



Arno SE

User Manual V1.1



Download app



Please Take proper operation and flight safety guidelines in mind as it is very important for all of us.

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Important

- Please read this manual carefully before using this product, and operate strictly in accordance with the manual.
- Please do not try to disassemble, modify or repair the aircraft by yourself, please contact authorized agent if necessary.
- Finding 'colleague' ' manual' on Cfly2 APP to download the manual .
- This instruction is updated without prior notice.

Product Overview

This section describes Arno SE and lists the components of the aircraft and remote controller.

1. Introduction

Arno SE is equipped with a vision positioning and GPS positioning system, which allows it to fly and hover stably indoors and outdoors, and has functions such as one-key RTH, circle mode, follow me, and waypoint flight, etc. Arno SE is equipped with a 3-axis mechanical stabilization gimbal to capture high-resolution pictures and videos. It can adjust the camera angle during flight to capture unique photos and videos from different angles for better aerial photography experience.

Arno SE can be used with remote controller and APP to realize various operations and settings of the aircraft and camera. The APP on the phone can display real time high-definition FPV (first-person view) and information like flight parameters at the same time. Using 'rocket, drone, helix, boomerang' mode to get the small unique video easily.

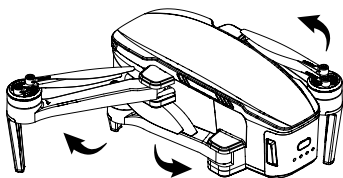
The maximum speed of the aircraft is 61.2km/h, the maximum transmission distance approach 4000m.the maximum flight time approach 32mins.

2. First use

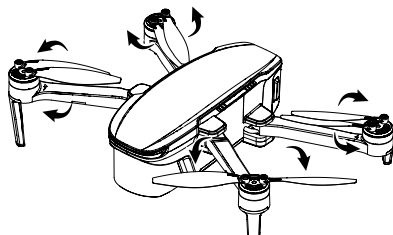
1) Prepare the aircraft

(1). Unfold the aircraft, and remove the gimbal cover

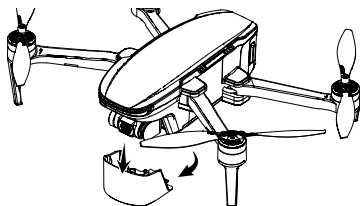
The aircraft is folded inside the package. Follow the steps to unfold the aircraft.



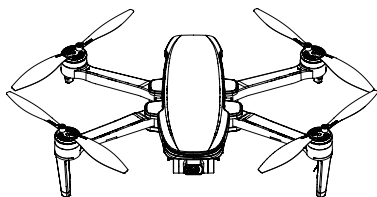
(1).Extend the front and rear arms outward.



(2).Separate the propeller blades.



(3).Remove the gimbal cover.

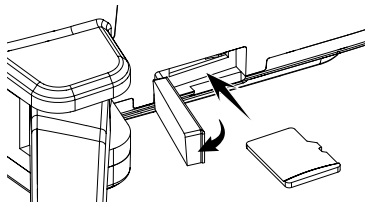


(4).Complete.

(2). Micro SD card installation

The micro SD card slot is located on the right side of the aircraft body.

Before installing the micro SD card, open the micro SD card slot cover as shown on the picture, then insert the Micro SD card into the slot, and confirm that the micro SD card is in the right place, then close the micro SD card slot cover.

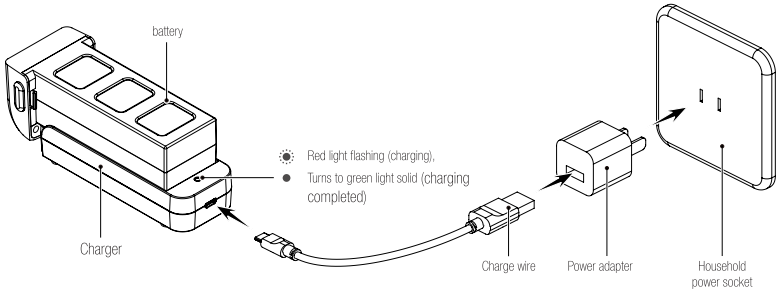


Note: Please use micro SD card with above or UHS-1 rating.

Attention: Do not install or remove the micro SD card while the aircraft is powered on. Otherwise, errors will occur for the data stored.

(3). Charge the battery

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:

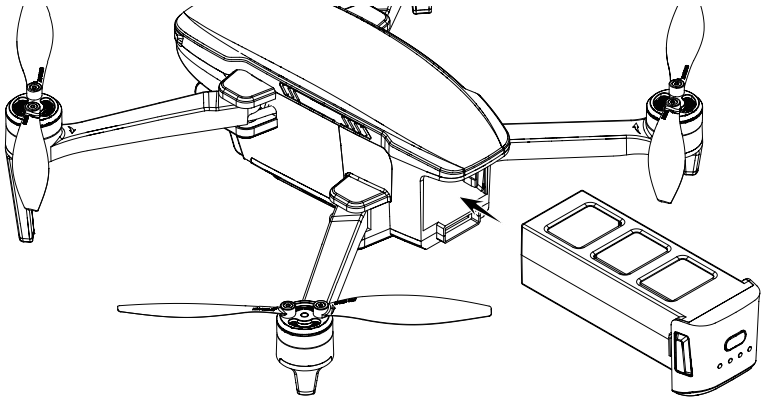
The aircraft battery must be charged using the officially supplied dedicated charger.

The power of USB power adapter determines the charging time.

With 5V 2A adaptor, the charging time is about 270 minutes.

(4). Battery installation

Insert the battery into the battery compartment from the bottom, make sure that the latch on the battery is locked.



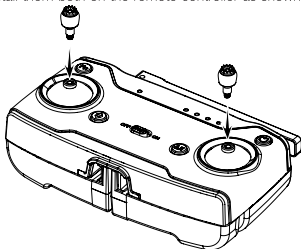
Warning:

- Please use both hands to install the battery. Installing the battery with one hand may result in poor battery installation.
- Insert the battery into the battery compartment from the bottom, make sure that the latch on the battery is locked and heard the click sound.
- If the battery is not installed properly, the aircraft may crash due to power-cut during flight.

2) Prepare the remote controller

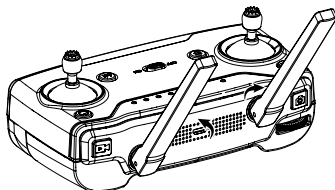
(1). Install the joystick

Find the sticker on package, and install them both on the remote controller as shown:



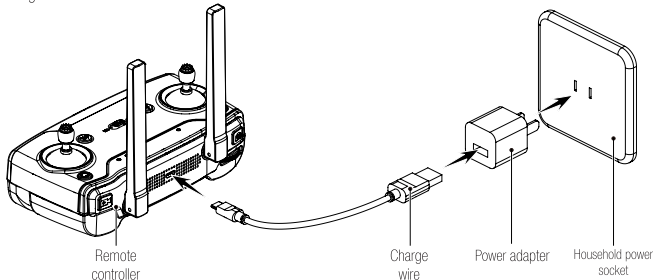
(2). Unfold the antenna

Please unfold the antenna as shown below.

