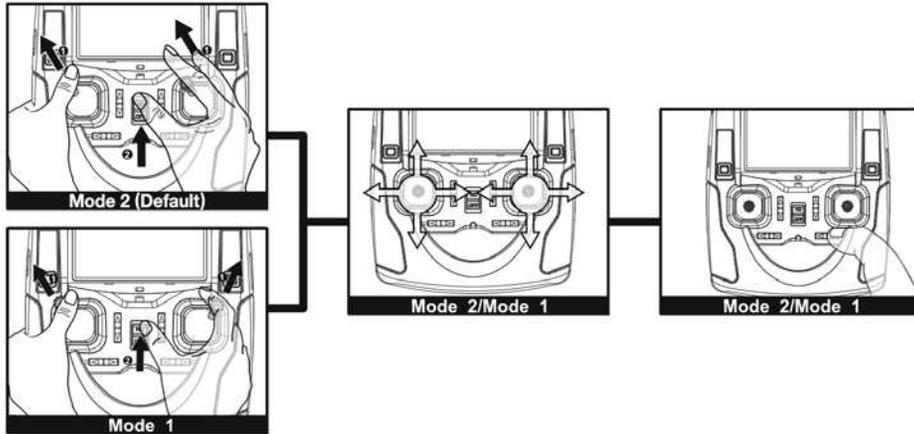
- 1** LCD Screen
- 2** Elevator Trim (Mode 1)
Throttle Trim (Mode 2)
- 3** Elevator/Rudder Stick (Mode 1)
Throttle Rudder Stick (Mode 2)
- 4** Rudder Trim
- 5** Recording
- 6** Throttle Trim (Mode 1)
Elevator Trim (Mode 2)
- 7** Aileron/Throttle Stick (Mode 1)
Aileron/Elevator Stick (Mode 2)
- 8** Power Switch
- 9** Aileron Trim
- 10** Memory Card
- 11** USB Socket
- 12** Video Glasses Socket
- 13** Earphone Socket



NOTE: The transmitter is set to Mode 2 by default.

	MODE/ CONTROL	INPUT KEY FUNCTION
3	THROTTLE/RUDDER STICK MODE 2	Move the stick forward or backward to make the quadcopter ascend or descend. Move the stick left or right to rotate the quadcopter's fuselage left or right.
7	ELEVATOR/AILERON STICK MODE 2	Move the stick forward or backward to make the quadcopter move forward or backward. Move the stick left or right to make the quadcopter drift sideways left or right.
(4)	ELEVATOR/RUDDER STICK MODE 1	Move the stick forward or backward to make the quadcopter nose point up or down. Move the stick left or right to make the quadcopter yaw left or right.
(8)	THROTTLE /AILERON STICK MODE 1	Move the stick forward or backward to increase or decrease speed. Move the stick left or right to make the quadcopter roll left or right to initiate a banked turn.
9	AILERON TRIM	Aileron trim adjusts for left and right drift.
6	ELEVATOR TRIM	Elevator trim adjusts for forward and backward drift.
4	RUDDER TRIM	Rudder trim adjusts for drift of left and right rotation or yaw.
2	THROTTLE TRIM	Throttle trim normally left at neutral. The lower trim turns LEDs on and off.
8	POWER SWITCH	Push to ON to turn on the transmitter. Push to OFF to turn off.
5	RECORDING	Press the Recording button for 1 second to start or stop

TRANSMITTER STICK CALIBRATION



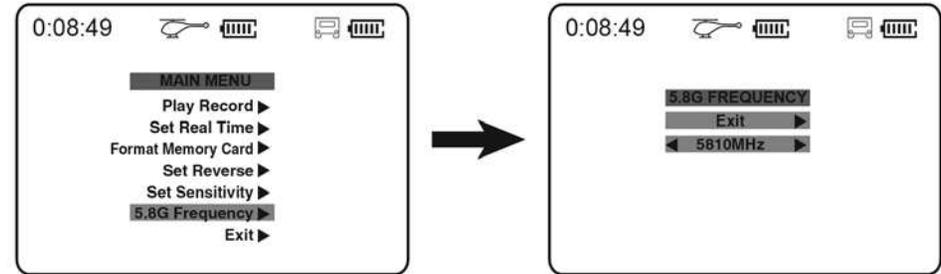
MODE 2: Push both sticks to the upper left position and hold, then power on the transmitter. Rotate both sticks twice. Hold down any trim button until the LED on the transmitter blinks red indicating successful calibration.

