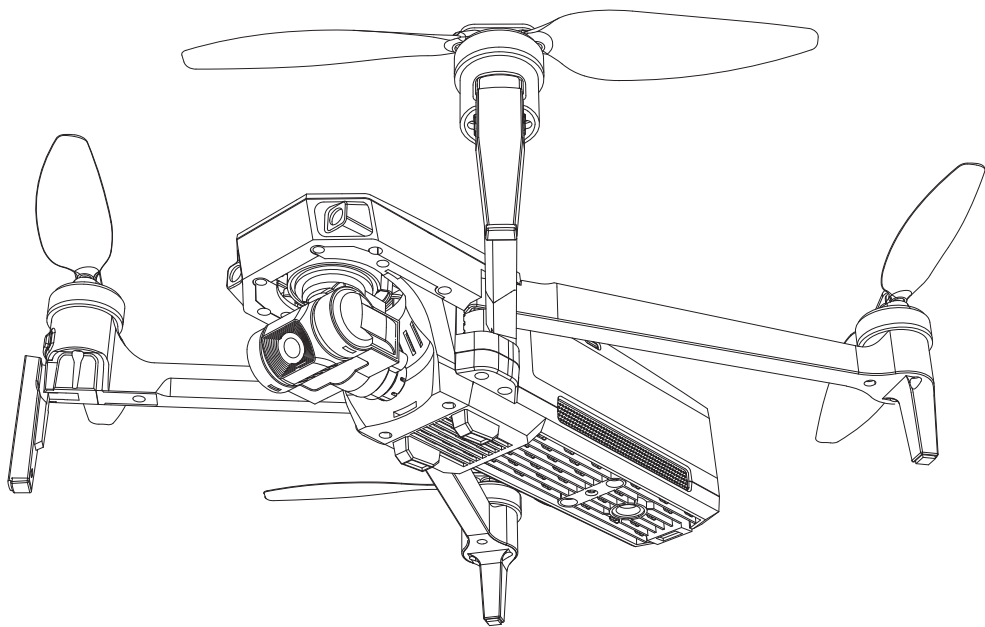


Bugs 16

Bugs 16 pro

User Guide



3 Axis Gimbal



Farther.Faster.Clearer

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Product Description

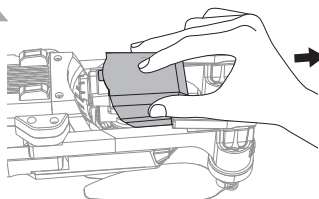
Introduction

Bugs 16/Bugs 16 pro are equipped with optical flow system and GPS, can hover and fly steadily indoor and outdoor. They have automatic return home and easy-to-use intelligent flight, such as Orbit Flight, Follow-Me and Waypoint Flight. It can shoot 4K HD video with highly precision 3 axis anti-shake gimbal. The transmitter with functional buttons can complete various operation and setting of the aircraft and camera. Through the APP, not only have real time HD image but also flight parameters information. The folding design of transmitter improves the user operation experience. The pull-out phone holder is easy to carry and store for the user. The gimbal can adjust the camera shooting angle during flight. The maximum flying speed of Bugs 16/Bugs 16 pro is 40km/h.

Prepare the Aircraft

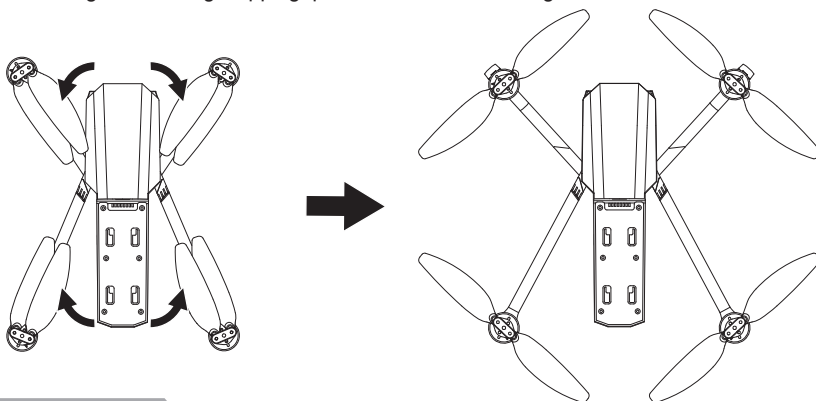
Disassemble the gimbal protection lock

Pull out the protective cover of gimbal camera.



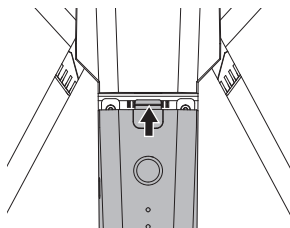
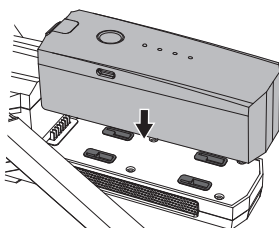
Expand the arm

The aircraft is in folding state during shipping, please unfold it according to below instruction.



Install aircraft's battery

Insert fully charged battery into the battery holder (as the below picture), make sure the battery install correctly.

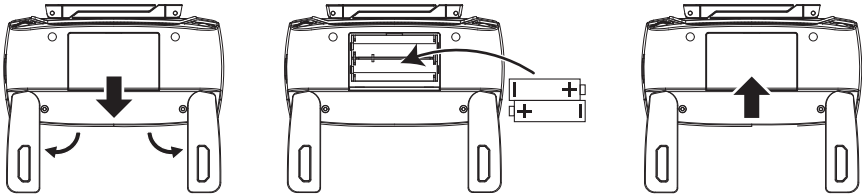


Reminder: If the battery is not installed properly, it may cause the aircraft to fall down due to power failure.

Prepare the Transmitter

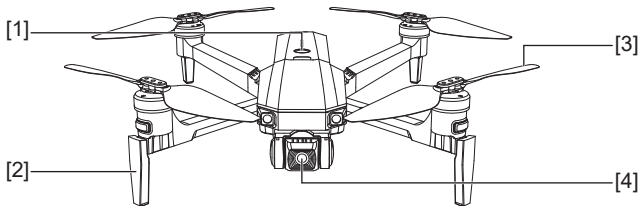
Install the transmitter's battery

Open the battery box, insert 2*AA batteries correctly according to the polarity in transmitter, then close the battery box.

