# Q-COP 450

## Operation Manual


HiTEC | AEE | Aerial Photography Envision

## DISCLAIMER

It is the responsibility of the user to read the contents of this manual carefully and in full before operating the Q-Cop 450. Once the Q-Cop 450 is put in use, the user has agreed to operate the device in accordance with the guidelines specified here and Hitec may confidently assume that the user has read and accepted the contents of this user's manual.

**This product is suitable for ages 18 years and above.**

**The Q-Cop 450** is a sophisticated electronic product with integrated flight and camera control. As such, it provides exceptional aerial photography under normal power supply and when all components are functioning optimally. Although our quadcopter software integrates safety mechanisms to ensure the equipment is safe for handling during power-up, Hitec strongly recommends that you remove the rotor blades through calibration.

**Hitec RCD, Inc.** does not assume any responsibility for any personal injury, property loss [whether direct or indirect losses], legal disputes and compensation issues caused while using this product due to the following reasons:
1. This product is used in any illegal activity.
2. This product is used in a no-fly zone for flight, video recording and/or photography.
3. This product is operated without following the instructions contained in this user's manual.
4. In cases of any force majeure or acts of God, including earthquakes, tsunamis, lightning, hail, etc.

## SAFETY PRECAUTIONS

1. Check whether all product components are in good working condition prior to use. Please do not operate the device if any part appears worn out or damage.
2. Ensure the transmitter and quadcopter batteries are sufficiently charged before operating.
3. Take reasonable measures to prevent transmitter signals from interacting and interfering with other wireless devices.
4. Ensure the quadcopter operates under the specified maximum load while it is airborne.
5. Before take-off, switch on the transmitter and then start the quadcopter. After landing, turn off the quadcopter first, before turning off the transmitter power.
6. While inspecting, do not get close to or touch the rotating motor or rotor blades.
7. Please ensure the quadcopter takes off or lands from/at a central point in an open area. Confirm that there are no persons or other obstructions within a 5 to 10 meter radius prior to using the quadcopter.
8. Only fly the quadcopter in a safe, clear zone away from obstructions, crowds, and high-voltage lines. Exercise precaution for your own safety when operating the device.
9. Do not answer phone calls when using mobile WiFi to connect with the onboard camera to preview images.
10. Do not use the product in a complex electromagnetic environment as it may cause communication errors.
11. Do not use or store the product in a humid environment as it may create condensation inside the machine that may damage the device or lead to unpredictable consequences.
12. Do not use the product during lightning, in rain, with strong winds or dust storms present, or in otherwise harsh weather conditions to ensure your personal safety and the protection of the quadcopter.



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## SAFETY PRECAUTIONS

13. . Please keep the unit away from heat as the quadcopter's thermoplastic material may wear-off quickly, deform, or even melt in high temperatures.
14. Novice users should operate the quadcopter under the guidance of professionals, and the throttle stick should be operated slowly to make adjustments. Do not rapidly push or pull the throttle stick.
15. For the safety of your life and property, please follow operating instructions in the user's manual. Do not operate the quadcopter for any illegal activity.
16. Unauthorized disassembly or modification of the quadcopter is prohibited.
17. Batteries should be placed out of reach children. Please seek medical assistance immediately if batteries are swallowed by a child.
18. Make sure the quadcopter battery is properly installed and locked in place.
19. Do not use any device other than the battery charger provided with the product to charge the quadcopter battery.
20. Do not use or store batteries near heat-emitting equipment (like ovens, for example).
21. Do not dispose of batteries in a fire. Do not otherwise subject the batteries to heat.
22. Do not use batteries in places with strong static charge, as it may lead to possible failure of the electronic protection system or cause other safety accidents.
23. Do not soak batteries in water. Batteries should be stored in a cool and dry place if they are not to be used for a long time.
24. Do not combine this product's batteries with other manufacturer's batteries of different capacity, type, or variety.
25. Do not transport or store batteries together with necklaces, hairpins or other metal objects.
26. Do not strike or throw batteries.
27. Do not directly short circuit the battery contacts.
28. Do not pierce the battery case with nails or other sharp objects.
29. Do not hit the batteries with a hammer or stamp on the batteries.
30. Do not attempt to disassemble the batteries in any manner.
31. Do not use or store batteries in a hot environment, such as in direct sunlight or in a car in hot weather, as high temperatures may affect battery performance and shorten life, or even cause batteries to catch fire.
32. Do not leave batteries unattended while charging.

### Conventions

All of the Q-Cop 450's features described in this manual, unless particularly stated, are described while the product is in the operating mode.

### Download the Hitec AEE APP

Please download the Hitec AEE App to simultaneously watch live video while using the Q-Cop 450. For iOS users, please search Hitec in the App store where you can download and install the Hitec AEE App.

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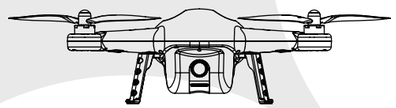
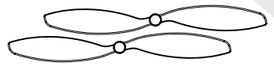
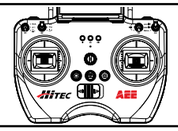
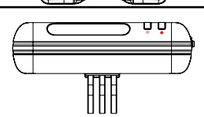
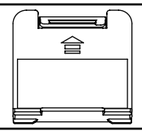
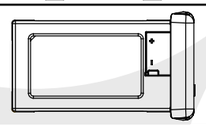
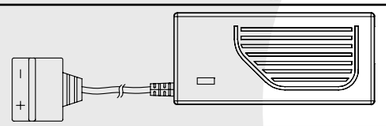
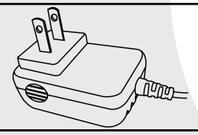
The Q-Cop 450 is a sophisticated product with integrated flight and camera control. It is equipped with a 16 megapixel camera and advanced intelligent flight control system. You can use mobile devices to remote control the camera through the Hitec AEE App, and achieve real-time transmission of video images. Q-Cop 450 will help you effortlessly capture clear and stable aerial videos and photos.

**Kit Contents:**

| Quantity | Name | Description | Diagram |
|---|---|---|---|
| 1 piece | Quadcopter | With Built-in Onboard Camera |  |
| 4 pairs | Rotor Blades | 4 Rotor Blades [gray caps]<br>4 Rotor Blades [black caps] |  |
| 1 piece | Transmitter | Includes Repeater Mount |  |
| 1 piece | Repeater | Use to Connect to Mobile Devices using Wi-Fi |  |
| 1 piece | Mobile Device Mount | Use to Mount Mobile Devices |  |
| 1 piece | Quadcopter Battery | Provides Power Supply to the Quadcopter |  |
| 1 piece | Quadcopter Battery Charger | 100-240V 50/60Hz |  |
| 1 piece | Repeater Adapter | 100-240V 50/60Hz |  |



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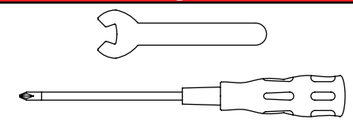
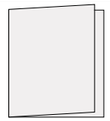
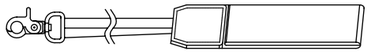
OVERVIEW

| Quantity | Name | Description | Diagram |
|---|---|---|---|
| 1 set | Tools | 1 Wrench & 1 Screwdriver |  |
| 1 piece | Micro SD Card | Required for Recording [not included] |  |
| 4 pieces | AA Batteries | Provides Power for the Transmitter |  |
| 1 piece | User Manual and Warranty Card | Use to Connect to Mobile Devices with WiFi |  |
| 9 pieces | Screws | Use to Mount Mobile Devices |  |
| 1 piece | Strap | Clips onto Transmitter |  |
| 1 piece | CD | 100-240V 50/60Hz |  |

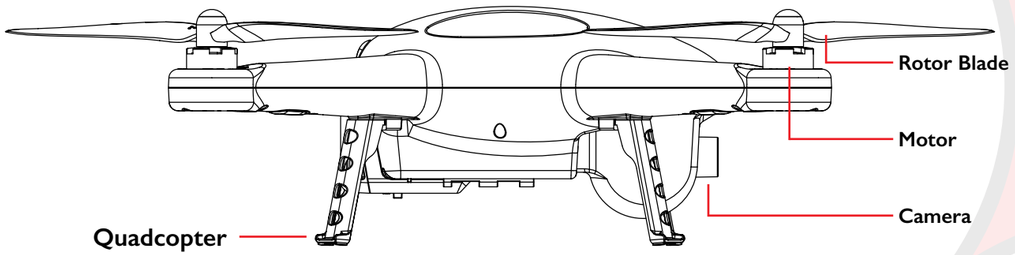
## OVERVIEW

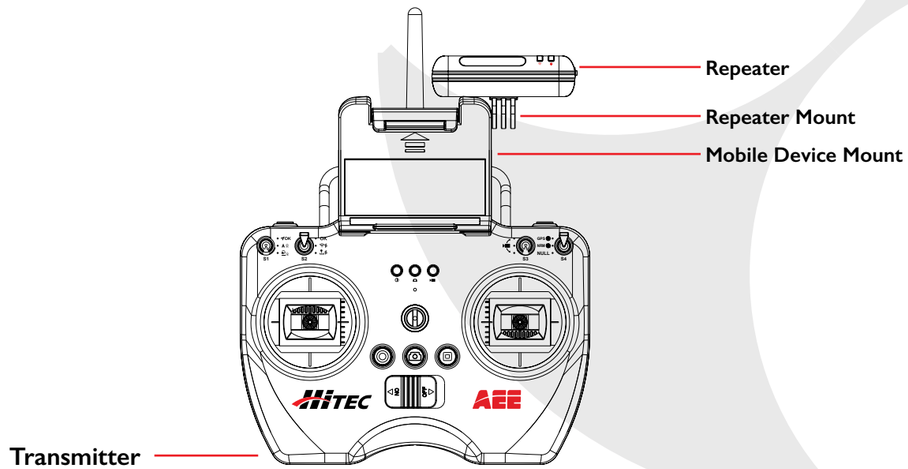
**Product Introduction:**

Congratulations on the purchase of your new Q-Cop450!

