



LiteBee Stars

Indoor and Outdoor Low-altitude Drone Light Show System
User Manual

CONTENTS

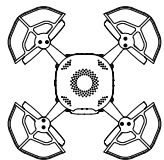
1.Introduction	01
2.Packing List	02
3.Specifications	03
4.Working Flow Chart	05
5.Whole Process Introduction &Notices	07
6.Aircraft	08
7.Base Station	09
8.Repeater	10
9.Charger	11
10.LiteBee Client Software	12
11.LiteBee Go Software	23
12.Disclaimer&Operation Guide	25

Introduction

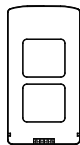
LiteBee Stars is a set of swarm drones of 10-200 ,low-altitude indoor&outdoor drone formation.With advantages of tiny&flexibility ,easy carrying and occasion free,LiteBee Stars create you an enjoyable and relaxing visual experience.

1.Packing List

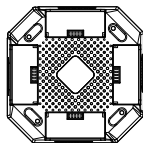
Drone packing list



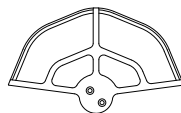
Aircraft*10



Battery*30



Multi-charger*3



Spare Propeller Guards *10



Spare propeller CW*12



Spare propeller CCW*12



Cross Screw*20



M2 Screw*20

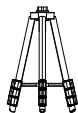


M2 Screwdriver H2.0*1

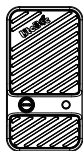


Phillips screwdriver

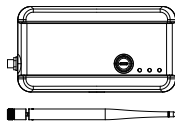
UWB module packing list



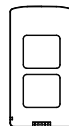
Tripod*5



UWB Base Station*4



Repeater*1



Battery*5

2.Specifications

LiteBee Stars Specifications

Size	202mm(L)x 202mm(W) x 80.5mm(H)	Maximum Inclination Angle	30 degree
Weight	188g	Maximum Ascend Speed	2m/s
Wheelbase	153mm	Maximum Descend Speed	2.5m/s
Motor	1104/5200KV	Maximum Relative Altitude	8m
Battery	1300mAh/8.4V	Maximum Horizontal Flight Speed	2.5m/s
ESC	15A	Maximum Wind Speed	< 3m/s
Propeller	3018	LED	Full LED
Propeller Guards	Semi-surounded	Maximum Number of Aircraft	130 pcs
Programing	3D Unity	Maximum Flight Space	50*50m
Flight Time	12 mins	Minimum Flight Space of Each Aircraft	0.5m
Altitude Hold	Barometer&TOF	Minimum Distance from Ground	0.5m
Positioing	Optical Flow/UWB	Suggested Show Time	5-8 mins
APP	LiteBee Client	Preparation Time	10 mins
Wireless Frequency	2.4GHz/3.9GHz	Environment Temperature	5°C - 40°C

3.Accessories Specifications

Charger

Input Voltage	AC 110-240V/50-60Hz
Output Voltage	8.4V
Output Current	1.5A
Power	4*15W

Battery

Capacity	1300mAh
Voltage	7.4V
Type	Lipo
Weight	71g
Working Temperature	5°C-40°C

4.Litebee Stars Hardware Requirements

It is suggested to use a laptop to control the whole process of drone light show. Make sure hardware FPS keeps above 20FPS, otherwise will lead design and 3D preview distortion.

Minimum Hardware configuration requirements

Type	Minimum Hardware Configuration Requirement
CPU	Intel® Core i5 7200U (7th generation low voltage 3.1GHz 2 cores 4 threads) and above
Memory	≥4GB
Graphics card	Intel® HD Graphics 620 (Core graphics) discrete graphics card better
System	Windows 10 64bit / Windows 7 64bit

Suggested Laptop

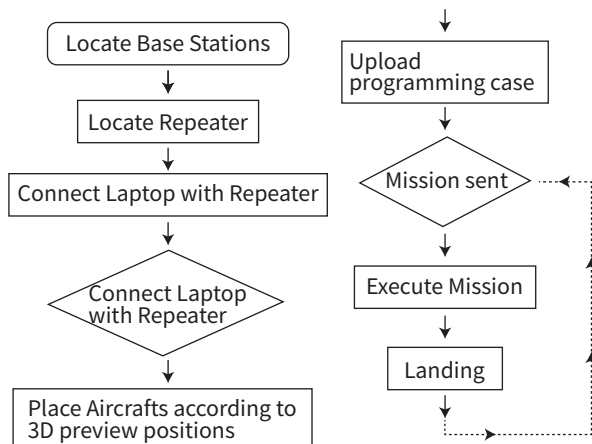
Basic Laptop:

