J150 Multifunctional Agricultural Drone

Product Manual

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Type 3WWDZ-U70B

Suzhou Eavision Robotic Technologies Co., Ltd.

To Users

Thank you for choosing the EA-J150 Multifunctional Agricultural Drone carefully developed and manufactured by Suzhou Eavision Robotic Technologies Co., Ltd. (hereinafter referred to as "Eavision Robotic"). To familiarize yourself with the operation and maintenance of this device, please carefully read and abide by the requirements of this manual. Meanwhile, during actual operations, please strictly follow the usage requirements and carry out maintenance meticulously as required.

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Safety Statement

Please read this statement carefully before using the product. Using the product indicates your acceptance and agreement with all the contents of this statement.

This product is not suitable for people under 18 years old. Keep this product away from children and exercise extreme caution when operating in the presence of children.

According to the "Interim Regulations on the Management of Unmanned Aerial Vehicle Flights", personnel engaged in routine agricultural drone operation flights should be trained and examined by the producers of agricultural drones in accordance with the specified content and obtain an agricultural drone pilot operation certificate.

During the use of the product, the user undertakes to be responsible for their actions and all consequences arising therefrom. Eavision Robotic shall not be liable for any losses caused by the user's failure to use the product in accordance with this manual, nor shall it be liable for any indirect, consequential, punitive, accidental, special, or penal damages.

The user undertakes to use this product only for legitimate purposes and agrees to abide by all the contents of this "User Manual" and any relevant policies or guidelines that Eavision Robotic may formulate or modify.

The user understands, acknowledges, and accepts that during the use of this product, relevant flight records and data will be automatically uploaded and stored on Eavision Robotic's servers, and agrees that Eavision Robotic may legally collect, store, and use all relevant data during the use of this product. If, due to the user's reasons, the flight records and data cannot be uploaded and saved, resulting in Eavision Robotic being unable to store and analyze the flight records and data, Eavision Robotic shall not be liable for any consequences.

The excellent performance of this product depends on the original accessories of Eavision Robotic. Eavision Robotic shall not bear any legal liability for any losses and damages caused by the use of non-original accessories.

This statement has a significant impact on the safe use of this product and your legitimate rights and interests. Suzhou Eavision Robotic Technologies Co., Ltd. reserves the right to update this disclaimer. Thank you again for choosing our company's products.

Safety Precautions

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This product is not intended for use by persons under the age of 18.

The Safety Instructions section contains essential flight safety knowledge. It is better that read the entire content of the "User Manual" thoroughly.

Pesticide Usage Rules

- The Eavision CCMS normal-temperature mist spray nozzle can spray powder pesticides, but it will affect its service life. After each use of spraying powder pesticides, be sure to clean the nozzle. Otherwise, it may cause nozzle blockage or damage. The reduced service life of the nozzle due to improper maintenance after spraying powder pesticides is not covered by the warranty.
- Pesticides are toxic. Please use them with caution and operate in accordance with the pesticide usage specifications.
- When preparing pesticides, pay attention to prevent the pesticide solution from splashing and avoid human harm caused by pesticide residues on the aircraft body.
- When preparing pesticides, use clean water without minerals. After preparing the pesticide solution, filter it before adding it to the operation tank to prevent impurities from blocking the filter screen. If there is a blockage during use, clean it in time before continuing to use.
- When using pesticides, ensure that people are in the upwind direction to avoid harm caused by pesticide drift.
- When using pesticides, wear protective equipment to prevent direct contact with pesticides. After spraying, wash your skin and clean the agricultural drone and remote controller.
- The effectiveness of pesticides is closely related to factors such as the concentration of the pesticide solution, spraying flow rate, the height of the agricultural drone from the crops, wind direction, wind speed, temperature, and humidity. These factors should be comprehensively considered during use to achieve the best results. Ensure that these factors do not affect the surrounding people, animals, and the environment during the pesticide application process.
- When using pesticides, it is strictly prohibited to pollute rivers and drinking water sources. Handling of Remaining Pesticide Solution: Plan in advance to minimize the amount of leftover pesticide solution. Purchase and prepare pesticide formulations according to the area to be treated. Spraying any remaining pesticide solution and rinsate onto the crops should be the first option considered. At the same time,

consideration should be given to installing dedicated piping or equipment systems for the proper disposal of cleaning liquids.

- It is prohibited to use strong acid, strong alkali, high-temperature liquids, and pesticides explicitly prohibited by the state.

Operational Safety

- Unless otherwise stipulated by the laws of the country or region where the product is used, agricultural drone operators shall not operate agricultural drones for work without legally obtaining the corresponding certificates and licenses.
- Before use, the user should ensure that the power supply system and the unfolded position of the drone arms are correct, keep the agricultural drone away from people and dangerous items, and confirm whether there are unsafe factors.
- It is strictly prohibited for pilots to operate agricultural drones under the influence of alcohol, drugs, drug anesthesia, dizziness, fatigue, or other poor physical or mental conditions to avoid potential dangers.
- During the novice stage, if the operator has not completed sufficient flight training, they shall not operate this agricultural drone alone outside the training area. It is recommended to seek help from an experienced user before flying and have an experienced user accompany and assist during the flight.
- Keep away from operating agricultural drones. Do not touch the rotating propellers with your body or other parts. Do not wear loose clothing during flight to avoid entanglement with the propellers. It is strictly prohibited to directly obstruct, interfere with, or impact the agricultural drone with the human body, animals, or any objects.
- Try not to fly in magnetic field interference areas, radio interference areas (such as high-voltage power towers, large power equipment, radio and television transmission towers, mobile phone base stations, etc.). If it is necessary to operate, ensure that there are no idle personnel within a radius of 200 meters of the operation area. Eavision Robotic shall not be liable for any product, equipment damage, or personal injury caused thereby.
- Be sure to fly within the specified maximum takeoff weight to avoid potential dangers.
- After landing, turn off the power of the agricultural drone first, then the spare power supply, and finally the remote controller to prevent danger caused by the loss of the remote controller signal.
- When the low-battery warning is issued, return to the base as soon as possible. The default battery level for returning to the base is 30%. Operating under low battery conditions is strictly prohibited.
- Maintain control of the agricultural drone throughout the process, reasonably judge the flight situation, and obtain control of the agricultural drone in a timely manner.

- Do not rely entirely on the radar module. In certain environments or flight modes, the radar module may not provide accurate detection. Ensure good visibility, rely on visual observation, make reasonable judgments about flight conditions, avoid obstacles in a timely manner, maintain full control of the agricultural drone at all times, and operate with caution.
- If there are high-voltage power lines in the operating area, carefully plan the flight route and maintain a safe distance to avoid collisions. In the event that the agricultural drone collides with power lines, do not touch the drone by hand due to the risk of electric shock. Contact the local power utility to disconnect the power supply before attempting to retrieve the drone.
- During night operations, do not look directly at the searchlight, as this may cause eye injury.
- After completing operations, avoid touching the surfaces of the motors and ESCs to prevent burns.

Environmental Safety

- Fly in open areas away from people.
- Do not fly indoors.
- Fly in good weather conditions (not in extreme weather such as strong winds, heavy rain, snow, icing, sandstorms, and lightning).
- Under controlled laboratory conditions, the core module of the agricultural drone has an IP67 protection level. The protection ability is not permanently effective and may decline due to long-term use, resulting in aging and wear. Damage caused by liquid intrusion is not covered by the warranty.

Regulatory Safety

- Agricultural drone operators shall strictly abide by the relevant laws and regulations regarding agricultural drone flights in the place where the product is used to ensure that the agricultural drone flies legally and compliantly (the scope of legality and compliance includes, but is not limited to, flight altitude, flight area, and flight line of sight). The default factory settings of the J150 agricultural drone limit the true altitude to 30m, the speed to 13.8m/s, and the distance to 2,000m. (According to the "Interim Regulations on the Management of Unmanned Aerial Vehicle Flights", when operating an agricultural drone in China, it is required to fly above agricultural, forestry, and pastoral areas, with a true altitude not exceeding 30m, a speed limit of 50km/h, and a flight radius not exceeding 2,000m).
- Personnel engaged in routine agricultural drone operation flights should be trained and examined by the producers of agricultural drones in accordance with the specified content and obtain an agricultural drone pilot operation certificate.
- According to the Interim Regulations on the Management of Unmanned Aircraft Flights, before using the

agricultural drone for the first time, you must complete the real- name registration and product activation for civil unmanned aircraft. Flights are strictly prohibited without registration and activation. If you operate the aircraft without completing registration and activation as required, the public security authority will order you to rectify the situation and may impose a fine of up to 200 RMB; if the circumstances are serious, a fine of not less than 2,000 RMB and not more than 20,000 RMB shall be imposed.

- When the product is transferred, sold, or its owner changes, the original owner must first deactivate the product and unbind the real- name registration. The new owner shall then complete registration and activation anew. If the original owner fails to deactivate the product as required, the original owner may face civil legal risks such as liability for infringement or contract disputes. Under serious circumstances, the original owner may also bear corresponding criminal liability if the civil unmanned aircraft is used by others for illegal activities.
- Registration, record-keeping, and deregistration website: https://uom.caac.gov.cn
- The export, re-export, or transfer of this product must comply with the export control laws and regulations of China and other relevant countries. Without the authorization required under applicable export control laws or approval from the relevant competent authorities, when using, selling, transferring, leasing this product, or engaging in other related activities, you must ensure the following:

1. Strictly comply with the embargo provisions under applicable export control laws and refrain from any violations;

2. Not engage in transactions with end users prohibited by applicable export control laws;

3. Use this product strictly for civilian purposes. It is strictly prohibited to use it for military purposes or in connection with nuclear, chemical, biological weapons, missiles, or related applications.

You are obligated to comply with the export control laws of China and other applicable jurisdictions. If any violation of the above laws arises from your use, sale, transfer, lease of this product, or any other related actions, you shall bear full legal responsibility independently. Under such circumstances, EAVISION Robotics shall assume no liability. You shall also indemnify and hold harmless EAVISION Robotics and its affiliates, officers, employees, agents, and representatives from any liabilities, damages, or losses arising from your aforementioned actions, and bear all related expenses, including but not limited to litigation costs, attorney fees, and travel expenses.

List of Items

Please check the items of EA-J150 you received as per the sales package.



EA-J150 Agricultural Drone



EAV-RC60 Remote Controller Set



EAV-CTB45Ah Intelligent Flight Battery



EAV-C60 Cooling Charger



EAV-SUT60 Surveying Tool



Lifting Set



EAV-BAS60 Base Station



EAV-SPD100 Precision Spreader

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

Product Overview

Product Introduction

The new EA-J150 agricultural drone from Eavision is an all-in-one multifunctional agricultural drone integrating plant protection, spreading, mapping, and lifting. It features industry-leading ultra-low terrain-following technology and autonomous flight obstacle avoidance, allowing it to fly smoothly in large fields and mountainous areas. Equipped with a normal-temperature mist spraying system, it can meet the prevention and control needs of various crops. The onboard spraying, spreading, and lifting operation systems can be quickly switched, truly realizing multi-functionality in one machine. It has undergone more than 100 tests in strict accordance with reliability test standards and has an IP67 protection level, making it more reliable, durable, and efficient in operations.

Feature Highlights

- New Laser Compound-Eye Vision System: With ultra-high dynamic simulation capabilities, it can quickly detect, locate, and identify targets while moving, and avoid obstacles in advance. The 360-degree full-field view combined with high-definition resolution enables it to perceive an area the size of a football field and distinguish the smallest obstacles with a diameter of 1 cm. It can accurately identify obstacles such as dead branches, utility poles, and wires in complex operation environments, providing comprehensive flight safety protection.
- Upgraded Route Algorithm: Takeoff/landing and turning are synchronized, and the line-changing and drift-turning are smoother, greatly reducing non-operation flight time. The maximum operation speed can reach 13.8 m/s, and the maximum operation efficiency can reach 360 mu per hour.
- Powerful Onboard Chip: Combined with a more powerful onboard chip, it can quickly build a 3D map of the operation environment in real-time, automatically generate safe flight routes, and ensure smoother obstacle avoidance and terrain-following trajectories. It can achieve precise obstacle avoidance and terrain-following flight at a high speed of 10 m/s in various complex terrains such as plains, water surfaces, and mountains. The terrain-following height can reach 30 meters.
- Open Intelligent Lifting Function: The maximum lifting capacity is 75 Kg, equipped with a high-strength lifting rope, quick-release and quick-mount design, with torque release and automatic hook release devices. Combined with the anti-swing control algorithm, it improves the safety of lifting flights. A dedicated guidance device is provided, enabling one-click location of the takeoff point and lifting point, and autonomous flight, greatly reducing the lifting operation difficulty and improving lifting efficiency.
- Integrated Pesticide Box: The standard pesticide box has a rated capacity of 70 L. It is equipped with dual

electromagnetic impeller pumps, and the maximum flow rate can reach 40 L/min.

- The spreading system can be quickly replaced with the spraying operation system. The 100 L spreading box uses high-power auger motors and spinner motors, and is equipped with replaceable augers, which are suitable for various particle sizes. The material discharge is uniform and smooth, and the maximum discharge speed can reach 240 Kg/min. It can intelligently calculate the material density, accurately set the spreading width, and the row spacing error is less than 10 cm, greatly reducing overlapping and missing spreading. The effective spreading width can reach up to 10 meters.
- Upgraded Normal-Temperature Twin-Peak Mist Nozzle: With an innovative double-layer spray disk structure design, it significantly increases the fog output, has a better penetration effect, and improves the atomization efficiency. At the same time, the innovative structure inside the spray disk makes the fog more uniform, ensuring the atomization effect. The double-layer spray disk adopts an up-and-down through-flow guide structure design, making the liquid pesticide atomize more smoothly and less prone to blockage.
- The night flight operation fully synchronizes with the day flight operation. The night flight obstacle avoidance function is enabled, allowing for safe night flight operations without the need for additional obstacle marking.
- Enhanced Handheld Flight Mode: It can achieve altitude-holding and direction-holding flight functions in the manual mode. Combined with Eavision's new sensing system, it realizes omnidirectional obstacle avoidance in the manual mode. It can perform fast, safe, and precise manual operations without the need for plot mapping. The altitude-holding flight mode is available, with an altitude-holding range of up to 30 meters, suitable for more special operation scenarios.
- Upgraded Intelligent Remote Controller: The 7-inch large screen provides a larger and more user-friendly operation interface. It is equipped with an 8-core processor, a 6-nanometer high-performance chip, 8G of running memory, and 128G of storage. With a powerful cooling fan, the operation is more fluent. Equipped with a high-definition FPV system, it can conduct farmland mapping and generate high-definition farmland maps locally in real-time, greatly reducing the labor intensity of manual plot marking. With its strong sensing ability, you can draw the boundary and start flying immediately.
- The optional mapping device can quickly obtain the RTK signal in a dense forest environment. The optional "Extreme Link" communication station integrates four functions: high-precision mapping, offline base station, signal relay, and lifting guidance, meeting the needs of more scenarios such as no-network, weak-network, and mountain-blocked areas.
- It adopts the industry-innovative CTB integrated shell-core super-charging battery with a blade-like

battery structure design. The battery cells have independent heat dissipation, and the heat dissipation area is increased by 7 times, enabling rapid heat dissipation and greatly improving the battery cycle efficiency. The dual-interface design for charging and discharging solves the problem of overheating at the interface during high-temperature operations in summer.

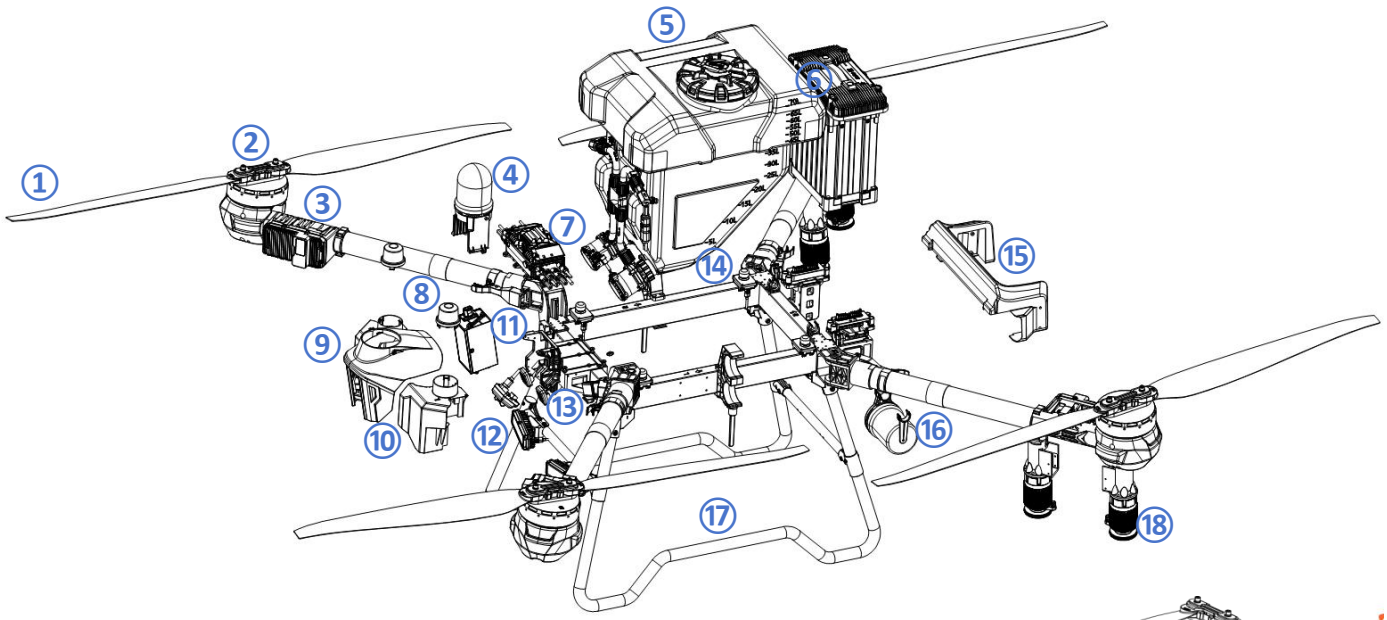
- The integrated cooling charger is equipped with a dual-axis unidirectional large-fan, supports 5C charging, and can be fully charged in as fast as 9 minutes, greatly improving the charging efficiency. It can achieve two-battery cycle operations in a 40°C high-temperature environment. The charger has a custom-defined charging power setting mode, allowing for free switching between fast-charging and slow-charging modes. It also supports generators and traditional rural power circuits, meeting the needs of full-scenario operations.

Agricultural Drone

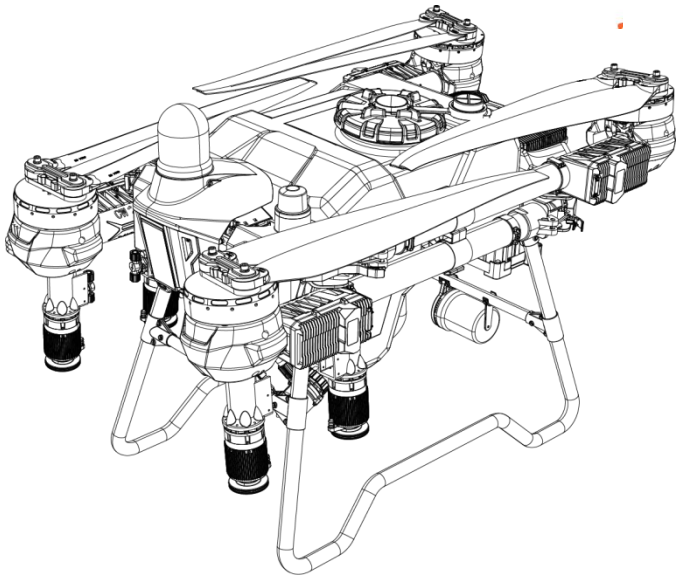
Overview

The agricultural drone adopts an industrial-grade flight system, with high-atomization spraying using four nozzles in mountainous areas. It is equipped with a multi-functional lifting device and can generate high-definition maps in real-time for immediate flight after plot marking. It meets the operation requirements of plant protection, spraying, lifting, and aerial surveying in different scenarios. Equipped with a laser compound-eye vision system with ultra-high dynamic simulation capabilities, the 360-degree full-field view combined with high-definition resolution can accurately identify obstacles such as dead branches, utility poles, and wires in complex operation environments, providing comprehensive safety protection.

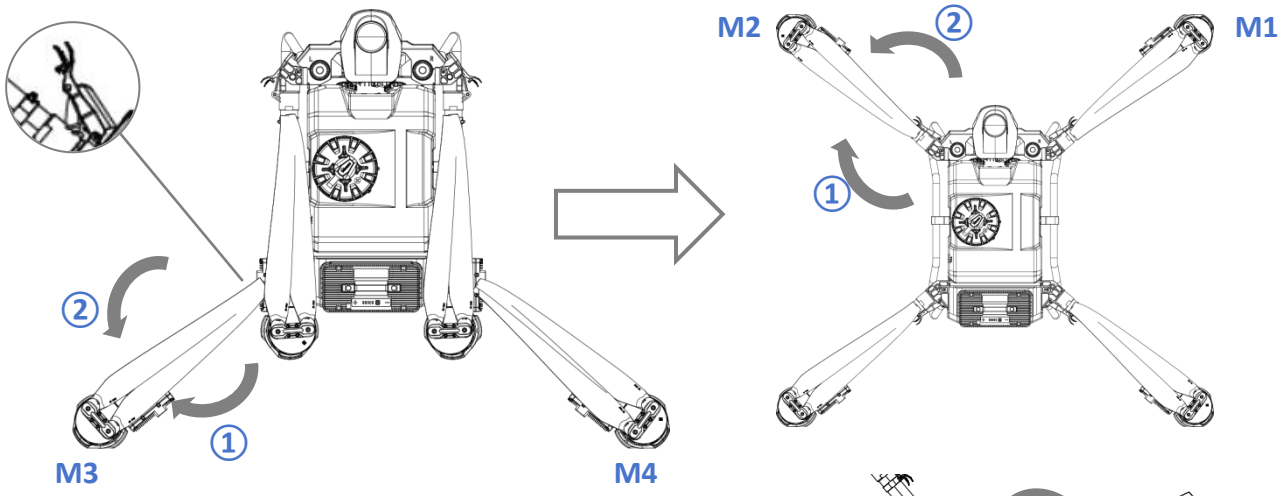
Agricultural Drone Components



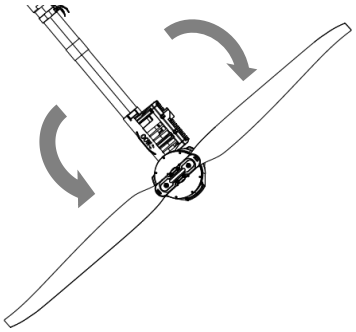
1. Propeller
2. Power Motor
3. Power ESC
4. Upper Rotating Radar
5. Water Tank Body
6. Battery
7. Main Controller
8. GNSS Antenna Cap
9. Front Cover Body
10. GNSS Antenna Left Bracket
11. Front Laser Radar
12. Infrared Lamp Assembly
13. FPV
14. Load Cell
15. Rear Cover Body
16. Rear Rotating Radar
17. Landing Gear
18. Mist Nozzle



Preparation



1. Unfold the drone arms M3 and M4 and fasten the arm fasteners tightly, being careful not to get pinched.
2. Unfold the drone arms M1 and M2 and fasten the arm fasteners tightly, being careful not to get pinched.
3. Unfold the propellers.
4. Install the battery.



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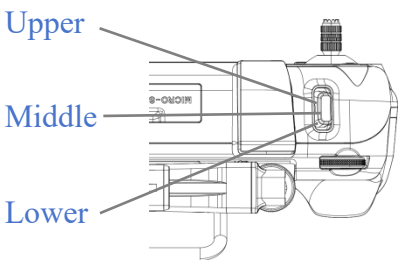
- When folding the drone arms, fold the arms M1 and M2 first, then M3 and M4, and ensure that the arms are snapped into the semi-circular slots on the side of the aircraft. Otherwise, the arms may be damaged.
- The arm fasteners must be fastened tightly. The arm fasteners have a detection function, and if not fastened, a warning will be displayed on the remote controller.
- When installing the battery, pay attention to the positive and negative polarities. The battery has a positive-negative anti-insertion design. When plugging or unplugging the battery, make sure the battery power is turned off.

Flight Modes

The flight mode refers to the selection of manual and automatic modes during flight. The mode switch is located in the upper-left corner of the remote controller.

Flight Gear Switching

Toggle the switch to switch the flight mode of the agricultural drone.



Gear Position	Corresponding Flight Gear
Upper, Middle	Manual Flight Mode
Lower	Automatic Flight Mode

Operation Modes

Aerial Photography and Mapping

Aerial photography and mapping means using the J150 agricultural drone for aerial photogrammetry. The FPV camera of the agricultural drone collects images of farmland and orchards, and a high-definition orchard map is automatically generated on the remote controller. By obtaining boundary points with the remote controller, it helps users accurately plan plots and easily complete plot marking and waypoint setting. For detailed operation steps, please refer to the flight chapter.

Spreading Operation Mode

The agricultural drone's load can be quickly replaced with a spreading box, which can be used to spread seeds, fertilizers, bait, etc. The suitable particle diameter range is 1-10mm dry solid particles. Equipped with a 100L spreading box, it uses high-power auger motors and spinner motors, and is equipped with replaceable augers, which are suitable for various particle sizes. The material discharge is uniform and smooth, and the maximum discharge speed can reach 240 Kg/min. It can intelligently calculate the material density, accurately set the spreading width, and the row spacing error is less than 10 cm, greatly reducing overlapping and missing spreading. The effective spreading width can reach up to 10 meters.

Spraying Operation Mode

The spraying operation mode supports spraying in large fields and orchards. By default, it is equipped with four CCMS normal-temperature mist nozzles. You can select to use only two nozzles or four nozzles for spraying through the remote controller APP settings. A new mixed-particle-size spraying mode is added to achieve uniform distribution of the liquid pesticide, and the droplet particle size can be continuously adjusted from 10-300um. For detailed operation steps, please refer to the flight chapter.

Lifting Operation Mode

During multi-scenario operations, the agricultural drone is equipped with a lifting device for agricultural plant protection lifting. The lifting function realizes automatic guidance, with a maximum load-bearing capacity of 75 Kg. It is also equipped with a high-strength lifting rope and an automatic hook-release device, enabling quick-release and quick-mount, reducing the lifting operation difficulty and improving lifting efficiency. Different mounts can be replaced for different operation scenarios to achieve "one machine, multiple functions". For detailed operation steps, please refer to the flight chapter.

Enhanced Manual Flight Operation Mode

The enhanced manual flight operation mode is different from the traditional manual flight. By setting

parameters such as height, speed, and route, it conducts assisted manual flight in the GNSS mode to achieve manual enhancement. For detailed operation steps, please refer to the flight chapter.

Resume Operation Point

If the agricultural drone exits the flight path operation during the operation process, the agricultural drone will record the breakpoint, and the user can continue the flight path operation through the "Resume Operation Point" function.

The "Resume Operation Point" function is mainly used for operations such as adding pesticides to the pesticide box (material box) and replacing the battery during the operation.

Recording Breakpoints

During the operation process, the following operations will make the agricultural drone record breakpoints.

1. Click the "Return" button in the lower-right corner of the APP during operation.
2. The agricultural drone returns to the base in any way.
3. Return to the base when switching the mode in the lower-left corner of the remote controller.
4. Return to the base when the pesticide box is empty (displaying "pesticide box empty").
5. Return to the base when the agricultural drone's battery is low.
6. Return to the base when the agricultural drone reports any fault.

