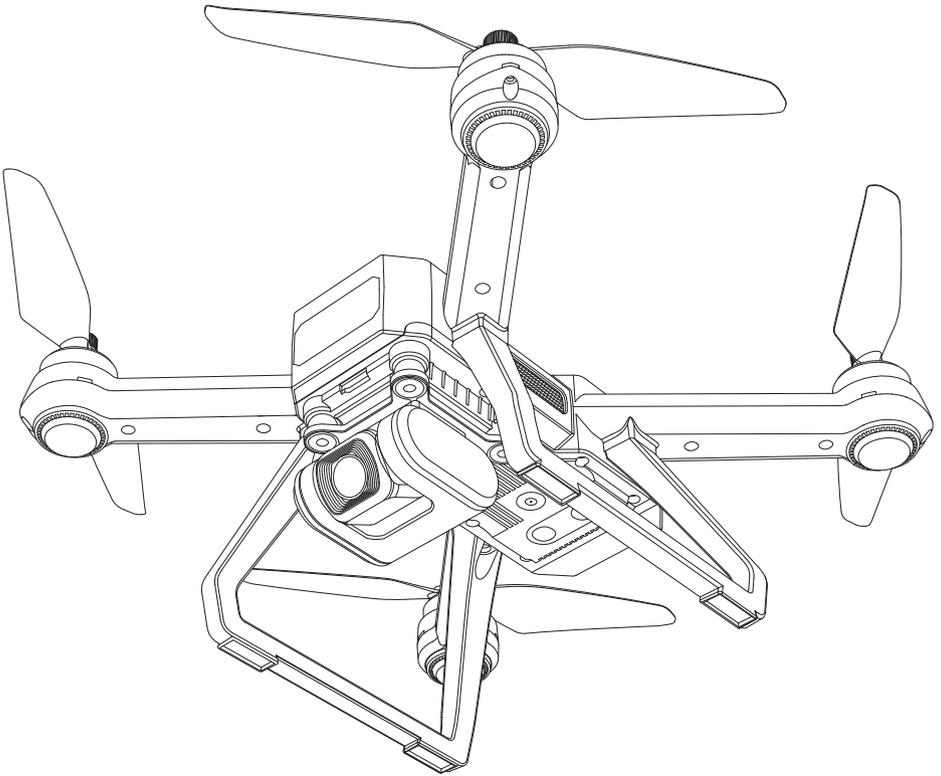


# Bugs 20EIS

## User Manual



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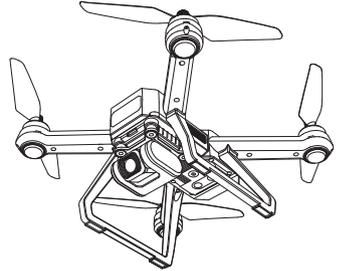
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## Product Profile

This section mainly introduces functions and installation guidelines of Bugs 20EIS and lists the components of the aircraft and remote controller.



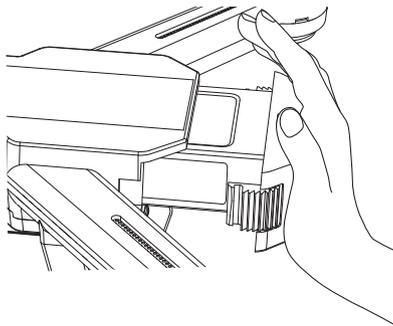
## Introduction

- The Bugs 20EIS aircraft is equipped with optical flow and GPS system. It can hover and fly stably indoor and outdoor. It has automatic return home function and other easy-to-use intelligent flight functions, such as orbit flight, follow-me and waypoint flight. Bugs 20EIS can shoot 4K HD videos.
- The transmitter is equipped with a complete set of function keys, it can realize various operations and settings of the aircraft and camera. Not only can display real-time HD pictures on the mobile device through the APP, but also display information such as flight parameters on the device screen. The folding transmitter improves users' operation experience. The pull-out stand is easy to carry and for storage, the gimbal can adjust camera angle 90 degrees in flight.
- The maximum flight speed of Bugs 20EIS is 40km/h.
- **EIS turned on by default, cooperating with "Photography Slow Mode", the drone achieves a more stable image effect.**

## Prepare Your Bugs 20EIS

### Battery installation

Slide the battery into the battery compartment at the rear of the aircraft by pushing with appropriate force. Make sure that you hear a click sound indicating the battery is firmly installed.



Attention: The battery should be installed firmly, failure to do so may affect the flight safety of your aircraft. The aircraft may crash due to power-cut during the flight.

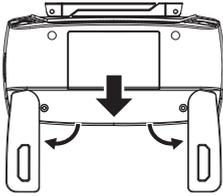
## Prepare the Remote Controller

### Install the battery of remote controller

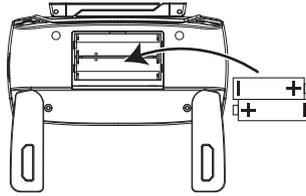
Step 1: Unfold the hand sticks and open the battery door (Pic. 1);

Step 2: Install 2\*AA batteries into the battery compartment according to the given polarity (Pic. 2);

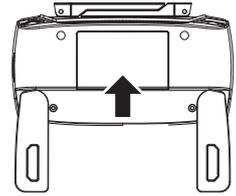
Step 3: Close the battery compartment (Pic. 3).



Pic. 1



Pic. 2

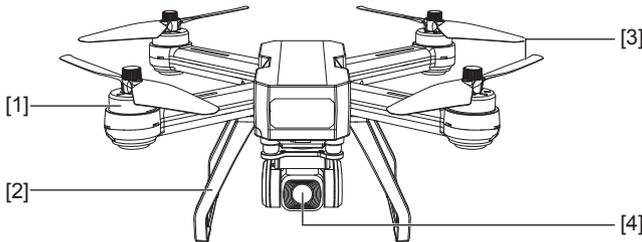


Pic. 3

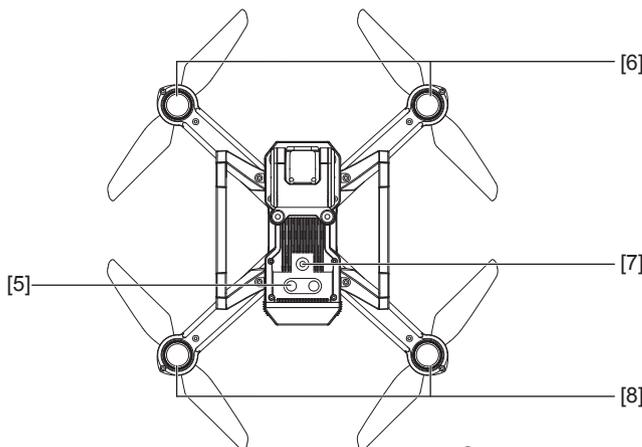


- Insert batteries with correct polarity.
- Non rechargeable batteries are not to be charged; the transmitter need 2\*AA batteries for work.
- Do not mix old and new batteries.
- Do not mix alkaline, standard (carbon-zinc), or rechargeable (nickel-cadmium) batteries.
- Rechargeable batteries are to be removed from the aircraft before being charged.
- Rechargeable batteries are only to be charged under adult supervision.
- Exhausted batteries are to be removed from the aircraft.
- The supply terminals are not to be short-circuited.