Type	Suggested Configuration
CPU	Intel Core i5 1135G7 (first-low voltage) or AMD Ryzen5 5600U
Memory	≥8GB
Graphics	Intel Iris Xe Graphics (HD Graphics) or AMD Radeon Graphics 7 (HD Graphics) or NVIDIA Geforce MX350 (Discrete Graphics)
Hard Disk	SSD
Operation System	Windows10 64bit

High Configuration Laptop:

Type	Suggested Configuration
CPU	Intel Core i5 10300H (10th Gen Standard) or AMD Ryzen5 4600H
Memory	≥8GB
Graphics	NVIDIA Geforce GTX1650 (discrete graphics card) or AMD Radeon RX5500M (discrete graphics card)
Hard Disk	SSD
Operation System	Windows10 64bit

5. Whole Process Introduction & Notices



1) Locate Base Stations

- Turn on Base stations ,place them according to A0-A1-A2-A3 pointed positions
- Base Stations location space > Drone light show required space

2) Repeater location & Calibration

- Repeater should be put in the drone light show area or between drone light show area and laptop
- Open repeater antenna and tripod to the limit ,repeater height is above 1.2m
- Repeater Calibration

3) Connect with Laptop

- Choose programming case in the control mode ,then click "connect"
- Keep Wifi connection up to 60
- Authorize Repeater LAN

4) Aircraft position

- Place Aircraft according to 3D preview positions and make sure ground is flat.
- The distance of adjoin aircraft is not less than 10cm, the distance of adjoin aircraft that take off at the same time is not less than 30cm
- Nose direction of aircraft is the direction of A0A1

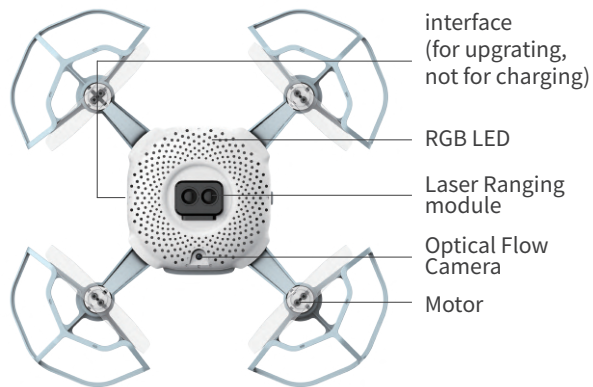
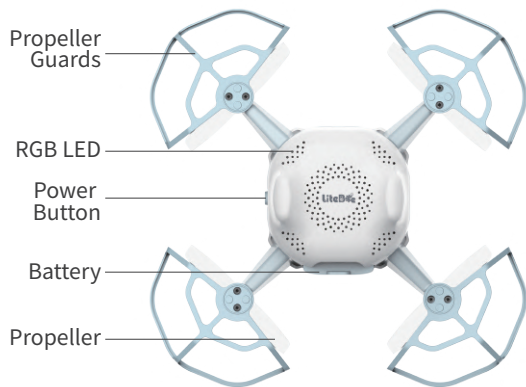
5) Mission Sent

6) Execute Mission

- Double checks include aircraft positions, propeller guards, battery full charging, wifi signal ,all light shows green.
- Environment checkings: drone light show space, ground ,light ,wifi signal

6.Aircraft

1



7.Base Station

Do not move any base station once position well,otherwise re-position.

Expand base stations and make sure height is not less than 1.8 meters.Power button is facing the center of the flight space.

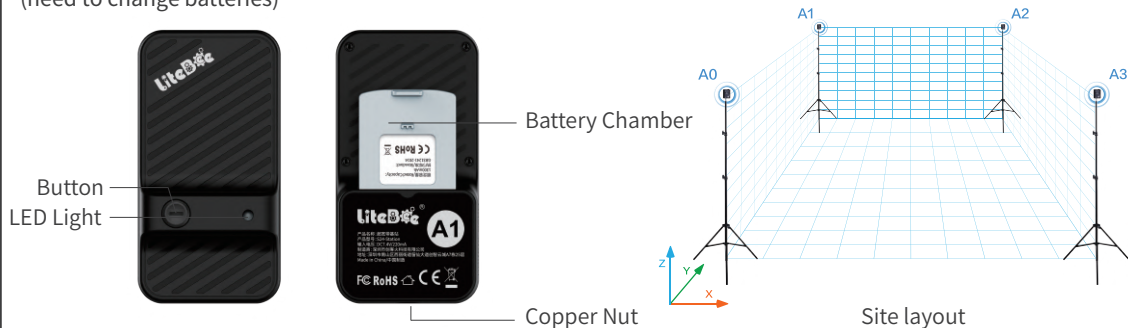
Installation: expand tripod ,cooper nut is into the post.Rotate clockwise until secure.