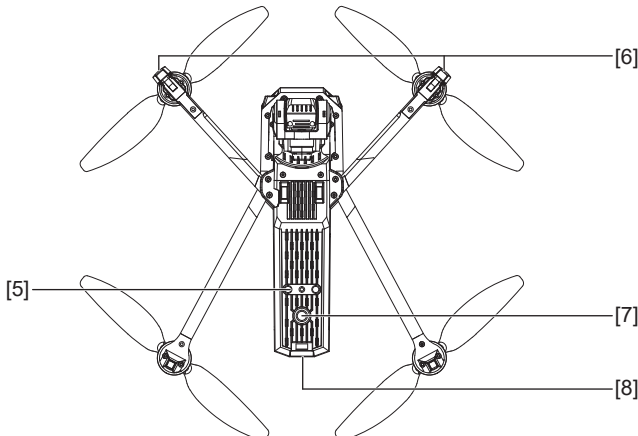


- The transmitter use 2*AA Non-chargeable batteries or AA chargeable batteries. (Please purchase)
- Please notice the polarity during install or change the batteries.
- Non-chargeable battery cannot be charged, only use the batteries the same with the recommended ones.
- Please take out the chargeable batteries before charging.
- Forbid to connect the aircraft with higher than the recommended power batteries.
- Do not mix the old and new different type batteries.
- Please take out the exhausted batteries in time, discarded batteries cannot be littered.
- In order to avoid battery leakage causing damage to the aircraft, please take out the battery if not in use for a long time.

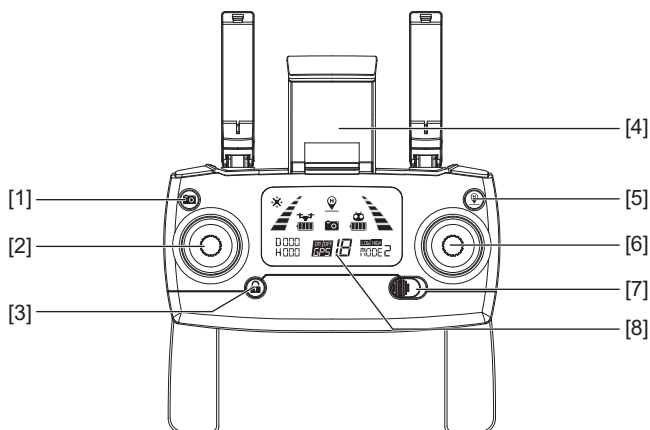
Parts Name



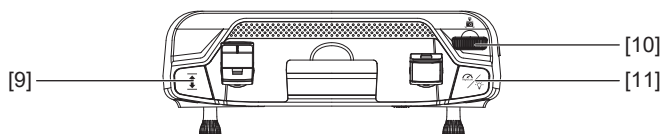
- [1] Power switch
- [2] Landing gear
- [3] Propeller
- [4] Gimbal camera



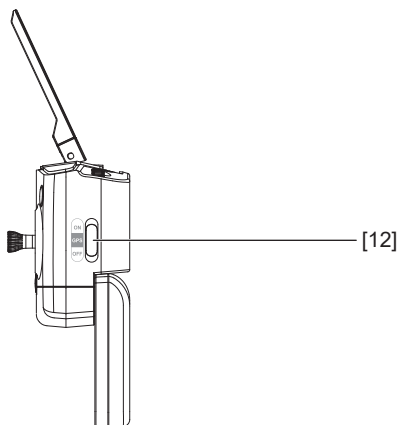
- [5] Optical flow system
- [6] Front light
- [7] Fill light
- [8] Rear light



- [1] Take picture/video
- [2] Left joystick
- [3] One key to unlock/ Lock
- [4] Phone holder
- [5] One key return home
- [6] Right joystick
- [7] Power switch
- [8] Status display screen



- [9] One key to take off/ landing
- [10] Gimbal control hand wheel
- [11] Short press for light control/
Long press for fast slow speed switch



- [12] GPS Switch

Aircraft

Flight Mode

The following flight modes are available in Bugs 16/Bugs 16 pro.

GPS mode

In GPS mode, the aircraft achieves precise hovering by receiving GPS signals. If the GPS signal is weak, the aircraft will enter Fix-Altitude Mode or Optical Flow Position mode. (Please refer to the status bar for specific status in APP.)

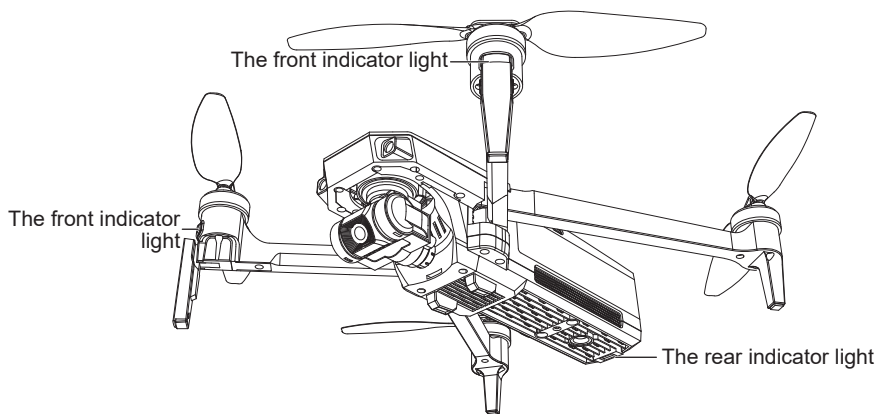
When the GPS signal is weak, please land to safe place immediately avoiding any accidents. In the same time, please avoid flying in any weak GPS signal or narrow space, lest flight accidents.

Optical flow position mode

If it cannot receive the GPS signal or the GPS turned off, the aircraft will enter the Optical Flow Position mode automatically. In this mode, the aircraft can hover stably by optical flow system.

The applicable flight height of Optical Flow Position is 3 meters. The position effect will gradually weaken if the height is higher than 3 meters. Recommend not to exceed a flight altitude of 3 meters.

The Status Indicator Light of Aircraft





The status indicator light reminder

No.	Indicator light status	Meanings
1	The front and rear indicator light flash yellow quickly.	The aircraft and transmitter have not connected.
2	The front and rear indicator light flash yellow green red in turns.	The aircraft is in the initialization detection state.
3	The front indicator light stays in red, the rear indicator light stays in yellow.	No GPS signal.
4	The front indicator light stays in red, the rear indicator light stays in green.	Good GPS signal, available to enter into GPS mode.
5	The front and rear light flash green quickly.	The aircraft is in gyroscope calibration.
6	The front and rear light flash yellow in turns.	The aircraft is in geomagnetic horizontal calibration.
7	The front and rear light flash green in turns.	The aircraft is in geomagnetic vertical calibration.
8	The front light stays red, the rear light flashes red slowly.	The aircraft is close to low battery, only 16% power left.
9	The front light stays red, the rear light flashes red quickly.	The aircraft is in low battery, only 12% power left.
10	The front and rear light flash red once, stop about 1.5s.	The gyroscope has a malfunction.
11	The front and rear light flash red twice, stop about 1.5s.	The barometer has a malfunction.
12	The front and rear light flash red three times, stop about 1.5s.	The compass has a malfunction.
13	The front and rear light flash red four times, stop about 1.5s.	The GPS has a malfunction.



