Agricultural Spraying Drone

EA-J100 User Manual

v1.0

3WWDZ-45A

Intelligent Quadrotor Agricultural Spraying Drone

Suzhou EAVISION Robotic Technologies Co., Ltd.

To Users

Thank you for choosing EA-J100, the agricultural spraying drone developed and manufactured by EAVISION. To operate the product correctly and avoid damage or serious injury, please read and follow all the instructions in the user manual, and carry out maintenance in a timely and meticulous manner.

Navigate to a Topic

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Disclaimers

By using this product, you hereby acknowledge that you have read this declaimer and the user manual carefully and that you understand and agree to abide by the terms and conditions herein.

This product is not intended for use by persons under the age of 18. Adults should keep the drone out of reach of children and do not operate this drone in the presence of children. Drone operation license issued by EAVISION is required for users to operate the drone.

In no event will EAVISION be liable to you for any indirect, incidental, special, consequential or punitive damages (including damages for loss of profits, goodwill, or any other intangible loss) arising out of or relating to your access to or use of, or your inability to access or use, the product, product accessories, or any materials, flight environment data, and whether or not EAVISION has been informed of the possibility of damage.

This product is a multirotor flying platform intended for agricultural applications only. When you use our mobile apps or our products or other software, you will provide EAVISION with data regarding the use and operation of the product, and operations record, and agree that the latter can legally collect, store, and use the data and record. EAVISION bears no responsibility for loss of data that results from your inability to use the product.

The excellent performance of this product relies on the original parts of EAVISION. Do not use accessories that are not from EAVISION.

Drone operators should abide by the regulations from self-regulatory organizations such as the International Civil Aviation Organization, the Federal Aviation Administration, and their local aviation authorities. Once you use this product, it is deemed that you have read

the relevant regulations and documents, and EAVISION is not responsible for any relevant legal responsibilities arising from the use of this product in violation of laws and regulations.

This statement has important implications for the safe use of this product and your legal rights. Suzhou EAVISION Robotic Technologies Co., Ltd. reserves the right to update this disclaimer. Thank you again for choosing EAVISION.

Rules for the use of pesticides

- Avoid the use of powder pesticides as much as possible as they may reduce the service life of the nozzle. Be sure to clean the nozzle carefully each time after spraying powder in case of nozzle blockage and damage.
- Pesticides are toxic and needed to be handled in strict accordance with their specifications.
- Residue on the equipment caused by splashes or spills when pouring and mixing the pesticide can irritate your skin. Make sure to clean the equipment after mixing.
- Use clean water to mix the pesticide and filter the mixed liquid before pouring into the spray tank to avoid blocking the strainer. Clear any blockage before using the equipment.
- Make sure to stay in an upwind area when spraying pesticide to avoid bodily harm.
- Wear protective clothing to prevent direct body contact with the pesticide. Rinse your hands and skin after handling pesticides. Clean the drone and remote controller after applying the pesticide.
- Effective use of pesticides depends on pesticide density, spray rate, spray distance, drone speed, wind speed, wind direction, temperature, and humidity. Consider all factors when using pesticides, but do not compromise the safety of people, animals, or the environment in doing so.
- Do not contaminate rivers and sources of drinking water.

Operation

- Make sure that your operations do not violate any applicable laws or regulations, and that you have obtained all appropriate prior authorizations. Consult the relevant government agency or authority before flight to ensure you comply with all relevant laws and regulations.
- Make sure that the battery is firmly inserted into the drone and the arms are unfolded and arm locks are firmly tightened. Avoid flying over or near crowds or hazardous materials.
- Do not fly under the influence of alcohol or drugs or in poor physical or mental condition.
- Do not operate the drone alone outside the training area without sufficient training. Seek help from experienced users before and during flight.
- Stay away from the rotating propellers. And avoid any obstruction, interference or assault from humans, animals or objects during flight.
- Avoid flying near strong electromagnetic sources such as high voltage towers, large power equipment, radio and television transmission towers, and mobile phone base stations. EVASION assumes no liability for damage or injury incurred from operation in such areas.
- Make sure you comply with all relevant laws and regulations before flight. Factory settings for the drone: 30m of max altitude, 13.8m/s of max speed, and 2000m of max distance.
- Always fly within the specified maximum takeoff weight to avoid any potential risks.
- After landing, first turn off the power of the agricultural drone, then the backup power, and finally the remote controller to prevent signal loss and potential risks.
- When the low power warning occurs, please return as soon as possible. The default set value is 30% of the battery level.
- Maintain control of the agricultural drone throughout the entire flight, make reasonable judgments about the flight conditions, and regain control of the drone promptly when needed.

- FCC Statement:

  This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

  This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

  NOTE: 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.

  MODIFICATION: Any changes or modifications not expressly approved by the grantee of this device could void the user’ s authority to operate the device.

  The device supports 5GHz U-NII 1 frequency band, which is 5.150 to 5.250 GHz. It will be restricted for use in the indoor environment only.

Environment

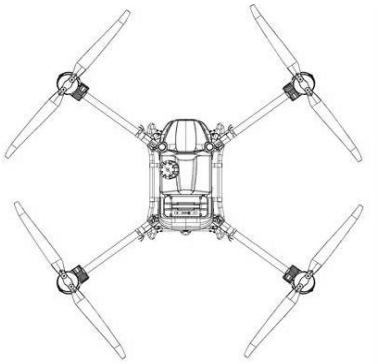
- Fly in open space away from crowds.
- Do not fly indoors.
- Fly in favorable weather conditions and avoid heavy rain, strong winds, sandstorms, or

extreme weather.

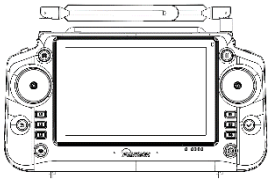
- Under controlled laboratory conditions, the core module protection level of the agricultural drone is IP67. The protective capabilities may not be permanent and may decrease over time due to long-term use. Damage caused by the intrusion of liquids is not covered by warranty.

List of Items

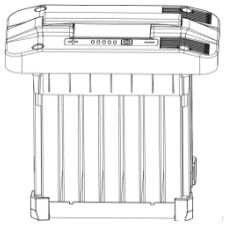
Please check the items of EA-J100 you received as per the sales package.



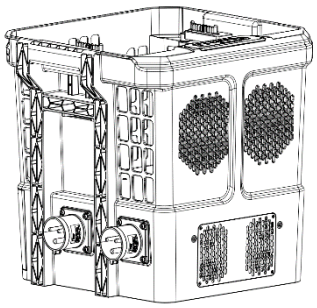
EA-J100 Drone×1



EAV-RC50 Remote Controller×1

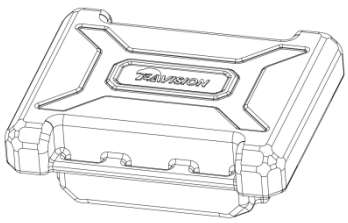


EAV-CTB29000A Smart Batteries×2

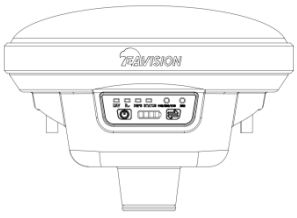


EAV-C50-9000 Cooling Charger×1

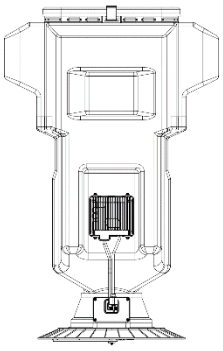
EAV-SUT50 Handheld Surveying Tool×1



Lifting Set×1



Base Station×1



EAV-SPD50 Spreader×1

Tool box contains Type-C adapter x 1, Type-C data cable x 1, screwdriver set x 1

Product Overview

Product description

The new generation of the EA-J100 is a multifunctional agricultural spraying drone that combines crop protection, spreading, surveying, and cargo lifting into one integrated system. The mist nozzle produces droplets to penetrate various kinds of crops. For spreading and lifting, users can purchase the optional package to transform the drone into spread or lift configuration. The drone has a protection rating of IP67 (IP66 for battery), which contributes to easier cleaning and higher efficiency of operation.

Feature highlights

- The innovative laser compound eye vision system with exceptionally high dynamic capability, is capable of rapidly detecting, locating, and identifying targets while in motion, allowing for advanced obstacle avoidance. The 360-degree view combined with high-definition resolution enable seamless real-time perception without blind spot, covering an area the size of a football field. It can detect obstacles as small as 1 centimeter in diameter, such as dead branches, utility poles, and power lines, thus providing all-around safety assurance within the operational environment.
- The onboard chipset boasts remarkable computational power, enabling real-time generation of a three-dimensional map of the operation environment. It autonomously plans safe flight routes and ensures smooth obstacle avoidance and terrain following at a speed of 10 meters per second across complex and diverse landscapes such as plains, waters, and mountainous regions without the need for manual terrain selection, efficient and worry-free. And the terrain following height can be as high as 15 meters.
- Thanks to an upgraded routing algorithm, synchronized steering at takeoff and landing, and the ability to perform drift-style turns for nimble maneuvering and optimal time efficiency, the operational efficiency of the drone can achieve 60 acres per hour with the maximum operation speed of 13.8m/s.
- The state-of-the-art intelligent lifting function introduces a maximum lifting capability

of 60 kg, streamlined with quick installation, quick release, and automatic detachment features. In conjunction with anti-swing control algorithm, it enhances the safety of lifting flight operations. This cutting-edge automatic guidance system enables one-click locating of take-off and lifting points, facilitating autonomous flight, greatly reduce the operation difficulty of lifting and effectively doubling the efficiency of lifting operations.

- The standard integrated spray tank of 45L can be optionally expanded to 60L. With dual electromagnetic impeller pumps, it can reach the maximum flow rate of 24L/min.
- A quick-exchange 50Kg (70L) granule spreader integrates the replaceable blade stirrer and the 300W high-power motor, enabling uniform distribution at the rapid spreading rate of 110 kg/min. An innovative intelligent estimation method for material trajectory has been developed, providing accurate spreading width adjustments with less than 10 cm error margin, significantly reducing the chances of oversowing and missing spots. The effective swath width can be 10 meters.
- The third-generation CCMS ambient temperature mist nozzle offers significant upgrades with a redesigned adjustable water outlet for improved atomization. It allows for precise control over droplet sizes ranging from 10 to 300 micrometers, ensuring effortless transition between settings. It innovatively equipped with two types of nozzles, high atomization, and high flow, to meet a wider range of operational needs and effectively extend the nozzle's lifespan. Switching between dual and quad mist nozzles is easy and quick, improving the density of leaf coverage on both sides, and the overall spraying efficacy.
- It now comes equipped with night flight obstacle avoidance capabilities, ensuring seamless operations around the clock without requiring additional markers.
- A new manual flight enhancement mode has been added, which provides the functions such as constant speed patrol, fixed altitude patrol, directional flight and omnidirectional obstacle avoidance during manual operation with the updated sensing system. Manual operation is safe and precise without the need for land mapping now. Fixed-altitude flight mode is available now, and the patrol height can be set up to 30 meters, which is suitable for a variety of special operation scenarios.

- A newly developed high-performance remote control with a 7-inch ultra-clear large screen offers a bigger and more user-friendly interface, built-in with a 6-nanometer 8-core AI processor, 8GB of RAM and 128GB of storage, and paired with a powerful cooling fan, providing super computing power for more agile operation. With the high-definition FPV camera, it can achieve quick stitching of high-definition aerial survey maps, eliminates the hassle of manual marking and doubles the operating efficiency.
- The surveying tool comes with an adjustable bracket, allowing for quick acquisition of RTK signals even in dense forest environments. The optional "Super Link" communication repeater, which integrates four major functions: high-precision surveying, offline base station, signal relay, and lifting guidance, fearless of no network, weak network, and mountain blockage.
- The innovative design of CTB shell-core integrated supercharged battery with a blade-like battery structure allows for rapid heat dissipation, increasing the heat dissipation area by 7 times, which significantly improves battery cycle efficiency. The dual-interface design for charging and discharging solved the issue of interfaces overheating during high-temperature operations in summer.
- A 9000W integrated cooling charger can fully charge in as fast as 9 minutes, offering super-fast charging and quick start-up. Even in a 40°C high-temperature environment, the drone can operate on the rotation of two batteries. The power self-define function allows for seamless switching between fast and slow charging modes, accommodating both generator and mains electricity charging, catering to diverse charging requirements.

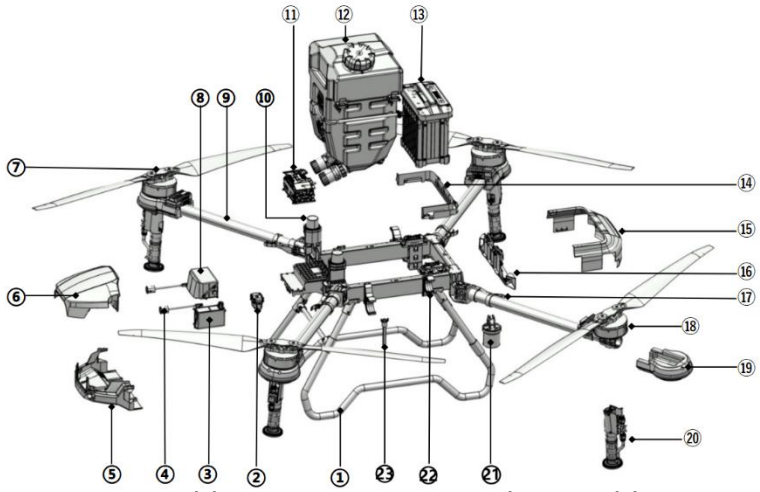
Drone

Overview

J100 employs an industrial-level flight system. Its standard dual nozzles for high flow spraying in large fields can be easily switched for mountainous terrain with four improved atomization nozzles. It is a multifunctional agricultural drone that seamlessly integrates a variety of solutions, including crop protection, spraying, land surveying, as well as lifting various objects.

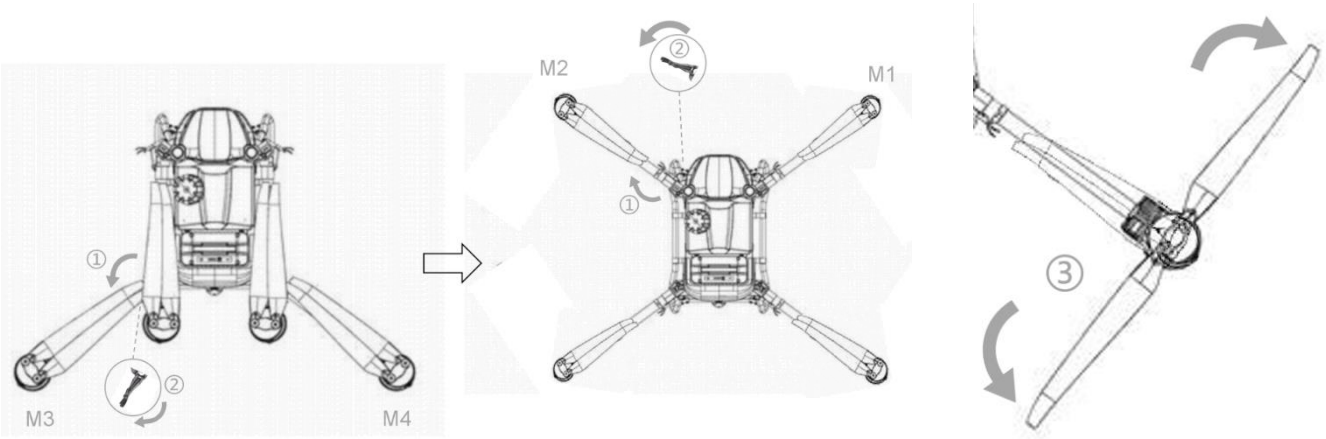
The 360-degree high-resolution laser compound eye possesses an exceptionally high dynamic modeling capability. It can detect obstacles such as dead branches, utility poles, and power lines, thus providing all-around safety assurance within the operational environment.

Drone components



1.Landing gear assembly
2.FPV assembly
3.Downward lidar assembly
4.Front light assembly
5.Front lower shell assembly
6.Front cover assembly
7.Propeller assembly
8.Forward lidar assembly
9.Arm tube assembly V5.0
10.GPS antenna assembly
11.Flight control module
12.Spray tank assembly
13.Battery
14.Rear support assembly
15.Rear cover assembly
16.Rear cable bracket
17.Folding lock assembly
18.Power assembly
19.Motor housing
20.Mist nozzle assembly
21.360 radar assembly
22.Arm semi-circular slot
23.Receiver antenna assembly V5.0

Preparing the drone



1. Unfold the M3 and M4 arms followed by M1 and M2 and fasten the four arm locks. Avoid pinching fingers.
2. Fold the M1 and M2 arms followed by the M3 and M4 and make sure that the arms are inserted into the storage clamps on both sides of the drone. Avoid pinching fingers.
3. Unfold the propeller blades.

⚠ The arm locks must be securely fastened. Otherwise, the remote controller will alarm.

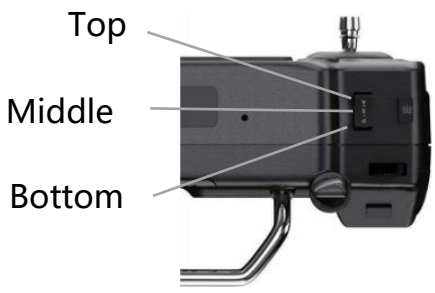
When installing the battery, pay attention to the positive and negative polarity. The battery has a reverse insertion prevention feature for positive and negative poles.

Flight modes

There are four flight modes: manual, auto, GPS, and attitude, and you can switch the dial on the upper left corner to choose the flight mode.

Flight Mode Switch

Switch to change flight mode of the drone, and attitude mode can be hide in settings.



Position	Flight Mode
Top	GPS manual mode
Middle	GPS manual mode
Bottom	GPS auto mode

Attitude Mode Warning

In A-mode, the drone cannot position itself and is easily affected by its surroundings, which may result in horizontal shifting.

Maneuvering the drone in A-mode can be difficult. Avoid flying in confined spaces or in areas where the GNSS signal is weak. Otherwise, the drone will enter A-mode, leading to potential flight risks.

Operation modes

Aerial Mapping

Aerial mapping can be easily accomplished using J100. Its FPV camera captures images of farmland and orchards, generating high-definition maps on the remote controller. Boundary points can also be acquired on the remote controller, assisting in precise land planning and effortless boundary marking. For detailed operational steps, please refer to the flight section.

Granules Spreading

After quickly switching to the granule spreader, the drone can spread dry solid particles with a diameter of 1mm to 10mm, such as seeds, fertilizers, bait, and more. Equipped with a 70L spread tank, a 300W high-power motor and a blade mixer, the maximum granule distribution speed reaches 110Kg/min. Its spreading width error is less than 10 centimeters and the maximum spreading width is up to 10 meters. Different payloads can be swapped for various operational scenarios, achieving versatility with a single drone. For detailed operational steps, please refer to the flight section.

Land Spraying

It includes field spraying and orchard spraying. The standard dual nozzles for high-flow spraying can be converted to quad nozzles with improved atomization, which distributes the water supply to all four nozzles. Users can switch between the two-nozzle and four-

nozzle modes using the app. The ambient temperature mist nozzles ensure even distribution of the droplets with the sizes ranging from 10 to 300 microns. For detailed operational steps, please refer to the flight section.

Object Lifting

In various agricultural scenarios, the drone can be equipped with a lifting device, enabling lifting operations during agricultural crop protection. The lifting function is automated and renders a maximum lifting capability of up to 50kg. It is equipped with a high strength lifting rope and an automatic detachment mechanism, allowing for quick installation and quick release, which makes the lifting operations easier, and improves efficiency. Different payloads can be swapped for different operational scenarios, achieving versatility with a single drone. For detailed operational steps, please refer to the flight section.

Manual Operation Enhancement

It differs from traditional manual flight, and involves parameters setting such as altitude, speed, and flight route while operating in GPS mode to facilitate manual flight, thus achieving manual operation enhancement. For detailed operational steps, please refer to the flight section.

Operation resumption point

When exiting a route, the drone records a breakpoint. The Operation Resumption Point function allows you to pause an operation temporarily to refill the spray tank, or change the battery. Afterwards, resume operation from the breakpoint.

Recording a breakpoint

A breakpoint is recorded in the following scenarios during operations.

1. Click the Return button at the lower right corner of the screen.
2. The drone returns in any way.
3. Push the pitch at the upper left corner.

4. Empty tank.
5. Low battery warning.
6. Pop up warning and initialize return.

Resuming Operation

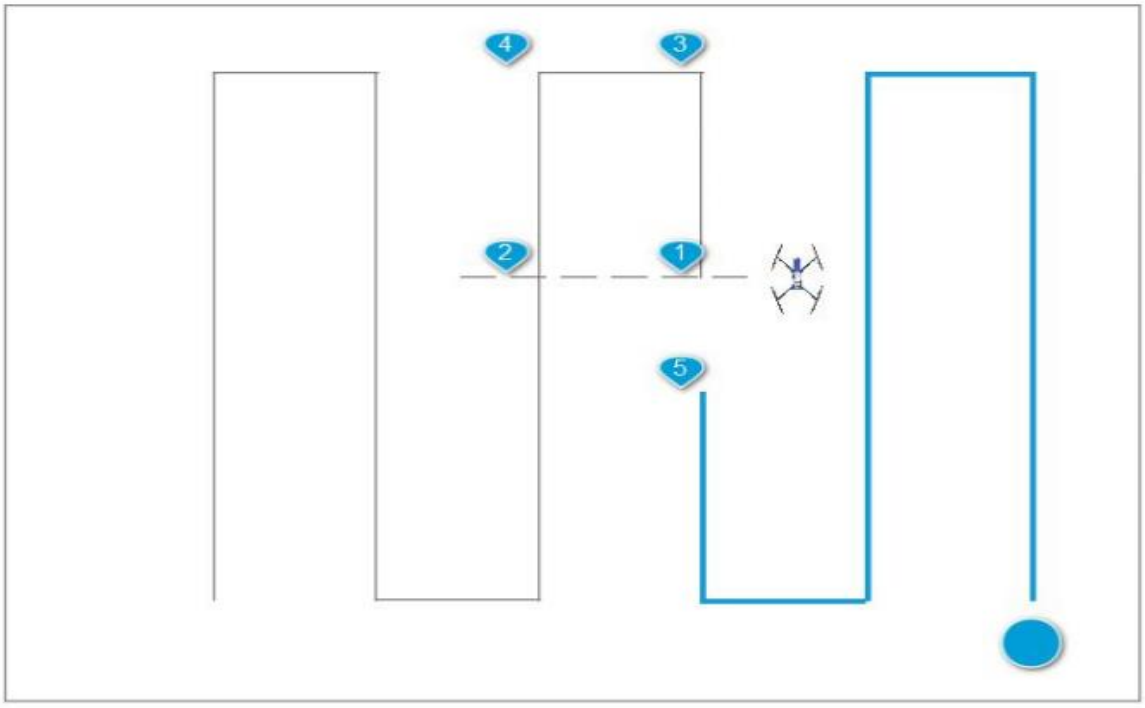
1. Click Operation Resumption Point, and the following waypoints will appear. Select one of these waypoints and the drone will resume operation.

a) "Waypoint 1" is the intersection point of the current position of the drone and what is perpendicular to the current unworked flight path.

