UPA IR 2 Basic 2.7k

Instruction Manual

Content

Instruction Manual

Product Profile

This part is mainly meant to introduce the main features of the UPair 2 Basic 2.7k Drone, the method for assembling the Aircraft and various components including the Aircraft and the Remote Control.

Introduction

The UPair 2 Basic 2.7k Drone consists of the Aircraft, Remote Control, Gimbal Camera and a matching UPair APP. The flight control system is integrated within the aircraft's fuselage, and the visual positioning module and the removable gimbal are placed at the lower part of the fuselage. You can control the camera's pitch by using the roller on the remote control, and the low-latency HD digital images transmission component is designed to transmit long-distance real-time images.

Main Features

UPair 2 Basic 2.7k Drone is equipped with the 3-axis open loop gimbal to guarantee the 5 Bohr 110 Degree Micro Distortion. Meanwhile, the imx179 image sensor is applied to record at 4K at 25 FPS and take 8-megapixel photos.

In addition, the model has applied the newly-developed flight control system, and added the visual positioning module, which can make the aircraft precisely hover indoor and bring you much more flight experience.

The UPair 2 Basic 2.7k Drone is installed with the high-capacity lithium battery. Combined with the optimized power system, its maximum duration of flight can achieve 20 minutes.

Aircraft

This part is to introduce the product's systems and main functions.

Aircraft Profile

The main components of the UPair 2 Basic 2.7k Drone are the flight control system, the image transmission system, the remote communication system, the positioning and navigation system, the visual positioning system, the power system, and the gimbal camera. The aircraft's main functions will be introduced in detail as follows.

Components of the Aircraft

[1] Propellers
[2] Motors
[3] Red LED Indicator (head of the aircraft)
[4] Landing Gear
[5] Damping Ball
[6] Gimbal
[7] Camera

[8] Green LED Indicator (Rear of the Aircraft)
[9] Battery Power Button
[10] Controller Antennas(Built-in)
[11] Battery Power Level Indicator
[12] Image Transmission Antenna(Built in)

* Aircraft indicators: The red indicators indicate the front of the aircraft. The green indicators indicate the tail of the aircraft.

Parameters of the Aircraft

Weight (including the Battery, Gimbal, and Camera)	About 1400g	Max. Ascending Velocity	3.5m/s
Max. Descending Velocity	2.2m/s	Max. Tilt Angle	28°
Flight Time	20min	Max. Horizontal Velocity	8m/s
Propellers	9450	Operating Ambient Temperature	-10℃~40℃
Motors	2212	GPS Module	GPS/GLONASS

Auto Return Home (RTH)

The UPair 2 Basic 2.7k Drone features the Auto Return Home (RTH) function. In case of signal loss between the Remote Control and the Aircraft or low voltage during flight, the aircraft will automatically initiate the Auto Return Home (RTH) function and fly back to its home point with automatic landing. There are three available ways of returning: One-key RTH, Low-voltage RTH, Unsafe RTH.

	GPS	Description
Home Point	The GPS signal must be of at least 8 stars of coverage before it takes off.	The place where the aircraft takes off will be recorded as a home point, provided that the GPS signal has at least 8 stars of coverage, so a good GPS signal is needed for recording the home point,

* The RTH system does not support obstacles recognition, and you try the best to operate the aircraft in an open field.
* There is a time difference in searching GPS signals according to user's location. The cold boot will cost 2 minutes or so, and the warm boot 30 seconds.
* During an auto-flight, like auto-return, auto-landing, or follow-up mode, etc., you can activate the flight mode by using the flight mode joggle switch on the left of the remote control to avoid bad situation like crashing into barriers, or falling into a river, etc..

One-key RTH:

By pushing the one-key RTH joggle switch on the controller backwards or starting it manually through the UPair APP to trigger the one-key return, the aircraft will go back to you. If you want to regain control during RTH, they can do so by just switching the mode.