Base Station Location :refer to below picture ,total 4 positions ,stickers of A0.A1.A2.and A3 are on the back of each base station .

Battery installation.

Turn on/off:turn-on long press power button 3 Seconds,turn-off long press power button 2 seconds

LED Indications:Green:battery capacity above 80%,Blue:battery capacity 40%-80%,Red:battery capacity 20%-40% (need to change batteries)



8.Repeater

Repeater is a device for transmitting flight mission and returning flight status.

Antenna installation:rotate antenna clockwise and make sure it is installed well before the show.

Repeater installation:install it on the tripod ,rotate clockwise until secure.

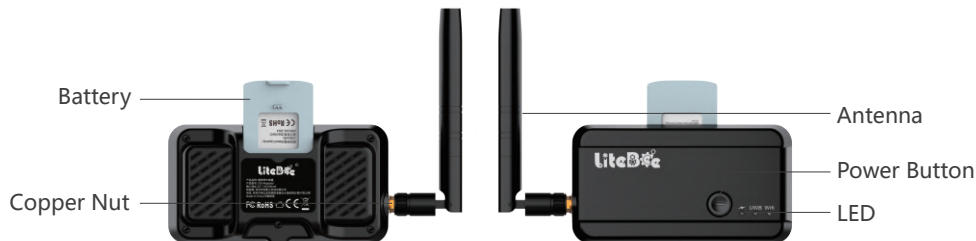
Battery installation as below.

LED indications (from left to right)

LED1:Power LED.Green:battery capacity above 40% Red:power less 40%(need to change battery)

LED2: UWB position LED.Light Off:not position.Solide Green:position done.Green light slow flash:in position.Red light:position failure

LED3:Wifi LED.Green:connection successful .Red:No connection



9.Charger

Multi-Charger support 4 batteries charge at the same time.

Charging Power:65W(Max)

LED indications:

Solide white :not connect to battery

Solide Red:battery capacity 20%-60%

Solide Blue:60%-99%

Solide Green:full charged



10.LiteBee Client Software

Download the software from litebee.com

Copy the zip file of LiteBee Client to the computer and decompress, find and run the application of "LiteBee Client.exe" the folder and run it directly. (Currently, only WIN7-64-bit operating system is supported, WIN7-32-bit operating system needs to install WIN7-32-bit software separately).

Name	Date modified	Type	Size
 LiteBeeClient_Data	5/13/2022 4:50 PM	File folder	
 MonoBleedingEdge	5/13/2022 4:50 PM	File folder	
 LiteBeeClient	5/13/2022 4:50 PM	Application	639 KB
 UnityCrashHandler64	4/10/2021 8:22 AM	Application	1,100 KB
 UnityPlayer.dll	4/10/2021 8:22 AM	Application exten...	27,657 KB

10.LiteBee Client Software

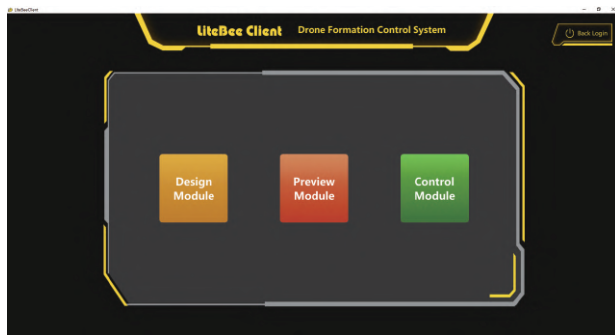
LiteBee Client interface introduction

The software is divided into three sections, including Design Module, Preview Module and Control Module.

Design Module: Programming combined with 3D scene design light formation, add or delete the drone's number in the formation, provide three-dimensional geometry composition template, etc.

Preview Module: Preview the design of the formation case, check formation case action consistency, light display, and drone flying speed and safety distance detection.