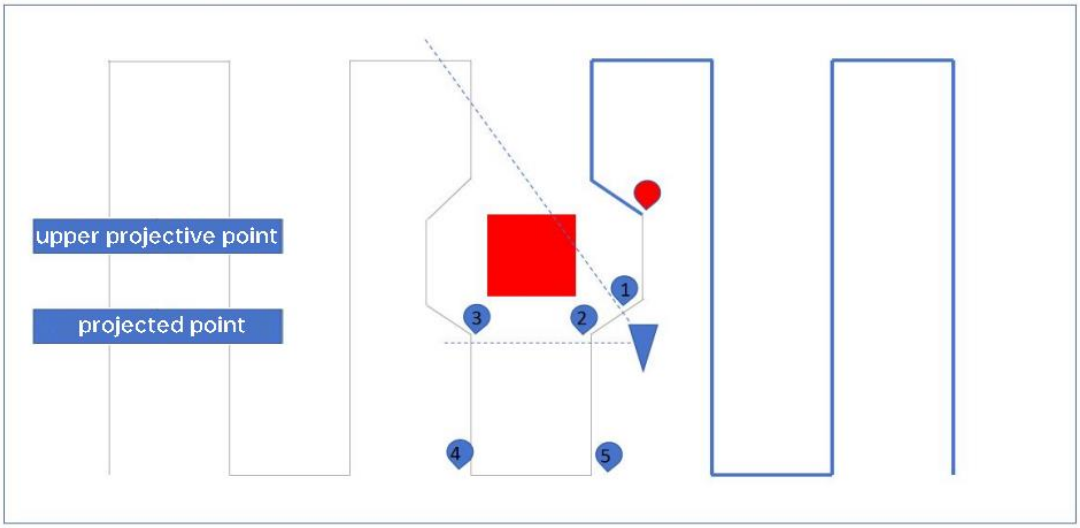
b) "Waypoint 2" is the intersection point of the current position of the drone and what is perpendicular to the next unworked flight path.

c) The next two waypoints on the current unworked flight path are "Waypoint 3" and "Waypoint 4."

d) The breakpoint when switching from automatic mode to manual mode is "Waypoint 5."



2. When the location of the projection point is not suitable for the drone to continue its operation, users can click on the next projection point to continue projecting new points in the next flight path, as shown in the diagram below. They can also click on the previous projection point to go back to the previous flight path for projection.



Empty Tank Warning

Profile

The drone calculates the remaining pesticide and displays the information on the app. In the event of an empty tank, an alert will be issued, with a voice message stating "Empty Tank".

Usage

1. When an empty tank warning appears in the app, the nizzles automatically turn off.
2. In the event of an empty tank during operation, a breakpoint will be recorded.
3. During autonomous operations, the drone will return immediately after issuing an empty tank alert.
4. Land the drone and stop the motors. Refill the spray tank and tightly secure the cover.
5. Continue operation in autonomous mode.

Laser Compound Eye Vision System

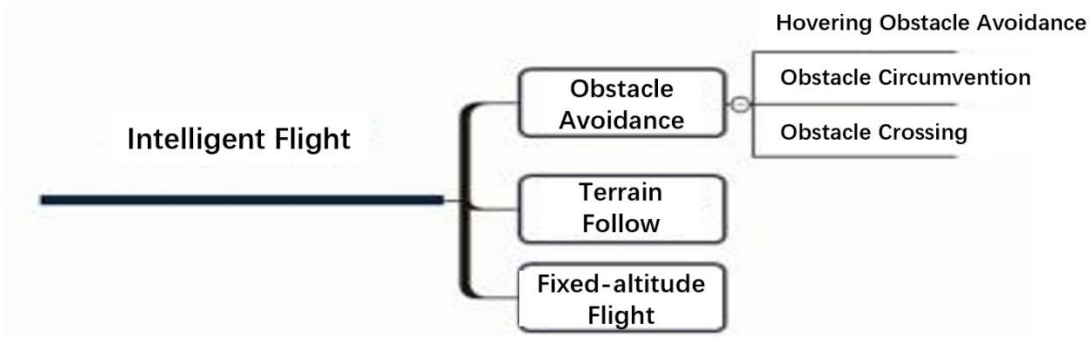
J100 is equipped with a laser compound eye vision system composed of forward lidar, downward lidar, and a 360-degree rotating radar, enabling multi-directional obstacle detection and avoidance to enhance safety. Additionally, during the operation, it can accurately detect crop heights, enabling terrain-following flight. This allows the drone to maintain a consistent altitude relative to the crops throughout the spraying operation, ensuring uniformity in pesticide application.

It possesses outstanding dynamic maneuverability, swiftly detecting, locating, and identifying targets while in motion, thereby proactively avoiding obstacles. Combining a 360-degree panoramic view with high-definition resolution, it can recognize obstacles such as dead branches, utility poles, and power lines in complex operational environments, providing comprehensive safety assurance for flight.

The forward lidar, downward lidar, and 360-degree rotating radar should be used in coordination with the terrain conditions, with the forward obstacle avoidance radar automatically activated during operation. Obstacle avoidance and terrain-following functions need to be enabled through the app, allowing the drone to intelligently navigate and follow terrain based on the specific operational environment.

Definition

- Obstacle Avoidance: All methods to prevent collisions with obstacles.
- Hovering Obstacle Avoidance: Hovering in front of obstacles.
- Obstacle Circumvention: Circumvent obstacles from the left and right.
- Obstacle Crossing: Navigating above and below obstacles.
- Terrain Follow: The drone maintains a consistent relative altitude with respect to crops or the tops of obstacles directly beneath it.
- Fixed-altitude Flight: The drone maintains a constant height.



Detection Range

Forward laser compound eye: 120° (horizontal), 70° (vertical).

Downward laser compound eye: 120° (horizontal), 25° (vertical).

360-degree 4D imaging radar: 360° (horizontal), 50° (vertical).

Obstacle Circumvention & Terrain Follow Usage

Click ⚙ at the upper right corner of the app screen, turn on or off the obstacle avoidance and terrain follow functions, and the drone will follow the terrain in accordance with the preset relative height, and circumvent or cross obstacles once it detects them.

⚠

The icons of Obstacle Circumvention and Terrain Follow on the app  are  and respectively.

Flatlands

This operational scenario is suitable for flat terrain with no significant changes in elevation, typically found in large field crops. Click ⚙ at the upper right corner of the app screen, turn on or off the obstacle avoidance and terrain follow functions, and the drone will follow the terrain in accordance with the preset relative height, and circumvent or cross obstacles once it detects them.

When Terrain Follow and Obstacle Avoidance function are both enabled, the drone will prioritize obstacle avoidance.

Hills

This scenario is suitable for crops in hilly areas with significant changes in elevation. Click at the upper right corner of the app screen, turn off Obstacle Avoidance and turn on Terrain Follow, and the drone will follow the terrain in accordance with the preset relative height, and cross obstacles once it detects them.

When Terrain Follow and Obstacle Avoidance function are both enabled, the drone will prioritize obstacle avoidance.

- When obstacle avoidance is enabled, the maximum flight speed of the drone is 10m/s.
- The terrain-following capability of the drone is within a slope range of ≤90°.

- For mountainous operations, it is imperative to disable obstacle avoidance and enable terrain-following to avoid potential hazards.
- When encountering multiple consecutive obstacles like utility poles or trees, if the distance between the obstacles is greater than 8 meters, the drone will automatically circumvent them. If the distance is less than 8 meters, it will be treated as a single obstacle.
- In manual operation enhancement mode, only the fixed-altitude flight feature is supported. The drone will hover and avoid obstacles when encountered.
- When sensors are contaminated, the drone may perform abnormal obstacle avoidance and terrain-following. Please be cautious during flight.

Sensing System Usage Notice

- Please maintain control over the drone throughout the entire flight, make informed judgments about the flight conditions, and regain control of the drone promptly when necessary. Ensure good visibility, make reasonable judgments about flight conditions, and promptly avoid obstacles.
- Obstacle Avoidance is disabled in attitude mode. The radar module is delicate, so avoid squeezing or bumping it.
- When multiple drones operate in close proximity, the sensitivity of the radars may decrease. Operate with caution.
- Prior to each flight, inspect and ensure that the exterior is clean, and the outer protective cover is intact, without any cracks, dents, or deformations.

Speed & Altitude

Terrain	Terrain Follow Off Obstacle Avoidance Off	Terrain Follow On	Obstacle Avoidance On	Cross Line
0°≤Crop canopy slope≤5°	13.8	10	10	4
5°＜Crop canopy slope≤25°	13.8	7	7	4
25°＜Crop canopy slope≤90°	13.8	5	5	4

Chart 1 Max Speed (m/s) in Different Scenarios under Auto Mode

Terrain	Terrain Follow Off Obstacle Avoidance Off	Terrain Follow On	Obstacle Avoidance On	Cross Line
0°≤Crop canopy slope≤5°	-5~30	1.5~20	-5~30	3~20
5°＜Crop canopy slope≤25°	-5~30	2~20	-5~30	3~20
25°＜Crop canopy slope≤90°	-5~30	2~20	-5~30	3~20

Chart 2 Max Altitude (m) in Different Scenarios under Auto Mode

Mode	Both On	Terrain Follow Off Obstacle Avoidance On	Terrain Follow On Obstacle Avoidance Off	Both Off
Manual	/	0~300	/	0~300
Manual Enhancement	1.5~20m	-5~30	1.5~20	-5~30

Chart 3 Max Speed (m/s) in Different Scenarios under Manual Mode

Mode	Both On	Terrain Follow Off Obstacle Avoidance On	Terrain Follow On Obstacle Avoidance Off	Both Off
Manual	/	10	/	13.8
Manual Enhancement	10	13.8	10	13.8

Chart 4 Max Altitude (m) in Different Scenarios under Manual Mode

⚠ Note: Altitude -5 means parameter for flying from high altitude to low altitude is set to -5.

Return Home

The return point is the location recorded by the drone before taking off.

Return Home: It brings the drone back to the last recorded return point.

There are three types of Return Home: Smart Return, Low Battery Return, and

Smart Return

Press the Return button on the app screen to enable Smart Return immediately.

Low Battery Return

Low battery return is only available in autonomous operations. If the low battery action is

set to Return Home in the drone battery settings in the app, the drone will pause the operation and enter Return Home automatically when the drone battery level reaches the low battery threshold. Users can switch to manual mode to control the drone manually.

Disconnection Return

If the drone signal is lost during autonomous operations, the drone will hover, and then return automatically after 30 seconds of disconnection.

Obstacle Avoidance & Terrain Follow During Return

In an optimal operating environment, obstacle avoidance and terrain follow during Return Home are available.

- During autonomous operations in large fields or mountain orchards, the drone will automatically follow the terrain and cross obstacles such as trees and power lines encountered during the return.
- In manual operation enhancement mode, the drone will only hover when encountering obstacles, and the app will warn you if you disable Terrain Follow and enable Obstacle Avoidance. Manual control is required to circumvent the obstacles in this case.
- In manual mode, both the flight and return processes are under complete manual control.

Low Battery Warning

The drone features a low battery warning.

When the low battery warning prompt appears in the app, fly the drone to a safe area and land as soon as possible.

Users can set the threshold of low battery warnings in the app.

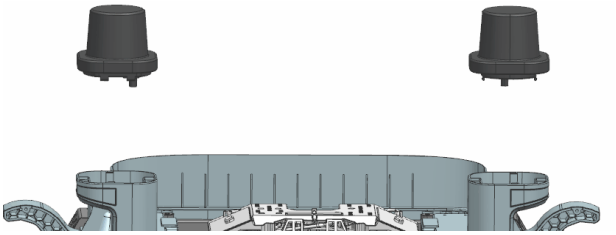
- In the case of manual operations (manual operation enhancement mode included), continuing operations after receiving a low battery warning may lead to the risk of

the battery running out of power.

RTK Functions

J100 supports centimeter-level positioning to improve agricultural operation when used with the base station.

It has an onboard D-RTK which can withstand magnetic interference from metal structures and high-voltage power lines to ensure safe flights.



Using with the Network RTK Service

Before each use, make sure that the drone RTK positioning function is enabled and the RTK signal source is correctly set to either base station or network RTK. Otherwise, RTK cannot be used for positioning.

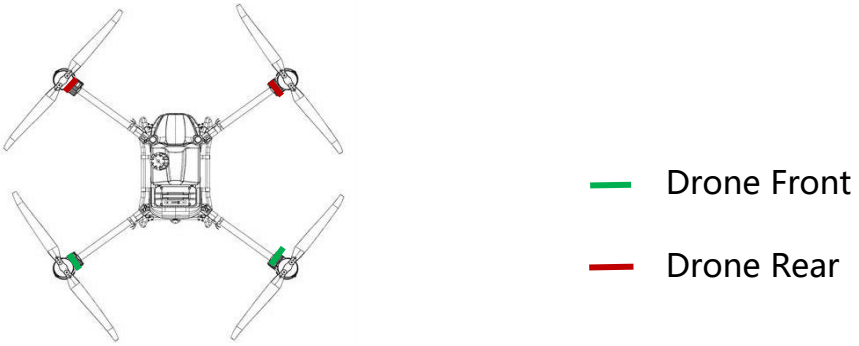
Go to drone status in the app, and select RTK to view and set.

Using with the Base Station

Refer to the base station chapter for more information about completing the linking between the drone and the base station and setting up the base station.

Navigation Lights

There are LEDs on the frame arms marked M1 to M4. The LEDs on M1 and M2 are front LEDs and glow red during flight to indicate the front of the drone. The LEDs on M3 and M4 are rear LEDs and glow green during flight to indicate the rear of the drone. They are off when the drone power is not turned on.

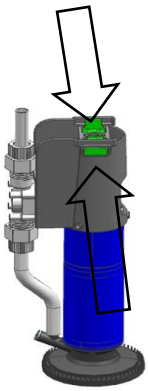


Nozzle & Spraying Disk Switch

Switching between dual and quad mist nozzles and spraying disks is easy and quick. For field operations, it is recommended to use dual nozzles with high flow rate, while for mountainous terrain operations, quad nozzles with high atomization have better performance.

Click and then to switch the nozzle mode on the app after installing quad nozzles.

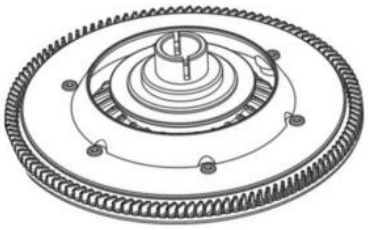
There are two types of nozzles: dual nozzles and quad nozzles. To switch the nozzles, just remove and install nozzles, connect the pipelines and cables, and press the nozzle locking clip.



Spraying Disk Types

Spraying disk for high atomization: suitable for hilly areas to ensure the penetration effect.

Spraying disk for high flow rate: suitable for large fields.



- Replace the high atomization spray disk with high flow rate one to avoid damage when the droplet size is set to over 200μm.
- Switch to spraying disk for high atomization when the flow rate of dual nozzles is set to over 16L/min.

- Do switch to spraying disk for high atomization when the flow rate of a single nozzle is set to over 6L/min.

Backup Battery

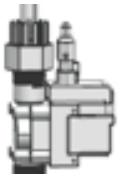
The drone is equipped with a backup battery, which will be charged automatically after powering on the drone, and will power the entire modules when replacing the main battery, saving the time to wait for a self-check after changing the main battery, thereby improving operational efficiency.

- Turn off the backup battery after completing the operation.
- Click ⚙ on the upper right corner of the screen and turn off the backup battery. And it will be turned off successfully 40 seconds later.

⚠
- The shutdown sequence is to first turn off and remove the main battery and then turn off the backup battery.

Solenoid Valve

A solenoid valve is an electromechanically operated valve to control the fluid flow automatically.



Dual Electromagnetic Vane Pump

The electromagnetic vane pump in the drone operates by driving the liquid to rotate at high speed using the working vane. The maximum flow rate for a single pump is 12L/min. The atomization capability of an individual nozzle is limited, with smaller droplet sizes requiring higher rotation speeds, which in turn restrict the flow rate. Choosing smaller droplet sizes can affect the flight speed, spray width, or spray rate.

Droplet Size	Flow Volume (Dual Nozzles)	Flow Volume (Quad Nozzles)
10	4L	8L
20	6L	12L
30	8L	16L
40	10L	20L
50-100	12L	24L
100+	16L	24L

Flow Rate Calibration

The flowmeter needs to be calibrated in the following situations:

1. Change to another fluid with different viscosity.
2. There is a significant discrepancy exists between the actual operational area and the theoretical operational area.

Flowmeter Calibration Steps

1. Fill the tank with approximately 2 liters of water.
2. Go to the operational interface in the app, click ⚙ and then 💧 on the upper right corner, and then click on the flowmeter calibration button.
3. Select the consistent nozzle flow rate, and the system will automatically perform the calibration.

⚠ If the calibration is successful, you can proceed with your operation as usual.

- Flowmeter inaccuracies are typically due to slight measurement deviations, as shown in the following example.
- If the actual water flow rate is 10 L/min but the flowmeter measures 10.5 L/min, with a deviation of 0.5 L/min, this deviation will continue to accumulate into the flow rate, resulting in a target volume. To compensate for this, the adjustment should be increased by 0.05 at a time.

Compass Calibration

⚠
- Compass calibration is of utmost importance, as the calibration results directly affect flight safety. Failure to calibrate the compass may lead to abnormal operation of the agricultural drone.
- When calibrating, ensure that the location is open and far away from large buildings, manhole covers, high-voltage lines, wire fences, mobile phone transmitters, cars, and magnetic minerals.

- Operators should be without mobile phones, keys, or metal objects, and the notebook and test wires being used should not be near the flight controller's GPS during operation.
- After successful calibration, place the drone on the ground. If the calibration is unsuccessful, reposition and recalibrate.

Calibrating the compass

When the drone has been moved far from the original place or it hasn’ t been used for a long time, it is necessary to follow the steps below to calibrate the compass. It is recommended to perform this when there’ s no liquid in the spray tank.

1. Click Device Management, and then Drone, scroll down to the bottom of the menu, and select the Calibrate button in Compass Calibration.
2. Power on the flight controller, and wait until the Start Calibration button becomes clickable.
3. Click on the Start Calibration button while keeping the drone level. Lift the drone about 1 meter off the ground and then slowly (less than 30 degrees/second) rotate it horizontally. If the horizontal calibration is successful, proceed to the next step.
4. Keep the drone vertically oriented and slowly (less than 30 degrees/second) rotate it horizontally.
5. If the calibration fails, please start the process again from step 2.

Firmware Upgrade

Firmware Upgrade: Modifying the underlying software to replace or enhance hardware functionality for better performance.

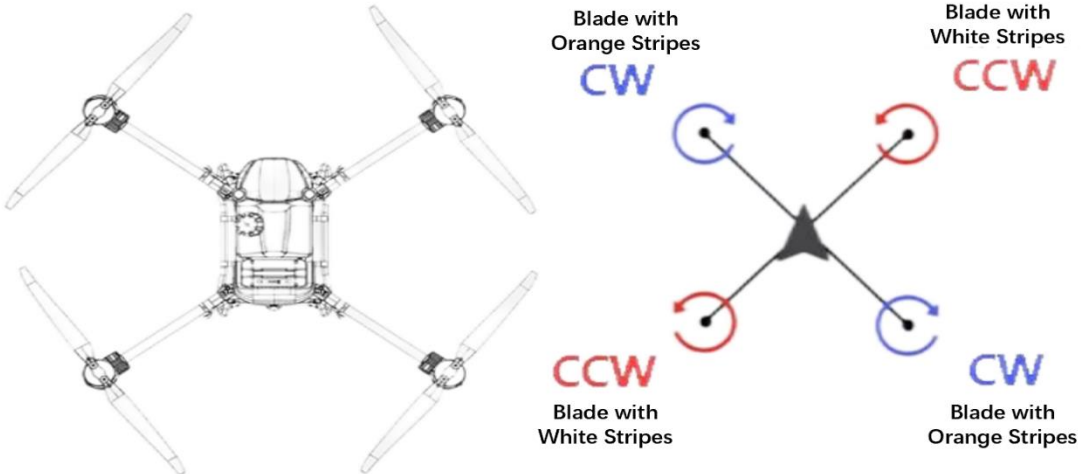
After upgrading the drone version, users are required to perform the drone firmware update.

Firmware Upgrade Steps:

1. Click the upward arrow icon on the lower right corner of the app to access the upgrade page.
2. Or click on Device Management on the main interface.
3. Then click the Upgrade button on the right side of the firmware version to initiate the automatic upgrade process.
4. After the download is complete, connect the flight controller upgrade cable (on the drone) to the USB port on top of the remote controller.
5. Once the firmware is successfully uploaded, the update is complete.

Propeller Rotation Direction

Before operation, it is necessary to confirm whether the propeller rotation direction of the drone is correct, including tests after maintenance. Installation must strictly adhere to the



specified propeller rotation direction.

The propeller rotation direction must strictly follow this diagram, as any deviation may lead to potential danger.

Remote Controller

Remote controller overview

The EAVISION remote controller adopts the advanced high-definition image transmission technology, and can automatically select the frequency band with the lowest interference. Equipped with an omnidirectional antenna, the image transmission and control distance can reach 3 kilometers. Its powerful computing performance reduces video transmission display delay to 180ms with Qualcomm eight-core CPU.