Description of RTH Mechanism:

When the aircraft's current flight height is lower than 15m, it will firstly ascend to the height of 15m, and then horizontally return to the home point, and descend;

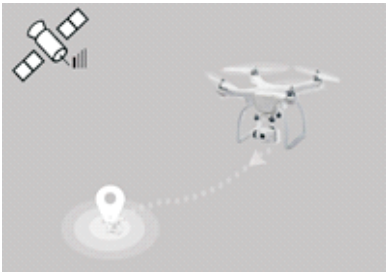
When the aircraft's current height is higher than 15m, it will directly and horizontally return to the home point and descend.

Low-voltage RTH:

The UPair 2 Basic 2.7k Drone has applied the 3S Non-Intelligent Battery, and when its battery power level reaches the set value (about 30%), it will return to the home point.

Unsafe RTH:

When the GPS signal is normal, and the aircraft has automatically recorded the home point, if the radio signal (the remote control's signal) is interrupted for more than 3 seconds, the flight control system will take control over the aircraft and make it return to the home point. If the radio signal recovers during the RTH process, the aircraft will stop and hover. Then, you can take control over the aircraft again by using the remote control.



Flight Data

2.7K Drone is equipped with the “Black Box”, and all relevant flight data will be recorded in the SD card within the flight control system.

Flight Mode

Position Hold: Use the GPS module or the Optical Flow Module to drive the aircraft's precise hovering.

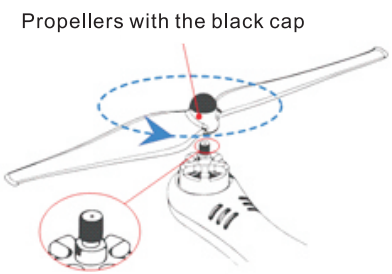
Altitude Hold: When the GPS is invalid, or the signal is lost, the altitude hold mode can be enabled to make the aircraft fly at a fixed altitude.

Headless Mode: The aircraft will record the direction of its head when it takes off, and after it enters this mode, no matter where the head points at, the front direction is still the direction of the head when it takes off.

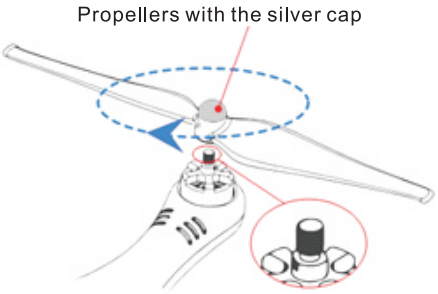
Propellers

The UPair 2 Basic 2.7k aircraft has 9450-type propellers, the propellers feature black or silver-colored caps, each representing a different direction of rotation.

1. Attaching the Propellers: Find the motors that have a hole, attaching the propellers with black cap onto them and rotating tightly counter- clockwise. Attach the propellers with silver cap onto motors without a hole and rotate them tightly clockwise.
2. Detaching the Propellers: Please hold the motor on one hand, then rotate the propeller in the unlock direction to loosen it.



(Picture 3)



(Picture 4)

* Make sure that the black and silver propellers are installed on the right motors; otherwise, the aircraft cannot take off normally. Please manually tighten the propellers, and tighten them firmly; otherwise, an accident may happen. Since the blade is thin, be careful not to get hurt.
* Please use the original UPair propellers, the propellers must correspond to the exact aircraft model.
* Propellers are easily consumed, if necessary, please purchase one additionally.
* Ensure the propellers are in good shape, tightly attached before flight. Deformed or broken propellers should be replaced.
* Maintain a safe distance once the motors and the propellers start spinning in order to avoid any injury.

Battery

[1]Battery Charging Interface

[2]Battery Box Clip

[3]Battery Power Switch

[4]Battery Level Indicator

Introduction

The UPair 2 Basic 2.7k Drone has applied the high-capacity lithium battery equipped with a protection board with 5200mAh of current and a nominal voltage of 11.1V. In order to guarantee the battery's usage safety and service life, please use the original UPair charger.