Control Module: Control the real flight swarm formation, monitor the dynamic data from all the drones, one key task import and one-key send task, one key emergency land.



10.LiteBee Client Software

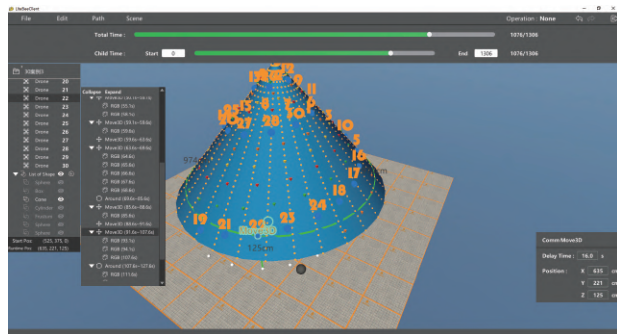
Design Module includes 4 parts: Menu,Time control, Formation creative, 3D dynamic edit.

Menu

File: Include create New case/Open case/Save/Save as/Import case/Export case, "New case" create a new case, after entering the new case, a dialog box will pop up, set the case name in the dialog box, the number of drones and the size of the space. "Open case" can open the previously saved case text. "Import and export case" to sharing the design case files.

Edit: Include Copy command/Paste command/Copy insert command/Delete command, simple operations for repeated commands.

Path: Include Show path/Path count/Path color/Delta move, design the path planning process as a path reference.



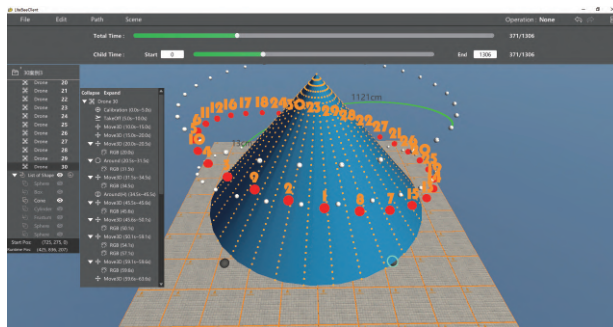
10.LiteBee Client Software

Scene: Provide Ground size/Skybox, ground size change floor background, skybox can change environment, simulate a real performance scene.

Time control

Timeline:Display the total time from the first drone taking off to the last drone landing.

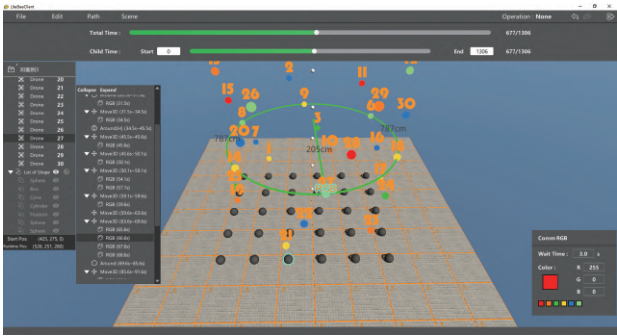
Second timeline: Set interval time, start with the start time, end time is the end point, Drag the timeline to move within the locked time range, check interval formation and lighting changes.



10.LiteBee Client Software

Formation creative Design

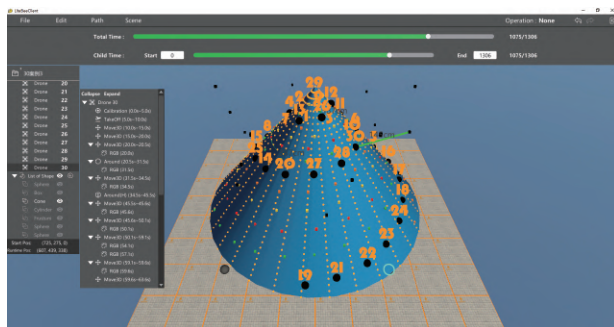
The drone from start position to landing, set the drone’ s number and start position, displacement track and lighting design, the design effect can be viewed with 3D preview. When setting special patterns, LiteBee Client provides image templates as auxiliary tools to improve design efficiency.



10.LiteBee Client Software

3D dynamic edit area

Support the mouse to drag the drone model in the three-dimensional space for fine-tuning and pattern layout, assist the designer to complete the flight pattern design from different perspectives. For example, when importing a solid model, the drone can be moved to the generated target coordinate point by dragging and dropping.