Return Home Automatically

Bugs 16/Bugs 16 pro are equipped with return home automatically. It include one key to return home, return home in low power and out of control.



The aircraft has recorded the home point successfully. In good GPS signal, when the user turns on the one key return, return home in low power, return home in out of control for disconnection between transmitter and aircraft, the aircraft will fly back to home point and land automatically.

	GPS	Description
Home Point		In taking-off or flight, when the GPS signal reaches more than 7 for the first time, the current position of the aircraft will be recorded as the home point. In the same time, all indicator lights change yellow to green.

One key to return home

When the GPS signal is good (the No. of satellites is more than 7), you can press “” button to start the return home. In return-home, press “”, the return home will be canceled, you will get the flight control right again.

Return home in low power

1. The red indicator lights flash slowly, the power icon in the LCD screen of transmitter is “” with continuous Beep Beep sound. If the flight altitude is between 30 meters and 100 meters, the aircraft will return home automatically, fly back to the home point.
2. The red indicator lights flash quickly, the power icon in the LCD screen of transmitter is “” with continuous Beep Beep sound. If the flight altitude or distance is far than 15 meters, the aircraft will return home automatically, fly back to the home point.
If the distance is less than 15 meters, the aircraft will land on the taking off spot.

Return home in out of control

When the GPS signal is good (the No. of satellites is more than 7), the compass situation is good, if the signal of transmitter is interrupted for more than 6 seconds without APP control, the flight control will take over the control of the aircraft and control the aircraft fly back to the home point. If the transmitter signal is restored during flight, the return home will continue, while the user can cancel it by the return home button on transmitter, get back the aircraft's control right.

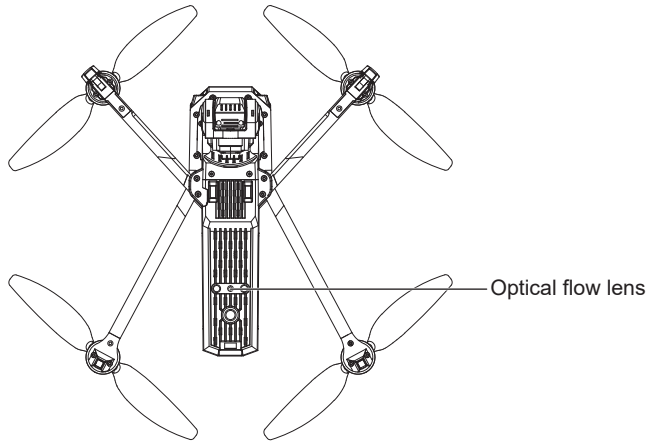


Notice for return home:

- In Return Home, the aircraft will fly straight to the home point, cannot avoid the obstacles. Please pay attention to it.
- When the GPS signal is week or not working, it cannot return home.
- In return home, if the flight altitude is higher than 15 meters, the aircraft will perform the return home immediately, otherwise, the aircraft will raise up to 15 meters, then perform the return home (In APP, the return altitude can be setting)
- If the aircraft does not get the GPS signal, in the same time, the signal of transmitter has been interrupted for more than 6 seconds, the aircraft will not be able to return home, it will descend slowly until landing, then will be locked.

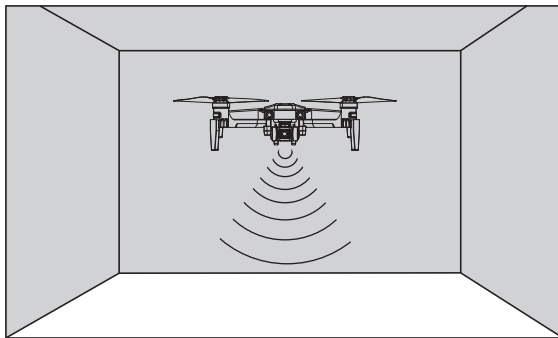
Optical Flow System

The optical flow system is composed of optical flow lens modules. It is an image positioning system that locating the aircraft by optical flow images. It ensures the accurate positioning and safe flight of the aircraft.



Usage requirements of optical flow positioning function

It is suitable for environments where the altitude is below 3 meters, there is no GPS signal or the GPS signal is weak.



The measurement accuracy of the optical flow system is easily affected by the light intensity and the surface texture of the object. Once the optical flow failure, the optical flow positioning mode will automatically switch to fixed altitude mode. Please be cautious in as following situations:

1. When flying fast at low altitude (below 0.5 meters), the optical flow system may not be able to locate.
2. Monochrome surface (such as pure black, pure white, pure red, pure green).
3. Surfaces with strong reflections.
4. Water surface or transparent surface.



5. Surfaces of moving objects (such as, the upside of crowds, the swaying bushes or grasses).
 6. Scenes with dramatic and rapid light changes.
 7. Surface extremely dark ($Lux < 10$) or extremely bright ($Lux > 10,000$).
 8. Very sparsely textured surface.
 9. Surfaces with highly repeating textures (such as small grid brick in the same color).
 10. Surfaces that are tilting over 30 degrees.
 11. Flying speed should be controlled not too fast. When the aircraft altitude is 1 meters, the flying speed should not be over 5m/s; When the aircraft altitude is 2 meters, the flying speed should not be over 14m/s.
-

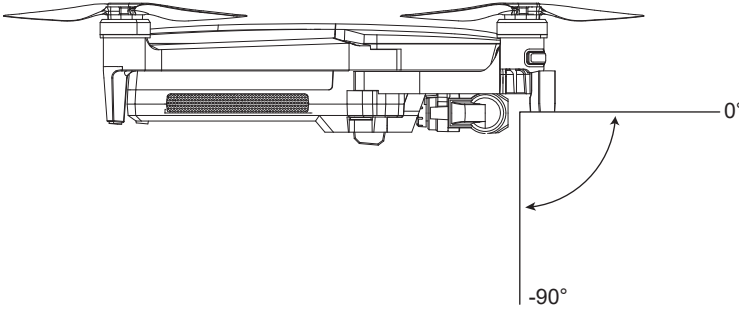
- Please ensure that the optical flow lens is clear.
 - The optical flow system is only effective within the altitude less than 3 meters.
 - Since the optical flow function system relies on ground surface to obtain location information, please ensure that the surrounding environment has sufficient light sources and rich texture ground.
 - The optical flow system cannot be positioned on the water surface, in extremely dark environment and no clear texture ground.
 - If the light is dim, please turn on the optical flow fill light.
-

Gimbal Camera

Gimbal description

The 3-axis gimbal provides a stable platform for the camera. Ensure that the camera can shoot stable images even the aircraft is at high speed flying. The camera angle can be adjusted through the transmitter handwheel, or through the buttons on the M RC PRO APP camera interface.

