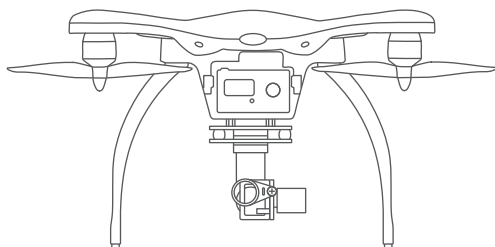


GHOSTDRONE 2.0

OPERATING MANUAL

GHOSTDRONE 2.0 AERIAL



EHANG

GHOSTDRONE 2.0 created by EHang, Inc.

GHOSTDRONE 2.0 Operating Manual
includes packing list, assembly, parts
and specification information.

Congratulations on purchasing your new GHOSTDRONE 2.0!
For customer service and support, please e-mail support@ehang.com
or contact our customer service hotline: 888-800-7056.

www.ehang.com
www.twitter.com/ehang
www.facebook.com/theghostdrone
www.instagram.com/ehang.official/
forum.ehang.com

Thank you, and enjoy your GHOSTDRONE!

www.ehang.com
Business Hour: Monday – Friday 9:00 A.M – 5:00 P.M (PST)
Customer Service Phone: +1 650-533-8554 / 888-800-7056
Customer Service Email: support@ehang.com

EHang, Inc. reserves the right to interpret this Operating Manual.

GHOSTDRONE 2.0 AERIAL

TABLE OF CONTENTS

Warning

Warning -----03

Introduction

Diagram -----05

Packing List -----05

Assembly

Propellers -----06

Propeller Guards -----08

Camera -----09

Accessories

Smart Flight Battery -----10

G-BOX -----15

LED Indicator Light Instructions -----17

Specifications

Specifications -----18

App Download

App Download -----20

Supported Device Requirements -----20

FAQ

FAQ -----21

WARNINGS

Before flying, please consult flight documentation from the International Civil Aviation Organization (ICAO) and Federal Aviation Administration (FAA) regarding unmanned aircraft operation. The user is responsible for his or her actions and any ensuing consequences. Users are hereby advised that they are liable for the use of the GHOST-DRONE and any and all liability is solely theirs. Please fly responsibly.

1. If you are flying your GHOSTDRONE 2.0 for the first time, please fly it in an open area in order to experience its various functions safely.
2. DO NOT fly in restricted air zones.
3. DO NOT fly near obstacles, people, power lines, trees, above waters or any other environments which are not safe for flying.
4. The copter may not fly properly near tall buildings and metal structures due to GPS interferences.
5. DO NOT fly in or around congested electromagnetic (EM) environments. The copter must be kept at least 200 m (656 ft.) away from strong EM source to operate properly. EM interference can cause a loss of communication with the copter and result in damage to properties or hurting other people.
6. Do not fly the copter in adverse weather conditions, including extreme temperatures, heavy snow, strong wind, storm or fog.
7. It is recommended to always retain line-of-sight with the copter during flight. Losing sight of the copter may result in accidents.
8. GHOSTDRONE is not suitable for use by children under 14 years of age. Adult supervision is required if the copter is operated by children.
9. Please make sure your mobile device, VR goggles, and the copter have sufficient battery before flying.
10. Stand clear of the copter (at least 5m or 16 ft.) with its head facing away from you when ready to fly.
11. Compass must be re-calibrated if the icon ▲ in the App points at a significantly different direction than the copter's actual orientation. If the difference persists after calibration, please choose a new environment for flying.

12. Propeller guards must be installed when flying indoors. EHang will not be liable for any accidents caused by not installing the propeller guards. However, guards are not recommended to be installed when flying in outdoor environments, the extra load and wind resistance of the guards might have negative impact on flying experiences.

13. To avoid injury, DO NOT approach or touch the propellers or motors while they are spinning.

14. Keep the VR goggles within 3 meters from you during flight. DO NOT put the VR goggles on the floor or in the pocket. If the the VR goggles is not near you, you may lose connection with the copter.

15. Please keep an eye on the copter's battery shown on the App interface. We strongly suggest to land the drone when the battery is low.