MODE 1: Push the left stick to the upper left position and the right stick to the upper right position and hold. Then, power on the transmitter. Rotate both sticks twice. Hold down any trim button until the LED on the transmitter blinks red indicating successful calibration.

TRANSMITTER NOTES

- Video will cease capture when the transmitter batteries are low.
- When the memory card is full it will no longer record and “Memory Full” will be displayed on the screen.
- It is best to use a class 4+ memory card with at least 4GB memory. Format the card in the transmitter before use.
- When the power of the transmitter is low, the red LED will blink quickly and the screen will turn black. The transmitter and quad will not link if the batteries are low. Always start with fresh batteries.
- Use only AA Alkaline or NiMH batteries in the transmitter. Other battery types will damage the transmitter.

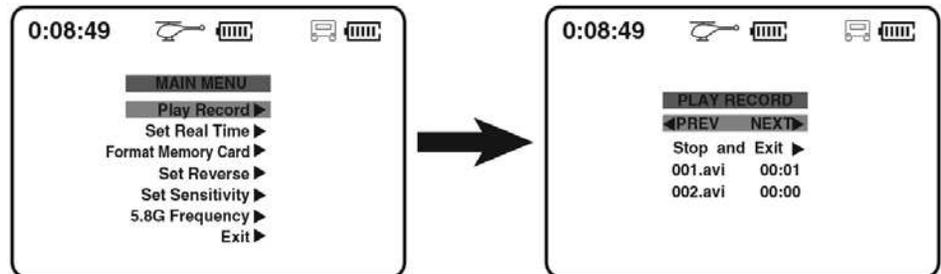
FREQUENCY SELECT (VIDEO)



Your transmitter will automatically find the best frequency to ensure the best quality live video feed. If there is any interference in your area you can change frequency from 5.725 to 5.945 GHz to get better video transmission.

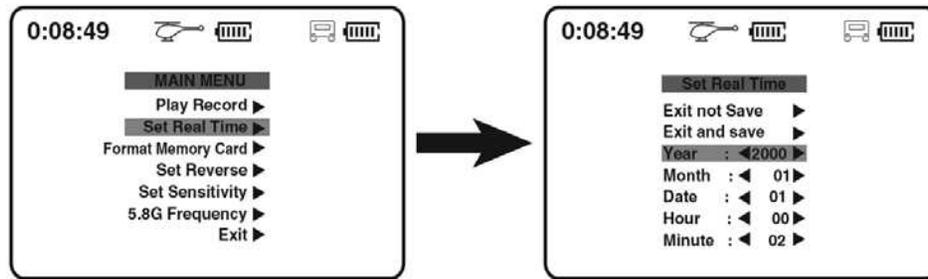
To enter this menu press down on the right stick for 1 second. Move the stick up or down to choose 5.8GHz FREQUENCY. Move the right stick to the left or right or up or down to scroll through the menus. Save the settings as you follow the menus out of the program. Or, you can simply hold the right sticks down for 2 seconds to save and exit.

PLAY RECORDING (TRANSMITTER CAPTURE ONLY)



Your transmitter can play back the video recording from your flight. To do so press down on the right stick to enter the main menu. There you will see “Play Record”. Move the stick or up or down to scroll through the menu and move the stick right to NEXT/STOP to play the recording. Exit from the program using the menu or you can simply hold the right sticks down for 2 seconds to exit.