10.LiteBee Client Software

Preview Module: Include menu, timeline control and preview

Menu

Case selection: The drop-down box selects the cases that require a 3D preview.

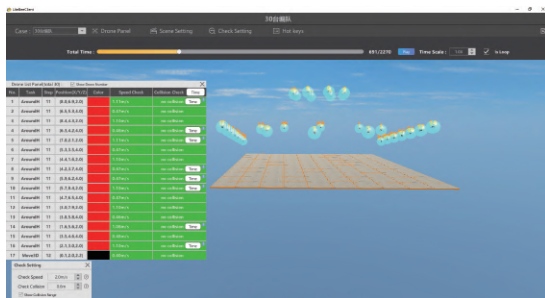
Drone panel: pop-up dialog box, monitor the current tasks, coordinate information, light color, instantaneous speed, and safe distance detection; scene setting.

Scene settings: Settings change floor background, sky background, field size, grid size, grid settings, grid color, scene brightness and other information.

Detection settings: can set the maximum speed, collision safety distance and safety spacing display.

Shortcut panel: A list of common shortcut keys.

Timeline: Drone formation of the whole process of time line view, automatic playback, playback speed and playback mode Settings



10.LiteBee Client Software

Formation control:

Include four sections, file management, drone information, drone information detection and formation control.

File management

Drone count: Drone connected number.

Connect: use repeater connection, click "Connect" to connect the base station. The maximum signal quality is 99, and it is recommended to ensure that the signal quality is over 70.

Preview: click " Preview" to the 3D preview module.

Case selection: Click the drop - down box to select the case to be executed.

Drone information

Click any drone in the drone information detection area, view the drone number, drone battery voltage, drone flight status, space coordinate information, and flight time in the drone information in the current state.

Light test: Click "Light Test" to quickly make the drone light up automatically, test whether the lighting function of a single machine is normal and quickly lock the number of drone.

Land: During the execution of the drone formation, click "Land" to control the corresponding numbered drone to leave the formation mission and land automatically.

Drone information detection

Aircraft signal strength: indicates whether the environment meets the formation requirements through color. Excellent is green, medium is orange, and poor is red. The red state has a lot of interference, and it is not recommended to execute the formation.

10.LiteBee Client Software

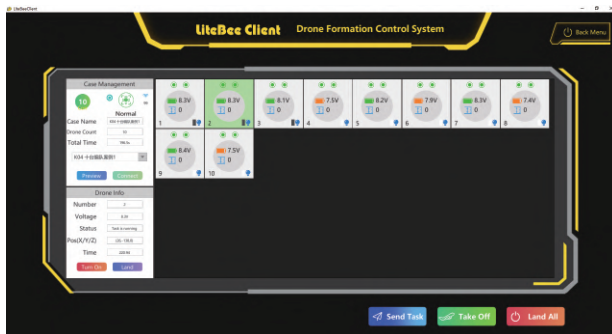
Task status: green means pass the verification code verification, red and orange means there is a mission but the mission verification code fails, and gray means no mission data.

Drone battery voltage: Feedback the battery voltage value of the drone in volts. If the voltage is greater than 8V is green, if the voltage is 7.6-7.9V means orange, and if the voltage is less than 7.6V is red.

Laser height-fixing data: Feedback the current distance of the drone from the ground in centimeters. The effective measurement height on the stationary ground is 0-6 cm is normal.

Light test button: equivalent to light test, click the icon and no LED light will be lit in the queue.

Drone serial number identification: The serial number of the drone in the queue should be placed according to the serial number when the drone is arranged at the start position.



+ LiteBee Client Software

Drone management: If need to replace the drones participating in the formation in emergencies, first turn off the drones that will exit the queue. As shown in the figure, if want to replace the No. 15 drone, click the delete button in the upper right corner to delete the original No. 15 drone, the drone is removed from the queue. And then the standby drone is powered on. After the standby drone is connected to the system, it will be automatically filled in the position of the No. 15 drone.



10.LiteBee Client Software

Formation drone

Include send mission, take off, land all.

Send task: Upload the case file selected in file management to each drone.During the upload process, the system will first send the formation task, and then perform the task verification.If some drone tasks fail verification, resend the tasks.

Take off:Click"take off", all in-flight drones will take off after executing countdown "3" "2" "1".

Land all: Interrupt ongoing formation mission and perform landing procedure.

Basic operation process:

Step 1: Complete the case coding in the design module.

