

2. Flight gear

The aircraft support two flight gears: normal and sports, which can be switched through the sport mode switch on the RC.

1) Normal mode(When sport button is off)

GPS, optical flow positioning and ultrasonic altitude hold system are used to realize the functions of precise hovering, stable flight and Intelligent Flight of aircraft.

When GPS signal is good, GPS can be used for accurate positioning; GPS signal is poor, and it can be used when environmental conditions such as illumination meet the requirements of optical flow system, In normal mode, the maximum flight speed is 10m/s.

2) Sport mode(When sport button is on)

Using GPS, optical flow positioning and ultrasonic height determination system, the aircraft can hover accurately and fly stably. When the sport mode is turned on, the control sensitivity of the aircraft is adjusted, and the maximum flight speed will be increased to 17 m/s.

Note:

When the GPS satellite signal is poor or the compass is disturbed and does not meet the working conditions of visual positioning, the aircraft will enter the altitude mode. In the altitude mode, the aircraft will drift in the horizontal direction; And some intelligent flight functions will not be available. Therefore, in this mode, the aircraft itself cannot achieve hover and autonomous braking, so it should land to a safe position as soon as possible to avoid accidents. user should try our best to avoid flying in GPS satellite with poor signal and narrow space, so as to avoid entering attitude mode and causing flight accidents.

3. Return to home (RTH)

Aircraft has return-to-home (RTH) function, and there are 3 types of RTH: one-key RTH, low battery RTH and lose control RTH. When the GPS signal is good and the aircraft successfully records the return point, if user turns on one-key RTH, or the aircraft triggers low battery RTH, or the communication signal between the remote controller and the aircraft is lost, the aircraft will automatically return to the return point and land. Before the aircraft takes off, when the aircraft status indicator turns green and the GPS mode is displayed on the app, the current position of the aircraft will be recorded as the return point.

1) One-key RTH

When the GPS signal is good (the aircraft status indicator is solid green), the aircraft can return to the return point via the '🏠' button on the remote control, and the return process is the same as lose control RTH. The difference is that when the aircraft returns and begins to land, the user can control the aircraft through the joystick to avoid obstacles and change the landing position. After pressing and holding the '🏠' button for more than 2 seconds to exit the return, the user can regain control of the aircraft.

2) Low battery RTH

During the flight, when the red light of the aircraft status indicator flashes slowly, the aircraft triggers low battery RTH. During the landing, the user can control the aircraft by joystick to avoid obstacles and change the landing position.

3) Lose control RTH

When the GPS signal is good (the aircraft status indicator is solid green), the compass is working normally, and the aircraft successfully records the return point, if the remote control signal continues to be lost for more than 2 seconds, the flight control system will take over the control of the aircraft and control the aircraft to fly back to the last recorded return point. If the signal of the remote controller is restored later during the flight, the return process will continue, but the user can cancel the return and regain the control of the aircraft through the Pause button '⏸'.

Attentions :

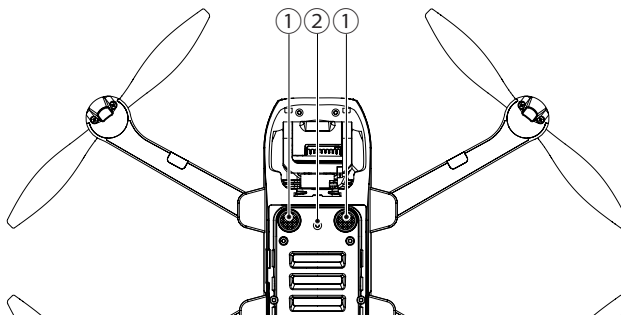
- The aircraft cannot avoid obstacles when it is flying back during the RTH process.
- The aircraft cannot return to the return point if the GPS signal is weak or unavailable.
- During RTH process, when the aircraft is flying above 30 meters, the aircraft will immediately perform the RTH function; when flying below 30 meters, the aircraft will rise to 30 meters automatically and then perform the RTH function.
- If the aircraft does not receive the satellite signal or the signal of the remote controller continues to be lost for more than 2 seconds, the aircraft will not be able to return, and will slowly descend until it lands.