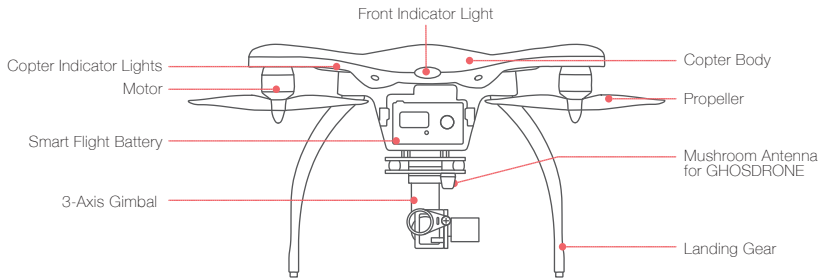
16. Please tap Hover button in case of any emergencies. The copter will stop moving and hover at its current position. If it fails to hover, please secure your personal safety first.

17. For your safety, Avatar Mode will be unlocked after you have flown in Touch-to-go Mode for 3 times. It is important for you to familiarize yourself with the Avatar manual mode to ensure flight safety. In Avatar manual mode, the copter flies only using gyroscope and accelerometer, other sensors are not used in this mode. This mode is safe but users need to control every movement of the copter. If you are flying Avatar manual mode for the first time, to ensure precise manual operation, please fly the copter in open area and only use this mode when the copter is 30 meters above the ground.

INTRODUCTION

With dual-sensor flight controller and high efficiency dynamic system, GHOSTDRONE 2.0 secures safer and more stable flight. Its smart battery LCD screen displays real-time battery status information. Our GHOSTDRONE 2.0 Aerial version contains the 3-axis gimbal, which ensures the camera always steady and stable, helping you record the exciting moments in your life.

Diagram



Packing List


Copter ×1	Propeller ×8	Propeller Guard ×4
Power Adapter ×1	G-BOX ×1	Tool Kit ×1
Info Package ×1		

Note:

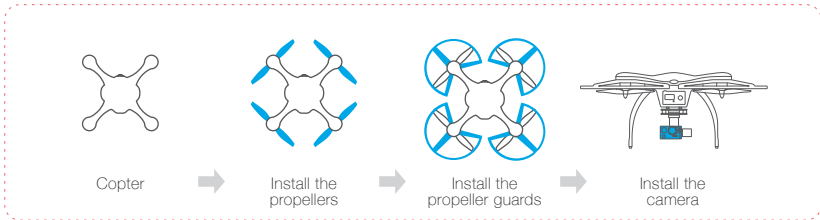
The tool kit contains a USB charging cable, a battery charging cable, a wrench, a screw driver, 4 dampers, a resistor load and 15 screws.

The USB cable is used to charge the G-BOX as well as connecting the GHOSTDRONE to a PC to update the copter's firmware.

RF Load introduction:

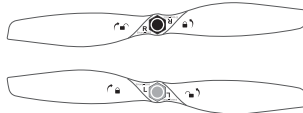
If real time image transmission is required, the 5.8G antenna should be installed on the drone. If real time image transmission is not required, the installation of the antenna is optional. However if the antenna is not installed, the RF Load  should be installed into the antenna port to protect the connection port.

ASSEMBLY



Propellers

GHOSTDRONE 2.0 uses 2-bladed 8.5-inch self-tightening propellers. Propeller nuts have two colors, silver and black. Each indicates different rotating directions.

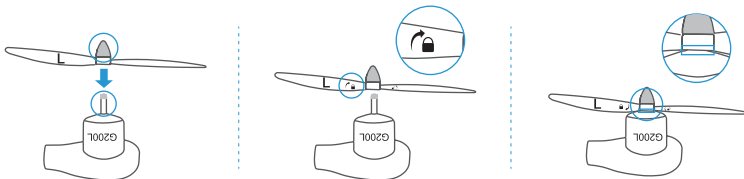


Legends

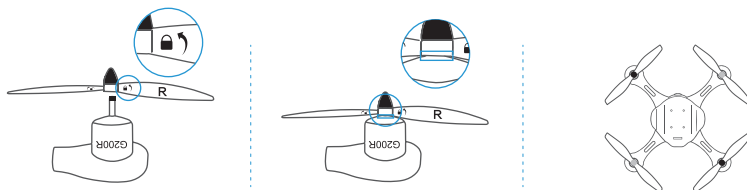
- LOCK: Tighten the propeller in this direction.
- UNLOCK: Remove the propeller in this direction.