Parameters of the Battery

Type	Lithium Battery	Charging Time	About 2 Hours
Capacity	5200mAh	Charging Environment Temperature	0℃~40℃
Nominal Voltage	11.1V	Discharging Environment Temperature	-10℃~40℃

Basic Functions and Charging of the Battery

Turning on the battery: when the battery is turned off, please firstly press Power once, and then keep pressing Power for over 2s to turn on the battery. When the battery is turned on, the power indicator (Green) will display the current battery power level.
Turning off the battery: when the battery is turned on, press Power once and then keep pressing Power for over 2s to turn off the battery. After the battery is turned off, the power indicator will also be off.
Check the battery level: Provided the battery was powered off, shortly press the battery power button once to check.

Charging the Battery:
1. The battery charger must be connected to the AC power supply (100-240V, 50/60Hz) first. If necessary, please use the power adapter.
2. When the battery is turned off, connect the battery to the UPair charger.
3. The battery level indicators will show the level status as the battery is charging.
4. When fully charged, the battery level indicators will go off, remove the battery from the charger after that.
5. The battery will become hot after flight, do not charge it immediately, wait until it cools down before charging it.
6. The optimal charging temperature range of the battery is from 0℃ to 40℃. If it is beyond the temperature range, please do not charge the battery.
7. The intelligent aircraft's battery and the remote control's battery can be charged simultaneously, but their charging times are different.

Tips:
* Before you attach the battery or detach it from the aircraft, please make sure the battery is turned off. Please do not attach and detach the battery when the battery is turned on.
* Charge the Intelligent aircraft's battery only with the original UPair charger, other chargers may cause damage to the UPair Drone, such damage will not be covered by the UPair after-sale service.

Remote Control

This part is introduces various functions of the remote control, including the methods applied to operate the remote control, and various function buttons.

Remote Control Profile

The remote control provided with the UPair 2 Basic 2.7k Drone consists of Control Command Transmission and Image Transmission. The control command transmission module works in 2.4Ghz and can realize the full-band random frequency-hopping communication, featuring a strong immunity from interference. In addition, it has also integrated various function buttons to operate the camera and the gimbal. The remote control is paired with the aircraft's built-in 2.4G Remote Control Receiver in the factory. The image transmission module works in 5.8Ghz and is meant to receive the image signal sent by the aircraft and to transmit such signal to the display device.

Safety Regulations: The remote control of the UPair 2 Basic 2.7k Drone shall conform to FCC and CE Standards.

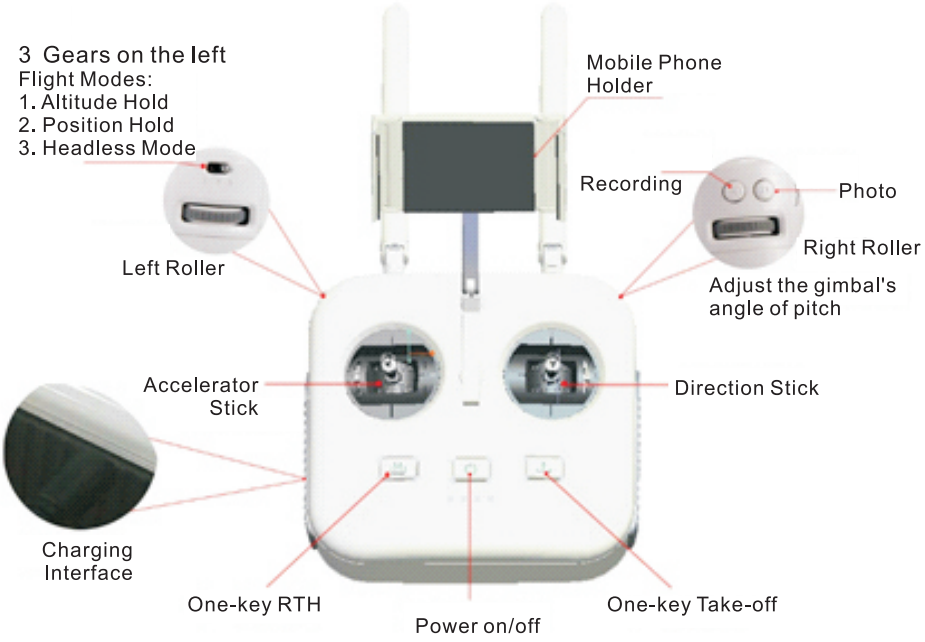
By default, the remote control based on the American remote-control standards (Please refer to “Controlling the Aircraft” for details).