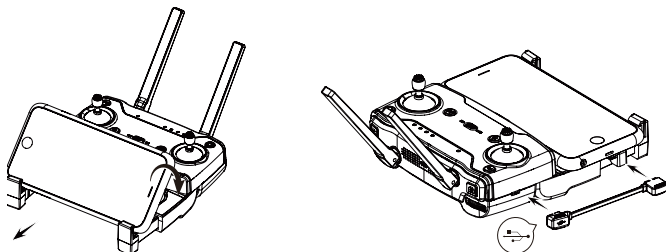


(3). Charge for remote controller

Please charge the remote controller as shown.



(4). Unfold the phone support and insert the phone as shown, Choose correct data wire to connect RC and phone.



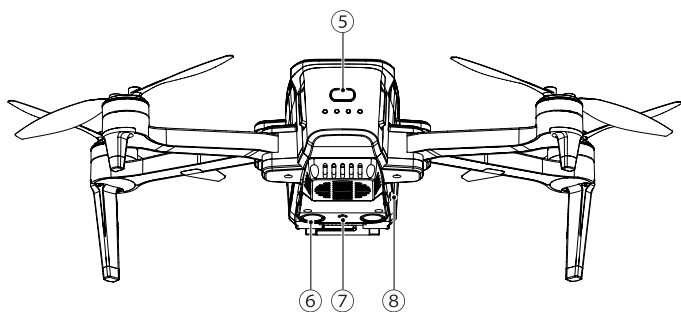
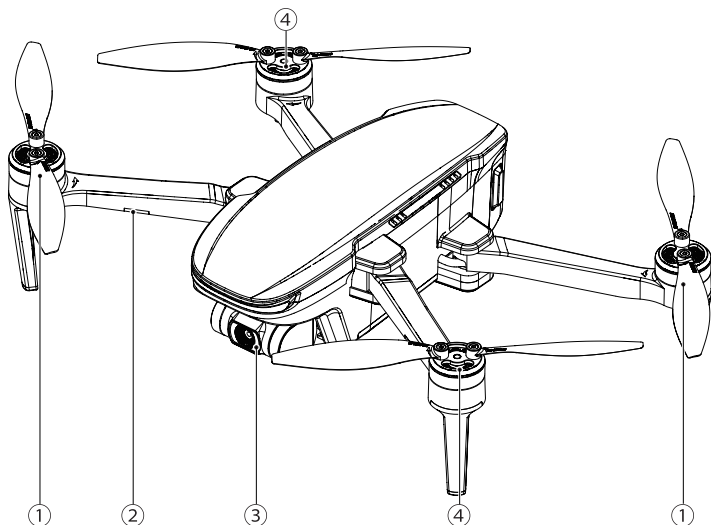
3. Activate the aircraft

The new aircraft must be activated. Please turn on the aircraft and RC open CFLY 2 APP then operate according to the interface prompts. The Internet is required during activation.

4. Upgrade

After activating the RC and aircraft, CFLY recommend user to upgrade when there is new firmware to get better flight experience.

5. Aircraft diagram



① CCW motor / propeller

④ CW motor / propeller

⑦ Optical flow

② Head / optical flow status indicator light

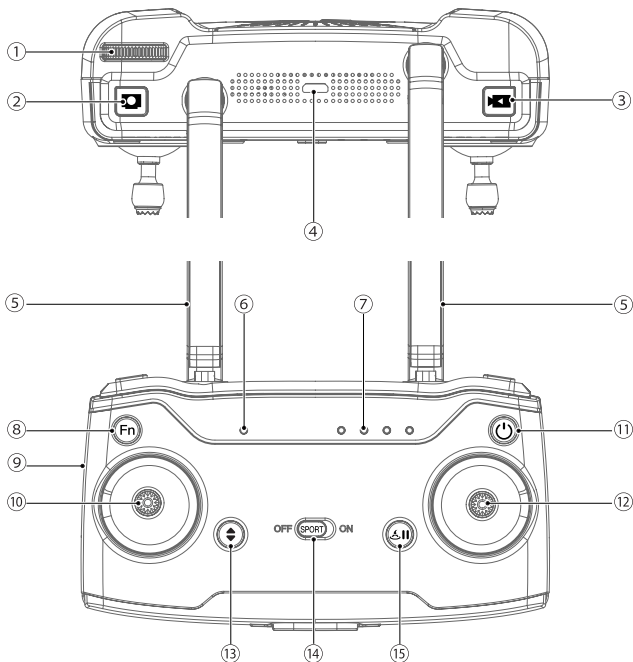
⑤ Flight status indicator light

⑧ Micro SD card slot

③ Gimbal & camera

⑥ Aircraft battery

6. Remote controller diagram



- ① Gimbal adjustment
Control the angle of the camera.
- ② Photo button
Press to take a picture.
- ③ Video button
Press to start/stop recording the video.
- ④ USB port
For charging.
- ⑤ Antenna
- ⑥ Connection status indicator
When the green light is always on, the aircraft is connected, and when the red light is always on, the aircraft is not connected.
- ⑦ Power indicator
- ⑧ Zoom button
Press and hold this button and pull out ① at the same time to adjust the zoom of the camera, and the picture will be enlarged or reduced accordingly..
- ⑨ Data wire port
Connect the RC and phone.
- ⑩ Left joystick
- ⑪ Power switch
Short press: check the battery power,
Long press: turn on/off the remote controller.
- ⑫ Right joystick
- ⑬ One key takeoff / landing
Press this button before takeoff, and the aircraft will takeoff automatically;
Press this button after takeoff, and the aircraft will land automatically.
- ⑭ Sport mode switch
When it's off, aircraft is normal speed mode .
When it's on, aircraft is high speed mode, please fly carefully.
- ⑮ RTH / Pause button
Long press over 1.5seconds,aircraft will start RTH mode,short press this button, aircraft will stop intelligent mode(except low battery return),and hover.

Aircraft

This section describes system composition, function of Arno SE.

The aircraft is mainly composed of flight control system, communication system, optical flow positioning system, power system and intelligent battery system. This chapter will introduce the functions of each part in detail.

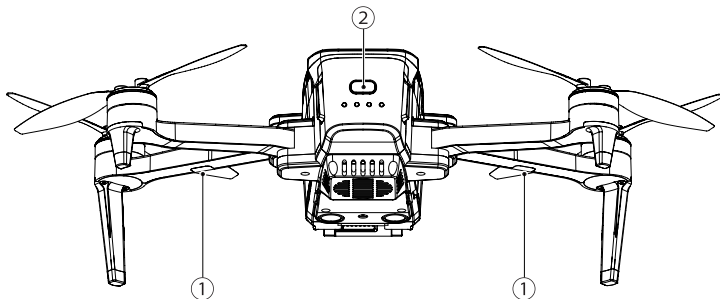
1. LEDs and status indicator of aircraft

LED indicator light is installed on the front arm of the aircraft, which is used to indicate the direction of the aircraft. After the aircraft is started, the red light will be on.