The remote controller uses a 7 inch 1920*1080 high-definition display with a maximum screen brightness of 1500cd/㎡. A 6-nanometer high-performance chip paired with 8GB of RAM and 128GB of storage, combined with a powerful cooling fan, and an integrated Android ground station with a 1080P digital transmission system, all in one station for your convenience.

Preparing the Remote Controller

Mounting the SIM Card

SIM card enables the remote controller to access specific networks and platforms such as the J100 APP.

- Before using the remote controller for agricultural operations, it's necessary to connect to a network. You can choose to connect the remote controller to a wireless LAN network. For an enhanced user experience, it is recommended to install an operator's SIM card for mobile network connectivity.

Mounting Steps:

① Remove the dongle compartment cover.

② Make sure the SIM card is inserted into the dongle.

③ Reattach the cover firmly.

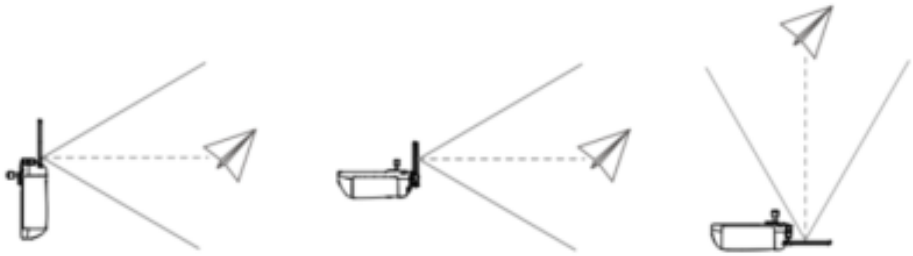
Adjusting the Antennas

Lift and adjust the antennas. The strength of the remote controller signal is affected by the position of the antennas.

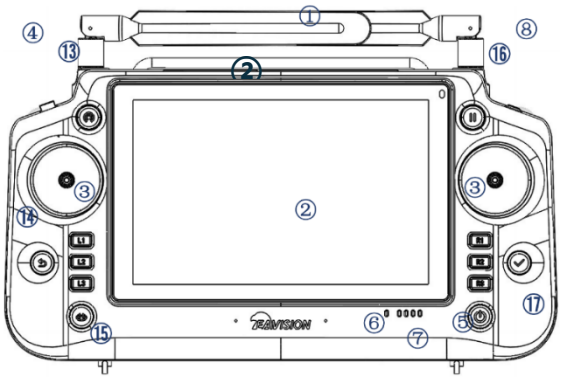
⚠ ● During operations, please avoid covering the remote controller antenna or obstructing signal transmission in any way.

● The top end of the remote controller antenna is the weakest point for signal transmission, so avoid pointing it towards the drone. Antennas should not cross each other.

● Proper antenna use: The remote controller antenna should be oriented vertically, pointing upwards from the remote controller screen, and keep the flat surface of the antenna facing directly towards the drone.



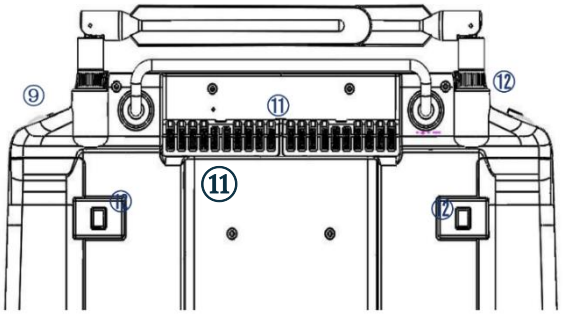
Remote Controller Components



1. Antenna (Relays drone control and image transmission signal)

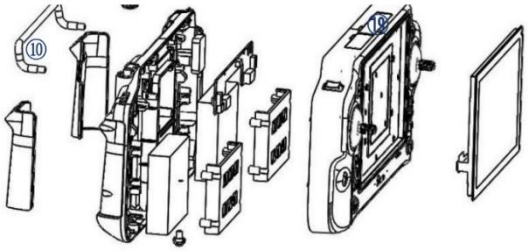
2. Touch screen (Tap to select. Android-based device to run Smart AG Pro App)

3. Joystick (controls drone movement)



4. Flight Mode Switch (attitude/manual/auto mode)

5. Power Button (Used to power the remote controller on and off. When the remote controller is powered off, press the button to check the battery level.)



6. Status LED (Indicates whether the remote controller is linked to the drone.)

7. Battery Level LEDs (Displays current battery level of the internal battery.)

8. Spray/Spread Button (Press to start or stop spraying/spreading in Manual operation mode.)

9. FPV Dial (Turn to adjust the FPV angle) 10.Handle

11. Air Outlet (Used for heat dissipation. Do not cover the air vent during use.)

12. Customizable Button 13. Link Botton (between the remote controller and the drone)

14. Back Button 15. Return/Land Button 16. Hover Switch (in any mode)

17. Save/Confirm Button 18. Internal Battery 19. Remote Controller Ports

HDMI Port (for video output) USB Port SIM Card Slot (for mobile network connection)

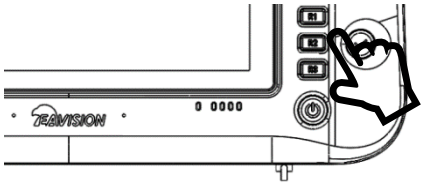
Type-C Charging Port (Use to charge the remote controller)

Using the Remote controller

Powering the Remote Controller On and Off

The battery level is indicated via the battery level LEDs on the remote controller. Follow the steps below to power on the remote controller:

1. When the remote controller is powered off, press the power button once to check the current battery level of the battery. If the battery level is too low, recharge before use.
2. When the remote controller is powered off, press and hold the power button until the battery level LEDs flash. Then press the power button once to power on the remote controller.
3. When the remote controller is powered off, press and hold the power button until the battery level LEDs flash. Then press the power button once to power off the remote



controller.

- Screenshot: when the remote controller is powered on, swipe down from the top of the screen, and click the screenshot button.

- Standby: when the remote controller is turned on, press the power button to switch to the energy-saving mode.

It takes about 90 seconds to power on the remote controller for the first time. And it takes about 15 to 30 seconds to change battery during operation (with backup battery).

Charging the Battery

Charge the battery with the original power adapter when the remote controller is powered off.

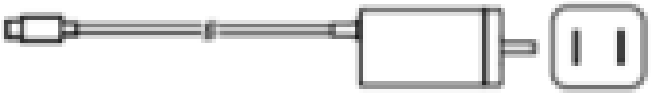
1. Use Type-C fast charging cable to connect the remote controller and adaptor.

2. The Battery Level LEDs flash when charging.

3. The Battery Level LEDs turn solid green when fully charged.

Please use the original charger.

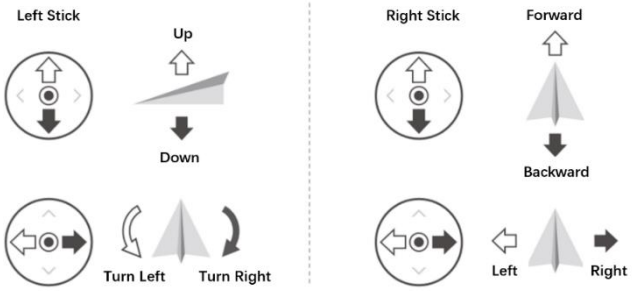
⚠ ● The battery will deplete when stored for an extended period of time. Recharge the battery at least once every three months to prevent over discharging.



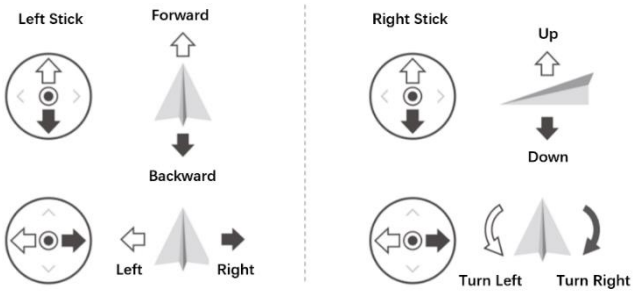
Operating the Drone

Control mode can be set to American Mode, Japanese Mode, and Chinese Mode.

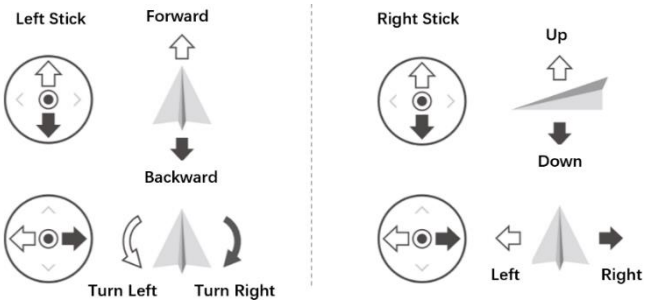
American Mode



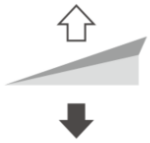
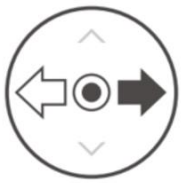
Japanese Mode

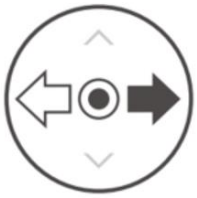


Chinese Mode



The remote controller is factory-defaulted to American Mode. This manual provides instructions on operating the remote controller based on the American Mode.

Remote Controller (American Mode)	Drone	Remarks
Left Stick 		Throttle Stick: Move the left stick vertically to control the elevation of the drone. Push up to ascend and push down to descend. Use the left stick to take off when the motors are spinning at an idle speed. The drone hovers in place if the stick is in the center position. The further the stick is pushed away from the center position, the faster the drone changed elevation.
Left Stick 		Yaw Stick: Move the left stick horizontally to control the heading of the drone. Push left to rotate the drone counterclockwise and push right to rotate clockwise. The drone hovers in place if the stick is in the center position. The further the stick is pushed away from the center position, the faster the drone rotates.

Right Stick 		Pitch Stick: Move the right stick vertically to control the pitch of the drone. Push up to fly forwards and press down to fly backwards. The drone hovers in place if the stick is in the center position. Push the stick further for a larger pitch angle and faster flight.
Right Stick 		Roll Stick: Move the right control stick horizontally to control the roll of the drone. Push the stick left to fly left ad right to fly right. The drone hovers in place if the stick is in the central position. Push the stick further for a larger roll angle and faster flight.

Stick Fingering

We can use two fingers when manually control the drones: keep the thumb on top of the control stick to perform the control actions, and always place the index finger on the side of the control stick to provide stability.

Stick Mode Switch

Change the stick mode in the app settings.

Remote Controller Warning Sounds

In scenarios where there is an error, the remote controller will prompt the voice warning. Please refer to the actual prompt in the app.

In silent mode, all sounds will be turned off, including any abnormal alert sounds such as Return Home or Low Battery Warnings. Please use it with caution.

J100 APP Operations

Home Screen

The top status bar displays the time, network connection status, and remaining battery level of the remote controller.

Operations

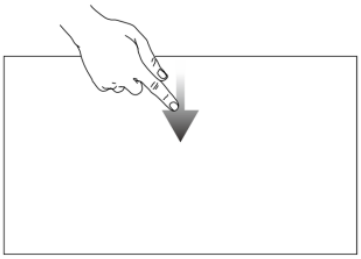
To go back: Swipe up and tap the bottom-right corner.

To return to the home screen: Swipe up and tap the bottom-center.

To access the task center: Swipe up and tap the bottom-left corner.

Quick Panel Interface:

To access the quick panel, swipe down from the top edge of the screen.

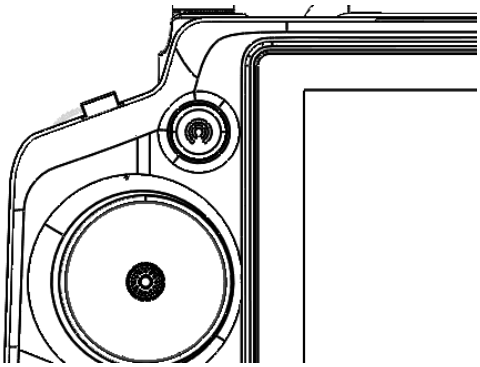


1. Bluetooth: Single tap to enable/disable Bluetooth connection. Long press for Bluetooth connection settings.
2. Screen Recording: Activate screen recording functionality.
3. Mobile Data Toggle: Turn mobile data on or off; used for the agricultural drone app's network requirements.
4. Screen Brightness Adjustment: Drag the slider to adjust screen brightness.
5. Volume Adjustment: Drag to adjust media volume.

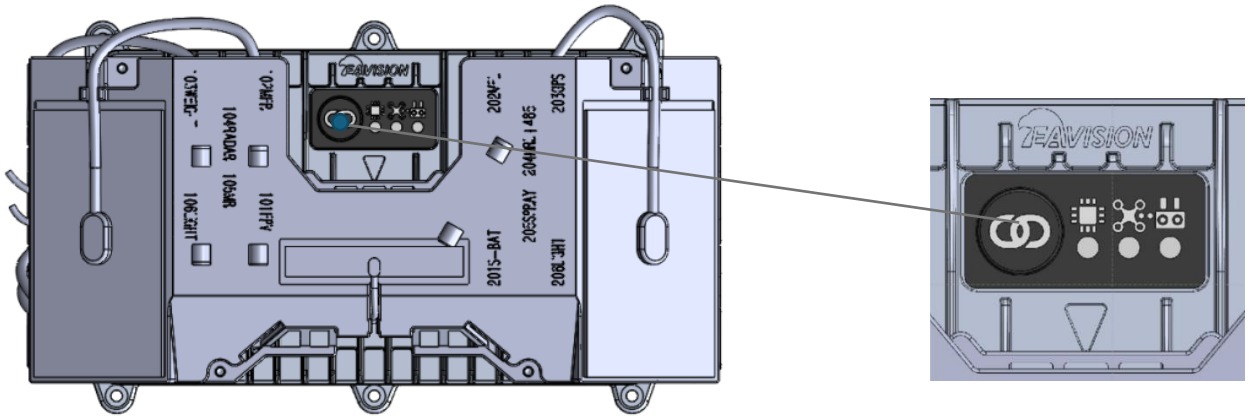
Link the Remote Controller

The remote controller is linked to the drone by default. Linking is only required when using a new remote controller for the first time.

1. Remove the front cover of the drone.
2. The status LED glows solid blue.
3. Press and hold the linking button on the remote controller for 3 seconds, and the status LED blinks red and green respectively.



4. Press and hold the button on the flight controller for 2 seconds, and the flight controller LED blinks red and blue respectively.
5. Wait for 30 seconds, and the status LED on the remote controller grows solid green if linking is successful.

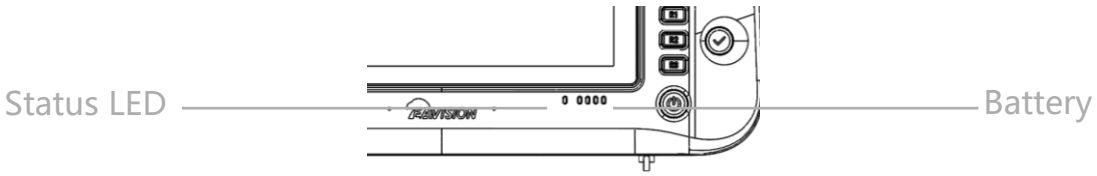


FPV Control

Click ⚙ on the upper right corner of the app, and you will see the live video.

💡 You can adjust the FPV angle using the dial located in the top-right corner of the remote controller.

Remote Controller LEDs



The remote controller status LED displays the linking status.

Description	Status LED
Abnormal image transmission initialization	Flashes Red
Remote controller not linked	Solid Red
Linking remote controller	Alternating red-green flashing
Remote controller linked but not connected to drone or communication repeater	Flashes Green
Remote controller linked and connected to drone or communication repeater	Solid Green

The battery level indicators display the battery level of the controller.

Battery Level Indicators				
LED1	LED2	LED3	LED4	Battery Level
☼	☼	○	○	0%-50%
☼	☼	☼	○	51%-75%
☼	☼	☼	☼	76%-99%
○	○	○	○	100%

Remote Controller Use Notice

⚠
- Do not use the remote controller to control the drone near crowds, obstacles, strong electromagnetic source, or other areas that are likely to cause unnecessary economic losses or even personal injury.
- When operating, do not cover the remote controller antenna or block signal transmission in other ways.
- Do not cut off the power of the remote controller when the drone motor is still running.

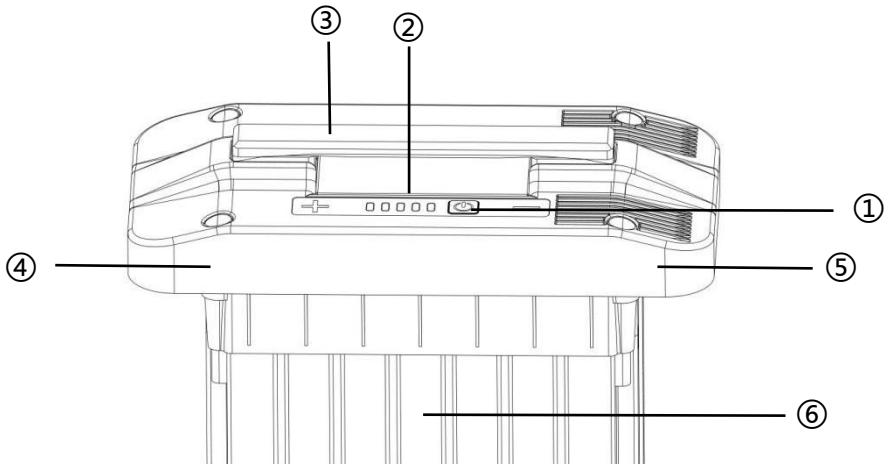
- Always check the battery level of the remote controller before operation.
- The optimal remote controller distance should not exceed 2 kilometers.
- If there are any signs of the remote controller being exposed to water, oil, or coming into contact with other chemicals, please stop using it immediately.
- The remote controller is an electronic component, and please store it away from areas that may generate static electricity when it is not in use.
- Use alcohol for cleaning.

Smart Battery

Smart Battery Overview

The innovative design of CTB shell-core integrated supercharged battery provides a robust 29,000mAh power source for agricultural drones. The individual cell design enhances heat dissipation, increasing the heat dissipation area by seven times, allowing for rapid cooling and significantly improving battery cycle efficiency. The dual charging and discharging interfaces address overheating issues during high-temperature operations.

Smart Battery Components



1. Power Button

2. LED Indicator（From left to right are power LED1, LED2, LED3, LED4, fault light）

3. Handle

4. Positive Power Interface

6. Independent heat dissipation battery cells

5. Negative Power Interface

Battery Function

EAV-CTB29000A Smart Flight Battery has the following functions:

1. Battery level display: press the battery power button to check the current battery level.
2. Efficient Cooling: With the support of charging heat dissipation, efficient cooling is achieved, maintaining the battery within the optimal operating temperature range of below 60°C.

3. Intelligent transmission: the battery information, such as voltage, battery level can be obtained in real time through the intelligent charging app to ensure that the drone can work properly.
4. Abnormal use record: the management system can record information such as high and low temperature charging and discharging, charging overcurrent, discharging overcurrent, long-time high-power storage, etc.
5. Charging warning prompt: if an error occurs during charging, restart the battery and charger. If the problem is not solved, restart the battery according to the App display and try again.
6. Automatic balancing function: under certain conditions, the battery will automatically turn on the balancing function to ensure the dynamic balance of the cells in the battery.
7. Automatic discharging function: the battery has a self-discharge function, and it will automatically discharge 40% of the power when left in a fully charged state for more than five days.
8. Automatic adjustment of current and segmental protection function: when charging with an official charger, the charging current can be intelligently adjusted according to the current cell temperature. Also, the battery protects itself based on its temperature.
9. Thermal balance management function: the battery has a thermal balance management function, which controls the temperature difference between the cells within the error range and makes them equal.
10. Dual Interface Protection: The dual-interface battery connectors are divided into positive and negative terminals, preventing the battery from being inserted incorrectly.

Battery Use

Turning on and off

1. In sleep mode or shutdown mode, press and hold the power button (T > 3 seconds) until all LEDs flash, then press the power button to turn on the battery.

1) The battery will be kept off if there is no operation during LEDs flashing.

2) The battery will be kept off if either operation is performed.

2. In the power-on mode, press and hold the power button (T > 3 seconds) until all LEDs flash, then press the power button to turn off the battery.

1) The battery will be kept on if there is no operation during LEDs flashing.

2) The battery will be kept on if either operation is performed.

When the battery is correctly inserted into the drone, press and hold the power button until all LEDs flash, then press the power button to turn on the battery. After flight, press and hold the power button until all LEDs flash, then press the power button to turn off the battery, and then disconnect the battery from the drone.

⚠
- Make sure the battery is fully charged before each flight.
- If the drone enters the low battery alarm mode, land and stop flying as soon as possible, and replace the battery.
- In a low temperature environment, it is recommended to preheat the battery to above 5°C before flight, preferably to 20°C. Do not charge the battery when the temperature is below -5°C.

Checking battery level

1) In sleep mode or shutdown mode, press the power button (0.1 second < T < 1 second), the LED will display the power for 5 seconds. The battery LEDs are shown in the table below.

LED1 (Green)	LED2 (Green)	LED3 (Green)	LED4 (Green)	LED5 (Red)	Current Battery Level
On	On	On	On	Off	85%--100%
On	On	On	Off	Off	65%--85%
On	On	Off	Off	Off	45%--65%
On	Off	Off	Off	Off	25%--45%
Flash quickly	Off	Off	Off	Off	0%--25%

The flashing frequency is 5Hz, on for 0.2 seconds and off for 0.2 seconds.

2) When charging battery, the battery level indication is shown in the table below.

LED1 (Green)	LED2 (Green)	LED3 (Green)	LED4 (Green)	LED5 (Red)	Current Battery Level
On	On	On	On	Off	90%--100%
On	On	On	Flash slowly	Off	70%--90%
On	On	Flash quickly	Off	Off	50%--70%
On	Flash quickly	Off	Off	Off	30%--50%
Flash quickly	Off	Off	Off	Off	0%--30%

The fast-flashing frequency is 5Hz, on for 0.2 seconds and off for 0.2 seconds.