Remote Control and Real-time FPV

Battery Voltage	11.1V	Remote Control Working Frequency Image Transmission Working Frequency	2.4GHZ 5.8GHZ
Controller Antenna Frequency	2.4GHZ, 5.8GHZ	Remote Control Communication Distance	About 1km
Battery Capacity	1500mAh	Image Transmission Communication Distance	About 1km

Using the Remote Control

1. The Remote Control's Components:



2. Function Buttons

(1) Power on/off: By pressing it, you will hear a voice prompt.

Operations	Detailed Steps
Power-on Operation	Press the button once to display the remaining battery power level, and it will go off after 2s; if you press it again and hold for 3s before the LED indicator goes off, it will be powered on, and all LED indicators will be on.
Power-off Operation	Press the button once to turn on all LED indicators. After 2s, the battery power level display will recover. If you press it again and hold for 3s before the LED indicator recovers, it will be powered off, and all LED indicators will be off.

(2) One-key RTH: By pressing it, you will hear a voice prompt.

Operations	Detailed Steps
Activate One-key RTH Mode	Press the One-key RTH button once and all LED indicators will be on; release it and press it again within 2s to activate One-key RTH Mode. Upon activation, all indicators will flicker, and you will hear a voice prompt.
Cancel One-key RTH	During the RTH process, press the RTH button again, all indicators will be off and the RTH process ends.

(3) One-key Take-off: By pressing it, you will hear a voice prompt.

Operations	Detailed Steps
Operate One-key Take-off Mode	Press it and hold for 3s, and all indicators will be on during this process with the accelerated pace. When you hear a long voice prompt, the One-key Take-off mode will be triggered.
If the aircraft is during a flight	By pressing it, you will hear the same voice prompt without triggering the one-key take-off mode.

(4) Photo Button: By press it, the voice prompt will sound. Press it once to take a photo.
(5) Recording: By pressing it, you will hear a voice prompt.

Operations	Detailed Steps
Start	Press Recording once to start the recording process.
End	Press Recording once to stop the recording process.

(6) Gimbal Pitch Control Roller:
The absolution position-type potentiometer control shall be applied, and the impeller shall be rotated to adjust the gimbal's angle of pitch.
(7) Flight Mode 3-Gear Switch:
Adjust the switch to change the Flight Mode.
Available Flight Modes include: 1. Altitude Hold 2. Position Hold 3. Headless Mode
(8) Emergency Stop:
1. During the normal flight, press down three buttons (RTH Button, POWER Button, and Take-off Button) on the control panel simultaneously to trigger an Emergency Stop with corresponding voice prompts (one long sound and two short sounds).
2. Cancelling the Emergency Stop: After Emergency Stop is triggered, press down Photo and Recording simultaneously to cancel Emergency Stop, and the voice prompt will disappear.

Tips:
* Emergency Stop can only be triggered in some cases. After Emergency Stop is triggered, the Aircraft will fall. Before you trigger Emergency Stop, please keep away from the people.