**The Q-Cop 450** adopts high-standard integrated design with professional-grade airborne photography equipment and a repeater. Your Q-Cop450 provides excellent aerial photography in outdoor low-lying or large indoor spaces. New owners of the Q-Cop450 will need to conduct a simple installation process to put the quadcopter in flight and begin taking aerial photographs. The resulting images for your session will automatically store in the memory card. Users can control the quadcopter in real-time through the transmitter and can view light video through an appropriate mobile device. This product is suitable for residential or commercial photography applications and features simple and flexible operating procedures with an ever-stable and highly reliable performance.

| Transmitter Device | Quadcopter External Components | Quadcopter Operating Modes | Quadcopter Internal Components |
|---|---|---|---|
| Transmitter<br>2pc Throttle Sticks<br>Multi-Channel | Airborne Camera<br>Power Unit [Motor & Blades] | GPS Mode<br>Normal Mode<br>Null [Reserve] | Flight Control System<br>Wi-Fi Module<br>Receiver<br>ESC [Electronic Speed Control] |








## QUADCOPTER BATTERY

Please make sure the following device batteries are fully charged before using the Q-Cop 450.

| Transmitter Device | Quadcopter Internal Components |
|---|---|
| Transmitter | Install 4 AA batteries for power supply. |
| Repeater | Repeater needs to be charged through the built-in charging port [Micro USB port.] |
| Quadcopter | Charge Quadcopter battery for power supply. |
| Mobile Devices | Please ensure that your mobile device is fully charged before using Hitec AEE App. |

**Quadcopter Battery Introduction:**

The quadcopter battery [Figure 2] is a unique battery with charge and discharge management functions. It is specifically designed for the Q-Cop 450 and has a capacity of 5300mAh and a voltage of 11.1V. You must use the dedicated quadcopter battery charger [Figure 3] provided for charging.

Figure 2

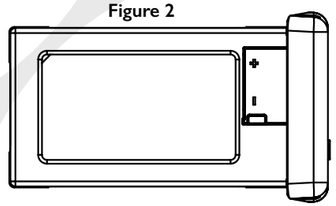
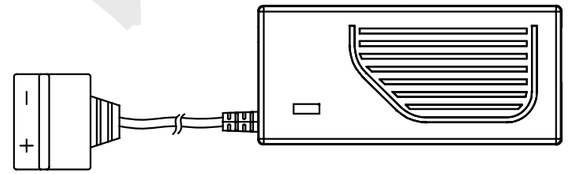


Figure 3




**Caution:**

1. Do not remove the battery when the quadcopter is switched on as it may damage the power supply connector.
2. If the battery is not used for a long time, it is recommended that you discharge the battery to a 40-50% charge level and store it in a dedicated battery box.
3. Replace the battery after 300 unique charges or more. Before disposing of your batteries, please discharge the unit until the charge is fully depleted.
4. Do not continue using the battery if there is any expansion or damage to the battery surface, as it may catch fire or explode. Please replace the battery in such cases, and do not try to charge them.
5. Please pay attention while charging batteries to prevent accidents. When charging the battery, please keep the battery and charger in a place where there are no flammable or combustible materials on the ground.
6. Do not leave the battery charging unattended.
7. Battery safety is very important. Please refer to the Safety Precautions for more notices.

Press the Battery Level Check button [Figure 4]. The screen displays appropriate battery level. Please fully charge the battery when the battery charge displayed is less than two bars.

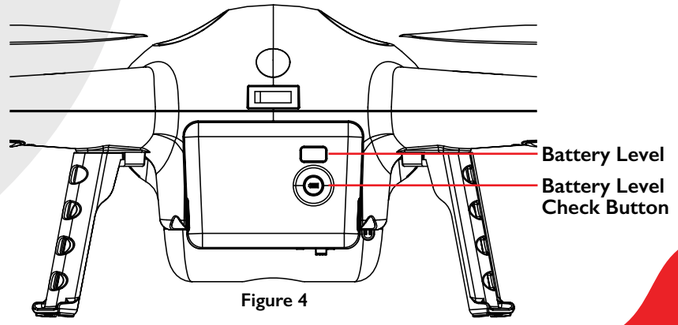



Figure 4

## QUADCOPTER BATTERY

### Battery Specifications:

| Type | Li-Po Battery |
|---|---|
| Capacity | 5300mAh |
| Charging Ambient Temperatures | 0°C to 50°C |
| Discharging Ambient Temperatures | -20°C to 50°C |
| Charging/Discharging Ambient Relative Humidity | < 80% |

Before using the battery, please carefully read and strictly comply with this manual's instructions. Any problems caused due to failure to follow instructions will be the responsibility of the user.

### Charging the Quadcopter Battery:

1. Connect the charger to an AC power source (110-240V, 50 / 60Hz). If necessary, please use a power adapter.
2. While charging, the battery charger indicator lights up, and turns red.
3. When the battery indicator turns green, it means the battery is fully charged. Please remove the battery and disconnect the charger cable from the socket once the battery is completely charged. Do not leave the battery plugged in to the charger for long periods of time after the light has turned green.

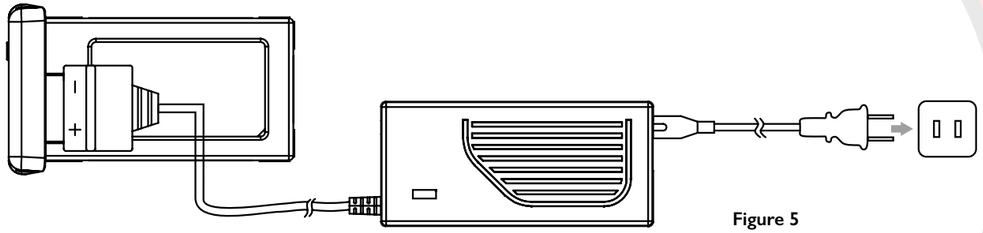


Figure 5

### Installing the Quadcopter Battery:

Push the battery in the correct direction (Figure 6) into the quadcopter's battery compartment and ensure the battery is properly installed before fastening the battery lock. If the battery lock is not fastened before the flight, it may cause poor contact with the battery which may affect flight safety or even cause the quadcopter to fail to take off.

