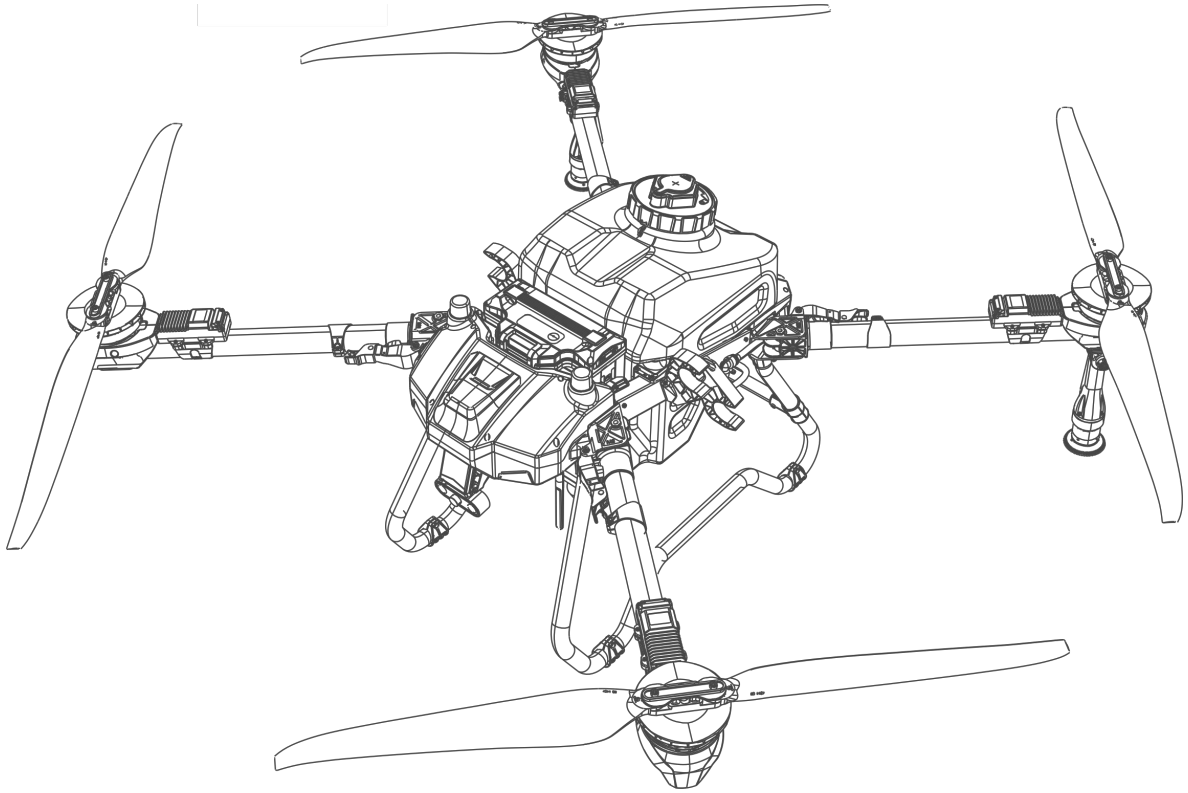
LV Series plant protection drone

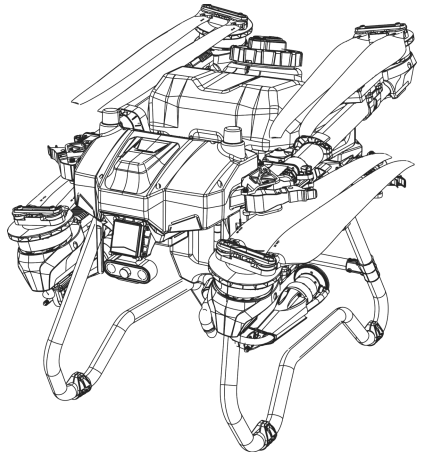
LV2 0/ LV30 User Manual



list of articles

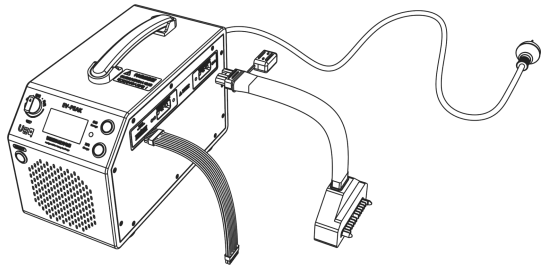
Before using this product, please check whether all items and quantities are included in the package. If any items are missing, please contact Jaisen's official or authorized agent.

The contents of the box are as follows

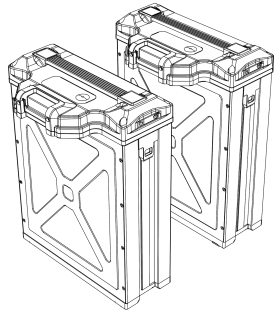


Four-axis unit ×1

H12 remote ×1



Smart charger ×1



Smart Battery ×2

disclaimer

This product is a quadcopter. Before using this product, please read the relevant safety knowledge and installation instructions to understand your legal rights, responsibilities, and safety instructions. Otherwise, it may cause property loss, safety accidents, and personal safety hazards. By using this product, you are deemed to have understood, accepted and accepted all the terms and conditions herein, and agree to comply with these terms and conditions and the relevant regulations and guidelines formulated by Jaisen.

▲The company shall not be liable for personal injury, property loss or other (including direct or indirect injury) caused by the use of the product for the following reasons.