4. Optical flow position and ultrasonic altitude hold

The aircraft is equipped with optical flow position and ultrasonic altitude hold system, which provides better environmental adaptability.

The optical flow positioning system is located at the bottom of the fuselage. As shown the camera module ②, optical flow positioning system obtains aircraft position information through image.

The ultrasonic height determination system consists of a pair of ultrasonic sensor modules ① (transmitter and receiver). The ultrasonic sensor can measure the current aircraft height by ultrasonic.



Optical flow position system

The optical flow position system is typically used in indoor environment when GPS is weak or unavailable. It works best when the altitude is less than 3 meters.

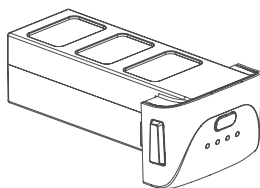
Note :

The precision of the optical flow position system is easily affected by the light strength and features of the surface textures. It would happen if the ultrasonic sensor could not work normally to detect the altitude when it is flying over objects that is made by sound-absorbing materials. Once the optical flow position sensor and ultrasonic sensor are both not available, aircraft will switch to altitude mode automatically. Be cautious to operate the Aircraft in the following situation.

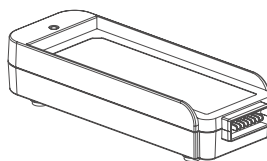
- Fly fast at an altitude below 0.5m.
- Fly over monochrome surfaces (like pure black, pure red, pure red and pure green).
- Fly over strong light reflective surfaces or surfaces prone to reflection.
- Fly over water or transparent object surfaces.
- Fly over moving object surfaces (such as crowds, swaying juggles and glass).
- Fly over an area where light changes dramatically and rapidly.
- Fly over surfaces extremely dark (lux<10) or extremely bright (lux>10,000).
- Fly over material surfaces that absorb ultrasonic waves (like thick carpet).
- Fly over surfaces without clear textures.
- Fly over surfaces with highly repeating textures (small grid brick in the same color).
- Fly over surfaces that are tilting over 30 degrees (could not receive the echo of the ultrasonic wave).
- Flying speed should be controlled not to be too fast. When the aircraft is 1 meter against the ground, the flying speed should not be over 2m/s; when the aircraft is 2 meter against ground, the flying speed should not be over 5m/s.
- Keep sensors clean at all the time.
- The vision system is only effective when the aircraft is within the altitude of 3 meters.
- Make sure that the light is bright enough and the surfaces is with clear textures so that the vision system can acquire the movement information through recognizing the ground textures.
- The vision system may not function properly when the Aircraft is flying over water, low light ground and surfaces without clear patterns or textures.
- Do not use other ultrasonic device with a frequency of 40KHz when the vision system is in operation.
- Since the ultrasonic altitude hold will emit ultrasonic waves that human ears cannot perceive, the ultrasonic waves may cause the animals to be uneasy, please stay away from the animals when using.

5. Battery of aircraft

The aircraft battery capacity is 3100mAh, and its rated voltage is 11.4V. This battery uses high-energy battery cells.



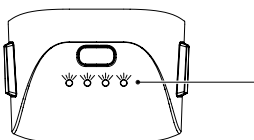
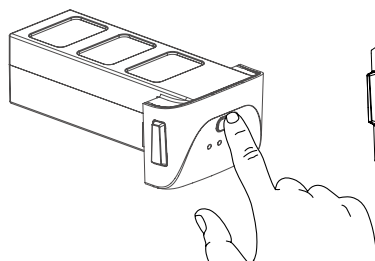
Aircraft battery