Installation

1. Put the copter upside down on soft surface to avoid scratches.
2. Match the silver nut propellers with the L motors (with silver motor shaft), and tighten the propellers according to the LOCK instructions.

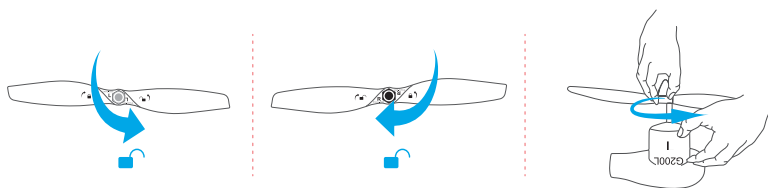


3. Attach the black nut propellers to the R motors in the same way.



Disassembling

Keep the motor deadlocked in place with one hand and remove the propeller according to the UNLOCK instructions.



Warning

1. Check that the propellers and motors are installed correctly and firmly before each flight.
2. It is necessary to check that all propellers are in good condition before take-off.
3. DO NOT use any aged, deformed or damaged propellers.
4. To avoid injury, DO NOT approach or touch the propellers or motors while they are spinning.
5. For a better flight experience, please use EHang proprietary propellers.
6. For a better and safer flight experience, please use original EHang propellers. EHang does not offer warranty for propellers. If you need to replace your propellers, please go to our website www.ehang.com

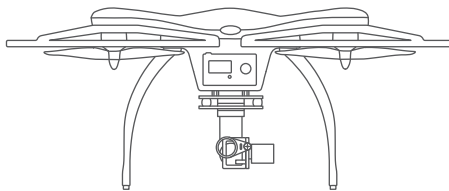
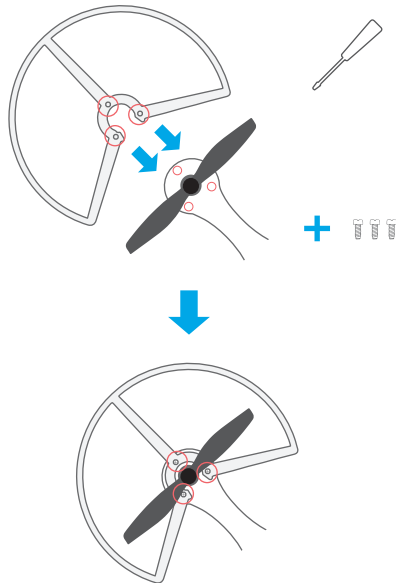
Propeller Guards

Warning

Propeller guards must be installed when flying indoors. EHang will not be liable for any accidents caused by not installing the propeller guards. However, guards are not recommended to be installed when flying in outdoor environments, the extra load and wind resistance of installing the guards might have negative influences on flying experiences.

Installation: Place the guards over the copter. Use the screwdriver to tighten the 3 screws.

Disassemble: Unscrew the three holding screws and remove the guard.



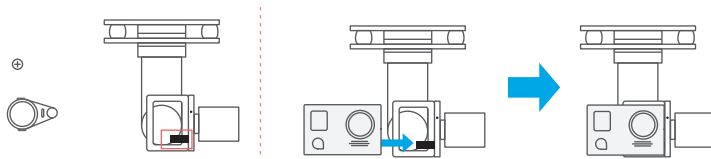
Completed Assembly

Camera

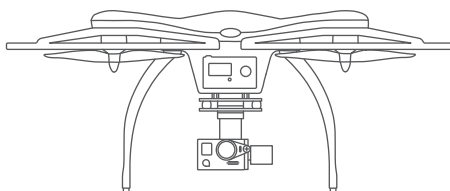
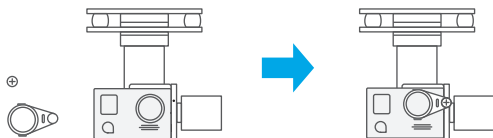
The 3-axis gimbal is compatible with GoPro 3, GoPro 3+, GoPro 4 and EHang sports camera. Camera is not included in the box.

Take EHang sports camera as instance:

- 1.Remove the camera guard. Connect the gimbal black plug with the camera USB interface.



- 2.Use the camera guard to fix the camera lens, and tighten the screw.