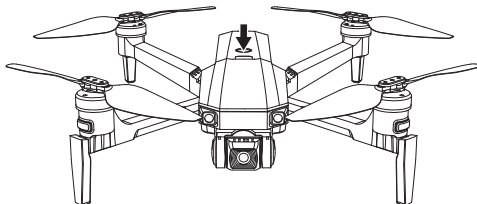
The default gimbal camera shooting angle is -90° to 0° .



- Please place the aircraft on a flat and open ground before takeoff, do not touch the gimbal after the power turned on.
- The gimbal contains precision parts. If it is hit or damaged, the precision parts will be damaged, which may affect the performance of the gimbal. Please take good care of the camera gimbal, keep it from physical damage.
- Please keep the gimbal clean, keep the gimbal from contacting objects such as sand and rocks. Otherwise, the movement of the gimbal may be blocked and affect the performance.
- If the aircraft is placed on uneven ground or grass, when the object on ground hits the gimbal, or the gimbal is subjected to excessive external force (such as being hit or being blended) may cause the motor abnormal.
- Do not add any objects on the gimbal camera, otherwise it may affect the performance even cause the motor burned.
- During using, please take off the gimbal protection lock first then turn on. During storage or transportation, please re-assemble the protection lock to keep the gimbal safe.
- If flying in heavy fog or clouds, may cause condensation on the gimbal and then gimbal not working. If this happens, please make the gimbal dry, then it will back to work.

Power Switch of the Aircraft

Long-press the power button for 3 seconds, the aircraft will turn on. In the same time, the aircraft will have power-on sound and indicator light stays on. Long-press the power button for 3 seconds again, the aircraft will turn off and indicator light will turn off.



Aircraft Battery

Aircraft No.	Rated voltage	Battery capacity
Bugs 16	7.6V	3400mAh
Bugs 16 pro	11.4V	3200mAh

⚠ Warning:

Bugs 16 and Bugs 16 pro have different battery types, please charge according to corresponding adapter.

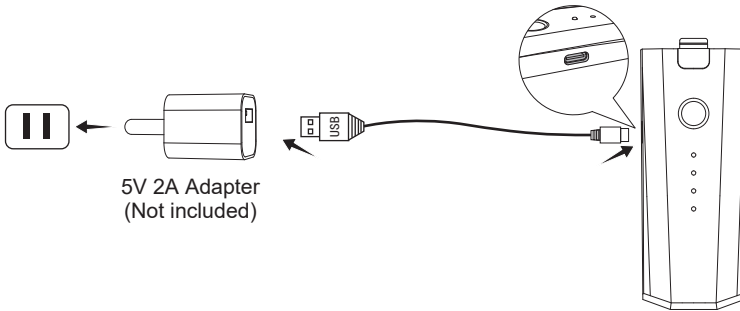
Charging

①USB to Type C charging cable

Please charge the battery fully before using it. Be sure you use the officially supplied USB charging cable to charge. The charging time is about 5.5 hours.

- Power off: The battery indicator light will flash.
- Charging: The battery indicator light will flash in turns.
- Fully charge: The battery indicator will stay on.

*The above charging data is based on 5V 2A adapter. Using the different adapter will affect the charging data. Recommend using 5V 2A-2.1A adapter to charge.

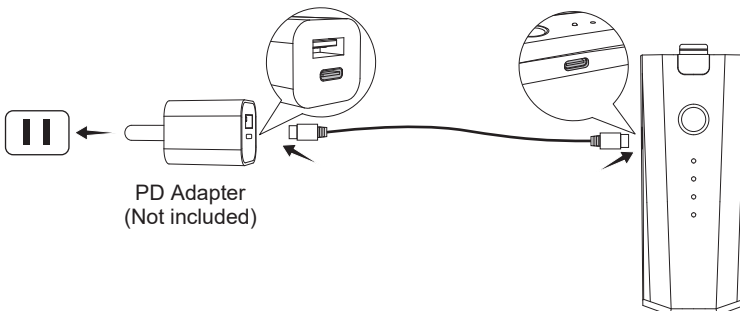


②PD Fast charging cable (PD fast charging only applies to Bugs 16 pro batteries)

Please charge the battery fully before using it. Be sure you use the officially supplied USB charging cable to charge. The charging time is about 70 minutes.

- Power off: The battery indicator light will flash.
- Charging: The battery indicator light will flash in turns.
- Fully charge: The battery indicator will stay on.

*The above charging time data is based on an adapter with 45W Up. Using the different adapter will affect the charging data. Recommend to use a PD charger with 45W Up, for faster charging experience.





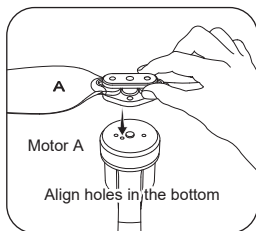
- Please charge the battery under adult supervision. Do not let children to charge it alone. Keep away from flammable materials when charging, pay attention on the aircraft, do not leave it beyond your monitoring range.
- Please do not make the battery short-circuit or squeeze the battery to avoid explosion.
- Forbid to take the power cord out from the aircraft. Do not make the power cord short-circuit. Forbid to make the battery short-circuit, disassemble or throw into fire. Do not put the battery in high temperature or near heated places (such as fire or electric heating devices).
- Please check the charger's power cord, plug, shell and other parts regularly, if any damage, please fix first.
- Please use the charger indoor only.
- After the flight, please charge the battery to half full then store. If no use for long time, recommend to use out and recharge the battery once per month, lest the battery damaged for over discharge.

Assemble & Disassemble the Propellers

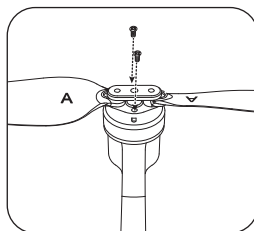
Assemble/disassemble the propellers

●Assemble

Select corresponding propellers, (A and A, B and B), use screwdriver to fix the 2 screws clockwise (as pic 1-2).



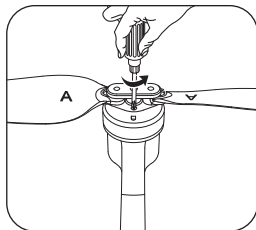
Pic. 1



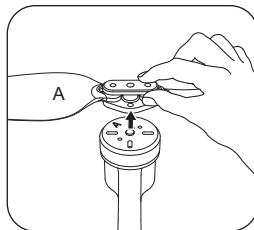
Pic. 2

●Disassemble

Turn screwdriver anti-clockwise, take out 2 screws then pull out the propellers (as pic.3-4).