Balance charger

1) Check battery life

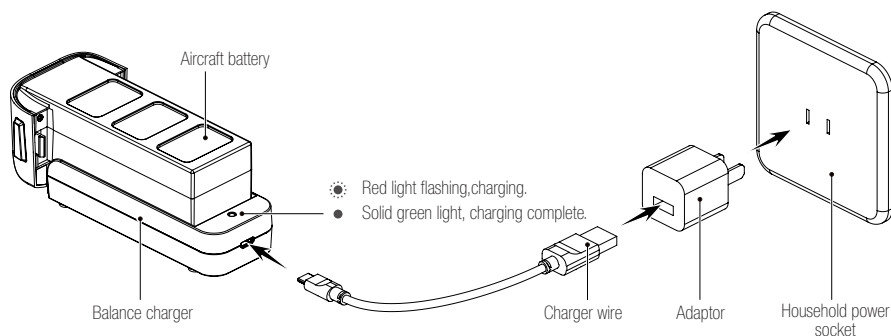
Press the battery power switch to display the current remaining capacity.



- Battery capacity $\leq 25\%$
- Battery capacity $\leq 50\%$
- Battery capacity $\leq 75\%$
- Battery capacity $\leq 100\%$

2) Charge

Be sure to fully charge the aircraft battery each time before flight, please use the charger and wire to charge the battery as follow.



Note :

- The aircraft battery must be charged by using the officially supplied dedicated charger.
- The power of USB power adapter determines the charging time.
- With 5V 2A adaptor, the charging time is about 270 minutes.

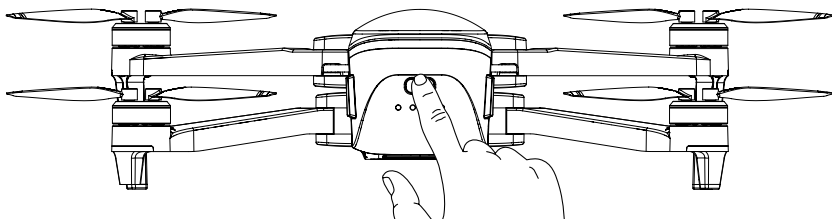
Attention :

- Adult supervision is needed when the aircraft is charging. Batteries are only to be charged under adult supervision.
- Do not short circuit and squeeze the battery to avoid explosion.
- The battery should not be short-circuited, decomposed or put into the fire; and the battery should not be placed in high temperature and heated places (such as in the fire or near the electric heating device).
- The model can only use the recommended charger. Regular checks should be made to check whether the charger's wires, plugs, housing and other components are damaged. When damaged, the charger should be stopped using until repaired.
- Charger is not a toy.
- Charger can only be used indoors.
- After the flight, the battery needs to be charged before storing. If not using it, it is recommended to charge the battery at least once a month to avoid permanent battery damage due to excessive discharge.
- Only 5V USB power adapters that meet local laws and regulations can be used.

6. Aircraft power switch

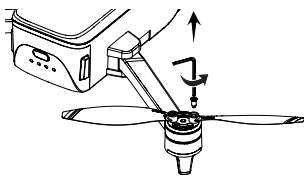
Power on and power off

Press and hold the power switch of the aircraft for about 2 seconds, the aircraft will power on. At this time, the aircraft will sound a tone, and the front and rear lights will be on; press and hold again the power switch for about 2 seconds, the aircraft will power off, and the front and rear lights will be off.

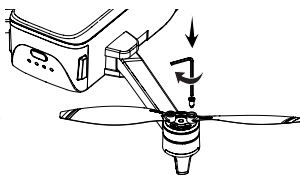


7. Attach and detach the propellers

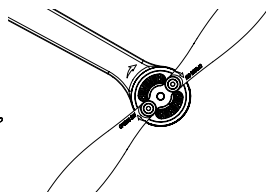
The propellers are pre-installed in the package. If the propeller is damaged during using, please replace the propellers according to the following steps.



Turn the screw counterclockwise to remove the propeller.



Install the propeller and screw, turn the screw clockwise to lock.



When installing the propeller, make sure that the arrow on the propeller is in the same direction as the arrow on the arm.