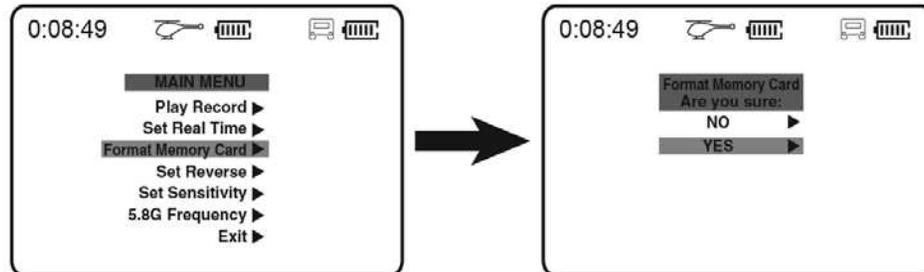
SET TIME



You can set the current time and date in your transmitter. (24-hour clock)

To do so press down on the right stick to enter the main menu. There you will see SET REAL TIME. Move the stick up or down to scroll through the menu and move the stick right to navigate the menu and set time. Exit the menu by scrolling out of the program or you can simply hold the right stick down for 2 seconds to exit.

FORMAT MEMORY CARD



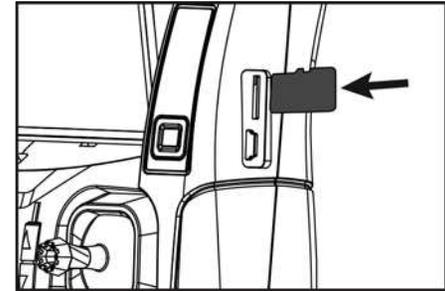
Insert your memory card into the transmitter.

Press down on the right stick for 1 second to enter the settings menu. Move the right stick up and down to choose FORMAT MEMORY CARD. Push the right stick to the right, move it up and down to choose and push right to confirm or exit. Hold down the right stick for 2 seconds to exit. **WARNING: ALWAYS FORMAT THE SD CARD AND ACTIVATE THE CAMERA BEFORE FLIGHT.**

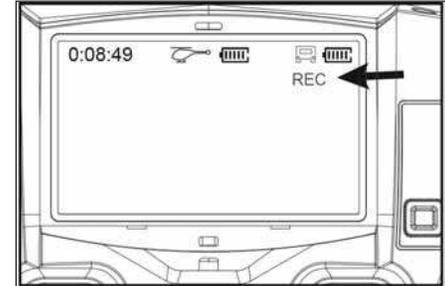
RECORDING (TRANSMITTER)

NOTE: Always have the transmitter switched OFF when installing or removing the memory card. Always stop video recording before removing the memory card.

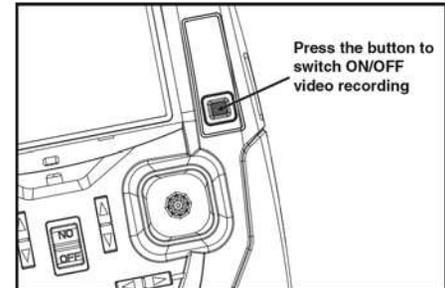
Insert the memory card by carefully orienting it and pushing it. The card will click into place. To remove, simply push to eject.



With the quad linked to the transmitter pushing the Record button will begin the recording session. The word REC will show on the screen. Simply push the Record button to stop the recording session. Remember, NEVER format the card in flight or with the Quad linked to the transmitter.



NOTE: If you want to enter the on screen menus after powering on the transmitter and before linking, you can simply press and hold the transmitter's "video" button to bypass linking. It's important to note that you must turn the transmitter off, then back on before attempting to link up to the quadcopter.



ON-BOARD RECORDING (PROTO-X FPV HD)

Install the micro memory card into the back of the quadcopter by placing it "contacts down" and sliding it into the card slot. To remove the card, grasp it and pull it out. After use this card can be placed in the reader and the video file viewed or saved on any computer. To start-and stop- recording video on the quadcopter, press the small button located on the back of the quad near the Micro memory card. Press one time to start (the LED near the button will flash). Press once again to stop recording. The transmitter and the Proto-X FPV HD's video recordings are two separate recording systems. Both require memory cards to capture and replay video.