Resume Operation

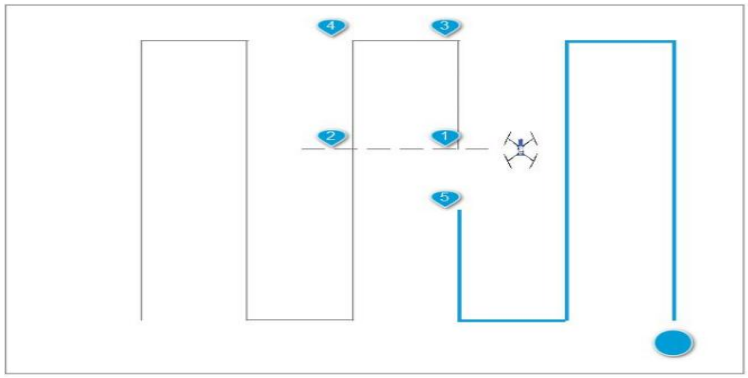
1. After clicking the resume operation point, the following waypoints will appear. The user can manually select a single waypoint, and the agricultural drone will continue the operation.

a) The intersection point of the current position of the agricultural drone perpendicular to the current un-operated route is [Waypoint 1].

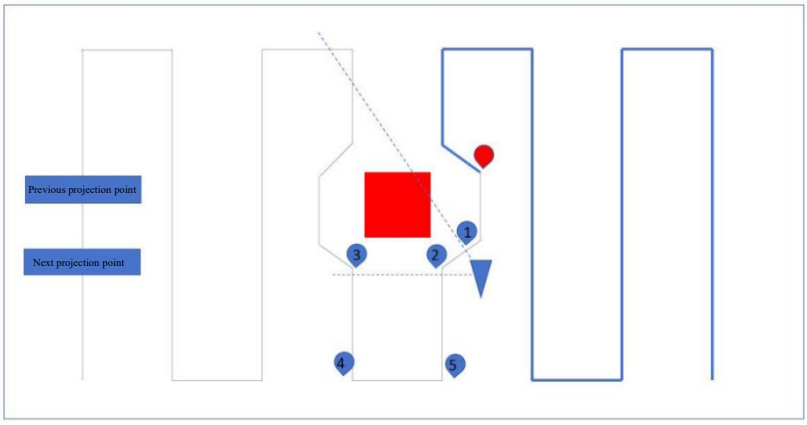
b) The intersection point of the current position of the agricultural drone perpendicular to the next un-operated route is [Waypoint 2].

c) The next two waypoints of the current un-operated route are [Waypoint 3] & [Waypoint 4].

d) The breakpoint when switching from the automatic mode to the manual mode is [Waypoint 5].



2. When the projection point position of the agricultural drone is not suitable for the agricultural drone to continue the operation, the user can click the next projection point to project a new projection point on the next flight segment, as shown in the figure below. You can also click the previous projection point to return to the previous flight segment for projection.



No-Pesticide Alarm

Overview

The agricultural drone transmits the remaining pesticide information detected by the load cell back to the APP and displays it on the APP interface in real-time. If there is no pesticide, an alarm will be issued, and "pesticide box empty" will be announced.

Usage

1. When the APP announces and prompts "pesticide box empty", the agricultural drone will automatically turn off the nozzles and stop spraying.
2. When the pesticide box is empty during operation, a breakpoint will be recorded.
3. During autonomous operation, the drone will return to the base immediately after the no-pesticide alarm.
4. After the agricultural drone lands and the motor stops, add pesticides to the pesticide box (or material box) and tighten the lid of the operation box.
5. Enter the autonomous operation mode to continue the operation.

Laser Compound-Eye Vision System

The J150 is equipped with a laser compound-eye vision system composed of a front laser radar, an upper rotating radar, and a rear rotating radar. It can achieve multi-direction obstacle perception and obstacle avoidance, further ensuring safety. In addition, during the operation process, it can accurately detect the height of crops and achieve terrain-following flight, maintaining a relatively constant height from the crops

during the agricultural drone's operation to ensure the uniformity of the plant protection spraying operation effect.

It also has ultra-high dynamic simulation capabilities, which can quickly detect, locate, and identify targets while moving, and avoid obstacles in advance. With a 360-degree full-field view and high-definition resolution, the laser compound-eye vision system can clearly identify utility poles, houses, and thick trees from a distance of 40 meters, and clearly perceive wires and inclined cables with a diameter of 1 cm and above from a distance of 10 meters. It can identify obstacles such as dead branches, utility poles, and wires in complex operation environments, providing comprehensive flight safety protection.

The front laser radar, upper rotating radar, and rear rotating radar need to be used in combination according to the terrain. The bypass and terrain-following functions need to be enabled in the APP before use. The agricultural drone will intelligently bypass and follow the terrain according to different operation terrains.

Definition and Concepts

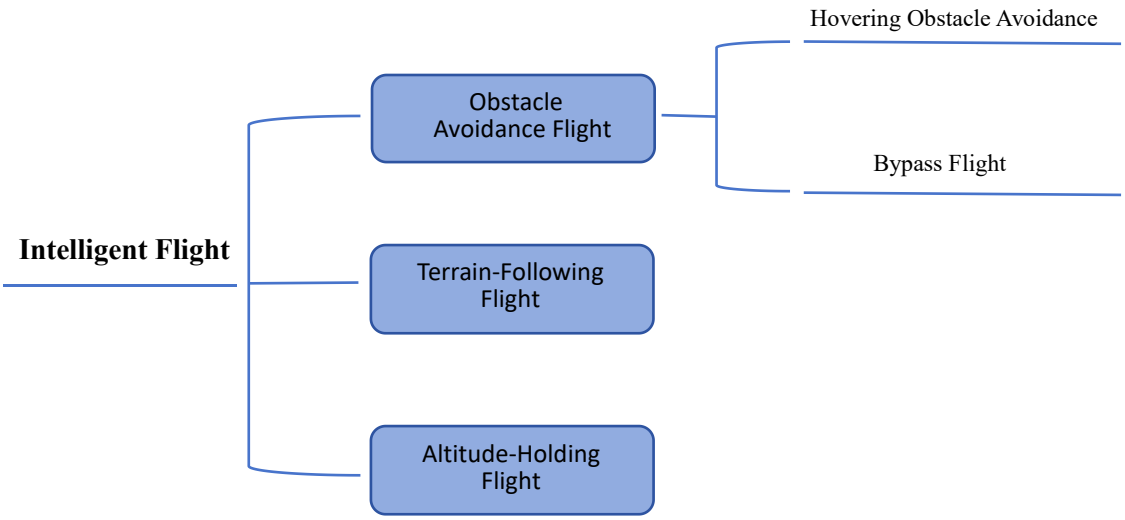
Obstacle Avoidance: All methods to avoid colliding with obstacles.

Hovering Obstacle Avoidance: Hovering in front of an obstacle.

Bypass Flight: Bypassing obstacles from the left or right side.

Terrain-Following Flight: The agricultural drone always maintains a certain relative height from the crops or the top of the obstacles directly below.

Altitude-Holding Flight: The agricultural drone always flies at a constant height from the take-off point.



Detection Range

Front Laser Radar Sensing Range: Horizontal direction 70°, vertical direction 120°; effective detection distance 80 meters.

360° 4D Imaging Upper Rotating Radar Sensing Range: Horizontal direction 360°, vertical direction 140°; effective detection distance 60 meters.

360° 4D Imaging Rear Rotating Radar Sensing Range: Horizontal direction 50°, vertical direction 270°; effective detection distance 60 meters.

Usage of Bypass and Terrain-Following

Click the "⚙" in the upper-right corner of the APP operation interface to enter the "⚙" interface. After selecting to turn on or off the bypass and terrain-following functions, the agricultural drone will perform automatic flight operations according to the corresponding settings.

⚠

The bypass and terrain-following icons in the APP operation interface are subject to the above-shown diagrams "" "", and the buttons are for reference only.

Large Field: Suitable for large-field crops with no obvious height changes in the terrain

Flat Ground: Suitable for fruit trees with no significant height changes in the terrain (slope range ≤ 10°)

Gentle Slope: Suitable for fruit trees with gentle terrain changes (10° < slope range ≤ 30°)

Steep Slope: Suitable for fruit trees with drastic terrain changes (30° < slope range ≤ 90°)

⚠

- After enabling the obstacle avoidance function, the maximum flight speed of the agricultural drone is 10m/s.
- The terrain-following slope range of the agricultural drone is ≤ 90°.
- When operating in mountainous areas, be sure to turn off the bypass function and turn on the terrain-following function for operation. Otherwise, continuous obstacle avoidance may occur, posing a danger.
- For continuous multiple obstacles such as utility poles or trees, if the distance between obstacles is greater than 8m, the agricultural drone will automatically bypass the obstacles; if the distance is less than 8m, they will be automatically calculated as one obstacle.
- The enhanced manual flight operation mode only supports the altitude-holding function. The agricultural drone will hover and avoid obstacles when encountering obstacles.
- When sensors such as the radar are dirty, the agricultural drone may have abnormal obstacle avoidance and terrain-following, and its flight performance will be different from that in normal operation scenarios. Please fly with caution.

Precautions for Using the Sensing System

⚠

- Maintain control of the agricultural drone throughout the process, reasonably judge the flight situation, and obtain control of the agricultural drone in a timely manner. Ensure good visibility, rely on visual observation, reasonably judge the flight situation, and avoid obstacles in a timely manner.
- The obstacle avoidance function cannot be entered in the attitude mode. The radar module is relatively precise. Do not squeeze or bump it.
- When multiple agricultural drones operate in close proximity, the radar sensitivity may decrease. Please fly with caution.
- Before each flight, check to ensure that the appearance is clean and the outer protective cover is intact, without cracks, dents, or deformation.

Speed and Altitude

Table 1 Automatic Flight Mode - Maximum Speed (m/s) in Different Scenarios

Settings	Large-field			Flat ground			Gentle slope			Steep slope		
	Normal	Power line	Water surface	Normal	Power line	Water surface	Normal	Power line	Water surface	Normal	Power line	Water surface
Enable terrain following	10	7	6	10	7	6	7	7	4	5	5	4
Enable bypass	13.8	7	10	10	7	7	7	7	7	5	5	5
All off	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
All on	10	7	6	10	7	6	7	7	4	5	5	4

Table 2 Automatic Flight Mode - Altitude Range (m) in Different Scenarios

Settings	Large-field			Flat ground			Gentle slope			Steep slope		
	Normal	Power line	Water surface	Normal	Power line	Water surface	Normal	Power line	Water surface	Normal	Power line	Water surface
Enable terrain following	1.5~30	1.5~30	2.5~8	1.5~30	1.5~30	2.5~8	2.5~30	2.5~20	2.5~8	2.5~30	2.5~20	2.5~8
Enable bypass	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30
All off	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30	-5~30
All on	1.5~30	1.5~30	2.5~8	1.5~30	1.5~30	2.5~8	2.5~30	2.5~20	2.5~8	2.5~30	2.5~20	2.5~8

Note: Altitude -5 means flying from a high-altitude area to a low-altitude area, with an altitude difference of -5 meters.

Table 3 Manual Flight Mode - Maximum Speed (m/s) in Different Scenarios

Settings	Pure manual	Enhanced manual flight
All off	10	10
All on	/	10

Automatic Return

The agricultural drone has functions such as intelligent return and low-battery return during autonomous operation due to reasons such as low battery.

Return Point: The point where the agricultural drone records its current position during takeoff.

Return: The process in which the agricultural drone automatically returns to the return point is called return.

Intelligent Return

The intelligent return can be activated by clicking the return button in the lower-right corner of the APP operation interface on the remote controller. In spraying and spreading operations, the action will be executed immediately after clicking the return button.

Low-Battery Return

The low-battery return occurs when the remaining battery power of the aircraft is insufficient to continue the operation. The operation will be suspended, and the drone will automatically return to the base. This function is only effective during automatic operations. During the return process, if the user switches to the manual flight mode, the user will obtain manual control.

Disconnection Return

When the agricultural drone loses its signal during autonomous operation, it will continue to complete the operation independently. After the task is completed, the agricultural drone will return to the base on its own.

Return Obstacle Avoidance and Terrain-Following Function

When the (enabled) radar module meets the working conditions, the agricultural drone can achieve return terrain-following and obstacle-avoidance flight.

- If the return process is executed during autonomous operation in large fields or mountainous orchards, the agricultural drone will automatically perform terrain-following flight to jump over obstacles such as trees and wires during the return journey.
- In the enhanced manual flight operation mode, if the automatic terrain-following function is not turned on and the omnidirectional obstacle-avoidance radar is turned on, the drone will only brake urgently when encountering obstacles. The APP will issue a reminder, and the drone can be manually controlled to bypass the obstacles.
- During completely manual flight operations, the flight and return processes are completely manually controlled.

Low-Battery Protection

The agricultural drone has a low-battery alarm function:

If a low-battery alarm appears on the APP, return the agricultural drone to the base and land as soon as possible, and then replace the battery.

- The low-battery warning function can be set in the "⚙" power management in the upper-right corner of the APP operation interface.

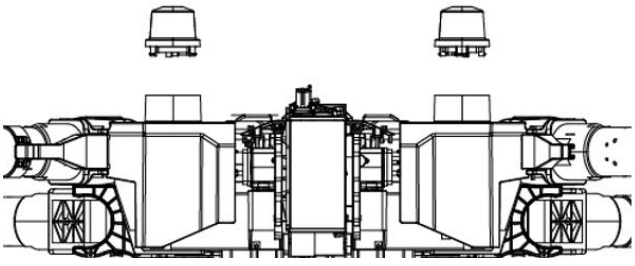
⚠

- If the operation continues after the low-battery alarm during manual flight operations (enhanced manual flight), it may cause the battery power to run out, posing a danger.

RTK Function

The agricultural drone is equipped with RTK (Real-time kinematic) real-time differential positioning technology as standard. It is a measurement method that can obtain centimeter-level accuracy positioning outdoors in real-time. Through the connection between the cloud base station and the agricultural drone, it can accurately locate the position of the agricultural drone, ensuring the accuracy of agricultural plant protection.

At the same time, the dual-antenna technology on the aircraft provides strong anti-electromagnetic interference capabilities, ensuring reliable operation flights in environments with strong magnetic interference such as high-voltage lines and metal buildings.



The autonomous operation of the agricultural drone must be supported by the high-precision service of the cloud base station to provide centimeter-level positioning. Otherwise, the agricultural drone cannot take off when it fails to enter the RTK state.

RTK

Each time before using the agricultural drone, check to ensure that the RTK signal is received correctly. Otherwise, the agricultural drone cannot take off when it fails to enter the RTK state.

RTK is divided into network RTK and ground RTK. Select according to the situation. Enter the APP Home Page - Device Management - Base Station Settings to view and set.

No-Network RTK

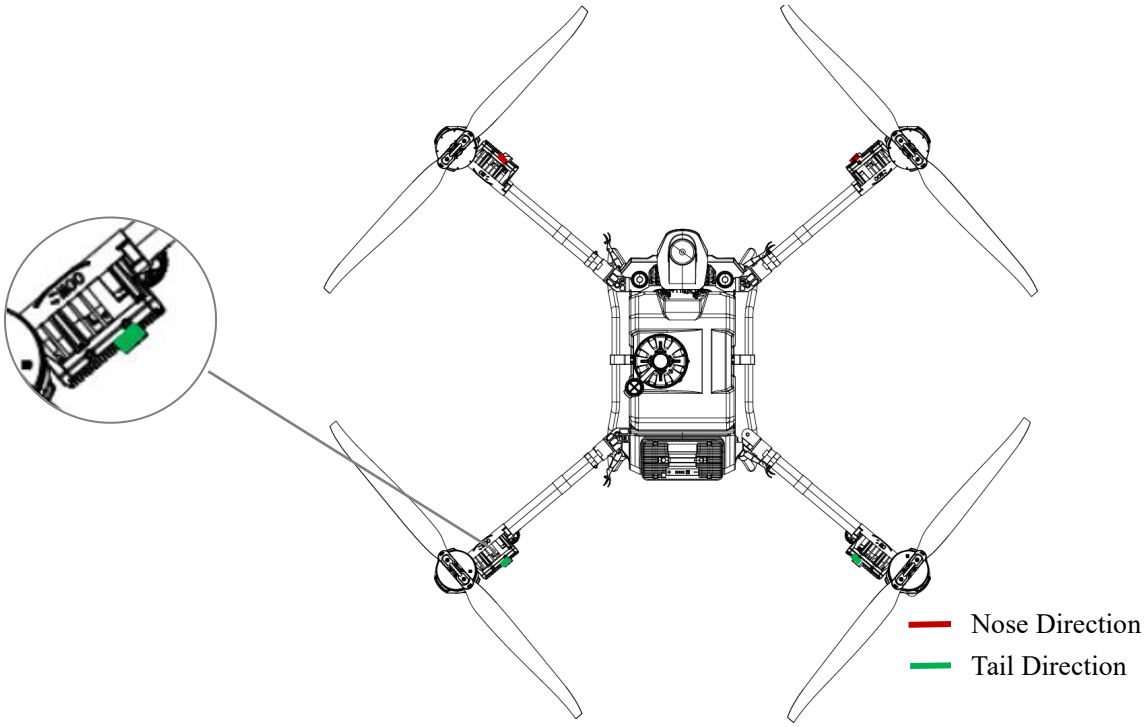
No-Network RTK needs to be used in conjunction with the Extreme Link Communication Station (base station function). Refer to the Extreme Link Communication Station Chapter of this manual to complete the frequency pairing and installation of the agricultural drone and the base station function.

Navigation Lights

The drone arms M1 to M4 of the agricultural drone are equipped with LED lights.

The lights on drone arms M1 and M2 are the nose indicator lights of the agricultural drone. When the power is turned on, the red lights are always on to indicate the nose direction of the agricultural drone. The LED lights on drone arms M3 and M4 are the tail indicator lights. When the power is turned on, the green lights are always on to indicate the tail direction of the agricultural drone.

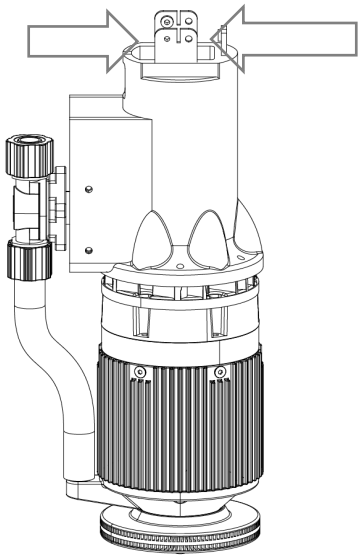
When the main power of the agricultural drone is not turned on, all navigation lights are off.

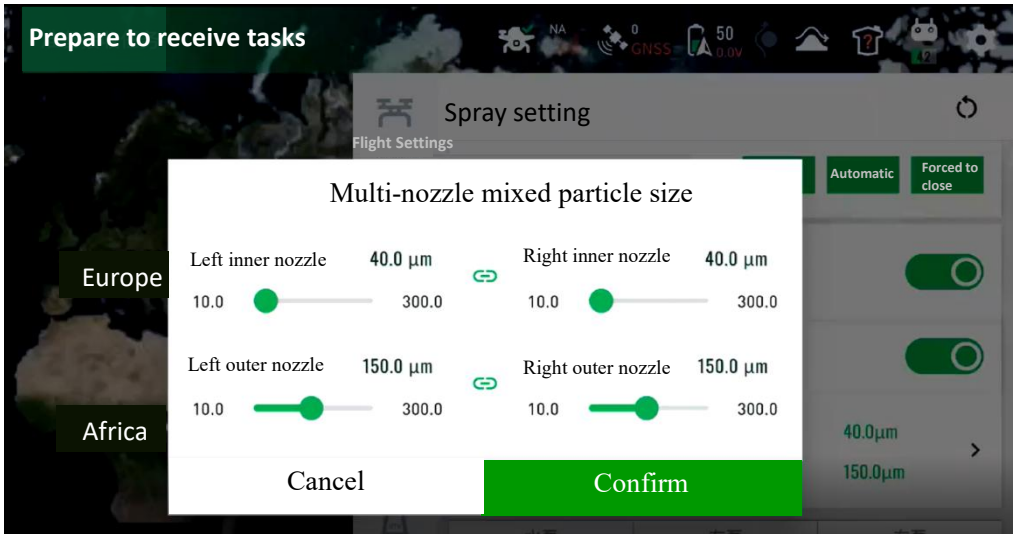


Nozzles and Spray Disks

The agricultural drone is equipped with four nozzles as standard, and it can directly achieve the independent setting of multiple nozzles with different particle sizes. To replace the nozzles, simply remove the water pipes and screws.

- For APP nozzle switching, perform 2/4 nozzle switching in the operation interface < .

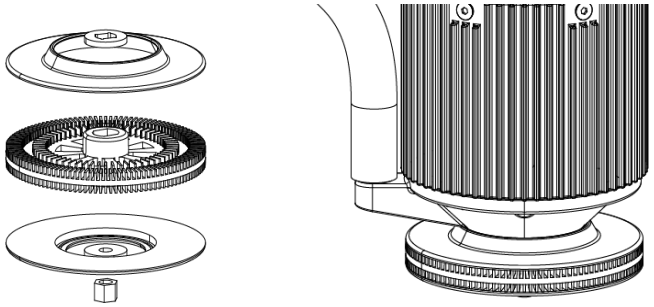




- For APP particle size independent selection, perform multi-nozzle mixed-particle-size setting in the operation interface < .
- In the spraying settings interface, turn on the "multi-nozzle mixed-particle-size" setting, click ">" to jump to the parameter setting interface for adjustment.
- After adjusting the parameters, click the "Confirm" button to complete the multi-nozzle mixed-particle-size task setting.

Spray Disk Type

The innovative double-layer spray disk structure design significantly increases the fog output, has a better penetration effect, and improves the atomization efficiency. At the same time, the innovative structure inside the spray disk makes the fog more uniform, ensuring the atomization effect. The double-layer spray disk adopts an up-and-down through-flow guide structure design, making the liquid pesticide atomize more smoothly and less prone to blockage.



Spare Battery

The agricultural drone is equipped with a spare power supply. After the agricultural drone is powered on, the spare power supply automatically turns on to supply power. When replacing the power battery, the spare battery discharges to maintain the operation of the entire machine module, eliminating the need to wait for the self-inspection time after battery replacement and improving the operation efficiency.

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- After using the agricultural drone, turn off the spare battery.
- The switch is located in the APP operation interface. Click "⚙" in the upper-right corner, click "Turn off small power", and wait for 40s to successfully turn off the spare battery.
- The shutdown sequence is to turn off the power battery first, and then the spare battery.

Dual Electromagnetic Impeller Pump

The electromagnetic impeller pump of the agricultural drone drives the liquid to rotate at a high speed through the working impeller, transferring mechanical energy to the liquid. The maximum flow rate of a single pump is 20L/min.

The atomization ability of a single nozzle is limited. The smaller the droplet particle size, the higher the rotation speed, and the smaller the limited flow rate. The smaller the selected droplet particle size, the more it will affect the setting of the flight speed, spraying width, or application rate per mu.

Flow Calibration

The flow meter needs to be calibrated in the following situations:

1. When replacing the liquid pesticide with different viscosities.
2. When there is a large error between the actual operation area and the theoretical operation area.

Flow Calibration Steps

1. Add about 2L of water to the pesticide box.
2. Enter the APP operation interface, click  in the upper-right corner, and click the flow calibration button.
3. Adjust the left/right nozzle calibration ratio, and then click the confirm button.
4. Re-spray to confirm whether the flow rate is calibrated successfully. If there is still an error, repeat steps 2-4.

⚠

- The inaccuracy of the flow meter is generally due to a certain deviation in the measurement data.The following is an example of adjustment:

  If the actual water flow rate is 10L/min, but the measurement result of the flow meter is 10.5L/min, there is an offset of 0.5L/min. This deviation will be continuously superimposed on the flow rate, resulting in a reduction in the actual application rate per mu. In this case, the ratio should be increased, and it is adjusted by 0.05 times each time.

Compass Calibration

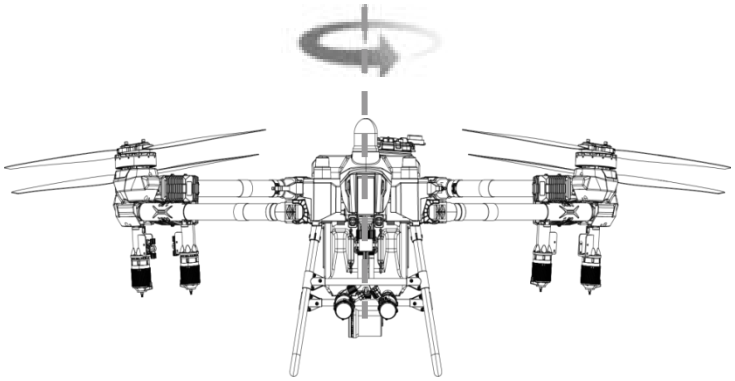
⚠

- Compass calibration is very important. The calibration result directly affects flight safety. Failure to calibrate may cause abnormal operation of the agricultural drone.
- When calibrating, choose an open area away from large buildings, well covers, high-voltage lines, wire meshes, vehicles, and magnetic mines.
- Do not carry ferromagnetic substances such as keys and mobile phones with you during calibration.
- After successful calibration, place the agricultural drone on the ground. If the calibration is unsuccessful, change the location and calibrate again.

Compass Calibration

When moving a long distance or after long-term idling, the compass needs to be calibrated. Operate according to the following steps. It is recommended to perform the calibration when there is no liquid in the operation box.

1. Enter Device Management - Drone - Advanced Settings, select the compass, and click the "Start Calibration" button.
2. Connect the power supply. When the start calibration button becomes clickable, proceed to the next step.
3. Click the [Start Calibration] button on the current page. Keep the aircraft body horizontal, lift the agricultural drone 1m off the ground, and then slowly rotate the agricultural drone in the horizontal direction. After successful calibration, there will be a corresponding prompt.



4. If the calibration fails, start over from step 2 to calibrate the compass again.

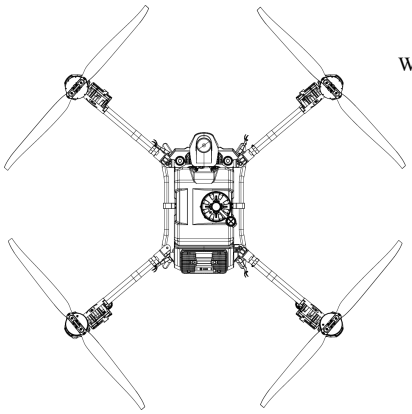
Firmware Upgrade

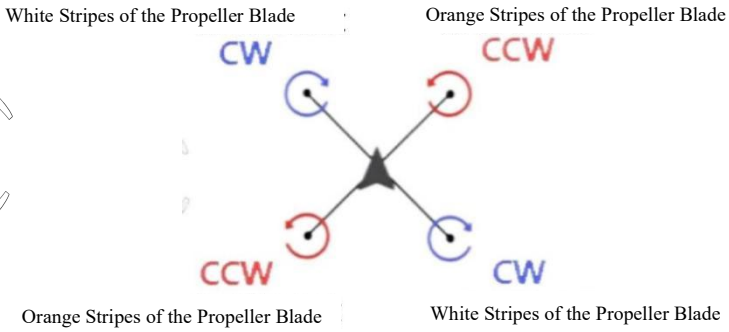
Firmware Upgrade: Modifying and replacing the underlying software to enable the hardware to add new functions or operate better.