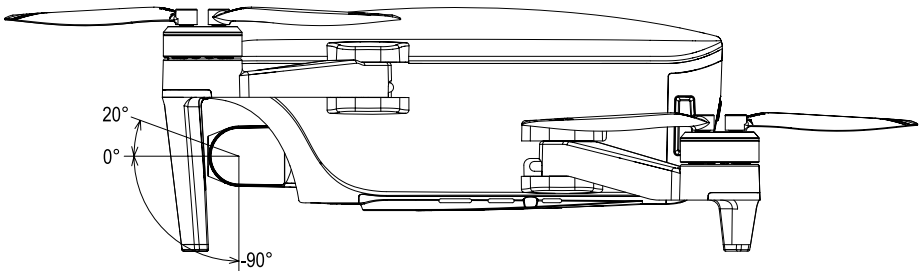
Note :

- If the propeller with the CW-mark is to be disassembled, choose the propeller with the CW-mark for installation. If the propeller marked with CCW-mark is removed, Just choose the propeller with CCW-mark to install.
- Make sure that the propeller CW and propeller CCW are installed in the correct positions. The aircraft will fail to fly normally if the propellers are installed improperly.
- As the propellers are thin, be careful when installing them to prevent accidental scratches.
- Please use the official dedicated propellers for replacement.
- Propellers are consumables. Please purchase the official dedicated propellers if necessary.

8. Gimbal camera

1) Gimbal

The 3-axis stabilized gimbal a stable platform for the camera, so that the camera can also take a stable picture when the aircraft is flying at high speed. The controllable angle range of gimbal is -90° to 20° .



Note :

- Remove the gimbal cover before flight, during storage or transportation, re-install the cover to protect the gimbal .
- Please place the aircraft on the flat and open ground before takeoff. If it is placed on the uneven ground or grass, the gimbal will touch the ground object, or the gimbal will be subject to excessive external force (such as being collided or broken), which may cause the gimbal motor to enter the protective state and fail the self inspection.
- Do not touch the gimbal after the aircraft is powered on.
- Please do not add any objects on the gimbal, otherwise it may affect the performance of the gimbal, or even burn the motor.
- The gimbal contains precision components. If it is collided or damaged, the precision components will be damaged, which may lead to the performance degradation of the gimbal. Please protect the gimbal from physical damage.
- Please keep the gimbal clean and avoid contacting with sand and other matters, otherwise the gimbal activity may be blocked and its performance may be affected.

2) Camera

The camera of aircraft adopts sony CMOS, up to 20 million pixels, and the photographing distance is from 1 m to infinity.

The camera supports up to 20 million still photos, 30 fps, 4K high-definition video recording.

3) Photos and videos saving

A micro SD card slot is set at the bottom of the right side of the aircraft fuselage to install a micro SD card to store the captured images.

Please use micro SD card with transmission speed of class 10 and above or UHS-1 rating to make sure high-definition video can save smoothly.

If a SD card is not installed, the video and photos will be saved to the mobile app. In this case, the video quality is relatively poor, If a SD card is installed in the aircraft, the videos and photos will be saved to the SD card. In this case, the video quality is much better, the videos and photos on the SD card can be transferred to the mobile app.

- The FPV transmission quality and distance varies by different mobile phones and different environmental situations.
- Please fly the aircraft in an open and undisturbed environment as possible for a better FPV transmission experience.
- The actual test indicates that the maximum FPV transmission distance approach 5000 meters in an interference-free environment.

Note :

- Do not plug and unplug the micro SD card while the aircraft is on. Inserting or removing the card during recording or removing the battery with the power on may cause damage to the memory card and loss of stored data.

- To ensure the stability of the camera system, limit the length of a single recording to 30 minutes or less.
- Check the camera settings before shooting with the camera to ensure that the parameters are correct.
- When using the device to take important images, please take several test shots before actually shooting to ensure that the device is in proper working condition.
- Stop recording before turning off the aircraft, otherwise the video being recorded will be corrupted. For the damaged video, please insert the memory card back into the flight and turn on the device, there is a probability that the file will be repaired automatically. Cfly are not responsible for any damage caused by unreadable videos and photos.
- Please use and store the camera within the nominal temperature and humidity range to keep the camera lens in good condition.
- For dirty or dusty lens surface, it is recommended to clean the lens with a professional lens cleaning tool to avoid damaging the lens or affecting the image quality.
- Make sure the camera is not covered by any shade, otherwise the high temperature may cause damage to the camera and even burn you or others.