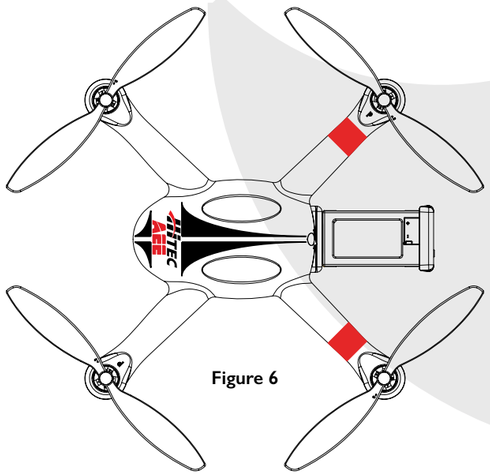


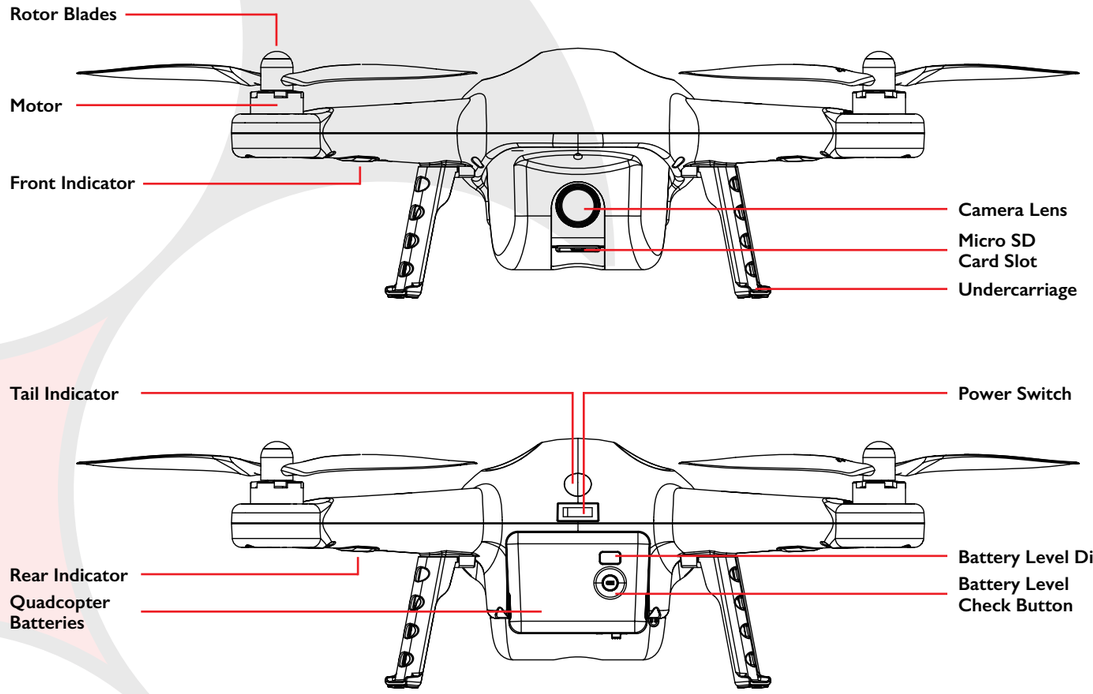
Figure 6





## QUADCOPTER PREPARATION

The quadcopter includes the flight control system and an airborne camera that are convenient to use.



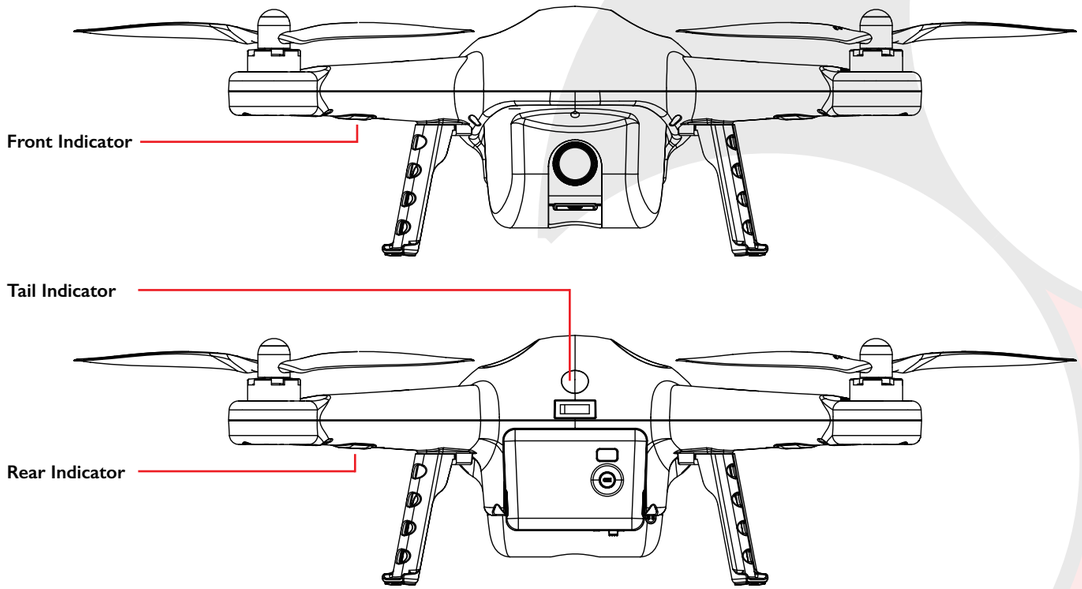

### Flight Control System:

The Q-Cop 450 is designed with an AEE flight control system, which is easy to operate and provides stability. In addition to supporting basic flight maneuvers such as climb, descend, roll and pitch, it also supports failsafe protection, battery alarm levels, smart direction control and other functions.

| Flight Control System Component Modules | Functions |
|---|---|
| Master Controller | Core of flight control system. Connects all modules and plays the role of centralized control. |
| GPS & Compass | Used for positioning and navigating the quadcopter. |
| Indicators | Indicates current status of flight control system. Used to navigate during night flying. |

## QUADCOPTER PREPARATION

**Flight Indicator:**
There are three LED Flight Indicators: the Front indicator, Rear indicator and Tail indicator. When the quadcopter switch is turned on, the LED Flight Indicators will be lit. The Front indicator is green and the Rear indicator is red. [Note: Hereafter use Green/Red Indicator to describe Front/Rear indicators respectively].



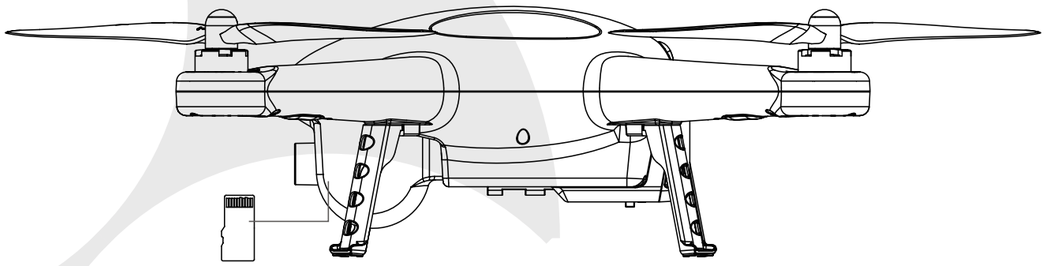

| Function | Front Indicator [Green] | Rear Indicator [Red] | Tail Indicator [Red] |
|---|---|---|---|
| Flight Navigation Instructions | Remains ON | Remains ON | |
| 1st Level Low Battery Alarm | Slow Blink [1sec ON , 1sec OFF] | Slow Blink [1sec ON , 1sec OFF] | |
| 2nd Level Low Battery Alarm | Fast Blink twice at 1sec intervals | Fast Blink twice at 1sec intervals | |
| Barometer Abnormal State | Remains ON | Slow Blink once at 3sec intervals | |
| GPS Abnormal State | Remains ON | Fast/Slow Blink twice at 3sec intervals | |
| Compass Abnormal State | Fast Blink | Remains ON | |
| Compass Needs Calibration | Slow Blink | Remains ON | |
| Accelerometer Abnormal State | Fast Blink | Fast Blink | |
| Accelerometer Needs Calibration | Switches ON>OFF>ON | Switches ON>OFF>ON | |
| Gyro Abnormal State | Remains ON | Fast Blink | |
| Gyro Needs Calibration | Remains ON | Slow Blink | |
| Transmitter Signal Status Indication | | | Fast Blink |
| GPS Searching Satellite Status Indication | | | Slow Blink |





## QUADCOPTER PREPARATION

**Micro SD Card Slot:**
Before using the Q-Cop 450 to take pictures or record videos, please insert the Micro SD card into the card slot while the power is OFF. The Q-Cop 450 Micro SD card supports a maximum of 32GB capacity cards.



**Onboard Camera:**
The Q-Cop 450's camera power is supplied by the quadcopter's battery. The camera power is on when the power switch is turned on. Users can take photos and record videos by pressing the camera function key, or through the Hitec AEE App. The camera supports single shot and continuous shooting mode, and video capture resolution is up to 1080P / 30fps (N system) 1080P / 25fps (P system) Full HD video.

| Camera Specifications: | |
|---|---|
| Resolution | Maximum1080P / 30fps (N System) 1080P / 25fps (P System) |
| Image Resolution | 4608 x 3456 |
| Video File Formats | MOV (H .264 Compression) |
| Storage | External Micro SD Card, Up to 32GB |
| TV System | P / N System Optional |

**Camera Function Keys:**

**Photo Capture Function:** Press the airborne camera button on the transmitter to take pictures. Each press snaps one photo.

**Video-Recording Function:** The Q-Cop 450 quadcopter automatic recording is set to ON as a default setting. While video recording, you can press the Stop Button on the transmitter to stop recording, or press the Record Button to restart video recording.

**Camera Data Copy:**
When the Q-Cop 450 power is switched OFF, remove the Micro SD card from the Micro SD card slot, and connect to a computer with a card reader to easily copy camera photos and videos.
[Quadcopter power must be OFF while removing the Micro SD Card.]