1. Damage caused by the pilot's poor physical or mental condition, such as drinking, drug use, drug anesthetics, dizziness, fatigue, nausea, etc.
2. The pilot's subjective intention causes personal injury, property loss and legal liability.
3. Any compensation for mental damage arising from the accident.
4. Damage caused by operators operating in no-fly areas such as nature reserves.
5. Damage caused by failure to assemble or operate the product in accordance with the correct guidance in this manual.
6. Other damage caused by the failure of the aircraft as a whole due to the modification or replacement of parts or parts not produced by Jaisen.
7. Damage caused by the use of products produced by or imitating Jayson.
8. Compensation for damage caused by pilot error or subjective judgment error.
9. The aircraft itself is in poor condition due to natural wear and tear (flying time of 100 hours or more), corrosion, aging of the circuit, etc.
10. The aircraft falls after the aircraft sends out a low voltage alarm and does not land.
11. Damage caused by the forced flight of a flight vehicle knowing that it is in an abnormal state (such as water, oil, soil, sand and other unknown substances; obvious failure of major parts; obvious defect or absence of accessories).
12. Damage caused by flight operations under the following conditions: when the aircraft is in a magnetic field interference zone, radio interference zone (such as near high-voltage power lines, large power equipment, broadcast TV transmission towers, mobile phone base stations, etc.), government-designated no-fly zones, or when the pilot's field of view is backlit, obstructed by obstacles, blurred, or impaired by poor vision, or other conditions unsuitable for operation.
13. Flying in bad weather, such as rain or wind (more than level 4), snow, hail and other bad weather.
14. Flight vehicles encounter collisions, rollovers, fires, explosions, lightning strikes, storms, tornadoes, heavy rains, floods, tsunamis, ground collapses, ice collapses, cliff collapses, snow avalanches, typhoons, mudslides, landslides, earthquakes, etc.
15. The battery is damaged due to the matching problem of the protection circuit, battery pack and charger or improper use.
16. All flights and filming not operated as instructed will cause damage.
17. The pilot's failure to comply with local laws and regulations, resulting in legal liability, personal and property losses, or damage to the ecological environment.
18. The loss and legal liability caused by the pilot's reckless and unsafe flight without sufficient flight training.
19. The pilot flies in an area where the laws and regulations or the relevant administrative units prohibit him from flying.
20. The pilot shall not be liable for any losses or legal liabilities arising from failure to comply with the usage methods and precautions specified in the disclaimer published by Jaisen on its official website, product manual, and user quick-start guide.

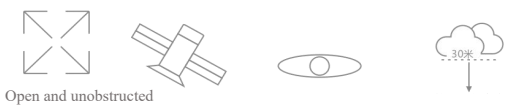
matters need attention

Flight Vehicle Usage

1. Keep away from unsafe factors such as obstacles, crowds, high-voltage lines, etc.
2. Be sure to fly at a safe takeoff weight to avoid danger.
3. Check that the propeller and motor are properly and securely installed, and ensure the correct installation positions for both forward and reverse rotation. (During inspection, avoid getting close to or touching the rotating motor or propeller to prevent injury from the propeller.
4. Prevent the remote control transceiver, onboard WiFi devices, and other wireless communication devices from interfering with or disrupting other wireless devices.
5. Ensure that the remote control, battery, and other electrical components are adequately powered.
6. Always turn on the remote control before starting the aircraft. After landing, disconnect the aircraft's power supply and then turn off the remote control.
7. Be sure to check that all parts are in good condition. If any parts are old or damaged, do not fly.
8. Do not use this product in areas with complex electromagnetic environments, such as near high-voltage lines, large power equipment, mobile communication base stations, or TV broadcast towers. This may affect the product's communication, causing remote control or image transmission issues, or compromising the aircraft's heading determination and positioning accuracy.
9. Do not fly in bad weather such as strong wind, rain and sandstorm.
10. Before flying, please read the instructions carefully, as well as the relevant instructions and videos on the Internet.

Flight environment requirements

1. Select open areas with no tall buildings nearby as your flight zone. GPS signals are weaker near buildings and trees, which may cause GPS dead reckoning and return-to-home functions to fail.
2. Do not use in bad weather, such as strong wind (wind speed 4 or above), heavy snow, rain and fog.
3. During flight, please stay away from obstacles, crowds, high-voltage lines, trees, water surface, etc., to avoid blocking your view.
4. Do not fly in places with complex electromagnetic environment (such as base stations or transmission towers around), so as to avoid interference of the remote control.
5. Not available in the Arctic and Antarctic Circles.
6. Do not fly in the restricted areas where the relevant laws or regulations restrict flying.



Open and unobstructed
Flying in the environment with good signal within visual range, controlling the flight altitude below 30 meters

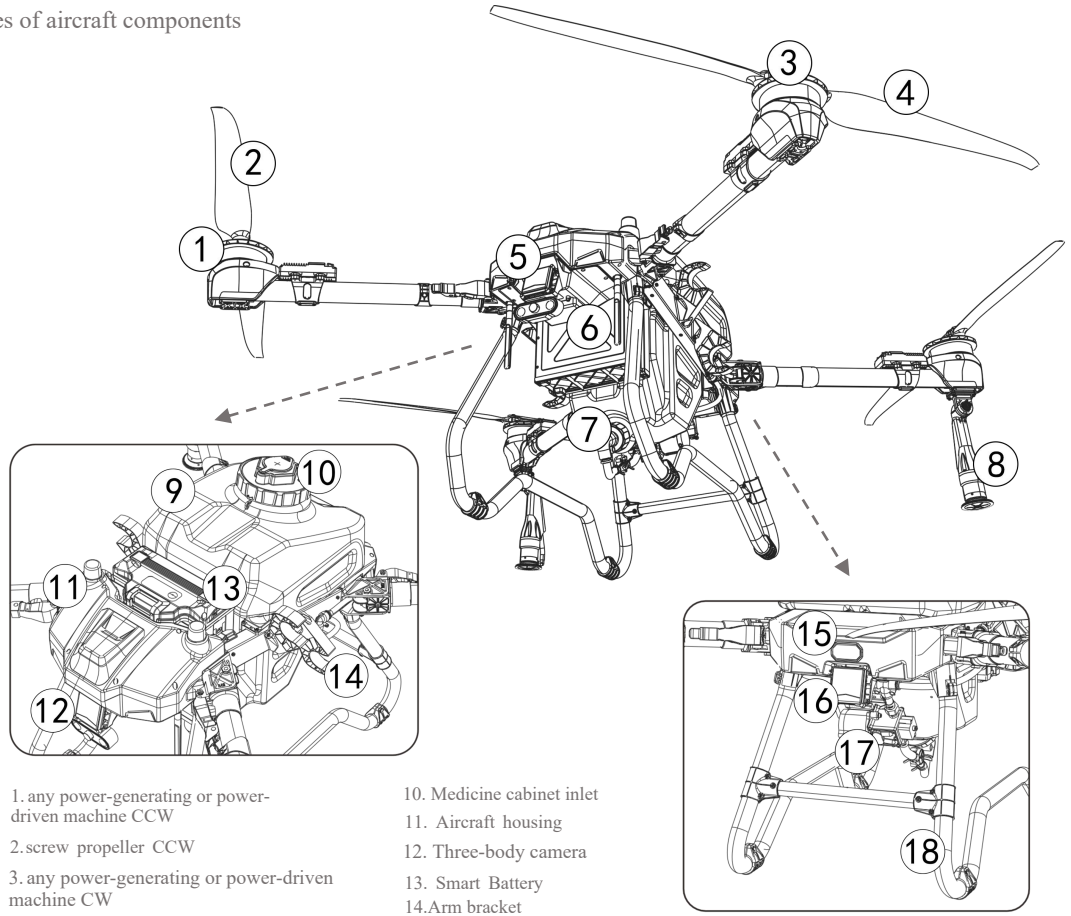
Do not fly during rain, fog, snow, thunderstorms, or strong winds (wind speed of 10 meters per second or higher).