The indicator light is also used to indicate the status of the optical flow positioning system.

The indicator light on the rear of the aircraft is used to indicate the status of the current flight control system during flight.

Please refer to the table below for the status of flight control system indicated by different color of lights.



① Optical flow positioning status indicator – LED

No.	Indicator light	Status
1	Flashing red light	Optical flow positioning failure.
2	Solid red light	Optical flow positioning works.

② Flight status indicator – LED

No.	Indicator light	Status
1	Flashing blue light	RC and aircraft is not paired,GPS is not located
2	Solid blue light	RC and aircraft is not paired,GPS is located
3	Solid green light	RC and aircraft is paired,GPS is located
4	Flashing green light	RC and aircraft is paired,GPS is not located
5	Red and blue light flashing alternately	Horizontal calibration process
6	Red and green light flashing alternately	Vertical calibration process
7	Solid red light	Serious error
8	Flashing red light	Low battery alarm
9	Red light flashes doubly	Alarm for severe low battery.
10	Green light flashes doubly	Beginner mode (GPS not positioned)
11	Blue and green light flashes alternately	Compass data error

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 altitude 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 Short press '🏠' button for more than 2 seconds to exit the return, the user can regain control of the aircraft.

During RTH, user can control altitude of aircraft, adjustment range is between altitude of RTH to limit altitude of 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.

During low battery return, user can control altitude of aircraft, the maximum adjustment range is altitude of RTH, the minimum adjustment range is limit altitude of RTH

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 '⏸️'.

During lose control RTH, user can control altitude of aircraft, adjustment range is between altitude of RTH to limit altitude of aircraft.

Attentions :

- The aircraft cannot avoid obstacles when it is flying back during the RTH process.
- About 'altitude of RTH' and 'limit altitude', please refer page 25.
- 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, meanwhile, altitude of RTH can adjust via APP.
- 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

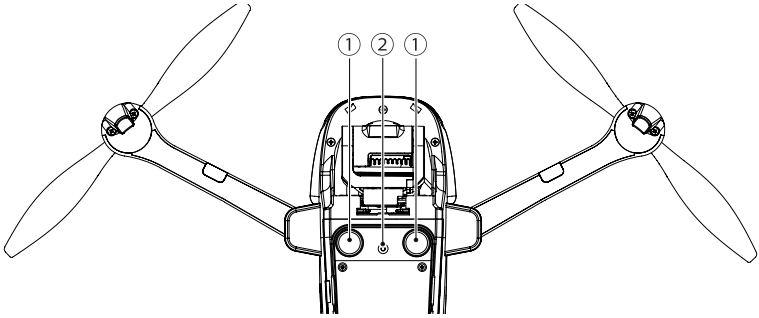
The aircraft is equipped with optical flow position and ultrasonic altitude hold system, which provides better environmental adaptability.

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.

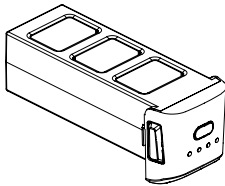


Note: :

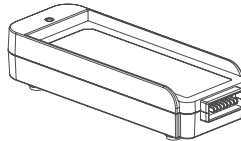
- The precision of the optical flow position system is easily affected by the light strength and features of the surface textures. It would happen if the ultrasonic sensor could not work normally to detect the altitude when it is flying over objects that is made by sound-absorbing materials. Once the 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.
 - (1) Fly fast at an altitude below 0.5m.
 - (2) Fly over monochrome surfaces (like pure black, pure red, pure red and pure green).
 - (3) Fly over strong light reflective surfaces or surfaces prone to reflection.
 - (4) Fly over water or transparent object surfaces.
 - (5) Fly over moving object surfaces (such as crowds, swaying juggles and glass).
 - (6) Fly over an area where light changes dramatically and rapidly.
 - (7) Fly over surfaces extremely dark ($\text{lux} < 10$) or extremely bright ($\text{lux} > 10,000$).
 - (8) Fly over material surfaces that absorb ultrasonic waves (like thick carpet).
 - (9) Fly over surfaces without clear textures.
 - (10) Fly over surfaces with highly repeating textures (small grid brick in the same color).
 - (11) 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..



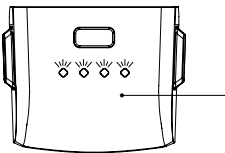
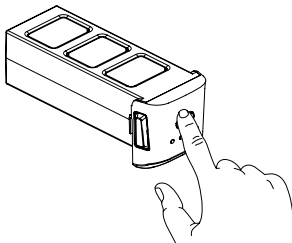
Aircraft battery







Balance charger

1) Check battery life

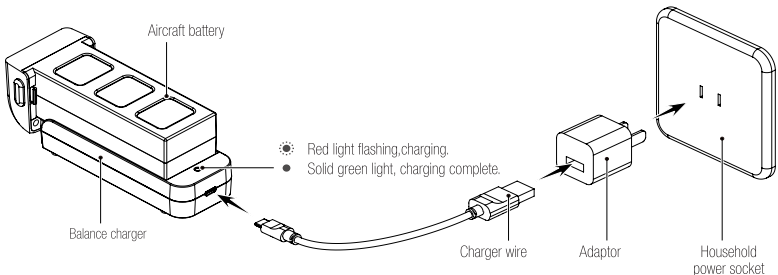
Press the battery power switch to display the current remaining capacity.



-  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 adaptor determines the charging time.
- With 5V 2A adaptor, the charging time is about 270 minutes.

Attention :

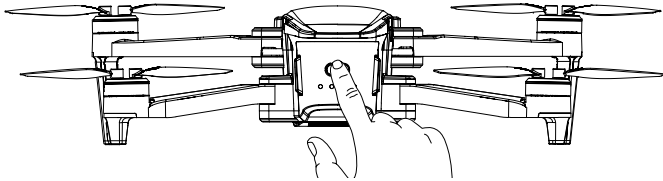
- Adult supervision is needed when the aircraft is charging. Batteries are only to be charged under adult supervision.
- Do not short circuit and squeeze the battery to avoid explosion.

- 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

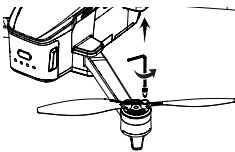
Power on and power off

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.

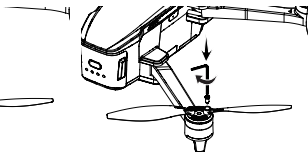


7. Attach and detach the propellers

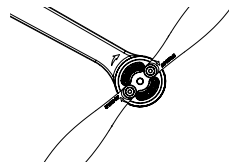
The propellers are pre-installed in the package. If the propeller is damaged during using, please replace the propellers according to the following steps.



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.

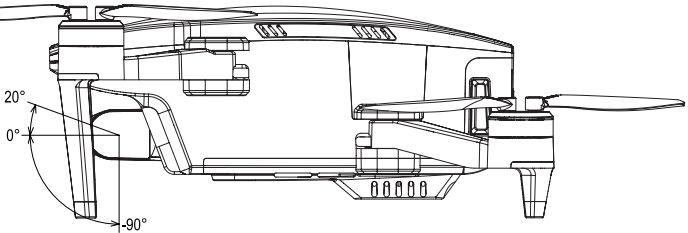
Note:

- 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 above or UHS-1 rating.