- When charging battery, the LED will flash to indicate the charging status. After charging, please disconnect the battery from the charging device.

Warning prompt

The battery status LED can display information about battery protection triggered by abnormal charging. After troubleshooting, please press the battery switch to cancel the LED protection prompt, and re-plug in the charging device to resume charging. If the charging temperature is abnormal, wait for it to return to normal, and the battery will

automatically resume charging without re-plugging in the charging device.

LED1	LED2	LED3	LED4	LED5(Fault Indicator)	Description
Off	Off	Flash	Off	Flash	Charging overcurrent / Discharging overcurrent
Off	Off	Flash	Flash	Flash	Short circuit protection
Flash	Off	Off	Flash	Flash	Charging at low temperatures / Discharging at low temperatures
Flash	Off	Off	Off	Flash	Charging at high temperatures / Charging at high temperatures
Flash	Flash	Flash	Flash	Off	Upgrading Battery
Off	Off	Off	Off	Flash quickly	Incompatible/Abnormal charger

Battery Storage & Transport

- After each flight, disconnect the drone from the battery, check the battery power interface and clean up the debris.
- Make sure the battery is powered off and disconnected from the drone or other device before transportation.
- Keep batteries out of the reach of children. If a child accidentally swallows a part, seek immediate medical attention.
- Do not place batteries near heat sources, in direct sunlight or in a car on a hot day.
- Store the batteries in a dry environment. Do not place the battery in water or in a place where water may leak.

- Do not store or transport batteries together with metal objects (such as glasses, watches, metal necklaces, hairpins, etc.), inflammable or explosive materials.
- Put the battery on flat ground to avoid damage to the battery from sharp objects.
- Do not store the battery for a long time after being completely discharged in case of over-discharging.
- For long-term storage, please disconnect the battery from the drone.

Battery Disposal

- Soak the battery in water for over 24 hours to ensure that the battery has been completely discharged before putting in the designated battery recycling bin. Batteries are hazardous chemicals and should not be put in other trash bins. For details, please follow local laws and regulations on battery recycling and disposal.
- If the battery cannot be completely discharged due to the failure of the power switch, contact a professional battery recycling company for further processing instead of putting the battery directly into the battery recycling bin.

Precautions for Use

1) Do not use the battery near a heat source, such as in direct sunlight or in a car on a hot day
2) Keep the battery away from any liquid. Do not immerse the battery in water or get it wet. Never use the battery in the rain or in a wet environment. When the interior of the battery meets water, a decomposition reaction may occur, causing the battery to spontaneously ignite or even explode.
3) Batteries with bulging, leaking or damaged packaging are strictly prohibited. If the above situation occurs, please contact local dealer for further processing.
4) Keep the battery off before mounting or removing the battery from the drone. Do not remove or insert the battery while the battery is turned on, otherwise the power connector may be damaged.
5) The battery should be used between -5°C and 65°C. High temperature may cause the

battery to catch fire or even explode. If the temperature is too low, the battery performance will be seriously degraded and cannot be used. Use the battery when it returns to normal temperature.

6) Do not use the battery in a strong electromagnetic environment. Otherwise, the battery protection board may be abnormal, resulting in serious failure of the drone.
7) Do not disassemble or puncture the battery with sharp objects in any way, otherwise it will cause the battery to catch fire or even explode.
8) Stay away from the battery leakage as it' s highly corrosive. If the internal liquid splashes on human skin or eyes, please rinse it off with clean water and seek medical attention immediately.
9) Do not use the battery again after it is dropped from the drone or hit by external force.
10) If the battery accidentally falls into the water during flight or under other circumstances, please remove the battery immediately and place it in a safe open area, and keep away from the battery until it is completely dry. Dried batteries should not be used again and should be disposed of properly according to the disposal methods in the user manual.
11) Do not use wires or other metal objects to cause battery short circuit.
12) Do not hit the battery or place heavy objects on the battery or charging device.
13) If the battery interface is dirty, wipe it with a dry cloth, otherwise it will cause poor contact, resulting in energy loss or charge failure.
14) Do not reversely connect the positive and negative poles of the battery, otherwise abnormal charging of the battery may cause overheating, explosion, or fire. Do not use generic batteries, and please contact the consumer service or designated dealers for replacement. Users are solely responsible for battery error and flight failure resulting from their use of generic batteries.
15) Batteries are dangerous goods. Do not stack other items on the battery, or sit on the battery or the package containing the battery, otherwise the battery may be damaged or even become dangerous.
16) The battery is heavy, please place it carefully to avoid tipping over and damaging the side of the battery. If the battery is toppled and damaged, immediately place the battery in an open area away from combustibles and crowds. Half an hour later, soak

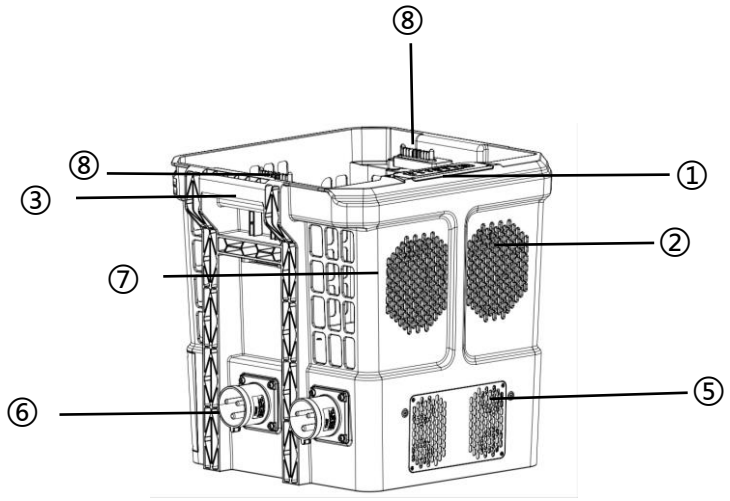
the battery in water for more than 24 hours. Make sure the battery is completely depleted before disposal.

Cooling Charger

Cooling Charger Overview

The smart battery can be fully charged in 9 minutes with the JM-C50-900 cooling charger. With two batteries and one charger, users can charge one battery while operating with another, making it extremely efficient. The maximum charging power of the charger can reach 9000W, and the charger has multiple intelligent protection functions to avoid damage from over-temperature, over-voltage, under-voltage, short circuit and ensure charging safety.

Cooling Charger Components



1. Charge Controller
2. Built-in Cooling Pan
3. Handle
4. Pedal
5. AC Power Dustproof Screen
6. Power Input Interface
7. Cooling Charger Cover
8. Power Output Interface

Battery Charge Status LED

LEDs indicate the charging status of the inserted channel battery

1. The solid yellow indicates that charging has not started.
2. The blink green indicates that charging is in progress.
3. Solid green indicates a full charge.

Fault LED

LED indicates error, and blink red indicates a charger or battery alarm.

⚠ When the warning light turns red, stop charging immediately and check the App alarm information. Resume charging only after the red light goes out.

Charger Use

Checklist before use

- **Appearance check**

1. Make sure that the charging controller and power input cables are not broken.

2. Make sure that the charging controller pins are not misshapen.

3. Make sure that the generator supply cable and socket are not cracked, chipped, misshapen, or blocked.

- **Power-on check**

1. Make sure that the fan runs normally after connecting to the power supply.
2. Check whether the fault LED of the charging controller is off which indicates that the charger self-check is normal.

Use

1. Connecting the charger to household electricity or a generator.
2. Insert the charging cable connector into the battery to start charging.
3. The AC end of the charger is equipped with two power input sockets: one for regular household electricity, which requires a 16A plug for charging, and the other for a generator, which requires a 32A industrial standard plug for charging.
4. In a home environment, make sure that the socket and wiring power support 3600W. It is recommended to use a single 2.5-square-millimeter 16A plug. The charger will automatically determine and charge with a low power of 3600W to avoid the danger of overloading the home grid due to excessive current. Charging time is about 20

minutes when the battery capacity is at 30%.

5. For generators of 9500 watts or more, the charger will charge the battery with the power of 9000 watts when plugged into the input power socket. Charging time is about 9 minutes when the battery capacity is at 30%.

⚠
- The charger interface can be connected to one household circuit, one generator, or two generators. When the two sockets are used at the same time, the charging power is superimposed.
- Before connecting the charger, make sure various ports and input harnesses of the charger are not cracked, chipped, blocked, or misshapen.
- Before charging, make sure the battery is not cracked, chipped, or misshapen, and the port is not blocked.
- It is strictly prohibited to use a double plug when charging with household electricity. Only when equipped with a 2.5-square-millimeter 16A plug can you connect it to the radiator charger for charging with a single plug.

6. When charging is completed, unplug the charging controller from the battery before unplugging the power supply cable.

Cooling Charger LEDs

Bluetooth LED	
Solid Green	Connected to Bluetooth device
Flashes Green	Not connected
Battery LED	
Solid Yellow	Charger not connected to battery
Solid Green	Fully charged battery
Flashes Yellow	Alarm on the battery

Flashes Green	Charging battery
Solid Red	Battery charging protection disabled
Status LED	
Off	Charger not connected to power module
Flashes Green	Charger connected to 1 power module
Solid Red	Charger connected to 2 power modules
Smart Fan	
Smart	Smart mode
On	Cooling fan is always on
Off	Cooling fan is kept off

Connecting to APP

APP Connection

To connect the cooling charger to the app while the charger is in the ON state, press the button on the cooling charger.

Then open the J100 app, click on Device Connection, and select the cooling charger to view relevant information.

Bluetooth LED

LED indicates Bluetooth connection status

1. Blink green indicates that the app is to be connected.

2. Solid green indicates that the charger is connected to the App.

Storage and Maintenance

- When charging is completed or the charger is not in use, please disconnect the battery charging cable from the charger, and disconnect the power cable.
- Please keep the charger away from direct sunlight, rain or humidity when storing it for a long time.
- The charger should be stored away from heat sources, high pressure, water, flammable gases, corrosives and other dangerous items.
- Please clean the charger heat sinks regularly to ensure effective charging.
- Please regularly inspect the power module to ensure its cleanness. if there is any dust, clean it promptly to eliminate safety hazards.

Precautions for Use

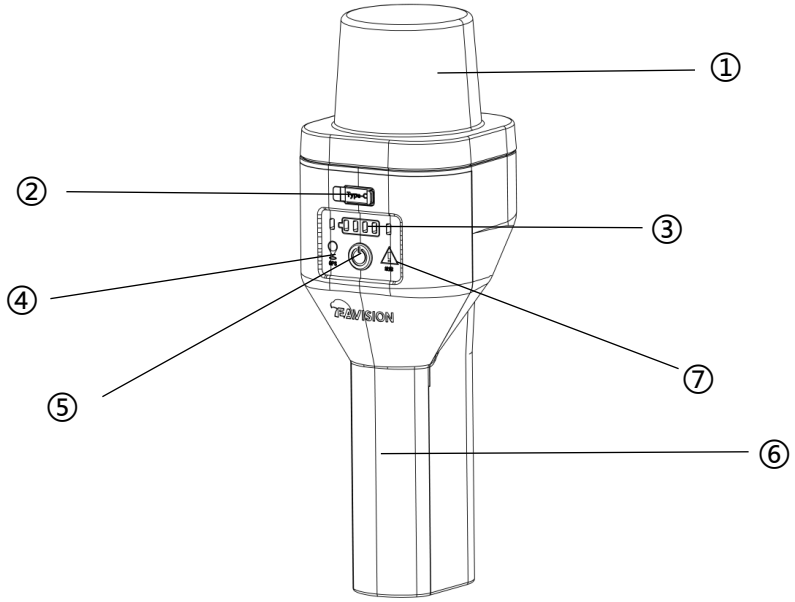
- The AC power input port and generator plug are with high voltage, and it is strictly forbidden to touch them with hands. It is strictly forbidden to use this product in thunder and thunderstorm weather.
- Make sure there are people nearby while charging. And keep the distance between battery and battery, battery and charger greater than 30cm to ensure safe charging.
- The product must be placed on a horizontal surface, and be 50cm or more away from walls, heat sources and window-type air inlets to ensure good ventilation when the product is working.
- In the case of fire, please correctly use the dry powder extinguisher to extinguish the fire, using a liquid extinguisher may result in electric shock.
- It is forbidden to charge any unofficial EAVISION battery. Do not unplug the power cord during charging.
- After charging is completed, please unplug the battery in time.
- It is forbidden to plug and unplug the battery with power on, otherwise it will cause the charging malfunction. When the status LED on the charging controller grows solid yellow, wait for about 10 minutes for charging resumption. Turn off the battery manually before plugging or unplugging the battery.

Surveying Tool

Surveying Tool Overview

EAVISION surveying tool is a product developed for high-precision surveying with an integrated antenna receiving accurate position information. The surveying tool comes with an adjustable bracket, allowing for quick acquisition of RTK signals even in dense forest environments.

Surveying Tool Components



1. RTK Antenna
2. Type-c Charging Port
3. Battery Level LEDs
4. GPS LED
5. Power Button
6. Adjustable Bracket
7. Fault LED

Turning On & Off

In shutdown mode, press and hold the power button (T > 3 seconds) until all LEDs flash, then press the power button to turn on the battery.

In the power-on mode, press and hold the power button (T > 3 seconds) until all LEDs flash, then press the power button to turn off the battery.

Checking Battery Level

When charging battery, the battery level indication is shown in the table below.

Battery Level Indicators				
LED1	LED2	LED3	LED4	Battery Level
☼	☼	○	○	0%-50%
☼	☼	☼	○	51%-75%
☼	☼	☼	☼	76%-99%
○	○	○	○	100%

Press the power button (0.1 second < T < 1 second), and the LED will display the power.

The battery LEDs are shown in the table below.

Linking LEDs

When not powered on, both the LEDs on the remote controller and the drone remain off.

Battery Level Indicators				
LED1	LED2	LED3	LED4	Battery Level
○	○	○	○	88%-100%
○	○	○	☼	76%-87%
○	○	○	○	63%-75%
○	○	☼	○	51%-62%
○	○	○	○	38%-50%
○	☼	○	○	26%-37%
○	○	○	○	13%-25%
☼	○	○	○	0%-12%

GPS LED	
Off	Device not powered on
Flashes Green Quickly (10Hz)	Initializing
Flashes Green Slowly (1Hz)	Searching for satellites
Solid Green	Working normally
Fault LED	
Off	Working normally
Solid Red	Abnormal surveying tool

Surveying Tool Use

Before using the surveying tool, it needs to be powered on and connected.

Usage Steps:

1. Press and hold the power button for 3 seconds, then press to power on the surveying tool.
2. The surveying tool will automatically search the satellites, then open the J100 APP.
3. Go to the 'Device Management' page to check the connection status of the surveying tool and connect to the Bluetooth.
4. After a successful connection, go to the operation interface to check if the surveying tool has entered RTK mode.

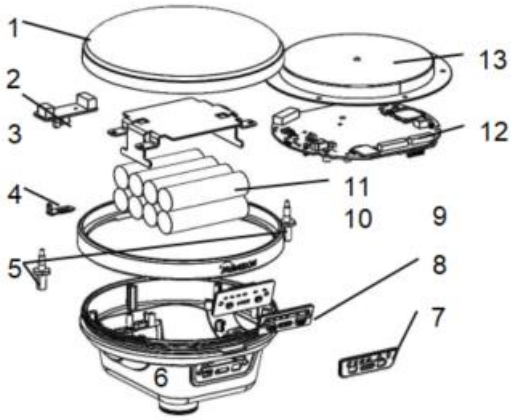
⚠
- When the surveying tool is not powered on, neither the GPS LED nor the fault LED will be on.
- The charging power supports fast charging, and it takes 2-3 hours for a full charge.
- When powered on, it defaults to non-surveying mode.

"Super Link" Communication Repeater

"Super Link" Communication Repeater Overview

J100 is optionally equipped with the innovative "Super Link" communication station, which integrates four major functions: high-precision surveying, offline base station, signal relay, and lifting guidance, having no fear of no network, weak network, or mountain interference.

"Super Link" Communication Repeater Components



1. Base Station V4.0 Antenna Cap
2. Base Station Charging Board
3. Base Station V5.0 Battery Clamp
4. Sealing Plug
5. Receiver Antenna Feeder
6. Base Station V4.0 Lower Casing
7. Base Station V5.0 Panel Mounting Plate
8. Switch Button Pad
9. Base Station V5.0 Panel
10. Base Station LOGO Ring
11. Base Station V5.0 Battery
12. Base Station PCB
13. Base Station V5.0 Antenna

Powering On/Off

- To power on the "Super Link" communication repeater when it's in the off state, press the power button for 3 seconds. Wait for the battery level to be displayed, then press and hold the power button.

- To power off the "Super Link" communication repeater when it's in the on state, press the power button for 3 seconds. Wait for the battery level to be displayed, then press and hold the power button.

⚠ To check the battery level, short-press the power button while in the off state.

Linking

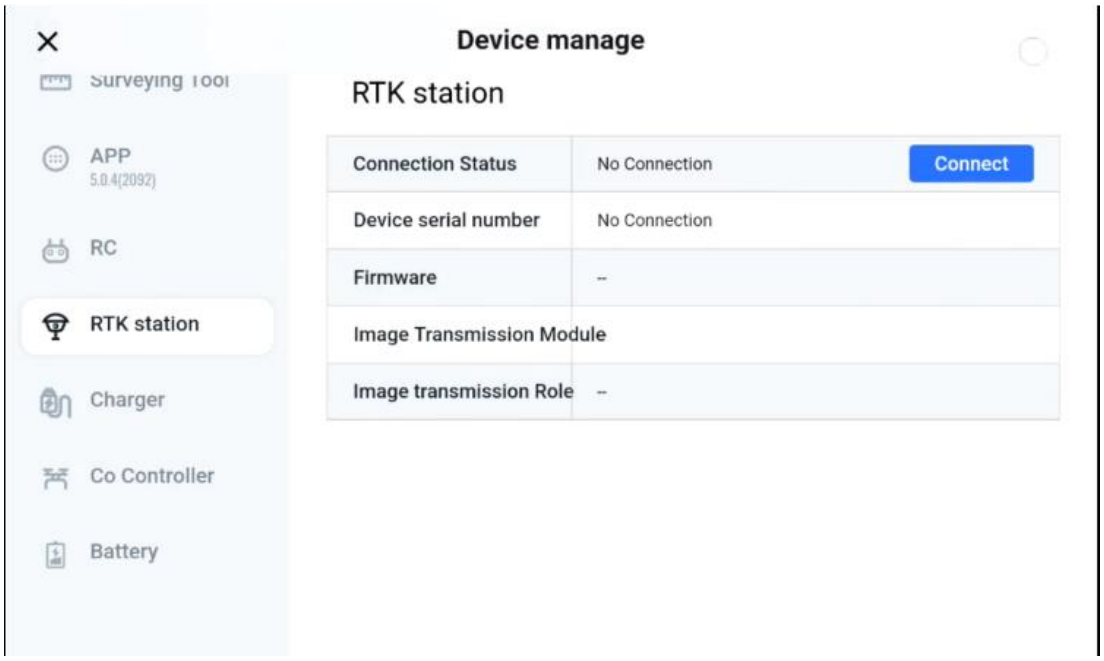
1. Link the Remote Controller to the Drone

In the J100 APP, navigate to "Device Management", then "Drone." Click on "Start Linking" and wait for 15 seconds, then short-press the linking button on the drone.

Alternatively, long-press the button in the upper left corner of the remote control for 4 seconds, then short-press the linking button on the drone.

2. Link the Remote Controller to the Base Station

Once the remote controller is successfully linked with the drone and the RC LED is flashing green, long-press the power button of "Super Link" communication repeater for 3 seconds until the RC LED alternates between red and green flashing. After that, go to "Device Management" -> "RTK Relay" -> "Pairing Connection" and click on "Start Linking" on the app.



Switching Modes

Long-press the mode switch button until the mode light keeps on. Then, short-press the mode switch button to toggle between modes. Wait for 5 seconds to confirm the selected mode.

⚠ Note: Mode switching is not possible while linking.

"Super Link" Communication Repeater LEDs

UAV LED	
Solid red	"Super Link" communication repeater not linked
Flashes red	Video Transmission Initialization or Anomaly
Solid green	"Super Link" communication repeater linked and connected to drone
Flashes green	"Super Link" communication repeater linked but not connected to drone
RC LED	
Solid red	"Super Link" communication repeater not linked
Flashes red	Video Transmission Initialization or Anomaly
Solid green	"Super Link" communication repeater linked and connected to remote controller
Flashes green	"Super Link" communication repeater linked but not connected to remote controller
Alternating red-green flashing	Linking "Super Link" communication repeater
DGPS LED	
Green light flashing quickly (10Hz)	RTK mode initializing

Green light flashing slowly (1Hz)	Searching satellites/GPS mode
Solid green	RTK mode
STATUS LED	
Green light flashing quickly (10Hz)	Device initializing
Green light flashing slowly (1Hz)	Aligning Qianxun
Solid green	Working normally
Base Station/Relay/Guidance	
Flashes green	Confirming mode
Solid green	Base Station/Relay/Guidance mode
Surveying Tool LED	
Flashes green	Confirming mode
Solid green	Surveying mode

Usage Steps

1. Power on the "Super Link" communication repeater

2. Link the remote controller to the drone

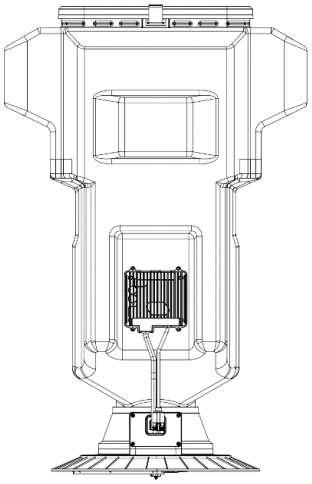
3. Link the base station to the drone

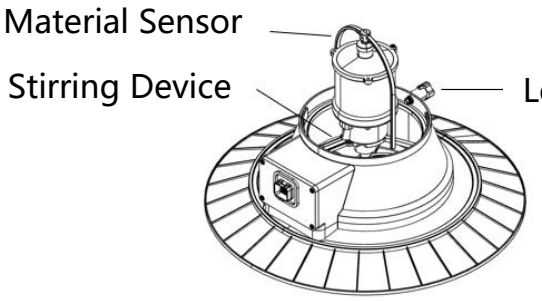
4. Switch the mode

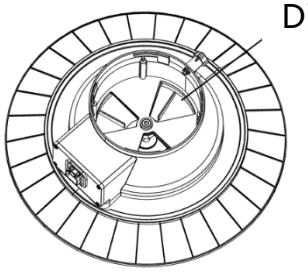
Spreader

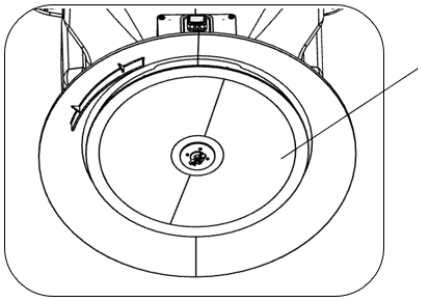
Spreader Overview

This product is compatible with EA-J100 and offers efficient and reliable spreading operations. The applicable particle diameter range is 1mm-10mm for dry solid particles. The spreading system comes up with a built-in stirring device and hopper gate control structure to prevent material blockages and improve operating accuracy and reliability. Equipped with the shortage sensor and weight sensor while improve the accuracy of the spread rate control.