Pic. 3



Pic. 4



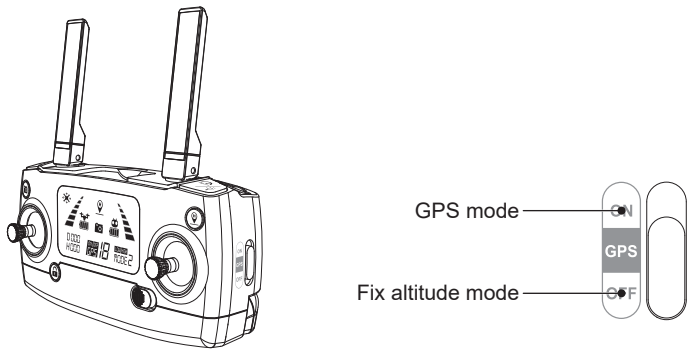
- Please ensure that the clockwise and anti-clockwise propellers are installed correctly, otherwise the aircraft cannot fly.
- As the propeller is thin, please be careful during installation, lest any accidental scratches.
- Please use the official propellers.
- Propellers are consumable, if necessary, please purchase accessories separately.

Transmitter

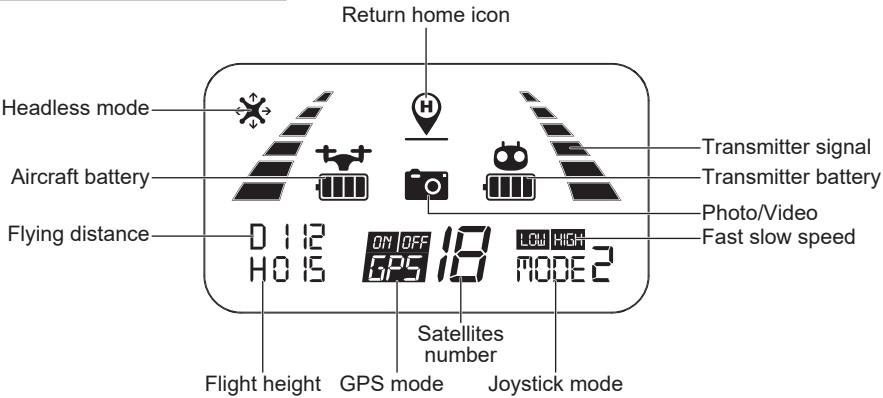
Function&Situation of Transmitter

Flight mode switch

Toggle the switch button on the right side of the transmitter to control the aircraft flight mode. The flight mode switch is below, please check it. The icon “GPS ON/OFF” on transmitter LCD screen displays the current flight mode.

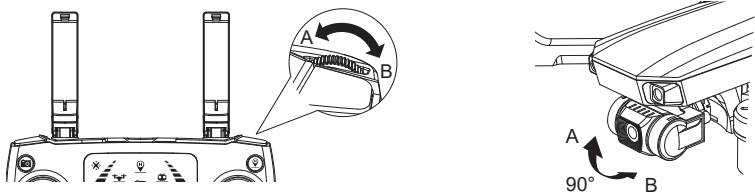


Transmitter display screen



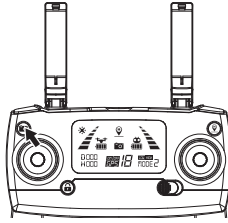
Gimbal control handwheel

By toggling gimbal hand wheel on transmitter, the camera shooting angle can be adjusted to get a better aerial photography experience. When the wheel rolls to the A direction, the camera angle will be adjusted to the A direction; when the wheel rolls to the B direction, the camera angle will be adjusted to the B direction.



Photo/Video

Short press the “📷” button on transmitter to take photo, the icon “📷” on LCD screen will flash once. Long press the “📷” button on transmitter to take video, the icon “📷” on LCD screen will flash slowly continuously. Long press the “📷” again, the shooting will exit.

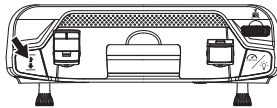


Tips: The 4K HD Photos and videos cannot be saved without TF Card.
If TF Card is in errors, the drone cannot take picture/video.

One-key takeoff/landing

After the Bugs unlocked, short-press the “🚀” button, the aircraft automatically take off and hover at 1.5m altitude.

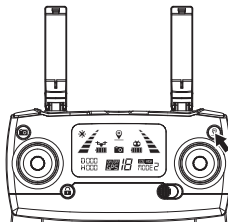
When the aircraft is flying, short-press the “🚀” button, the aircraft automatically land on the ground. In landing automatically, press any joystick, the aircraft will exit the mode.





One-key return home

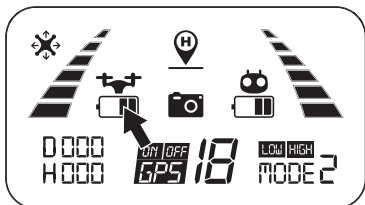
Press the “🏠” with the buzzer making “Beep” sound, the auto- return home is on. The aircraft will fly back to the lasted home point.

Short press the button again, the return home will exit.

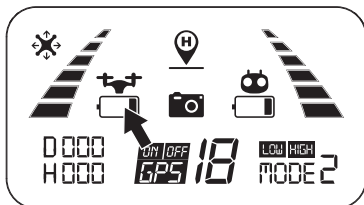


Aircraft low battery warning

1. The indicator light of aircraft flash red slowly, in the same time, the battery icon in LCD screen of transmitter is “”, with continuous Beep Beep Beep sound. If the altitude of aircraft is higher than 30 meters or distance far than 100 meters, the aircraft will return home automatically, fly back to the home point.
2. The indicator light of aircraft flash red fast, in the same time, the battery icon in LCD screen of transmitter is “”, with continuous Beep Beep Beep sound. If the altitude of aircraft is higher than 15 meters or distance far than 15meters, the aircraft will return home automatically and fly back to the home point. If the altitude of aircraft is lower than 15 meters or distance less than 15meters, the aircraft will land directly at the flying point.




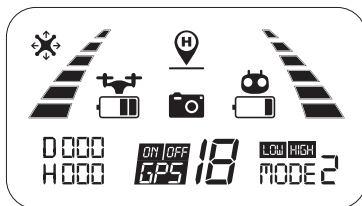
Pic. 1






Pic. 2

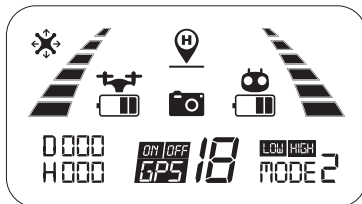
Transmitter low battery warning

When the “” icon displays on the LCD screen and the transmitter has continuous Beep Beep Beep sound, it means the transmitter battery power is low. Please exchange new batteries.



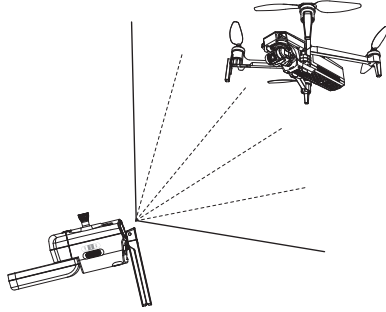
Signal strength

- Icon “” displays the strength of the received signal. The more of the grid, the stronger of the signal, otherwise, the signal is weaker.
- If the icon “” changes from the weak to strong circularly, means that the transmitter is under signal matching status.
- If the “” is less than 2 grids or no any grid.
 - 1) The distance between the aircraft and the transmitter is too far to get the signal.
 - 2) The aircraft battery has been removed after signal matching.