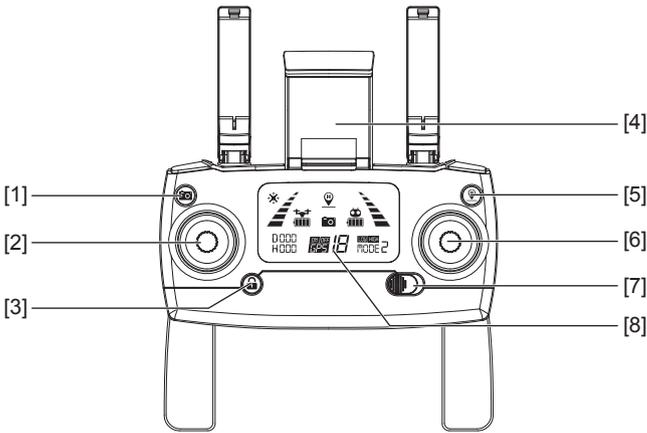
## Major Parts & Functional Switch



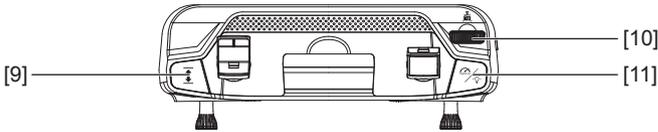
- [1] Brushless motor
- [2] Undercarriage
- [3] Propeller
- [4] Camera



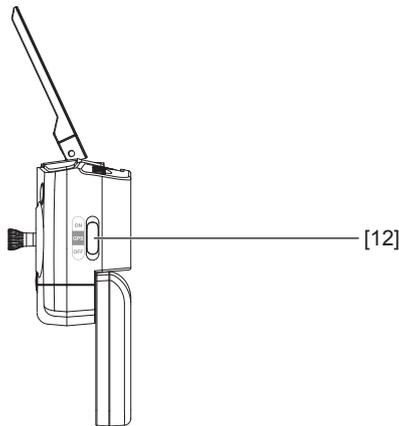
- [5] Bottom lights
- [6] Front light
- [7] Vision positioning lens
- [8] Rear light



- [1] Photo/Video
- [2] Left stick
- [3] One-key unlock/lock
- [4] Mobile phone holder
- [5] One-key RTH
- [6] Right stick
- [7] Power switch
- [8] LCD screen



- [9] One-key takeoff/  
One-key landing
- [10] Gimbal trimmer
- [11] Light switch  
(short-press);  
High/Low speed  
switch (long-press)

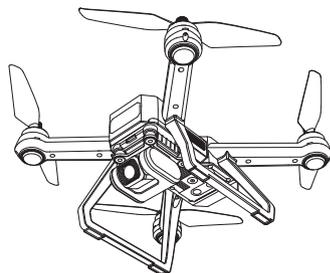


- [12] GPS Switch

# Aircraft

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This section introduces functions and features of the Bugs 20EIS.



## Flight Modes

The following flight modes are available in Bugs 20EIS.

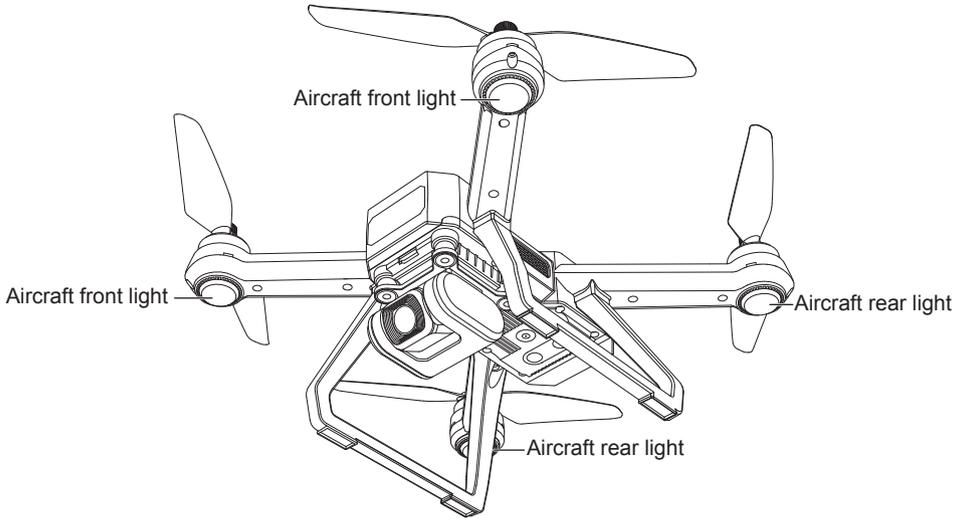
GPS mode:

- When the aircraft is in GPS mode, it can receive the GPS signal to realize accurate hovering.
- If the GPS signal is weak, the aircraft will enter into altitude-hold or optical flow position mode. (For specific situation, please refer to APP status bar)
- Please make the aircraft land ASAP when the GPS signal is poor lest any accidents.
- By the way, please note do not fly the aircraft in any weak GPS signal place or narrow space place lest any flight accidents.

Optical flow positioning mode:

- If the aircraft does not receive GPS signal or GPS turned off and its altitude is within 3 meters, it automatically enters into the optical flow positioning mode. It utilizes the optical flow positioning mode to hover stably.
- If the aircraft does not receive GPS signal or GPS turned off, what's more its altitude is beyond 3 meters, it will enter into altitude-holding mode, cannot realize accurate hovering. In the situation, the user should be have some basic operations, recommended not to fly the aircraft.

## Aircraft Status Indicator Lights



### Aircraft status indicator

| No. | Indicator status   | Meanings  |
|-----|--|---|
| 1   | Front and rear lights flash yellow rapidly.                      | Aircraft 2.4GHz disconnected.                           |
| 2   | Front and rear lights flash red, green and yellow alternatively. | Aircraft is in initialization detection status.         |
| 3   | Front lights glow solid red, rear lights glow solid green.       | No GPS signal, aircraft is in gesture mode.             |
| 4   | Front light glows solid red, rear light glows solid green.       | Good GPS signal, aircraft is preparing for GPS mode.    |
| 5   | Front and rear lights flash green rapidly.                       | Aircraft is in gyroscope calibration status.            |
| 6   | Front and rear lights flash yellow alternatively.                | Aircraft is in compass horizontal calibration.          |
| 7   | Front and rear lights flash green alternatively.                 | Aircraft is in compass vertical calibration.            |
| 8   | Front light glows solid red, rear light flashes red slowly.      | Aircraft is nearly low voltage, 1/6 battery level left. |
| 9   | Front light glows solid red, rear light flashes red rapidly.     | Aircraft is in low voltage, only 1/8 voltage left.      |
| 10  | Front and rear lights flash once, stop for 1.5 second.           | Something wrong with the gyroscope.                     |
| 11  | Front and rear lights flash twice, stop for 1.5 second.          | Something wrong with the barometer.                     |
| 12  | Front and rear lights flash three times, stop for 1.5 second.    | Something wrong with the compass.                       |
| 13  | Front and rear lights flash four times, stop for 1.5 second.     | Something wrong with the GPS module.                    |

## Return to Home (RTH)

The Return-to-Home (RTH) function brings the aircraft back to the last recorded Home Point. There are 3 types of RTH: smart RTH, low battery RTH and failsafe RTH. This section describes these 3 scenarios in detail.