Keep away from crowds, trees, power lines, tall buildings, airports and signal towers during flight.
Radio transmission towers, high-voltage lines, substations and large magnetic metal blocks can interfere with remote control signals and compasses, threatening flight safety.

Flying is not allowed in the no-fly zone

Learn about aircraft

Names of aircraft components



1. any power-generating or power-driven machine CCW
2. screw propeller CCW
3. any power-generating or power-driven machine CW
4. screw propeller CW
5. Front obstacle avoidance radar (optional)
6. Terrain Radar (optional)
7. delivery port
8. Centrifugal nozzle
9. Medicine cabinet outlet
10. Medicine cabinet inlet
11. Aircraft housing
12. Three-body camera
13. Smart Battery
14. Arm bracket
15. LED Rear lights
16. Rear obstacle avoidance radar (optional)
17. Pump
18. Tripod

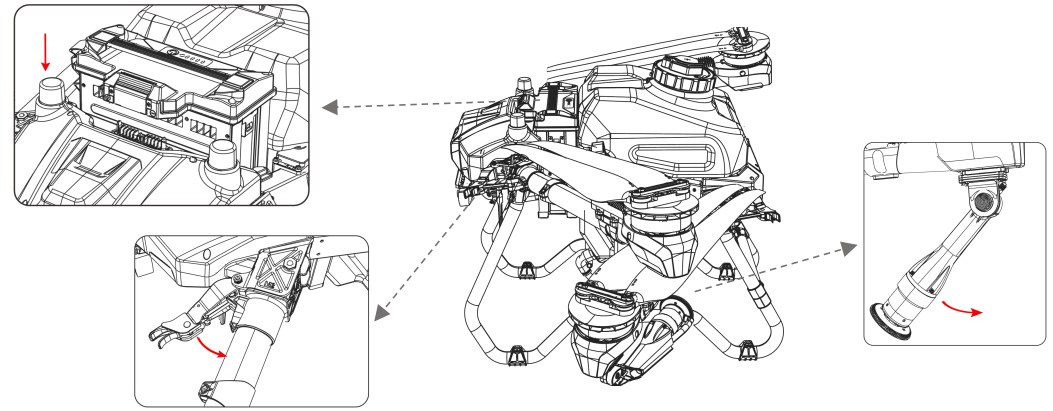
Preparing aircraft

The aircraft is in storage when it leaves the factory. Follow these steps.

1. Straighten the folded arm and press the folding clip;

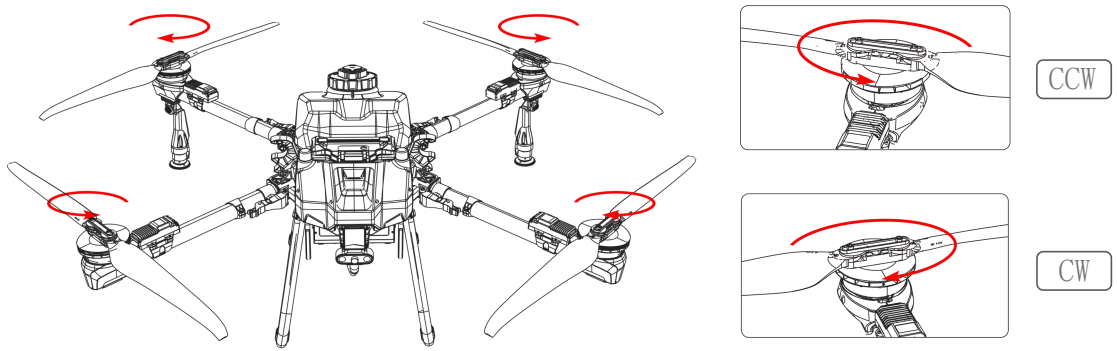
2. Turn the centrifugal nozzle knob to UNLOCK, press the button to lower the nozzle, and it will lock securely when fully deployed.

3. Insert the battery. Press and hold the button once to turn on the power.



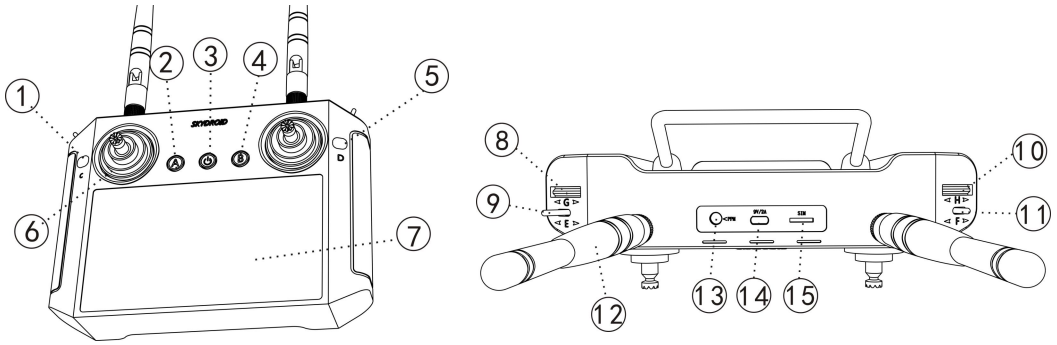
4. Remove the blades and assemble them according to the CW (clockwise) and CCW (counterclockwise) markings on both the blades and the motor.

▲Note: Ensure that the blade is installed correctly to avoid damage.



Learn about the remote

Remote control component names



1.Terrain Radar Switch

This button is blank when not installed on a ground-based switch radar.

2.Return Switch

Use one button to return the remote-controlled aircraft

3.Remote Power Switch

Press and hold to turn the screen on/off, press and hold to turn the remote on/off

4.Water Pump Switch

Enable the pump with one click

5.Obstacle Avoidance Radar Switch

This is a switch obstacle avoidance radar. The button function is blank when not assembled.