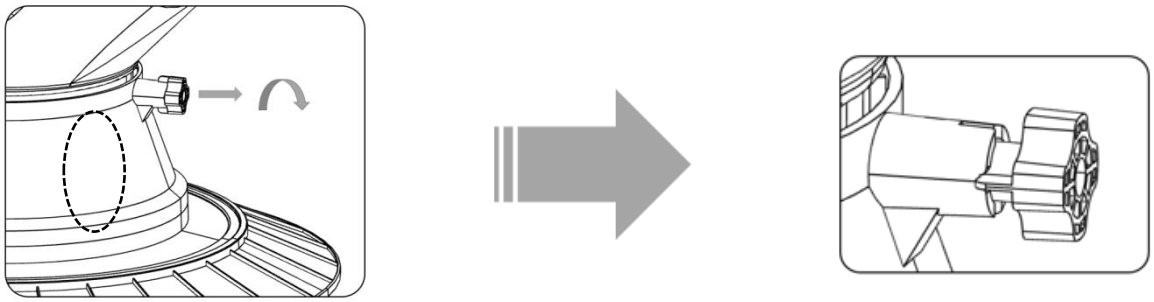




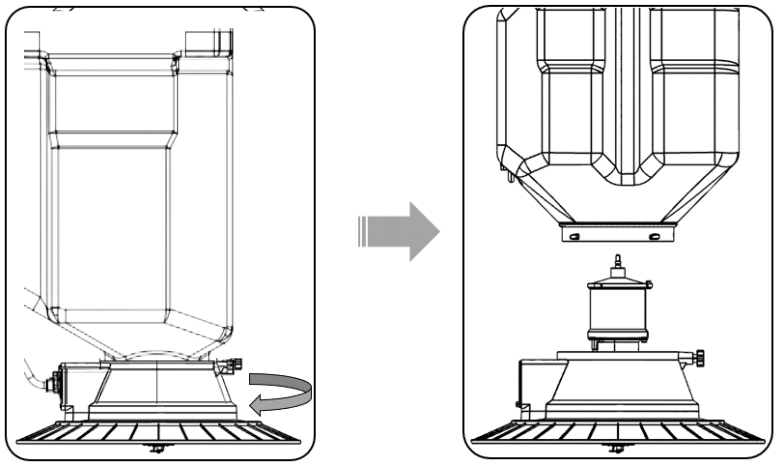
Spreader Components

Maintenance

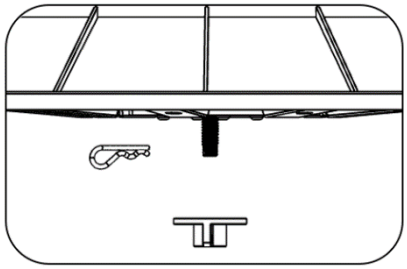
1) Regularly clean the material box and spreading tray of the material grain residue, can use tap water to directly rinse it, after the cleaning is completed, please use the air gun or clean rag to clean the remaining water stains, cleaning should be careful to avoid the harness connector into the water.
2) Unplug the wire harness connected to the UAV and remove the spreader from the UAV.
3) Pull the locking bolt on the spreader disc outward from the slot, rotate it 90° in any direction and snap it into the slot.



4) Unscrew and remove the entire spreading tray in the direction indicated by the arrow.



5) Remove the pin and screw down the fastening nut to remove the dumping disk, then you can clean the discharge port, stirring bar, dumping disk and other mechanisms as



ON

needed (for detailed maintenance video, please pay attention to the EAVISION Academy Wechat applet).

6) After the cleaning is completed, put back the spreader in the above manner.

Precautions

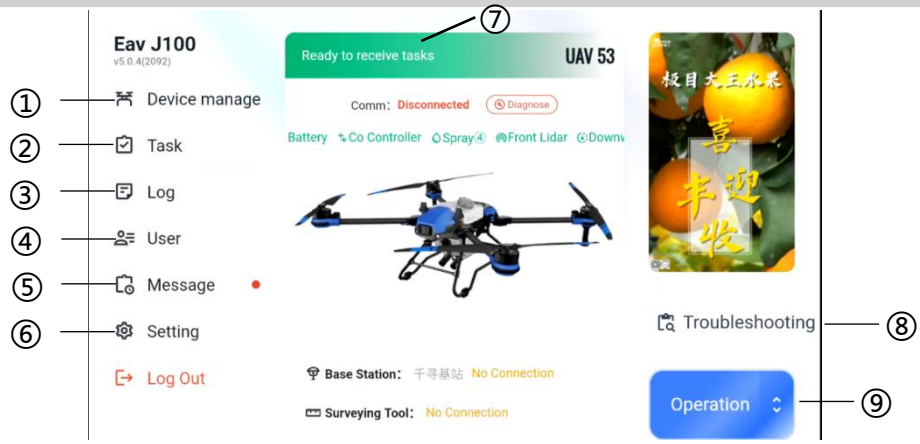
- The spreading system is only for EAVISION agricultural drones, do not use it on other products or for non-agricultural purposes.
- Scrapped products need to be dismantled by professionals. Related parts, such as electrical components and motherboards, metal parts, plastic parts, etc., shall be collected and handed over to qualified units or sanitation departments for processing.
- The maximum internal load of this spreader is 50kg (70l), please do not use overweight in order not to cause damage.
- Please check whether the outlet switch is normal and the spreading disc is rotating smoothly before operation.
- Be careful when using the mechanical structure to prevent injuries to hands.
- When performing spreading tasks, be sure to stay away from the spreader to avoid injury.
- This spreader has IP66 level protection performance, the whole machine can be flushed with water directly, but need to pay attention to protect the wire harness connector, if accidentally soaked in water, need to check all electronic equipment is normal before using, otherwise it will lead to short circuit and cause damage to the spreader.
- The diameter range of the spread particles is 1mm-10mm, the particles cannot be too big or too small, otherwise it will easily lead to jamming of the sown disc.

J100 APP

J100 APP Overview

J100 APP is designed for agricultural applications. It displays the status of drone, spraying system, and other devices connected to the remote controller, and offers an integrated solution for surveying, aerial mapping, and lifting functions. After planning a field via the intelligent operation planning system of the app, the drone can automatically follow the pre-planned flight route.

Home Screen



1. **Device:** view status of the drone, base station, surveying tool, remote controller, and the app version.
2. **Task:** view task records and check the status of ongoing or completed tasks, and view demands in demand management section.
3. **Log:** view logs of the drone and other devices, and upload
4. **User:** view accumulated operational data, check the expiration date of the cloud-based station, and update account passwords.
5. **Message:** post messages and announcements to inform everyone about app updates, news, and other information.
6. **Setting:** configure parameters, units, and various function settings within the app.
7. **Drone Status:** view drone and other device connection status

8. **Knowledge Base:** click to engage in real-time AI Q&A
9. **Operation Mode:** click to start the operation. Clicking on the top-right pull-down menu allows you to switch between functions such as crop protection operations, manual operation enhancement, lifting operations, and low-altitude aerial mapping.

Operation Modes

There are four operation modes of agricultural drones, namely plant protection operation, low-altitude aerial surveying, lifting operation, and manual operation enhancement. The required operating settings for different modes varied to meet the needs of different users.

Plant protection operation: support surveying in fields and mountains, as well as fully autonomous operations. Users can choose according to different application scenarios.

Low-altitude aerial surveying: carry out fully autonomous aerial surveying, and generate high-definition maps in real time after the surveying is completed, and you can select high-definition maps for operation.

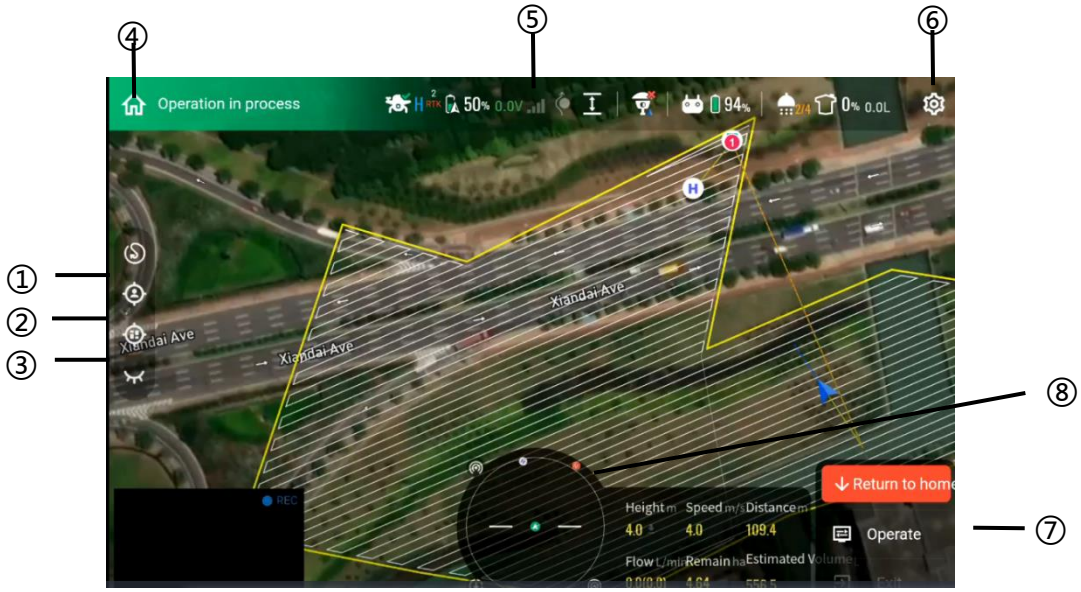
Lifting operation: it can be applied to lifting in mountains where human transportation is difficult and inefficient. It involves transporting various items such as construction materials, photovoltaic panels, fruits, etc. This method supports autonomous operation mode, greatly enhancing efficiency and safety.

Manual operation enhancement: greatly enhance the stability of manual operation, enabling precise manual operation of speed, altitude, directional control and omnidirectional obstacle avoidance. It also includes intelligent features like one-key return and route locking.

Operation View

In the operation view, you can view the status of agricultural drones, set parameters, and plan and operate in different modes. By clicking on different modes in the bottom right

corner, you can enter the desired operation mode. Taking spraying operation as an example, let's explore the other displays and menus in the operation view:



1. Perspective follow: Follow the perspective of agricultural drones for operation.

2. Remote control positioning: View the current location of the remote controller.

3. Plot Positioning: View the location of the plot.

4. Home screen options: Return to the home screen.

5. Drone information: View the current drone battery level, connection status, remote controller power, liquid amount, fertilizer amount and other information, and you can also click the icon to view the corresponding information.

6. Operation settings: Click to set for flying, spraying, spreading, sensing, RTK, power, and report work order.

7. Autonomous operation: Click to take off, return, hover, fine-tune, spray, and auto spray.

8. Flight information: check the current flight altitude, speed, distance, remaining liquid amount and others.

Device management

Check the status of agricultural drones, base stations, surveying tools, APP versions, and remote controllers.

1. Agricultural drones: View the version number of agricultural drones, base station connection status, operating devices, fault analysis, radar display status, calibration and firmware functions.

⚠ In combined mode, the agricultural drone will automatically download the firmware to upgrade. In the data transmission mode, the remote controller downloads the firmware via network. You can turn on the agricultural drone' s hotspot, and upload to the agricultural drone for upgrade.

2. Base station: A variety of base stations can be switched to ensure the connection of agricultural drones.
3. Surveying tool: Connect to the surveying tool via Bluetooth, then connect to the Qianxun base station for use.
4. Remote controller: Check the linking information of agricultural drones and the channel settings of each stick.
5. Flight controller: View the current flight controller module version information and configuration parameters.
6. Smart battery: View the current battery firmware version, cell voltage, temperature, cycle times and other information.
7. RTK repeater

Connection steps

1) Check whether the remote controller and the agricultural drone have been linked, if it has been linked, skip this step.
2) Then link the remote controller and repeater, and it takes about 1 minute.

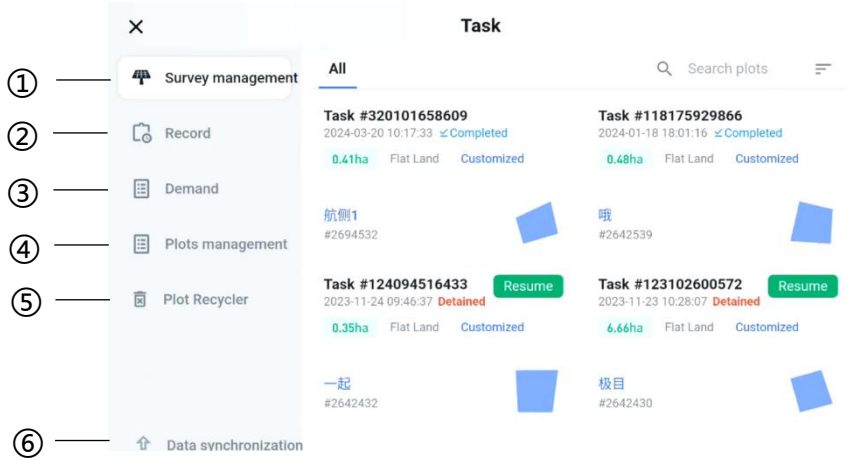
3) Set the function of the RTK repeater after the linking is completed.

4) The surveying function is an independent function, similar to the survey tool, which can be connected through Bluetooth.

5) Switch to the other three functions, and the signal relay, base station, and lift guidance will be enabled at the same time.

Task management

You can check operating/completed tasks in Record, and view all demands in Demand.



1. Aerial Survey: Click on the task in the aerial photography task record, and you can view the aerial pictures, perform stitching, and other operations, and jump to the new plot for plot surveying.

Stitch: In Aerial Survey, select a plot and click the "Stitch" button to stitch images. There will be a progress display. You can reset to delete previous images and restitch, and click Preview to view the stitched image. If stitching fails, you can try resetting and stitching again. If the issue persists, it may be due to the quality of the images. Ensure you take photos on a sunny day with good lighting, keep the lens clean, and increase overlap rate if needed.

2. Record: Records the data after the crop protection operation, including the operation area, flow rate, and parameter data.

3. Demand: Provides an overview of all plot operation data under the demand. It allows

you to view the overall content, plot distribution, and operation status.

4. Service Order: Use with EAVISION to view all the operation data under the order. Used in conjunction with EAVISION Smart AG app, it allows you to view all operation data under the order.
5. Plot: Supports operations such as transferring, presenting, deleting, and copying plots.

Transfer: Move the plot to another demand

Present: Give the plot to someone else

Delete: Move the plot to the recycle bin

Copy: Duplicate the plot and modify the information

6. Data Sync: During offline operations, data that cannot be transmitted to the server will be temporarily stored locally. When the remote controller connects to the network, the data can be transmitted to the server. Clicking on it allows you to view information such as plots, tasks, planning, flights, etc.

Plot: Information on surveyed plot, boundary points, etc.

Task: Operation task

Planning: Route planning, with replanning generating new ones

Flight: Flight data for each takeoff

Other: Communication message packets

Log management

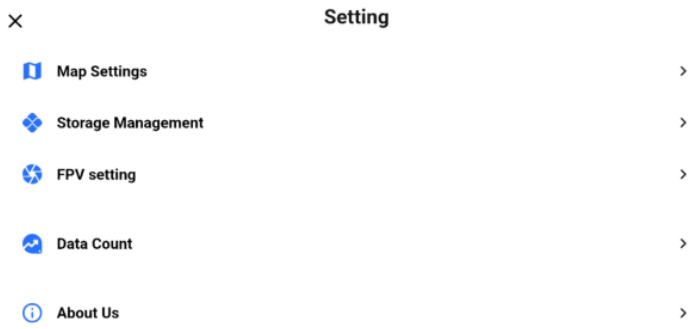
When an agricultural drone malfunctions or is damaged, it is necessary to upload the drone logs for analysis and processing. Clicking on "Log Management" allows you to view the logs of the drone, flight controller, app, and FPV videos, and upload these logs.

- Drone Log: The operational logs of the agricultural drone. To obtain them, you need to connect to the drone's hotspot to retrieve the logs. You can select a time range to find the logs. When uploading, ensure that the app has a network connection.

- APP Log: Logs of the app's operation. When uploading, ensure that the app has a network connection.
- FPV Video: Recordings of the flight. When uploading, ensure that the app has a network connection.
- FC Log: Logs of the flight controller module. To obtain them, you need to insert a USB cable, as detailed in the remote controller section.

General settings

You can set parameters such as units and various functions.



1. Map Settings: Allows changing between various maps and supports custom maps.
2. Storage Management: Allows cleaning system cache, drone logs, app logs, FPV videos, and sync data. Be cautious when clean up data transmission files.
3. FPV Recording: Enables viewing of FPV videos on the operation page. If the FPV video is not displayed during operation, you can view it here.
4. FPV Recording on: When opened, recording starts immediately when the propellers are spinning.
5. RTK Service: Shows the current RTK service time and activates the RTK service.
6. Data Count: Allows changing various unit settings to adapt to different usage scenarios.
7. Plot Recycler: Allows restoring mistakenly deleted plots. Plots in the recycle bin are

only saved for 30 days.

Submit a work order

When a drone malfunctions or is damaged, a work order needs to be submitted. The steps are as follows:

Firstly, enter the operation page and click ⚙ on the upper right corner, then select  to submit the work order.

FPV viewing

When the FPV window is not displayed, perform the following steps to check:

1. Enter the operation page and click  on the upper right corner, then click  in the operation settings bar to enter the flight settings and check whether the FPV window is turned on.
2. Select "General Settings" in the home page, select FPV settings, and check whether the FPV video display is turned on.
3. Go to Settings on the home page of the remote controller and check if the Ethernet option is turned on.

Spraying and spreading

In a completely manual operation, users can adjust the amount of spraying or spreading. However, if the fixed spraying is not set, it will be at maximum flow rate.

Fixed spraying/spreading

Fixed spraying: First, enter the operation page and click ⚙ on the upper right corner, click  in the operation settings bar to enter the spraying settings, turn on the "fixed flow rate" option to set the flow rate of the spraying.

Fixed spreading: First, enter the operation page and click ⚙ on the upper right corner, click  in the operation settings bar to enter the spreading settings, and turn on the "fixed opening" option to set the opening size of the spreading.

Spraying

First, enter the operation page and click ⚙ on the upper right corner, click  in the operation settings bar to enter the spraying settings, then set the spraying.

Spreading

First, enter the operation page and click ⚙ on the upper right corner, click  in the operation settings bar to enter the spreading settings, then set the spreading.

Flight

Operation Environment

- Slope operations must not exceed the manufacturer's specified requirements for surface conditions; otherwise, agricultural drones cannot be used for operations.
- Within a 10-meter radius around the operating area, obstacles such as utility poles, trees, and buildings that may affect agricultural drone operations should be avoided.
- The operating area should be kept away from breeding farms, schools, hospitals, residential areas, as well as other ecologically sensitive areas like water sources and grazing lands.
- According to local agronomic requirements and factors such as the type and growth stage of the grain crops, as well as the types of pests and diseases, reasonable pesticide application parameters should be set.
- Determine the safety of crops and specify a safe interval for crop harvesting and environmental safety.
- Do not take off indoors, as indoor environments lack GPS signals. After takeoff, there will be drift as GPS reception improves with more satellite signals. Large buildings can block GPS signals, leading to reduced accuracy in the positioning of agricultural drones.
- Short visibility distances during flight will affect the operator's ability to accurately judge the flight distance, making it prone to beyond-visual-line-of-sight (BVLOS) flight, which can compromise flight safety.
- It is recommended to fly with wind speed lower than 6m/s to avoid personal and property damage and ensure spraying effect, and operate with wind speed lower than 3m/s for herbicides, fungicides and insecticides that are prone to drift.

- In areas with centralized heating systems in the northern regions, when the outdoor temperature is low, directly bringing agricultural drones from the outdoors into a heated indoor environment will result in the condensation of water vapor inside the agricultural drone. This could potentially impact the flight control system and electronic speed controller due to condensation, leading to malfunctions.
- Humid air can cause corrosion on the metal components of agricultural drones. Avoid placing them in a humid environment.
- Maintain VLOS of the drone at all times, and avoid flying near crowds, animals, etc.
- Do not exceed the recommended payload weight limit when adding materials to the tank. Otherwise, the flight safety may be affected.