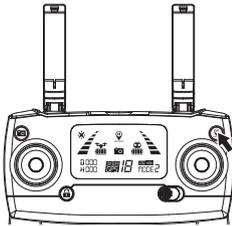
|  | GPS   | Description  |
|--|---|--|
| Home Point   |  | If a strong GPS signal (satellites over 7) was acquired before takeoff, the Home Point is the location from which the aircraft launched. The GPS signal strength is indicated by the GPS icon (  ). The aircraft rear indicator lights will blink rapidly from yellow color to green color when the home point is recorded. |



- During the return home flight, the aircraft will fly straight to return home point and cannot avoid obstacles. Please make sure there are no any obstacles on the path.
- Aircraft can not return to the Home Point when the GPS signal is weak or unavailable.
- Aircraft will stop ascending and immediately return to the Home Point if user moves the throttle stick in the aircraft reaches 15 meters altitudes or beyond during Smart RTH.
- If there is no GPS signal and the remote controller signal lost for more than 6 seconds, the aircraft can not Return-to-Home but descend slowly until land to the ground and lock the aircraft.

### Aircraft status indicator

When the GPS signal is available (more than 7 satellites is presented), use the RTH button on the remote controller (Pic. 1) or tap the RTH button in the “M RC PRO” APP (Pic. 2) and then follow the on-screen instructions to initiate Smart RTH. During the smart RTH, you can use the remote controller to guide the aircraft around obstacles. You can press the RTH button again to exit RTH procedure and regain control of the aircraft.



Pic. 1



Pic. 2

### Low battery RTH

The low battery level failsafe is triggered when the intelligent battery is depleted to a point that may affect the safe return of the aircraft. Users are advised to return home or land the aircraft immediately when prompted.

1. If the rear indicator light flash slow, the battery icon in transmitter LCD screen is “”, with transmitter has “DIDI” sound. As only the aircraft is beyond 30 meters altitude or 100 meters distance, the aircraft will return home automatically. As long as the aircraft is in 100 meters distance, the user can cancel the return via “” button.
2. When the aircraft rear lights flash slowly, battery icon “” is shown on the remote controller or on the “M RC PRO” APP. And steady “beep...beep...beep” sound is heard. At this moment, the aircraft will automatically return to the Home Point if the flying altitude is beyond 15 meters or the flying distance against the home point is beyond 15 meters. If the aircraft flying altitude is less than 15 meters or the flying distance is less than 15 meters, the aircraft will automatically land to the ground.



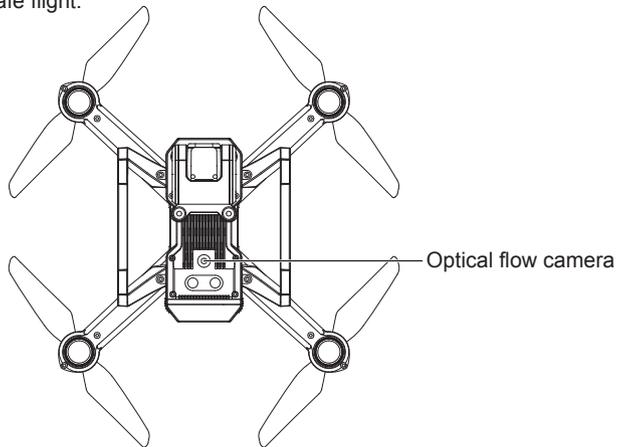
Attention: When the aircraft is automatically return home with Low Battery RTH function activated, you can not cancel the RTH procedure by pressing the RTH button to regain control of the aircraft.

### Out of connection return home function

The GPS signal is good (the No. of GPS satellites is more than 7), the compass is working and the home point has been recorded successfully, if the control signal continuously interrupted for longer than 6 seconds and APP control turning off, the flight control system will take over the transmitter control, controlling the aircraft to fly return home point. If the control signal is restored during returning home, the returning home flight will continue unless the user cancel it by transmitter's return home button and get back the aircraft's control right.

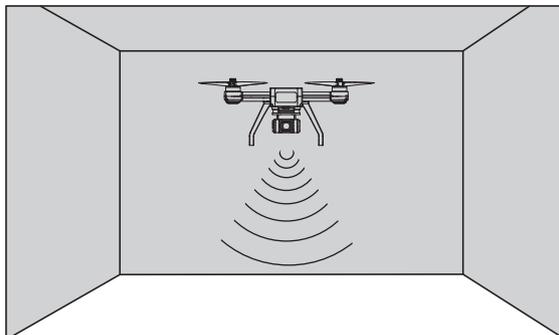
## Vision System

The optical flow system consists of optical flow lens modules. The optical flow system is an image positioning system, obtaining the aircraft's position through the optical image thereby ensuring the accurate positioning and safe flight.



### Vision Positioning System function

The Vision Positioning System is typically used in indoor environment when GPS is weak or unavailable. It works best when the aircraft altitude is less than 3 meters.





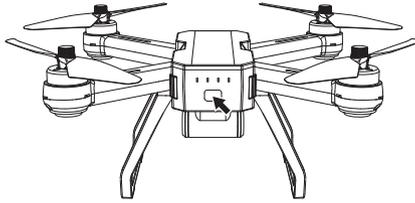
The measuring precision of optical flow system will be affected easily by the light strength and the features of object surface texture. Once the optical flow is unavailable, the aircraft will enter to altitude-holding mode automatically. Please be cautious in as following situations:

1. Fly fast at an altitude below 0.5m.
  2. Fly over monochrome surfaces (like pure black, pure red, pure red and pure green).
  3. Fly over strong light reflective surfaces or surfaces prone to reflection.
  4. Fly over water or transparent object surfaces.
  5. Fly over moving object surfaces (such as crowds, swaying juggles and glass).
  6. Fly over an area where light changes dramatically and rapidly.
  7. Fly over surfaces extremely dark ( $lux < 10$ ) or extremely bright ( $lux > 10,000$ ).
  8. Fly over surfaces without clear textures.
  9. Fly over surfaces with highly repeating textures (small grid brick in the same color).
  10. Fly over surfaces that are tilting over 30 degrees.
  11. Flying speed should be controlled not to be too fast. When the aircraft is 1 meter against the ground, the flying speed should not be over 5m/s; When the aircraft is 2 meter against the ground, the flying speed should not be over 14m/s.
- 

- Keep sensors clean at all times.
  - The vision system is only effective when the aircraft is within the altitude range of 3 meters.
  - Make sure that the light is bright enough and the surfaces is with clear textures so that the vision system can acquire the movement information through recognizing the ground textures.
  - The vision system may not function properly when the aircraft is flying over water, low light ground and surfaces without clear patterns or textures.
  - If the light is dim, please turn on the optical flow supplement light.
-

## Aircraft Power Switch

Long-press the power button for 3 seconds, it 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, the aircraft will turn off and indicator light will turn off too.