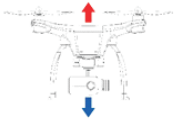
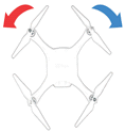
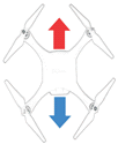
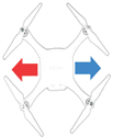
Charging the Remote Control:

Use only the original UPair charger. The charger with dual heads is available for charging the aircraft's battery and the RC battery. Charge the RC battery by connecting the RC battery with the charger in the corresponding plug.

The charger can be used to charge the aircraft's battery and the RC Battery at the same time, but their charging times are different. It will take about 2 hours to fully charge the aircraft's battery, and 1.5 hours the RC Battery. If you use it to charge the aircraft's battery and the RC Battery at the same time, the charging time will be longer.

Controlling the Aircraft

The default factory setting follows the American standards. The present manual takes example from the American best practices of explaining how to operate an aircraft by using the controller:

Remote Control (American Standard)	Aircraft/Switch	Altitude Hold/Position Hold/IOC Mode
		Push up the stick on the left to make the aircraft ascend. Push down the stick on the left to make the aircraft descend.
		Push the stick on the left leftward to make the aircraft rotate counter-clockwise. Push the stick on the left rightward to make the aircraft rotate clockwise. The aircraft has a maximum rotating angular velocity of 200°/s.
		Push up the stick on the right to make the aircraft fly forward. Push down the stick on the right to make the aircraft fly backward.
		Push the stick on the right leftward to make the aircraft fly leftward. Push the stick on the right rightward to make the aircraft fly rightward. The aircraft has a maximum tilt angle of 30°.

Intelligent Return Home

Press the RTH button and then hold for above 2s, the RTH indicator will flicker with the voice prompt, and activate One-key RTH Mode. Upon activated, the Aircraft will return to the nearest home point recorded. When the aircraft can only return, you cannot control the aircraft by using the remote control. However, by changing the position of three deflector rods on the left, you can gain control over the aircraft again.

1. When the aircraft's current flight height is lower than 15m, it will firstly ascend to the height of 15m, and then horizontally return to the home point and descend;
2. When the aircraft's current height is higher than 15m, it will directly and horizontally return to the home point and descend.

Camera

Camera Profile

The UPair 2 Basic 2.7k Camera has a 1/3.2 CMOS Sony Image Sensor and can capture 8-megapixel images. Equipped with the low-distortion lens and the BLF, it can effectively promote the picture quality.

The UPair 2 Basic 2.7k Camera can record up to 2.7K videos at 30 frames per second, and you can set the Camera's resolution by means of UPair APP. Please refer to UPair APP Camera Setting Diagram for details.

Camera Features: It can record up to 2.7K videos.

Function Items	Parameters	Function Items	Parameters
Video Resolution	2.7k	Picture Resolution	8-megapixel
Compatible Storage Card	Micro SD Card (64G at most), and C10 Card are recommended.	Supply Voltage	USB 5V
Video Format	Mp4	Operating Temperature	-20~+80℃
Picture Format	JPG	Operating Humidity	30%~80%
Images Shooting Mode	Single-picture Mode	Storage Temperature	-40~+150℃
Main Image Sensor	imx179, 8-megapixel 1/3.2"	Lens	5 Bohr 110 Degree Micro Distortion

Camera SD Interface:

The UPair 2 Basic 2.7k Drone supports MicroSD Card (64G at most). As the Camera is required to quickly read and write HD video data. Please use the Micro SD Card above Class10 or UHS-1 to guarantee the normal video recording.

Gimbal

Gimbal Profile

The UPair 2 Basic 2.7k Gimbal is powered by the Aircraft's Battery as a 3-axis high-precision Gimbal that provides a steady platform for the attached 2.7K Camera, and during a flight you can use the gimbal dial on the controller to tilt the camera within -90°~10° (pitch).

You can shoot stable videos and photos by means of the 3-axis steady gimbal, and you can also enable the One-key Shooting function by using the remote control.