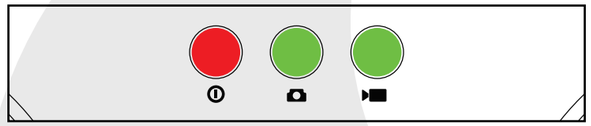
## QUADCOPTER PREPARATION

**Shooting Status Indicator:**

When the quadcopter is turned on and the camera is used for recording and photo capture, the Shooting Status Indicator will light up. Users can determine the current camera status through the Shooting Status Indicator. Camera Status Indicators on the Transmitter are as shown in the figure below.

**The Three LED Indicators on the Transmitter are:**

1. Transmitter Power Indicator [red.]
2. Photo Capture Indicator [green.]
3. Video Recording Indicator [green.]

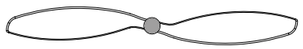


| Function Status | Power Supply [Red] | Photo Capture [Green] | Video Recording/Code-Pairing [Green] |
|---|---|---|---|
| Start Quadcopter | Remains ON | OFF | ON>OFF |
| Accelerometer Calibration | Remains ON | OFF | OFF |
| Gyro Calibration | Remains ON | OFF | OFF |
| Compass Calibration | Remains ON | OFF | OFF |
| Start Video Recording | Remains ON | OFF | Slow Blink [1.5 sec OFF, 0.8 sec ON] |
| Stop Video Recording | Remains ON | OFF | OFF |
| Photo Capture | Remains ON | Flash 0.3 sec | OFF |
| Photo Capture Completed | Remains ON | OFF | OFF |
| Low Power | Remains ON | OFF | OFF |
| Code-Pairing | Remains ON | OFF | Remains ON |
| GPS Satellite Searching | Remains ON | OFF | OFF |

When the Transmitter battery charge is low, a warning alert sounds. When video recording and photo capture commands are sent from the Transmitter, the Transmitter LED indicators show the corresponding function status.

**Prepare Rotor Blades:**

The Q-Cop 450 uses 10-inch rotor blades with black and gray color rotor blade caps. Rotor blades are consumable items. If necessary, please purchase separately.

| Rotor Blades | Install/Uninstall |
|---|---|
|  | Grey Blade Lock: Turn Blade Clockwise |
| | Grey Blade Unlock: Turn Blade Counter-Clockwise |
|  | Black Blade Lock: Turn Blade Counter-Clockwise |
| | Black Blade Unlock: Turn Blade Clockwise |

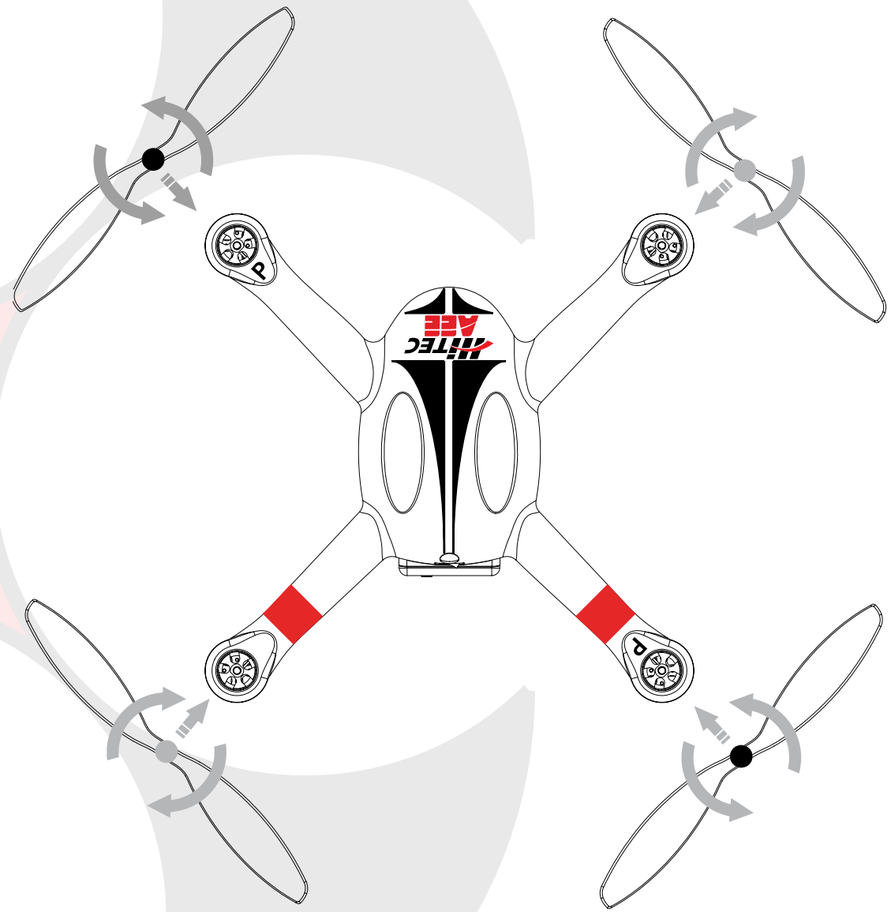


Q-COP450

## QUADCOPTER PREPARATION

**Installation Method:**

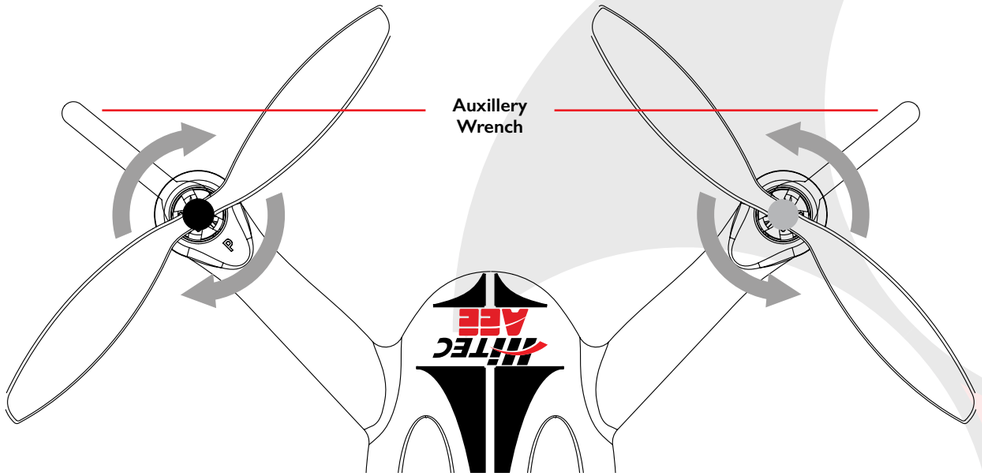
(As shown below) Prepare two blades with gray caps and two with black caps. Attach the blades with gray caps to the motor shafts without "P" marks and attach the blades with black caps to the motor shafts with "P" marks. Tighten appropriate rotor blades as per the locking direction on blade.




Rotor blades are designed for automatic turning, therefore do not tighten excessively during the installation. Do not use glue. Please ensure rotor blades are installed in the correct position. The quadcopter cannot fly properly if the rotor blades are installed incorrectly. Since the blades are very thin, it is advised to wear gloves during installation to prevent accidental injury.

## QUADCOPTER PREPARATION

**Removing Blades:**




**Precautions:**

1. Before each flight, please check that the rotor blades are correctly and firmly installed.
2. Ensure all rotor blades are intact before each flight. If the blades are worn or damaged, please replace with new blades before flying.
3. Keep your distance from rotating rotor blades and the motor to avoid cuts and injury.
4. Use only rotor blades provided by Hitec and AEE to ensure optimal performance.