PREFLIGHT SETUP, LINKING & FLYING

Remove the protective lens cover from the front of the quadcopter and discard. Pull on the little green tab to do so.



With the quadcopter in arm's reach, the battery plugged in and the throttle stick (left stick mode 2) all the way down, turn on the transmitter, and the red LED will flash. Do not move any of the control sticks, trims or Quad before the transmitter and Quad have finished pairing. The screen will say "System Initialize", then "Bind to Plane". At this time, move the ON/OFF switch to the ON position to complete the initialization (linking). The LED on the transmitter will turn green, letting you know linking is complete.



NOTE: Your Proto-X FPV is designed with a Power-On safety feature. This ensures that the motors will not start unless it detects a suitable control signal when the battery is connected. Make sure the throttle stick is in the full down position.

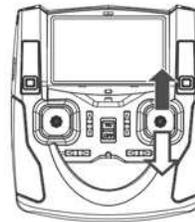
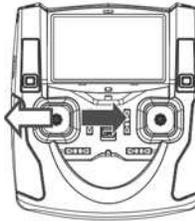
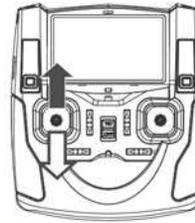
To turn the quadcopter's LEDs on and off, use the throttle trim button. Press and hold one time to turn off, then again to turn on. The LEDs on the quad will also start to flash when the flight battery becomes low or the linking has failed.

ADVANCE SETUP AND FLYING (FPV FLYING)

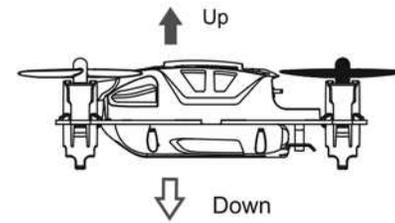
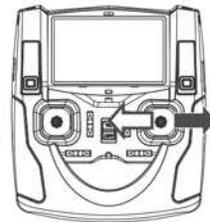
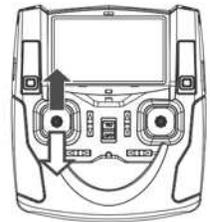
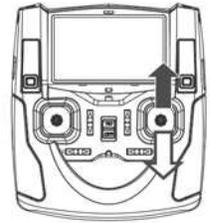
Learn how to fly the Proto-X FPV (First Person Video) and maintain control both indoors and out at an altitude no higher than 10 feet before you advance to full FPV flight. A large part of being successful in FPV flying is training your fingers and brain to know how the model will respond with your inputs so you can predetermine your stick movements. It can be very different to look at an LCD screen and determine hover altitude and speed. You will need to visually correlate and remember how the model reacts in wind and no wind conditions.

When flying indoors or out allow for plenty of free space between couches, tables, trees, buildings or other objects that you might fly into. A large area with soft tall grass is best. Remember when flying FPV you should have a "safety spotter" to help manage the flight of the Proto-X FPV.

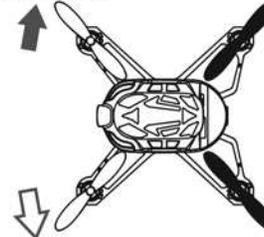
MODE 2



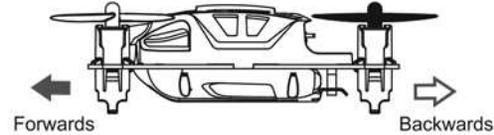
MODE 1



Right rotation

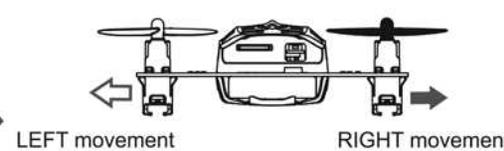


Left rotation



Forwards

Backwards



LEFT movement

RIGHT movement

CAUTION: Controls will *appear reversed* when the model is flying towards you !