6.Remote Control Joystick

Used to control basic aircraft operations, takeoff and landing

7.Remote Screen

Built-in Android system, use ground station to view aircraft current flight data and video feed

8.G Dial

You can customize features. The default is empty.

9.Airplane Mode

For switching flight modes: Attitude Mode, Manual Mode, AB Point Mode

10.Wheels H

Used to control the core speed

11.AB Point Record

Used to record A and B points for AB point operations

12.Remote Antenna

For wireless transmission of aircraft control and image signals

13. PPM

For PPM output

14.TYPE-C Mouth

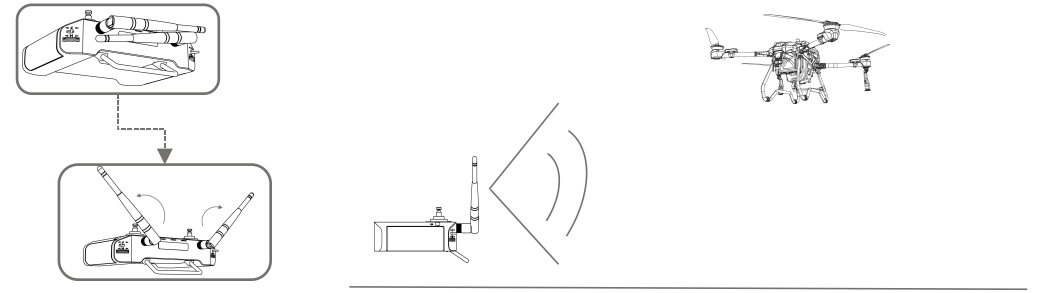
For remote charging and data transfer

15.SIM Card Slot

Insert a card to connect to the network

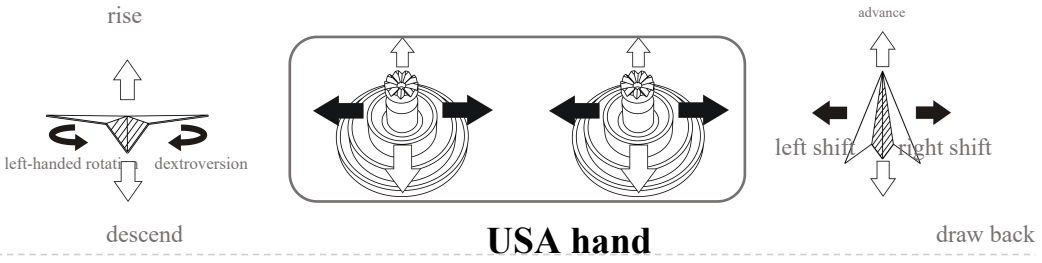
Remote control usage

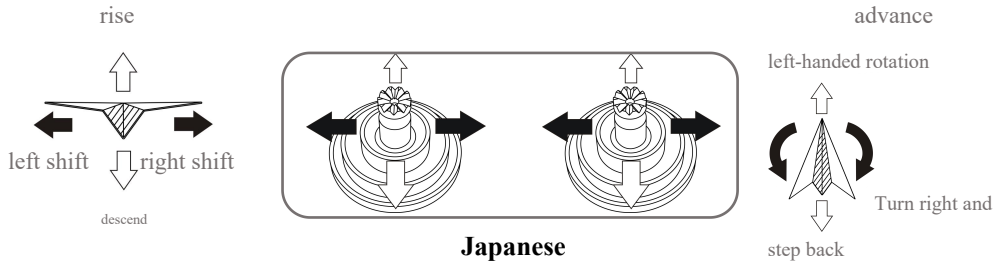
When using, the remote control antenna should be unfolded, vertical and tilted to both sides to ensure the best wireless signal transmission with the aircraft.



Remote control type

The factory default is **US hand**. If you want to change it, you can set it up in the ground station.





App 1

Flight Safety Tips

▲Necessary Flight Safety Awareness Is Very Important for the Safety of the People and the Environment Around You

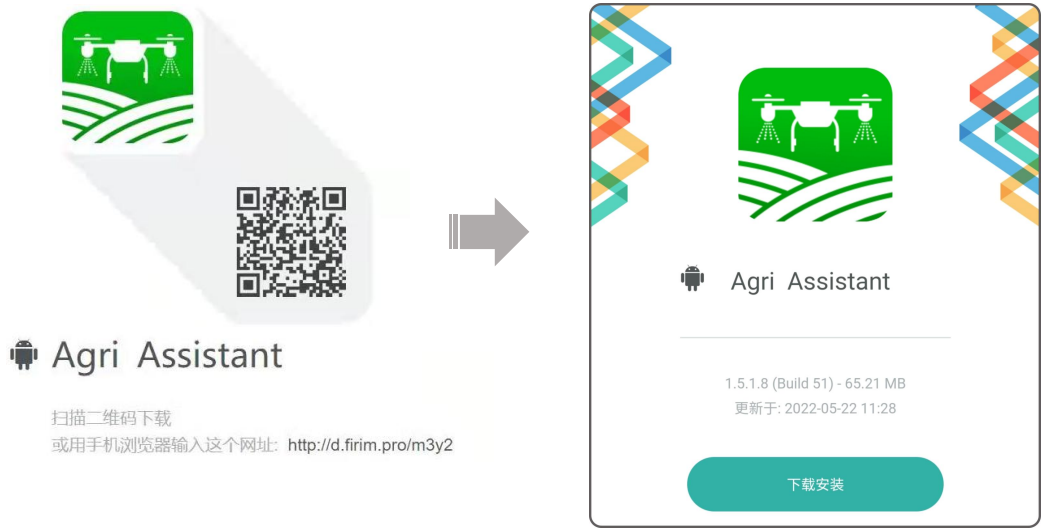
1. **Flying in an open area:** Pay attention to obstacles such as telephone poles and high-voltage lines while flying, and stay away from water, people and animals.
2. **Flying within line of sight:** Keep the aircraft always within the line of sight of the pilot and avoid damage caused by flying behind tall obstacles that may block the line of sight.
3. **Full flight control:** Keep the remote in your hand at all times, even when using features such as autonomous flight path operation, AB point operation mode and automatic return.
4. **Control flight altitude:** In order to ensure the flight safety of the aircraft and civil aviation, please control the aircraft within 30 meters. If there are no-fly or flight altitude restriction regulations below 30 meters in your area, please follow the regulations.

APP Download

Download the Feifang Butler APP, which is only compatible with Android.

The remote control has built-in software, but you need to register an account and real name with your phone. After completing the real name, you can log in to the remote control software.