[1] Damping Ball

[2] Gimbal Motor

[3] Camera

* Please do not insert or pull out the Micro-SD card while the aircraft battery is powered on to avoid losing the recording data.
* Please do not insert or pull out the gimbal while the battery is powered on; otherwise, the gimbal or the flight control system will be damaged.

Upair APP Main Screen

This part introduces the UPair APP which is specially designed for UPair Drone Camera. You can control the 2.7K gimbal and camera by clicking the APP, including controlling the Picture and Video Shooting and Setting the flight parameters. In order to support the HD images transmission, you are suggested to install the APP on a tablet device or a large-screen mobile phone in order to achieve the best visual experience.

Connecting to a Mobile Device

IOS System:

Your mobile phone is connected with the remote control by with an USB cable. A Prompt Box will pop up in your phone, you shall click TRUST (otherwise, the connection fails) and then enter Phone Settings -> Personal Hot-spot Activate Hot-spot (Personal Hot-spot Connection on the top of your phone's screen). In this case, your mobile phone will be successfully connected with the aircraft.

* “Enter Camera” Button in grey means the inactive status.
* When your mobile phone is successfully connected with the aircraft, “Enter Camera” Button will turn blue, and you can click to activate the button.

Android System:

1. Turn on the remote control.
2. Connect your mobile phone with the remote control via the USB interface by using the USB Cable.
3. Enter the Phone Settings interface and check to enable the USB Network Sharing.
4. After the network sharing is successfully enabled, you can then enter the APP.

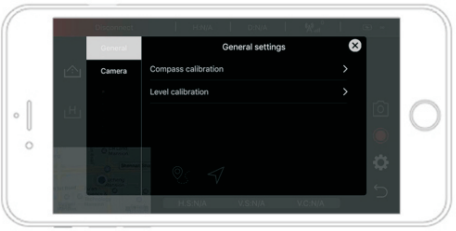
Camera Screen

Via the camera screen, you can set various parameters related to the camera and the viewing of 2.7K real-time HD videos and pictures. In the Camera interface, the full screen video will display by default, and the real-time mapping window will display on the lower left corner. By sliding the blank space on the screen upward and downward, you can enter the full screen display mode, and only the mapping can be displayed as follows:

[1] Connection status
[2] H:N/A (1) When GPS is not positioned, it will display the altitude; (2) When GPS is positioned, it will display the distance from the home point.
[3] D:N/A Distance from Home → Distance from Mobile Phone.
[4] GPS Signal Icon:shows the current strength of the GPS signal.
[5] Battery Level Indicator: The battery level indicator provides a dynamic display of the battery level.
[6] Press Camera Icon to shoot a photo, following the single photo shooting pattern.
[7] Recording: Tap once to start recording video.
[8] General Settings
[9] Return Button: Press it togo back to the Home page.
[10] Follow-me Mode: When the aircraft has taken off, click it, then the Follow-me Mode starts.
[11] Flight Route Planning: When the current status of the aircraft is unlocked, the function can be used, refer to the detailed introduction.
[12] Map Thumbnail
[13] One-key RTH Mode: Click to return to the recorded home point.
[14] One-key Take-off Mode: When the aircraft takes off, the Take-off Button will serve as a Landing Button. When the aircraft is flying indoors, only the unlocking function can be enabled; if it is flying outdoor, the aircraft will automatically hover at the height of 3m. (Take-off Button , Landing Button)
[15] H.S: Horizontal Velocity
[16] V.S: Vertical Velocity
[17] V.C: Remote Control Voltage

Basic Settings

Click to enter the Setting interface; Basic Settings, Camera Settings and Remote Control Settings on the left side, and detailed parameters settings on the right side.