Operation Process: After connecting the agricultural drone, if there is a prompt on the lower-right corner of the remote controller main interface indicating that a new version is available for upgrade, click "Upgrade Immediately" to upgrade the firmware. If there is no prompt, no upgrade is required.

Propeller Rotation Direction

Before operating the agricultural drone, it is necessary to confirm whether the rotation direction of the propellers is correct. This is also required for tests after maintenance. The propellers must be installed strictly in accordance with the specified rotation direction.



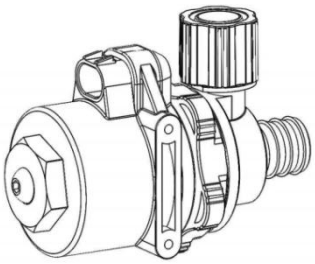


⚠

- The rotation direction of the propellers must be strictly in accordance with this diagram. Otherwise, it may cause danger.

Solenoid Valve

A solenoid valve is a stop valve that opens and closes automatically by electromagnetic force and has an anti-dripping effect.



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- When the solenoid valve cannot be opened, loosen the screw in the reverse direction to reduce the opening force and make it operate normally.

Remote Controller

Overview of the Ground Control Terminal

The RC remote controller applies brand-new advanced digital-image transmission communication technology, with adaptive frequency modulation. It can automatically select the operating frequency band with the least interference. Equipped with a high-gain antenna, it supports ultra-long-distance communication up to 3km. It is equipped with a Qualcomm octa-core high-performance CPU, with H.264 or H.265, 1080P@60FPS hard-decoding capabilities. The powerful computing performance reduces the video transmission and display delay to 320ms, allowing you to see exactly what the flight encounters.

The remote controller integrates a 7.02-inch 1920*1200 high-definition display screen, a 6-nanometer high-performance processor, 8G of running memory, and 128G of storage. With a powerful cooling fan, it is a 1080P digital-image transmission Android integrated handheld ground station that can handle all tasks.

Remote Controller Preparation

Installing the SIM Card

The SIM card can provide network connection for the remote controller, enabling the use of applications such as the Eavision SmartFarm 60 APP.

- Before using the RC remote controller for plant protection operations, a network connection is required. You can choose a portable WIFI to provide network access for the remote controller.
- For a better experience, it is recommended to install a SIM card of a mobile operator for mobile network connection. Make sure the remote controller is turned off before installation.

Installation Steps:

① Open the rubber protective cover on the top

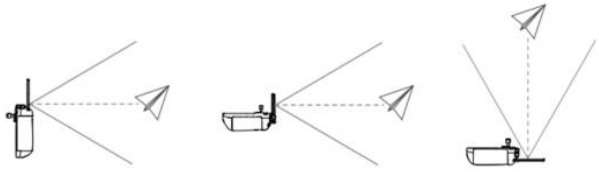
② Insert the wireless Internet-access SIM card into the card slot

③ Close the rubber protective cover

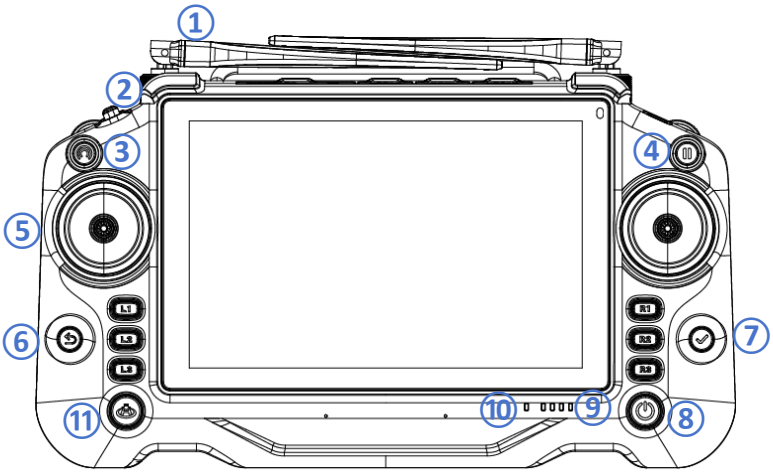
Adjusting the Antenna

Unfold the remote controller antenna and adjust it to an appropriate position. Different antenna positions receive different signal strengths.

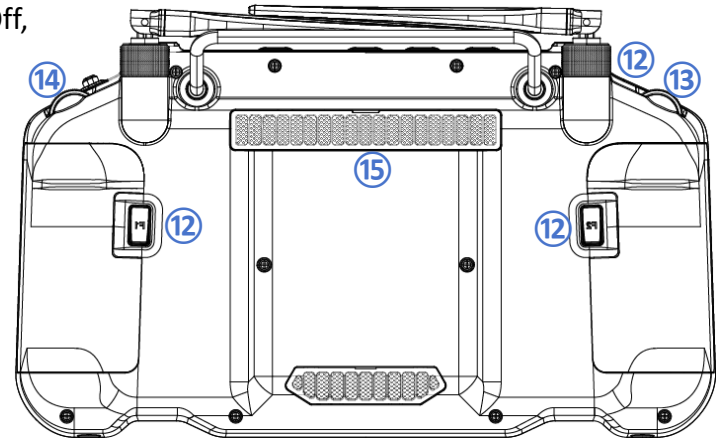
- During operation, do not cover the remote controller antenna or block the signal transmission in other forms.
- The top of the remote controller antenna is the weakest part of signal transmission. Avoid pointing it at the agricultural drone. The antennas should not be crossed.
- Use the antenna: The optimal signal reception occurs when the antenna is placed vertically upward from the screen, with the flat side facing the drone.

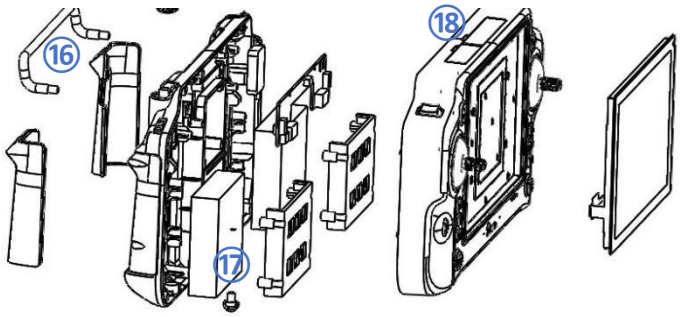


Remote Controller Components



1. Remote Controller External Antenna
   (Wireless Signal Transmission)
2. Flight Mode Switch (Flight Mode Switch:
   Upper and Middle for Manual,
   Lower for Automatic)
3. Pairing Button
   (Pairing and Connection Status Display)
4. Hover Button
5. Joysticks (Flight Control)
6. Return/Exit
7. Save/Confirm
8. Power Button(Check Battery Level,Power On/Off,
   Tap to dim screen when powered on)
9. Battery Level Indicator
   (Displays the Current Battery Level
   of the Remote Controller)
10. Status Indicator (Displays the Working Status
    of the Remote Controller)
11. Return / Landing Button (Reserved)
12. Button (Reserved)
13. Left Dial (Adjusts FPV Gimbal Pitch Angle)
14. Right Dial
15. Air Outlet
    (Outlet for the Heat-Dissipating Air
    of the Remote Controller)
16. Handle
17. Built-in Battery
18. Remote Control Interface





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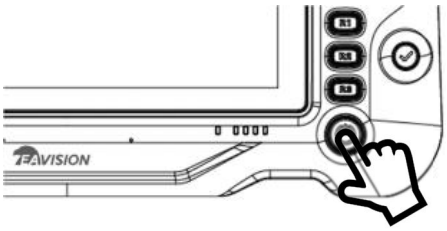
- Independent port for external display
- USB Port (for External U Disk)
- SIM Card Slot (for Mobile Network Access)
- Type-C Port (for Remote Controller Charging)

Remote Controller Operations

Power On and Off

You can check the battery level of the remote controller through the battery level indicator. Operate the remote controller according to the following steps:

1. Check Battery Level: When the remote controller is turned off, short-press the power button once. The battery level indicator lights up, allowing you to check the battery level. If the battery level is low, charge it.
2. Power On: When the remote controller is turned off, long-press the power button until the battery level indicator blinks. Then, short-press the power button while the indicator is blinking to turn on the remote controller.
3. Power Off: When the remote controller is turned on, long-press the power button until the battery level indicator blinks. Then, short-press the power button while the indicator is blinking to turn off the remote controller.



- Screen Recording: When the remote controller is turned on, swipe down from the upper edge of the screen to bring up the quick-access panel, where you can turn the screen recording function on or off.
- Screen Off: When the remote controller is turned on, short-press the power button. The remote controller screen turns off to enter the energy-saving mode. Short-press the power button again to restore the screen.
- The first power-on startup of the agricultural drone and its connection to the remote controller takes about 1 minute and 30 seconds. During the operation process, when replacing the main battery (with the spare battery powered on), it takes 15-30 seconds.

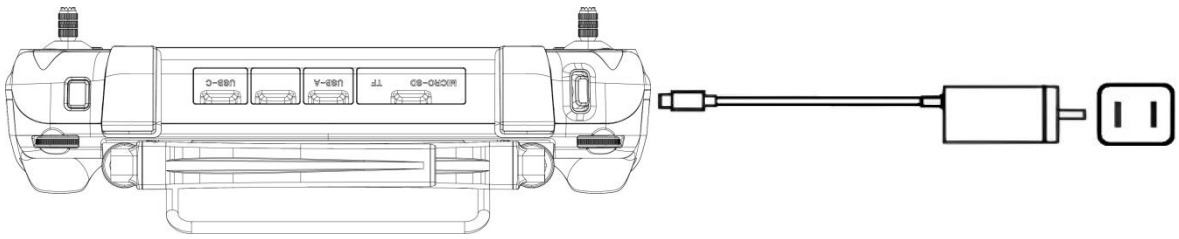
Charging

The remote controller uses a 65W adapter and only supports charging with the original factory-standard adapter.

1. Use the original Type-C fast-charging cable to connect the remote controller and the adapter.
2. If the battery level indicator is blinking, it indicates that the remote controller is charging.
3. When the battery level indicator is constantly on, it means the charging is complete.

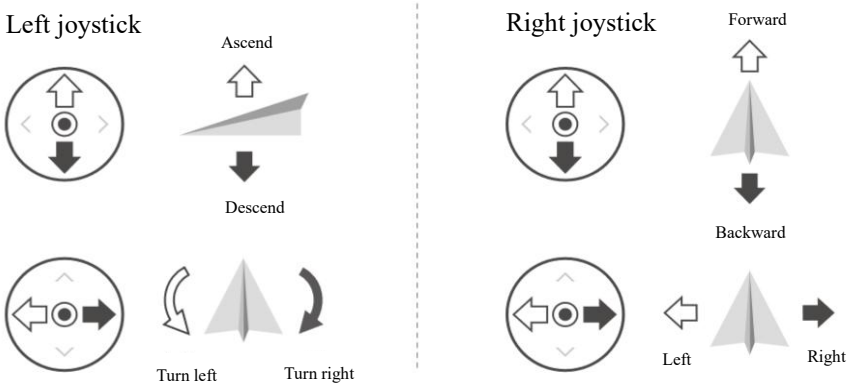
⚠

- You can use a power bank for charging (the power bank needs to support the PD3.0 protocol or above). Please use the original fast-charging cable.
- When storing the remote controller for a long time, to maintain the best battery condition, make sure to charge the remote controller once every 3 months.

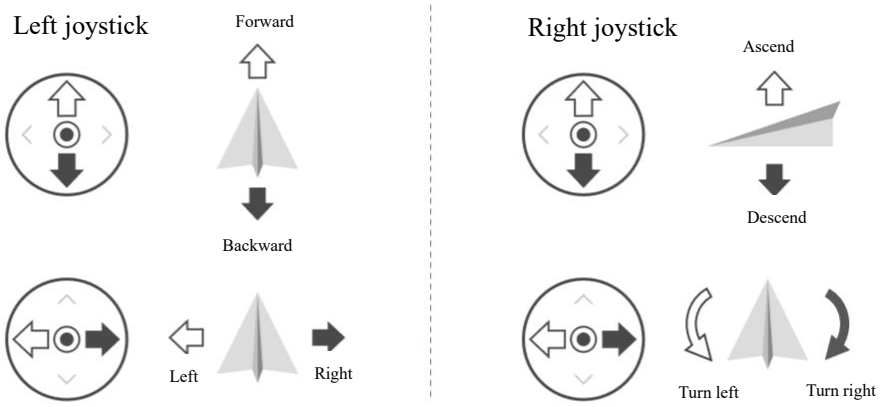


Remote Controller Joystick Modes

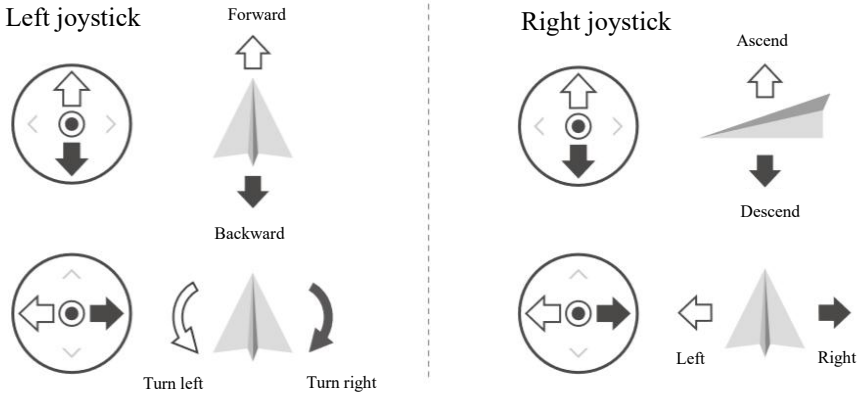
Before operating the agricultural drone with the remote controller joysticks, it is necessary to clarify the current joystick mode of the agricultural drone to ensure flight safety. The joystick modes of the remote controller are divided into the American mode, Chinese mode, and Japanese mode, as shown in the following figure:



American Mode



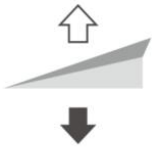
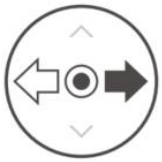
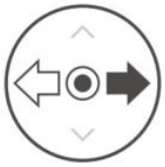
Chinese Mode



Japanese Mode

The remote controller is set to the American mode by default. This manual describes the control method of the remote controller with the American mode as an example.

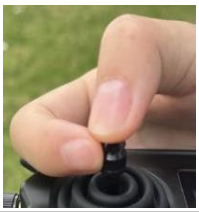
- Joystick Center/Neutral Position: The remote controller joysticks automatically return to the middle position when not manually operated.
- Joystick Deflection: The control amount of the remote controller joysticks when controlling the agricultural drone.

Remote Controller (Default American Mode)	Agricultural Drone	Control Method
Left joystick 		Throttle stick controls the ascent and descent of the agricultural drone. Push the throttle stick upward to make the agricultural drone rise; pull it downward to make the agricultural drone descend. When the stick is in the middle position, the height of the agricultural drone remains unchanged. The throttle stick must be pushed above the middle position for the agricultural drone to take off.
Left joystick 		Yaw stick controls the heading of the agricultural drone. Push the yaw stick to the left to make the agricultural drone rotate counterclockwise; push it to the right to make the agricultural drone rotate clockwise. When the stick is in the middle position, the rotation angular velocity is zero, and the agricultural drone does not rotate. The joystick deflection corresponds to the rotation angular velocity of the agricultural drone. The larger the deflection, the greater the rotation angular velocity.
Right joystick 		Pitch stick controls the forward and backward flight of the agricultural drone. Push the pitch stick upward to make the agricultural drone tilt forward and fly forward; pull it downward to make the agricultural drone tilt backward and fly backward. When the stick is in the middle position, the agricultural drone remains horizontal in the front-back direction. The joystick deflection corresponds to the forward-backward tilt angle of the agricultural drone. The larger the deflection, the greater the tilt angle and the faster the flight speed.
Right joystick 		Roll stick controls the left-right flight of the agricultural drone. Push the roll stick to the left to make the agricultural drone tilt left and fly left; push it to the right to make the agricultural drone tilt right and fly right. When the stick is in the middle position, the agricultural drone remains horizontal in the left-right direction. The joystick deflection corresponds to the left-right tilt angle of the agricultural drone. The larger the deflection, the greater the tilt angle and the faster the flight speed.

Joystick Manipulation

When manually flying an agricultural drone, the joystick is used for manual control. The following demonstrates the "two-finger method" of using the joystick:

Keep your thumb on the top of the joystick at all times to control the operation, and also keep your index finger on the side of the joystick at all times to provide stability.



Joystick Mode Switching

The joystick mode of the remote control can be changed in the "Settings" of the Eavision SmartFarm 60 APP.

Remote Controller Prompt Sounds

In certain scenarios or when the remote controller encounters an error, it will broadcast voice messages about the current fault or mode. For specific information, please refer to the real-time prompts of the Eavision SmartFarm 60 APP.

In the mute mode, all sound prompts will be turned off, including abnormal alarm sounds (such as return, low-battery alarm, etc.). Please use this mode with caution.

Touch Screen Operations

Home Page



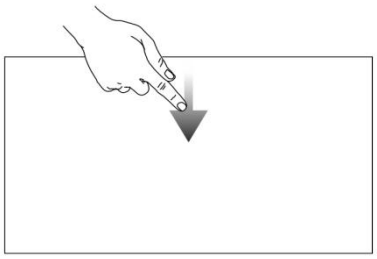
The top-status bar on the home page displays the time, network connection status, and the remaining battery level of the remote controller.

Gesture Operation

- Return: Swipe up and click the lower-right corner
- Return to the Home Page: Swipe up and click the middle of the bottom
- Enter the Task Center: Swipe up and click the lower-left corner

Quick-Access Panel Interface

Swipe down from the top edge of the screen to bring up the quick-access panel.

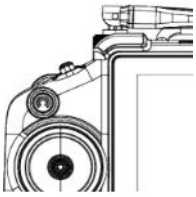


- Bluetooth: Single-click to turn the Bluetooth connection on or off. Long-press to set the Bluetooth connection.
- Screen Recording: Turns on the screen recording function.
- Mobile Network Switch: Turns the mobile data on or off, used for the network needs of the agricultural drone APP.
- Screen Brightness Adjustment: Drag the slider to adjust the screen brightness.

Remote Controller Pairing

The remote controller of the agricultural drone has been paired at the factory. If re-pairing is required, follow these steps:

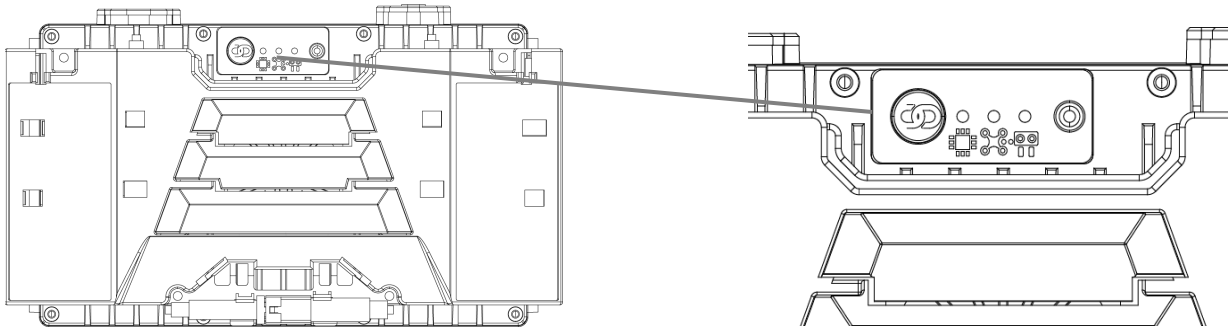
1. Remove the front casing of the agricultural drone.
2. Press the pairing button in the upper-left corner of the remote controller for 3 seconds. The pairing status indicator light turns red-green alternating flash.



Status	Indicator Light Display
Digital-image transmission initialization or abnormal	Red light flashing
Not paired	Red light on constantly
Pairing in progress	Red-green alternating
Paired, but not connected to the aircraft or the Extreme Link Communication Station	Green light flashing
Paired and connected to the aircraft or the Extreme Link Communication Station	Green light on constantly

Table 1 Meanings of Pairing Indicator Light Status

3. Press the pairing button on the main controller for 2 seconds. The middle indicator light enters a red-blue alternating flashing state.



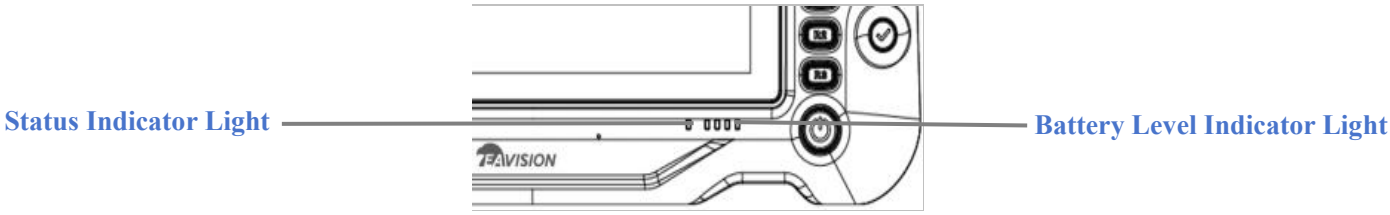
4. Wait for about 30 seconds. When the pairing status indicator light of the remote controller turns green and stays on, and the indicator light of the main controller turns blue and stays on, it indicates that the pairing is successful.

FPV Control

When the remote controller is connected to the agricultural drone, click " ⚙ " in the upper-right corner of the Eavision SmartFarm 60 APP operation interface on the remote controller to open and display the FPV video, and the video transmission screen will be shown.

Use the dial on the upper-left corner of the remote controller to adjust the FPV angle.

Remote Controller Indicators



The status indicator lights of the remote controller use lights of three colors with different flashing frequencies to represent different meanings.

Remote Controller Status Indicator Light	
Blue light on constantly	No abnormality in the remote controller
Red light flashing	Joystick disconnection
Red light on constantly	Battery gauge communication abnormality
Yellow light flashing	Battery temperature exceeds 55°C
Yellow light on constantly	Battery temperature exceeds 60°C

The battery level indicator lights indicate the battery level of the remote controller.

Battery indicator				
LED1	LED2	LED3	LED4	Current battery level
☼	☼	○	○	0%-50%
☼	☼	☼	○	51%-75%
☼	☼	☼	☼	76%-99%
○	○	○	○	100%

Precautions for Using the Remote Controller

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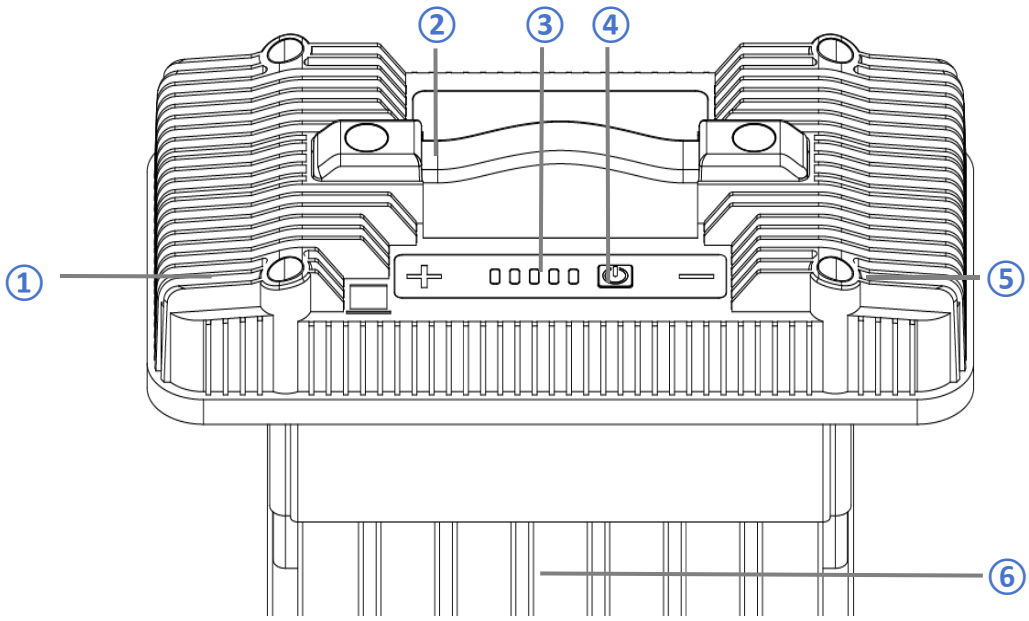
- Do not use the remote controller to control the agricultural drone in crowded places, areas with many obstacles, places with strong magnetic fields or signal interference sources, or other areas that may cause unnecessary economic losses or even personal injuries.
- During operation, do not cover the remote controller antenna or block the signal transmission in other forms.
- Do not cut off the power of the remote controller in advance when the motors of the agricultural drone are still running.
- Before starting the operation, be sure to check the battery level of the remote controller.
- The optimal remote control distance is within 2km.
- If the remote controller shows signs of water immersion, oil immersion, or contamination by other chemicals, immediately power off and stop using it.
- Since the remote controller is made of electronic components, keep it away from areas prone to static electricity when it is not in use.
- Use alcohol for cleaning and wiping.

Intelligent Battery

Intelligent Battery Overview

The Eavision J150 adopts the industry-innovative CTB integrated shell-core super-charging battery, which provides 45000mAh of abundant power for the agricultural drone. The battery cells have independent heat dissipation, and the heat dissipation area is increased by 7 times, enabling rapid heat dissipation and greatly improving the battery cycle efficiency. The dual-interface design for charging and discharging solves the problem of overheating at the interface during high-temperature operations in summer.

Intelligent Battery Components



1. Positive Power Interface
2. Handle
3. LED Indicators (from left to right: Battery Level LED1, LED2, LED3, LED4, Fault Indicator)
4. Power Button
5. Negative Power Interface
6. Independent Heat-Dissipating Battery Cells

Battery Functions

The EAV-CTB45Ah intelligent flight battery has the following functions:

1. Battery Level Display: The battery is equipped with an indicator light. Short-press the power button to check the battery level.
2. Efficient Cooling: With the help of a charging radiator, it can efficiently cool down and maintain the battery within the optimal operating temperature range below 60°C.
3. Intelligent Communication: Through the power interface on the battery, real-time battery information

such as voltage and battery level can be obtained to ensure the normal operation of the agricultural drone.

4. Abnormal Use Record: The management system has an abnormal record function, which can record information such as charging and discharging at high or low temperatures, over-current charging, over-current discharging, and long-term storage at high battery levels.
5. Charging Abnormality Prompt: If an abnormality occurs during the charging process, restart the battery and the charger. If the problem persists, restart the battery according to the APP prompt to resolve the abnormality.
6. Automatic Balancing Function: When the battery meets certain conditions, it will automatically turn on the balancing function to ensure the dynamic balance of the battery cells.
7. Automatic Discharging Function: The battery has an automatic discharging function. If the battery is fully charged and left standing for more than ten days, it will automatically discharge to about 60% for storage.
8. Automatic Current Adjustment and Sectional Protection Function: When using the official charger, the charging current can be intelligently adjusted according to the current battery cell temperature. In addition, the battery will also self-protect according to the temperature.
9. Thermal Balance Management Function: The battery has a thermal balance management function to control the temperature difference between the battery cells within the error range and keep them equal.
10. Dual-Interface Protection: The dual-interface battery socket is divided into positive and negative poles to avoid reverse insertion. The battery has an anti-reverse insertion protection function.