Remote Controller

This section describes function of remote controller.

The remote controller should be used with the aircraft.

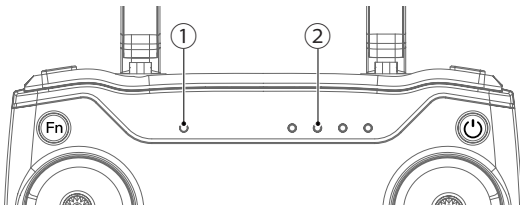
Through the joystick and function buttons on the remote controller, user can operate the aircraft and camera within distance up to 5km (under FCC, non blocking and non-interference environment), and display high-definition images on the mobile phone in real time through the app.

The telescopic foldable mobile phone support at the bottom of the remote controller is used to place the mobile phone. The joystick is detachable and easy to pack and carry.

The remote controller is equipped with 2600 mAh rechargeable lithium battery, and the maximum working time is about 4 hours.

1. Status indicator of remote controller

Two sets of LED lights are set on the remote controller, light ① on the left is used to indicate the RC and aircraft is paired or not, and light ② on the right is used to indicate the current remote control power. indicator light refer to the following description.



①Flight mode indicator -- LED

No.	Indicator light	Sound	Status
1	Solid green light	Not	RC and aircraft is paired.
2	Solid red light	Not	RC and aircraft is not paired.

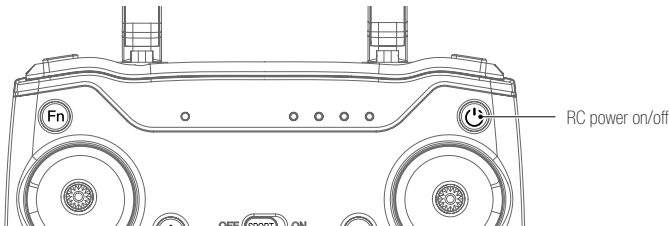
②Power indicator -- LED

No.	Indicator light	Sound	Status
1	Flashing green light during	Not	Charging.
2	Solid green light during charging	Not	Charging complete.
3	Solid green light	Not	The remote controller is working normally.
4	Green light flashes slowly	B-B-B-.....	Low battery alarm, please charge.
5	Green light flashes doubly	B-B-B-.....	The remote controller is idle for more than 9 minutes after power-on; the prompt disappears automatically once operate.

2. Function instructions of remote controller

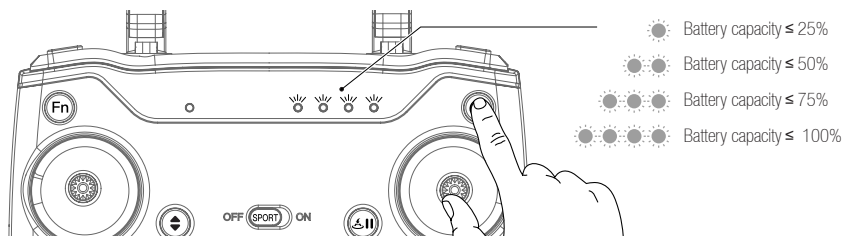
1) RC power on/off

Power on and power off the remote controller by pressing the power button for more than 2 seconds.



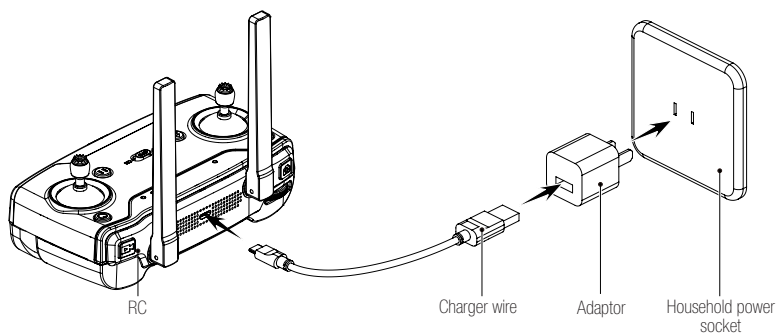
2) Battery life check

Short press the power button on remote controller, check the current power of the battery through the following diagram and the status of the indicator light.