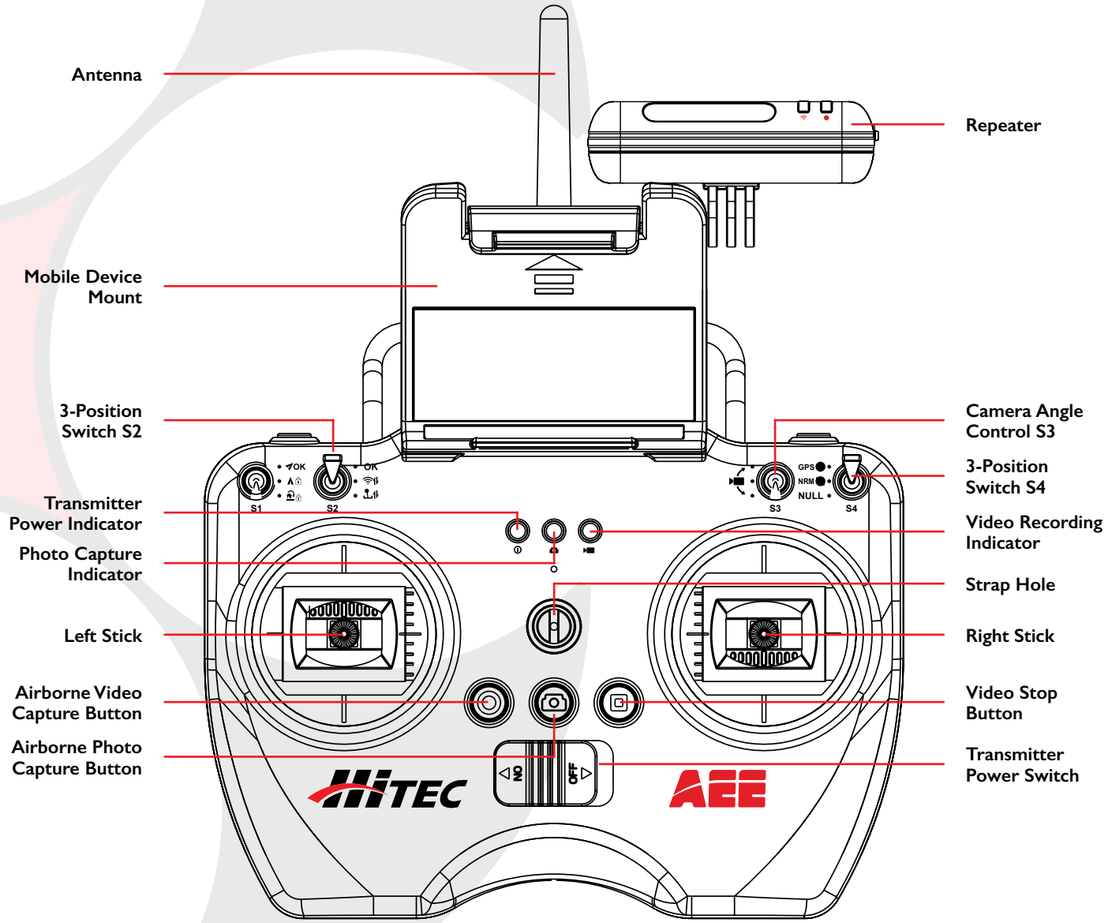




## TRANSMITTER PREPARATION

**Preparing the Transmitter:**

The Q-Cop 450 transmitter is used together with the quadcopter receiver. The transmitter and receiver have been successfully adjusted to match frequency before delivery. The transmitter is set to U.S. mode as the default factory setting mode. The repeater mount is already installed on the transmitter before delivery. Install repeater as shown in the image below with included lock screw. Please install the mobile device mount to place mobile devices. The mount is not suitable for use with oversized mobile devices like an iPad.



## TRANSMITTER PREPARATION

**Switching on the Transmitter:**

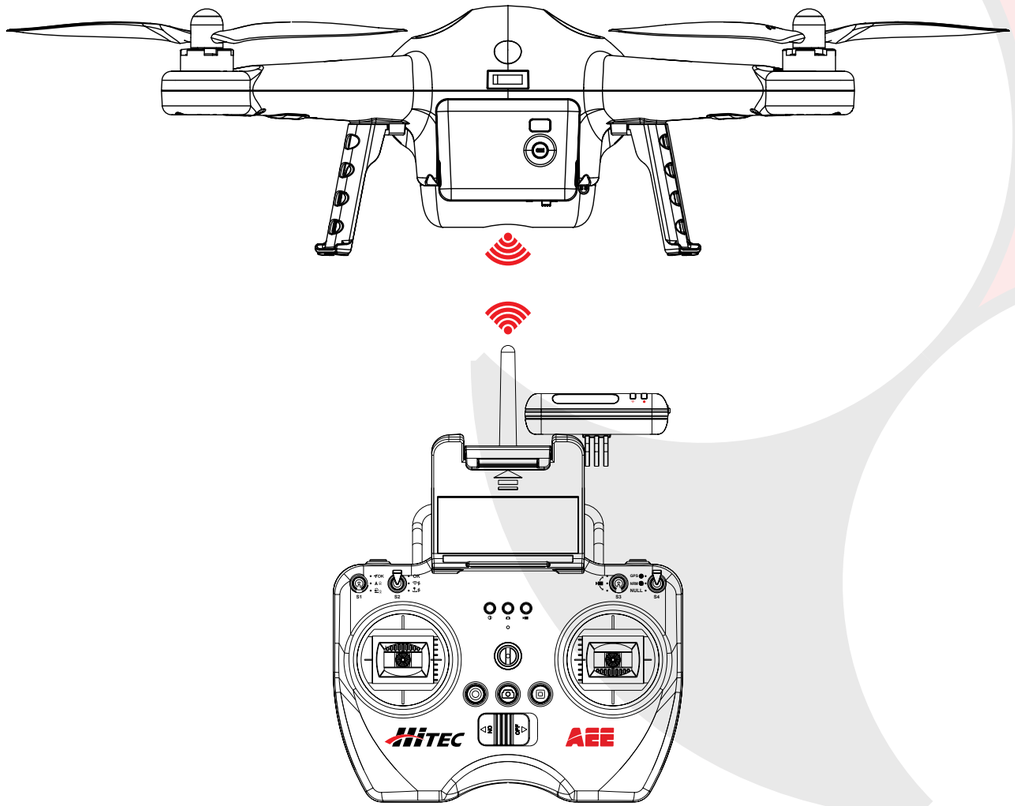
1. Install 4 AA batteries into the battery compartment as per positive and negative directions.
2. Ensure the two sticks are in the center position. Push switches S1and S2 to the top position.
3. Push the transmitter switch to the ON position to switch on the transmitter.
4. After switching on the transmitter, the power indicator remains on and is red.

**Caution:**

1. Before each use, make sure the transmitter has sufficient battery charge. If the charge is too low, the transmitter will sound a lower power alarm. Please replace the battery immediately.
2. Please remove the batteries if you do not intend to use the transmitter for a long time.
3. After the batteries are depleted, please remove the batteries and follow the battery instructions for recycling.

**Antenna Signal Description:**

Point transmitter antenna vertically skywards towards the receiver antenna on the quadcopter. Try to maintain an unobstructed view between the antennas, otherwise you may lose control of the quadcopter. Be careful not to let the mobile device and the repeater on the transmitter block the antennas.

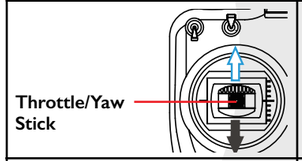
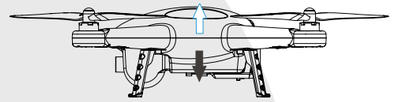
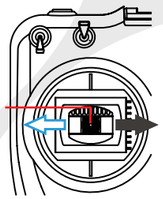
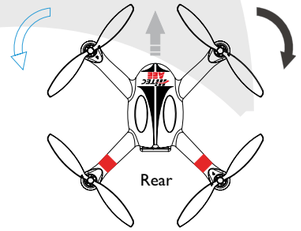
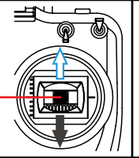
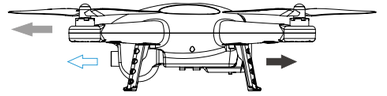
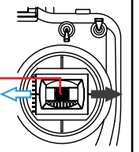
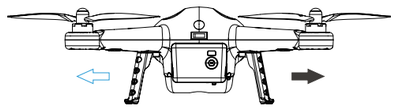
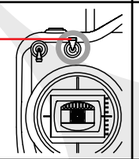
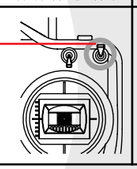





Q-COP450

## TRANSMITTER PREPARATION

**Transmitter Operating Instructions:**

| Transmitter [US Mode] | Quadcopter Action | Explanation |
|---|---|---|
|  Throttle/Yaw Stick |  | The throttle stick controls quadcopter elevation. Push the stick up and the quadcopter rises. Pull the stick down and the quadcopter descends. Keep the stick at the center position, and the quadcopter hovers at that particular height [height is automatically set.] Push the throttle stick upwards over the centered position to make quadcopter take off from the ground. [Please push the throttle stick slowly to prevent the quadcopter from suddenly/ unexpectedly rising.] |
|  Throttle/Yaw Stick |   | The yaw stick controls the quadcopter rudder. Push the stick left and the quadcopter rotates counterclockwise. Push the stick right, and the quadcopter rotates clockwise. If the stick is centered, the quadcopter flies in the same direction without rotating. The stick controls the rotating angular velocity of the quadcopter. Move the stick to increase quadcopter rotation velocity. |
|  Pitch/Roll Stick |  | The pitch stick controls the quadcopter's front & back tilt. Push the stick up and the quadcopter will tilt and fly backward. The quadcopter will keep level and straight if the stick is centered. Move the stick faster to increase the tilt angle [maximum is 35 degrees], and faster flight velocity. |
|  Pitch/Roll Stick |  | The roll stick controls the quadcopter's left & right tilt. Push the stick left and the quadcopter will tilt and fly left. Push the stick right and the quadcopter will tilt and fly right. The quadcopter will keep level and straight if the stick is centered. Move the stick faster to increase the tilt angle [maximum is 35 degrees], and for faster flight velocity. |
|  S2 Switch |   | S2 Switch is used to calibrate the throttle position. Toggle the S2 to position 3 to start the transmitter. Toggle the throttle stick from left to right and back to left in a circle, to make the stick touch the maximum positions. After doing this for 5-8 times, toggle S2 to position 1, the Video Recording Indicator lights up [green], and calibration is completed. |
|  S4 Switch |   | S4 Switch is the flight mode toggle switch:<br>Position 1: GPS mode<br>Position 2: Notmal [NRM] mode<br>Position 3: Null [Manual]<br>In GPS Mode, when all sticks are in the neutral position [centered], the quadcopter hovers at a fixed point. In Normal Mode, when all sticks are in the neutral position [centered], the quadcopter remains level but may drift in a horizontal direction. |