Completed Assembly

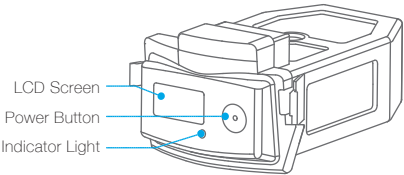
ACCESSORIES

Smart Flight Battery

⚠ Improper use of battery may lead to fire, explosion or other dangers. Please be familiar with the product before using.

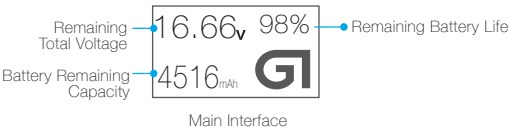
The smart flight battery is specially designed for the GHOSTDRONE 2.0, with capacity of 4500mAh, voltage of 14.8V, charge-discharge management functionality and a smart display screen. The battery should only be charged by EHANG power adapter.

Battery Structural Diagram



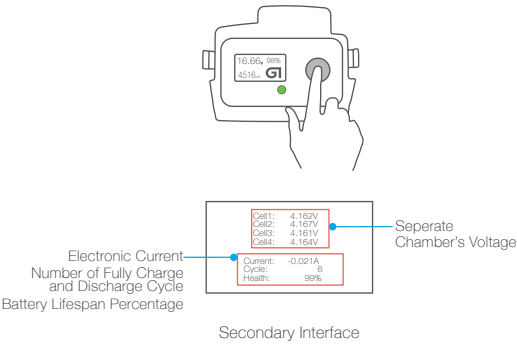
Powering On

Press the power button shortly, then quickly press and hold the button again. Don't release it until the last letter "G" of logo "EHANG" fully appeared on the screen. The LED indicator light turns on once the battery is turned on, referring to the diagram below.



Note: When the battery is powered off, press the power button to check the battery life. (Main interface will display for 3 seconds while the LED Indicator light stays off during the whole process.)

After turning on the battery you can enter the battery status interface by clicking the on button, to return to the main interface click the on button again.



Powering Off

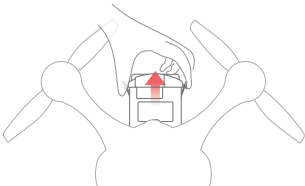
Press the power button shortly, then press and hold again until the '!' of 'SEE YOU !' message disappears on the screen.



Battery Removal & Installation

Remove Battery

Turn off the battery first. Hold the battery handles to remove it from the battery compartment.



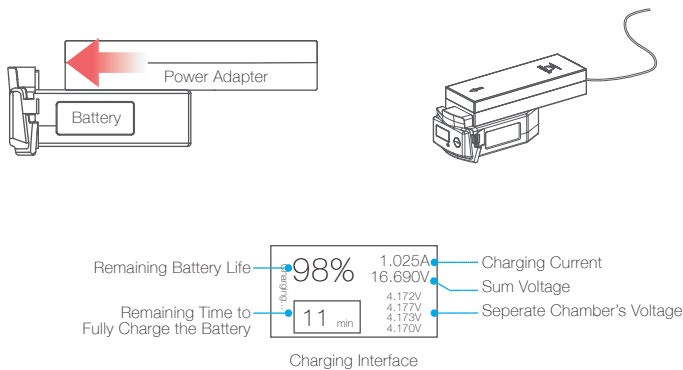
Install Battery

Hold the battery handles and push the battery into the battery compartment. Make sure the power blades in the compartment align with the battery interfaces. When a click is heard, the battery is well installed.

Note: DO NOT remove or install the battery into the copter when it is powered on, otherwise the battery will be damaged.

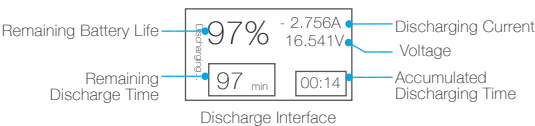
Battery Charging

Connect the battery to the power adapter, and then connect the power adapter to a wall socket (use the plug if necessary). Once connected successfully, the LED indicator light flashes slowly and the screen displays current battery information as below:



Battery Discharging

When the battery is discharging, the LED indicator light stays on and the screen displays as below:



LED Indicator Light Instructions

	Low frequency flash (Green)	Charging
	High frequency flash (Green)	Low battery
	Solid green	Working
	Light off	Standby