Pre-Flight Checklist

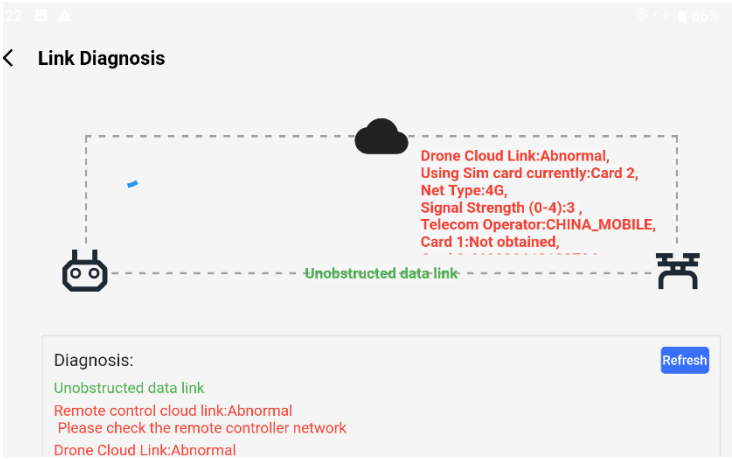
- Make sure the remote controller, drone battery and surveying tool are fully charged. The gasoline required for the generator is adequate.
- Make sure the spray tank and drone battery are firmly in place.
- Make sure all parts are mounted securely.
- Make sure all cables are connected properly and firmly.
- Make sure propellers are securely mounted, that there are no foreign objects in or on the motors and propellers, that the propeller blades and arms are unfolded, and the arm locks are firmly tightened.
- Make sure the FPV camera is clean and in good condition.
- Make sure the spraying system is not blocked in any way.
- Make sure the nozzles are clear from bubbles. Discharge any bubbles as they may affect the performance of the nozzles.
- Make sure the radar assembly surface is free from stains and in good condition.
- Make sure the charging equipment such as chargers and generators have a good

appearance and their connectors are undamaged.

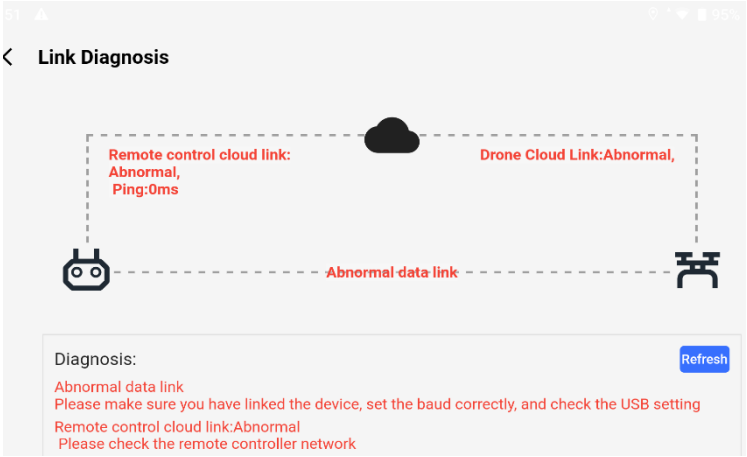
Drone Connection

Drone connection modes: data transmission mode, disconnection mode

1. **Data transmission mode:** data transmission between the remote controller and the drone works properly, and the connection between the remote controller and the base station is great. Users can operate drones in this mode.



2. **Disconnection mode:** the drone has been disconnected from the remote controller, and unable to fly



Version check

Before operating the agricultural drone, it is necessary to check if the firmware of the drone and the software of the remote controller are up to date.

1. **Agricultural drone firmware upgrade:** After connecting the drone, a reminder will pop up on the main interface, which will display the update details. If there is no

prompt, there is no need to upgrade. Follow the firmware upgrade process in the firmware upgrade section.

2. **Remote controller upgrade:** After opening the J100 APP, a reminder will automatically pop up, which will display the update details. Follow the prompt process to upgrade.

Remote controller Stick Offset

⚠ When upgrading or receiving a new remote controller, it is important to check the remote controller's stick offset. If there are abnormalities (such as abnormal centering), the stick must be calibrated before use.

Manual Mode

Basic flight operations

1. Place the drone near the operation area, in a flat and open area, with the pilot facing the rear of the drone.
2. After adding liquid to the spray tank, tighten the tank lid.
3. Turn on the remote controller to ensure the normal operation of the EAVISION J100 APP, and then power on the drone.
4. Ensure that the agricultural drone is properly connected to the remote controller, with the remote controller indicator showing green.
5. Wait for self-check, ensure stable GPS signal, and unobstructed RTK dual antennas.
6. The drone should not have any fault alarms and should be ready to receive tasks.
7. Unlock the drone and take off.
8. Carry out manual spraying operations.
9. When landing, return to a flat and open area near the operation area, with the pilot facing the rear of the drone. Pull down the throttle stick to make the agricultural drone

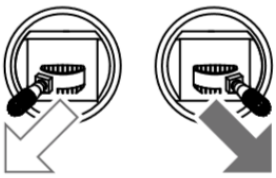
land, then pull it to the lowest position and hold it for 3 seconds until the motors stop.

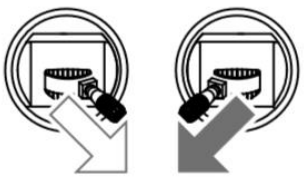
10. After the motor stops rotating, please turn off the power of the agricultural drone, then turn off the backup battery, and finally turn off the power of the remote controller.

- When using the agricultural drone in fully manual mode, obstacle avoidance can be manually operated after enabling it.
- When obstacle avoidance is not activated, the maximum speed is limited to 13.8m/s.
- When obstacle avoidance is activated, the maximum speed is limited to 10m/s.

Takeoff

The Combination Stick Command (CSC) listed below is used to start and stop the motors. Make sure you perform the CSC in one continuous motion. The motors begin to accelerate at an idle speed. Release both sticks simultaneously. Take off immediately once the motors are spinning, or else the drone may lose balance, drift, or even takeoff by itself and risk causing damage or injury.





Or

If you fail to start the motors, please click on flight controller to check the fault codes.

Landing

When the drone has landed, push and hold the throttle stick down. The motors will stop after three seconds.

Spinning propellers can be dangerous. Stay away from spinning propellers and motors. DO NOT start the motors in confined spaces or when there are people, animals and other obstacles nearby.

Keep your hands on the remote controller when the motors are spinning.

⚠ ● After landing, power off the drone before powering off the remote controller.

Low-altitude aerial surveys

Aerial survey operation is an important part of plant protection operations, and high-definition maps can be provided quickly and efficiently through the real-time mapping function of agricultural drones, which greatly improves the accuracy, safety and efficiency of hand-drawn plots.

The flight parameters for low-altitude aerial survey of plots include heading overlap rate, side overlap rate, and entry/exit speed.

Heading overlap rate: The probability that the images taken by the drone on the first line of flight overlap with those taken on the second line of flight when moving forward to take photos.

Side overlap rate: The probability that the images taken on the first line of flight by the drone overlap with those taken on the second line of flight.

Entry/exit speed: The speed at which the drone enters and returns from the takeoff

point to the operation point.

Procedure

1. Switch modes: Open the "EAVISION J100 APP", click the operation mode switch button next to the crop protection operation, and select aerial survey.
2. Select a plot: Move the crosshairs to the boundary of the desired plot and click "Take Boundary Point".
3. Adjust parameters: After selecting the boundary points of the plot, the APP will automatically generate the aerial survey point. At this point, you can adjust the corresponding parameters such as heading overlap rate, entry/exit speed, etc., according to your own situation.
4. Automatic aerial survey: The drone will automatically perform the aerial survey after takeoff.
5. Generate high-definition maps: Immediately after the aerial survey is completed, a high-definition map will be generated, which can be viewed in the "Aerial Survey" section of the "J100 APP" homepage.
6. Survey plot: Manually draw flight routes on the high-definition map.

⚠
- A minimum of 4 boundary points is required for the aerial survey of the plot.
- The aerial survey flight speed is automatically adjusted, and users manually adjust the entry/exit speed. When the terrain following function is enabled, the maximum speed is 10m/s; when the terrain following function is not enabled, the maximum speed is 13.8m/s.
- Low-altitude aerial survey can be conducted with or without terrain following, but obstacle avoidance cannot be activated.
- The flight altitude for any low-altitude aerial survey operation is maintained at 30 meters.

Spraying operations

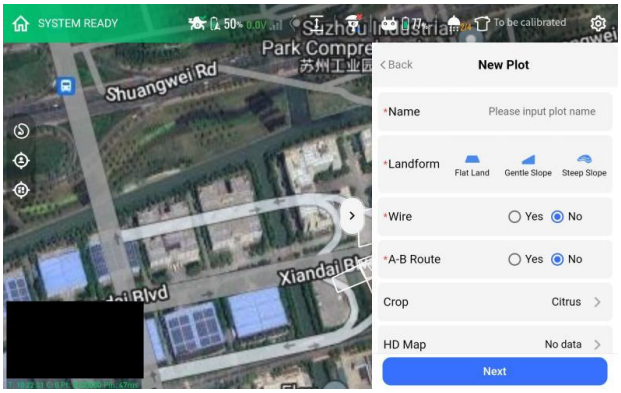
Spraying operations are a major part of crop protection requirements, using drones to precisely spray pesticides to protect and treat plants, such as controlling pests and weeds, and spraying foliar fertilizer. Standardized operations directly affect the effectiveness of the operation.

Plot surveying

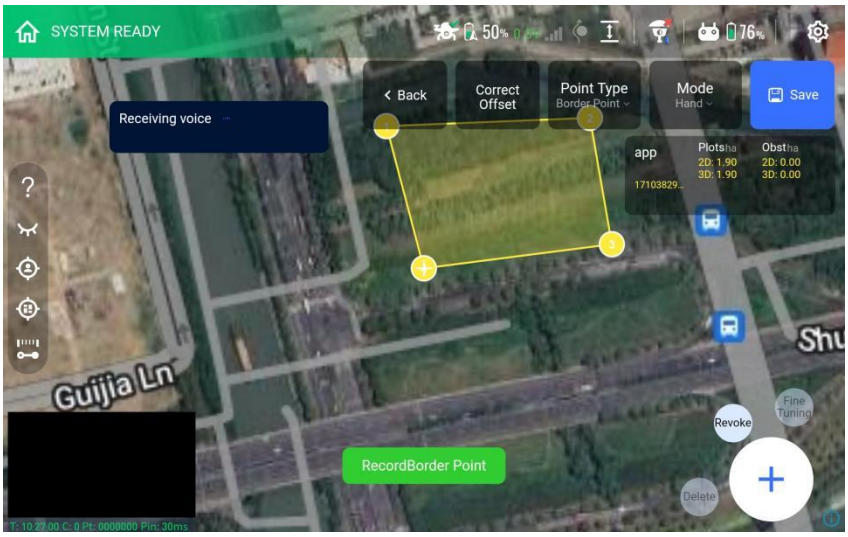
Accurately measuring the plot enables drones to efficiently complete crop protection tasks independently, and effectively marking obstacles to avoid the probability of accidents.

Plot surveying steps:

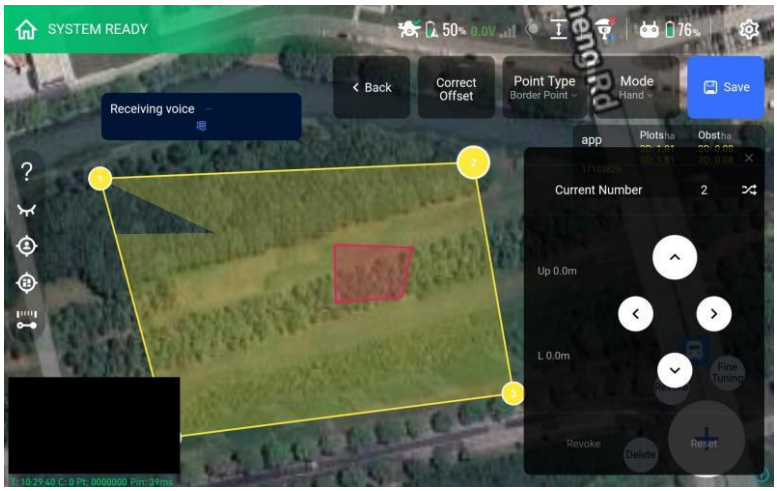
1. Power on the remote controller.
2. Open the EAVISION J100 APP and log in to your account.
3. Click on the device and follow the prompts to connect.
4. Click on "Operation" on the main page, then select "Plots" from the right-hand list, and click "New Plot" to submit the operation information.
5. Click "New Plot", enter the plot and crop information, and enter the plot surveying page.



6. Use the default "boundary points" to mark the plot boundary. It is recommended to select RTK mode.



7. After marking the plot, if there are obstacles such as farmhouses or power poles in the plot, select "Normal Obst" or "Circular Obst" under "Point Type" to mark them, and adjust the boundary points or obstacle points as needed.



8. Click "Save" to complete the plot surveying. You can choose to "Save" or "Operate Now".

Functions of Survey

The judicious use of surveying capabilities can reduce drone failures, improve operational efficiency, and minimize unnecessary waste of pesticides by preventing over-spraying, under-spraying, and double-spraying.

1. Boundary point types

Normal boundary point, normal obstacle, circular obstacle, non-spray area

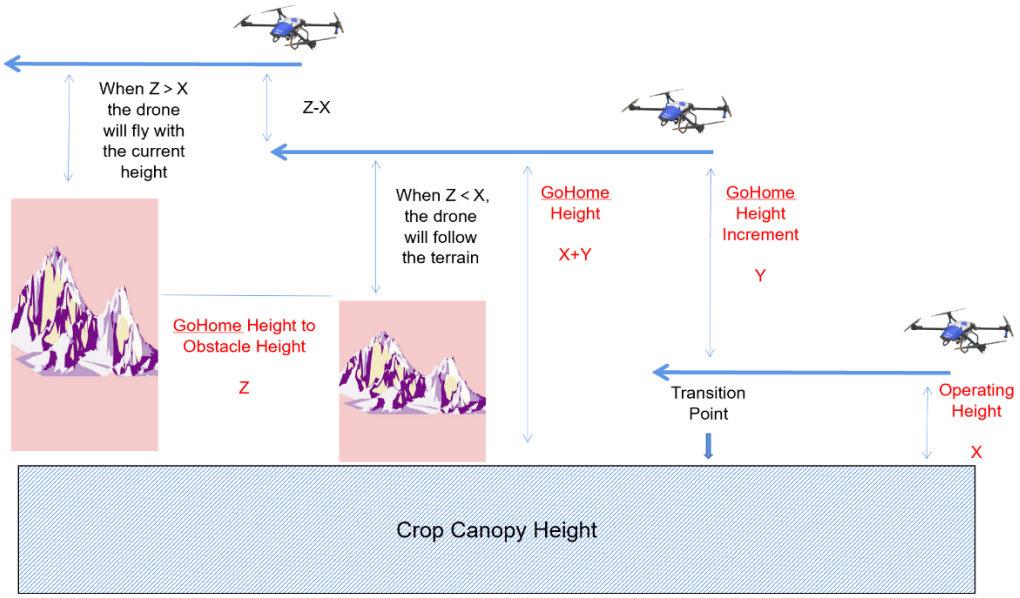
- Normal boundary point: it is used to record normal boundary points. 3 or more points need to be recorded to form a plot, and points can be deleted, revoked or fine-tuned.
- Normal obstacle: points need to be inside the plot. 3 or more points need to be recorded to form an obstacle, and points can be deleted, revoked or fine-tuned.
- Circular obstacle: tap the target location, and a hexagon with side length of 1.5m will appear to record obstacle points, and 2 fine tuning points will be generated. Tap the center fine tuning point, and the Fine Tuning button on the right to adjust the overall location. Click the right fine tuning point of the hexagon, and the Fine Tuning button on the right to adjust the size of the obstacle. Tap the obstacle to delete it.
- Non-spray area: 3 or more points need to be recorded to form a non-spray area. The spray function will be disabled by default in the area, and automatically enabled outside the area.
- Note: the non-spray area must be recorded inside the plot.

2. Types of adding points:

Hand drawn, RTK and drone

- Hand drawn surveying: it is convenient without going to the target location for surveying. However, the hand-drawn precision is low, and can only form ordinary plots, and cannot generate high-precision plots.
- RTK surveying: it’ s with the highest precision and can generate high-precision plots.
- Drone surveying: it can generate high-precision plots. Users need to manually operate the drone to fly to the boundary points to add points. However, during flight, visual errors can easily occur, leading to inaccuracies in marking points.

Functions of Operate



Takeoff Height Setting

1. Takeoff height of the drone must be equal to or greater than the operating height.
2. When the takeoff height is equal to the operating height, the drone will follow the terrain directly.
3. When the takeoff height is greater than the operating height, the drone will follow the terrain based on the circumstances below:

Let’ s say the setting height is X, takeoff height is Y, and obstacle height is Z.

When Y-Z<X, the drone will follow the terrain.

When Y-Z>X, the drone will not follow the terrain.

GoHome Height Setting

1. When the GoHome height increment is not set, the drone will return to the takeoff spot according to the operating height.
2. When the GoHome height increment is set, GoHome height = operating height + GoHome height increment.

The principle of GoHome height is as follows,Let’ s say the operating height is X, GoHome height increment is Y, then GoHome Height = X + Y. AndGoHome Height to Obstacle

Height is Z.

When the drone returns, it finishes operation with operating height of X, flies to the transition point, then flies with the height of X+Y. The system will detect the height of Z and adjust its operations automatically.

When Z>X, the drone will fly with the current height.

When Z<X, the drone will follow the terrain.

GoHome height increment can be set in two ways.

1) Tap the setting icon at the upper right corner of the home screen, set parameters, restart the app, and these parameters will be applied to the plot operations.
2) Set the GoHome height increment on the operation page, and it can be only applied to current task. When reusing the plot, the last parameter setting will be used by default.

Route split

In the parameter setting page, you can tap the route to plan. After split the planned route, the drone has completed the route by default and can operate from the Nth route.

Intelligent Avoidance

Tap the setting icon at the upper right corner of the main page, and choose to turn on or turn off the Intelligent Avoidance function.

- Intelligent Avoidance on: the drone can sense obstacles with a diameter of over 1cm, and perform Intelligent Avoidance function.
- Intelligent Avoidance off: the drone will surmount obstacles.

Users shall choose in accordance with the actual situations to meet different operating needs.

Note: the obstacle avoidance function cannot be enabled in night flight mode.

Operation parameters

Before autonomous flight of the agricultural drone, it is necessary to adjust the operational flight parameters, which are closely related to the efficiency and quality of the operation.

1. **Line spacing:** The distance between two routes, or the distance between lines
2. **Target volume:** The amount of liquid sprayed per ha
3. **Takeoff height:** The distance from the ground after takeoff
4. **Operation height:** The relative height between the drone and the crop canopy.
5. **Operation speed:** The horizontal flight speed of the drone.
6. **Entry/exit speed:** The horizontal flight speed of the drone when entering or exiting the work area from outside.
7. **Atomization:** The droplet size of the sprayed liquid.
8. **Flow rate turning increase:** Adjustment of the spray increment during turns.
9. **Reference boundary setting:** After selecting the reference boundary, click "Plan Plot" to automatically generate the flight routes.
10. **Takeoff point setting:** The takeoff position can be set in the plot (click in the plot).

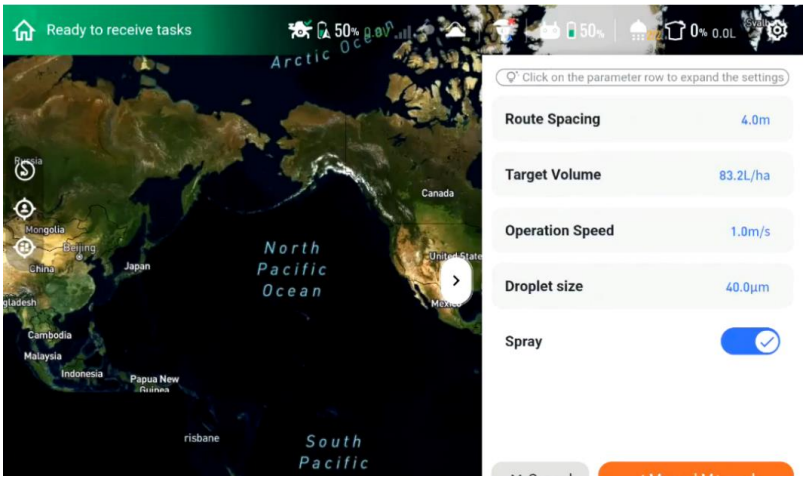
Manual Operation Enhancement

The manual operation enhancement mode enables precise manual operation of speed, altitude, directional control and omnidirectional obstacle avoidance. This mode is designed to help novice users quickly master manual flight functions, and it is complemented by features such as intelligent one-key turn and heading lock, providing users with an easy manual flight experience.

Usage process

1. Open the "EAVISION J100 APP" and select "Manual Operation Enhancement" in the lower right corner of the operation mode.

2. Adjust the corresponding parameters according to your own needs. Click on the corresponding parameters to adjust, and the adjustable parameters are as follows:



- Row spacing: The spacing between flight lines of the drone.
- Target volume: The amount of liquid per ha of plot, in liters.
- Takeoff height: The distance from the ground after takeoff
- Operation height: The relative height between the drone and the crop canopy.
- Operation speed: the flight speed of drone during operation
- Atomization: The droplet size of the sprayed liquid.

⚠ Droplet size of 200 microns or more require disassembling the high-atomization inner and outer discs, and replacing them with high-flow spray discs to avoid harm to the crops.

3. Switch to manual operation mode. After adjusting the parameters, click on "Manual Operation Enhancement". After the self-check is completed, slide to take off.
4. After takeoff, manually push the pitch stick and carry out the manual heading flight.

- In this mode, the sticks of the remote controller can only be used after turning on the angle lock. The pitch stick can be continuously controlled, but the speed is limited to

the maximum value set.

- The drone needs to perform a self-check before taking off automatically. After hovering, the stick can be used.

5. Click on the operation button on the right side. You can choose one-key turn, angle lock, and left/right ridge change functions to assist in the operation.

- One-Key Turn: Changes the heading direction of the drone during manual enhancement operations.
- Angle Lock: Locks or opens the heading of the drone in manual operation enhancement mode, allowing you to disable or enable the left and right direction joysticks of the remote controller.
- Ridge Change: The function of changing ridges (changing rows) of the drone in manual operation enhancement mode.

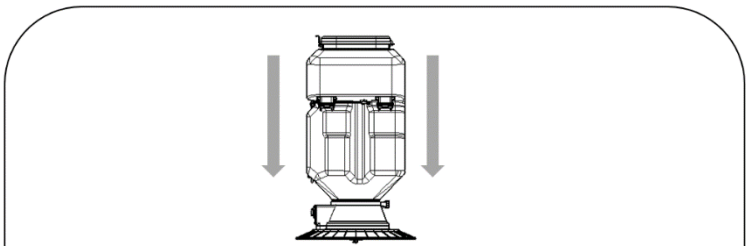
Spreading Operations

The spreading operation mode supports mountainous terrain route operation, field route operation, and manual operation. You can easily switch between spraying and spreading modes through the J100. Users can choose the appropriate mode for spreading operations based on different scenarios.