## Aircraft Battery

- Made by high-energy battery cells;
- Standard battery capacity is 7.6V 3400mAh.

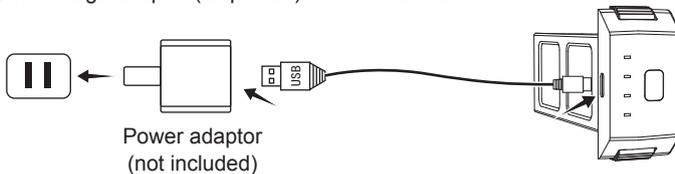
### Charge the aircraft battery

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 will flash fast;
- In charging: The battery indicator will flash in turn;
- Fully charging: The battery indicator will stay on.

\*Above charging data is based on 5V 2A adaptor test. Using the different adaptor will affect the charging data.

- Recommend using 5V 2A-2.1A adaptor to charge.
- Please note, the charge adaptor (as picture) is not included.



- Need adult supervision when this aircraft is being played by children.
- Only batteries of the same or equivalent type as recommended are to be used.
- Insert batteries with correct polarity.
- Rechargeable batteries are to be removed from the aircraft before being charged.
- Rechargeable batteries are only to be charged under adult supervision.
- Exhausted batteries are to be removed from the aircraft.
- The supply terminals are not to be short-circuited.
- The charging line to be used with the product should be regularly examined for potential hazard, such as damage to the cable or cord, plug, enclosure of other parts and that in the event of such damage, the product must not be used until that damage had been properly removed.
- Please charge the battery about 2 hours after flight to save.
- If no play for long time, recommend to use out and recharge the battery one time per month lest the battery damaged for over discharge.

# Attach and Detach the Propellers

## Blade assemble and disassemble

### ● Attach propeller A:

Insert Propeller marked "A" into clockwise motor, fix it with 2 screws.

Then place the propeller cover on the motor and tighten it anti-clockwise by hand.

### ● Attach propeller B:

Insert Propeller marked 'B' into anti-clockwise motor, fix it with 2 screws.

Then place the propeller cover on the motor and tighten it clockwise by hand.

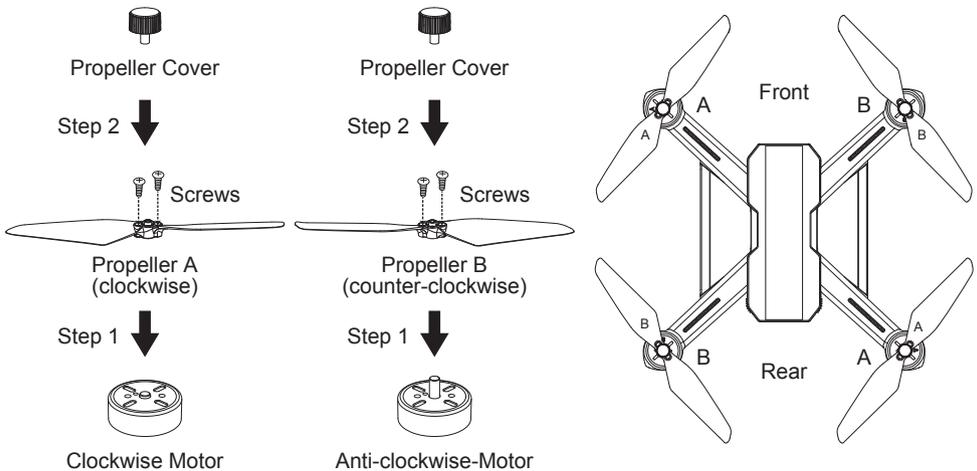
### ● Detach the propellers:

Hold the motors, screw the propellers out by counterclockwise installation direction.

Then using screwdriver take out the screws and disassemble the propellers.



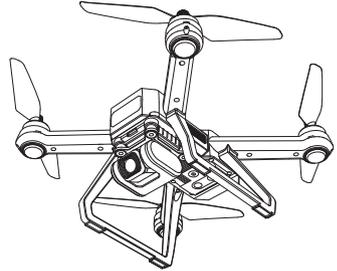
Tips: The propeller covers, propellers have clockwise/anti-clockwise installation.  
Please install all the accessories properly as following pictures.



- Please make sure that the clockwise and the counter-clockwise propellers are installed on the correct motors, because the aircraft will not fly normally for wrong propellers installation.
- Be aware of the sharp edges of the propellers. Handle with care.
- **ONLY** use the factory approved propellers. **DO NOT** mix propellers types.
- Stand clear of the motors and **DO NOT** touch the propellers when they are spinning.
- Check that the propellers and motors are installed correctly and firmly before every flight.
- Ensure that all propellers are in good condition before each flight. **DO NOT** use aged, chipped, or broken propellers.
- To avoid injury, **STAND CLEAR** of and **DO NOT** touch propellers or motors when they are spinning.
- **ONLY** use designated propellers for a better and safer flight experience.

# Remote Controller

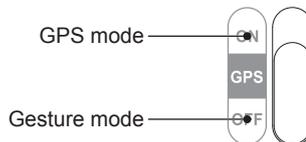
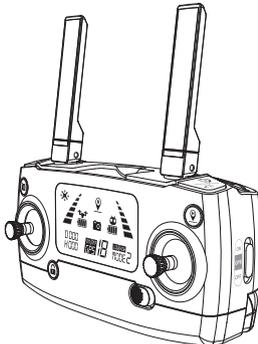
This section describes the features of the remote controller, including the instruction on controlling the Bugs 20EIS.



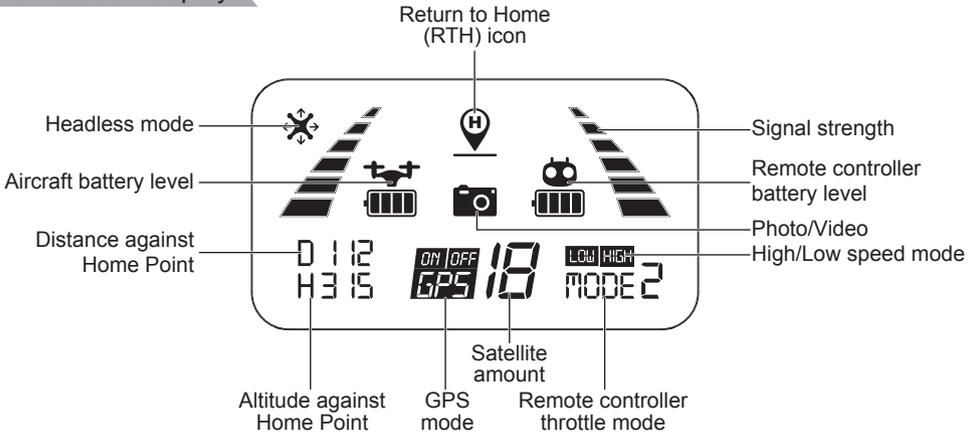
## Remote Controller Functions and Status

### Flight mode switch

Choose the flight mode by switching the GPS button to ON/OFF position. The on-working flight mode “” is shown on the LCD display.