Battery Usage

Power On and Off

1. In the sleep mode or shutdown mode, long-press the power button (T > 3 seconds). All LED indicators flash quickly. During the fast-flashing of the LEDs, short-press the power button (0.1 second < T < 1 second) to turn on the battery.

(1) If the power button is not short-pressed during the fast-flashing of the LEDs, the battery will return to the shutdown state.

(2) If the power button is long-pressed (T > 5 seconds) or short-pressed (T < 1 second), the battery will also return to the shutdown state.

2. In the power-on state, long-press the power button (T > 3 seconds). All LED indicators flash quickly. During the fast-flashing of the LEDs, short-press the power button (0.1 second < T < 1 second) to turn

off the battery.

(1) If the power button is not short-pressed during the fast-flashing of the LEDs, the battery will return to the power-on state.

(2) If the power button is long-pressed (T > 5 seconds) or short-pressed (T < 1 second), the battery will remain in the power-on state.

After correctly connecting the battery to the agricultural drone, long-press the power button until all LEDs flash, and then short-press the power button to turn on the battery. After the flight ends and the propellers stop, long-press the power button until all LEDs flash, then short-press the power button to turn off the battery, and finally disconnect the battery from the agricultural drone.

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- Before each flight, make sure the battery level is above 95%.
- If the drone enters the low-battery alarm mode, land and stop flying as soon as possible, and replace the battery.
- In low-temperature environments (such as below 5°C), it is recommended to pre-heat the battery before operation, and it is better to pre-heat it to 20°C. You can achieve pre-heating by hovering the drone.
- Charging and discharging are prohibited below -5°C.

Check Battery Level

1. In the battery sleep mode or shutdown mode, short-press the power button (0.1 second < T < 1 second). The LEDs display the battery level, which lasts for 5 seconds and then automatically turns off. The battery level indication is as follows.

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	20%--45%
Flashing	Off	Off	Off	Off	20%

Note: The red light is the fault indicator, which is normally off.

2. When the battery is charging, the battery level indication is as follows.

LED1 (Green)	LED2 (Green)	LED3 (Green)	LED4 (Green)	LED5 (Red)	Current Battery Level
On	On	On	On	Off	95%--100%
On	On	On	Flashing	Off	70%--95%
On	On	Flashing	Flashing	Off	50%--70%
On	Flashing	Flashing	Flashing	Off	30%--50%
Flashing	Flashing	Flashing	Flashing	Off	0%--30%

Note: When the battery level is below 30% during charging, the green lights flash in a cycle. When the battery is charged to 95%, all green lights are on. At this time, it is in a small-current charging state. When the battery is fully charged to 100%, the charger fan stops operating.

- The LED lights of the battery will flash to indicate the charging status. After charging is completed, disconnect the battery from the charging device.

Abnormal Prompt

The LED lights of the battery can display information related to battery protection triggered by charging abnormalities. After troubleshooting, press the battery switch to cancel the LED light protection prompt, and re-insert the charging device to resume charging. If the charging temperature is abnormal, wait for the charging temperature to return to normal, and the battery will automatically resume charging without re-inserting the charging device.

LED1	LED2	LED3	LED4	LED5 (Fault Indicator)	Abnormality Description
Flashing	Off	Off	Off	Flashing	Short-circuit Protection / Overcurrent during Charging and Discharging
Off	Flashing	Off	Off	Flashing	Low Temperature during Charging / Low Temperature during Discharging
Off	Off	Flashing	Off	Flashing	Over Temperature during Charging / Over Temperature during Discharging
Off	Off	Off	Flashing	Flashing	Over-Discharging
Off	Off	Off	Off	Flashing	System Abnormality
Flashing	Flashing	Flashing	Flashing	On constantly	Battery upgrade in progress

Note: A flashing red light indicates a battery fault. When the battery is being upgraded, the red light is on constantly, and the remaining green lights flash in a running-horse-lamp state.

Battery Storage and Transportation

1. After each use, after disconnecting the battery from the unmanned aircraft, check whether there are any foreign objects in the battery power interface. If so, clean them in time.
2. During transportation, make sure to turn off the battery power and disconnect the battery from the agricultural drone or other devices.
3. Keep the battery out of reach of children. If a child accidentally swallows a component, seek medical help immediately.
4. Do not place the battery near a heat source, such as in direct sunlight, in a hot car, near a fire source, or on a heating furnace.
5. The environment where the battery is stored should be kept dry. Do not place the battery in water or in a place where it may leak water.
6. Do not store or transport the battery together with metal objects (such as glasses, watches, metal necklaces, hairpins, etc.) or flammable and explosive items.
7. When placing the battery, make sure the ground is flat to prevent sharp objects from piercing the inside of the battery.
8. Do not store the battery for a long time after completely discharging it to avoid the battery entering an over-discharged state, which may damage the battery cells and make the battery unusable.
9. If long-term storage is required, disconnect the battery from the unmanned aircraft.

Battery Disposal

1. Soak the battery in salt water for more than 24 hours to ensure that the battery is completely discharged, and then place it in the designated battery recycling bin. Batteries are hazardous chemicals and are strictly prohibited from being discarded in ordinary trash cans. Please follow the local battery recycling and disposal regulations for details.
2. If the battery cannot be completely discharged due to a malfunctioning power switch, do not discard the battery directly in the battery recycling bin. Contact a professional battery recycling company for further processing.

Precautions for Use

1. Do not use the battery near a heat source, such as in direct sunlight during high-temperature seasons, in a hot car, near a fire source, heating furnace, or generator exhaust port.
2. It is strictly prohibited to make the battery contact any liquid. Do not immerse the battery in water or get it wet. Do not use the battery in the rain or a humid environment. If the inside of the battery comes into contact with water, a decomposition reaction may occur, causing the battery to catch fire or even explode.
3. It is strictly prohibited to use a swollen, leaky, or damaged-packaged battery. If any of these situations occur, contact the agent for further handling.
4. Before installing or removing the battery from the agricultural drone, keep the battery power off. Do not insert or remove the battery when the battery power is on, otherwise, the power interface may be damaged.
5. The battery should be used within the temperature range of 0°C to 65°C. Excessive temperature may cause the battery to catch fire or even explode. At low temperatures, the battery performance will be seriously reduced and cannot meet the normal use requirements. It can be used normally after returning to normal temperature.
6. Do not use the battery in a strong electrostatic or magnetic field environment. Otherwise, it may cause the battery protection board to malfunction, resulting in serious malfunctions of the agricultural drone.
7. Do not disassemble the battery in any way or pierce it with sharp objects. Otherwise, it will cause the battery to catch fire or even explode.
8. The liquid inside the battery is highly corrosive. If it leaks, keep away from it. If the liquid splashes onto the human skin or eyes, immediately rinse with plenty of water and seek medical attention.
9. If the battery falls from the agricultural drone or is hit by an external force, do not use it again.

10. If the battery accidentally falls into water during the flight of the agricultural drone or in other situations, immediately remove the battery and place it in a safe open area. Keep away from the battery until it is completely dry. Do not use the dried-out battery again. Dispose of it properly according to the disposal method described in this document.
11. Do not short-circuit the positive and negative poles of the battery with a wire or other metal objects.
12. Do not hit the battery. Do not place heavy objects on the battery or the charging device.
13. If there is dirt on the battery interface, wipe it clean with a dry cloth. Otherwise, it may cause poor contact, resulting in energy loss or failure to charge.
14. Do not reverse-connect the positive and negative poles of the battery. Otherwise, the battery may be abnormally charged, which may lead to overheating, explosion, or fire. It is strictly prohibited to use a battery that is not recommended by the official. If replacement is required, contact the after-sales service or the designated agent. The user shall be responsible for any battery accidents or flight failures caused by using a non-official battery.
15. Batteries are dangerous items. Do not stack other items on the battery or use the battery and its packaging as a seat cushion. Otherwise, it may damage the battery and even cause danger.
16. Batteries are heavy. Place them carefully to prevent them from tipping over and damaging the sides of the battery. If the battery tips over and is damaged, immediately place it in an open area, away from combustibles and people. After half an hour, soak the battery in water for more than 24 hours. Make sure the battery is completely drained before scrapping it.

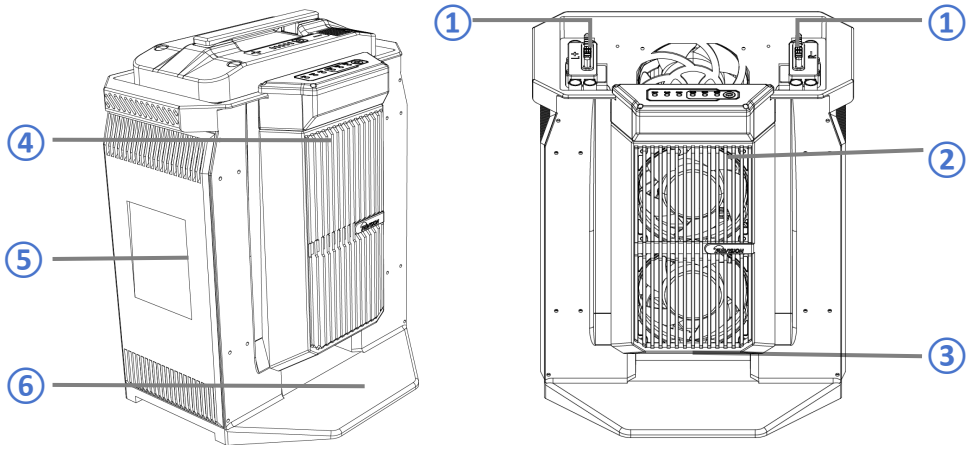
Cooling Charger

Overview

The intelligent battery is equipped with a JM-C60 cooling charger, which can fully charge a battery in 9 minutes. The operation time can cover the charging time, realizing "two batteries and one charger for easy cycling". The charging and cooling all-in-one machine has multiple intelligent protection functions, such as over-temperature protection, over-voltage protection, under-voltage protection, short-circuit protection, and fan-blockage protection, to ensure charging safety.

Cooling Charger Components

1. Power Output Interface
   (Positive and Negative Poles)
2. Charging Controller
3. Built-in Cooling Fan
4. AC Power Dust Screen
5. Cooling Charger Shell
6. Foot-Step Force-Bearing Pedal



Battery Charging Status Indicator

The LED corresponds to indicating the charging status of the inserted battery.

1. A yellow light on constantly indicates that charging has not started and no battery is detected;
2. A green light flashing indicates that charging is in progress;
3. A green light on constantly indicates that the battery is fully charged.

Fault Indicator

The LED indicator shows the fault situation. A red light flashing indicates that the charger or battery has an alarm.

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- When the warning light turns red, immediately stop charging and check the APP alarm information. Charging can be resumed only after the abnormality is eliminated and the red light goes out.

Charger Usage

Pre-Use Inspection:

- Appearance Inspection

1. Check whether the charging controller and the power input cable are damaged, and confirm that the cable is normal.
2. Check whether the double-interface pins of the charging controller are deformed.
3. Check whether the generator power supply cable and the socket are damaged, deformed, or blocked by foreign objects.

- Power-On Inspection

1. After connecting to the power supply, check whether the fan operates normally.
2. Observe whether the fault light of the charging controller is off. An off state indicates that the charger has passed the self-inspection.

Usage

1. Connect the socket of the cooling charger to the mains electricity, household electricity, or a generator.
2. Insert the battery into the cooling charger to start charging.
3. The AC side of the cooling charger is equipped with two power input sockets. Mains electricity and household electricity need to use a 16A plug for charging, and the generator needs to use a 32A industrial-standard plug for charging.
4. In a home environment, ensure that the socket and circuit can support 5000W. When using household electricity for charging, it is strictly prohibited to use a double-plug. A 2.5-square 16A plug should be equipped, and the charger will automatically determine and adopt a 5000-watt low-power charging mode to avoid overloading the household power grid and causing danger. When the battery capacity is 30% remaining, the charging time is approximately 20 minutes.
5. If a 13000-watt Eavision generator is used, insert the generator plug, and the cooling charger will automatically use a 13000-watt power to charge the battery. When the battery capacity is 30% remaining, the charging time is approximately 9 minutes.
6. After charging is completed, unplug the connection of the battery first, and then the power supply cable.

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- The interface of the cooling charger can be connected to one-way household electricity, two-way generator circuits, or one-way generator input power. When two sockets are used simultaneously, the charging power is superimposed.
- Before connecting the charger, ensure that there are no obvious defects such as blockage, damage, short-circuit, or open-circuit in each port and input wire harness of the charger.
- Before charging, check the battery to be charged to ensure that there is no deformation, damage, or blockage at the port.
- When using household electricity for charging, it is strictly prohibited to use a double-plug for charging. A 2.5-square 16A plug must be equipped to connect to a single-plug of the cooling charger for charging.

Cooling Charger Indications

Bluetooth Light	
Green light on constantly	Connected to a Bluetooth device
Green light off	Not connected
Battery Light	
Yellow light on constantly	The charger cannot communicate with the battery
Green light on constantly	The battery is fully charged
Yellow light flashing	The battery feedback information includes an alarm
Green light flashing	The battery is charging
Red light on constantly	Battery charging protection is stopped
Status Light	
Light off	The charger cannot communicate with the switch power module
Green light flashing	The charger can only communicate with 1 switch power module
Green light on constantly	The charger can communicate with 2 switch power modules
Red light on constantly	Relay fault / Power fan fault / Address conflict
Intelligent Fan	
Intelligent	The cooling fan of the charger operates in an intelligent mode
On constantly	The cooling fan of the charger on constantly
Off constantly	The cooling fan of the charger off constantly

APP Connection

APP Connection Method

When connecting the cooling charger to the APP, keep the charger turned on, open the APP connection channel, and select Bluetooth connection.



On the remote controller side, click device connection-cooling charger connection in the Eavision SmartFarm 60 APP to view relevant information.

Bluetooth Indicator

The LED indicates the Bluetooth connection status.

1. A green light flashing indicates waiting for the APP to connect;
2. A green light on constantly indicates that the charger is connected to the APP;

Charger Storage and Maintenance

1. After charging is completed or when the charger is not in use, disconnect the battery charging cable from the charger and the power cord to play a stable protection role.
2. When storing the charger for a long time, keep it away from direct sunlight, rain, or humid environments.
3. Store the charger away from heat sources, high-voltage sources, water, flammable gases, corrosives, and other dangerous items.
4. Regularly clean the cooling holes of the charger to ensure the charging effect.
5. Regularly check the cleanliness of the power module. If there is dust accumulation, clean it in time to eliminate potential safety hazards.

Precautions for Use

1. The AC power input port and the generator plug carry high voltage. Do not touch them with your hands.
2. It is strictly prohibited to use this product during thunderstorms and lightning.
3. During the charging process, someone should be on-site to watch. To ensure charging safety, keep a distance of more than 30 cm between other batteries and the charging battery.
4. This product should be placed on a horizontal surface and not tilted. Ensure that there is enough ventilation space around it (it is recommended to keep a distance of more than 50 cm from walls, heat

sources, and window-type air inlets) to ensure good ventilation during the operation of the product.

5. In case of a fire, use a dry-powder fire extinguisher correctly. Using a liquid-type fire extinguisher may cause an electric shock hazard.
6. It is prohibited to insert any non-Eavision battery for charging. Do not unplug the power cord during the charging process. After charging is completed, remove the battery in a timely manner.
7. It is prohibited to insert or remove the battery while it is charged. Otherwise, it will cause a charging fault, and the yellow light of the battery controller will be on constantly. You need to wait for about 10 minutes for the charging to return to normal. If the battery is inserted or removed while charged, you can manually turn off the battery.

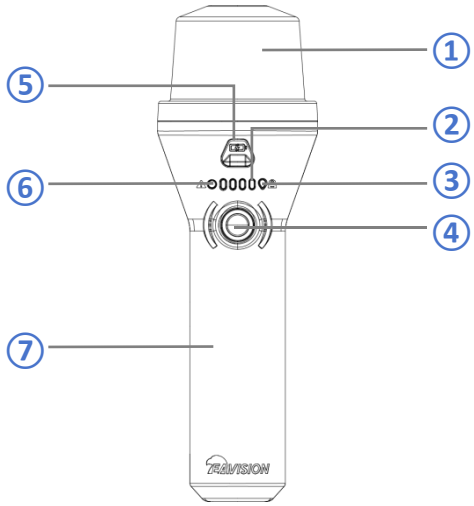
Handheld Mapping Device

Mapping Device Overview

The internal differential positioning module of the mapping device is a high-precision positioning module independently developed by Eavision. It is used to accurately obtain GNSS positioning information. It adopts a multi-stage integrated antenna inside, which can receive precise positioning information simultaneously and conduct high-efficiency on-site accurate mapping.

Handheld Mapping Device Components

1. RTK Antenna
2. Battery Level Indicator Lights
3. Positioning Status Indicator Light
4. Power On/Off Button
5. Charging Type-C Port
6. Fault Status Indicator Light
7. Handheld Rod



Power On/Off

The power-on and-off methods of the handheld mapping device are the same as those of the agricultural drone battery:

In the shutdown state: Long-press the power button for 3S. The four lights flash three times and then go out. Within 3S, trigger a short-press once, and the battery powers on. The LED running-horse lamp lights up, indicating a successful power-on.

In the power-on state: Long-press and then short-press to turn off the battery. The LED running-horse lamp goes out. Short-press for 1S to display the battery level, which turns off after 5s, indicating a successful power-off.

Battery Level Display

Charging Status: The battery level indicator lights show a continuous green light.

LED1	LED2	LED3	LED4	Current Battery Level
Flashing	Off	Off	Off	0%-25%
On constantly	Flashing	Off	Off	26%-50%
On constantly	On constantly	Flashing	Off	51%-75%
On constantly	On constantly	On constantly	Flashing	76%-99%
On constantly	On constantly	On constantly	On constantly	100%

Display Battery Level: Short-press once to display the current battery level of the mapping device. In the power-on state, it displays the current battery level.

LED1	LED2	LED3	LED4	Current Battery Level
On constantly	Off	Off	Off	0%-25%
On constantly	On constantly	Off	Off	26%-50%
On constantly	On constantly	On constantly	Off	51%-75%
On constantly	On constantly	On constantly	On constantly	>76%

Indicator Light Display

When not powered on, neither the positioning status light nor the fault indicator light is on.

Indicator Light	Color	Status	Flashing State
Positioning Status Indicator Light	None	Not powered on	Off
	Blue	Initializing	1HZ flashing
	Blue	Searching for satellites	1HZ flashing
	Blue	Normal operation	On constantly
Fault Status Indicator Light	None	Normal operation	Off
	Red	Mapping device abnormality	On constantly

Usage of the Handheld Mapping Device

The mapping device needs to be powered on and connected before use.

Usage Steps

1. Power on the mapping device.
2. The mapping device automatically enters the satellite-searching mode. Open the Eavision SmartFarm 60 APP on the remote controller.
3. In the APP interface, check the connection status of the mapping device in the "Device Management" interface and perform Bluetooth connection.
4. After successful connection, enter the operation interface to check whether the mapping device has entered the RTK state.

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- When the mapping device is not powered on, neither the positioning status light nor the fault indicator light is on.
- The charging power supports fast charging, and it can be fully charged in 2-3 hours.
- When powered on, it defaults to the non-mapping mode.

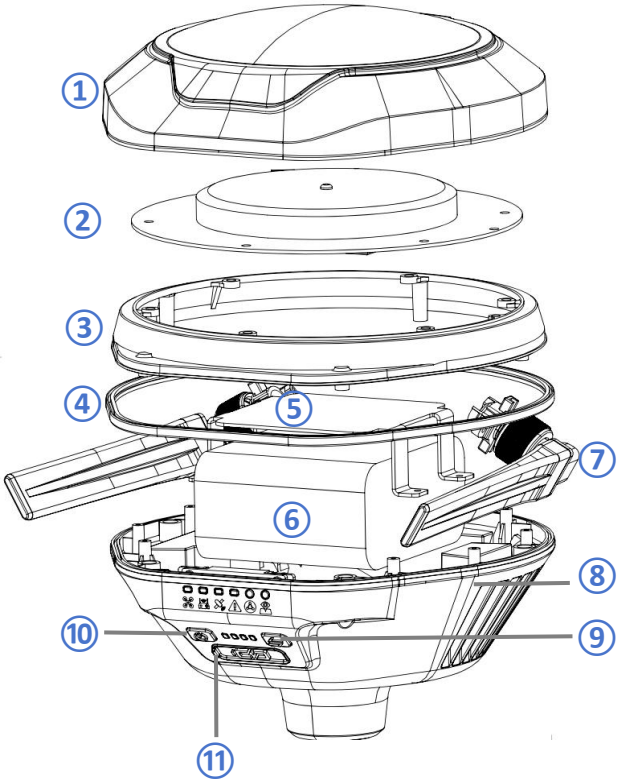
Extreme Link Communication Station

Extreme Link Communication Station Overview

The optional "Extreme Link" communication station integrates four functions: High-precision mapping, offline base station, signal relay, and lifting guidance. It can meet the needs of more scenarios such as no-network, weak-network, and mountain-blocked areas with a single device.

Extreme Link Communication Station Components

1. Base Station Antenna Cap
2. GNSS Full-Frequency Surveying Antenna
3. Base Station Inner Shielding Shell
4. Base Station Shell Rubber Gasket
5. Antenna Assembly
6. Base Station Battery
7. Base Station Battery Pressure Plate
8. Base Station Lower Bottom Shell
9. Switch Button
10. Power On/Off Button
11. Rubber Plug



Power On/Off/Battery Level Check

Power On: In the shutdown state, long-press the power button until the battery level indicator light flashes, and then short-press the power button while the light is flashing to turn on the device.

Power Off: In the power-on state, short-press the power button. The indicator lights start to flash. Long-press the power button while the lights are flashing to turn off the device.

Check Battery Level: Short-press the power button once in the shutdown state to check the battery level.

Pairing

1.Pairing the Remote Controller with the Drone

In the Eavision SmartFarm 60 APP on the remote controller, go to "Device Management"-"Drone", click "Start Pairing", and then short-press the pairing button on the drone's main unit. Or long-press the indicator light in the upper-left corner of the remote controller until the light turns red-green alternating flashing, and then

short-press the pairing button on the drone's main unit.

2.Pairing the Base Station with the Remote Controller

After pairing the remote controller with the drone first, long-press the power button of the Extreme Link Communication Station. When the RC indicator light turns red-green alternating flashing, click "Start Pairing" on the remote controller (path: "Device Management - Extreme Link Communication Station - Connect and Pair").

Mode Switching

Long-press the mode-switching button. When the mode status light flashes, short-press the mode-switching button to switch to the required mode. Wait for the status indicator light to change from flashing to on constantly.

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- During the pairing process, mode switching is not possible.
- During the pairing process, the device cannot be turned off.

Extreme Link Communication Station Light Language

UAV Light	
Red light flashing	Digital-image transmission initialization or abnormal
Green light on constantly	The Extreme Link Communication Station is paired and connected to the aircraft
Green light flashing	The Extreme Link Communication Station is paired but not connected to the aircraft
RC Light	
Red light flashing	Digital-image transmission initialization or abnormal
Green light on constantly	The Extreme Link Communication Station is paired and connected to the remote controller
Green light flashing	The Extreme Link Communication Station is paired but not connected to the remote controller
Red-green alternating flashing	The Extreme Link Communication Station is in the pairing process
DGPS Light	
Green light flashing quickly (10Hz)	RTK module initialization
Green light flashing slowly (1Hz)	Searching for satellites / GNSS mode
Green light on constantly	RTK mode
STATUS Light	
Green light flashing quickly	Device initialization

(10Hz)	
Green light flashing slowly (1Hz)	Aligning in progress
Green light on constantly	Normal operation
Relay/Base Station/Guidance Light	
Green light flashing	Mode confirmation in progress
Green light on constantly	Relay/Base Station/Guidance mode
Mapping Light	
Green light flashing	Mode confirmation in progress
Green light on constantly	Mapping mode

Usage Steps

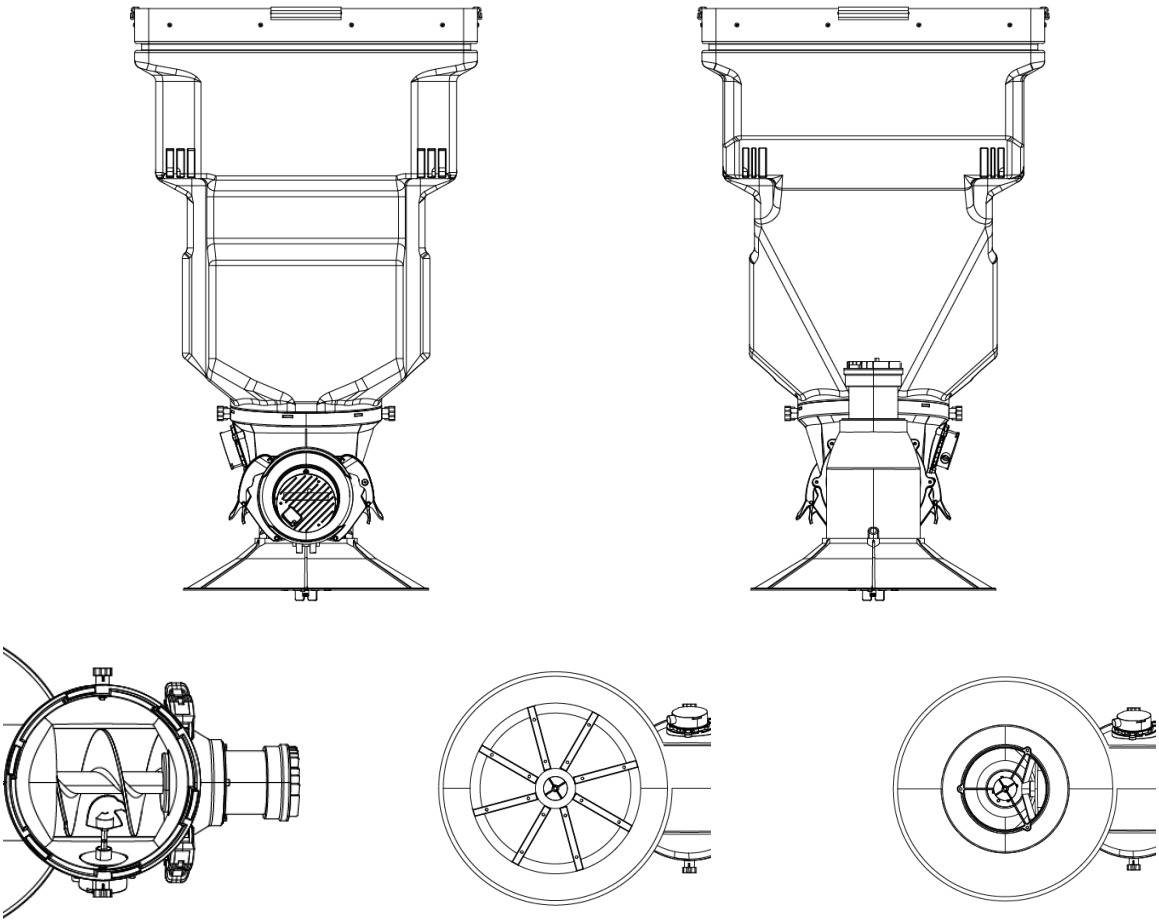
1. Power on the Extreme Link Communication Station
2. Pair the remote controller with the drone
3. Pair the remote controller with the Extreme Link Communication Station
4. Switch the mode (the default mode is the base-station mode, and the mode is not saved after shutdown)

Spreader

Spreader Overview

This product is a supporting device for the agricultural drone, suitable for the Eavision EA-J150 series of agricultural drones. It is applicable to spreading dry solid particles with a particle diameter range of 1mm-10mm. It has the advantages of uniform spreading and high efficiency. The spreading rate can be controlled as needed. With the combination of a material-shortage sensor and a high-precision load cell, it can keep track of the remaining material in real-time, improving the operation accuracy. Using the spreader with the agricultural drone can complete efficient, reliable, and stable spreading operations, increasing the operation opportunities of the agricultural drone. Different mounts can be replaced during different operation periods to achieve "one machine, multiple functions".