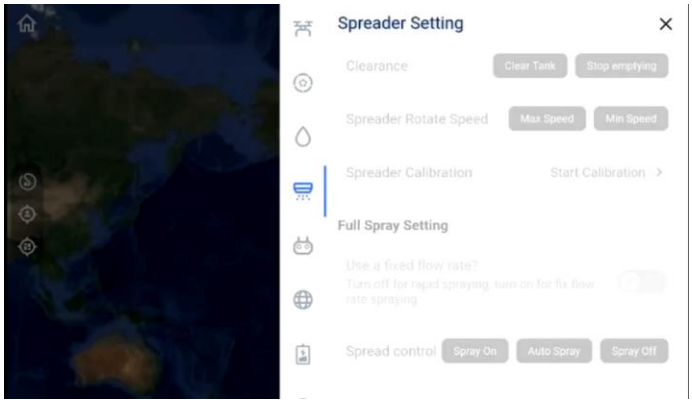
Installing and Usage

In an open and flat area, place the drone body horizontally and the spreader horizontally above the drone, (the spreader should be organized in advance with the wire harness and spreader disc). The EAVISION spreader is designed for quick disassembly and installation, only one connection cable is needed between the drone and the spreader to quickly connect the drone and the spreader, and it only takes a few seconds to complete the installation and replacement of:

1. Install the spreader to the drone along the rails (if the drone is equipped with a spray tank, the spray tank needs to be removed first).



2. Connect the harness to the drone.
3. Open the J100 app, log in to your account and connect the drone.
4. Click on "Operate" to enter the plot and click ⚙ on the right side to enter the spreading setup screen. Calibration is required for the first operation or for a new spreading material (no template). The calibration is divided into two parts: weighing calibration and flow rate calibration.



Weight Calibration

① Click on "Weight Calibration"

② Enter the weight calibration program and prompt "Please lift the spray tank and keep the weight sensor 5~10cm away from the longitudinal beam of the body".

③ Click 'Confirm' to enter the countdown. At this point, it enters the automatic calibration mode.

④ When the countdown is over, the message "Please place the spray tank horizontally, note: keep the bottom of the box clean, free of foreign objects and horizontal" pops up.

⑤ Click "Confirm" and then enter the countdown. At this point, it enters automatic tare

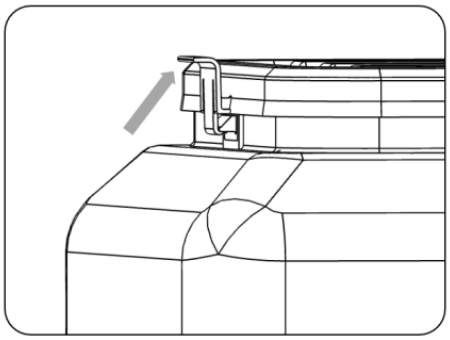
weight mode.

⑥ When the calibration is finished, it will indicate that the calibration is successful. Then click Confirm, go back to the main screen and check if the weight display is 0.

⑦ At this point the calibration procedure is complete and the spreader can be applied for operation.

New Spreader Template

1. Before flow rate calibration, a suitable container can be placed around the spreader plate to store the material and, if necessary, the rotating plate can be removed to prevent splashing.
2. Open the cover of the spread tank according to the method shown, add the suitable spreading material and close the cover of the tank.

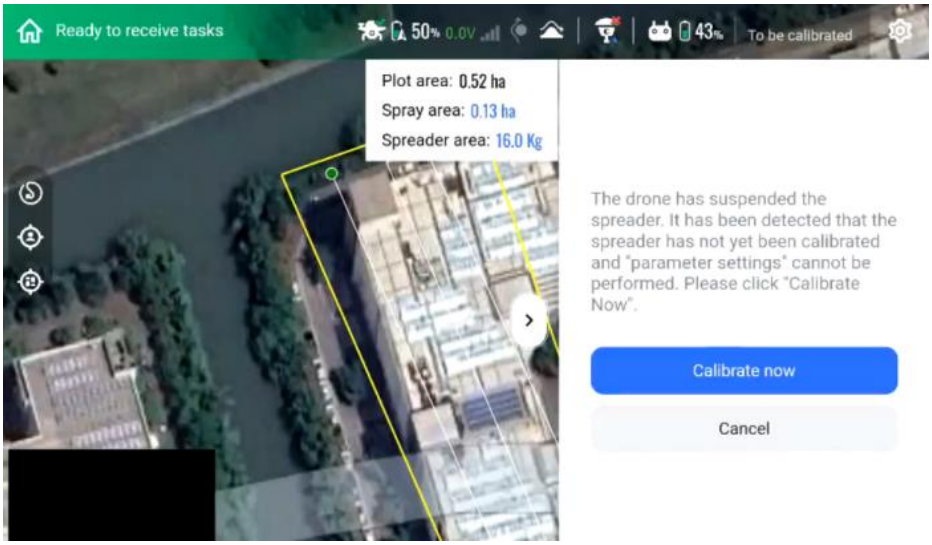


3. Click Start Calibration to enter the flow rate calibration procedure.
4. Click on “New Spreader Calibration Template”, and enter the template name.
5. Click on "Start Calibration" to create and name a new spreader calibration template, and then click on "Start Calibration". This manual uses "Compound Fertilizer " as an example.
6. Drag the created template page to adjust the opening size and calibration time parameters, and then start the calibration. The first calibration opening size is recommended to be 30%. Generally, the longer the calibration time, the more accurate the flow rate data calibration will be, but it should be avoided that the opening time is

too long, resulting in insufficient material and empty spreading of the spreader.

7. The screen shown in the figure appears to indicate that the first calibration is in progress and to confirm that the spreader is spreading the material properly.
8. After the first calibration is completed, the weight sensor will automatically calculate the spreading volume. Please observe whether the deviation between the weighing value and the actual spreading volume is too large, if the error is less than 200g, you can proceed directly to the next step. If you find that there is an obvious weight error, it is recommended to use the electronic scale to weigh to determine the actual spreading weight and refill the parameters.
9. After the first calibration is completed, click "Next" to start the second calibration.
10. Before the second calibration, the barrel should be filled up to avoid insufficient material, which may affect the calibration accuracy. The second calibration needs to adjust the opening size and the calibration time, and the second calibration opening size is recommended to be 80%. The longer the calibration time is, the more accurate the calibration of flow rate data will be. However, it should be avoided that the opening time is too long, resulting in insufficient material. 20s is recommended, and attention should be paid to adding spreading material to avoid the calibration failure caused by empty spreading of the spreader. If you need a larger spreading volume you can try to use 100% calibration, and 10s, but pay attention to add material in time to ensure that the whole calibration process tank will not be empty.

11. The screen shown in the figure appears to indicate that the second calibration is in progress and to confirm that the spreader is spreading properly.

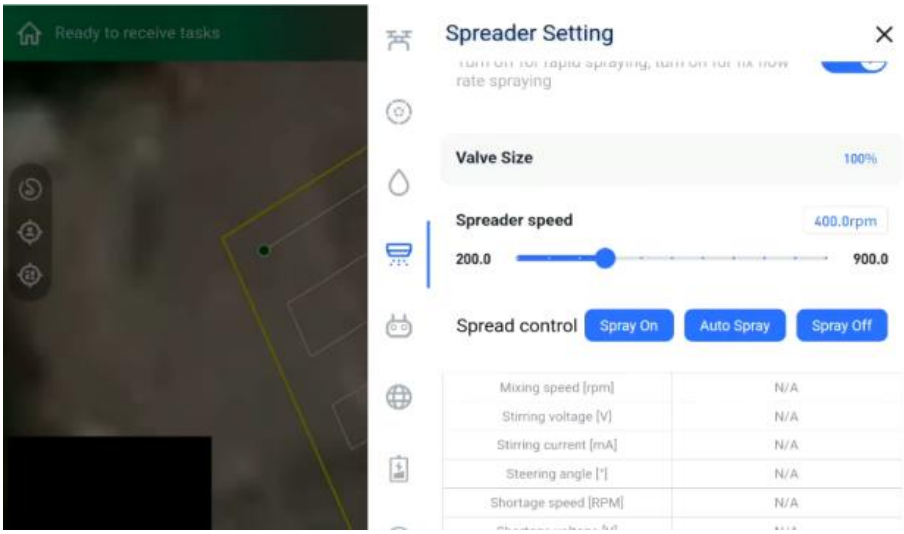


12. After the second calibration is completed, the weight sensor will automatically calculate the spreading volume. Please observe whether the deviation between the weighing value and the actual spreading volume is too large, if the error is less than 200g, you can proceed directly to the next step. If you find that there is an obvious weight error, it is recommended to use the electronic scale to weigh to determine the actual spreading weight and refill the parameters.
13. Click "Save" and the word "Spreader calibration successful" appears, which means the flow rate calibration is successful.
14. After successful calibration, the template can be repeated in the operation page. After clicking "Operate", you can find the spreader template settings in the parameter setting screen.
15. Click the ">" icon on the right to view all spreader templates.

Spreader Parameter Setting

No calibration operation: Select Operate on the main page of J100 APP, click "Plot", if you are using the spreader for the first time, you will be prompted "Spreader not calibrated, please click [Calibrate Now]".

Calibration operation has been performed: If the "calibration" operation has already been performed, you can directly set the "particle size", "spreader speed", "Operating height" and other operating parameters.



Particle size: There are three types of particle size to choose from, users can choose the right particle size according to the state of their own materials, for example: rice selection (medium particles), compound fertilizer urea selection (small particles) closer to the automatically calculated value; the larger the particles selected, the smaller the default spray width will be.

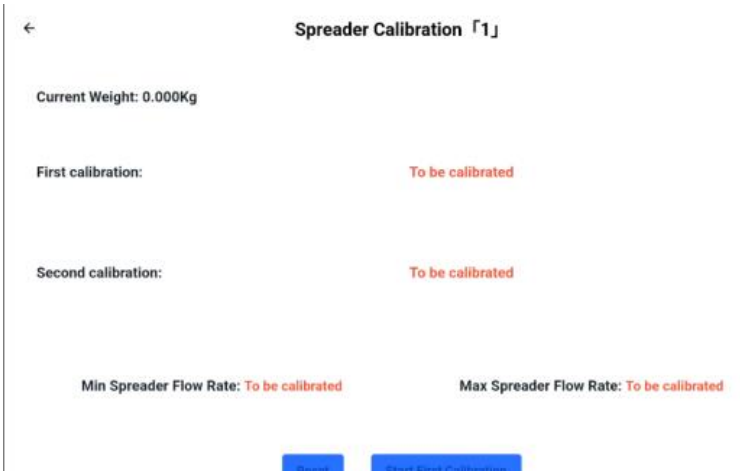
Spreader speed: The spreader speed can be adjusted from 200 to 900 RPM, the larger the speed, the larger the spraying width, initially it is recommended to use a minimum speed of 300RPM-400 RPM.

Operating height: the operating height can be adjusted from 1 to 5m, the higher the height, the greater the spraying width. If the spray width is greater than 15m, the height cannot be adjusted.

Row spacing: The row spacing will be calculated automatically based on the above three items, "particle size", "spreader speed" and "operating height". If the actual spreading spray width is different from the row spacing, the row spacing can be fine-tuned separately, and when the automatic calculation value needs to be restored, the operating

height or spreader speed can be adjusted again, and the row spacing value will be restored to the automatic calculation.

Select a template: when selecting the operating template and operating speed, please select the template corresponding to the material, otherwise it will cause excessive error in the spreading amount; The process of calculating the spread rate by comparing actual material consumption with the actual coverage can be adjusted by fine-tuning the multiplier through the template's editing function.



If the spread rate is too high, you can increase the multiplier in the direction greater than 1, adjusting it incrementally by 0.1-0.3 each time. Conversely, if the spread rate is too low, you can adjust it in the opposite direction until it reaches the desired level, then confirm the fine-tuning.

This process is opposite to the normal logic and contrary to spray calibration.

Start operation: click "Confirm", the drone can work autonomously.

Autonomous operation: click "Start", send the task, the drone began to work autonomously.

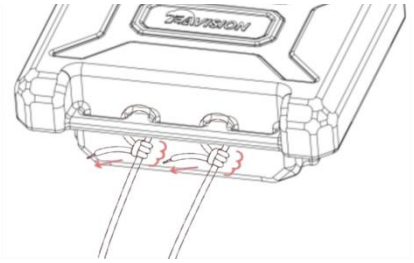
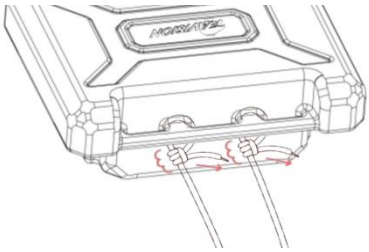
Lifting operations

Lifting operations can be applied in mountainous areas where human transportation is difficult and efficiency is low, addressing the common difficulties associated with lifting point identification, difficult operation, energy consumption, and long-term safety hazards.

The J100 can support fully autonomous lifting operations, greatly ensuring safety while improving efficiency.

Installation preparation

1. Removing the front and rear nozzles to increase the payload.
2. Tie 4 lifting ropes to the left and right sides of the lifting installation module for weighing through the lifting module.

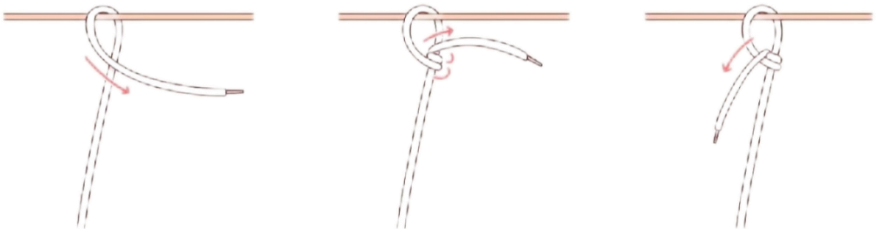
3. Place the ropes and the lifting installation module inside the frame and ensure that the length of the ropes is between 5-10m.

- It is very important to tie the ropes securely for load-bearing.
- Recommended tying steps (any method is acceptable):

1. Camp nail knot

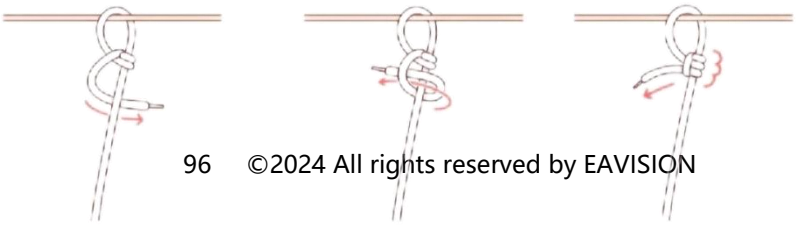
(1) The rope goes around the object to form a loop with the end of the rope above the rope.

(2) The end of the rope wraps around the rope loop twice.



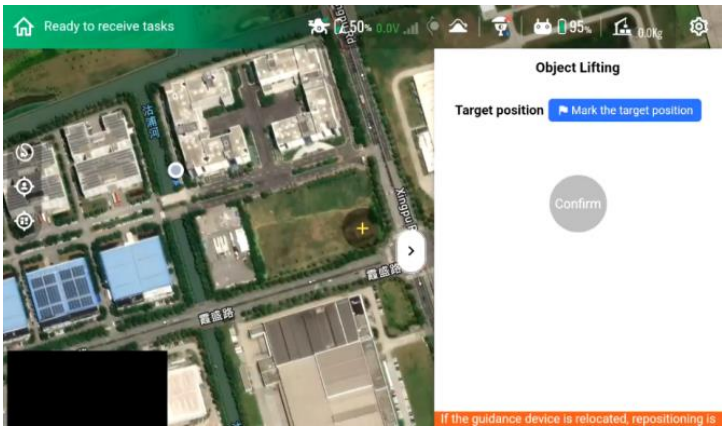
(3) Put the end of the rope aside, stack it under the rope, and form a small hole with the rope.

(4) The rope passes through the rope hole and tightens.

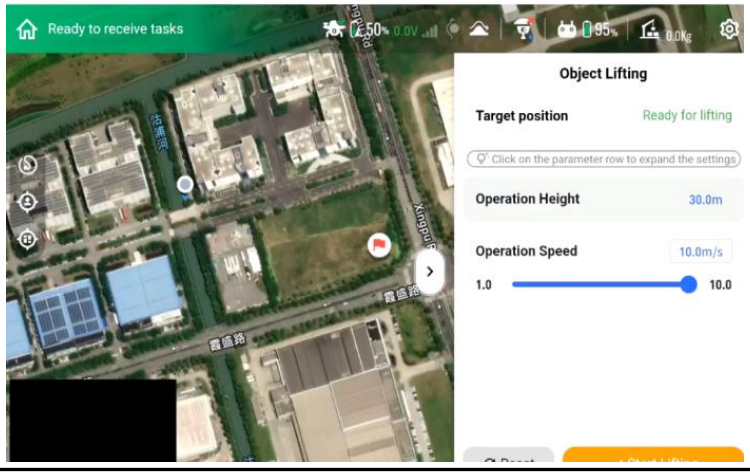


Usage process

1. Enter the J100 APP homepage.
2. Click the function switch button in the lower right corner.
3. Select lifting operation.
4. Obtain the lifting position: Connect to the "Super Link" communication station or obtain it through hand drawn on the remote controller map.



5. After obtaining the position, the lifting parameters can be set.
6. After reaching the specified position, hover and lower the height. Communicate with the personnel loading the cargo. After the cargo is lifted off the ground, check if the weight exceeds the limit before clicking to return.
7. After reaching the return position, hover and lower the height. After the cargo touches the ground, it will automatically detach.



- Automatic lifting flights require clicking the "⚙" and selecting "Perception Settings" to turn on the intelligent terrain following mode.

- Use automatic lifting as much as possible, as it is more efficient and safer than manual lifting.
- When landing, switch to manual flight and operate the joystick gently.
- During automatic lifting operations with terrain following enabled, the maximum speed is 10m/s and the maximum altitude is 30 meters.
- Use a weighing sensor to check the weight of the cargo.

Precautions for lifting

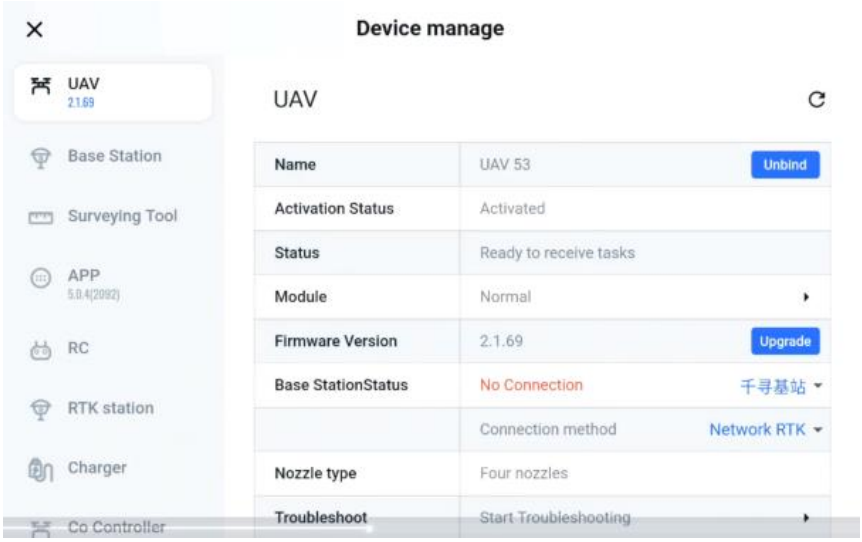
⚠
- It is strictly forbidden to lift weights exceeding 60kg.
- When manually lifting heavy objects, the speed must not exceed 7m/s and the altitude must not exceed 30m.
- It is strictly forbidden to manually/automatically cross wires.
- Pay attention to not using ropes that are too light and to avoid rope entanglement.
- It is strictly forbidden to fly with unknown weight, resulting in overweight flight.
- It is strictly forbidden to consume a significant amount of battery power. Return and replace the battery when the battery level is 30%.
- It is strictly forbidden to have people, goods, livestock, etc., around or below the drone when detaching.
- During the lifting operation, there may be dangers that lead to damage or loss of the three, and the loaded goods are not covered by compensation.
- It is strictly forbidden to lift building materials, photovoltaic panels, and other non-agricultural operation goods during lifting operations.
- EAVISION does not assume any compensation liability for losses or damages caused by violations of the above prohibitions.

Troubleshooting

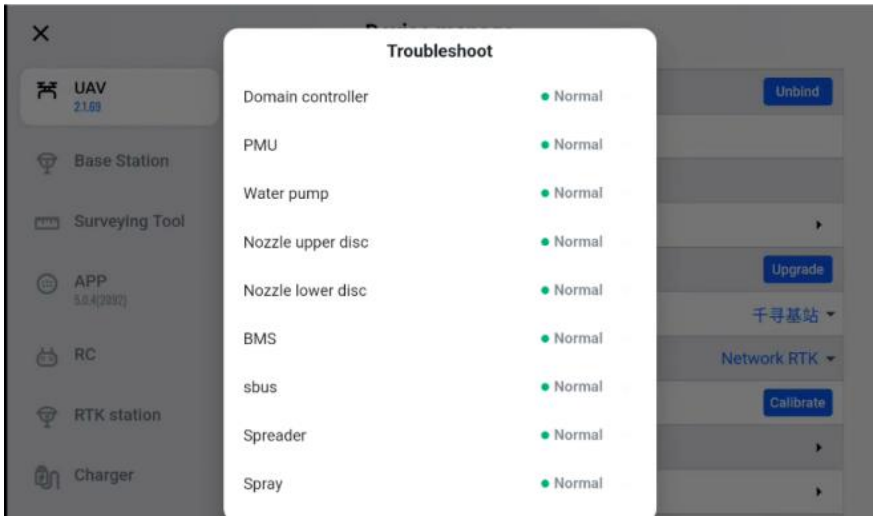
In the drone applications, if unexpected situations such as the inability to take off occur, a preliminary inspection can be conducted to quickly restore operational speed and ensure operational efficiency.

Troubleshooting Procedures

1. When a problem occurs, the system will prompt "Unable to takeoff". You can check the cause of the fault in the status bar.
2. Tap Device Management, then the arrow on the right of the fault in the status bar.