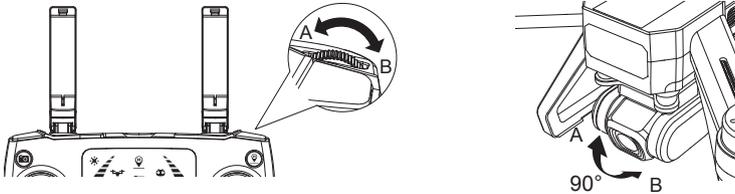


## LCD Screen display



## Gimbal trimmer

The camera angle can be adjusted within a 90 degree range by operating the gimbal trimmer to obtain a better aerial experience. When scroll up the gimbal trimmer (upward to direction of "A"), the camera will tilt upward to the direction of A; when scroll down the gimbal trimmer (downward to direction of "B"), the camera will tilt downward to the direction of B.

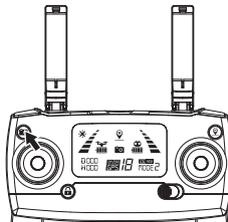


## Photo/Video

Short-press the button indicated as below, the camera icon "📷" on the LCD screen flashes once, the camera takes one photo;

Long-press the same button, the video icon "📹" on the LCD screen flashes slowly, the camera is taking video.

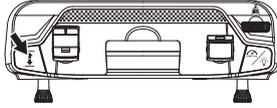
Long-press again will exit shooting.



**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.

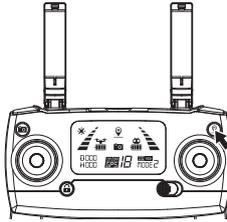
### One-key takeoff/landing

- After the Bugs 20EIS unlocked, short-press the “” button (indicated as below), the aircraft will automatically take off and hover at 1.5m altitude.
- When the aircraft is flying, short-press the “” button (indicated as below), the aircraft will automatically land on the ground.  
In aircraft's landing automatically, press any joystick, the aircraft will exit the mode.



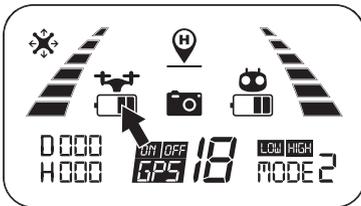
### One-key RTH button

- Press the “” with the buzzer having “Di”, it means the auto- return home is on.
- The aircraft will return to lasted home point. Press the button shortly again, the return home will be closed.

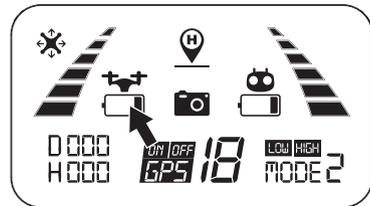


### Low battery warning

- If the rear indicator light flash slow, the battery icon in transmitter LCD screen is “”. As only the aircraft is beyond 30 meters altitude or 100 meters distance, the aircraft will return home automatically. As long as the aircraft is in 100 meters distance, the user can cancel the return by “”.
- When the battery icon “” is shown on the LCD screen (Pic. 2) with steady “beep ...beep” sound, it means that the aircraft battery is in low voltage. At this time, the aircraft front lights glow solid on and rear lights flash rapidly. The aircraft will return when the altitude is over 15m or the distance is over 15m; if either the flying altitude or flying distance is less than 15m, the aircraft will land to the ground.



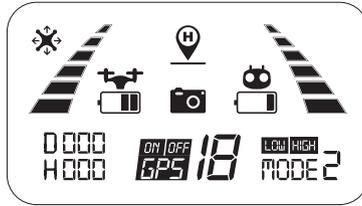
Pic. 1



Pic. 2

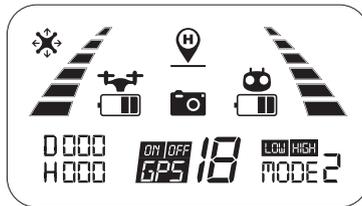
### Remote control low voltage warning

When the “” icon appears on the LCD screen and the remote control emits “beep beep” sound, it means that the remote control battery is nearly out of power. Please change new battery for the remote control.



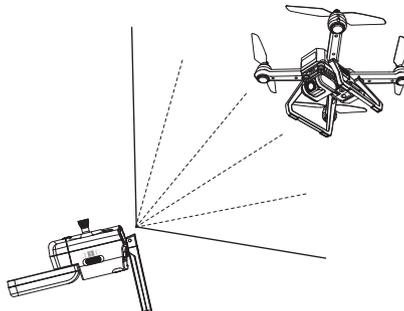
### Signal strength indicator

- Signal strength bar “” shows the strength of the received signal. The more, the better.
- When the strength bar “” changes from weak to strong circularly, it means that the remote controller is under signal connection status.
- There are 2 situations that the strength bar “” is less than 2 grids or no displaying.
  - 1) The distance between the aircraft and the remote controller is too far causing a weak signal.
  - 2) The battery is removed after the aircraft connects to the remote controller.



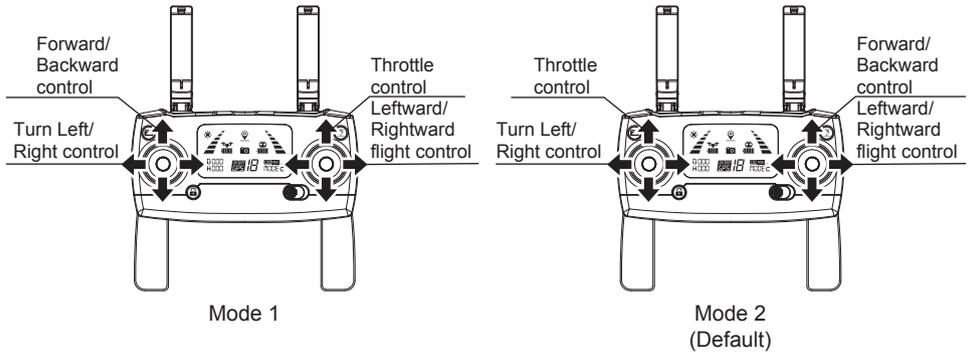
### Optimal transmission zone

To obtain a satisfied flight experience, please make sure that your Bugs 20EIS is flying ahead of the remote controller and no obstacles between the aircraft and the remote controller.



## Throttle Control Stick Mode

### Throttle mode switch



Mode 1: The right stick serves as the throttle.

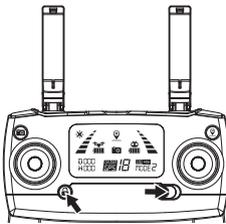
Mode 2: The left stick serves as the throttle.