3) Charge for remote controller

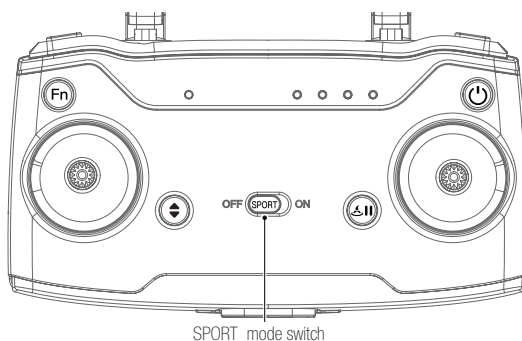
Charge the remote controller when the battery capacity is insufficient.



4) Sport mode

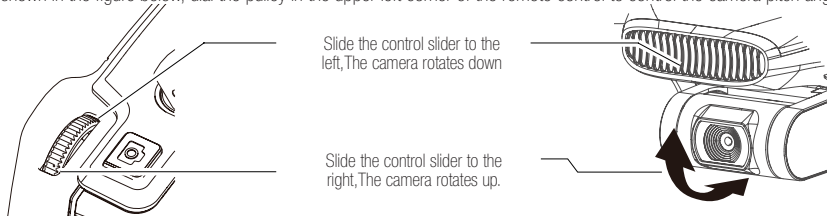
When it's on, aircraft is high speed mode, please fly carefully.

When it's off, aircraft is normal speed mode.



5) Gimbal adjustment

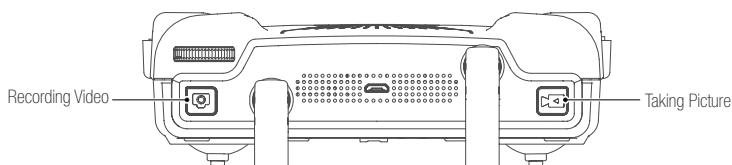
As shown in the figure below, dial the pulley in the upper left corner of the remote control to control the camera pitch angle.



6) Photo / video

Press '📷', with 'Beep' sound on RC, which means photo is taken successfully.

Press '📹' with 'B-B-' sound on RC, which means video start to record successfully, press '📹', again, with 'B-B-' sound on RC, which means video stop to record successfully.



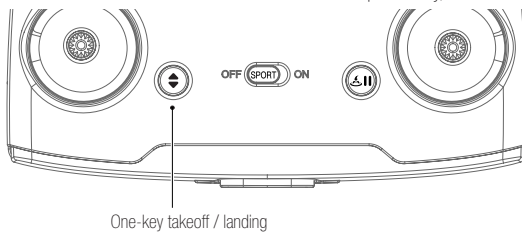
Note :

- When the aircraft is not inserted with micro SD card or the micro SD card malfunction, the photos and videos will be stored on the mobile device, the quality of video files is relatively poor.
- Please stop recording before turn off, otherwise it will cause file damage.
- Pictures can not be taken when it's recording.

7) One-key takeoff / landing

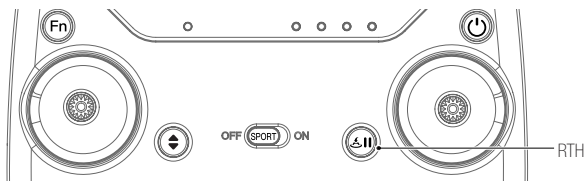
Long press the '⬆️' button for 2 to 3 seconds. When the remote controller beeps steadily, the aircraft will automatically takeoff and ascend to the altitude of 1.2 meters and hover.

Long press the '⬆️' button for 2 to 3 seconds. When the remote controller beeps steadily, the aircraft will land vertically.