Spreader Components



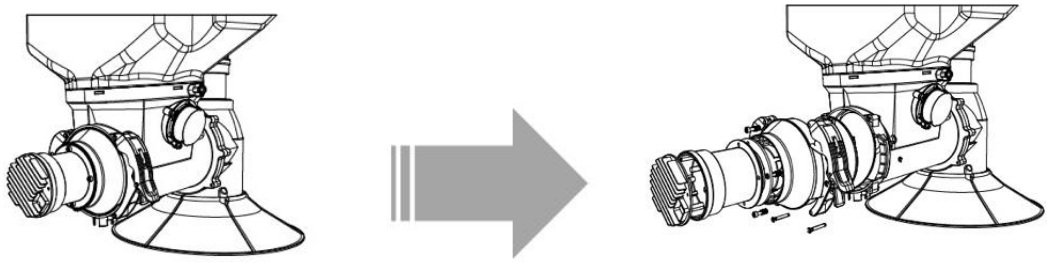
Maintenance

(1) Regularly clean the residue of material particles in the material box and the spreading disk. You can directly rinse them with tap water. After cleaning, use an air spray gun or a clean rag to remove the remaining water stains. Pay attention to avoiding water entering the wire harness connectors during the

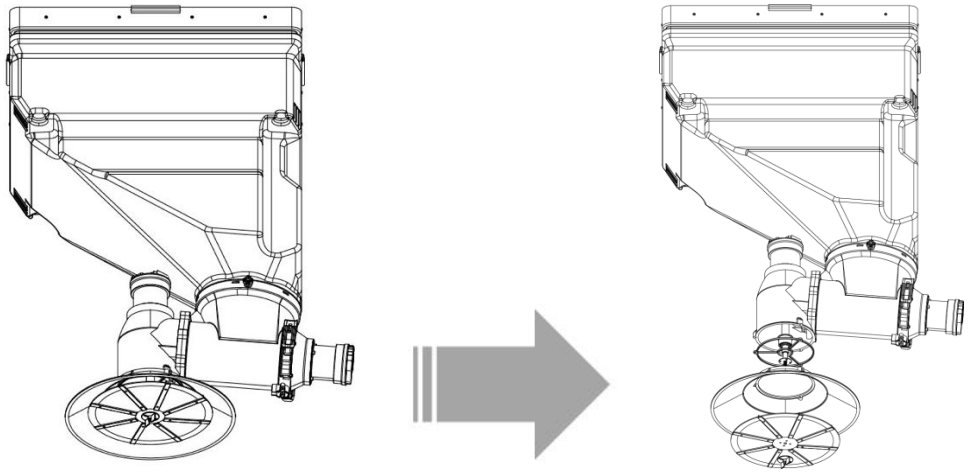
cleaning process.

(2) Disconnect the wire harness from the agricultural drone and remove the spreader from the agricultural drone.

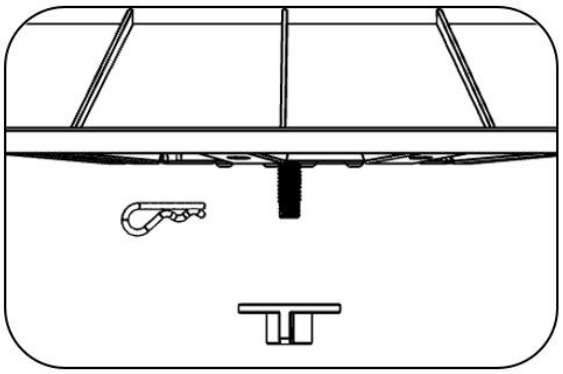
(3) Pull the locking bolt on the spreading disk out of the slot, rotate it 90° in any direction, and snap it into the slot.



(4) Unscrew and remove the spreading disk as shown.



(5) Remove the pin and unscrew the fastening nut to remove the spinner. Then, you can clean the discharge port, mixing rod, spinner, and other components as needed (for detailed maintenance videos, please follow the Eavision Academy Mini-program).



(6) After cleaning, install the spreader in the reverse order.

Precautions

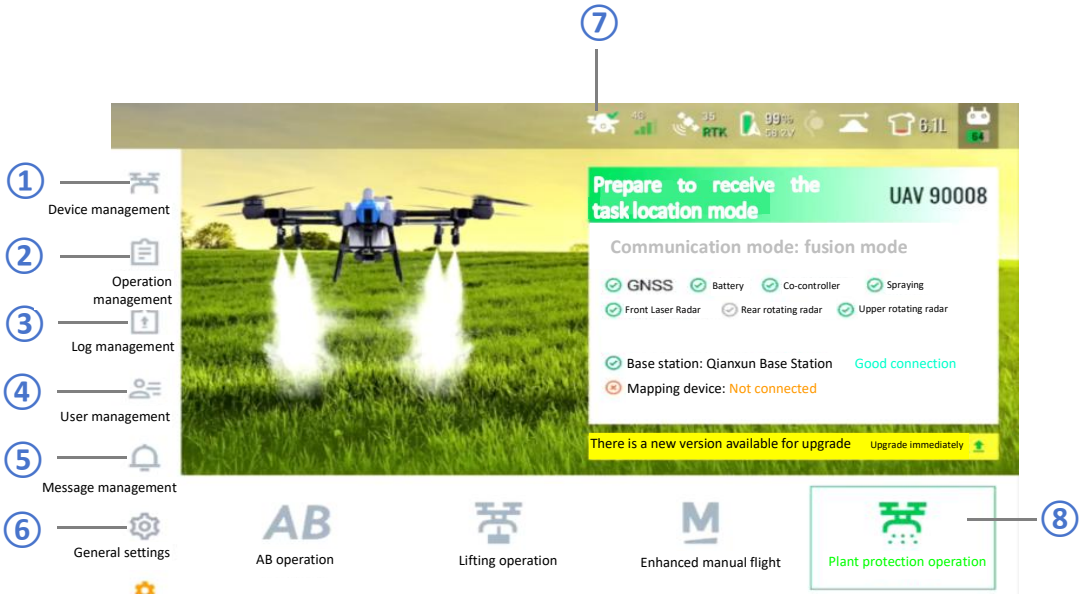
- This spreader is only suitable for Eavision series agricultural plant protection drones (see the specification parameter table for specific models). Do not use it on other products or for purposes other than agricultural plant protection.
- The disassembly of scrapped products should be carried out by professionals. Relevant parts, such as electrical components, motherboards, metal parts, and plastic parts, should be collected separately and handed over to qualified units or the sanitation department for disposal. Product disassembly and repair should be carried out by professionals. Do not disassemble it yourself.
- The maximum internal load of this spreader is 75Kg. Do not overload it to avoid damage.
- Before each operation, check whether the discharge port switch is normal and whether the spreading disk rotates smoothly.
- Be careful when using it to prevent injury from the mechanical structure.
- During spreading operations, keep a safe distance from the spreader to avoid personal injury.
- This spreader has an IP66 protection level, and the whole machine can be directly washed with water. However, pay attention to protecting the wire harness connectors. If it gets soaked in water accidentally, check that all electronic devices are normal before use. Otherwise, it will cause a short-circuit and damage the spreader.
- The spreading particle diameter range is 1mm-10mm. The particles should not be too large or too small, otherwise, the spreading disk may get stuck.

Eavision SmartFarm 60 APP

Eavision SmartFarm 60 APP Overview

The Eavision SmartFarm 60 APP is specifically designed for plant protection applications. It supports real-time viewing of the working status of the agricultural drone and the operation system. It is a multi-functional APP integrating mapping, lifting, and aerial surveying. It is equipped with an intelligent route-planning system. Users can plan plots intelligently in the APP, and the agricultural drone will complete autonomous operations.

Main Interface



1. Device Management: View the status of the agricultural drone, base station, mapping device, APP version, remote controller, etc.
2. Operation Management: View operation records, query ongoing/completed tasks, and view established requirements in the requirement management.
3. Log Management: View and upload the logs of the agricultural drone and devices.
4. User Management: View cumulative operation data, the expiration time of the cloud base station, and change the account password.
5. Message Management: The background can release message content, such as APP updates, news, etc.
6. General Settings: Perform parameter unit settings, function settings, etc.
7. Agricultural Drone Status: View the connection and device status of the agricultural drone.
8. Operation Modes: Click the different buttons at the bottom of the home page to select different operation types.

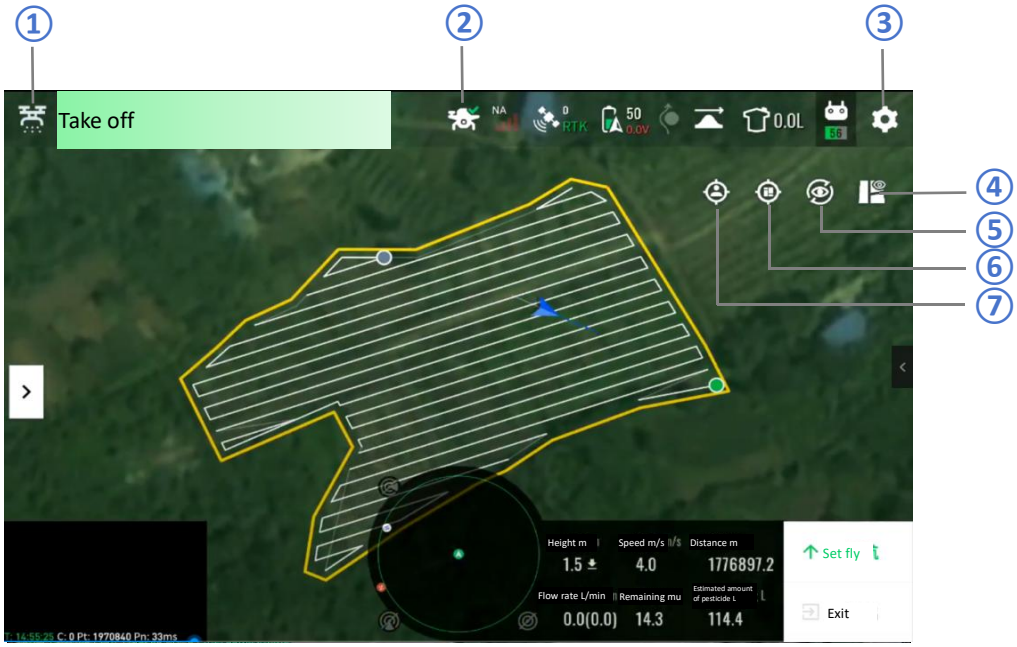
Operation Modes

The agricultural drone has five operation modes, namely plant protection operation, enhanced manual flight, lifting operation, AB operation, and low-altitude aerial survey. Different operation modes require different operation and setting steps to meet the needs of different users.

- Plant Protection Operation: Supports surveying and full-autonomous operation of fertilization and spraying in large fields and mountainous areas. Users can choose according to different application scenarios
- Enhanced Manual Flight: Greatly enhances the stability of manual flight operation. It can perform flight operations with settings such as fixed-mu spraying amount, fixed-speed, and fixed-route, and includes intelligent assistance functions such as one-click turn-around and route locking.
- Lifting Operation: Applied to mountainous lifting scenarios where manual transportation is difficult and inefficient. It can transport items (excluding building materials and photovoltaic panels which cannot be transported by agricultural drones), and supports the autonomous operation mode, greatly improving efficiency and safety.
- AB Operation: Suitable for large-area regions with regular terrain and few obstacles. Only simple setting of points A and B is required to achieve route planning and operation.
- Low-Altitude Aerial Survey: Performs full-autonomous aerial survey and mapping. After mapping is completed, a high-definition map is generated in real-time, and users can select the high-definition map for operation during work.

Operation Interface

In the operation interface, you can view the status of the agricultural drone, set parameters, and perform plot planning and operation execution for different operation modes. Click the mode selection in the lower-right corner to enter the corresponding operation mode. The following takes the spraying operation as an example to explain the other displays and menus in the operation interface.



1. Main Interface Option: Click to return to the main interface.
2. Agricultural Drone Information: View information such as the current battery level of the agricultural drone, connection status, remote controller battery level, remaining pesticide amount, etc. You can also click the icon to view detailed information.

3. Operation Settings: Click the icon to enter the "Operation Settings" to perform flight, spraying, spreading, sensing, RTK, remote controller, power settings, and one-click repair.
4. View Nearby Plots: Click to display other planned plots on the map.
5. View-Following Button: Follow the perspective of the agricultural drone during operation.
6. Plot Positioning Button: Check the location of the plot.
7. Remote Controller Positioning Button: Check the current location of the remote controller.

Device Management

View the status of the agricultural drone, base station, mapping device, APP, remote controller, Extreme Link Communication Station, charger, and co-controller.

1. Agricultural Drone: View the version number of the agricultural drone, base station connection status, operation equipment, fault analysis, radar display status, calibration and firmware functions, and information related to the drone battery.
2. Mapping Device: Connect to the mapping device via Bluetooth wirelessly. After connection, it needs to be connected to the Qianxun base station for use.
3. Remote Controller: View the pairing information of the agricultural drone and the setting of each joystick channel.
4. Extreme Link Communication Station

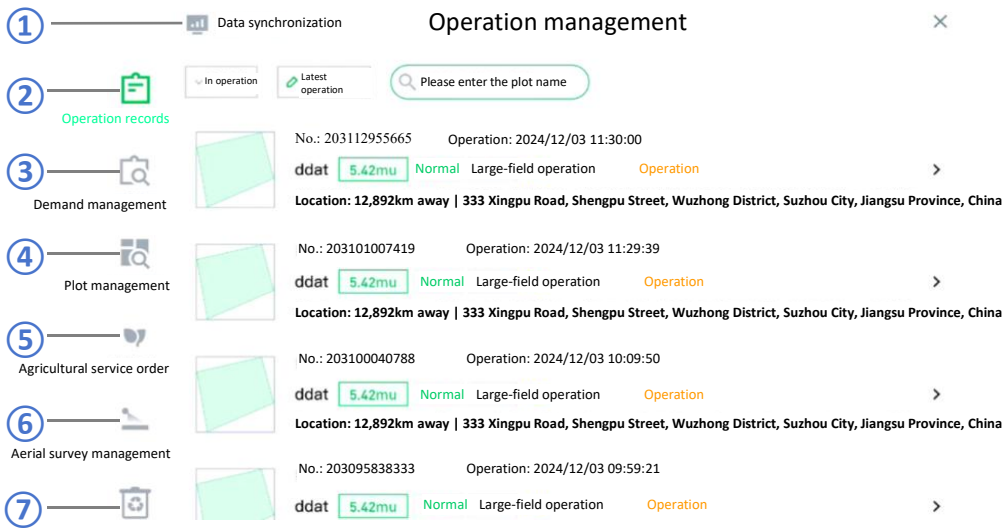
- First, check whether the remote controller and the agricultural drone have been paired. If they have, ignore this step.
- Then, pair the remote controller with the Extreme Link Communication Station. The pairing process takes about 1 minute. After successful pairing, the functions of the Extreme Link Communication Station can be set.Function of Extreme Link Communication Station.
- The mapping function is an independent function. Refer to the mapping device and connect via Bluetooth.
- When switching to the other three functions (relay, base station, and guidance device), they will be enabled simultaneously.

1. Charger: View various statuses and firmware information of the charger.
2. Co-Controller: View the version information and configuration parameters of the current co-controller module.

Operation Management

View operation records, query ongoing/completed tasks, and view established requirements in the

requirement management.



1. Data Synchronization: When operating offline, data that cannot be transmitted back to the server is temporarily stored locally. After the remote controller is connected to the network, it can be transmitted back to the server. Click to view information such as plots, tasks, planning, and flight missions.
2. Operation Records: Records of plant protection operations. You can view post-operation data, including operation area, flow rate, and parameters.
3. Requirement Management: Overview all plot operation data under requirements. You can view the overall content, plot distribution, and operation status of the operation.
4. Plot Management: Supports operations such as plot transfer, gifting, deletion, and replication.
5. Agricultural Service Orders: Used in conjunction with the Eavision SmartFarm 60 APP to view all operation data under the order.

- Transfer: Transfer the plot to other requirements.
- Gift: Gift the plot to others.
- Delete: Move the plot to the recycle bin.
- Copy: Copy the same plot and modify the information.

1. Aerial Survey Management: Records of aerial photography tasks. Click the task to view aerial photography pictures, perform image mosaicking, image tiling, and jump to create a new plot for plot mapping.

- Image Mosaicking: Select the plot in the aerial survey management and click the image mosaicking button. There will be a progress display. Resetting will delete the previous mosaic. Click preview to view the mosaicked picture.
- Image Tiling: Select the plot in the aerial survey management and click image tiling. The stitched picture will be tiled. In the operation page, it can be pasted on the map, and the corresponding tile map will be loaded according to the zooming of the map.
- Failed Image Mosaicking: Try resetting and remosaicking. If remosaicking still fails, it may be due to the quality of the photographed pictures. Choose a sunny day with good lighting for aerial photography and ensure the lens is clean. If it still cannot be mosaicked, increase the overlap rate.
- Failed Image Tiling: Check whether the image mosaicking has failed.

2. Recycle Bin: Click to restore accidentally deleted plots.

- Plot: Information such as the boundary points of the surveyed plot.
- Task: Operation tasks.
- Planning: Planned routes. Re-planning will generate new routes.
- Flight: Mission Data of each take-off flight mission.
- Others: Communication message packets.

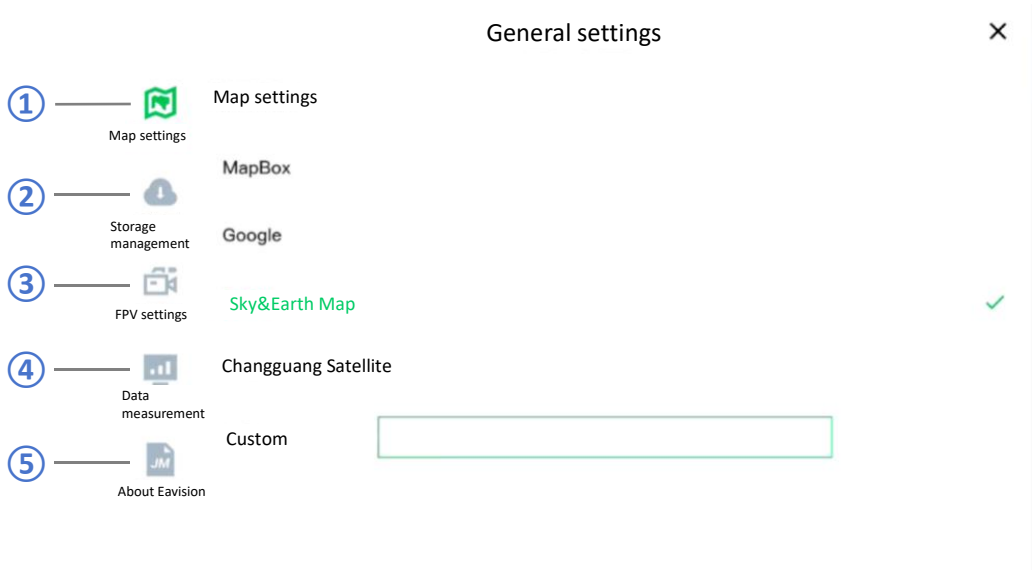
Log Management

When the agricultural drone malfunctions or is damaged, upload the logs of the agricultural drone for analysis and processing. Click "Log Management" to view and upload the logs of the agricultural drone, flight control, APP, and FPV videos.

- Agricultural Drone Log: The operation log of the agricultural drone. To obtain it, connect to the hotspot of the agricultural drone. You can select a time range to narrow down the log. Keep the APP connected to the network when uploading.
- APP Log: The operation log of the APP. Keep the APP connected to the network when uploading.
- FPV Video: The recording content during the flight. Keep the APP connected to the network when uploading.
- Flight Control Log: The log of the flight control module. See the remote controller chapter for details.
- Video Transmission Log: The log of the video transmission module. Keep the APP connected to the network when uploading.

General Settings

Perform parameter unit settings, function settings, etc.



1. Map Settings: Change to various maps and support custom maps.
2. Storage Management: Perform disk cleaning of system cache, agricultural drone, APP, FPV logs, and back-transmitted data. Be cautious when selecting back-transmitted data.

3. FPV Settings: FPV video display: Turn it on to view the FPV image in the operation interface. If the FPV image frame is not displayed during operation, check here. FPV recording enable: Turn it on, and the recording will start immediately when the agricultural drone starts.
4. Data Measurement: Click to change various unit settings to adapt to usage scenarios in different countries.
5. About Eavision.

One-Click Repair

When the aircraft malfunctions or is damaged, submit a work order. The steps to submit a work order are as follows.

Enter the operation interface, click " " in the upper-right corner, and select " " in the operation settings to perform one-click repair.

FPV Viewing

When the FPV viewing window is not displayed, check according to the following steps.

1. Enter the operation interface, click " " in the upper-right corner, select " " in the operation settings to enter the flight settings, and check whether the FPV viewing window is turned on.
2. Select "General Settings" on the main interface, and select "FPV Settings" to check whether the FPV video display is turned on.

Forced Spraying and Spreading

In the completely manual operation mode, users can adjust the spraying or spreading quantity when operating manually. If the quantity is not set and forced spraying is enabled, it will be at the maximum flow rate.

Spraying/Spreading Quantity Setting

Spraying Quantity: First, enter the operation interface, click "" in the upper-right corner, select " " in the operation settings to enter the spraying settings, turn on the "Spraying Quantity" option, and then set the strong-spray flow rate.

Spreading Quantity: First, enter the operation interface, click " " in the upper-right corner, select " " in the operation settings to enter the spreading settings, turn on the "Spreading Quantity" option, and then set the auger rotation speed for strong-spray.

Forced Spraying

First, enter the operation interface, click "" in the upper-right corner, select " " in the operation settings

to enter the spraying settings, and then set forced spraying.

Forced Spreading

First, enter the operation interface, click "" in the upper-right corner, select "" in the operation settings to enter the spreading settings, and then set forced spreading.

Flight

Requirements for the Operation Environment

1. For slope operations, the surface conditions should not exceed the requirements specified by the manufacturer. Otherwise, do not use the agricultural drone for operation.
2. There should be no obstacles such as utility poles, trees, and buildings that affect the operation of the agricultural drone within 10m of the operation area and its surroundings.
3. The operation area should be far away from farms, schools, hospitals, residential living areas, water sources, grasslands, and other ecologically sensitive areas.
4. According to local agronomic requirements, set reasonable pesticide application operation parameters based on factors such as different types and growth stages of grain and cash crops, and the types of pests, diseases, and weeds.
5. Ensure the safety of crops, clarify the safe harvest interval of crops, and the safety of the environment.
6. Do not take off indoors. There is no GNSS signal indoors, and the drone will drift after takeoff. The more satellites the GNSS receives, the higher its navigation accuracy. Large buildings will block the GNSS signal, resulting in poor positioning of the agricultural drone.
7. A flight environment with a short visibility distance will affect the operator's correct judgment of the flight distance, and is likely to lead to flight beyond the line of sight, thus affecting flight safety.
8. To avoid personal and property damage and ensure the spraying effect, perform spraying operations in a wind-speed environment of less than 6 m/s. For highly toxic pesticides such as herbicides and pesticides that are prone to drifting, it is recommended to operate in a wind-speed environment of less than 3 m/s.
9. In northern central-heating areas, when the outdoor temperature is low, directly bringing the agricultural drone from outdoors to a heated indoor environment will cause water vapor to condense inside the agricultural drone, which may affect the flight control system and the electronic speed controller, leading to malfunctions.
10. Humid air will cause corrosion of the metal parts of the agricultural drone. Avoid placing it in a humid environment.

11. Always fly within the line of sight and keep away from people and livestock.
12. Operate with the recommended operating load according to the operation environment. Do not exceed the default value, otherwise, it may affect flight safety.
13. Do not fly in severe weather such as strong wind, rain, snow, icing, fog, or lightning.
14. Do not fly under bridges, in canyons, or in areas where satellite signals are severely obstructed or degraded. During operations, ensure strong satellite signal reception and confirm that there are no high-voltage power lines, communication base stations, transmission towers, or other sources of electromagnetic interference within or near the operating area.
15. Flight payload capacity decreases as altitude increases. Taking the EAVISION J150 as an example: at altitudes above 1,000 meters, the maximum takeoff weight decreases by 2.5 kg for every additional 500 meters of elevation.
16. The product should be used and stored within a temperature range of -10°C to 45°C. In low-temperature environments, ensure that the flight battery is fully charged and reduce the aircraft payload. Preheat the battery cells to above 15°C before use; otherwise, flight safety may be affected or takeoff may be restricted.
17. Do not operate during disasters such as fire, explosion, lightning storms, tornadoes, floods, earthquakes, or sandstorms.

Pre-Flight Preparations

1. Ensure that the batteries of the agricultural drone, remote controller, and handheld mapping device are fully charged, and the generator has sufficient gasoline, to avoid forced landings or loss of control.
2. Ensure that the batteries of the agricultural drone and the operation box are installed in place.
3. Ensure that all components are installed firmly.
4. Ensure that all connection wire harnesses are correctly and firmly connected.
5. Ensure that the motors and propellers are correctly and firmly installed, can operate normally, and are clean without foreign objects. The propellers and drone arms are fully unfolded, and the arm fasteners are fastened tightly, blades leveled, and the app reporting no errors.
6. Ensure that the FPV lens is clean and intact.
7. Ensure that the spraying pipeline is unblocked and there is no liquid leakage.
8. Test whether the nozzles are working properly. If the nozzles cannot work properly, it may be due to air bubbles in the pipeline. Drain the air in the pipeline.
9. Ensure that the surface of the radar combination of the agricultural drone is clean and the appearance is intact.