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.

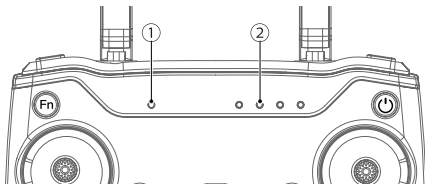
Through the joystick and function buttons on the remote controller, user can operate the aircraft and camera within distance up to 5km (under FCC, non blocking and non-interference environment), and display high-definition images on the mobile phone in real time through the app.

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, Minimum working time is 2.5h, based on different phone type.

1. Status indicator of remote controller

Two groups of LED lights are set on the RC, LED ① on the left is used to indicate the current aircraft connection status, and light ② on the right are used to indicate the current RC power.



Refer to the following description for the lighting mode and meaning of indicator lights:.

① Connection status 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.

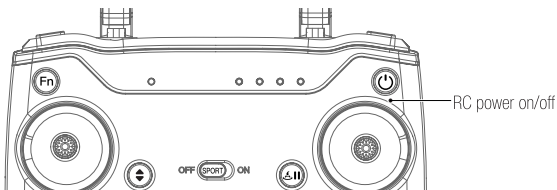
② Power indicator -- LED

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

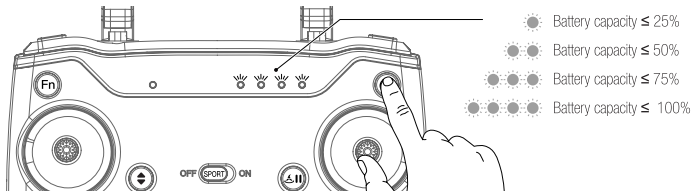
1) RC power on/off

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



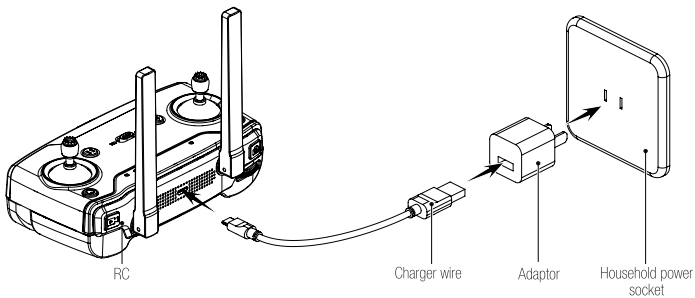
2) Battery life check

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

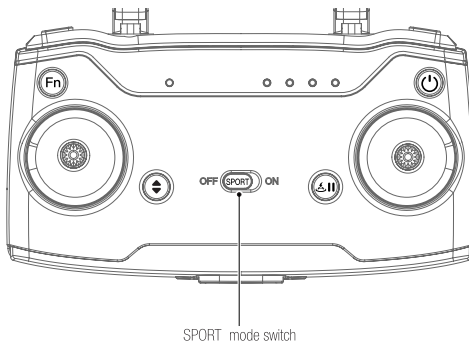
Charge the remote controller when the battery capacity is insufficient.



4) Sport mode

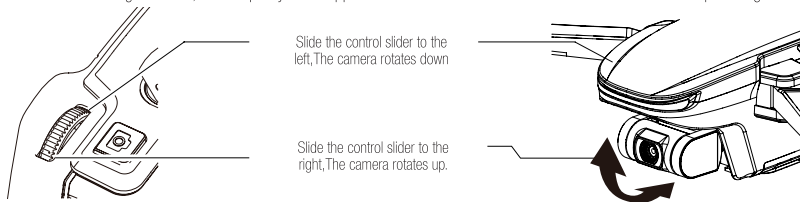
When it's on, aircraft is high speed mode, please fly carefully.

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



5) Gimbal adjustment

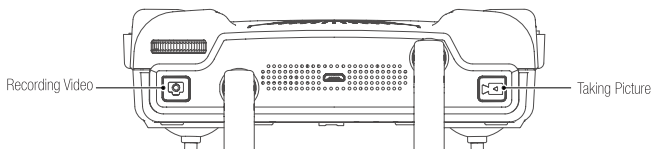
As shown in the figure below, dial the pulley in the upper left corner of the remote control to control the camera pitch angle.



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.



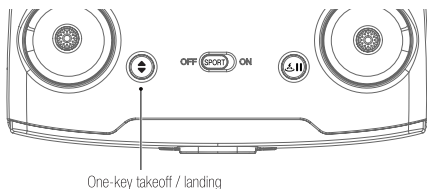
Note:

- 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

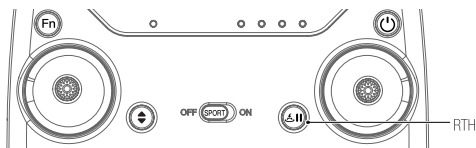
Long press the '📶' button for 2 to 3 seconds. When the remote controller beeps steadily, the aircraft will automatically takeoff and ascend to the altitude of 1.2 meters and hover.

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 :

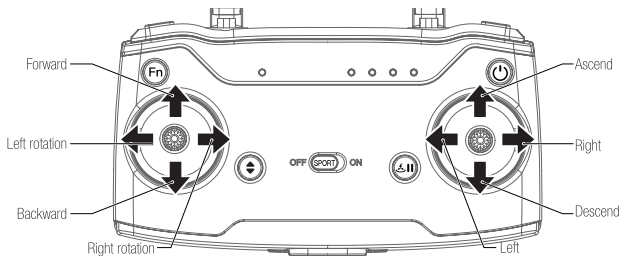
- To ensure the return to home point as precise as possible, please fly the aircraft in open area (no tall buildings in 50 meters of radius, flat in 10 meters of radius) with the GPS working well, then the return to home function will be able to activate.
- With the GPS positioning mode turned on, it 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

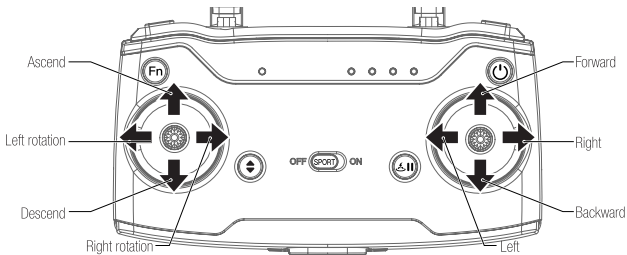
1) There are two kinds of control modes

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:

Mode 1



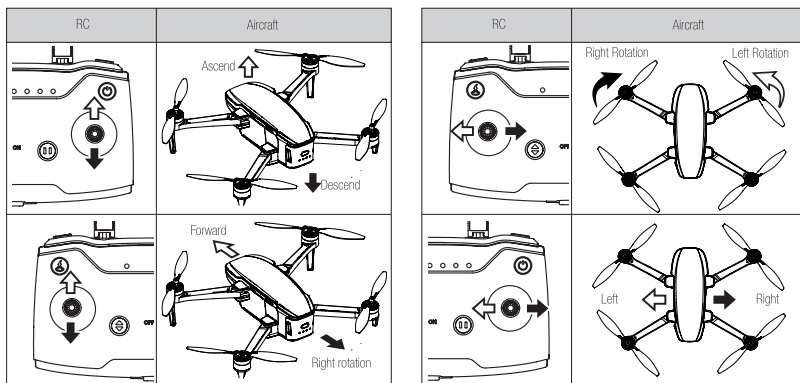
Mode 2



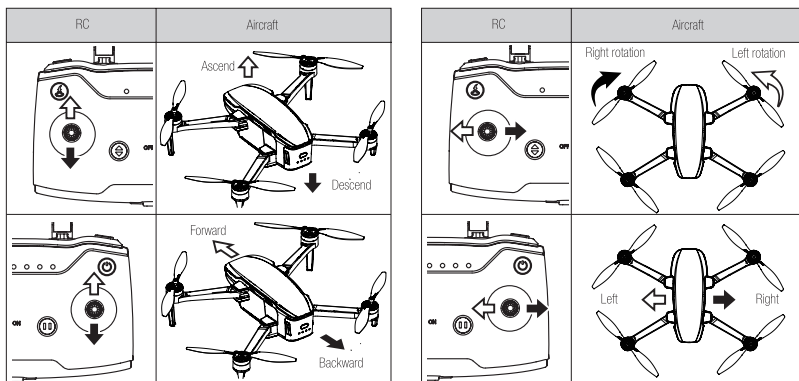
The default setting mode is left hand throttle mode (mode 2, i.e. american hand).

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

Mode1



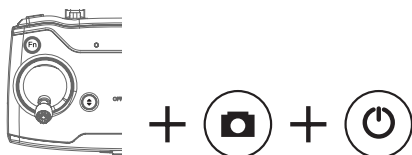
Mode2




2) Throttle control stick mode

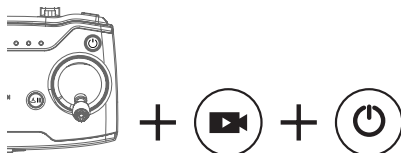
- Switch to mode 2 (default setting)

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

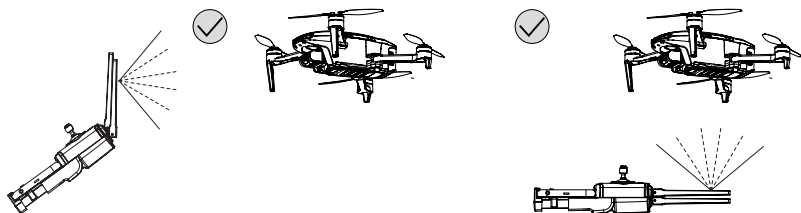


4. Optimal transmission zone

When operating the aircraft, the orientation and distance between the remote controller and the aircraft shall be adjusted in time, and the antenna position shall be adjusted to ensure that the aircraft is always within the good communication range.



When the antenna and the back of the remote controller have an included angle of 180° or 270° and the antenna plane is facing the aircraft, the signal quality of the remote control and the aircraft can reach the best state.



- Please keep the aircraft flying in front of the remote control, and there are no obstacles between the remote control and the aircraft.
- Please try to avoid the antenna tip facing the aircraft, which is in a poor communication area.
- Do not use other communication equipment in the same frequency band at the same time to avoid interference to the remote control signal.

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.

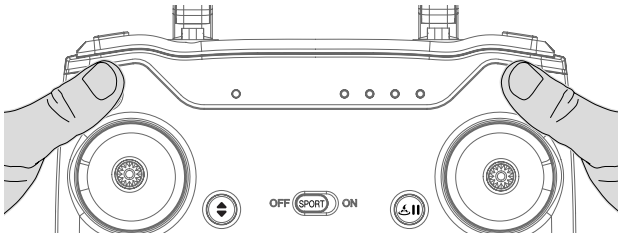
6. Remote control calibration

1) Please try to calibrate RC if one of those circumstances happened:

- (1) When the aircraft is under GPS mode, without any control, aircraft is drifting away to one side.
- (2) The gimbal camera automatically move without any control.

2) How to calibrate :

- (1) Turn off the RC.
- (2) Press the **FN** button, and hold still, then press **ON** to turn on the RC.



Attention: during this process, do not touch the left or right joystick.

- (3) loose the **FN** and **ON** button, calibration is completed .

Cfly 2 APP

This section describes function of Cfly 2 APP.



Download APP

1. APP introduction

Through the Cfly 2 app, user can check the FPV, as well as the status and data of the current aircraft. It can also control the flight of the aircraft, control the camera of the aircraft, control the photographing, camera shooting and set the flight parameters.

In order to get a better experience, please be sure to connect the Cfly 2 APP before flight.

2. Download Cfly 2 APP

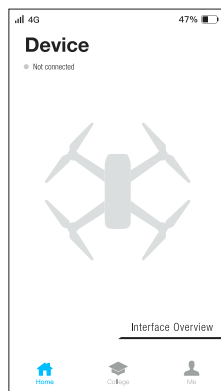
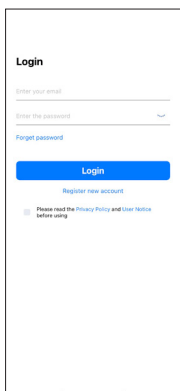
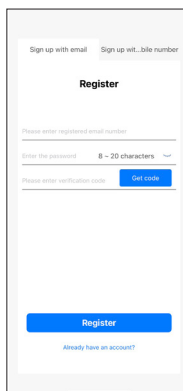
Scan the QR code to download the app.

- 1) Please make sure that the mobile software environment is android 6.0 or above and IOS 10.0 or above.
- 2) Make sure the mobile phone has enough power when connecting the app.
- 3) When use the Cfly 2 APP on mobile phone, please focus on controlling the aircraft.
- 4) Make sure the map on Cfly 2 APP is loaded before flight.
- 5) Please register the aircraft according to local laws and regulations.



3. Register / log in

Install Cfly 2 app, and register an account as shown:



4. Connect the aircraft

Turn on RC, connect RC and phone via data wire.

Open Cfly 2 APP to check whether the aircraft status in the upper left corner is connected. If 'connected' is displayed, click 'start flying' to enter operation interface.



5. Camera setting



- ① Homepage
- ② Remote controller signal
- ③ Mobile GPS accuracy
- ④ GPS signal
- ⑤ Battery life
- ⑥ Flight mode and status prompt:
- ⑦ Aircraft flight status data:

H: the altitude of the aircraft's current position and take-off point ;

D: the distance between the current position of the aircraft and the take-off point ;


VS: the current vertical flight speed of the aircraft;

HS: the current horizontal flight speed of the aircraft.