SUN SHIELD

To assemble and install the sun shield, start by laying the parts out as shown:



Snap each side panel together one at a time. Then slide the lower base in place.

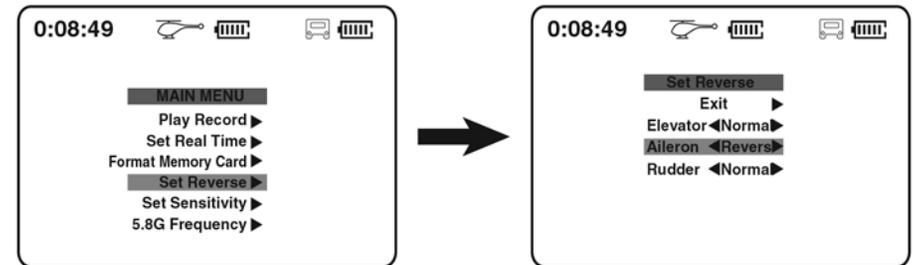


Snap the completed sun shield onto the transmitter by placing the two lower lugs into the two lower mounting holes of the screen. Rotate and snap the top lug into the upper hole to complete the assembly.



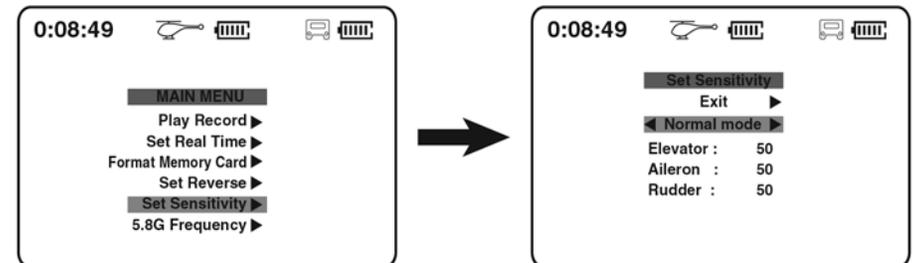
ADVANCED PERFORMANCE SETUP

SERVO REVERSING: If you would like to reverse any control function due to personal preference, then follow the instructions below.



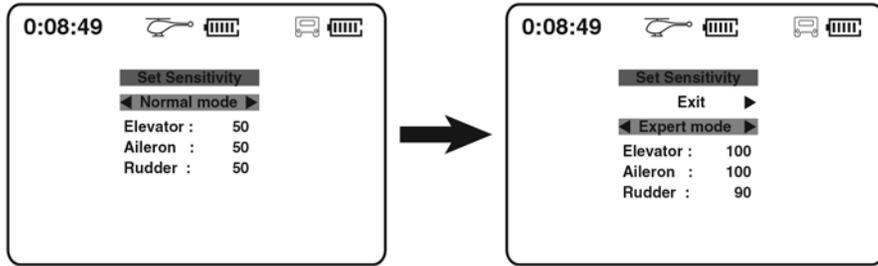
Press down on the right stick for 1 second to enter the settings menu. Move the stick up or down to choose SET REVERSE, scroll to the right, and then scroll up and down to select the channel you wish to reverse. Press the stick down for 2 seconds to exit.

SENSITIVITY SETUP: If you would like to change the sensitivity of any of the stick functions follow the instructions below. A higher setting value will enable larger/faster movements while a lower value setting will cause a smaller/slower response.



Press down the right stick for 1 second to enter the menu. Move the stick up or down to choose SET SENSITIVITY. Push the stick to the right and press the elevator/aileron/rudder trim to set sensitivity. Push the stick to the right to exit. Press the elevator stick down for 2 seconds to exit.