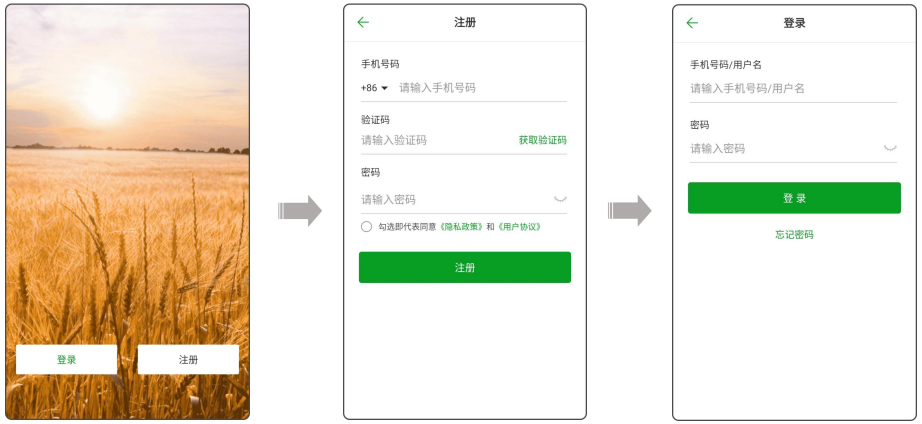
Use an Android phone to scan the QR code below to jump to the browser for download, as shown in the right figure. After downloading, manually install it.



Account Registration and Real-Name Verification

Register and log in to your account on the mobile phone. After logging in, complete real-name verification.

1. After entering the app's main interface, select "Register" and enter your phone number, SMS verification code, and password to complete registration.
2. After registration, open the app again, select "Login", and enter your phone number and password to log in. If you forget your password, you can reset it using the "Forgot Password" option below.



3. After logging in, go to the "My" interface. The real-name verification section will display "Not Verified". Click to proceed, enter your real name and ID number, then upload both sides of your ID card and a photo of yourself holding it. Submit and wait for review.
4. After approval, you can log in again to connect to the aircraft and unlock the flight.

App 2

Interface

Press and hold the power button on the H12 remote control to turn it on. From the main interface, select WIFI to connect to the network, or insert a SIM card into the remote's top slot for real-name verified account login and flight data synchronization.

Connect the aircraft and the remote control: enter the APP → **Log in to the account** → click "**Please connect the device**" → select "**H12**" to connect → click "**Execute the job**" to view all the current data of the aircraft.

APP interface

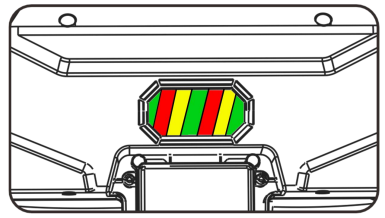
Icon Functions

1. Return to the main interface and switch between "Plan Plot" and "Execute Task"
2. Connect the remote control to the aircraft and display data.
3. The remote control and the aircraft receive wireless signal transmission and display.
4. Battery level display. Check whether the battery voltage is within the normal flight voltage range.
5. Before takeoff, check if the current number of satellites meets the flight requirements. The GPS mode must have at least 16 satellites active.
6. Flight mode display shows the current flight mode.
7. The aircraft spray switch can adjust the spray mode and spray amount.
8. Set the ground-level radar, which can be turned on/off and adjusted in height.
9. Multi-function menu for setting other aircraft functions.
10. To be done, select the plot after planning and assigning, and set up and work here.
11. Return with one click. The return function must ensure that the flight altitude is higher than other obstacles to avoid collision.
12. Switch flight mode. Select the current flight mode on the display.
13. The caption shows the image of the aircraft's front
14. Switch between front and back images. Tap to set automatic switching.
15. LED Light switch to turn on/off the front night light
16. Location: The current location of the aircraft and the remote control can be located.
17. Map switch: Switch between regular and satellite maps
18. Clear flight path
19. Compass: Switch the map direction to true north
20. Flight distance: The current distance between the aircraft and the remote control is displayed.
21. Flight altitude: The current altitude of the aircraft is displayed
22. Flight speed: Current speed of the aircraft is displayed
23. Spray quantity: the total amount of pesticide applied in the current spray operation
24. Spray flow rate: the current pump spray speed
25. Flight area: displays the area where the aircraft operates

Flight Vehicle Calibration

Accelerometer Calibration

After the aircraft's power-on self-check, it connects to the agricultural ground station. Open the menu, select' Sensors ', then click' Accelerometer Calibration '. Keep the aircraft stationary on a horizontal plane. Wait for the tail light to flash rapidly for 3-5 seconds before returning to slow blinking. The calibration is complete, with the app displaying' Normal'.



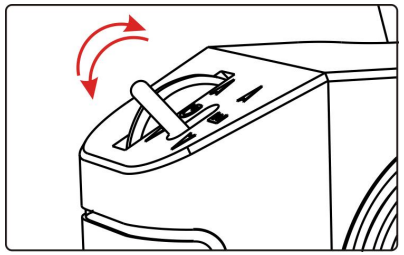
The red, yellow, and green lights blink alternately

Magnetic Compass Calibrate

After the power-on self-test of the aircraft, the GPS search is required. The magnetic compass can be calibrated when the number of stars is sufficient. There are two ways for the aircraft to enter the magnetic compass calibration:

1. Open the mobile APP, open the page function menu, find the "**sensor**", click the "**Compass calibration**" button, and the aircraft status indicator light (**yellow light on**) indicates that the compass calibration starts.