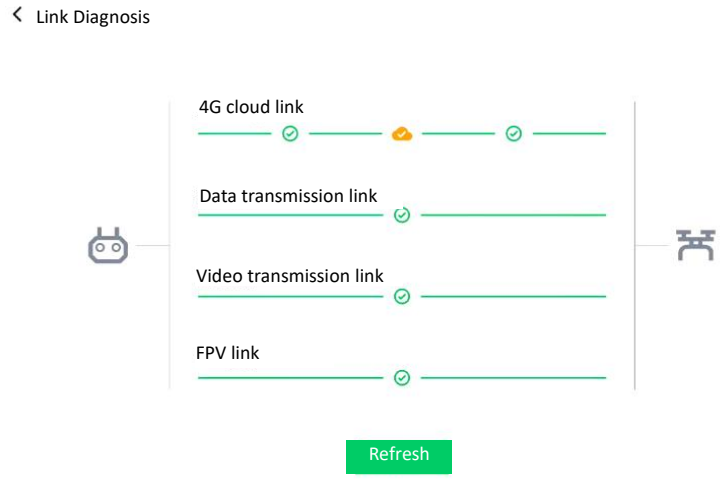
10. Ensure that the account cloud base station is within the validity period.
11. Ensure that charging devices such as chargers and generators have a good appearance and undamaged connectors.
12. Ensure that all drone accessories and parts are sourced from official channels. Using parts obtained from other sources may prevent proper accident analysis and void warranty coverage.
13. Ensure that all components are free from damage and that no foreign objects are obstructing the aircraft surface, including but not limited to the motors, propellers, radar module, and antennas. If any component is aged or damaged, replace it promptly.
14. Operators must wear helmets and reflective vests during field operations. Maintain a safe distance of at least 10 meters from the drone. Do not approach the drone while propellers are spinning. Ensure that the area around the drone is clear of other personnel and vehicles, and that the takeoff point remains free of people, vehicles, or debris during operations.
15. Ensure that the remote control mode matches the pilot’s proficiency.
16. Ensure that the fields being sprayed are not at risk of pesticide damage, including adjacent fields within 100 meters that are not being flown over (distances should be determined by the pilot according to wind conditions, operational parameters, and environmental factors).
17. Ensure that obstacles such as guy wires, high-voltage towers, and power lines within the flight area are properly marked. For specific obstacles such as power lines, ensure they are perpendicular to the flight path and that flight parameters are appropriately set (for J150: 7 m/s).
18. Ensure that the takeoff point is not near roads, power lines, trees, or tall obstacles.



- The agricultural drone has a dual-operator automatic switching function. Users can install another SIM card (the aircraft-mounted terminal can install two SIM cards) according to the local operator's situation to ensure more stable signal transmission of the agricultural drone.

Agricultural Drone Connection

Detect the link status of the agricultural drone: 4G cloud link, data transmission link, video transmission link, FPV link.



Version Check

Before operating the agricultural drone, check whether the firmware of the agricultural drone, software of the remote controller, etc. are the latest versions.

1. Agricultural Drone Firmware Upgrade: After connecting the agricultural drone, if there is a prompt on the lower-right corner of the main interface indicating that a new version is available for upgrade, click "Upgrade Immediately" to update the firmware. If there is no prompt, no upgrade is required.
2. Remote Controller Upgrade: After opening the Eavision SmartFarm 60 APP on the remote controller, a "prompt box" will automatically pop up, showing the update details. Upgrade according to the prompt process.

Remote Controller Stick Quantity

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- When upgrading or getting a new remote controller, pay special attention to checking the joystick rudder quantity of the remote controller. If there are abnormal situations (such as abnormal neutral position), calibrate the joystick before use.

Manual Flight Operations

Basic Flight Operations:

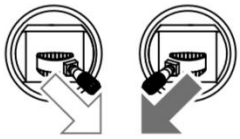
1. Place the agricultural drone in a flat and open area near the operation area, with the operator facing the tail of the aircraft.
2. After adding liquid to the operation box, tighten the lid of the pesticide box.
3. Turn on the remote controller, ensure that the Eavision SmartFarm 60 APP is running normally, and then turn on the power of the agricultural drone.

4. Ensure that the agricultural drone is normally connected to the remote controller, and the indicator light of the remote controller shows green.
5. Wait for the self-inspection to complete, ensure that the GNSS signal is stable, and the RTK dual-antenna is not blocked.
6. The agricultural drone shows no fault alarms and indicates that it is ready to receive tasks.
7. Unlock and take off.
8. Perform manual spraying operations.
9. When landing, return to a flat and open area near the operation area, with the operator facing the tail of the aircraft. Pull down the throttle to make the agricultural drone land, and then pull the throttle stick to the lowest position and hold it. After 3 seconds, the motor stops.
10. After the motor stops rotating, first turn off the power of the agricultural drone, then the spare power supply, and finally the power of the remote controller.

- When the agricultural drone is in the completely manual flight state, it can perform bypass operations manually after turning on the bypass function.
- When the bypass function is not turned on, the maximum speed limit is 13.8m/s.
- When the bypass function is turned on, the maximum speed limit is 10m/s.

Takeoff

Perform the following stick-moving actions to start the motor. After the motor starts to rotate, release the joystick immediately and take off as soon as possible. Follow the instructions of the remote controller for manual operations. If it does not take off, do not perform the stick-moving action to make the motor start to rotate, otherwise, the agricultural drone may be unbalanced, drift, or even take off on its own, causing personal injury or property damage.



- If the manual unlocking fails, first click the flight control to clear the fault code, and then try manual unlocking again.

Landing



Pull down the throttle to make the agricultural drone land, and then pull the throttle stick to the lowest position and hold it. After 3 seconds, the motor stops.

The high-speed rotating propellers are dangerous. Keep a safe distance from the agricultural drone during use and keep the agricultural drone away from people, animals, or other obstacles.

Before the motor of the agricultural drone stops, always keep the remote controller in hand and ensure that the agricultural drone is completely under control.

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- After landing, turn off the agricultural drone first, and then the remote controller.

Low-Altitude Aerial Survey

Aerial survey operation is an important part before plant protection operations. The real-time mapping function of the agricultural drone can quickly and efficiently provide high-definition maps, greatly improving the accuracy, safety, and efficiency of plot marking by hand-drawing.

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

Heading Overlap Rate: The probability that the first-taken picture overlaps with the second-taken picture when the agricultural drone moves forward and takes pictures along the first flight path.

Side-Overlap Rate: The probability that the pictures taken along the first flight path overlap with those taken along the second flight path.

Operation Speed: The flight speed of the agricultural drone during the aerial survey operation.

Entry/Exit Speed: The speed at which the agricultural drone enters and returns between the take-off point and the operation point.

Operation Steps

1. Mode Selection: Open the "Eavision SmartFarm 60 APP", and slide the operation mode selection bar at the bottom of the main page to the right to display the low-altitude aerial survey mode.
2. Plot Selection: Move the cross-hair cursor to the boundary of the plot to be surveyed, and click "Take

Boundary Point".

3. Parameter Adjustment: After selecting the boundary points of the plot, the APP will automatically generate aerial survey points. At this time, you can adjust the corresponding parameters according to your own situation, such as the heading overlap rate and entry/exit speed.
4. Automatic Aerial Survey: The agricultural drone will automatically conduct the aerial survey after take-off.
5. Generate High-Definition Map: A high-definition map will be generated immediately after the aerial survey is completed. You can view the high-definition map by selecting "Operation Management"-"Aerial Survey Management" on the home page of the "Eavision SmartFarm 60 APP".
6. Plot Mapping: Draw the flight path on the high-definition map.

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- The plot for aerial survey needs at least 4 boundary points.
- The flight speed of the aerial survey is automatically adjusted, and the user can manually adjust the entry/exit speed. When the terrain-following function is turned on, the maximum speed is 10m/s; when it is not turned on, the maximum speed is 13.8m/s.
- The low-altitude aerial survey can turn on or off the terrain-following flight, but the bypass function cannot be turned on.
- The height of the low-altitude aerial survey is 30 meters, and the flight height of any operation during the low-altitude aerial survey remains 30 meters.

Spraying Operation

The spraying operation is a core link in plant protection requirements. It protects and prevents plants by accurately spraying liquid pesticide using an agricultural drone, such as for pest control, weed removal, and foliar fertilizer spraying. During this process, whether the operation is standard directly affects the operation effect.

Plot Mapping

Accurately measure the plot to facilitate the agricultural drone to complete the plant protection task autonomously and efficiently. Marking obstacles effectively can greatly reduce the probability of the drone crashing.

Plot Mapping Steps:

1. Turn on the power of the remote controller.
2. Open the Eavision SmartFarm 60 APP and log in to the account.
3. Click "Device" and connect according to the prompts.
4. On the main page, click "Plant Protection Operation", and then select "Plot" in the left-hand list. A "New Plot" option will appear in the lower-right corner.
5. Click "New Plot", enter the plot and crop information, and then enter the plot mapping page.



Mapping Function

Reasonable use of the mapping function can reduce the occurrence of drone-crashing faults, improve operation efficiency, and reduce unnecessary waste of pesticides caused by over-spraying, missed spraying, or excessive spraying.

1. Boundary Point Types

Boundary points are divided into ordinary boundary points, ordinary obstacles, circular obstacles, and no-spray areas.

- Ordinary Boundary Points: These are used to mark the normal boundary points. At least 3 target points need to be marked to form a complete plot. The positions of ordinary boundary points can be "deleted", "undone", or "fine-tuned".
- Ordinary Obstacles: Ordinary obstacle points are generated within the plot and cannot be generated outside the plot. Also, at least 3 target points need to be marked to form a complete plot. Ordinary obstacle points can be "deleted", "undone", or "fine-tuned".
- Circular Obstacles: Click the target position, and a hexagon with a side length of 1.5m will appear to mark the obstacle point, and 2 fine-tuning points will be generated. Click the fine-tuning point in the center of the hexagon, and then click the "Fine-Tune" button on the right to adjust the overall position. Click the

fine-tuning point on the right side of the hexagon and the "Fine-Tune" button on the right to adjust the size of the obstacle. The circular obstacle point can be fine-tuned by clicking the "Fine-Tuning Point" and "deleted" by clicking its body.

- No-Spray Areas: When using the no-spray area, mark at least 3 target points within the plot to plan a complete no-spray area. When the agricultural drone enters this area, the spraying function will be automatically turned off temporarily, and it will be turned on again when the drone flies out of the no-spray area.

Note: The no-spray area must be marked within the plot and cannot be generated outside the plot.

2. Point-Marking Modes:

Point-marking modes are divided into hand-drawn point-marking, mapping-device point-marking, and aircraft point-marking. Different point-marking methods have different advantages, and you can choose the appropriate point-marking method according to the on-site plant protection requirements.

- Hand-Drawn Point-Marking: Hand-drawn point-marking is convenient as there is no need to actually go to the target location for marking. However, its accuracy is low and can only form ordinary plots, not high-precision plots.
- Mapping-Device Point-Marking: Mapping-device point-marking has high accuracy and can generate high-precision plots.
- Aircraft Point-Marking: The agricultural drone can generate high-precision plots when marking points, but there may be visual errors during flight, resulting in errors in the marking positions.

Flight Operation Functions

1. Route Cutting Function: In the parameter-setting interface, click "Route" to plan the route. After planning the route cutting, the agricultural drone is considered to have completed this route and can directly start operating from the n^{th} route.
2. Intelligent Bypass Switch:

- Click the settings interface in the upper-right corner of the agricultural drone operation interface to select the "Intelligent Bypass" switch.
- When the intelligent bypass switch is turned on, the agricultural drone can identify obstacles with a diameter of more than 1 cm and perform the intelligent bypass function.
- When the intelligent bypass switch is turned off, the agricultural drone will use the obstacle-crossing method for bypass flight.

Users need to select the "Intelligent Bypass" switch according to the actual situation to adapt to different operation scenarios.

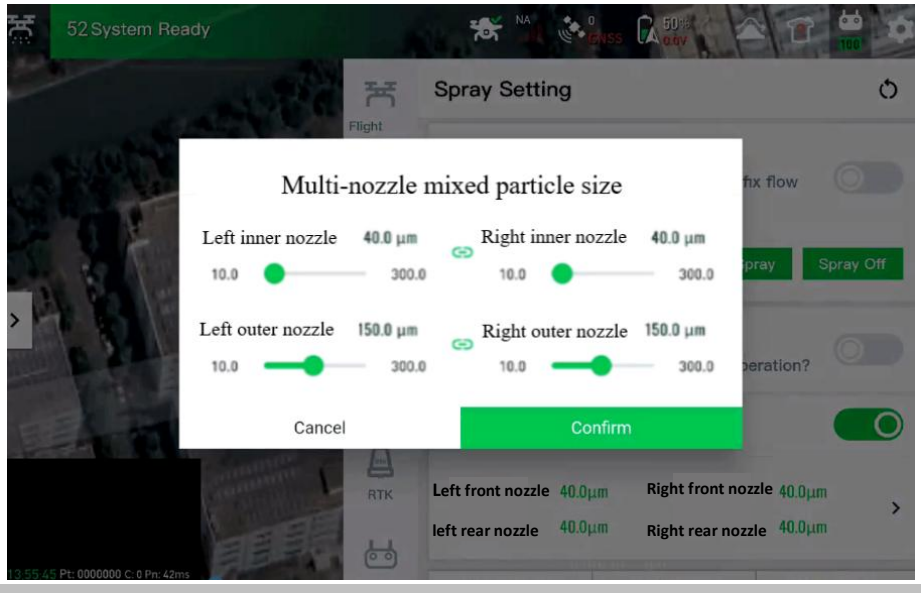
Operation Parameters

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

1. Atomization Level: The droplet particle size of the liquid pesticide sprayed by the agricultural drone.
2. Spraying Amount per Mu: The amount of liquid pesticide sprayed per mu of land.
3. Operation Height: The relative height between the agricultural drone and the canopy of the ground crops.
4. Operation Speed: The horizontal flight speed of the agricultural drone.
5. Enter/Exit Terrain-Following: Whether the drone flies along the terrain when entering or exiting the plot.
6. Enter/Exit Bypass: Whether the drone bypasses obstacles when entering or exiting the plot.
7. Enter/Exit Speed: The horizontal flight speed of the drone when entering or exiting the plot.
8. Enter/Exit Height: The relative height between the agricultural drone and the ground when entering or exiting the plot.

Mixed Particle Size

In one flight, the agricultural drone can spray four different particle-size droplets simultaneously, achieving uniform distribution of large droplets on the front of the leaves and full coverage of small droplets on the back, with a more excellent spraying effect. Click " " in the operation interface to enter the spraying settings interface and turn on the multi-nozzle mixed-particle-size setting.



AB Operation

The AB operation mode is suitable for large-area operations with regular boundaries and no obstacles. In this mode, there is no need to perform plot mapping in advance. The agricultural drone can automatically generate routes in a specified direction and fly along the routes for operation.

Operation Instructions:

1. Connect the agricultural drone, log in to the Eavision SmartFarm 60 APP, and click "AB Operation" at the bottom of the main interface.
2. Start the propellers and take off to enter the plot. Fly to the desired position and click "Point A", "Point A Angle", "Point B", and "Point B Angle" on the right side of the page respectively. The system will automatically generate a route extending to the left or right of the line connecting Point A and Point B on the map.
3. Adjust various operation parameters in the settings page and select an appropriate route spacing.
4. Click the AB operation button in the lower-right corner to start the operation.
5. When the aircraft flies to the boundary of the plot, if you want to stop the operation, manually press the return button.
6. During the operation process, if the operation is interrupted due to propeller intervention, low battery, low pesticide amount, or other problems, the aircraft will pause the AB operation and generate a breakpoint at the original position. When the aircraft is ready to continue the operation, click "Continue Operation" on the APP page, and the aircraft will fly to the breakpoint and continue the AB operation.

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- In the AB operation mode, after starting the operation, the user cannot use the joystick to interfere with the aircraft's attitude.
- If the joystick is used during the operation, it is necessary to switch to the manual mode, and a breakpoint will be generated on the page. Click "Continue" on the APP page, and the aircraft can fly back to the breakpoint to continue semi-autonomous operation.

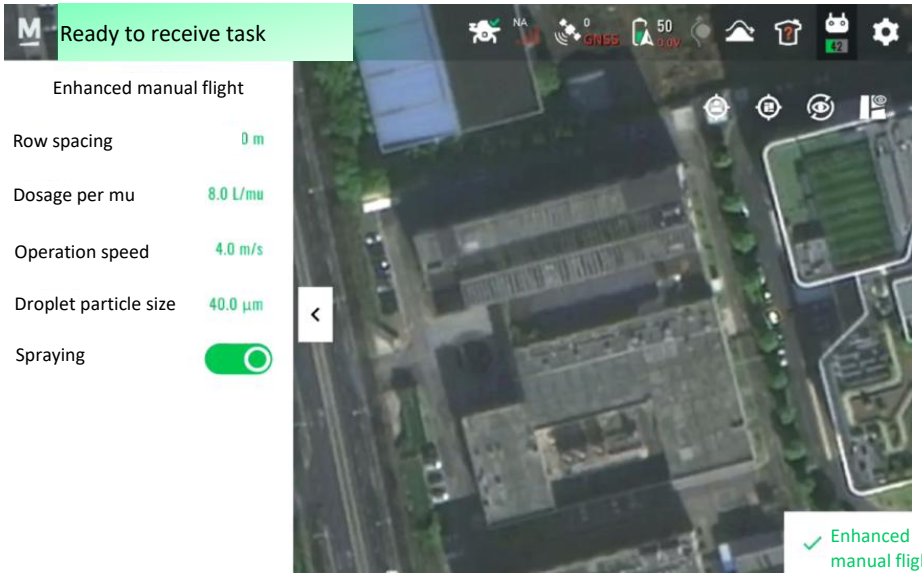
Enhanced Manual Flight Operation

The enhanced manual flight mode is a flight operation mode that supports the setting of parameters such as fixed height, fixed speed, and fixed spraying amount per mu during manual flight. It is convenient for novice users to quickly get started with the manual flight function. At the same time, it is equipped with intelligent functions such as one-click turn-around and heading locking, providing you with an easy manual flight experience.

Usage Process

1. Open the "Eavision SmartFarm 60 APP" and select the "Enhanced Manual Flight" mode in the operation mode options in the lower-right corner.

2. Adjust the corresponding parameters according to your needs. Click the corresponding parameter to adjust. The adjustable parameters are as follows:



- Row Spacing: The interval between the routes of the agricultural drone.
- Spraying Amount per Mu: The amount of pesticide used per mu of land, in liters.
- Operation Speed: The flight speed of the agricultural drone during operation.
- Atomization Particle Size: The particle size of the droplets sprayed by the agricultural drone.
- Spraying: Whether to spray during the flight of the agricultural drone.

3. Switch to the manual operation mode. After adjusting the parameters, click "Enhanced Manual Flight Operation" in the lower-right corner. After the self-inspection is completed, slide to take off.
4. After takeoff, push the pitch stick manually to perform manual heading-fixed flight.

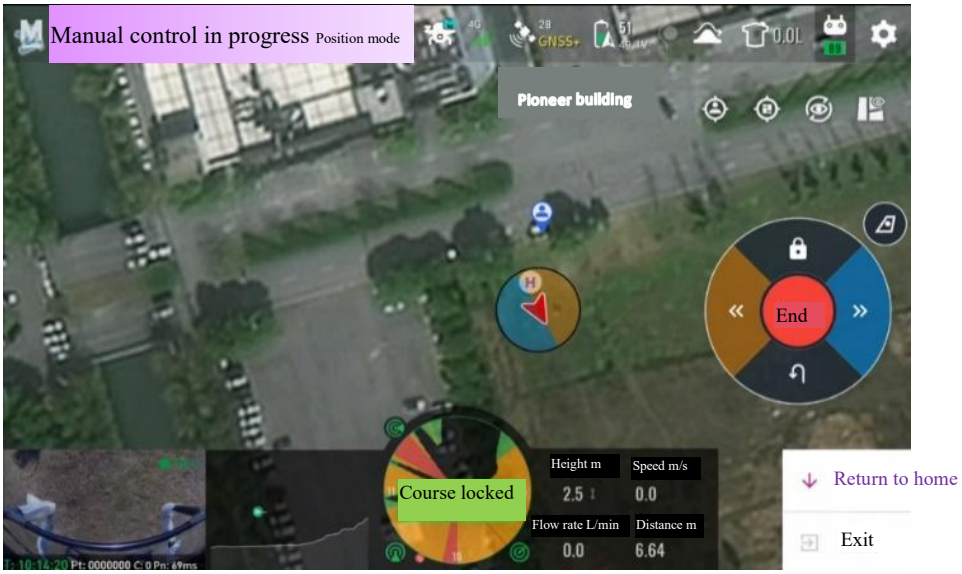


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- When flying in this mode, the aileron of the remote controller joystick cannot be controlled. The direction can only be used when the heading is locked. The pitch stick can be controlled all the time, but the speed is limited to the maximum value set by the parameters.
- The aircraft needs to take off automatically after self-inspection and hover before pushing the stick.

5. You can click the operation buttons on the right. You can select functions such as one-click turn-around, heading locking, and left-right ridge-changing to assist the operation.

- One-Click Turn-Around: The function of changing the nose direction of the agricultural drone during the enhanced manual flight operation.
- Heading Locking: Lock or unlock the heading of the agricultural drone in the enhanced manual flight mode. When the heading is locked, the left-right direction joystick of the remote controller can be disabled or used.
- Left-Right Ridge-Changing: The function of changing the row (ridge) of the agricultural drone in the enhanced manual flight mode.



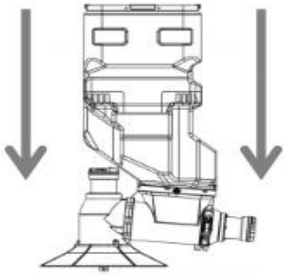
Spreading Operation

The spreading operation mode supports mountain-route operations, large-field route operations, and manual operations. The mode can be easily switched between spraying and spreading through the Eavision SmartFarm 60 APP. Users can select the corresponding mode according to different scenarios for spreading operations.

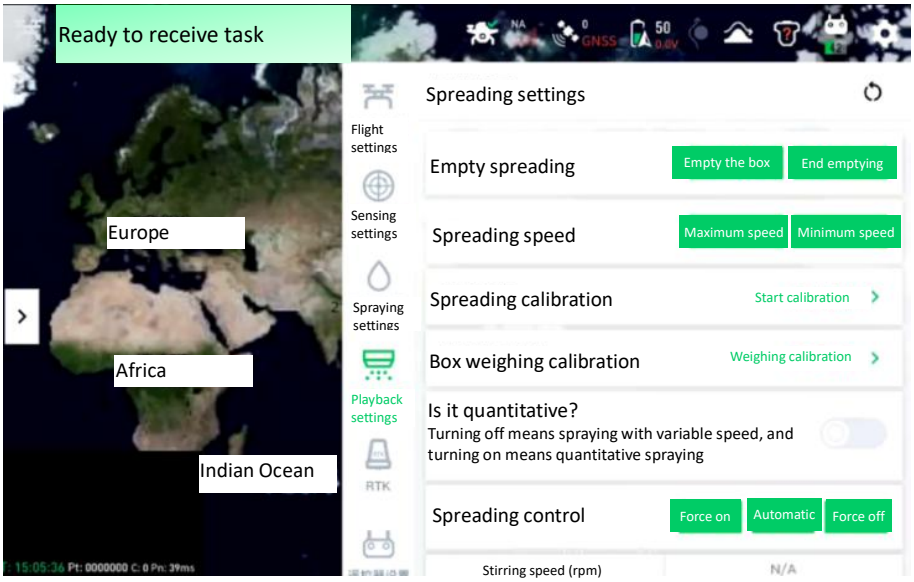
Installation and Use

In an open and flat area, place the body of the agricultural drone horizontally, and place the spreader horizontally above the agricultural drone (the spreader should be prepared in advance with the wire harness and spreading disk arranged). The Eavision spreader adopts a quick-disassembly and installation design. Only 1 connection wire is needed between the agricultural drone and the spreader, which can be quickly connected in just a few seconds.

1. Install the Eavision spreader onto the agricultural drone along the guide rail (if the agricultural drone is equipped with a pesticide box, remove the pesticide box first).



2. Connect the wire harness to the agricultural drone.
3. Open the "Eavision SmartFarm 60 APP", log in to the account, and connect to the agricultural drone.
4. Click "Plant Protection Operation" to enter the plot, click " " in the upper-right corner to enter the settings interface, and select " " for spreading settings. For the first operation or when replacing the spreading material (if no template has been created), calibration is required. This calibration is divided into two parts: material box weighing calibration and spreading calibration.



(Note: When replacing the spraying/spreading pesticide box, turn off the power of the drone and then connect the wire harness.)

Weighing Calibration

① Click "Material Box Weighing Calibration".

② Enter the weighing calibration procedure, and a prompt "Please lift the pesticide box and keep the load cell 5-10 cm away from the aircraft longitudinal beam" will appear.

③ Click "Confirm", and then enter the countdown. At this time, the software automatically enters the automatic calibration mode.

④ After the countdown ends, a prompt "Please place the pesticide box horizontally. Note: Keep the bottom of the pesticide box clean, free of foreign objects, and horizontal" will appear.

⑤ Click "Confirm", and then enter the countdown. At this time, the software enters the automatic tare-

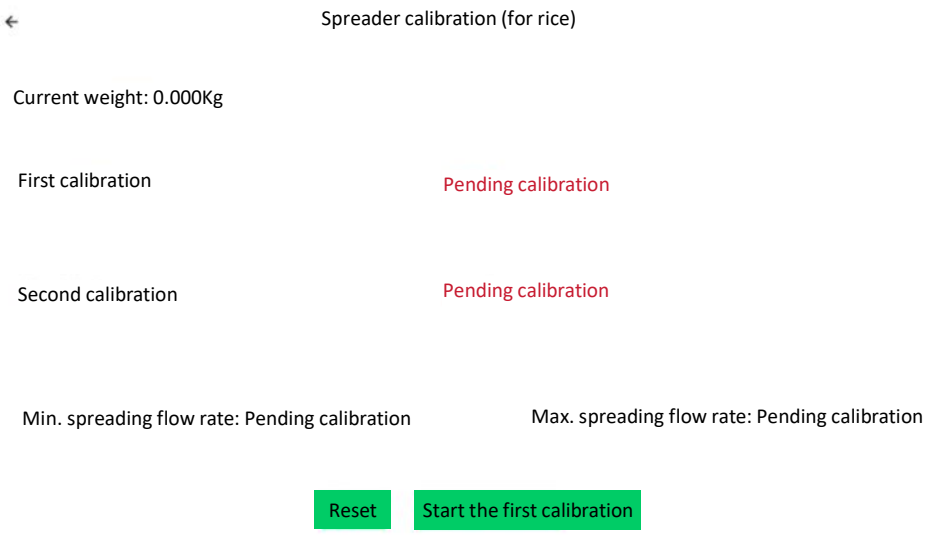
weight mode.

⑥ After the calibration is completed, a prompt "Calibration successful" will appear. Click "Confirm", return to the main interface, and check whether the weight display is 0.

⑦ At this point, the calibration procedure is completed, and the spreader can be used for operation.

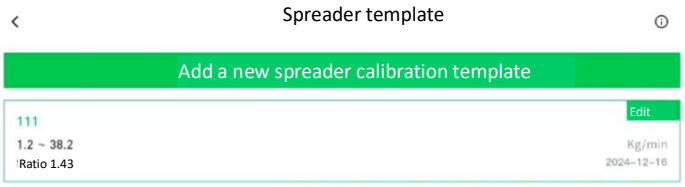
Spreader Template

1. Before spreading calibration, place suitable containers around the spreading disk to collect materials. If necessary, remove the spinner to prevent splashing.
2. Add suitable spreading materials.
3. Click "Start Calibration" to enter the flow rate calibration procedure.
4. Click the "New Spreader Calibration Template" option and enter the template name.
5. Click "Start Calibration" to create and name a new spreader calibration template, and then click "Start Calibration" again. This manual takes "Compound Fertilizer" as an example for explanation.
6. On the created template page, drag and adjust the auger rotation speed and calibration duration parameters, and then start the calibration. The recommended auger rotation speed for the first calibration is 25%. Generally, the longer the calibration time, the more accurate the flow rate data will be. However, avoid setting the auger rotation time too long to prevent material shortage and empty spreading of the spreader.
7. Click the "Start First Calibration" button and confirm that the spreader is spreading materials normally.