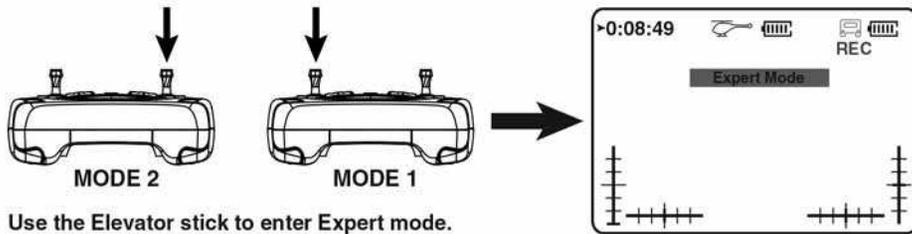
EXPERT MODE: In expert mode the sensitivity can be adjusted even further (up to 100%) to give the user even more performance.



Press down on the right stick for 1 second to enter the menu. Move the stick up or down to choose SET SENSITIVITY. Push the stick to the right and choose NORMAL MODE. Push the stick to the right to enter expert mode. Press the elevator/ Aileron/Rudder trim to set the sensitivity. Push the stick to the right to exit. Press the elevator stick down for 2 seconds to exit.

FLIP MODE:

The flip maneuver will only work in expert mode. **NOTE:** If the battery is low, your Proto-X FPV HD Quadcopter will not flip.

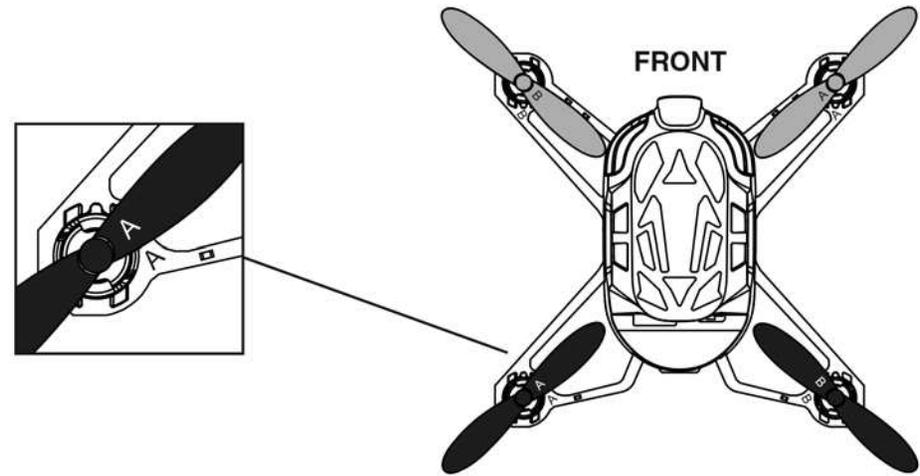


Use the Elevator stick to enter Expert mode.

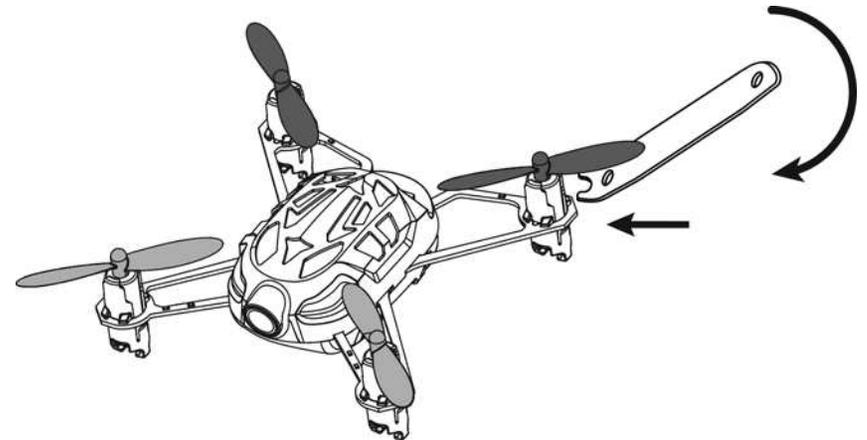
For proper flip execution, make sure the Proto-X FPV is close to level, within a 30° angle with the ground, and add throttle to climb before you perform a flip.