Warning

1. Only the EHang power adapter should be used to charge the battery.
2. DO NOT use the batteries from other companies for the GHOSTDRONE. EHang is not responsible for any accidents caused by third party batteries.
3. DO NOT use used LiPo batteries. EHang is not responsible for any dangerous accidents caused by used batteries.
4. DO NOT use the battery if it is inflated, damaged or deformed. DO NOT charge or discharge the battery if it is inflated, damaged or deformed.
5. DO NOT plug or unplug the battery into the copter when it is powered on, otherwise the battery will be damaged.
6. DO NOT overcharge the battery. DO NOT "trickle" charge the battery.
7. DO NOT leave the battery unattended when charging for a long time.
8. DO NOT charge or store the battery under direct sunlight. Please store batteries at room temperature. DO NOT store batteries under high or low temperature condition.
9. Recharge the battery only after it cools down to room temperature. Use the charged battery only after it cools down to room temperature.
10. DO NOT use the battery in strong electrostatic or electromagnetic environments, otherwise the electronic protection devices might be damaged leading to dangerous accidents.
11. DO NOT use any conducting wires or any metallic substance that would cause batteries to develop a short circuit.
12. DO NOT attempt to dismantle the battery case. DO NOT attempt to dismantle, pierce or cut a battery.
13. DO NOT discharge the battery below 3.0 V per cell. Ideally you never want to go below 3.2 V per cell to maintain a healthy battery. 2.9 V per cell and lower will cause permanent damage.
14. DO NOT leave the battery sitting around on a full charge for more than 2-3 days. If by the 3rd day you realize you are not going to use your battery, you need to discharge your battery down to 3.6 V-3.8 V per cell for safe storage until you are ready to use the battery again.
15. Depending on how they are used, most LiPo batteries typically do not last longer than 300 charge cycles. Leaving the batteries around on a full or depleted charge all the time, running them completely dead, or exposing them to high temperatures will shorten this lifespan dramatically.
16. Always pack your batteries in your carry-on bag and never in your checked baggage when traveling on an airplane. It's the law.

Storage Instructions

1. The battery should be stored in an environment with the temperature of $23\pm5^{\circ}\text{C}$.
2. The battery must be stored in places away from children, water, fire and metal.
3. Always keep a Class D fire extinguisher near your battery charging/discharging and storage area. The battery charging/discharging and storage area should be free from any materials which can catch fire such as wooden tables, carpets, or gasoline containers. The ideal surfaces for charging and storing batteries are concrete or ceramic.
4. DO NOT use your flight case/travel case for long term battery storage. The foam and plastic in these cases can help spread a fire caused by batteries. Always use a fire proof container such as a metal ammo box or fire proof safe for storage.
5. If the battery is not being used for more than 1 week, keep the battery capacity between 50% to 60%. Charge and discharge the battery once every two months.
6. Do not discard batteries in general household waste. Damaged or unusable batteries must be disposed in containers specially reserved for this purpose. When disposing of batteries, follow appropriate local guidelines and regulations.

G-BOX

G-BOX is a wireless interface unit designed specifically for controlling and interfacing with the GHOSTDRONE. GHOSTDRONE 2.0 G-BOX is compatible with both Android and iOS system. Each GHOSTDRONE is paired with one G-BOX. The App cannot operate the GHOSTDRONE without a G-BOX. Please store the G-BOX appropriately. If G-BOX is missing, it will be necessary to replace a new G-BOX unit.

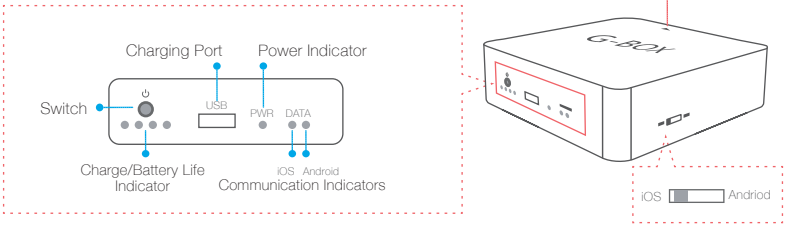


G-BOX



USB Power Cable

Structural Diagram

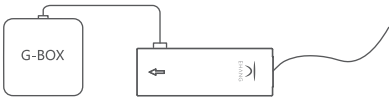


Using the G-BOX

Power On	Press the power button once. After the G-BOX turns on, the battery indicator, PWR and DATA indicators will turn on. After several seconds the battery indicators turn off to save battery.
Power Off	Hold the power button until the PWR indicator turns off.
While Charging	The four LEDs next to the power button flash in sequence.
Fully Charged	The left side LED flashes while the right three LEDs on the right are solid.
Electric current	The number of flashing LEDs indicates G-BOX's power levels.