Transmitter communication range

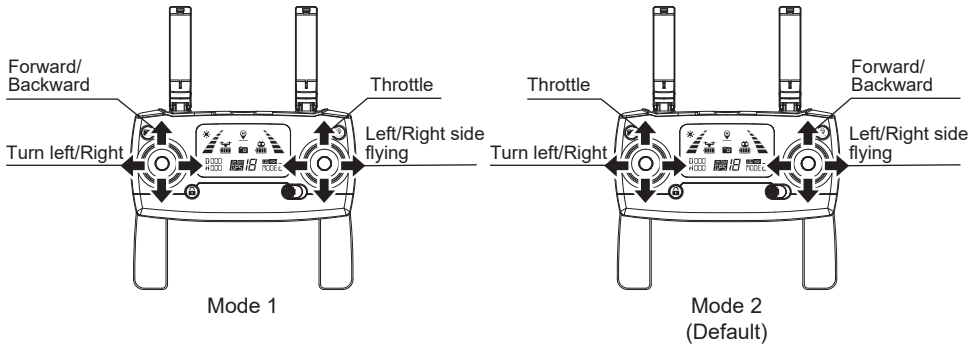
Please keep the aircraft fly in front of the transmitter, there is not any obstacles between them.




Best communication range

Transmitter Joystick Mode

Joystick mode



Joystick mode switch

1. As picture 1, press the unlock button “

①

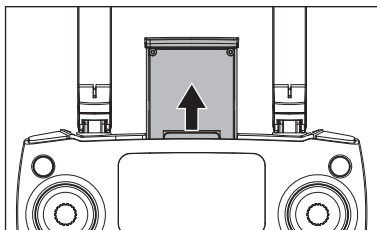
②



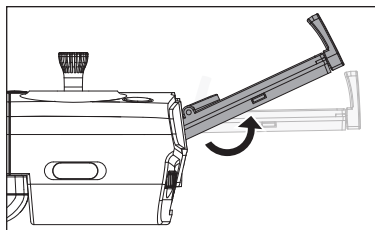
Reminder: Please make sure the transmitter is in signal matching status during switching the mode, otherwise it cannot switch the mode.

Assemble Phone Holder

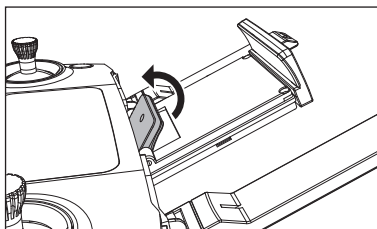
1. Pull up the phone holder completely (Pic. 2);
2. Rotate the phone holder up 30° (Pic. 2);
3. Rotate and fix the support board in place (Pic. 3);
4. Adjust phone fixing components, stretch up and down to adjust the size (Pic. 4).



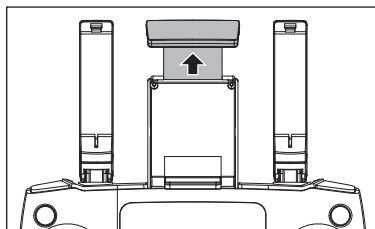
Pic. 1



Pic. 2



Pic. 3



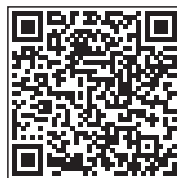
Pic. 4

M RC PRO APP

FPV Real Time Transmission Software

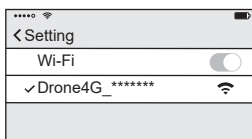
Scan code to download APP

- For Apple IOS system, please search for “M RC PRO” in APP STORE or directly scan the QR code to install.
- For Android phones, please scan the below QR code to install. (MJXRC.NET is an alternative download link)



Connection instructions

Enter the “Settings” option of the mobile phone, turn on the WIFI, find the name Drone4G_***** in the mobile WIFI search list, connect until the word “Connected” appears, indicating that the connection is successful and exit the setting options. Open the APP on the phone.



Connect WIFI

Photo/Video saving function

1. If the memory card is not installed, the video and photos will be saved in the phone APP album. (This photo and video only have the quality of the image transmitted to the mobile phone)
2. If the memory card is installed, the video and photos will be saved to the memory card.
3. The videos and photos in the memory card can be downloaded to the mobile APP.



Reminder: Only mobile phones that support 5G WIFI (802.11.ac) can connect to FPV.

Flight

Surroundings Requirements of the Flight

1. Do not fly in bad weather, such as strong wind, snow, rain, fog, etc.
2. Choose an open place without tall buildings around to fly. Buildings that use a lot of steel bars will affect the work of the compass and block the GPS signal, causing poor positioning of the aircraft or even unable to locate.
3. When flying, keep the aircraft in sight, stay away from obstacles, crowds, water, etc.
4. Do not fly in areas with high-voltage lines, communication base stations or transmission towers, avoiding interference with the transmitter.
5. When flying at the place whose altitude above 6000m, due to environmental factors, the performance of the aircraft battery and power system will decrease, and the flight performance will be affected correspondingly. Please fly with caution.
6. The aircraft cannot use GPS to fly in the north and south poles.

Flight restrictions and special area restrictions


According to the regulations of the International Civil Aviation Organization and the air traffic control of various countries on airspace control and the regulations of the management of drones, drones must fly in the specified airspace. For flight safety, the flight restriction function is turned on by default, including altitude and distance restrictions and special area flight restrictions, to help users use the aircraft more safely and legally.

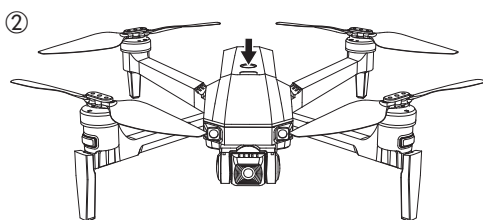
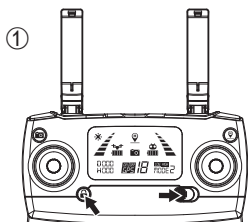
Pre-Flight Inspection

1. Whether the transmitter, aircraft battery and phone are fully charged.
2. Whether the propellers are installed correctly.
3. Whether the front and rear arms and propellers are fully unfolded.
4. After the power turned on, whether the camera and gimbal work.
5. Make sure the camera lens is clean.
6. Ensure to use official accessories or officially certified accessories. The non-official accessories may cause damage of the aircraft.