To flip, push the control stick rapidly to the right and then quickly to the left. This will cause the quad to flip left. Keep in mind you will have to center the stick to re-stabilize the quad after the flip. You can repeat this control input in any direction (left, right, front or back) to cause the quad to flip in any desired direction.

REPLACING THE ROTOR BLADES

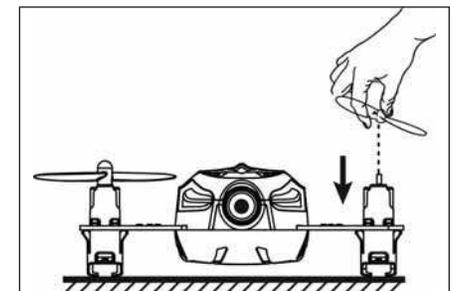


The Proto-X FPV rotor blades are not identical. Each blade is marked with an A or B. When installing the rotor blades, be sure to install them as shown.



Hold the rotor blade and insert the U wrench under the rotor blade. Pull up and the rotor blade will easily come off.

To install a new rotor blade simply slide the new rotor blade in place. Do not force it down hard. It is best to leave a 1mm gap between the back of the rotor blade hub and the motor.



TROUBLESHOOTING

PROBLEM: Transmitter and quadcopter do not link.

SOLUTION: Make sure the throttle stick is all the way down. Do not move the sticks or quadcopter during linking.

PROBLEM: Transmitter LED goes out.

SOLUTION: Replace the transmitter AA batteries.

PROBLEM: Transmitter display is not showing the setting interface after holding down the throttle for 2 seconds.

SOLUTION: The throttle stick needs to be in the full down position.

PROBLEM: Gyros not working well.

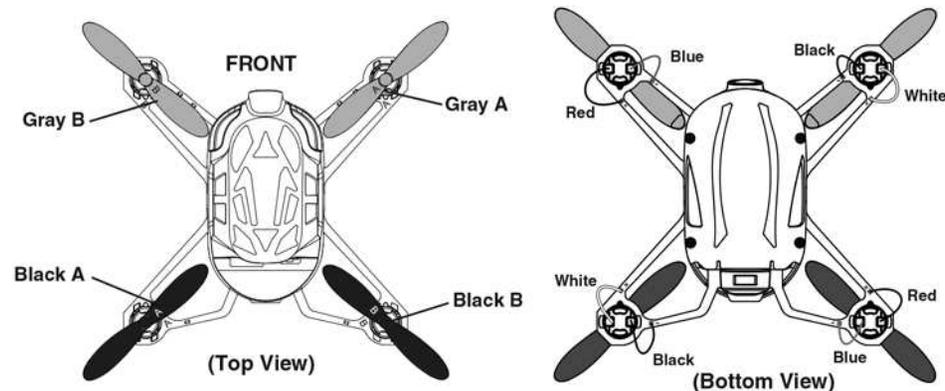
SOLUTION: (1) Battery voltage too low. (2) Re-link the quadcopter. (3) Land the quadcopter, move the throttle stick to the lowest position and wait 5 seconds, then take off again.

PROBLEM: Quadcopter won't flip.

SOLUTION: (1) Press the right stick to enter expert menu. (2) In expert mode the sensitivity on each channel should be above 90%. (3) Make sure to press left stick to enter flip function. (4) LiPo power is too low, charge battery.

PROBLEM: Quadcopter is shaking and making noise.

SOLUTION: Check that the motors, canopy, body and rotor blades are in good working order and properly positioned.



PROBLEM: Quadcopter will not take off.

SOLUTION: (1) Make sure the rotor blades are installed correctly. Rotor blades are marked with an A for clockwise and B for counterclockwise. Refer to the top view picture for the correct orientation. (2) There are also two different motors with two different motor wire colors. Refer to the bottom view picture for clarity.