- ⑧ General settings
- ⑨ One key takeoff:

Before the aircraft takes off, the take-off icon '  ' is

displayed. After clicking , the aircraft will automatically takeoff and hover at a height of 1.2 meters.

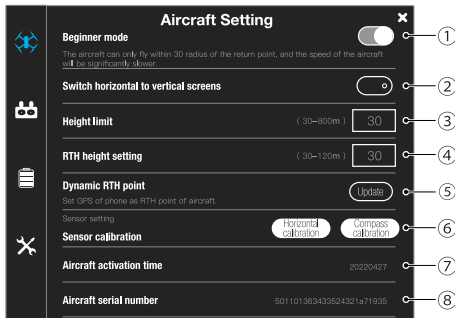
After the aircraft takes off, the landing icon '  ', is displayed, and the aircraft automatically descends to the ground after clicking. will automatically takeoff and hover at a height of 1.2 meters.

- ⑩ RTH
- ⑪ One key shoot:
- ⑫ Map
- ⑬ Photo/video switch
- ⑭ Photo/video start
- ⑮ Camera setting
- ⑯ Album
- ⑰ Current camera setting

Switch flight modes, or start one key shoot.

6. General settings

1) Aircraft setting



- ① Beginner mode:

Activate 'Beginner mode' before take-off, flight distance and altitude will be limited. the default flight distance is 50 meters and the flight altitude is 30 meters.

- ② Switch horizontal to vertical screens

- ③ Height limit:

Set the maximum flight altitude.

④ RTH height setting:

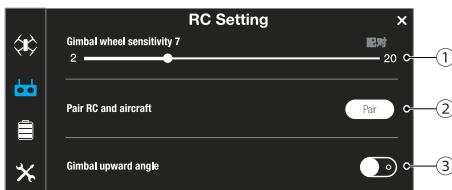
Set the flight altitude of RTH.

⑤ Dynamic RTH point:

Update return point.

⑥ Sensor calibration:

Refer to relevant chapters for its functions.

⑦ Aircraft activation time**⑧ Aircraft serial number****2) RC setting****① Gimbal wheel sensitivity:****② Pair RC and aircraft:**

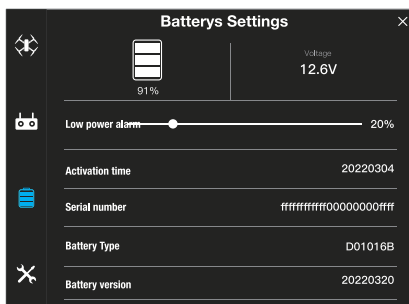
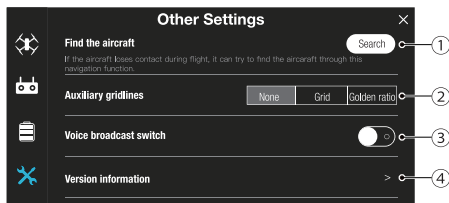
Pair the remote control. Refer to the relevant instructions for its functions.

③ Gimbal upward angle:

When on, the camera can be operated up to 20 degrees horizontally.

3) Battery settings

Click '🔋', enter battery setting interface, set rest battery capacity to alarm, the value is from 10%–80%, when battery of aircraft is lower than the value, the indicator of aircraft turn to flashing red, meanwhile, aircraft will return to home and land.

**4) Other settings****① Find the aircraft**

Find the lost aircraft through the navigation function.

② Auxiliary gridlines

It is used for the composition calibration of picture viewfinder.

③ Voice broadcast switch**④ Version information**

Display version information.

Flight

This section describes flight precautions, flight restricted area and aircraft precautions.

After completing the preparation, please conduct flight training or training first.

Please choose the right flight environment when flying. The default flight height of the aircraft is 120m. Do not exceed the safe flight height. Strictly abide by local laws and regulations during flight.

Be sure to read the 'safety and disclaimer' before flying to understand the safety precautions.

1. Flight environment requirements

- 1) Do not fly the aircraft in bad weather such as high winds, snow, rain, foggy weather, etc.
- 2) Choose a wide, open place with no tall buildings surrounded as a flight site. Buildings that use a lot of steel bars may affect the compass work and block GPS signals resulting in poor positioning or even inability to locate the aircraft.
- 3) When GPS is disturbed, the positioning effect of aircraft will become poor or even unable to locate, so that the aircraft is not controlled.
- 4) When flying, please keep aircraft in sight, away from obstacles, crowds, water, etc.
- 5) Do not flying in areas that have high-voltage lines, communication base stations or transmission towers, etc. to avoid signal interference of the remote controller.
- 6) When flying above 6000m altitude, the performance of the aircraft battery and power system will be degraded due to environmental factors, thus the flight performance will be affected. Please fly with caution.
- 7) GPS is not available for flight in Arctic circle and Antarctic circle.

2. Flight restrictions and flight limits of special area

Flight restrictions and flight limits of special area according to the air traffic control regulations and the aircraft management regulations of ICAO and different nations' air traffic control, aircraft must fly in the prescribed airspace.

3. Beginner mode

For beginners, please turn on the beginner's mode. Once the mode is activated, the aircraft will locate its own position by GPS before ready to takeoff. If the aircraft can not be controlled after takeoff, the RTH can be used to allow the aircraft to return automatically.

It is highly recommended to use the beginner mode, in which the flying height of the aircraft will be limited to 30 meters and the distance will be limited to 50 meters (the height / distance limitation can be manually adjusted), and the aircraft can only takeoff if there is a good GPS signal. If user are already familiar with the operation of the aircraft, user can turn off the beginner mode in the ' aircraft settings' menu of the app.

4. Pre-flight inspection

- 1) Make sure the remote controller, aircraft battery, and mobile device are fully charged.
- 2) Make sure the propellers intact and installed correctly.
- 3) Make sure that front and rear arms and the blades are fully unfolded.
- 4) Make sure that the camera lens is clean.
- 5) Make sure the micro SD card installed correctly.
- 6) Ensure that the battery is firmly installed.
- 7) Always use original components or accessories certified by the manufacturer. The use of non-original accessories may pose a hazard to the use of the aircraft.

5. Compass calibration

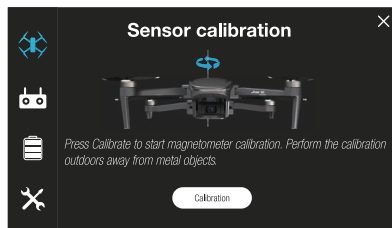
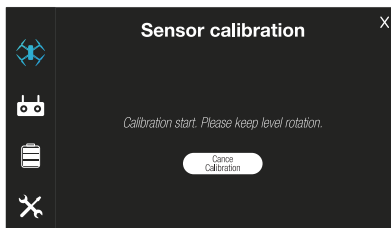
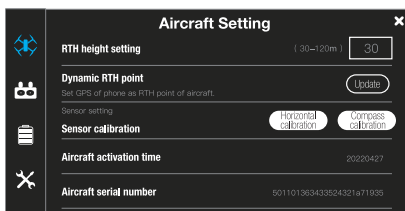
The aircraft has a built-in compass that ensures that the aircraft maintains an accurate heading during intelligent flight. The compass status must be checked before each flight. If encounter the following situations, please calibrate the compass:

- 1) Before the flight to a new flight site.
- 2) When the aircraft status indicator shows that the compass has errors.
- 3) When the APP and the aircraft remind to calibrate the compass.
- 4) When the aircraft experiences severe shifting during hovering or flying.