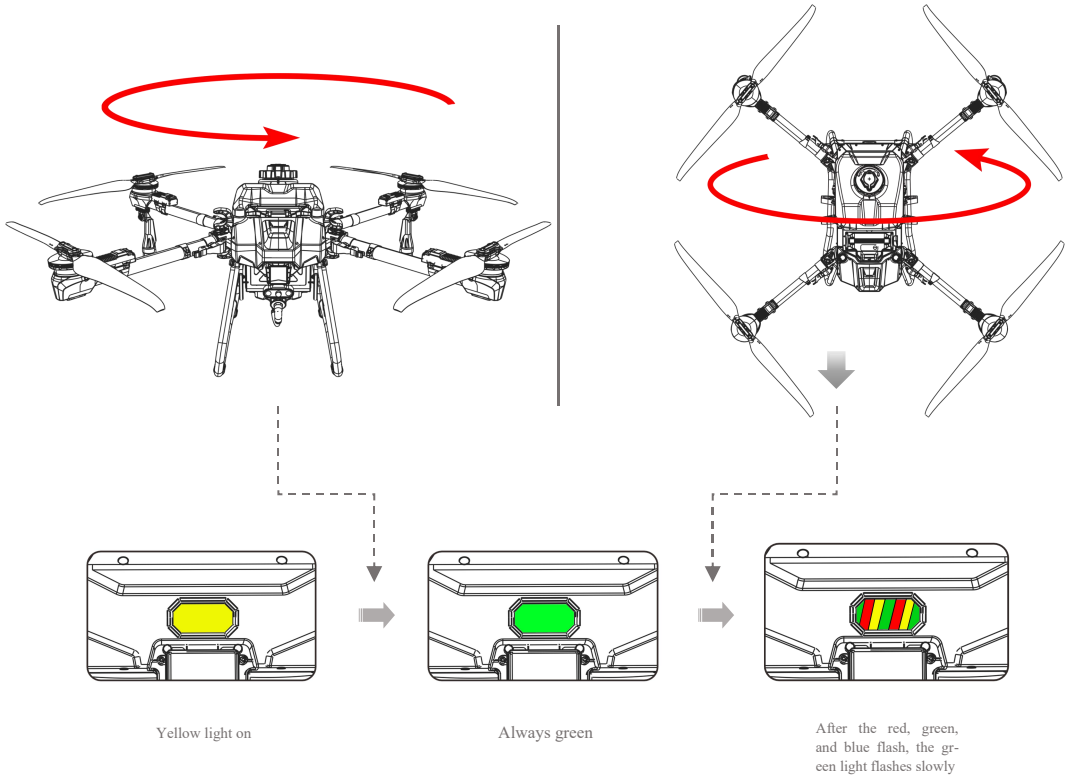
2. Find the **flight mode** lever E on the remote control, and move it up and down quickly **6 times**. When the flight status indicator light (**yellow light always on**) indicates that the magnetic compass calibration begins.



Calibration Process

The yellow tail light of the aircraft is always on, indicating that it has entered the magnetic compass calibration mode.

1. Lift the aircraft horizontally and rotate it in place for one or two turns. Observe whether the tail light of the aircraft changes from yellow to green.
2. After the tail light is green and on, lift the aircraft vertically so that the nose is down (**the GPS arrow is down and the tail light is up**) and continue to rotate one or two more times until the tail light starts to flash rapidly.
3. The tail light calibration is complete when the flashing stops. If the tail light does not flash, repeat the steps or power off and restart.
4. After calibration, power on again.



Yellow light on

Always green

After the red, green, and blue flash, the gr-een light flashes slowly

Flight Operations

Take Off

Before takeoff, it is necessary to ensure that the blade of the aircraft is installed correctly and firmly, and all data are normal.

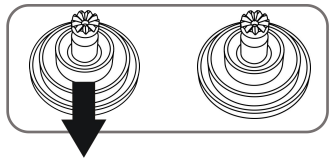
Remote unlocking: Perform the "inner eight strike" and the motor can be unlocked only when the rod is in place. After unlocking, the motor enters idle state. At this time, push the throttle upward, and the aircraft can take off.

Descend

In the air: Pull the throttle lever down gently to make the aircraft land at a constant speed until it touches the ground, then **push the throttle lever to the bottom and maintain it for 3 seconds** until the motor stops. The APP voice prompt is "Locked successfully".

Aircraft on the ground: When unlocking is required, **push the throttle lever to the bottom and hold it for 5 seconds** until the motor stops, and the APP voice prompt "Lock successful".

Unlock inner door



lock

●Do not perform the "inner eight strike" action to start the motor unless you are about to take off. When unlocking to check whether the aircraft is in normal condition, remove the blade to ensure safety.

●High-speed rotating propellers are dangerous, and the use of aircraft requires a safe distance and keeping the aircraft away from people, buildings or other obstructions.

●Before the aircraft motor stops, be sure to keep the remote control in your hand and ensure that the aircraft is fully under control.

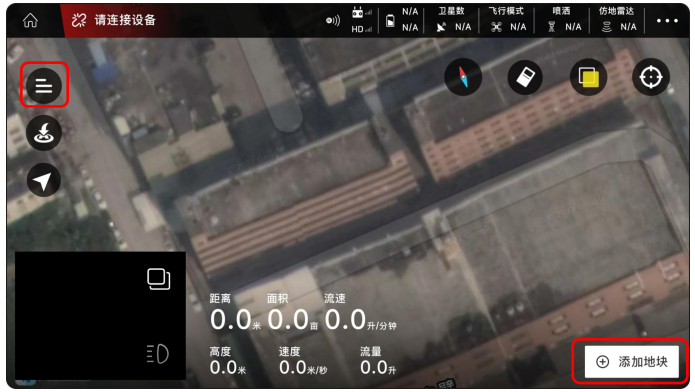
●During flight, do not stop the motor (unless under special circumstances, the motor needs to be stopped urgently to minimize damage), otherwise the aircraft will lose power and crash.

●After landing, disconnect the power supply before turning off the remote control. Similarly, always turn on the remote control before powering on the aircraft to ensure it operates with the remote enabled.

Plan the plot

Tap to open the app and select the "Plan Plot" button

Click the top-left button "Task List", then click "Add Plot" in the bottom-right corner to plan the plot.



Click the topmost button among the three left buttons — "Task List" — to plan the plot for aerial spraying operations.

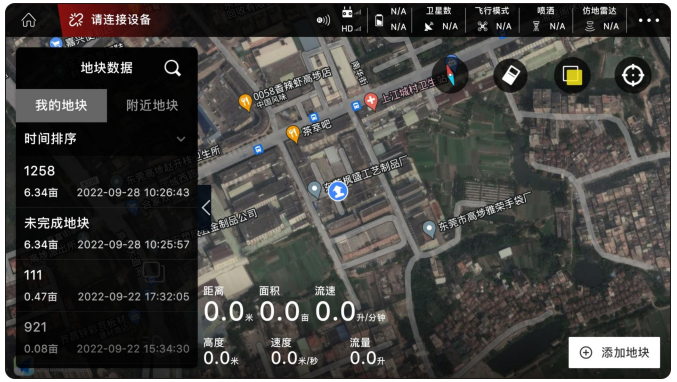
Plan the plot

Click the Task List to Access the Plot Data

My plot: You can select a pre-planned plot for reprocessing (no need to change all parameters).