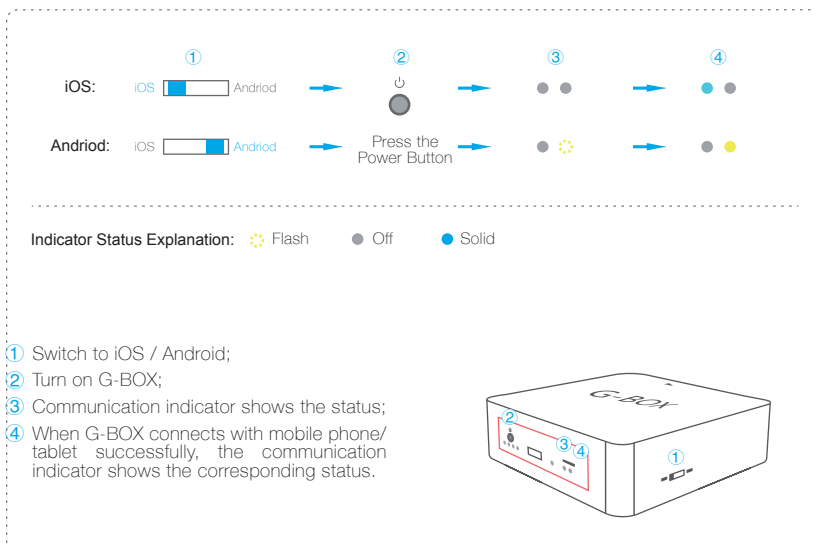
Switch/Battery Life Indicator



Charging G-BOX (with power adapter)

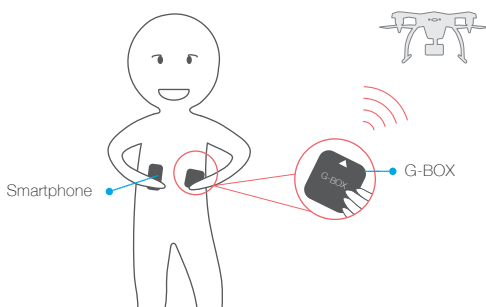
Note: You can charge the G-BOX by connecting it to a PC with a USB cable. When charging through a USB adapter, the required input current is 500 mA or higher.

Procedure



⚠ Important Tip

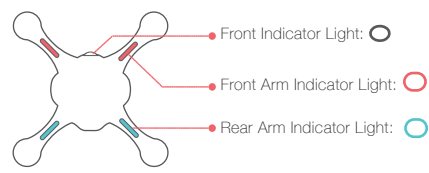
Keep the G-BOX within your 3 meter's radius during flight (We suggest keeping it in hand). DO NOT put the G-BOX on the floor or in the pocket. If the G-BOX is not near you, you may lose connection with the GHOSTDRONE. Best communication can be acquired when G-BOX's main antenna is pointing to the GHOSTDRONE.



Copter Indicator Lights Instructions

On GHOSTDRONE 2.0, there are four arm indicator lights and one front indicator light. The front indicator light displays multiple colors; the two front arm indicator lights display red; and the rear two lights display blue.

The following chart describes the display status of the lights and their corresponding explanation.





























Legend

 High Frequency

 Low Frequency Flash

 Solid

Front Indicator Light	Arm Indicator Light	Descriptions
 After powering on, front indicator light shows in white solid color then flashes in blue and green at high frequency until stop	  →  	Initializing.
 Flashes in yellow and blue at low frequency alternately	 	Control signal not receive.
 High frequency flash (red)	 	Unlock check failed, do not unlock.
 Low frequency flash (yellow)	 	GPS is not 3D locked. Unlock is only accessible in manual mode.
 Low frequency flash (blue)	 	GPS is 3D locked. Ready to unlock.
 Solid yellow	 	GPS is not 3D locked. Unlock successful.
 Solid green	 	GPS is 3D locked. Unlock successful.
 Low frequency flash (yellow)	 	Low battery. (Not related to unlock or not.)