## TRANSMITTER PREPARATION

**Frequency Pairing Between Transmitter and Receiver:**

Frequency pairing and the link between the transmitter and quadcopter's inbuilt receiver are factory set before the Q-Cop 450 product is delivered. You can skip this procedure and power on to directly use the product. However, if the transmitter or receiver is changed, then re-establishing link and frequency-paring is required.

**Frequency Pairing Procedures:**

1. Keep the transmitter power OFF and turn on the quadcopter, the quadcopter Front/Rear indicators as well as Tail indicator light up. When you hear a "beep" sound, switch on the transmitter, the Video indicator lights up, indicating frequency-pairing has commenced. When the Tail Indicator [red] continuously blinks fast, the link between the transmitter and receiver is successfully established.
2. After the link is established, turn on the transmitter, and then power on the quadcopter. The Tail Indicator starts blinking fast, indicating frequency-pairing is successful.

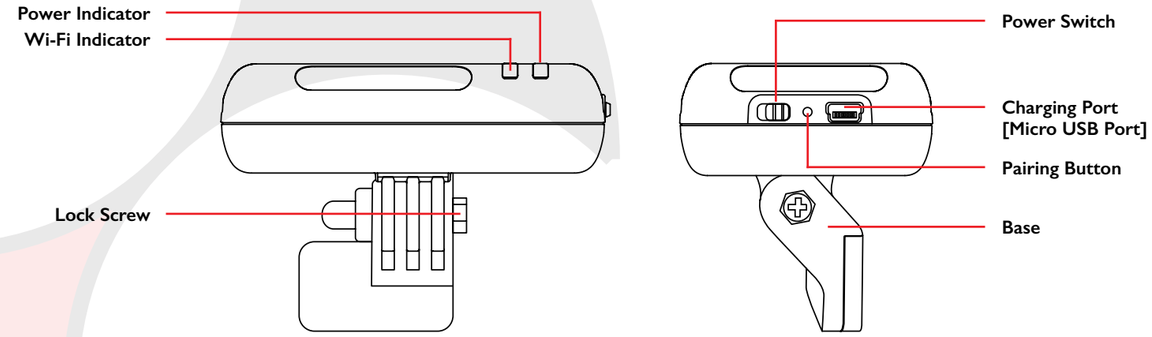




## REPEATER PREPARATION

**Preparing the Repeater:**

The Q-Cop 450's repeater is a wireless communication device that works in the 2.4GHz frequency band and is used to increase the effective communication distance between the mobile device and the Q-Cop 450. Communication distance is affected by the surrounding environment, with blockages due to trees, signal reflection by buildings, interference by other same frequency bands, etc. and more potentially affecting effective communication distance. Before flight, make sure the repeater works properly. Otherwise the connection cannot be established between the mobile device and the Q-Cop 450.




**Wi-Fi Indicator:**

Indicates repeater's Wi-Fi status.

| Wi-Fi Indicator | Description |
|---|---|
| Blue light remains ON | Repeater startup completed. |
| Blue light blinks fast [1.5sec OFF, 0.3sec ON] | Repeater is paired with the onboard camera. |
| Blue light blinks slow [3sec ON, 0.3sec OFF] | Successfully paired repeater with onboard camera. |

**Power Indicator:**

Indicates repeater's power supply status. [It is not recommended to turn on the repeater while it's charging.]

| Power Indicator | Description |
|---|---|
| Green light remains ON | Repeater power supply is normal. |
| Red light blinks | Repeater is charging, or repeater power is running out. Please charge as sooon as possible. |
| Red light remains ON | Charging is completed. |

**Pairing Button:**

When the repeater is on, long press the Pairing button for 3 seconds and the repeater will automatically restart for code re-pairing. Short press the Pairing button to check repeater power level.

| Press Pairing Button Once | Description |
|---|---|
| Short Press | If Power Indicator blinks once, indicates that repeater has over 80% charge remaining. |
| Short Press | If Power Indicator blinks twice, indicates that repeater has over 50% charge remaining. |
| Short Press | If Power Indicator blinks three times, indicates that repeater is running out of power. |
| Long Press [3 sec] | Repeater restarts and you can re-pair codes. |

## REPEATER PREPARATION

**Code Pairing:**
1.Switch on the transmitter power switch, quadcopter power switch and repeater power switch respectively.
2.When Wi-Fi repeater's blue light is on, the repeater is working normally. Toggle the S2 switch on the transmitter to the center position from "OK," and then toggle back to "OK."
3. Press the repeater pairing button for 3sec. The Wi-Fi repeater blue light indicator blinks slowly [0.3sec ON, 3sec OFF.] This indicates the repeater has successfully paired with the onboard camera. If pairing fails, please repeat steps above.

**Charging the Repeater:**
Connect the repeater to the Micro USB port through the repeater adapter to charge the repeater. It takes about 2 hours to fully charge. Before each flight, make sure the repeater has a sufficient charge.

**Switching on the Repeater:**
1. Toggle repeater power switch to ON to switch on the repeater.
2. Wait until the Wi-Fi indicator blinks blue indicating that the repeater works properly.
3. While using this procecss, ensure the repeater's LED side faces you and try to ensure that visibility between the repeater and quadcopter is unobstructed to obtain maximum communication distance. After the flight is completed, in addition to switching off the quadcopter and transmitter, be sure to turn off the repeater or else the repeater's battery will be depleted.

**Check Battery Status:**
In the Hitec AEE App camera interface, you can display and view the Q-Cop 450's power information located in the upper left corner of the screen.





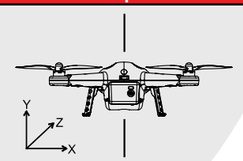
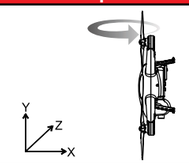
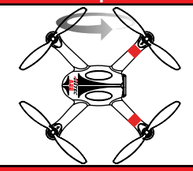

## FLYING THE QUADCOPTER

**Flying Environment Requirements:**
1. Do not use the quadcopter in inclement weather, such as strong winds, snow, rain and fog.
2. Select an open area with no tall buildings as the flying site. Presence of a large number of steel buildings in the area will affect the compass.
3. While flying the quadcopter, please stay away from obstacles, people, power lines, trees, shelters, water bodies, etc.
4. Do not fly in a complex electromagnetic environment, such as near mobile phone base stations or towers, to avoid transmitter interference.
5. This product cannot be used in the Antarctic and Arctic Circle.
6.Do not fly in restricted or no-fly zones and abide by relevant laws and regulations.

**Pre-Flight Check:**
1. Ensure transmitter, quadcopter, repeater and mobile device are fully charged.
2. Ensure rotor blades are correctly installed.
3. Ensure the Micro SD card is properly inserted before using the camera to capture images and videos.
4. Ensure S1 and S2 switches are in the "OK" position on the transmitter.
5. After powering on the quadcopter, transmitter and other equipment, please ensure they are working properly.
6. Check if the motors start properly after the quadcopter is switched on.
7. Check if the Hitec AEE App is properly connected to the camera.

**Compass Calibration:**
Compass calibration is required before first time use. Otherwise, the system may not work properly, affecting flight safety. The compass is susceptible to interference from other electronic devices, resulting in data anomalies, affecting the flight or even leading to accidents. Frequent calibration ensures the compass works appropriately. Do not calibrate in a strong magnetic field. Do not carry ferromagnetic items such as keys, cell phones, etc. while calibrating.