8) RTH

Long press '🏠' button, with 'B-B-' sound on RC, to start the RTH, The aircraft will fly back to the latest recorded return point. The joysticks can not be used during the process of ascent and return. During its landing, user can toggle the joystick to control the aircraft and decide the landing site. During its return, press the '🏠' button again to exit RTH mode, then the user will regain control of the Aircraft.



Attention :

- To ensure the return to home point as precise as possible, please fly the aircraft in open area (no tall buildings in 50 meters of radius, flat in 10 meters of radius) with the GPS working well, then the return to home function will be able to activate.
- With the GPS positioning mode turned on, it will automatically enter auto return to home mode if the remote controller loses control.
- Once the RTH mode is enabled, if the aircraft flies below 30 meters of altitude, the aircraft will automatically ascend to 30 meters before returning to home point. If the aircraft flies over 30 meters of altitude, the aircraft will return to home point at the current altitude. Please do not use other functions during the process of return. Please ensure there are no obstacles in way of return in case of any potential accidents.

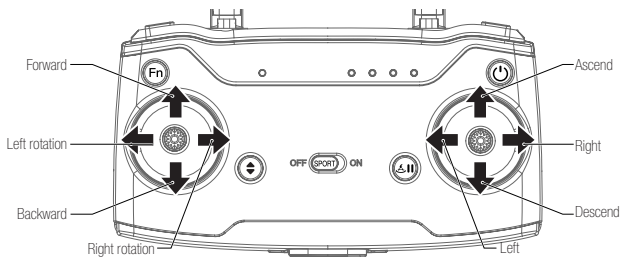
3. Throttle control stick mode

1) There are two kinds of control modes

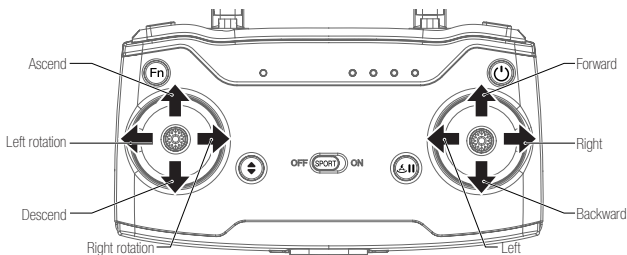
Right hand throttle mode (mode 1, i.e. japanese hand) and left hand throttle mode (mode 2, i.e. american hand). The control methods are as follows:

The default setting mode is left hand throttle mode (mode 2, i.e. american hand).