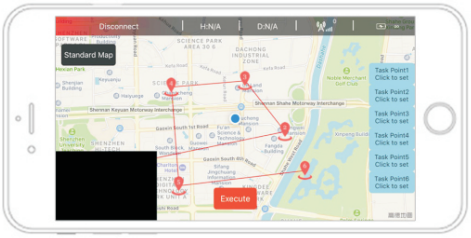
Items	Default	Limits
Height Limit	3 0 m	10-400m
Distance Limit	30m	10-800m

On the Camera Screen, click “Position Hold” Button to activate Flight Route Planning.

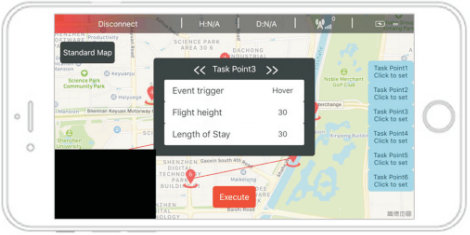
Flight Route Planning

On the Camera Screen, click “Position Hold” button to activate the Flight Route Planning.

Enter the page, zoom in the map, the first task point is the default location of the aircraft. The sequence number is 1, task is take-off. Click any point of the map, it shows the image below:



When you make enough task points, you can click the Settings button at the bottom of the list to set the corresponding task point. In the middle of the screen, a Settings menu will show with the following items: 1. No. of task point, 2. Stay time after reaching the task point, 3. Action after reaching the task point, 4. flight altitude after reaching the task point. You can click the left/right arrow on the top of the screen to switch among different items. Please refer to the below image:



Default Parameters are shown in the following table:

Item	Parameters Range	Default
Task point s time	1-250 s	30s
Task point expected Height	1-250 m	30m

Item	Parameters Range	Default
Tasks	1. Departure point 2. Landing point 3. Hover 4. Start Recording 5. Stop Recording 6. Shooting images	Hover

Notes:

1. This function can only be entered when the aircraft is unlocked.
2. The first mission point is the current location of the aircraft, and the locked event is take-off.
3. When the map is scaled, the coordinates of the latitude and longitude of the point of the mission will not change.
4. After starting the flight route planning, the Execute button will change into a Stop button. Upon confirmation, remove all points on the map and the line, exit this function and go back to the camera screen.
5. Click real time video to get back to camera interfaceand click the map to return to the Flight route planning interface.

Follow-me Mode

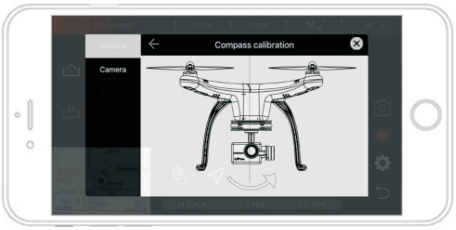
You can start the “Follow-me” function through clicking the "Follow me" button on the APP. After starting up successfully, the aircraft will fly up to 10 meters above the ground. Then, the aircraft will hover around the circumference formed by regarding the mobile phone as the center of a circle with a radius of 10m, and the camera's lens are pointing at the center of the circle.

Precautions:

* The Follow me function can only be entered after the aircraft takes off.
* Ensure that the aircraft power is sufficient and start flying more than 3 meters above the ground;
* This function only can be used after turning on the smart phone and when the GPS is positioned successfully;
* For the aircraft without any obstacle avoidance function, please pay special attention to the flight environments. Ensure that there is no obstacle around the aircraft, and be always ready to control the aircraft manually in case of emergency;
* When using the Follow-me Mode, you are required to comply with local laws and regulations;
* After exiting the Follow-me Mode, the aircraft will hover in place and you can continue operating the aircraft.

Compass Calibration Function

The compass calibration function can be enabled to calibrate the aircraft's flight stability. During the calibration process, please place the aircraft as shown below. When the arrow icon turns blue, rotate the aircraft counter-clockwise. After this direction is successfully calibrated, the APP will automatically skip to the next direction. Please repeat such operations and thoroughly complete the calibration process.