The Operation of Aircraft

Transmitter and aircraft signal matching

- ① Press the button “” without releasing and turn on the transmitter. The transmitter will have Beep Beep Sound, then releasing the button. The signal strength icon changes from the weak to strong circularly, It means the transmitter is under signal matching.
- ② Install aircraft battery, long press the power button of aircraft to turn on the aircraft. In this time, the aircraft will have a power-on sound and the indication light stays on. After signal matching, the transmitter will have a long Beep sound. The signal strength icon displays the current signal strength, then the signal matches successfully.

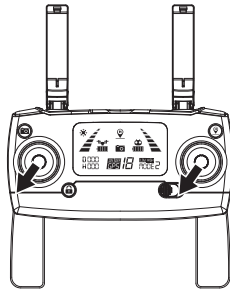
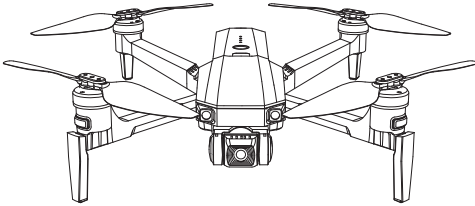




- As long as the transmitter and the aircraft are successfully matched, if you have not matched with other transmitters or aircraft, then do not need to match the signal again next time.
- When matching the signal, please make sure that no other transmitter or the aircraft are powered on nearby at the same time, otherwise the signal matching will have errors.

Gyro calibration

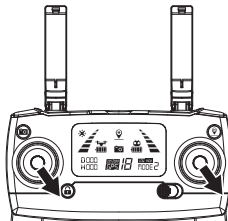
After the successful signal matching, place the aircraft on a horizontal ground. Push the left and right joysticks to the left bottom at the same time (as picture). In this time, the front and rear lights flash quickly, the gyroscope enters the calibration state. When the indicator lights stay on, the calibrations is completed.



- In gyro calibration, the aircraft should be place on horizontal ground, otherwise will affect the flight performance.
- The gyroscope has been calibrated before shipping. The user does not need to calibrate it. This operation can only be operated when the flight status is not good.

Geomagnetic calibration

Before unlock the aircraft, please operate as picture to enter the geomagnetic calibration.

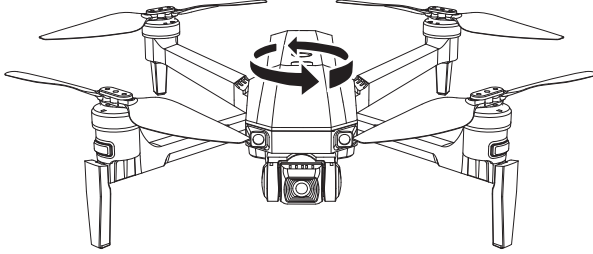


Two steps of geomagnetic calibration

Step 1: Horizontal Calibration

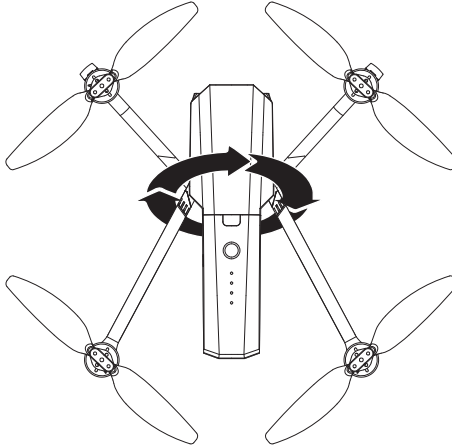
The front and rear indicator lights flash yellow alternately, means entering into the horizontal calibration.

Place the aircraft as below picture, rotate it horizontally for about 3 circles, until the indicator lights of the front and rear turn green alternately. In this time, the horizontal calibration is completed.



Step 2: Vertical Calibration

Place the aircraft's head up, like "stand up", as below picture, rotate the it about 3 circles until the front and rear indicator lights stay on. In this time, the geomagnetic calibration is completed.



Reminder:

- Ensure that the flight place is open and the satellite signal is greater than 7 stars before take-off.
- In GPS mode, if the aircraft cannot hover at a fixed point or the fixing performance is poor, please re-calibrate the geomagnetic, it can improve the flight performance.



- Do not calibrate in areas with strong magnetic, such as magnetic mines, parking or building areas with steel bars under ground., etc.
- Do not carry ferromagnetic materials, such as keys, phones, etc. with you during calibration.
- Do not calibrate near large pieces of metal.

Unlock/lock the aircraft

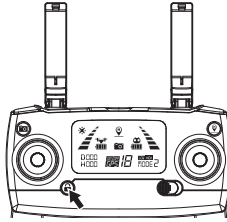
Unlock the aircraft

Short Press the "🔒" button in transmitter, the motor starts and the aircraft is unlocked.

Lock the aircraft

Method 1: After the aircraft landing, pull the throttle to the bottom and hold for 3 seconds. The motor will stop work and the aircraft will be locked.

Method 2: The aircraft will be locked automatically once no operation in 15 seconds after unlocked.



Emergency stop:

- When the aircraft is flying at a distance within 5 meters or altitude within 5 meters, press "🔒" for 3 seconds to stop the aircraft.
- The function is only for emergency, please don't use it in normal flight.

Operate the aircraft

Transmitter	Aircraft	Transmitter	Aircraft

Basic Flight

The steps of basic flight

1. Place the aircraft on a flat and open ground with the user facing the rear of the aircraft.
2. Turn on the transmitter and the aircraft.
3. Match the signal of transmitter and aircraft, and complete the initialization of aircraft.
4. Open the M RC PRO APP, connect the phone to Bugs 16/Bugs 16 pro, and enter into the camera interface.
5. Unlock the aircraft.
6. Slowly push the throttle stick up, the aircraft take off smoothly, and control the aircraft with the left/right joystick.
7. Pull down the throttle stick to lower the aircraft.
8. After landing, pull the throttle stick to the lowest position and hold it for more than 3 seconds until the motor stops.
9. After stopping, turn off the aircraft and the transmitter in turns.

Photograph tips and skills

1. Do a pre-flight inspection.
2. Select the appropriate gimbal camera angle
3. Fly and take photo in a good weather without wind.
4. Do a test flight, helping to make a plan of route and find a place to take view.
5. Push the joystick as slow as possible during the flight, making the aircraft fly smoothly.



The flight safety is very important for you, the surrounding people and the environment. Please read the "User Guide" carefully.