Nearby plots: You can choose nearby planned plots.

Add parcel: Add a new parcel to plan a new operation area.



You can choose to reassign tasks to pre-planned plots and proceed to the flight operation interface. Alternatively, add a new plot by clicking "Add Plot" to access the interface shown below.

There are four ways to plan the plot:

Handheld GPS (RTK) marker: Connect your phone to the RTK marker (OTG enabled) to mark boundaries around the work area.

Aircraft GPS: Operate the aircraft to the operation area to mark the boundary.

Map selection: Mark the boundary of the operation area directly on the map.

3D route: Use RTK and the latest firmware of the flight controller to collect 3D waypoints.

GPS accuracy: 3D flight path> handheld GPS (RTK) tracker> aircraft GPS> map-based point selection

Plan the plot

Edit parcel: Edit a saved parcel again.

Block division: The saved blocks can be divided for multi-vehicle operations.

Published plot: Shareable with other accounts.

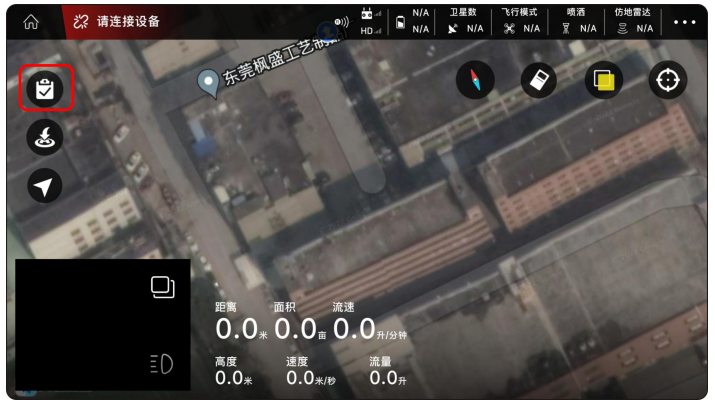
Task assignment: The planned plots must be assigned to the task list before the operation can be performed.

Planned plots need to be assigned tasks. **Enter the name** to record plot information. You can find the plots to be operated in the execution list.

To assign to a third party, you must enter the **third-party account**. After completing the task assignment, it will appear in the task list. You can select crop types to categorize operations for easier reuse.

Run the task

Tap to open the app and select the "Execute Assignment" button



Click the topmost button among the three left buttons — "Task List" — to plan the plot for aerial spraying operations.

Run the task

Auxiliary point: Add auxiliary point, which can be used to correct positioning deviation of parcel during secondary operation.

Execute the job: Execute the planned plot.

Route adjustment: Adjust the direction and starting point of the route.

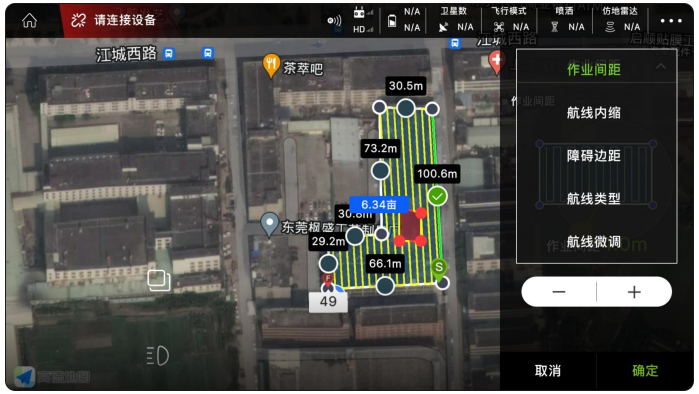
Spacing: Adjusts the distance between each route, which is related to the spray width.

Route contraction: adjust the distance between the route and the operation boundary.

Obstacle margin: the distance between the obstacle and the flight path

Route type: Select the obstacle avoidance mode and reverse the route.

Route fine-tuning: overall adjustment of the route.



Run the task

After adjusting the flight route, click **Execute Job**, and the APP will pop up the **pre-flight Settings** window.

Set spray mode:

Manual spray: manually control the spray speed

Precise spraying: Spray at the preset speed

Coordinated spraying: Spraying according to the flight speed of the aircraft

You can set the flight speed: **0m/s ~ 10 m/s**, and set whether to enable terrain following and coordinated turn **(U-turn)**.

Click OK. After uploading the flight path, set the takeoff altitude and press and hold the button below to perform autonomous operation. (If the aircraft has not taken off, it will take off automatically and start the operation after right sliding. If the aircraft has taken off manually, it will start the operation after right sliding.)

Flight Settings

You can adjust the aircraft parameter settings according to the actual situation. Click **Read** to view the current setting value. Click **Save** after changing the setting, otherwise the setting will not change.

You can change the aircraft's horizontal speed, line spacing, return altitude, and more based on the value range.

Task completion behavior:

Return: The aircraft returns directly to the last takeoff point at the set altitude

Hover: The aircraft is hovering at the completion point. Switch the mode manually to control the aircraft

U-turn on: when turned on, the aircraft turns directly without stopping during transit.

Route mode:

Manual control of heading: The nose of the aircraft is controlled by the operator, and the route remains unchanged.

Auto-align flight path: Align the aircraft nose with the flight path

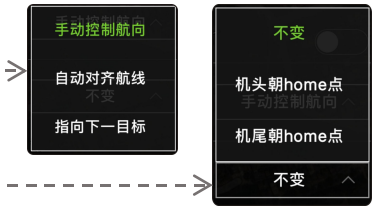
Point to the next target: Point the nose of the aircraft at the next target point while keeping the nose forward.