- The remote controller is set at Mode 2 by default.

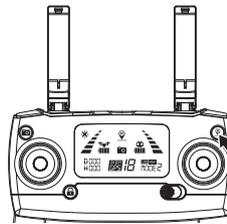
### How to change throttle mode

Step 1. Keep pressing the red button “” and turn on the remote controller, the remote controller is under signal connection status (Pic. 1);

Step 2. Keep pressing the RTH button “” for 3 seconds to choose the throttle control mode (Pic. 2). The throttle control mode will change according to each press. The mode number is shown on the LCD screen. The throttle control mode is set at mode 2 by default.



Pic. 1



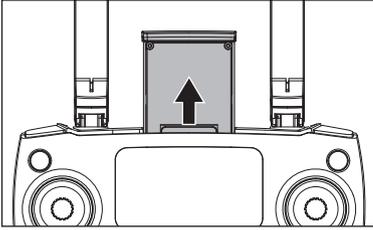
Pic. 2



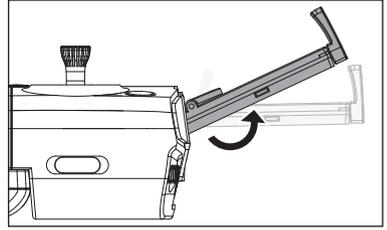
**Attention:** To change the stick mode of the remote controller, please make sure that the remote controller is under signal connection status (the indicator light keep flashing). If not, the stick mode could not be changed.

## Install the Mobile Phone Holder

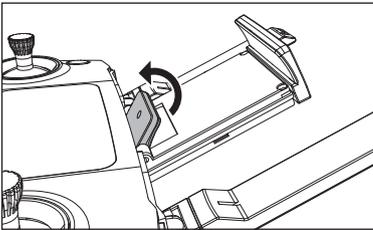
1. Pull out the mobile phone holder upwards completely (Pic. 1);
2. Tilt the holder 30 degrees towards you and then you will hear a click sound (Pic. 2);
3. Rotate and fix the support board in place (Pic. 3);
4. Adjust the mobile phone holder upward or downward according to the size of your mobile phone (Pic. 4).



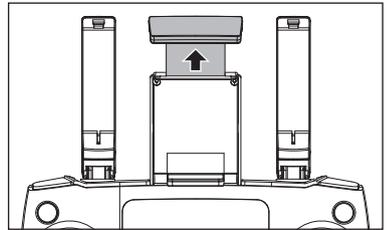
Pic. 1



Pic. 2



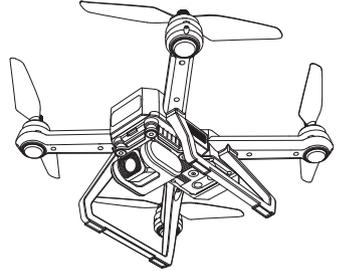
Pic. 3



Pic. 4

# APP Download & Installation

This section introduces how to download the “M RC PRO” APP and connect with mobile device.



## FPV Real-time Image Transmission Software “M RC PRO”

### Where to download “M RC PRO” APP

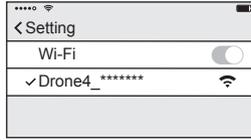
- For Apple IOS system, please turn to Apple store, search “M RC PRO” or scan the QR code at right side to download the software.
- For Android system, please turn to Google play, search “M RC PRO” or scan the QR code at right side to download the software.

Or scan “MJXRC.NET” QR code to download the software.



## How to link the “M RC PRO” to the camera

Power on the aircraft, then enter phone setting option. Turn on WiFi, find “Drone4\_\*\*\*\*\*” on the list and connect it. When “” legend is shown, it means WiFi connection is successful. Exit settings and tap “M RC PRO” APP at your mobile device.



Connect WIFI

## Photos and video saving feature

1. If the camera is without TF card, videos and photos will be saved at the APP.  
(The image definition of video and photo is APP received image quality).
2. If the camera is with TF card, videos and photos will be saved at the TF card.
3. Videos and photos in the TF card can be downloaded to the APP.

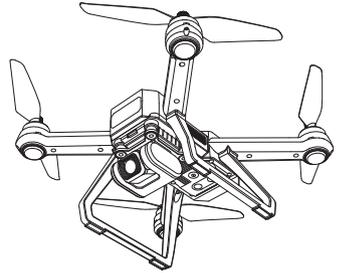


Tips: Only mobile phones that support 5G WIFI (802.11.ac) can make FPV connections.

# Flight

---

This section introduces safe flight requirements and basic aircraft operations.



## Flight Environment Requirements

1. Please don't fly in such bad weather conditions as high temperature, snow, strong wind ( $\geq$ level 5), rain or fog.
2. Always choose a wide open area for every flight. Tall structures and large metal structures may affect the accuracy of the onboard compass and GPS system.
3. Well away from people and property. Never fly directly over people or animals.
4. To minimize interference, please do not fly the aircraft in locations near power lines, base stations, electrical substations and broadcasting towers.
5. Aircraft and battery performance is subject to environment factors like temperature. Be very careful when flying over 6KM above sea level since the performance will be affected.
6. Your Bugs 20EIS cannot use GPS within the polar regions.

## Flight limits and GEO zones

Abide by all laws and regulations when flying your Bugs 20EIS. Flight limitations are applied by default to help users operate this product safely and legally. Flight limitations include altitude limits, distance limits and GEO Zones.

Altitude limits, distance limits and GEO Zones function concurrently to manage flight safety when operating in GPS Mode.

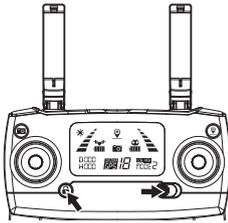
## Pre-flight Checklist

1. The aircraft, remote controller and mobile device are full charged;
2. The propellers are installed correctly;
3. Ensure the camera lens are clean;
4. Only use the designated or approved parts by manufacturer. Unauthorized parts or parts not from certified manufacturers may cause malfunction or safety issues.

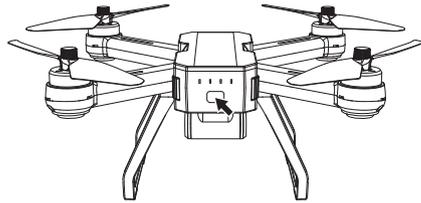
## Aircraft Operations

### Signal connection between the aircraft and remote controller

- Keep pressing the red button “” and turn on the remote controller (Pic. 1). The remote controller makes 2 beep sounds, and the indicator light “” keeps flashing; the remote controller is under signal connection status.
- Power on the aircraft (Pic. 2). The aircraft will make beep sounds with front and rear lights flashing and will automatically link to the remote controller. Once the remote controller sends out a long beep sound and the indicator light of the remote controller turns from flashing to solid on and the signal icon “” is shown on the LCD screen, it means that signal connection is succeeded.



Pic. 1



Pic. 2



- Signal connection is done once for all if the remote controller is not linked to other aircraft.
- Set the connection one by one to avoid signal connection error.