Appendix

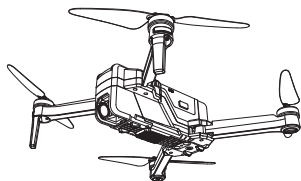
Aircraft Specification

Aircraft		
Weight (The Battery and Propellers Included)	Bugs 16: about 572g Bugs 16 pro: about 612g	
Dimension	Fold: 295*80*87mm (L*W*H) Unfold: 395*395*87mm (L*W*H)	
Maximum Ascent Speed	3m/s	
Maximum Descent Speed	2m/s	
Maximum Speed	40km/h	
Flight Height Limitation	120m	
Maximum Tilt Angle	35°	
Maximum Rotational Angular Speed	45°/s	
Operating Temperature Range	0℃-40℃	
GNSS	GPS	
Hovering Accuracy Range	Indoor: ±0.3m Vertical Outdoor: ±0.5m Vertical	±0.3m Horizontal ±1.5m Horizontal
Frequency	2.4GHz	
Transmission Power (EIRP)	20dBm	
Gimbal		
Gimbal Type	3 axis	
Gimbal Adjust Range	0℃ to -90℃ (Manual Adjust in Transmitter)	
Roll Servo Range	-30℃ to 30℃ (Auto)	
Heading Servo Range	-30℃ to 30℃ (Auto)	
Transmitter		
Frequency	2.4GHz	
Max Transmission Distance	>600m	
Working Temperature Range	0℃-40℃	
Battery	AA*2	
Transmission Power (EIRP)	2.4GHz≤20dBm	
Working Current/Voltage	200mA@3V	
APP/FPV Real Time Transmission		
APP Name	M RC PRO	
Transmission System	5G WIFI (802.11.ac)	
Real Time Transmission	720p@30fps	
Delay Time	200-300ms	
The System Version Requirements of the Phone	iOS 9.0 or Higher Android4.4 or Higher	

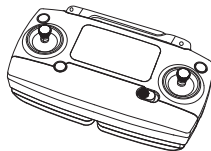
Camera	Bugs 16	Bugs 16 pro
Basic Information	4K 5G WIFI Camera	4K EIS 5G WIFI Camera
Image Sensor	1/3 inch CMOS	1/3 inch CMOS
Lens	View Angle: approx.108° Aperture: f/2.5 Focal Length: 3.6mm	View Angle: approx.120° Aperture: f/2.0 Focal Length: 2.96mm
ISO Range	Photo: 100-3200 (Auto) Video: 100-3200 (Auto)	Photo: 100-3200 (Auto) Video: 100-3200 (Auto)
Electronic Shutter Speed	1/30s-1/10000s	1/30s-1/10000s
Maximum Photo Size	3840x2160	3840x2160
Photo Shooting Mode	Single Shot	Single Shot
Video Resolution	3840x2160	3840x2160
Color Mode	RGB	RGB
Maximum Video Stream	Video 50Mbit Transmission 2Mbit	Video 50Mbit Transmission 2Mbit
Support File System	FAT32	FAT32
Local Video Frame Rate	3840x2160@15FPS	3840x2160@30FPS 1080P@60FPS
Maximum Transmission Frame Rate	720P@30FPS	720P@30FPS
Image Format	JPEG	JPEG
Video Format	MP4, Compressed Format H.264	MP4, Compressed Format H.264
SD Cards	Micro SD Card, Maximum Support 32GB Capacity Expansion, Class 10 and Above	Micro SD Card, Maximum Support 128GB Capacity Expansion, Class 10 and Above
Working Temperature	0°C-40°C	0°C-40°C
Aircraft Battery	Bugs 16	Bugs 16 pro
Capacity	3400mAh	3200mAh
Voltage	7.6V	11.4V
Battery Type	Li-po	Li-po
Power	25.84Wh	36.48Wh
Weight	about 164g	about 208g
Charging Temperature Range	5°C-40°C	5°C-40°C
Charger Input	5V/2-2.1A	5V/2-2.1A 15V 3A (PD)
Charger Power	10W (Max)	45W (Max)
Charging Time	300 minutes	330 minutes (5V 2A Adapter) 70 minutes (45W PD Adapter)
Charging Method	Type C Charging Cable	USB to Type C Charging Cable PD Charging Cable

Packing List

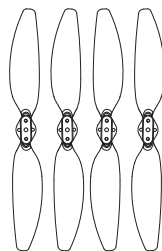
The full package contains the following items.



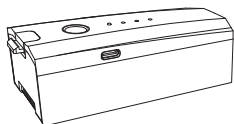
Aircraft *1



Transmitter *1



Propellers *4



Aircraft Battery *1



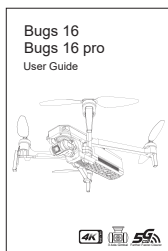
USB to Type C
Charging Cable *1



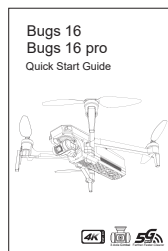
PD Charging Cable *1
(Only for Bugs16 pro)



Screwdriver *1



User Guide *1



Quick Start Guide *1

Important Statement

- This product is not a toy, but a precision device that integrates professional knowledge of machinery, electronics, aerodynamics, and high-frequency emission. It requires proper installation and debugging to avoid accidents. The product holder must use a safe way to operate and control. Otherwise, it may cause serious personal injury or property damage.
- This product is suitable for people who have experience in operating model aircraft and at least 14 years old.
- If any problems with use, operation, maintenance, etc., please contact your local dealer or relevant personnel of our company. Our company and the seller are not responsible for any loss and damage caused by improper use or operation, as well as human injury.
- The product contains small parts, please keep it out of the reach of children to avoid the risk of ingestion or suffocation.

Safety Precautions

The remote control model aircraft is the most dangerous commodity, please keep it away from the crowd when flying. Improper assembly or damage to the aircraft body, poor electronic control, and unfamiliar operation may cause unpredictable accidents such as aircraft damage or personal injury. Operators must pay attention to flight safety and understand their responsibility for accidents caused by their own negligence.

• Stay away from obstacles and people

The remote control aircraft has an uncertain flight speed and state during flight, is potentially dangerous. When flying, please stay away from crowds, high-rise buildings, high-voltage power lines, etc., and avoid flying in bad weather such as wind, rain, and lightning. Debugging and installing the aircraft must strictly follow the operating instructions. Pay attention to keeping the aircraft at a distance of 1-2 meters away from the user or other people during flight, to avoid the aircraft from crashing into the head, face and body of the person when flying or landing, causing injury .

• Keep away from humid environment

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

• Practice flying together with skillful pilot

There is a certain degree of difficulty in the early learning of remote control aircraft control skills. It is necessary to avoid flying alone, be guided by an experienced person.

• Use this product properly

Please use MJX original parts for installation or maintenance to ensure flight safety. Operate and use within the scope permitted by the product function, and must not be used for other illegal purposes.

• Safe Operation

1. Please operate the remote control aircraft according to your own flying skills. Fatigue, poor spirits or improper operation will increase the probability of accident risk.
2. Do not use it near your ears! Misuse may cause hearing hurt.

• Keep away from high-speed rotating parts

When the aircraft propellers are 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 source**

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, avoid deformation or even damage due to high temperature.

- **Environmental protection requirements**

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