**Calibration Procedures:**
Please choose vast and open venues to conduct the calibration. Start the transmitter and quadcopter and ensure the equipment works properly. Be sure to remove rotor blades before calibration to avoid accidental injury. The Q-Cop needs a full battery before you begin. Follow the below procedures to calibrate the compass:

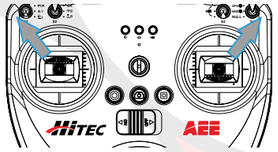
| Step 1 | Step 2 | Step 3 | Step 4 |
|---|---|---|---|
|  |  |  |  |
| Toggle Sticks to Above Position. Front Indicator Blinks Green | Rotate Q-Cop 360 Degrees Horizontally [Y Axis] | Rotate Quadcopter 360 Degrees Vertically Facedown [Z Axis] | Rotate Q-Cop 360 Degrees [X Axis] Front Indicator Turns OFF>ON Solid |

If done correctly the front indicator will turn Off then remain On solidly. If the indicator blinks rapidly instead, please repeat steps 1-3 to obtain successful calibration.

## FLYING THE QUADCOPTER

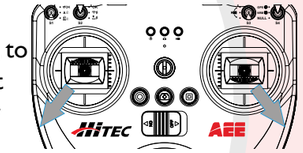
**Situations When Recalibration is Required:**
1. Compass data anomalies. Front indicator blinks fast.
2. Flight venue is far from the place where last compass calibration was conducted.
3. There are changes in quadcopter's physical structure.
4. The quadcopter drifts a lot while flying, or cannot fly straight.
If the Q-Cop 450 is still experiencing flight instability, it is possible that the gyro needs to be calibrated as well. If so, please follow the steps below.

**Gyro Calibration Procedure:**
1. Place the Q-Cop 450 on a level flat surface.
2. Turn on Transmitter and Q-Cop 450, wait until the Q-Cop front indicators are solid.
3. Toggle the left stick to the upper left corner, and the right stick to the upper right corner until the rear indicators begin blinking. Then, release the joysticks.
4. Wait for the rear indicators to return solid which indicates calibration success.
5. Repeat the steps for compass calibration from the previous page.

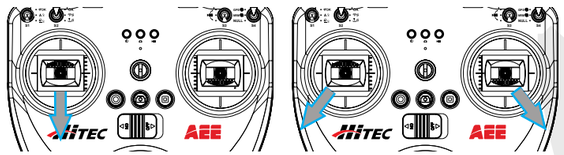


**Starting/Stopping the Motors:**

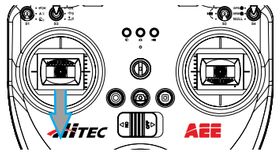
**Starting the Motors:**
Toggle the sticks as shown in the illustration, Combination Stick Command [CSC], to start the motor. Toggle the left stick to the bottom left corner, and toggle the right sticks to the bottom right corner. When performing CSC, toggle the sticks quickly and accurately. After the motors start, release the sticks immediately.



**Stopping the Motors:**
After the motors start, there are two ways to stop it:
1. After the quadcopter lands, toggle the throttle stick to the lowest position and then perform CSC. The motors will immediately stop. Release the sticks after the motors stop.



2. After the quadcopter lands, toggle the throttle stick to the lowest position and hold for 5 seconds to stop the motors.



Do not turn the motors off during flight or else the quadcopter may crash.





## FLYING THE QUADCOPTER

**Basic Flight Procedures:**
1. Place the Q-Cop 450 on flat and open ground, and ensure the battery indicator faces towards you.
2. Turn ON the transmitter, repeater and quadcopter.
3. Run the Hitec AEE App, connect the mobile device and Q-Cop 450, and navigate to the camera preview screen.
4. Wait until the tail indicator blinks slowly. The Q-Cop 450 enters a safe flying state. Perform CSC to start the motors.
5. Push up the throttle stick slowly for smooth take-off. Please refer to the transmitter control instructions for detailed control procedures.
6. Use the Hitec AEE App to take photos and videos, and enjoy the flight. For details refer to "Using Hitec AEE App."
7. When landing, slowly pull down the throttle stick to make the quadcopter descend slowly to the ground.
8. After landing, pull the throttle stick to the lowest position and hold for more than 5 seconds until the motors stop.
9. After motors stop, turn off the quadcopter, repeater, and transmitter one after the other.
During flight, if all 4 arm indicators slow blink or fast blink, it indicates the quadcopter has entered a low battery state. Please refer to the battery warning functions for details on the next page.

**Aerial Photography Tips and Tricks:**
1. Perform pre-flight checks.
2. Try to capture photos and record videos during safe flight status.
3. Try to capture photos and record videos in sunny weather with little wind.
4. Set camera settings as per shooting requirements, such as video resolution, picture size, etc.
5. Carry out a trial flight before actual flight to help plan the route and frame your photos and videos.
6. During flight, push the throttle stick as slowly as possible to ensure the quadcopter flies smoothly.

**Failsafe Protections:**
With the Failsafe mode, if the quadcopter loses the signal from the transmitter (i.e., you lose control), the Automatic Flight Control system will control the quadcopter, return it to the starting point and land it safely. This reduces the chances of the quadcopter getting lost or crashing in the event of a lost signal.

**Home Point:**
Indicates the quadcopter's position when the quadcopter's GPS successfully scans and connects to the satellite.

**Scenarios When Quadcopter Enters Failsafe Mode:**
1. When transmitter is turned off.
2. The flight distance is beyond the effective range of the transmitter signal.
3. There are obstructions between the transmitter and the quadcopter.
4. There is interference in transmitter signal.

**Failsafe and Return Procedure:**
If you lose control of the quadcopter during flight, the quadcopter will automatically follow the below operating procedures:
1. The quadcopter automatically slows down and hovers in one location.
2. If the quadcopter regains signal from the transmitter within 2 seconds, the flight control returns to Normal Mode, and the quadcopter will not enter Failsafe Mode and will not automatically fly back to Home Point.

## FLYING THE QUADCOPTER

**Failsafe and Return Procedure [cont.]:**
3. If the quadcopter does not regain signal from the transmitter within 2 seconds, the quadcopter enters Failsafe Mode, and initiates automatic flight control to fly back to the Home Point. The quadcopter will now continue to hover for 15 seconds and evaluate vertical distance to the Home Point. If the distance is more than 15 meters, the quadcopter will fly back to the Home Point. If the distance is less than 15 meters, the quadcopter will fly vertically to a 15 meters height and then return. When the quadcopter reaches the Home Point, it will hover for 5 seconds and then automatically land.
To ensure the quadcopter successfully flies back to the Home Point when it is in Failsafe Mode, please take-off only after the quadcopter's GPS successfully connects to the satellite.
The quadcopter cannot intuitively avoid obstacles in its path when it is flying in the Failsafe Mode.

**How to Regain Control on the Transmitter:**
When the quadcopter is out of control, toggle the S4 Switch on the transmitter several times to switch the flight mode. When the signal is restored, the transmitter will regain control and you can continue to use the transmitter to operate the quadcopter.

**Battery Level Alarm Function:**
When the quadcopter's battery is low, it has insufficient power and must land as soon as possible, or else may lose power completely and crash. In order to prevent danger caused by a low battery, the quadcopter has a two-level battery alarm function. Level 1 is a Low Power Alarm and Level 2 is a Severe Low Power Alarm that is indicated by the flight indicator lights. If unable to regain control on transmitter, cycle power to the Q-Cop 450. If the situation continues, turn Off the quadcopter, perform transmitter calibration, and restart the Q-Cop 450.

| Low Power Alarm | Flight Indicator Light Status | Low Power Risk Prompt |
|---|---|---|
| Level 1 Alarm | 4 Arm Indicators Blink Slow [Blinks ON>OFF in 1sec Intervals] | Quadcopter flies normally for 3 min and then initiates Level 2 Alarm. Be cautious while flying, keep the quadcopter within sight and do not fly too high or too far. |
| Level 2 Alarm | 4 Arm Indicators Blink Fast [Blinks Twice within 1sec] | Quadcopter flies normally for 3 min and then initiates Failsafe Mode and commences to automatically land. Under such a situation, please return and land the quadcopter as safely as possible, and do not push the throttle hard or make big movements during flight. |

During low-power automatic landing, you can regain control of the quadcopter by switching the flight mode.

**However, doing so repeatedly may cause the following:**
1. Reduce battery service life due to over discharge.
2. Quadcopter may crash due to insufficient power.





## USING THE HITEC AEE APP

**Using the Hitec AEE App:**
The Hitec AEE App is primarily used to control the quadcopter camera. It can be used to configure video and camera parameters, controlling the camera angle and for capturing images and videos. It can also display quadcopter status parameters.

**Compatible Mobile Devices:**
iOS (system version iOS6.1 or above): Applicable for iPhone 4s, iPhone 5, iPhone 5s, iPhone 5c, iPod Touch 4 and iPod Touch 5. iPad 3, iPad 4, iPad mini and iPad Air can also be used. [Hitec and AEE will continue to update on future support for more types of mobile devices.]