Return time heading:

Unchanged: The aircraft maintains its original attitude and returns

Head toward home: Head toward takeoff

Tail home: Tail takeoff



Flight Control

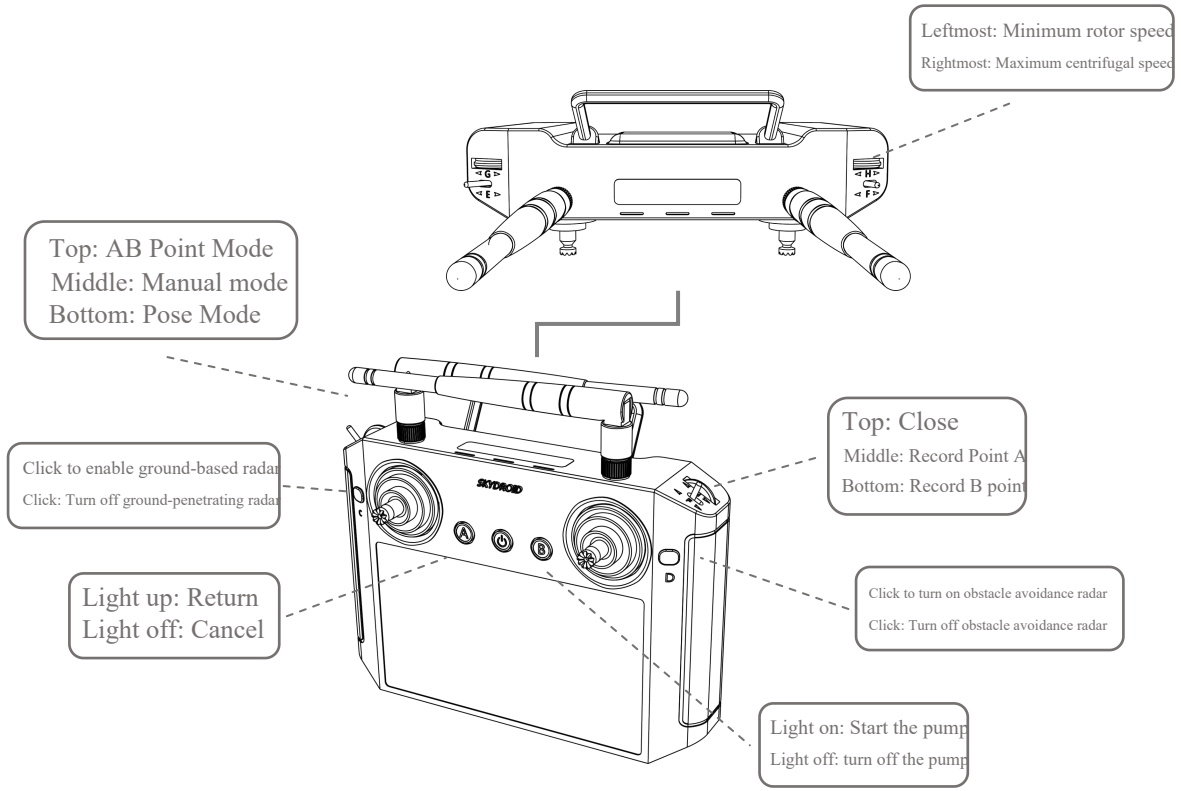
When the aircraft starts operation, the mode must be switched to "attitude mode" before unlocking .

After the normal take-off operation of the aircraft, the pump switch will be opened, and the aircraft will begin to spray the amount of medicine.

After the completion of the drug spraying during the flight, the indicator light of the aircraft will flash rapidly (**red, green and yellow alternately**) and hover at the point where the drug is cut off, indicating the completion of the drug spraying and **recording the point where the drug is cut off**.

The aircraft joystick control is invalid. Switch the mode to either attitude mode or manual operation mode.

Then manually operate the aircraft to return and land, or unlock or activate the return button to enable autonomous return to the takeoff point (point H on the software map).



AB Point Mode

After the aircraft is normally started and connected, switch **"AB point selector"** quickly for 6 times, then switch to the closed AB state, the **red, green and yellow** tail lights flash quickly, and the previous AB point is cleared.

Take the aircraft to the starting point of the operation on the plot, and switch the mode lever to "**AB point execution**", and the aircraft will enter the "**AB point operation mode**".

First, fly the aircraft to the departure point "A" shown in the diagram and select it. The **yellow light** staying on indicates successful A-point storage (voice prompt from the remote). Next, fly the aircraft forward to the boundary point B and select "B-point" for storage. The **green light** staying on confirms successful B-point storage. Finally, use the rudder stick to select the operation direction.

① The aircraft works to the left: hit the left rod for 3 seconds;

② Flight vehicle to the right operation: hit the right rod for 3 seconds.

After the rod is removed, the aircraft begins autonomous flight operations.

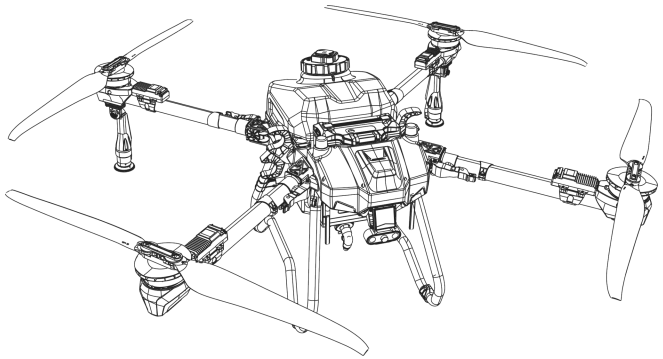
AB point operations are terrain-independent; always monitor the operational conditions.

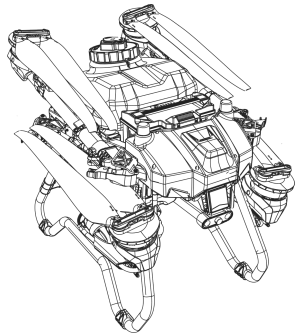
After the aircraft completes the spraying of the drug, the aircraft indicator light **red, green and yellow** will flash quickly and hover, indicating that the aircraft has completed the spraying of the drug and the drug cut point has been successfully recorded.

Switch the mode of the remote control to the **manual operation mode** and control the aircraft to fly back to the take-off point, or turn on the return mode of the remote control and the aircraft will return by itself.

After the drug is installed, the aircraft will switch the mode back to "**AB point execution**" after takeoff, and the aircraft will fly autonomously to the drug cut-off point and start the spray operation.

product display





Product Parameter

Product model: LV20	Product model: LV30
Symmetry axis distance: 1700mm	Symmetry axis distance: 1700mm
Expand size: 1370*1300*665mm	Expand size: 1370*1300*665mm
Fold size: 800*665*670mm	Fold size: 800*665*670mm
Takeoff weight: 50kg	Takeoff weight: 62.3kg
Medical kit capacity: 20L	Medical kit capacity: 30L
Power Motor: X9plus II	Power Motor: X11plus II
Propeller blade: 4314	Propeller blade: 4314
Operating voltage: 58.8v (14s)	Operating voltage: 58.8v (14s)
No-load flight: 18min	No-load flight: 15min
Full load flight: 8min	Full load flight: 8min
Spray pump: 8 L/min	Spray pump: 8 L/min
Spray nozzle: off-center	Spray nozzle: off-center nozzle