Aircraft Indicator Light Status Information Chart

Terminologies

3D Lock: Lock copter's current three-dimension location using GPS.

High Frequency Flash: Flash rapidly.

Low Frequency Flash: Flash slowly.

SPECIFICATIONS

Copter

Weight	1150 g (with battery and propeller, without propeller guards)
Shaft Distance	350 mm
Height	195 mm
Hover Accuracy	horizontal: ± 1 , vertical: ± 0.2 m
Maximum Tilt Angle	$\pm 45^\circ$
Maximum Horizontal Speed	40 km/h (GPS mode) / 70 km/h (Manual mode)
Maximum Ascending Speed	2.5 m/s
Maximum Descending Speed	1.5 m/s
Maximum Hover Time	25 min
Communication Frequency	2.400 GHz - 2.483 GHz
Maximum Communication Distance	1000 m
Recommended Working Distance	500 m
Output Power	255 W (Hover) 450 W (Maximum)
Operating Temperature	-10°C - 40°C
Wind Resistance	< 10.7 m/s (24 mph)

G-BOX

Communication	Wi-Fi (iOS) + Bluetooth (Android) + 2.4 GHz Data Transmission
Voltage	3.7 V
Battery Capacity	1500 mAh

Live Stream Video

Frequency	5.725 GHz~5.850 GHz
Maximum Operating Distance	1000 m
Stable Transmission Distance	500 m

Propeller

8.5-inch 2-bladed self-tightening propellers

Smart Flight Battery

Weight	400 g
Type	LiPo 4S
Voltage	14.8 V
Current	4500 mAh (67 Wh)
Operating Temperature	-10°C~ +40°C
Maximum Charging Power	60 W
Charging Time	60 min ~70 min

Power Adapter

Input Voltage	100 V~240 V
Input Current	2 A
Input Frequency	50/60 Hz
Output 1	DC 16.8 V 3.5 A
Output 2	DC 5 V 2 A
Rated Power	60 W
Operating Temperature	0°C~40°C
Storage Temperature	-20°C~85°C

3-Axis Gimbal

Weight	154 g
Accuracy	0.09°
Operating Voltage	DC 12 V
Controllable Range	Yaw 360°/ Pitch Angle -90° to +30°
Supported Cameras	EHang camera, GoPro3, GoPro3+, GoPro4

App Download

App Download

Method① Visit official website www.ehang.com to download EHANG Play App

Method② Search and download EHANG Play Android version in [Google Play](#)

Method③ Search and download EHANG Play iOS version in [App Store](#)

Supported Device Requirements

Android: Android 4.0 or above.

iOS: iOS 8.0 or above.

Note:

Please visit: www.ehang.com to download *EHANG Play App Manual* and learn how to use the App.

FAQ

Copter

1. Is the VR goggles compatible with both Android and iOS?

Not. GHOSTDRONE 2.0 VR goggles is not compatible with both Android and iOS. You should choose what kind of goggles you want.

2. What's the battery capacity? How long is the charging time?

GHOSTDRONE 2.0 is equipped with 4500-mAh 4S Lithium polymer smart flight battery. The battery's LCD screen displays information including battery capacity, voltage, remaining capacity etc. The charging time is about 60 to 70 minutes, which will also be displayed on the screen during charging.

3. What's the maximum flight time of GHOSTDRONE 2.0?

Flight time will vary depending on flight environment and flight mode. Under optimal condition, the maximum flight time for GHOSTDRONE 2.0 is 25 min. Please note that adding on gimbal, camera or other accessories will decrease the flight time.

4. How far and high can the GHOSTDRONE 2.0 fly?

The effective communication distance depends on the flight environment.

Under optimal conditions, GHOSTDRONE 2.0 can fly up to 1000 m (3,280 ft.) away from the mobile device and VR Goggles.

5. Are gimbals of GHOSTDRONE 2.0 Aerial and Aerial+ compatible with other sports camera?

GHOSTDRONE 2.0 Aerial's 3-axis gimbal is compatible with EHang sports camera, GoPro3, GoPro3+ and GoPro4.