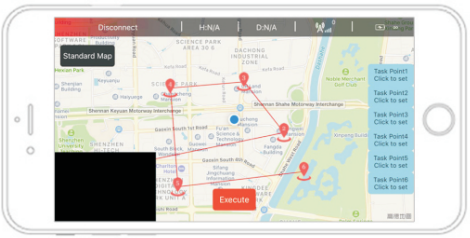


Notes:

* It is recommended to use the compass calibration as less as possible if the aircraft work properly.
* When calibrating halfway, it would be better not to exit too soon.
* Failure in calibrating will cause drone to become locked, think twice before doing it.

Point of Interest

The Upgrade of Flight Route Planning: During a flight task, the head of the aircraft will always point at the set Point of Interest. ★ represents the point of interest. Press the icon for a while and then move to change the point of interest (prior to the execution of a task).



Precautions

This part introduces the Flight Environment Requirements, Pre-flight Checklist and Flying Reminder. Before use, please read this manual carefully and operate the drone in accordance with the following instructions.

Pre-flight Checklist:

1. Before the flight, make sure all drone parts work properly. Do not take off the drone if the drone parts are missing or defective.
2. Mount the propellers according to the manual, make sure all propellers are firmly installed, avoid damages if the propellers falling off the drone during the flight.
3. Check if the remote-control battery and the flight-intelligent battery are fully charged, make sure the propellers, batteries, camera have been firmly installed, check if Micro-SD card or TF card has been inserted.
4. During take-off the drone, please power on the remote control, then start the aircraft.

Flying Reminder:

1. The UAV flight is restricted by many countries, before take-off, please understand and comply with the relevant laws and regulations.
2. Please make sure the drone lands smoothly. When close to the ground, ensure that the aircraft hovers, ensure the ground level, let the aircraft descend to the ground slowly.
3. Please do not operate the aircraft in restricted areas or no-fly zones under relevant laws or regulations, etc.
4. Please do not operate the aircraft when you are in poor mental state (such as intoxication).
5. Please keep the aircraft, accessories, and components out of reach of children.In case a child swallows any accessories or components, take the child to a doctor immediately.
6. If the aircraft is to be left idle for a long period, please remove the battery, place the aircraft in an environment free from dampness, moisture, mold, avoid exposing to strong sunlight, and out of electron magnetic interference.
7. Do not knock down, disassemble or repair the aircraft yourself. GTEN is not responsible for any damage resulting from such actions.

Frequently Asked Question (FAQ)

This part offers the basic solutions of problems that may occur during the normal use of the aircraft.

1. Why does the remote control emit beeping sounds?
   It means the remote control is out of power, please fully charge the remote-control battery before use.

2. How long do the flight battery and theRC Battery need to be charged?
   Normally, the charging time for the aircraft's battery is 1~1.5hours, the charging time for the RC battery is 2~3 hours.

3. Why does the FPV screen show black, while there is flying data shown on the FPV screen?
   Make sure the flight battery is turned on. Please try to remove 4 Damping Ball of the gimbal, check if the gimbal camera and the aircraft connection plugs are loose, you can unplug them, then reconnect, and remount the gimbal.

4. Why the flying time does not meet the description?
   As the common rules in drones' industry field, the flight time test is under hover status. The flying time in theory would not be the same as the actual flying time.

   *In case of any questions or concerns, please feel free to contact us:

   E-mail: contact@gl0dr.com; Tel.: +001 888-853-2218 +86-0755-26413259

A Thank-you Letter

Thank you very much for your order of the UPair 2 Basic 2.7k. Please follow the manual to use this product properly.

If you have any questions or problems when using this product, please contact UPair authorized distributors or the UPair customer service.

* This manual might be updated.You can download the newest version at: www.upairdrone.com.

UPAIR

SHENZHEN GTEN INNOVATION TECHNOLOGY CO., LTD.