8. After the first calibration is completed, the load cell will automatically calculate the spreading amount. Observe whether the weighed value and the actual spreading amount deviate greatly. If the error is less than 200g, proceed to the next step. If there is a significant weight error, it is recommended to use an electronic scale to weigh the actual spreading weight and re-enter the parameters.

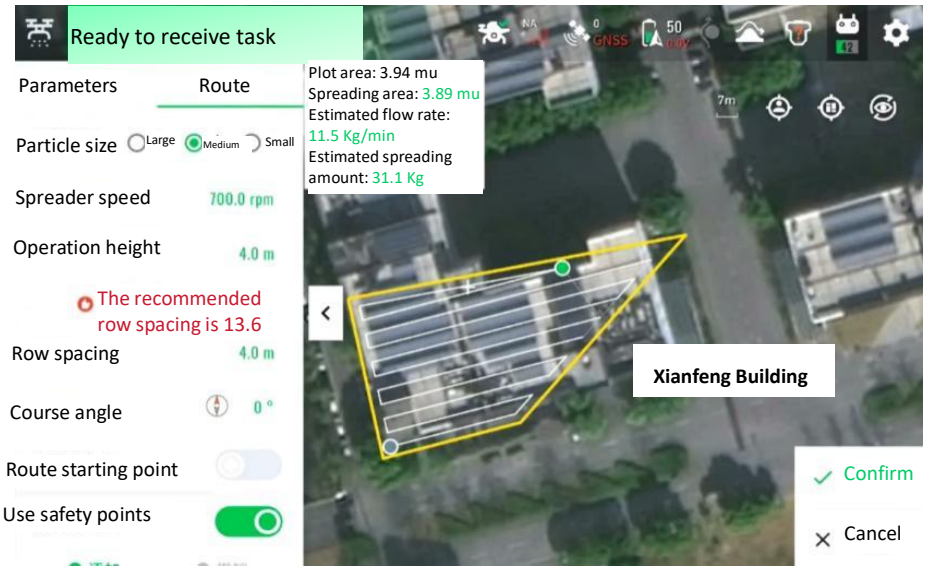
9. After the first calibration is completed, click "Next" to start the second calibration.
10. Before the second calibration, fill the material bucket to avoid material shortage, which may affect the calibration accuracy. For the second calibration, adjust the auger rotation speed and calibration duration. The recommended auger rotation speed for the second calibration is 80%, and the recommended calibration time is 20s. Generally, the longer the calibration time, the more accurate the flow rate data will be. However, avoid setting the auger rotation time too long to prevent material shortage. If a larger spreading amount is required, you can try using an auger rotation speed of 100% for both calibrations and a flow rate calibration time of 10s. But pay attention to adding spreading materials in a timely manner to ensure that the material box will not be empty during the entire calibration process. The faster the flow rate, the more power-saving and the higher the operation efficiency.
11. Click the "Start Second Calibration" button and confirm that the spreader is spreading materials normally. The process is the same as the first calibration.
12. After the second calibration is completed, the load cell will automatically calculate the spreading amount. Observe whether the weighed value and the actual spreading amount deviate greatly. If the error is less than 200g, proceed to the next step. If there is a significant weight error, it is recommended to use an electronic scale to weigh the actual spreading weight and re-enter the parameters.
13. Click "Save", and if the message "**-Spreader Calibration Successful" appears, it means the flow rate calibration is successful.
14. After successful calibration, this template can be repeatedly applied in the operation interface. Click "Operation", and then in the parameter-setting interface, find the spreader template setting.
15. Click the ">" icon on the right side of the operation parameter selection to view all spreader templates.



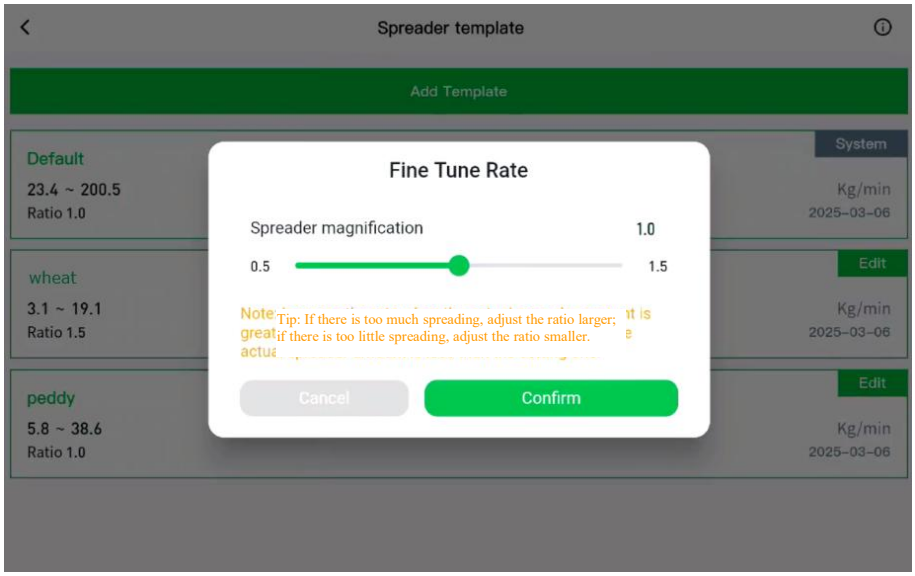
Spreader Parameter Settings

1. If no calibration operation has been performed: On the main page of the Eavision SmartFarm 60 APP, select "Plant Protection Operation", click "Plot", and click "Go to Operation". If it is the first time to use the spreader, a prompt "The spreader has not been calibrated. Please click [Calibrate Now]" will appear.
2. If the calibration operation has been performed: If the "calibration" operation has been carried out, you can directly set the operation parameters such as "Particle Size", "Spreader Rotation Speed", and

"Operation Height".

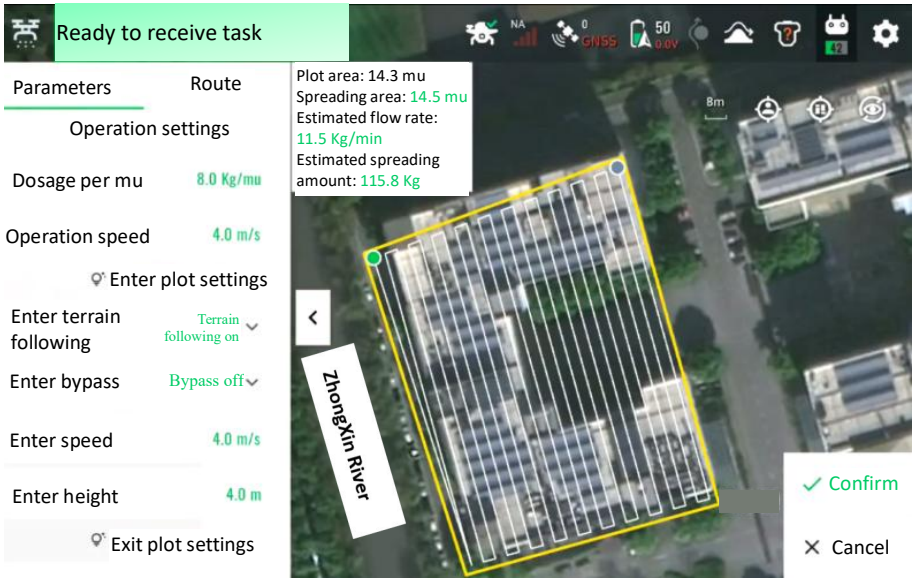


- Particle Size: There are three types of particle sizes to choose from. Users can select the appropriate particle size according to the state of their materials. For example, choose (medium-sized particles) for rice and (small-sized particles) for compound fertilizer and urea, which are closer to the automatically calculated values. The larger the selected particle size, the smaller the default spreading width.
- Spreader Rotation Speed: The rotation speed of the spreader can be adjusted in the range of 200-1000 RPM, with 100 RPM as one gear. The higher the rotation speed, the larger the spreading width. It is initially recommended to use 700-800 RPM.
- Operation Height: The operation height can be adjusted in the range of 2.5-30m. The higher the height, the larger the spreading width.
- Row Spacing: The row spacing will be automatically calculated based on the above three items: "Particle Size", "Spreader Rotation Speed", and "Operation Height". If the actual spreading width is different from the row spacing, the row spacing can be fine-tuned separately. To restore the automatically calculated value, you can adjust the operation height or the spreader rotation speed again, and the row-spacing value will be restored to the automatically calculated one.
- Select Template: Select the operation template and operation speed according to the corresponding material. Otherwise, it may cause a large error in the spreading amount. During the operation, calculate whether the application amount per mu is too large or too small based on the actual material consumption and the actual operation area. You can adjust the magnification in the template editing function.



- If the application amount per mu is too large, adjust the magnification in the direction greater than 1, with each adjustment of 0.1-0.3 times. If the application amount per mu is too small, adjust it in the opposite direction. After adjustment, confirm the fine-tuning until the application amount per mu reaches the set value.

- Start Operation: Click "Confirm", and the agricultural drone can perform autonomous operations.



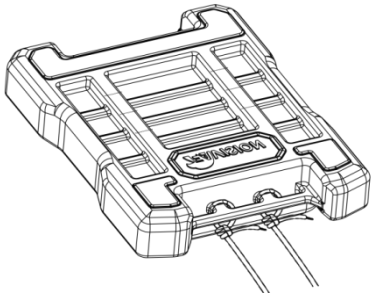
- Autonomous Operation: Click "Take Off", send the task, and the agricultural drone starts autonomous operation.

Lifting Operation

The lifting operation can be applied to mountainous lifting scenarios where manual transportation is difficult and inefficient. It solves potential problems such as manual point-finding by users, difficult operation, high energy consumption, and long-term lifting safety. The J150 can support full-autonomous lifting operations, which not only improves efficiency but also greatly guarantees safety.

Installation Preparation

1. Remove the four nozzles.
2. Tie **4 lifting ropes** to the left and right sides of the lifting installation module. The weight can be measured through the lifting module.



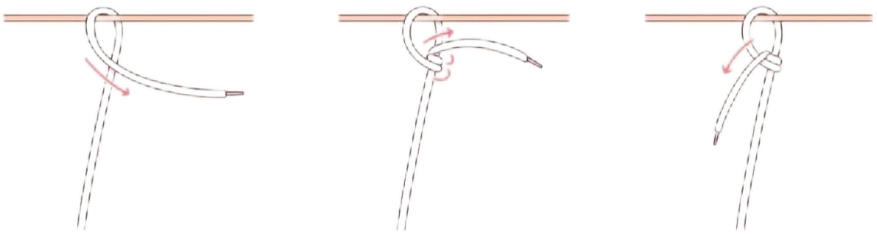
3. Place the ropes and the lifting installation module inside the frame and confirm that the rope length is between 5-10m.

- Tying the ropes is a very important step for load-bearing. Users must tie the lifting ropes firmly.
- Recommended Rope-Tying Method (Any method is acceptable):

Anchoring Hitch

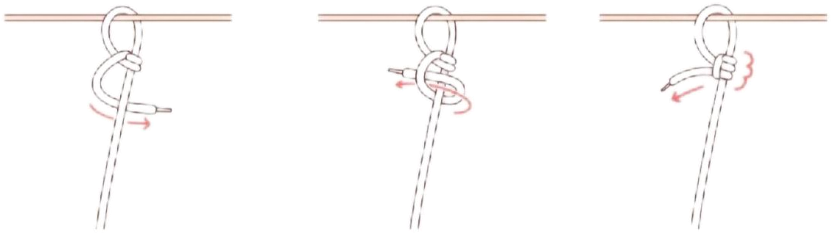
a）Pass the rope around the object to form a loop, with the rope end above the rope.

b）Wrap the rope end around the loop twice.



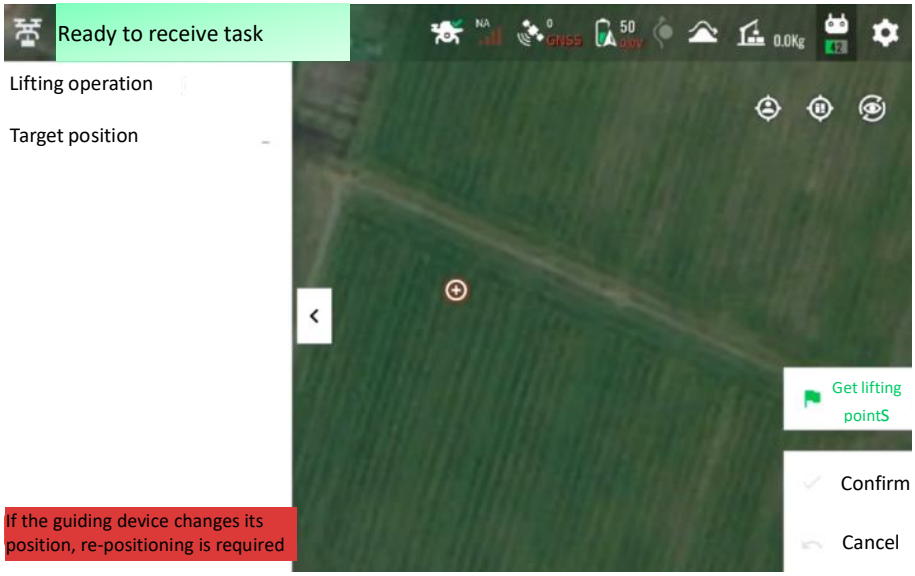
c）Place the rope end aside, overlapping it below the rope and forming a small hole with the rope.

d）Pass the rope through the hole and tighten it.

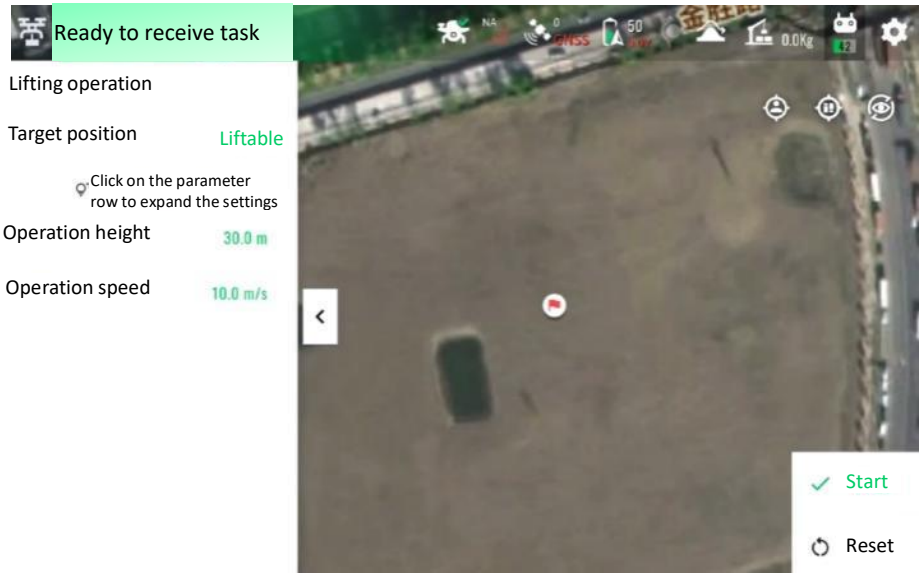


Usage Process

1. Enter the homepage of the "Eavision SmartFarm 60 APP".
2. Click the function-switching button in the lower-right corner.
3. Select the lifting operation.
4. Obtain the lifting position: It can be obtained by connecting to the Extreme Link Communication Station or by hand-drawing on the remote-controller map.



5. After obtaining the position, perform lifting parameter settings.



6. After reaching the designated position, hover and lower the height. After hanging the cargo, communicate with the person hanging the cargo. First, raise the height to check whether the weight exceeds the limit when the cargo leaves the ground, and then click "Return".
7. After reaching the return position, hover and lower the height. The cargo will automatically unhook when it touches the ground.

- For automatic lifting flight, click " " and select "Sensing Settings" to turn on the intelligent terrain-following mode.
- Try to 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.
- When the automatic lifting operation is in progress and the terrain-following function is turned on, the maximum speed is 10m/s, and the maximum height is a true altitude of 30 meters.
- Use the load cell to check the weight of the cargo.

Lifting Precautions

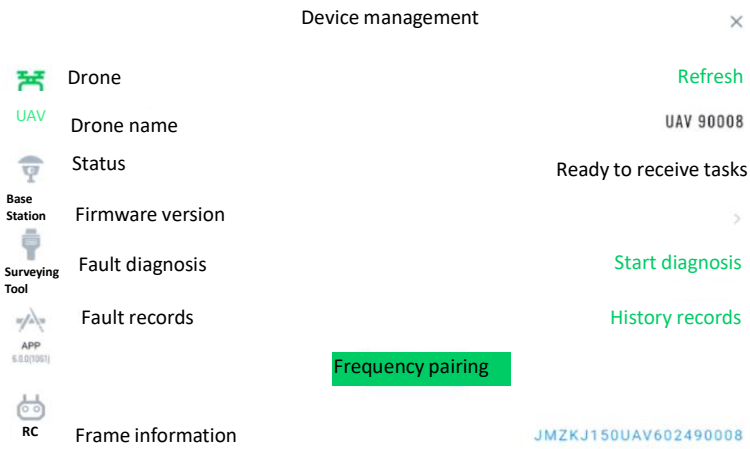
- First, ensure that the nozzles have been removed.
- It is strictly prohibited to lift loads exceeding 75kg.
- When manually hanging heavy objects for lifting, it is strictly prohibited to exceed a speed of 7m/s and a height of 30m (true altitude).
- It is strictly prohibited to manually/autonomously cross power lines.
- Pay attention to the rope not being too light and avoid rope entanglement.
- It is strictly prohibited to fly without knowing the weight, which may lead to over-weight flight.
- It is strictly prohibited to consume excessive power. When the battery level is 30%, return to the base immediately to replace the battery.
- It is strictly prohibited for people, goods, or livestock to be present around or below the agricultural drone when unhooking, as this may affect flight safety.
- During the lifting operation, there may be risks that cause damage or loss to third-parties. The loaded cargo is not covered by compensation.
- It is strictly prohibited to lift non-agricultural operation goods such as building materials and photovoltaic panels during the lifting operation.
- In case of any damage to the aircraft body or third-party losses caused by violating the above-mentioned prohibited operations, Eavision Robotic will not bear any compensation liability.

Fault Checking

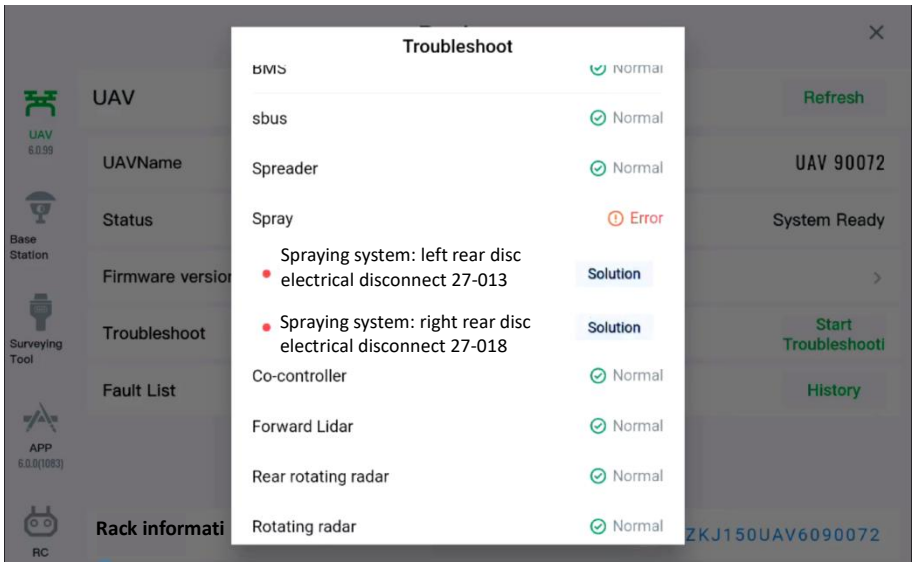
When an unexpected situation such as the inability to take off occurs during the application of the agricultural drone, you can conduct a preliminary troubleshooting in the fault-checking section to quickly resume operation and ensure operation efficiency.

Usage Process

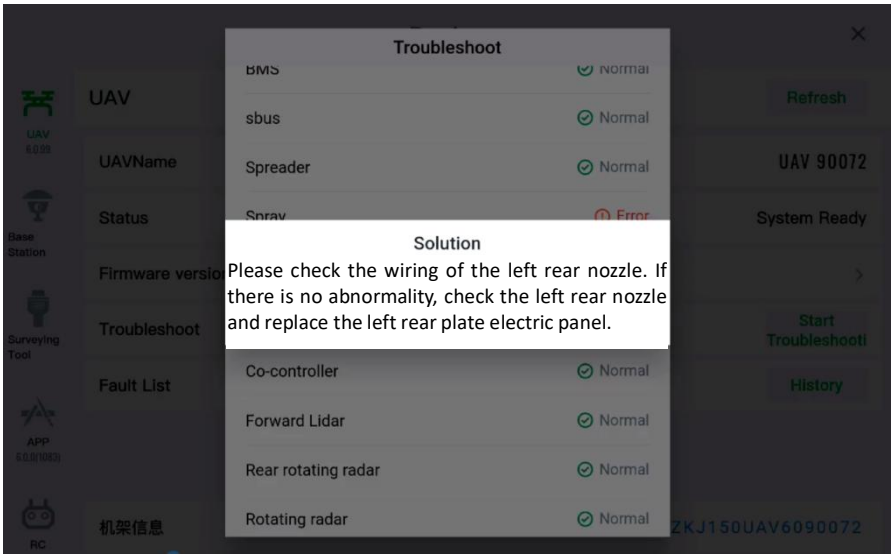
1. When the agricultural drone has a fault and prompts "Fault-Cannot Take Off", do the following:
2. Click "Device Management", and then click the "Start Diagnosis" button in "Fault Diagnosis".



3. Click the "Fault" on the right side to view the detailed fault status.



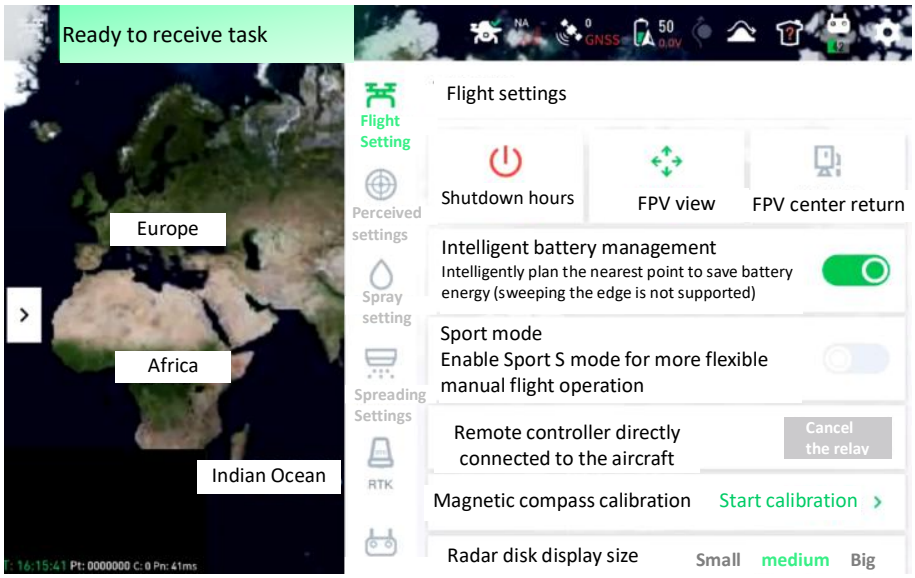
4. Click "Solution" and solve the corresponding fault according to the prompts.



- When a fault message appears during the operation of the agricultural drone, the fault point will be displayed in the upper-left corner of the operation interface.
- If the agricultural drone has a fault, it is not allowed to take off. It is necessary to troubleshoot until there is no fault before flight operation.

Shutdown Procedure

1. Wait for the agricultural drone to land and all propellers to stop rotating.
2. Clean the spraying system of the agricultural drone. For details, refer to the maintenance and upkeep chapter.
3. Turn off the power: Turn off the main battery power of the agricultural drone. For details, refer to the battery usage chapter.
4. Turn off the spare power supply: Enter the operation interface, click the "⚙" button in the upper-right corner, click the "Turn off Small Power" button, and wait for 40S to turn off the spare power supply.



5. Turn off the remote controller: When the remote controller is on, long-press the power button. The battery level indicator lights up. Then, short-press the power button. Wait for the battery level indicator lights to turn off one by one to turn off the remote controller.
6. Fold the propellers and the drone arms.

⚠

- The shutdown sequence is to turn off and remove the power battery first, then turn off the spare power supply, and finally turn off the remote controller.
- There is no hardware button to turn off the spare power supply, and it can only be turned off in the APP.

- After the agricultural drone finishes the operation, it is necessary to clean the spraying system to avoid corrosion caused by long-term pesticide adhesion.
- During transportation, fold the drone arms and propellers for transportation.
- Keep a sufficient safety distance between the camera and the transportation container to prevent damage caused by vibration.
- The landing gear of the aircraft and the contact surface should have sufficient friction to prevent horizontal movement during transportation.
- During transportation, place the aircraft stably.
- When disposing of the remaining pesticides, follow the safety instructions provided by the pesticide manufacturer.
- Store the agricultural drone in a dry environment.

Flight Restrictions

According to the "Interim Regulations on the Management of Unmanned Aerial Vehicle Flights", when operating an agricultural drone in China, it should fly above agricultural, forestry, and pastoral areas. Areas such as airport restricted-flight zones, emergency situations (such as forest fires, large-scale events, etc.), military restricted areas, and densely-populated areas are collectively referred to as restricted-flight areas.

According to the regulations of the Civil Aviation Organization and the management regulations of agricultural drones, agricultural drones must fly within the specified airspace. For safety reasons, the flight restriction function is enabled by default, including height and distance restrictions, as well as some no-fly zones, to help users use this product more safely and legally.

⚠

- To ensure flight safety, try to avoid flying in areas such as airports, military restricted areas, highways, railway stations, subway stations, and urban areas.
- Try to keep the agricultural drone within the line of sight during flight.

💡

- The default factory settings of the agricultural drone limit the true altitude to 30m, the speed to 13.8m/s, and the distance to 2,000m.

Restriction Lifting

When the agricultural drone conducts plant protection operations above agricultural, forestry, and pastoral areas, it does not need to apply to the air traffic management agency for flight activities. However, in the rectangular area 20 kilometers outside each end of the airport runway and 10 kilometers on each side, the agricultural drone cannot take off and needs to apply for lifting the no-fly restriction.

Before engaging in agricultural drone flight activities, the unit or individual should submit a flight plan application to the local flight control department. The flight can be carried out only after approval. The flight plan application should be submitted to the flight control department of the airport or the take-off/landing site before 15:00 on the day before the flight. The flight control department should reply before 21:00 on the day before the flight.