6. Can the propeller guards and landing gears be used at the same time?

Yes. Propeller guards must be installed when flying indoors. If users fly GHOSTDRONE without propeller guards, EHang shall not bear any liability or responsibility for any accident arisen from this reason.

7. Does GHOSTDRONE 2.0 have obstacle avoidance?

Obstacle avoidance function is currently unavailable for GHOSTDRONE 2.0. Please beware of the flight environment and it is highly recommended to fly the aircraft in an open area.

8. Can I modify the GHOSTDRONE 2.0?

It is strongly not recommended to modify GHOSTDRONE 2.0 for the sake of safety. Please use EHang accessories only as well as reading through the manuals or consulting EHang's customer service staff. EHang is not responsible for any damages or loss caused by unsupervised modification or mounting on GHOSTDRONE 2.0.

9. Can GHOSTDRONE 2.0 Aerial be upgraded by adding gimbals or other accessories?

Yes. GHOSTDRONE 2.0 Aerial can be upgraded to GHOSTDRONE 2.0 VR by adding the 3D gimbal and VR goggles.

10.Can the VR goggles be used on other devices? Can the VR goggles be used with EHang FPV monitor at the same time?

VR goggles real-time image transmission relies on the 5.8G analog signals, thus it can also be used with any similar transmitter.

While using the VR goggles, FPV monitor can also be used to search for the same channel to watch the same images. But only the VR goggles can offer the head tracking function.

App

11. Why i am not able to discover bluetooth or Wi-Fi's name?

Please restart the VR goggles and reinitiate VR goggles search in App.

12. What will happen if the smartphone runs out of battery during flight?

If the copter does not receive any command in 5 seconds or lost communication, in the case of accurate GPS, it will automatically return. (battery life should be sufficient.); In the case of inaccurate GPS, it will land automatically.

Troubleshooting

13. Battery has been plugged in, VR goggles have been connected with the App, but the aircraft does not response. What should I do?

Please check if the Bluetooth / Wi-Fi has been connected successfully (Bluetooth / Wi-Fi icon lights on). Check if all statistics including satellite number, heartbeat and battery life are all displayed normally on the App interface. If nothing above is abnormal, please turn off all devices and restart the App, then try to connect again.

14.What should I do if I click unlock but the propeller don't work?

Solution 1: Please check if battery has been turned on. Then check if the Bluetooth / Wi-Fi has been connected successfully (Bluetooth / Wi-Fi icon lights on). Check if all statistics including satellite number, heartbeat and battery life are all displayed normally. If nothing above is abnormal, please turn off all devices and restart the App, then try to connect again.

Solution 2: If the copter's front indicator light constantly flashes red, wait for a while. If the front indicator light still flashes red and the copter can not be unlocked, please turn off all devices and restart the App, then connect again.

Solution 3: If solution 1 and 2 do not solve the problem, try to reinstall the EHang Play App and connect VR Goggles again.

15.What should I do if there is no response after choosing Companion Mode?

Please make sure you allow the EHang Play App to access your GPS location of your cellphone otherwise the Companion Mode can not be activated.

Troubleshooting

17. Battery has been plugged in, G-BOX / VR goggles have been connected with the App, but the aircraft does not response. What should I do?

Please check if the Bluetooth / Wi-Fi has been connected successfully (Bluetooth / Wi-Fi icon lights on). Check if all statistics including satellite number, heartbeat and battery life are all displayed normally on the App interface. If nothing above is abnormal, please turn off all devices and restart the App, then try to connect again.

18.What should I do if I fail to unlock?

Solution 1: Please check if battery has been turned on. Then check if the Bluetooth / Wi-Fi has been connected successfully (Bluetooth / Wi-Fi icon lights on). Check if all statistics including satellite number, heartbeat and battery life are all displayed normally. If nothing above is abnormal, please turn off all devices and restart the App, then try to connect again.

Solution 2: If the copter's front indicator light constantly flashes red, wait for a while. If the front indicator light still flashes red and the copter can not be unlocked, please turn off all devices and restart the App, then connect again.

Solution 3: If solution 1 and 2 do not solve the problem, try to reinstall the EHANG Play App and connect G-BOX / VR Goggles again.

19.What should I do if there is no response after choosing Companion Mode?

Please make sure you allow the EHang Play App to access your GPS location of your cellphone otherwise the Companion Mode can not be activated.