Mode 1

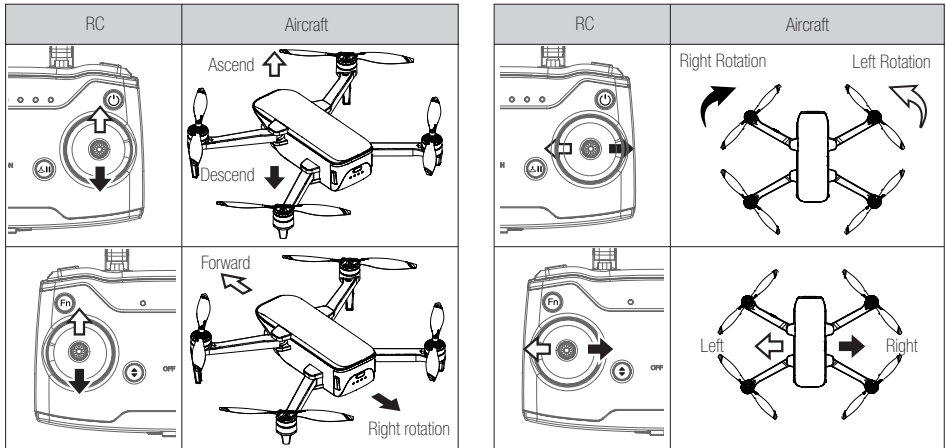


Mode 2

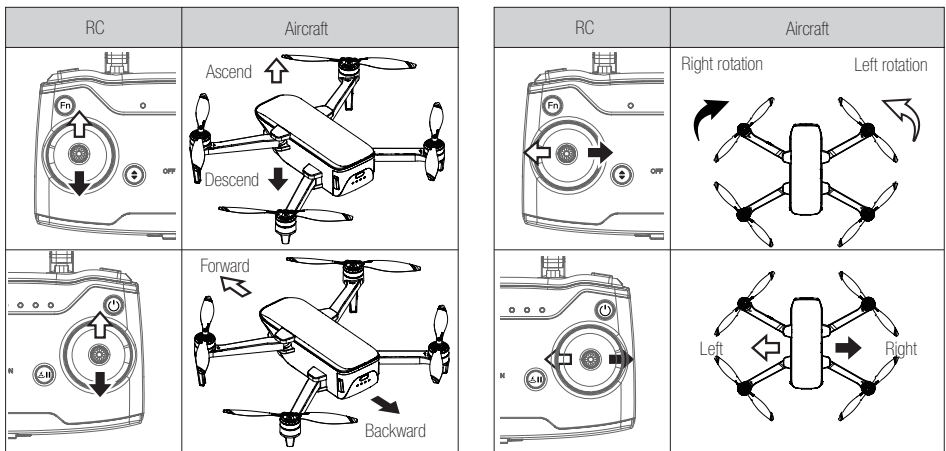


After taking off, control the aircraft as shown in the figure below.

Mode1



Mode2



2) Throttle control stick mode

- Switch to mode 2 (default setting)

Before turning on, pull the left joystick to the lowest position, press the buttons 'Fn' and 'P' at the same time, and keep still, wait for the remote control to make a beep and the two green lights are on to complete successfully. Switch to 'mode 2', user can use it after restarting the remote controller.

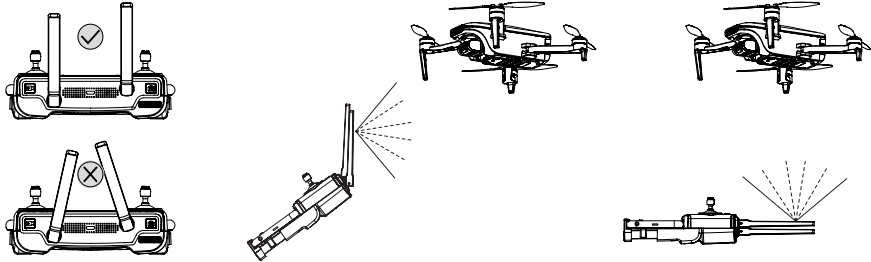


● Switch to mode 1

Before turning on, pull the right joystick to the lowest position, press the buttons '⏻' and '⌂' at the same time, and keep still, wait for the remote control to make a beep and the two green lights are on to complete successfully. Switch to 'mode 1', user can use it after restarting the remote controller.

4. Optimal transmission zone

Please fully extend the antennas before the flight. The signal is weak directly above the antenna. The signal between the aircraft and the remote controller is most reliable when the antennas are positioned in relation to the aircraft as depicted below.



Ensure that the aircraft is flying within the optimal transmission zone. To maintain optimal transmission performance, adjust the remote controller and antennas and keep the space between controller and aircraft clear during the flight.

5. Pair the aircraft

The aircraft is pre-paired with the remote controller in the package, users can use it once turn it on.

If the remote controller is replaced or for other reasons that causes a failure in matching the aircraft and the remote controller, please complete the binding as the following steps :

- (1) Turn on the aircraft and the remote control..
- (2) Use data wire to connect the RC and phone.
- (3) Open Cfy 2 app, choose 'mine—rc paired', click 'rc paired'.
- (4) The Wi-Fi name scanned will be displayed in the dialog.
- (5) Please select the Wi-Fi of the aircraft, such as 'drone-xxxxx' and then click 'OK'.
- (6) When the light of the aircraft turns green and flashes slowly or is always on, it indicates that the RC and aircraft is paired

Cfly 2 APP

This section describes function of Cfly 2 APP



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