### Aircraft initialization detection

After frequency matching, the aircraft will enter into initialization test. In this time, the yellow red green light flash alternately. The aircraft will finish the initialization about 8s in ground, then enter into compass calibration.



Attention: If the aircraft is always in initialization, can't enter compass calibration. Please place the aircraft in ground, let the aircraft do gyro calibration to exit the initialization.

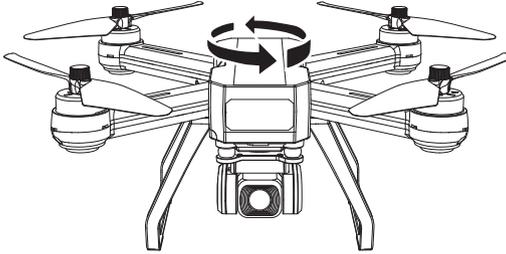
## Aircraft compass calibration

1. Compass calibration should be performed after successful aircraft initialization detection.
2. Aircraft compass calibration should be done for every flight. That is to say, if changing new battery or the battery is reinstalled, compass calibration should be done again.

Two steps of compass calibration:

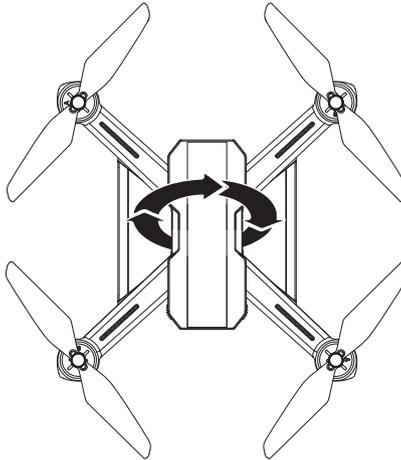
### Step 1: Horizontal calibration

After successful aircraft initialization detection, the aircraft front and rear lights flash yellow alternatively. Hold the aircraft horizontally and rotate it 360 degrees along the central axis for about 3 circles. The aircraft front and rear light will change from flashing yellow alternatively to flashing green alternatively when horizontal calibration is completed.



### Step 2: Vertical calibration

Hold the aircraft with camera facing up, and rotate it 360 degrees along the central axis for about 3 circles until the front and rear lights of the aircraft change from flashing to solid on, the compass calibration is successful.



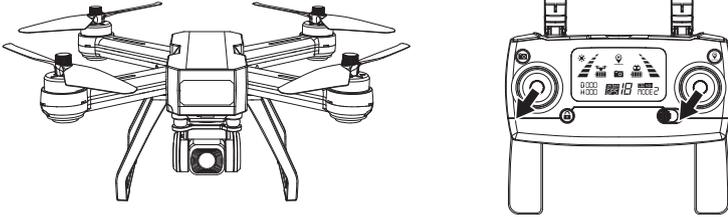
Attention: To fly at GPS mode, please choose an open and wide space for the flight, and make sure that the satellite amount is over 7.



- Please do not calibrate the compass in strong magnetic area, such as magnetic field, parking place or construction areas with underground reinforcement.
- Please do not carry magnetic materials with you (such as keys, cell phones, etc) when calibrating compass.
- Please keep away from big metal when calibrating compass.

## Gyroscope calibration

After the aircraft and the remote controller are banded, set the aircraft on flat ground and follow the indication photo as below to calibrate the gyro. Once the aircraft front lights turn from flashing to solid on, it means that the gyro calibration is succeeded.



- The gyroscope calibration was done at the factory. Gyroscope calibration is not needed unless the aircraft can not exit the aircraft initialization detection procedure.
- The gyroscope has calibrated already before shipping, the user don't need calibrate again. Only the aircraft can't exit initialization or the operation has problem after the aircraft taking off, the user can do the calibrate.

## How to lock and unlock the aircraft

### •Unlock the aircraft

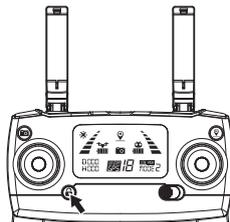
Short-press the red button “”. The motors rotate and the aircraft is unlocked.

### •Lock the aircraft

**There are 2 ways to lock the aircraft that you can find it as below:**

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

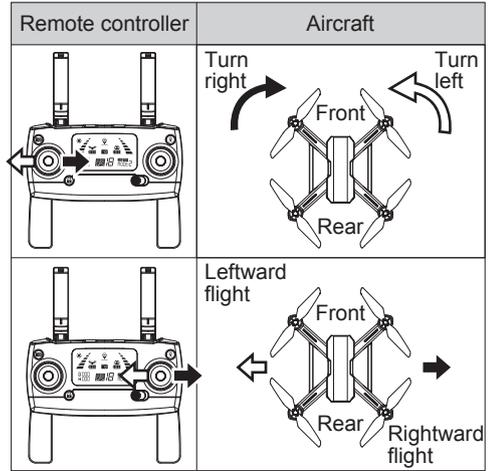
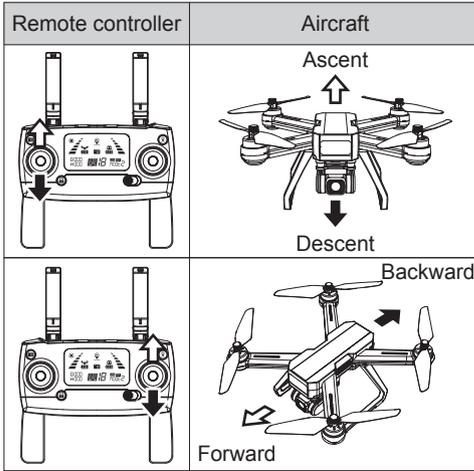
Method 2: The aircraft will be locked automatically once no any operation in 15 seconds after unlocked.



Emergency stop:

- Beyond 30 meters distance and 15 meters altitude, press the “” and hold for 3 seconds, the aircraft will be stop.
- The function is only for emergency, please don't use it in normal flight.

## Operate the aircraft



## Test Flight

### Basic flight operation steps

1. Place the aircraft in a wide open area that its front is your front.
2. Turn on the aircraft and remote controller.
3. Connect the remote controller with the aircraft and then proceed aircraft initialization detection.
4. Operate the "M RC PRO" APP, connect your device with Bugs 20EIS, enter into the Camera interface.
5. Unlock the aircraft.
6. Pull up the throttle stick then the aircraft takes off, and control the aircraft flight by left/right stick.
7. Pull down the throttle stick to land the aircraft.
8. Pull down the throttle stick to the bottom position and keep for 3 seconds to lock the aircraft.
9. Pull out the battery from the aircraft and then turn off the remote controller.

### Video suggestion and tips

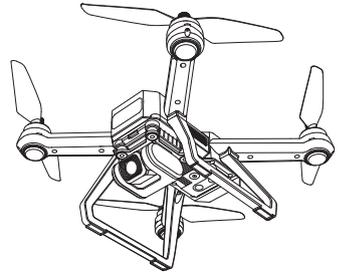
1. Do pre-flight checklist;
2. Choose appropriate gimbal shooting angle;
3. Fly in a good weather with no wind;
4. Perform test flights to establish flight routes and to preview scenes;
5. Push the control stick gently to keep the aircraft movement smooth and stable.