PROBLEM: One or more motors are not working.

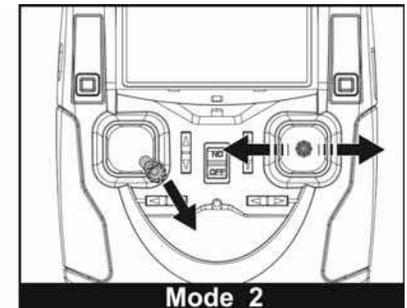
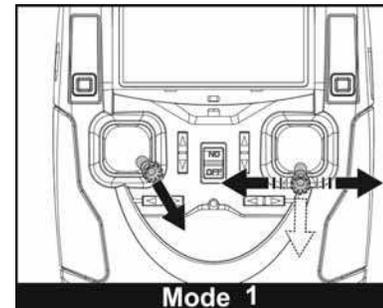
SOLUTION: (1) Replace the motor. (2) Check for loose solder joint between motor and board. (3) Spin the rotor blades by hand to check for binding.

PROBLEM: Quadcopter always drifts one direction.

SOLUTION: Calibrate the accelerometers as follows:

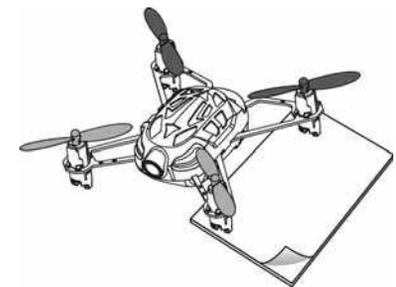
Before calibrating the accelerometers, make sure the rotor blades, motors and body are in good condition with the battery fully charged. Make sure the battery and connector are properly installed into the quad.

1. Put the quadcopter into expert mode.
2. Set both aileron and elevator trims to the middle so the LED displays 50.



Hold the throttle stick to the full down position and move the rudder stick to the lower right position. Quickly move the aileron stick to the left and right repeatedly until the two headlights blink indicating successful calibration. This calibration will reduce excessive drifting when performing level yaw turns.

If the Proto-X FPV HD Quadcopter still drifts to one side add a few sheets of paper (the number of sheets will vary depending on the amount of drift) to the side of the Proto-X FPV HD Quadcopter that drifts. The paper will counterbalance the offset in the accelerometers.



PROBLEM: The Camera does not record.

SOLUTION: (1) Press the button and the camera will start recording. When the recording is finished, press the button again to save it. If you want so save it please power off the transmitter. (2) Check the battery in both the transmitter and quad. If they are low the system will not record.

PROBLEM: The video not being saved to the memory card.

SOLUTION: (1) Always stop the video recording function and power off the battery first. After this you can take out the memory card. (2) Always turn off the power to the Transmitter before inserting or removing the memory card.

PROBLEM: Why is it that when I record video, the memory card only records videos of 75MB total but the file size remains 175MB?

SOLUTION: When the memory card is properly formatted in the transmitter, the formatting will split the file to speed up recording and smooth out playback. Therefore it shows a smaller file size when its properties are shown on a computer screen. The memory card is full when the LCD screen on the transmitter displays "Full". It's worth noting that when the memory card is formatted in the transmitter, you must reformat it if you intend to use it in another device. First save any files to your computer before formatting the card.

REPLACEMENT PARTS

ESTE4556	BODY SET
ESTE4557	ROTOR BLADE SET (4)
ESTE4558	MOTOR HOLDER SET (4)
ESTE4559	RUBBER LAND GEAR (4)
ESTE4560	SCREW SET (4)
ESTE4561	MAIN PCB
ESTE4562	CAMERA
ESTE4563	5.8G ANTENNA
ESTE4564	MOTOR SET (4)
ESTE4565	USB CHARGE CORD
ESTE4566	LIPO 1S 3.7V 650
ESTE4567	ROTOR BLADE WRENCH

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