**Download and Install Hitec AEE App:**
To use the Hitec AEE App, please download the app and install it on your mobile device.
1. Ensure your mobile device is connected to the internet
2. Enter the App Store and type "Hitec AEE App" in the search field and search. You will find the application icon shown in the results.
3. Touch the icon to install the app, and follow the prompts to complete the installation.

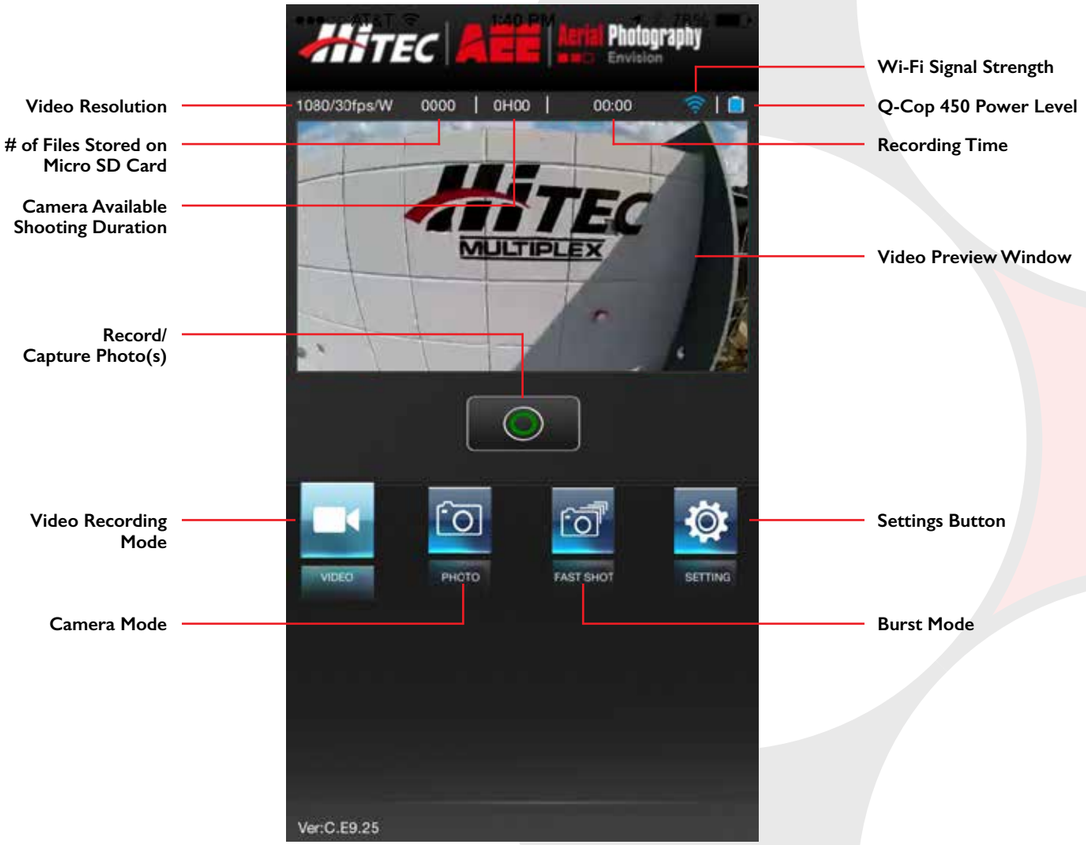
**Connect to Q-Cop 450 System Network:**
Before you start using the app, you need to connect to the HRU System Network.
The specific procedures are as follws:
1. Navigate to the mobile device "Settings" then "Wi-Fi" page.
2. Locate the "HRUXXXXX" network in the list of networks. Your personal HRU Network number is located on the bottom of the repeater on its own seperate label.
3. Select this network and enter the password. The default password is "HRU12345."

**Staring the Hitec AEE App:**
Touch the Hitec AEE App icon to launch it. The app will display the below interface on the mobile device. Touch "Connect" to establish a connection between mobile device and camera. After connection is successful, the app will display the preview interface. If connection fails, you will see the "Connection Error" message. Please check if your network connection is working properly, and then try to connect again. If you receive a phone call on the device while flying the quadcopter, the mobile device will display the call screen. Do not answer phone calls while the quadcopter is flying as it may distract you and compromise flight safety.


## FLYING THE QUADCOPTER

**Hitec AEE App Main Interface:**

After successfully connecting to the Hitec AEE App, you can see the app preview screen as shown below.








## USING THE HITEC AEE APP

**Video Interface:**

Touch the "preview" area to enter the video interface as shown in the picture below. When the mobile device is horizontal, the app interface will also change to landscape mode as shown in the picture.


The main interface and video interface buttons are essentially the same, except there are two additional buttons for zoom in the video interface as pointed out above.

**Settings Interface:**

When the Hitec AEE App is successfully connected to the mobile device, we can change camera and video parameter settings in the "Settings" menu to meet different photo and video requirements. You can also adjust the other following options. Touch the Settings button to begin.

## APPENDIX

### Common Indicators:

| Mode | Description |
|---|---|
| Normal | Front and Rear Indicators are ON; Tail Indicator Blinks Fast |
| GPS | Front and Rear Indicators Remain ON; Tail Indicator Blinks Slow |
| Warning Alarms | |
| Level 1 Alarm [Low Power] | Front and Rear Indicators Blink Slow |
| Level 2 Alarm [Severe Low Power] | Front and Rear Indicators Blink Fast |

### Specifications:

| Quadcopter | |
|---|---|
| Battery | 5300mAh LiPo |
| Weight | 1.4kg |
| Hover Accuracy | Horizontal: 2m, Vertical: 1m |
| Maximum Tilt Angle | 35 Degrees |
| Maximum Climb/Descent Speed | Climb: 8 m/s, Descend: 5 m/s |
| Maximum Flight Speed | 22-23mph |
| Wheelbase | 450mm |
| Flight Time | 25 min |
| Camera | |
| Ambient Operating Temperature | 0-50 Degees Celsius |
| Sensor Size | 1/2.3 |
| Effective Pixels | 16 Mega Pixels [MP] |
| Resolution | 4608 x 3456 |
| HD Video Recording | Maximum 1080P / 30FPS [N System], 1080P / 25FPS [P System] |
| Transmitter | |
| Communication Distance | 500m |
| Working Hours | 8hrs |
| Operating Current/Voltage | 150mA / 6V |
| Battery | 4 AA Batteries |
| Repeater | |
| Operating Frequency | 2.4GHz |
| Communication Distance [Open Outdoors] | 300m |
| Transmitting Power | <=17dBm |
| Power Consumption | 1.5W |





## TROUBLESHOOTING

### Solutions for Transmitter Sticks Center [Neutral] Position Errors:

When there is a big difference in transmitter sticks neutral position, the motors cannot start when performing CSC. Errors in transmitter sticks neutral position usually occurs in two cases:

**Problem 1:** When quadcopter is ON and the stick, not the throttle, is not in neutral position.

**Solution 1:** Move all transmitter sticks to neutral position and re-start the quadcopter. This will reset the neutral position. If the problem persists, it may be caused by Problem #2.

**Problem 2:** Transmitter stick is over-tuned, leading to a large shift in position, [i.e., there is a large asymmetry in transmitter stick position.]

**Solution 2:** Recalibrate the transmitter.

**a.** Toggle S2 Switch to position 3, all the way down, and start the transmitter. Then push the left and right sticks in circles [5-8] so that the sticks touch all endpoint positions. Then toggle the S2 Switch to position 1 [all the way up] until the video recording indicator [green] switches off and calibration is completed.

**b.** Restart the quadcopter and pay attention to whether the quadcopter starts properly. If the problem cannot be solved by the above methods, please send the transmitter back to our factory for repair.

### Quadcopter is Visible but Wi-Fi is Disconnected:

Turn off the transmitter and let the quadcopter automatically return. Make sure there are no obstructions on the quadcopter's return path, and make sure you are familiar with the procedures for regaining control of the quadcopter.

### WiFi Could Not Be Re-Connected:

This is likely due to the mobile device automatically connecting to other Wi-Fi networks after it disconnects from the Q-Cop 450's Wi-Fi connection. Please check that your mobile device is connected to the Q-Cop 450 Wi-Fi network.

### Precautions When Multiple Mobile Devices Use the App at the Same Time:

During flight if the app is used on one mobile device and then shifted to another during flight, please make sure you completely log out from the app on the original mobile device so that the app can be normally used on the other mobile device.

### Landing the Q-Cop 450 Smoothly:

Slowly reduce throttle stick until the Q-Cop is just above the ground. Continue to reduce throttle until the Q-Cop lands. Hold the throttle stick completely down until blades stop.

### Further Support:

For further support or if you have questions, feel free to call Hitec RCD, Inc. at (858)748-8440. You can also send us an email at service@hitecrcd.com, or visit our website at www.HitecRCD.com for more information.