Step 2: Complete the 3D preview in the Preview module and check the case.

Step 3: Import case in control module.

Step 4: Base station, repeater and equipment are put on and started according to the case design, and base station system is calibrated.

Step 5: Click the link in repeater mode to connect the computer to the repeater.

Step 6: Power on the drones one by one, and place all drones correctly according to the start position.

Step 7: Check the online status of the aircraft and the power of the battery and other information, check whether the flight time of the aircraft is consistent.

Step 8: Send the formation mission to ensure that all drones are in mission status and the signal is stable.

Step 9: Click Take off.

Disclaimer

This product is Not a toy and it's not suitable for children under of 12. The operation staff Keep the Aircraft out of the reach of children and exercise caution when operating the drone light show in presence of a crowd of people and children.

Read the user manual carefully before operation, it's important for the safe use and your legal rights.

This product is a multi-rotor aircraft set. When the power supply is working normally and all parts are not damaged, it will provide a wonderful drone light show.

Please visit www.litebee.com for more details. Shenzhen Makerfire Technology Co., Ltd. reserves the right to update this disclaimer and safety guidelines.

Ensure to read this document carefully to understand your legal rights, responsibilities and safety instructions before using. Otherwise, property damage, safety accidents and personal safety hazards may be caused. Once using this product, it is deemed that you have read and accepted all terms and contents of this document. The user undertakes to be responsible for all the consequences of his actions. The user undertakes to use this product only for legitimate purposes, and agrees to any relevant policies or guidelines that Makerfire may make.

To the maximum extent permitted by law. Makerfire does not provide any express or implied warranty for this product under any circumstances. including, but not limited to, the implied warranties of fitness for a particular purpose or non-infringement. To the maximum extent permitted by law, Makerfire shall not be liable for all losses caused by the user's failure to use this product in accordance with this document and user manual, and shall not be liable for any indirect, consequential, punitive, incidental, special or punitive damages. damages, including liability for damages suffered by you as a result of your purchase to use or inability to use this product. TO THE MAXIMUM EXTENT PERMITTED BY LAW, IN ANY CASES.

Makerfire is responsible to you for all damages, losses and lawsuits, and will not pay Makerfire the amount for your purchase of the product.

In compliance with laws and regulations. Makerfire reserves the right of final interpretation of the above terms. Makerfire own the right to update, revise or terminate these terms without prior notice.



Warning

Not suitable for children under of 12, contains small parts avoid swallowing.

Flight Environment and Regulation

Flight Environment Requirements

Do not fly in areas where magnetic or radio interference may occur such as close to: Wi-Fi hotspots, routers, Bluetooth devices, high voltage lines, high voltage power transmission stations, mobile base stations, or broadcasting towers. Flying in areas where interference may disrupt communication between the aircraft and the remote control device may adversely affect flight orientation and location accuracy and may potentially lead to loss of control.

Do not fly in adverse weather conditions such as rain, snow, fog, wind (grade 3 above), smog, hail, lightning, tornadoes, or hurricanes.

Do not fly in the strong sun light conditions (lightness $\geq 20000\text{LUX}$) but suitable for lightness $< 10000\text{LUX}$). Otherwise it will affect the distance measurement of laser sensor and may lead to loss of stability.

Flight test

Use only original litebee parts and make sure all components work in order;

Ensure all batteries full charged;

Ensure all propellers are undamaged, aged and properly installed on the motor, and the motor can start normally;

Ensure the flight site is non-restriction area and suitable for flying;

Do not control the formation under the influence of intoxication and drugs;

Familiar with the flight operation process and emergency landing control;

Compliance with the local flight regulations , and if necessary, the user should apply to authorization to fly the aircrafts.

Instructions for using parts

Propeller Guards

Ensure the propeller guards well installed.

Ensure the propeller guards in good condition before flight. Please replace in time if damaged.

Propeller

Ensure the propellers in good condition.If they are aged, damaged or deformed, please replace before flying. When performing any operation on the propellers, make sure that the aircraft turn off.

Be careful when installing the propellers.

Please use attached tools to install and remove the propeller.

Ensure the propellers are properly installed.

Do not get close to the rotating propeller or motor to avoid injury.

ESC

Make sure that the ESC will beep after the aircraft is powered on.

It is normal for the ESC to have a beep sound 10 minutes after aircraft turned on.

Motor

Make sure there are no objects inside the motor.



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