Compass calibration via APP

(1). Enter calibration mode :

When aircraft and APP connected, Choose 'aircraft—operation interface---setting---aircraft setting' click ' ≡ ' sensor calibration-- compass calibration.

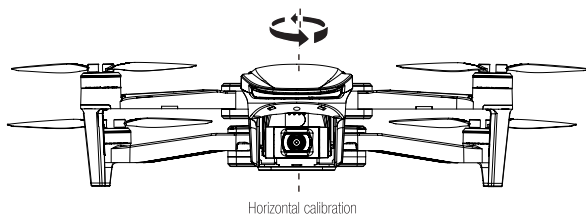


(2). Compass calibration:

When the APP pops up a prompt, check the current environment and keep away from metal objects as prompted. Then tap the 'calibration' button. In this case, when the status indicator on the rear arm of the aircraft flashes blue and red alternately, the compass calibration mode starts.

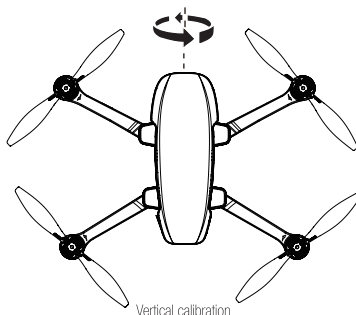
Horizontal calibration :

When the APP prompts to rotate the aircraft horizontally, place the aircraft horizontally in the hand, then turn the aircraft horizontally until the status indicator on the rear arm of the aircraft changes to an alternatively flashing red and green light, which means that the horizontal calibration is successful.



Vertical calibration :

When the APP prompts to place the aircraft's head to be up and rotates, place the aircraft in the hand and ensure that the aircraft body is perpendicular to the ground; then rotates the aircraft horizontally. When the status indicator on the rear arm of the aircraft turns solid (solid or flashing), the compass is successfully calibrated, at this time, the APP will prompt 'calibration successful', then tap 'finish' to end the calibration process, if the status indicator turns to solid red light for about 6 seconds, the compass calibration fails. Please go to another location and re-calibrate.

**Note :**

- After changing the flight site, make sure to calibrate the compass before the first flight.
- If the aircraft indicator flashes blue and green alternately during flight, which means that the compass is abnormal and need to calibrate.
- Stay away from the environment with magnetic interference when calibrating, otherwise the calibration may fail.
- Do not calibrate in areas with strong magnetic fields, such as magnetic mines, parking lots, and building areas with underground reinforcement.
- Do not calibrate with carrying ferromagnetic materials such as keys, mobile phones, etc.
- Do not calibrate when large pieces of metal are nearby.

6. Basic flight operation steps

- 1) Place the aircraft in a wide open area that its front is user's front.
- 2) Turn on the aircraft and remote controller.
- 3) Connect the remote controller with the aircraft and then proceed aircraft self-diagnostic tests.
- 4) Connect the APP with mobile device and enter into the FPV interface.
- 5) Unlock the aircraft after the APP indicate: ready go.
- 6) Pull up the throttle stick then the aircraft takes off, and control the aircraft flight by left/right stick.
- 7) Pull down the throttle stick to land the aircraft.
- 8) Down the throttle stick to the bottom position and keep for 3 seconds to lock the aircraft.
- 9) Pull out the battery from the aircraft and then turn off the remote controller.

7. Flight control instructions**1) Power on**

Put the aircraft on the flat surface, turn on the remote controller and aircraft successively, wait for aircraft on flat ground for about 30 seconds for self-diagnostic tests.

When the aircraft 's indicator light turns from flashing or solid blue to flashing or solid green, which means the Remote controller and aircraft are connected.

In the process of self-diagnostic tests, ground vibration may cause abnormal operation of the aircraft and gimbal, please shut

down and restart the aircraft on the static horizontal ground to enter the normal working state.

2) Connect APP

Turn on the 'Cfly 2 APP', reference page 24 Connect the aircraft.

3) GPS signal status

When the status indicator of the aircraft is solid green, it indicates that the GPS positioning is normal, and the aircraft can takeoff safely.

When the green light flashes on the aircraft status indicator, it indicates that the GPS signal is weak or no signal, and altitude mode can be selected for operation (this mode is difficult to operate, it is not recommended for beginners). Without GPS position, the altitude limit is 6m, no RTH function, fly with caution.

Note:

- **Set the aircraft up and get ready to takeoff after the aircraft indicator light turns solid green (indicating good GPS signal).**
- **Please choose an open and spacious field. Tall steel structures and metal materials will interfere the compass and GPS.**

4) Operate the aircraft takeoff

(1) One-key takeoff on remote controller:

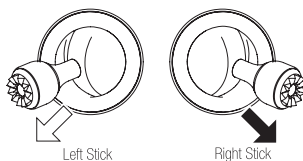
Long press the '⏻' button for 2 to 3 seconds. When the remote controller beeps steadily, the aircraft will automatically takeoff and ascend to altitude of 1.2 meters and hover.

(2) One-key takeoff on Cfly 2 app:

Click the '📶' on app, then click confirm, the aircraft will automatically takeoff and ascend to altitude of 1.2 meters and hover. Please make sure the safe distance for operate.

(3) Takeoff manually:

Toggle the left and right joysticks outward as to get the propellers started to rotate. Slowly push the throttle, the aircraft will takeoff.



5) Operate the aircraft flying

Reference page 19 'throttle control stick mode'.

6) Operate the aircraft land

(1) One-key landing on remote controller:

Long press the '⏻' button for 2 to 3 seconds. When the remote controller beeps steadily, the aircraft will automatically land and propeller stop to rotate.

(2) One-key landing on Cfly 2 app:

Click the '📶' on app, then click confirm, the aircraft will automatically land and propeller stop to rotate. Please make sure the safe distance for operate.

(3) Landing manually:

Slowly pull the throttle, the aircraft will descend to land, keep pulling the throttle, propeller stop to rotate.

7) Power off

After completing the flight, please turn off the power of the aircraft and the remote controller in turn.

Note: Please do not touch the motor after the aircraft just landed!

8. Suggestion and tips for recording video

- 1) Make sure components of the aircraft are normal before flight.
- 2) Choose sunny, windy weather for recording.
- 3) Perform test flights to establish flight routes and to preview scenes.
- 4) Push the control stick gently to keep the aircraft movement smooth and stable.
- 5) Choose appropriate gimbal shooting angle.
- 6) Try to record the videos under positioning mode.