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

For more information, please turn to Appendix.

# Appendix



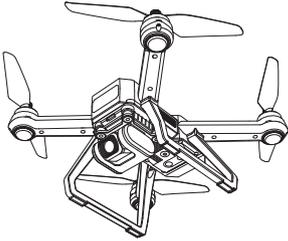
## Product Parameters

| Aircraft  |   |
|---|---|
| Gross Weight<br>(Battery and propellers included) | Bugs 20EIS: about 543g  |
| Dimensions  | 380*380*125mm (length*width*height)   |
| Diagonal  | 280mm   |
| Max Ascent Speed                                  | 3m/s  |
| Max Descent Speed                                 | 2m/s  |
| Max Speed   | 40km/h  |
| Flight Height Limitation                          | 120m  |
| Max Tilt Angle                                    | 35°   |
| Max Angular Velocity                              | 200°/s  |
| Operating Temperature Range                       | 0°C-40°C  |
| GNSS  | GPS   |
| Hovering Accuracy Range                           | Indoor: Vertical $\pm 0.3\text{m}$ Outdoor: Vertical $\pm 0.5\text{m}$<br>Horizontal $\pm 0.3\text{m}$ Horizontal $\pm 1.5\text{m}$ |
| Operating Frequency                               | 2.4-2.4835GHz (Transmitter)<br>5.15-5.25GHz (FPV)   |
| Transmission Power (EIRP)                         | 2.4GHz $\leq 20\text{dBm}$<br>5GHz $\leq 16\text{dBm}$  |
| Gimbal  |   |
| Controllable Range                                | Tilt: 0° to -90°  |
| Camera  |   |
| Image Sensor                                      | 1/3 inch CMOS   |
| Lens  | FOV: approx. 130°<br>Aperture: f/2.0<br>Focal length: 2.8mm   |
| ISO Range   | Photo: 100-3200 (Auto)<br>Video: 100-3200 (Auto)  |
| Electronic Shutter Speed                          | Electronic Shutter: 1/30s-1/10000s  |

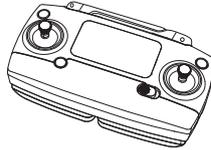
|                              |   |
|------------------------------|---|
| Still Image Size             | 3840x2160   |
| Still Photography Modes      | Single Shot   |
| Video Resolution             | 3840x2160   |
| Color Mode                   | RGB Mode  |
| Max Video Bitrate            | Video 50Mbit/Transmission 2Mbit   |
| Supported File System        | FAT32   |
| Photo Format                 | JPEG Format   |
| Video Format                 | MP4, Compressed Format H.264  |
| SD Cards                     | Micro SD Card, Support for 128GB Capacity Expansion Maximally, Class 10 or Up |
| Operating Temperature        | 0°C-40°C  |
| <b>Remote Controller</b>     |   |
| Operating Frequency          | 2.4-2.4835GHz   |
| Max Transmission Distance    | 600m  |
| Operating Temperature        | 0°C-40°C  |
| Battery                      | AA*2  |
| Transmission Power (EIRP)    | 2.4GHz≤20dBm  |
| Operating Current/Voltage    | 200mA@3V  |
| <b>Aircraft Battery</b>      |   |
| Capacity                     | 3400mAh   |
| Voltage                      | 7.6V  |
| Battery Type                 | Li-po   |
| Energy                       | 25.84Wh   |
| Net Weight                   | about 152g  |
| Charging Temperature Range   | 5°C-40°C  |
| Charging Current             | 2A(Max) 2A Adaptor  |
| Charging Time                | 330 minutes   |
| <b>APP</b>                   |   |
| APP Name                     | M RC PRO  |
| Image Transmission System    | WIFI 5GHz   |
| Real-time Image Transmission | 720p@30fps  |
| Latency                      | 200-300ms   |
| Required Operating System    | iOS 9.0 or later<br>Android 4.4 or later                                      |

## Packing Detail

Full package includes the following parts.



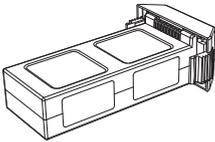
Aircraft \*1



Remote Controller \*1



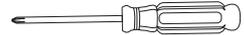
Propellers \*4



Aircraft Battery \*1



USB Cable \*1



Screwdriver \*1



User Manual \*1



Quick Start \*1

## Important Statement

- This aircraft is not a toy, but hobby grade model. It should be assembled and operated properly. Pilot must operate this aircraft in safe way. Improper operation may cause injury or property damage.
- This aircraft is applicable for pilots aged 14+ who are with skilled flying experience.
- Users are in full charge of proper operating this aircraft. Manufacturer and dealers disclaim any responsibility for damages caused by misuse.
- Keep the small accessories away from kids to avoid accident.

## Flight Safety Guidelines

Hobby grade radio control aircraft is somewhat considered to be the highest danger potential article. Users should firmly uphold the principle of “safety comes first”. Never fly the aircraft near airports, above crowds or in zones storing dangerous goods and understand the responsibility of the accident may cause by improper operations.

### ● Stay away from obstacles, crowds, power lines, trees or waters

Always choose a wide open area for every flight, well away from people and property. Never fly directly over people or animals. Please don't fly in such bad weather conditions as high temperature, snow, strong wind ( $\geq$ level 5), rain or fog. Maintain a 7ft (2m) distance from the aircraft when taking off and landing.

### ● Keep the aircraft in dry environment

The aircraft is composed by sophisticated electronic components and mechanical parts. To avoid damages on the mechanical and electronic components, please keep the aircraft in dry environment and use clean cloth to wipe the surface and keep it clean.

### ● Practice flying together with skillful pilot

Beginners are suggested to practice flying together with skillful pilot's guidance. Do not fly alone.

### ● Bear proper operation and safe flight guidelines in mind

Please take a careful look at the manuals before flights for important information of product functions and operation tips, and learn how to use the accessory, safe flight always comes first. Stay informed of and abide strictly by relevant local laws and regulations. Keep away from any non-flight zones and respect other people's privacy.

### ● Safe flying

Please make sure you are in good shape mentally before every flight. Fly the aircraft as per your flying experience. Never fly under influence of alcohol or drugs. Keep the remote controller at least 20 cm away from your body when flying the aircraft.

### ● Keep distance from a flying aircraft

Never use your hands to touch a flying aircraft under any circumstance. Don't approach and touch a landed aircraft before its propellers are completely locked.

### ● Keep away from heat source

The aircraft is made of metal, fiber, plastic, electronic component and other material. Please keep it away from the heat source to avoid deformation or even damage caused by sun exposure and high temperature.

### ● Environmental protection requirements

To protect our blue planet, so please recycle the aircraft as per local laws and regulations.

Note:

- a) Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- b) This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.

# SmoothMax

## Electronic Image Stabilization



**MADE IN CHINA**