3. Details of the fault can be checked here.

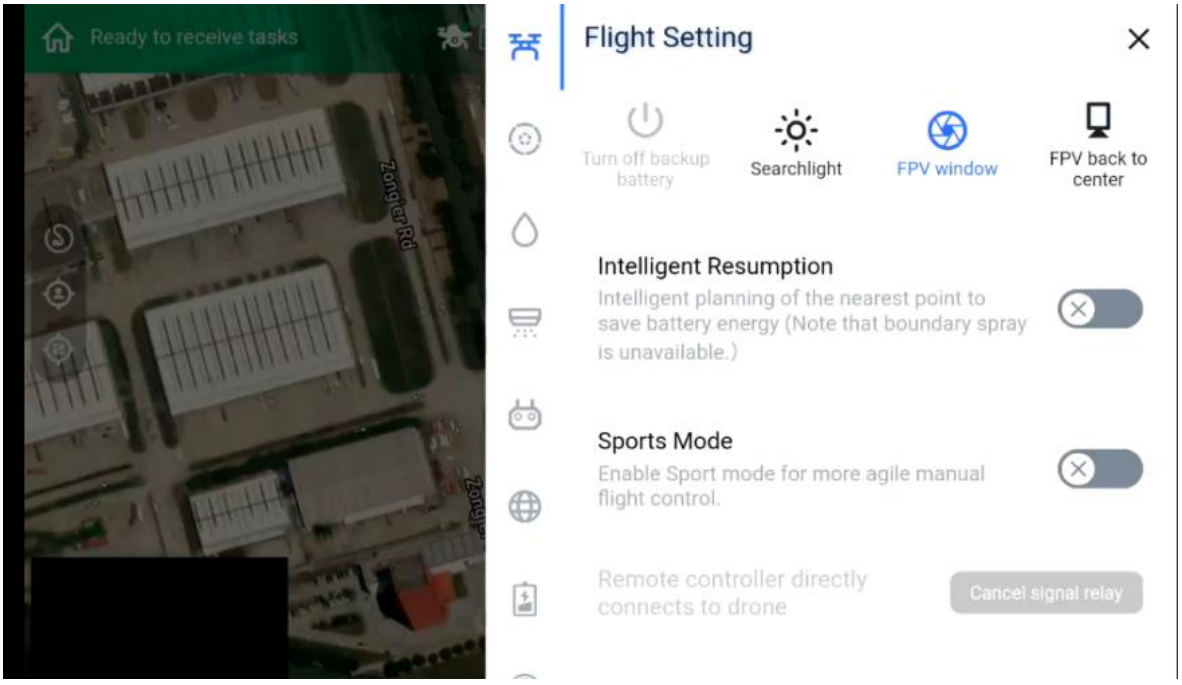


4. Tap Solution to try to solve the problem. Contact the customer service if you fail to solve the problem.

- When operating the drone and encountering any fault messages, the fault information will be displayed in the top left corner of the operation interface.
- If there is a fault in the drone, it is not allowed to take off, and a thorough inspection is required before flight operations can proceed without any faults.

Shutdown Procedure

1. After landing, wait for all propellers to stop spinning.
2. For the cleaning of the spraying system, please refer to the maintenance section for specific instructions.
3. Backup battery shutdown: tap at the upper right corner of the operation page, then tap Shut Down System, and the backup battery will be powered off.



4. Remote controller shutdown: when the remote controller is on, press and hold the power button of the remote controller till all indicators are on, then press the power button.
5. Fold the propeller blades and arms.

⚠ The shutdown sequence is as follows: first, turn off the power battery and remove it, then switch off the backup battery, and finally, power down the remote controller.

- Wait for 40 seconds before turning off the backup battery.
- You can only turn it off within the app.

- After completing operations, it is necessary to clean the spraying system to prevent prolonged pesticide attachment that may lead to corrosion.
- Fold the arms and propellers before transporting.
- Keep a distance between the camera and the shipping container to prevent damage from bumps.
- Avoid damage to drone resulting from shifting back and forth during transportation.
- Place the drone stably before transportation.
- The safety instructions provided by the pesticide manufacturer should be followed to handle the disposal of pesticides.
- Drones should be placed in a dry environment.

Flight Limits

Drone operators should abide by the regulations from self-regulatory organizations such as the International Civil Aviation Organization, the Federal Aviation Administration, and their local aviation authorities. For safety reasons, flight limits are enabled by default to help users operate this drone safety and legally. Users can set flight limits on height and distance.

The default factory settings for agricultural drones include altitude restriction to 30 meters, speed limit of 13.8m/s, and a range limit of 2000 meters.

⚠ ● To ensure flight safety, please avoid flying in areas such as airports, military restricted zones, highways, train stations, subway stations, and urban areas as much as possible.

- Please try to keep the agricultural drones within line of sight during flight.

No Flight Restrictions

In rural agricultural and forestry areas, there is no need to submit a flight activity request to the aviation authorities for agricultural unmanned aerial vehicle (UAV) crop protection operations. However, **within a rectangular area extending 20 kilometers outside each end of an airport runway and 10 kilometers on each side, agricultural UAVs will not be able to take off, and it is necessary to apply for the removal of flight restrictions.**

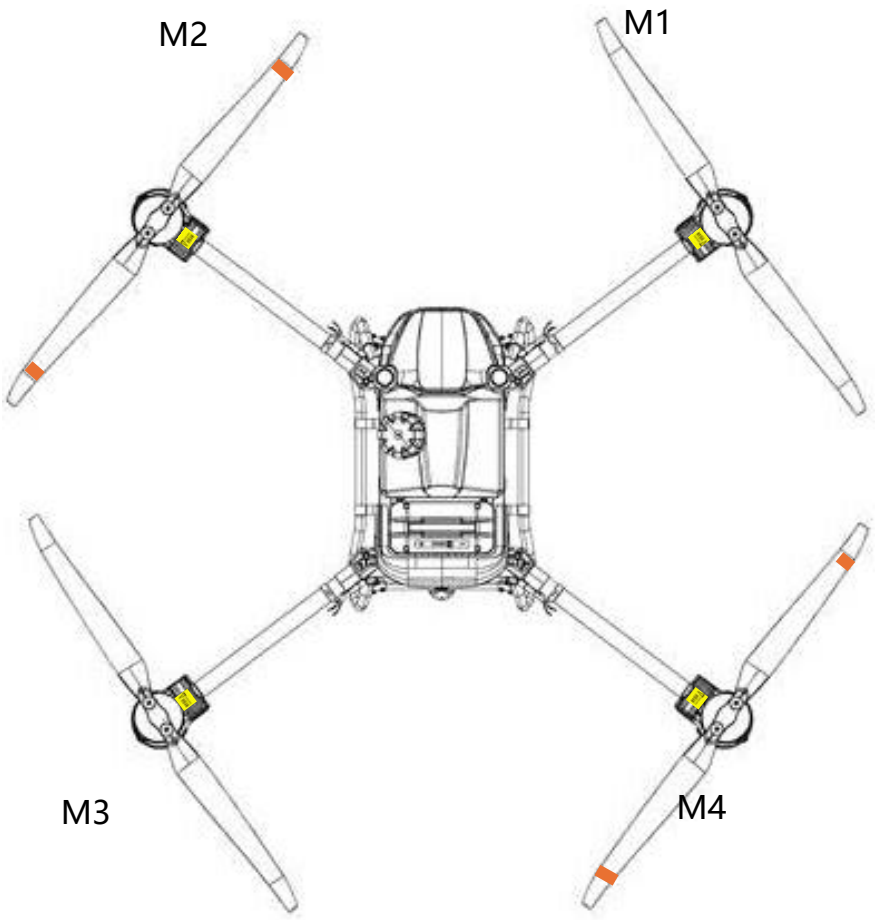
Safety Signs

Drone Signs

Drone Signs

1. ESC high temperature sign

2. Propellers



⚠ ● Install the M1 and M3 (blades with white stripes on) counterclockwise (CCW), and M2 and M4 (blades with orange stripes on) clockwise (CW).

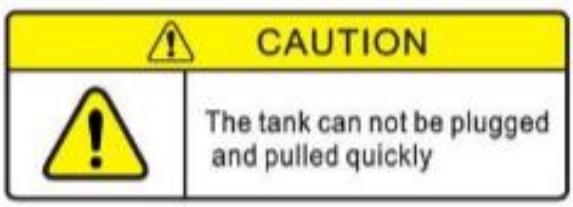
- The propeller blades are sharp, please handle them with care to avoid any cuts.
- Spinning propellers can be dangerous. Stay away from spinning propellers and motors. DO NOT start the motors when there are people, animals and other obstacles nearby.
- Do not approach the propeller until it stops spinning to prevent any injuries.

Battery Signs

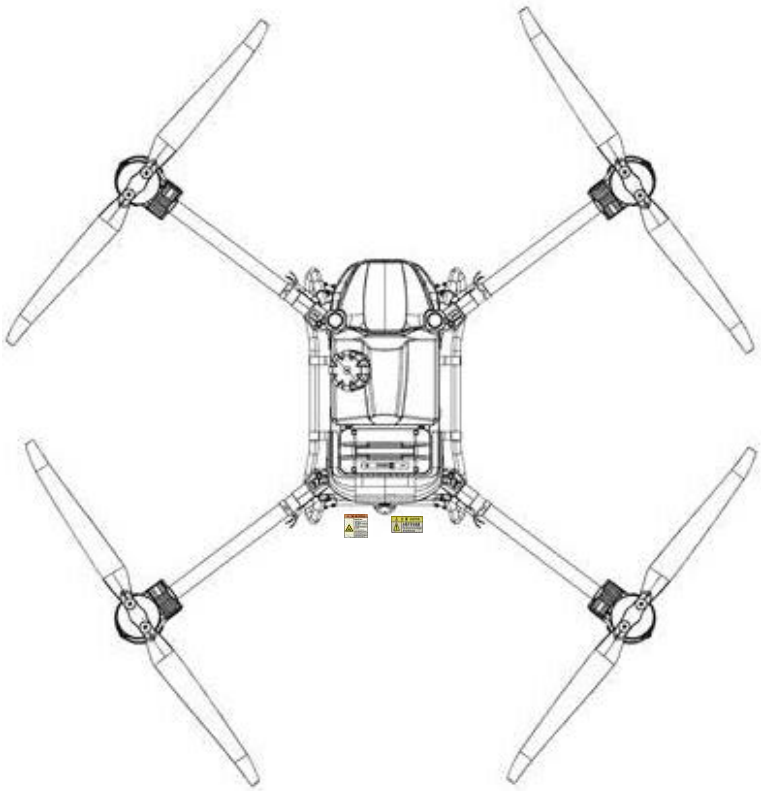
1. Battery Usage signs

Spray Tank Signs

1. Spray tank usage signs



2. Pesticide usage signs



Maintenance

To avoid component malfunction, serious injury, and property damage, observe the following rules:

1. Clean all parts of the drone at the end of each day of spraying after the drone returns to a normal temperature. DO NOT clean the drone immediately after operations are completed.

1) Fill the spray tank with clean water or soapy water and spray the water through the nozzles until the tank is empty. Repeat the step three times.
2) Use a clean and soft cloth to wipe the camera lens, distance sensor and other sensor components.
3) If there is dust or pesticide liquid on the motors, propellers, or heat sinks, wipe them with a wet cloth before cleaning the remaining water residue with a dry cloth.
4) Store the cleaned drone in a dry environment.

2. Wipe the surface and screen of the remote controller with a clean wet cloth that has been wrung out with water daily after operations.

3. Inspect the drone every 100 flights or after flying for over 20 hours:

1) Check for and replace worn propellers.
2) Check for loose propeller. Replace propellers and propeller washers if needed.
3) Check for aging plastic or rubber parts.
4) Check for loose sensor parts and tighten them firmly.
5) Check for loose wiring harness connectors and tighten them firmly.

4. Inspect the drone daily after operations:

1) Clean the nozzles and hoses at the end of each day of spraying or when the transition time is more than 4 hours, otherwise, the service life of the nozzles will be

reduced due to blockage.

2) Check for loose spray disc and screws, dynamic balance and abnormal sound of the spray disc. Clean the debris on the disc.

3) If there is dust on the surface of nozzles that affects the heat dissipation, wipe it with wet cloth that has been wrung out with clean water or soapy water.

Check for loose nozzles and tighten them firmly. Check for and replace worn rubber of the shock-absorbing mount.

List of dangers and hazards

Type	No.	Description	Solution
Dangers	1	Personal injury arising from rotating propellers	Seek medical attention immediately
	2	Accidental battery fires	Use sand or dry powder fire extinguisher to put out the fire
	3	Pesticide residue on skin or eyes	Immediately wash off with water and seek medical attention in time
	4	Beyond the designated operation area	Try to hover and make a forced landing
	5	Drone crash or corrosion caused by misoperation	Training
	6	Drone crash or corrosion caused by drone power exhaustion or drone failure.	Avoid extra-long routes
Hazards	1	Injury to crops and the environment caused by pesticide spraying	Contact relevant pesticide department for targeted remediation
	2	Injury to the environment caused by improper disposal of used batteries	Dispose of batteries properly

Appendix

Specifications

Product model	3WWDZ-45A
Product name	Agricultural Spraying Drone
Rotor type	Quadcopter
Weight of drone	54.6kg (with battery)
Maximum spray payload weight	100kg
Maximum spread payload weight	105kg
Maximum lift payload weight	115kg
Maximum wheelbase	2260mm
Working dimensions	2950×3100×820mm (Arms & propellers unfolded)
Folding size	1200×670×820mm (Arms folded) 1720×1860×820mm (propellers folded)
Hovering accuracy	RTK enabled: horizontal ±10cm, vertical ±10cm RTK disabled (within 4 minutes): horizontal ±10cm, vertical ±10cm
Landing accuracy	RTK enabled: horizontal ±30cm RTK disabled (within 4 minutes): horizontal ±50cm
No-load hovering time	16.5min (5%SOC)
Full-load spray hovering time	≥7min (5%SOC)

Full-load spread hovering time	≥6min (5%SOC)
Waterproof level	IPX6K (IP67 for modules)
Anticorrosion level	NSS24H
Operating temperature	-10℃～45℃
Operating moisture	30%～90%RH
Satellite receiver frequency	GPS L1/L2，GLONASS F1/F2, BeiDou B1/B2，Galileo E1/E5
Obstacle avoidance	Forward & downward laser compound eye: sense and avoid obstacles with a diameter of 1cm 4D imaging radar: emergency stop in the presence of obstacles
Terrain-follow slope	≤90°
Obstacle avoidance speed	≤10m/s
Terrain-follow Capability	0.7~15m
Autonomous Operating Altitude	-5～30m (-5m means flying from high altitude to low altitude)
Max operating speed	10m/s on flat land (avoidance & terrain follow on), 7m/s on gentle slope (avoidance off, terrain follow on), 5m/s on steep slope (avoidance off, terrain follow on); 13.8m/s (avoidance & terrain follow off in auto mode), 13.8m/s (avoidance & terrain follow off in manual mode), 10m/s (avoidance on in manual mode)
Max wind resistance	12m/s
Max service ceiling above sea level	1000m for 45kg, and for every 500 meters, the payload decreases by 2.5kg.

Max flight radius	2000m
Propulsion system—motor, ESC	
Operating voltage	18V~63V
Rated power	4kW
Motor KV value	60KV
Stator size	138×25mm
Max pulling (single motor)	53kg
Propulsion system - propeller	
Model	5620
Number of rotors	4
Rotor material	Nylon + Carbon Fiber
Mist spraying system – spray tank	
Rated volume	45L
Full-load volume	45L
Tank weight	3.8kg (water pump, flow meter, spray board included)
Material	ON
Mist spraying system - nozzles	
Model	EAV-CCMS50
Number of nozzles	2 or 4
Size	φ85mm*172mm
Weight	986g
Droplet size	10～300μm
Mist spraying system – water pumps	
Liquid pump form	Vane pump

Number of pumps	2
Rated power	29.4W
Max flow rate	24L/min,±5%
Mist spraying system—solenoid valve	
Operating Voltage	Operating voltage DC58V, holding voltage DC16V
Operating Current	Operating current 0.7A, holding current 0.25A
Service Life	≥400,000 cycles (Laboratory environment, 30°C, with 10 seconds on and 10 seconds off intervals)
Rated power	4W
Mist spraying system – flow meter	
Accuracy	≤3%
Measuring flow rate range	0.5 ~ 24L/min
Operating Voltage	5 ~ 15V
Light	
Number of lights	2
Power	5W
Brightness	100lm@3m direct light
Field of View (FOV)	Horizontal ±45°, vertical ±45°
Weight sensor	
Number of sensors	4
Max weight capacity (single)	75kg
Display range (in the app)	0 ~ 75kg
Overall error	±0.05%F.S
Sensitivity	1.75±0.15mv/V

Forward lidar	
Horizontal FOV	120°
Vertical FOV	70°
Max sensing distance	200m
Outdoor effective range	40m (70klux, 10% reflectance)
Horizontal FOV resolution	0.33°
Vertical FOV resolution	0.27°
Mapping accuracy	±3cm
Max power	35W
Laser class	Class 1, safe for the human eye
Downward lidar	
Horizontal FOV	120°
Vertical FOV	15°~26°
Max sensing distance	200m
Outdoor effective range	30m (70klux, 10% reflectance)
Horizontal FOV resolution	0.33°
Vertical FOV resolution	0.31°~0.54°
Mapping accuracy	±3cm
Max power	12W
Laser class	Class 1, safe for the human eye
360-degree 4D imaging radar	
Effective sensing range	40m
Distance resolution	0.8m
Mapping accuracy	0.05m

Horizontal Angle Measurement Accuracy	6°
Antenna beamwidth	Horizontal 360° × Pitch 50°
Rated power	5W
FPV	
Model	EAV-FPV50
FOV	130°
Rotation angle	120°
Max resolution	1080P 30fps
Video format	H.265
Video delay	720P@30FPS, ≤180ms; 1080P@30FPS , ≤250ms
Features	Anti-vibration
Spreader	
Model	EAV-SPD50
Spread tank volume	70L
Dimensions	820mm*530mm327mm
Spread width	3~10m
Spreading system weight (including tank)	≤4kg
Prevent blockages (all three formulas listed mix uniformly and discharge smoothly)	50% Diammonium sulfate + 50% Small granules of urea, with a 1% herbicide solution as the total mass. 50% Diammonium sulfate + 33% Potassium sulfate + 17% Large granules of urea. 50% Organic fertilizer + 50% Small granules of urea, with a

	1% herbicide solution as the total mass.
Operating voltage	47 ~ 58.8V
Operating current	0 ~ 6A
Max spread rate	110kg/min
Max power	360W
Disc operating speed range	200RPM ~ 900RPM
Disc operating speed accuracy	≤5%
Max weighing range	100kg
Weighing resolution	≤50g
Max discharge rate	100kg/min (urea) 50kg/min (wheat seeds)
Particle size	1 ~ 10mm
Spreading boundary accuracy	±0.1m
Target volume range	0.2 ~ 50kg/mu
Target volume accuracy	≤10% (wet material) ≤5% (dry material)
Non-discharge detection time (including material shortage, blockage)	≤500ms (from actual non-discharge to alert/hover/breakpoint generation time)
Surveying Tool	
Model	EAV-SUT50
Dimensions	210*65*65mm
Weight	317g

Communication method	Bluetooth
Duration	>8h
Charging time	2～3h
Operating voltage	7.4V
Waterproof level	IP54
Bluetooth connection range	10m
Communication frequency band (Bluetooth)	2.4GHz
GNSS Support	GPS/BDS/Galileo/GLONASS/NAVIC/QZSS/SBAS
Position update frequency	10Hz
Position Accuracy	0.01m+1ppm
Initial Positioning Time	<26s
RTK convergence time	≤15s
Time to recover fixed solution after losing satellites or network connection	≤1min
CTB shell-core integrated supercharged battery	
Model	EAV-CTB29000A
Weight	11.8±0.5kg
Capacity	29000mAh
Dimensions	305×139×249mm (range of change within ±0.1mm)
Charging current	150A (5C, ambient temperature: 15℃～60℃)
Nominal voltage	52.22V

Discharge current	300A (10C, ambient temperature: -5℃～60℃)
Charging time	9min (30%~95%)
Waterproof level	IP65
Smart protection	Short circuit, overcharge, overcurrent, fire protection
Cooling charger	
Model	EAV-C50-9000
Dimensions	420×394×410mm
Weight	<17.5kg
Max charging power	9000W (dual socket) 3600W (single socket)
Input voltage	AC90～264V, wide voltage input range
Output voltage	40～61V
Output current	150A
Charging speed	Approximately 20 minutes with a household electricity. Approximately 9 minutes with a generator of 9000 watts or higher.
Smart protection	Power factor correction, over/under voltage protection, over-temperature, short-circuit, fan blockage, and other protections, etc.
Fan airflow	318CFM*2
Max fan speed	7200RPM
Fan rated power	120W*2
Fan voltage	DC48V
Fan current	2.5A
Compatible battery	EAV-CTB29000A

Heat dissipation efficacy	The ambient temperature should not exceed 40°C, and during the battery charging process after operation, it should never trigger the high-temperature protection at 65°C (cell temperature).
Remote controller	
Model	EAV-RC50
Dimensions (antenna folded)	280*187*104mm
Weight	≥1.5kg
Operating system	Android 12
Wireless communication	Bluetooth 5.2, WIFI 6E, GPS, 4G network in China
Processor	64-bit Qualcomm octa-core CPU, 6nm process technology
Communication frequency band	2.4GHz
Maximum transmission distance	3000m
High-definition image transmission	Support 1080p@60fps, H.265/H.264
Storage	8G+128G
Screen size	7.02 inch
Screen resolution	1920×1200px
Maximum brightness	1500cd/㎡
Battery capacity	13100mAh
Charging time	<3h
Duration	>8h, supports charging with a power bank

Charging power	65W
Waterproof level	IP54
Ports	USB-A, TYPE-C, HDMI 2.1, TF card, SIM card (China)

Note: The above parameters are only for reference, the actual configuration is subject to the contract and the acceptance form. If the performance parameters are upgraded or changed in the future, no prior notice will be given.

Contact Us

The contents of this manual and product specifications are subject to change without prior notice.

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