Appendix

1. Specification

1) Aircraft

Size (fold):	170x108x74 mm (L*W*H)
Size (unfold):	182x255x74mm (L*W*H)
Wheelbase	280 mm
Weight	530g
Max ascent speed	Normal mode: 3m/s Sport mode: 5m/s
Max descent speed	Normal mode: 3m/s Sport mode: 3.5m/s
Max speed	Normal mode: 10m/s Sport mode: 17m/s RTH mode: 12m/s
Max service ceiling above sea	5000m
Max flight time	32mins
Satellite positioning systems	GPS/GLONASS
Hover accuracy range	Vertical: +/- 0.5 m± 0.2 m (ultrasonic system,optical flow system works) Horizontal: +/- 1.5m± 0,3 m (ultrasonic system,optical flow system works)
Maximum flight height	120m (maximum 800m (need to change setting on app))
Operating temperature range	0°C ~40°C

2) Optical flow system

Operating environment	Surface with clear pattern and adequate lighting (lux > 15)
Velocity range	≤1.5 m/s at 6.6 ft (2 m) above ground
Altitude range	0.5~5m

3) Ultrasonic altitude system

Operating environment	Except for surface of water or ground of absorbing material(such as thick carpet)
Velocity range	≤3m/s
Altitude range	0.2~4.5m

4) 3-axis gimbal

Controllable	Pitch: -90°~20°
Stabilization	Pitch:+30/-120°, Roll:± 35°, Yaw:±30°

5) Camera

Sensor	Ambarella A12, sony CMOS
Image size	3648 × 2736 (10MP)
Shooting mode	Single shot
Video recording resolution	2720 × 1530
Maximum video bit	50 Mbps
Supported file systems	FAT32(≤32GB) /exFAT(>32GB)
Photo	JPEG
Video	MP4
Supported SD cards	Micro SD™ Max capacity:128GB. UHS-I speed grade 3 rating required
Operating temperature range	0°C ~40°C

6) Battery

Capacity	3100mAh
Voltage	11.4V
Battery type	LiPo 3S
Energy	35.34Wh
Net weight	196 g
Max charging power	35W
Charge time	<5h(with 5V 2A adapter)
Charging temperature range	0 C ~40 C

7) APP

Mobile app	City 2
Live view quality	1080P
Aerial photography mode	Dronie,rocket,circle,helix
Required operating systems	Andrio 6.0 above, IOS 10.0 above
FPV transmission distance	4000m

8) Charger

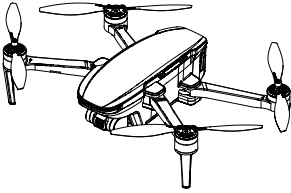
Input	5 V 2A (recommend)
Output	4.35V 0.7A×3
Rated power	10W

9) Remote controller

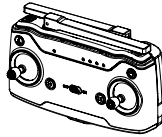
Operating frequency	2.4 GHz
Max transmission distance	4000m
Transmitter power (EIRP)	FCC: ≤23dBm CE: ≤14dBm SRRC: ≤20dBm
Operating current / voltage	1000mA @ 3.7V
Capacity	2600mAh
Battery capacity (built-in)	3.7V
Battery type	LiPo 18650 1S
Battery power	9.62Wh
Operating temperature range	0 C ~40 C
Supported mobile device size	Thickness supported:6.5-8.5mm
Charge	USB
Maximum charge power	5W
Charge time	< 3h(with 5V 2A adapter)

2. Packing detail

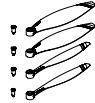
Before using this product, please check whether the product package contains all the following items. If something is missing, please contact our company or authorized dealers.



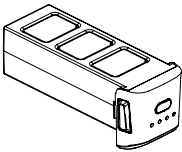
Aircraft x1



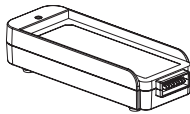
Remote controller x1



Propellers x4



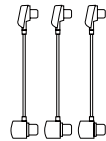
Aircraft battery x1



Balance charger x1



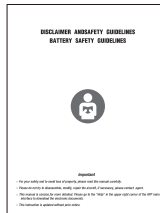
USB wire x1



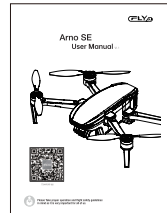
Date wire x3



Screwdriver x1



Operation manual x1



User manual x1

3. Important statement

- This product is not a toy, but a precision device that integrates professional knowledge such as mechanics, electronics, aerodynamics, and high-frequency emission. Accidents can be avoided by correct assembly and debugging. The owner of the product must use a safe way to operate and control; improper operation may cause serious personal injury or property damage.
- This product is suitable for people who have experience in operating model aircraft and are at least 14 years old.
- If user encounter problems with use, operation, maintenance, etc., please contact local dealer or relevant personnel of our company. Our company and the seller are No responsibility for any loss and damage caused by improper work and personal injury.
- This product contains small parts, please keep it out of the reach of children to avoid the risk of ingestion or suffocation.

4. Warranty information

Please browse the official website for the latest after-sales warranty information.

5. Safety precautions

The remote control model aircraft is the most dangerous commodity, so user must stay away from the crowd when flying. Improper assembly or damage to the body, poor electronic control, and unfamiliar operations may cause unpredictable accidents such as damage to the aircraft or personal injury. Please be careful when flying to be safe, user must understand the responsibility for accidents caused by your own negligence.

Stay away from obstacles and crowd

The remote control aircraft has an uncertain flight speed and state during flight, and it is potentially dangerous. Stay away from crowds and high-rise buildings when flying at the same time, avoid flying in bad weather such as wind, rain, thunder and lightning. Debugging and installing the aircraft must strictly follow the operating instructions when flying upwards, pay attention to keeping the aircraft at a distance of 1-2 meters from the user or other people. Avoid the aircraft from crashing into the head, face, and body of people when flying or landing, which may cause injury.

Keep away from humid environment

The inside of the aircraft is composed of many sophisticated electronic components and mechanical parts. Therefore, it is necessary to prevent the aircraft from getting wet or water vapor into the aircraft body. Avoid accidents caused by mechanical and electronic component failure. Please wipe the surface stains with a clean cloth during maintenance.

Avoid controlling alone

The control skills of remote control aircraft are difficult to learn in the early stage. It is necessary to avoid flying alone as much as possible, and the guidance of experienced persons is required.

Use this product properly

Please use original parts for modification or repair to ensure flight safety. Please operate and use within the scope allowed by the product function, and must not be used for illegal purposes other than security laws.

Safe operation

- 1) Please operate the remote control aircraft according to your own status and flying skills. Fatigue, poor spirits or improper operation will increase the risk of accidents Probability.
- 2) Do not use it near ears! Misuse may cause hearing damage.

Keep away from high-speed rotating parts

When the aircraft rotor is rotating at high speed, please keep the pilot, surrounding people and objects away from the rotating parts to avoid danger and damage.

Keep away from heat

The remote control aircraft is composed of metal, fiber, plastic, electronic components and other materials. Therefore, it is necessary to keep away from heat sources, prevent sunlight, and avoid deformation or even damage due to high temperature.

Environmental requirements

Discard the product at will, which may affect the environment, please recycle it properly according to local laws and regulations.

FCC statement :

This device complies with part 15 of the FCC rules. 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.

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC radiation exposure statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.