Application Process for Airspace Restriction Lifting

1. Fill in the information.

<table>
<tr><th colspan="8">Application Form for Civil Unmanned Aerial Vehicle Flight Activities</th></tr>
<tr><td>Applying Unit</td><td colspan="3">The unit or individual that needs the restriction lifting</td><td>Contact Person</td><td>Fill in directly</td><td>Contact Tel.</td><td>Fill in directly</td></tr>
<tr><td>Undertaking Unit</td><td colspan="3">The unit or individual that executes the flight mission</td><td>Contact Person</td><td>Fill in directly</td><td>Contact Tel.</td><td>Fill in directly</td></tr>
<tr><td rowspan="3">Drone Model</td><td>Drone model</td><td rowspan="3">Product SN</td><td>Drone SN</td><td rowspan="3">Flight Control SN</td><td rowspan="3">Flight Control SN</td><td rowspan="3">Eavision Account</td><td rowspan="3">Fill in your account registered in "Eavision Academy"</td></tr>
<tr><td>Drone model</td><td>Drone SN</td></tr>
<tr><td>Drone model</td><td>Drone SN</td></tr>
<tr><td>Flight Purpose</td><td colspan="3">Fill in the actual flight purpose</td><td>Flight Area</td><td colspan="3">The specific address or range of the restriction-lifting area</td></tr>
<tr><td>Flight Area Coordinates
Fill in the coordinates of the center point of the restriction-lifting area</td><td>Latitude
Longitude</td><td colspan="2">The coordinates of the center point of the restriction-lifting area</td><td>Estimated Flight Radius
Fill in according to the actual needs</td><td>Example: 30,000 meters</td><td>Flight Height</td><td>Example: 30 meters</td></tr>
<tr><td>The start and end time of the flight
Fill in according to the actual needs</td><td colspan="7">Example: From January 1, 2019, to March 1, 2019</td></tr>
<tr><td rowspan="3">Applying Unit Review Opinion</td><td colspan="2">The seal of the applying unit (signature)
(Seal)
___MM ___DD, _____YY</td><td rowspan="3">Undertaking Unit Review Opinion (If different from the applying unit)</td><td colspan="2">The seal of the unit undertaking the flight activity
(Seal)
___MM ___DD, ____YY</td><td rowspan="3">Management Department Approval Opinion (Public Security/Civil Aviation/Military Aviation)</td><td colspan="2">A letter or document approved for flight by any local military aviation, civil aviation, or public security agency (stamped by any one department is sufficient)
(Seal)
___MM ___DD, ____YY</td></tr>
<tr><td colspan="2">Reviewer</td><td colspan="2">Reviewer</td><td colspan="2">Reviewer</td></tr>
<tr><td colspan="2">Contact Information</td><td colspan="2">Contact Information</td><td colspan="2">Contact Information</td></tr>
</table>

2. Obtain approval from the local authorities (public security, air traffic control).

3. Report the restriction-lifting location of Eavision Robotic.

Safety Warning Signs

Airframe Signs

Airframe Signs

1. ESC High Temperature Signs



2. Propeller

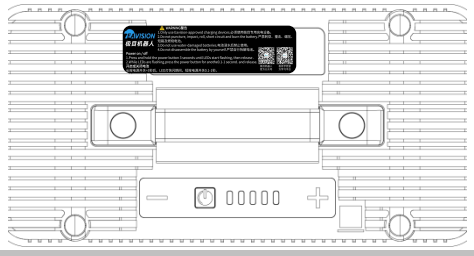
⚠

- The installation direction of the propellers: M1 and M3 have orange stripes and rotate counterclockwise (CCW). M2 and M4 have white stripes and rotate clockwise (CW).
- Be careful during related operations to avoid scratches.
- High-speed rotating propellers are dangerous. Keep a safe distance from the agricultural drone before starting the propellers and keep the agricultural drone away from people, animals, or other obstacles.
- Do not approach before the propellers stop to avoid cuts.

Battery Signs

1. Battery operation warnings





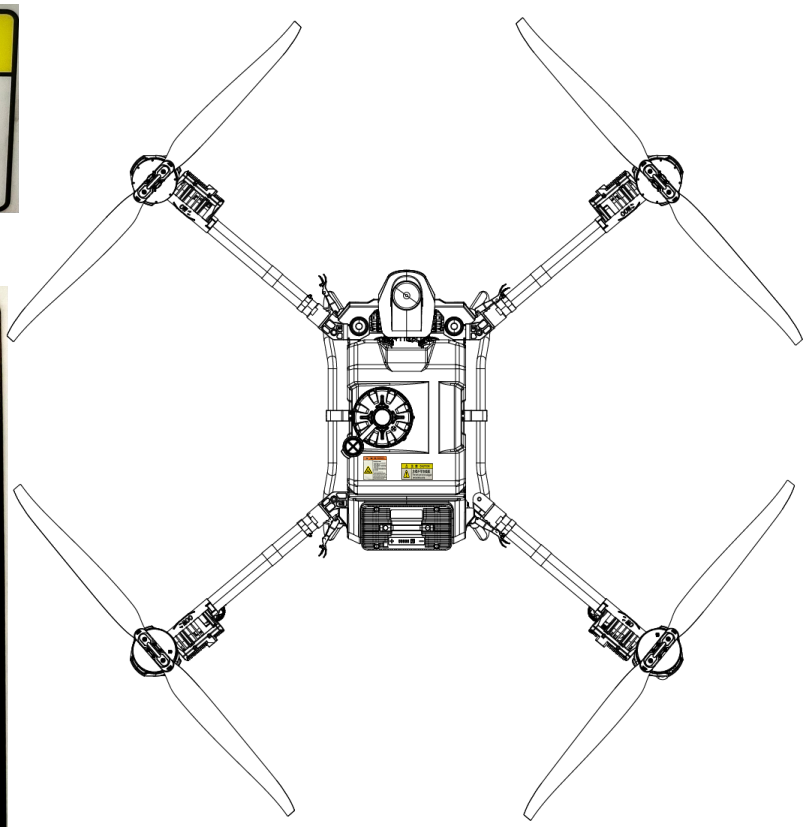
Pesticide Box Signs

1. Pesticide box usage warnings



2. Pesticide Usage Warnings





Maintenance Instructions

Frequency: Daily / After Each Operation

After Each Operation

Airframe and Tank Cleaning

Exterior Cleaning and Dust Removal

- Aircraft Body and Propellers: Use clean water with a soft-bristle brush or damp cloth to thoroughly remove pesticide residues and soil adhering to the arms, spray tank, landing gear, motors, ESCs, and propellers.
- Sensing System Cleaning: Gently wipe the radar surface and FPV lens with a clean soft cloth. Ensure that water stains and mud spots do not obstruct them to maintain obstacle avoidance and flight safety.
- The rear multi-pin plug is a wear-prone connector. Inspect it promptly; otherwise, melting or power-loss risks may occur. EAVISION accepts no liability for failures caused by inadequate inspection or maintenance.

Basic Structural Inspection

- Propeller Inspection: Check propellers for cracks, nicks, or severe deformation. Replace immediately if damaged.
- Initial Fastener Inspection: Check the arm locks and landing gear connections for cracks and ensure there is no obvious play.
- Clean the metal contacts of the rear multi-pin plug. Regularly wipe oxidized areas with a cotton swab moistened with alcohol. Replace the rear multi-pin plug immediately if arcing, severe oxidation, or corrosion is found.

Battery and Charging

- Check the battery connector for black oxidation marks or foreign matter; clean it promptly if any are found.
- The battery connector is a wear-prone connector. Inspect it promptly; otherwise, melting or power-loss risks may occur. EAVISION accepts no liability for failures caused by inadequate inspection or maintenance.
- Check the battery ventilation openings. If sand, gravel, or other debris is present, clean it promptly to prevent debris from entering and damaging the cells.
- Inspect the cells. Stop using the battery immediately if swelling or leakage occurs.
- Store and transport batteries in a battery safety box or fire-resistant battery storage box. Avoid high temperatures, humidity, and direct sunlight, and keep batteries away from ignition sources, flammable materials, and corrosive substances.

Operating System

- Clean the spraying system with clean water or a neutral detergent to prevent chemical residue from corroding the equipment.
- Check the nozzle spinner disk for debris, dynamic balance, and abnormal noise. Check the nuts at all hose connections and tighten them if loose.
- If the spreading system is used, clean the granular spreader after each operation. The screw feeder, spreader disk, motor, and spreader hopper may be disassembled for cleaning. Ensure

that spreading material does not remain on the aircraft body and cause residue buildup or corrosion.

- Clean the nozzles and hose system after daily spraying operations or when the field transfer exceeds 0.5 hours. This helps prevent clogging that can reduce nozzle service life or cause damage.
- Do not use a high-pressure water jet to wash the electronic components of the UAV shell. When cleaning structural components such as carbon fiber tubes, ensure that water pressure is not excessive to prevent equipment damage. After washing, place the UAV in a well-ventilated area to dry.

Scheduled Maintenance (by Time / Area)

After each specified operating-time or work-area interval, whichever occurs first, perform maintenance and servicing on the UAV at the applicable level.

Time / ha	50 h /2500 mu/ 165 ha	100 h /5000 mu/ 335 ha	150 h /7500 mu/500 ha	200 h /10000mu/ 665 ha	250 h /12500mu/830 ha	300 h /15000mu/ 1,000 ha	350 h /17500mu/ 1,165 ha	400 h /20000mu/ 1,330 ha	450 h /22500mu/ 1,500 ha	500 h /25000mu/ 1,665 ha	550 h /27500mu/ 1,830 ha	600h /30000mu/ 2,000 ha
Level A	●	●	●	●	●	●	●	●	●	●	●	●
Level B		●		●		●		●		●		●
Level C				●				●				●
Perform the applicable maintenance according to the corresponding area or operating time, whichever occurs first, and follow the above levels in the same manner.												

Level A: Basic Deep Maintenance

Structural Fastener Inspection

- Check the arm-folding fixture screws for looseness. Move the arms up and down to check for excessive play, then tighten the screws.
- Check whether the joints between the arm carbon fiber tubes and plastic parts are loose.
- Check all aircraft body fastening screws for looseness, stripped threads, corrosion, or fractures. Replace as needed.
- Check the arms, landing gear, main beams, carbon fiber frame, and propellers for deformation. Replace promptly if any are deformed or broken.

Propulsion System Maintenance

- Manually rotate the propulsion motors. Listen for abnormal noise and check that rotation is smooth.
- Remove the propeller clamps and inspect them for deformation and washer wear. Replace them if wear is severe.
- Inspect the motor enameled wire. Replace the motor if blackening is observed.
- Check motor plugs for melting or blackening. Check the metal portions of ESC plugs for

blackening or debris; clean or replace them promptly if blackened.
- Shake the motor and inspect the motor base. Tighten the screws if it is loose; replace it if cracked.
- Note: When reinstalling propellers, tighten them strictly to the specified torque.

Wiring and Connections

- Arrange exposed cables and check them for wear. Re-secure loose cables with cable ties.
- Check radar connection cables for looseness or cracks.
- Inspect the rear multi-pin plug for oxidation, black burn marks, or melting. Wipe it with a cotton swab moistened with 75% alcohol; WD-40 may also be used for cleaning. Replace it if severely worn.
- Check signal connectors for damage and inspect internal pins for deformation.

Application System Maintenance

- Disassemble the pump and check for internal wear or foreign matter. Check whether the internal pump gasket is intact. Replace it if the upper cover or impeller is worn.
- Check the seals of the impeller pump. Replace the seals promptly if sealing is poor or the seals have aged.
- Disassemble the nozzles and spinner disks for cleaning and inspection. Check whether nozzle rotation binds and whether the shaft has play.
- Perform a spraying test after installation and ensure there are no errors, abnormal noises, or other abnormalities.

Level B: Intermediate Deep Maintenance

In addition to all Level A items, perform the following

Motor Bearing Inspection

- For propulsion motors, inspect the internal coils for blackening, a sign of overheating, and clean dust and debris from the coils.
- Check whether the motor bearing clearance is excessive. Replace the bearing or motor if abnormal.
- Check whether the motor, motor-base, and ESC mounting screws are loose or missing.

ESC (Electronic Speed Controller) Maintenance

- Remove the four screws securing the ESC. Use a brush to remove soil and debris from the ESC cooling slots; poor cooling can cause ESC failure.
- Check the three-phase wire terminals between the motor and ESC for water-induced corrosion, melting, or arcing marks. Replace damaged terminals promptly.
- Remove the three-phase wires, thoroughly clean the terminals with alcohol wipes, and reinstall them.

Sensing System Inspection

- Check whether the Main Controller is loose and tighten its mounting screws if necessary. Inspect the front radar mount and replace it immediately if it is deformed or cracked.

After completing maintenance, perform tests and inspections to ensure there are no abnormalities or error messages.

Level C: Comprehensive Maintenance

Level C maintenance must be performed at an after-sales service station. In addition to all Level A and B items, perform the following.

Arm and Motor Inspection

- Check the arms for non-visible deformation or cracks that cause obvious play.
- Perform a full inspection of the airframe, motor, and motor-base screws. If any are loose, remove them, apply 243 thread locker, and tighten them.

Complete Aircraft Wiring Overhaul

- Check the anti-abrasion tape and insulation tape wrapping all harnesses for damage; replace them if damaged.
- Remove the nose cover and inspect the wiring at the Main Controller. Replace wiring if it is worn, broken, or has faulty connectors.
- Pay particular attention to the positive and negative power cables of the rear multi-pin plug. Check whether long-term vibration has worn the insulation, exposing copper, and whether the terminals are oxidized. Replace as needed.

After completing maintenance, perform tests and inspections to ensure there are no abnormalities or error messages.

Other Precautions

Software and Firmware

Regularly check and update firmware for all UAV modules and the remote controller. Update promptly when prompted.

Battery Transportation and Storage

- If chemicals spill onto the battery during operation, clean them promptly.
- Operating in rain is not recommended because results are poor and radar recognition accuracy may be affected. If a battery is accidentally exposed to rain, dry it promptly.
- During transport, keep batteries separated to prevent collisions with other hard objects that could cause damage and safety hazards.
- When transporting in rain, protect batteries from direct rain to prevent safety hazards.
- After daily operations, wipe the battery surface with tissue or similar material. Do not wipe the battery with water or other liquids.
- After operation, store batteries in a dry, well-ventilated location away from flammables, preferably in a fire-resistant battery storage box. Do not leave batteries in vehicle compartments exposed to direct sunlight.

Long-term Storage

When it is the off-season, such as winter, or the UAV will be idle for more than two weeks, store

the UAV and its accessories as follows:

- Before storage, make sure the aircraft body is thoroughly clean and dry. Store the UAV in a dry, well-ventilated, cool location, away from direct sunlight and humidity to prevent mold on circuit boards.
- Charge or discharge the battery to 60% to 65% for storage; never store it fully charged or fully depleted.
- Perform a charge-discharge maintenance cycle every two months to maintain battery activity.
- Note: This applies to UAV intelligent batteries and all equipment with built-in batteries, including remote controllers, SuperLink Stations, and handheld mapping devices.

Maintenance by Global Operating Environment

Global agricultural UAV environments vary widely. To ensure stable operation across climates, crops, and chemicals, adapt standard maintenance to local conditions and focus on:

1. High Temperature and Humidity

Typical regions: Southeast Asia, including Thailand, Vietnam, and Indonesia, and South America, including Brazil and Colombia.
Environmental risks: Electronic components can easily become damp; connector contacts can oxidize and corrode; and internal condensation may form.
Maintenance Focus:

- After cleaning at the end of each operation, place the UAV in a well-ventilated area to dry completely. Do not store it while damp. For long-term storage, place a sufficient amount of desiccant in the case.
- Daily check the battery connector, radar connector, and signal connector. If verdigris or black spots are found, wipe them immediately with electronic contact cleaner or anhydrous alcohol.

2. Dry and Dusty Environments

Typical regions: The Middle East, parts of Africa, inland Australia, and Central Asia.
Environmental risks: Fine dust can enter motor bearings, accelerate wear, block cooling air passages, and abrade FPV lenses.
Maintenance Focus:

- When cleaning the aircraft body, use a high-pressure air gun or blower to remove dust from gaps. Avoid wiping directly with a wet cloth, which may allow grit to scratch the aircraft body.
- Before each operation, manually rotate the motors and listen carefully for a gritty scraping sound. If present, clean promptly or replace the bearings.
- Focus on cleaning the ESC and the battery rear multi-pin plug to prevent dust blockage from causing high-temperature shutdown.

3. High-Corrosion / Salt-Spray Environments

Typical regions: Island nations, including Japan and the Philippines, coastal farms, and operations using high-concentration powders or strongly acidic/alkaline chemical solutions.
Environmental risks: Chemical residues and salt spray accelerate rust on metal parts and aging of rubber seals.
Maintenance Focus:

- After operations, thoroughly flush the entire spraying system, including the spray tank, pump, hoses, and nozzles, with plenty of clean water until the discharge is clear and foam-free.
- Apply a small amount of anti-rust oil, such as WD-40, periodically to exposed screws, motor bases, and other metal components.

4. High-Intensity Orchards / Complex Terrain

Typical regions: Orchards in Europe and the Americas, and mountain or terraced-field operating areas.
Environmental risks: Frequent uphill climbing can cause motors to operate under high load, while branch contact can damage propellers and sensors.

Maintenance Focus:

- Propellers are easily scratched during orchard operations. Before every flight, inspect propeller edges for small nicks or cracks. Any minor damage may cause a crash under high load.
- In orchards, keep radar and FPV cameras clean for reliable obstacle avoidance.

List of Dangers and Hazards

Classification	SN	Content	Response Measures
Danger	1	Injury caused by rotating rotors	Seek medical treatment immediately.
	2	Battery or fuel catching fire accidentally	Use sand or a dry-powder fire extinguisher to extinguish the fire
	3	Pesticide splashing onto the skin or eyes	Immediately rinse with a large amount of clean water, and seek medical treatment.
	4	Flying beyond the limited operation area	Hover and make an emergency landing on the spot.
	5	Crash and collision of the plant protection drone caused by misoperation	Strengthen training.
	6	Crash and collision of the plant protection drone due to power exhaustion or drone failure	Try to avoid long-distance routes.
Hazard	1	Pesticide damage to crops and the environment	Contact the relevant pesticide department for targeted remedies.
	2	Hazards to the environment caused by improper disposal of used batteries	Dispose of at the local designated location.

Warranty Service

Dear User,

Thank you for using our products. After purchasing the drone, please carefully read the product manual and related materials to ensure safe and reliable operation.

This company has formulated this warranty manual based on the "Product Quality Law of the People's Republic of China," the "Consumer Rights Protection Law of the People's Republic of China," and the "Regulations on Repair, Replacement, and Return of Agricultural Machinery Products" (hereinafter referred to as the Warranty Regulations), to provide warranty services.

Warranty Details

1 General Provisions

1.1 Purpose

This document clarifies the standards for responsibility determination by authorized service centers when providing after-sales services for the Eavision J150 agricultural drone. It ensures that actions are regulated, legally compliant, and provide high-quality service to customers while establishing a positive corporate image.

1.2 Scope of Application

Applicable to all company-operated service centers and authorized service centers providing after-sales maintenance services for the Eavision J150 agricultural drone.

2. Warranty Responsibility

2.1 Warranty Information Collection

When providing warranty service, Eavision requires customers to cooperate by providing the following necessary information, based on relevant national laws, regulations, and the drone’s operational environment and fault analysis. Failure to provide complete or timely information may affect warranty service:

- Description of the product fault and pilot’s operations (to be submitted within 48 hours, including photos of damaged drone parts on-site).
- Photos and videos of the accident site (capturing the environment around the drone and including footage of the damaged drone).
- Photos of damaged product components and screenshots of any app error notifications.
- Photos of the damaged components of the equipment, including all four motors, captured from

multiple angles around the drone.

- Upload logs for the period of the fault, including drone logs, FPV video logs, app logs, and field information (if drone logs cannot be uploaded on-site, manual extraction is acceptable; if logs are lost, provide flight control data).
- If a drone fault occurs during flight, provide the field number corresponding to the flight (for manually flown missions, provide the field number and flight time).
- Fault information must be reported to the service management system for repair requests.

2.2 Lifting Operation Requirements

- Operators conducting lifting operations with the agricultural drone must receive relevant training and hold valid certification. Lifting operations are strictly limited to agricultural applications. Operators must fully understand and assess the flight area and weather conditions to ensure safe operation.
- Malfunctions of the drone or lifting equipment may lead to accidents, such as lifting rope breakage or lifting device failure. If non-company-approved lifting equipment is used, warranty service will not be provided.
- Before conducting lifting operations, carefully evaluate the on-site environment, including whether the flight area is suitable and whether the surrounding area is safe.
- During lifting operations, the load must not exceed 75 kg; when manually attaching heavy loads for lifting, the flight speed must not exceed 7 m/s; the altitude must not exceed 30 m (true altitude); manual or automatic flight across power lines is strictly prohibited; ensure the rope is not too light and prevent rope entanglement; flying with an unknown load weight that may result in overloading is strictly prohibited; excessive power consumption is strictly prohibited, and the drone must return for battery replacement when the battery level reaches 30%; when releasing the hook, it is strictly prohibited for people, goods, livestock, or other factors affecting flight safety to be present around or beneath the plant protection agricultural drone.

2.3 Lifting Warranty Policy

- Warranty claims can be made according to section 2.1’s information collection requirements if a failure in any drone module causes a collision or crash.
- Lifting non-agricultural materials such as construction materials or photovoltaic panels is strictly prohibited. Failures caused by unauthorized loading are not covered under warranty.
- During lifting operations, potential risks may result in third-party property damage. The carried cargo is

not covered for compensation.

- Warranty service will not be provided to operators who do not possess a valid lifting operation certificate.

3. Warranty Responsibility Standards

According to Article 4, Chapter 1 of the Warranty Regulations, this product follows the principle that the seller is responsible for warranty service. If a module failure (cracking, deformation) or malfunction leads to accidental breakdown within the warranty period, the responsibility belongs to the product, and Eavision will bear the related repair costs.

- All products sold by the company (excluding consumable parts) are covered by a one-year full-machine warranty. Component warranties follow Appendix 1, and consumable parts follow Appendix 2, calculated from the activation date. Even if the device is not activated, if two years have passed since delivery, core components such as batteries and electronic parts may naturally age, exceeding the warranty coverage. It is recommended to activate and use the device within two years of delivery to fully enjoy warranty services.
- The main components of the Eavision J150 agricultural drone include the drone body, battery, heat-dissipation charging station, main control module, and remote controller.
- The warranty period is calculated from the activation date. After the warranty expires, the company will continue to provide paid maintenance services.

3.1 Repair

According to the Warranty Regulations, products (components) within the warranty period and quality assurance period will be repaired free of charge by repairers designated by the dealer, and are subject to supervision and inspection by the manufacturer and seller according to the contract.

3.2 Replacement

- Within 15 days of purchase and if the product has not been used, if the user finds discrepancies in brand, model, or configuration due to the seller, the user can notify the sales agent for free replacement, with shipping costs borne by the sales agent.
- During the warranty period, if the agricultural machinery product sent for repair is not fixed within 30 working days from the date of submission, the user can choose to continue repair or request a replacement. For replacement, the seller shall provide a product of the same model and specifications free of charge, based on the warranty certificate, maintenance and repair records, and purchase

invoice.

- During the warranty period, if the agricultural product experiences the same serious quality issue twice and cannot function normally, or within 30 days from the first operating season after purchase (excluding consumable parts), if the same quality issue occurs twice, the user can request replacement of the relevant main components or systems based on the warranty certificate, maintenance and repair records, and purchase invoice. The seller is responsible for free replacement.

Note: A serious quality issue refers to a significant decline in key performance exceeding standard requirements or declared limits, or major component failure requiring replacement, or product faults affecting personal safety during normal use. General quality issues refer to all other problems, including consumable parts, but exclude minor faults that can be resolved using standard tools according to the user manual.

3.3 Return

- If the manufacturer or seller did not clearly inform the user of the drone's applicable operational scope, resulting in inability to perform normal operations, the user may return the product within 30 days from the start of the first operating season, using the warranty manual and purchase invoice. The seller shall refund the full purchase price.
- If the product meets replacement conditions but the seller has no product of the same model/specification for exchange, the user may choose to return the product.

3.4 Warranty Exclusions

The following are not covered by the warranty:

- Plastic parts (body, motor casing, etc.), screws, wiring, packaging, guide tubes, and hardware (damage from collision, scratches, breakage, etc.).
- Damage caused by human actions.
- Damage caused by unauthorized modification, disassembly, opening, or repair not guided by Eavision.
- Damage caused by incorrect installation, usage, or operation not following the manual.
- Damage caused by unauthorized electrical modifications or use of non-Eavision accessories or non-original chargers.
- Direct or indirect damage caused by operating the drone under unsuitable conditions (e.g., device warnings, strong wind, rain, dust storms).
- Cases where the user cannot prove the product was within the warranty period, or the device serial

number, factory label, or other identifiers are inconsistent with order information, or show signs of tampering and origin cannot be verified.

- Damage caused by improper usage or maintenance, unauthorized disassembly of the frame, ESC, motor, or main control modules; unlicensed operation, incorrect operation, or operation beyond intended conditions; or unauthorized modification or addition of components.
- Damage from non-product-related factors such as water ingress.
- Loss of leased equipment due to theft, robbery, or similar causes.
- Damage caused by forced flight with aged or damaged components.
- Damage caused by forced flight with insufficient battery or battery fault warnings.
- Damage caused by operation in complex electromagnetic or strong interference environments.
- Damage caused by operators not trained and certified by Eavision Academy or failing to follow training requirements.
- Damage caused by flying in no-fly zones or interception.
- Damage caused by failure to perform system upgrades or power interruption during upgrades.
- Damage from using the product outside agricultural applications.
- Damage caused by violations of local laws, regulations, or industry standards during product use.

- If the purchased product requires maintenance or inspection, please back up the data stored in the device in a timely manner. The company is not responsible for any losses caused by data loss.
- Upon purchase, the user should conduct a proper acceptance inspection and test flight of the product, and check all included tools, accessories, and components.
- Before operating, using, or performing maintenance, the user should receive training from the sales agent regarding operation, maintenance, and safety precautions.

- When purchasing, the user should provide accurate and valid personal information to the sales agent to facilitate registration and contractual procedures.
- If components outside the warranty scope fail, the user has the right to consult regarding repair or replacement. Any costs arising from services outside the warranty scope shall be borne by the party

requesting the service.

Situations Where Products Are Not Eligible for Exchange

- Inability to provide valid proof of purchase or receipt, or if the receipt has been forged or altered.
- The product shows signs of disassembly or human-induced damage.
- Technical support inspection confirms there is no inherent quality issue.
- Collisions, burn damage, or quality problems caused by human actions such as unauthorized modifications, foreign object intrusion (water, oil, sand, etc.), incorrect installation, or failure to follow the manual instructions.
- Torn, altered, or removed labels, machine serial numbers, waterproof markings, or anti-counterfeit labels.
- Damage caused by unavoidable events such as fire, flood, lightning, traffic accidents, or other force majeure.
- Failure to send the relevant items within 7 calendar days after confirming exchange service with Eavision.
- Requesting an exchange for shipping damage without providing documentation from the carrier.
- Using the product in non-agricultural applications.
- Violating national, provincial, municipal, or industry laws and regulations during product use.

Situations Where Products Are Not Eligible for Return

- Returned products are incomplete; missing original packaging, accessories, gifts, manuals, or with externally caused damage.
- Inability to provide valid proof of purchase or receipt, or if the receipt has been forged or altered.
- Collisions, burn damage, or quality problems caused by human actions such as unauthorized modifications, foreign object intrusion (water, oil, sand, etc.), incorrect installation, or failure to follow the manual instructions.
- Torn, altered, or removed labels, machine serial numbers, waterproof markings, or anti-counterfeit labels.
- Damage caused by unavoidable events such as fire, flood, lightning, traffic accidents, or other force majeure.
- Failure to send the relevant items within 7 calendar days after confirming return service.
- Using the product in non-agricultural applications.

- Violating national, provincial, municipal, or industry laws and regulations during product use.

Obstacle Avoidance Disclaimer

The obstacle avoidance functionality of agricultural UAVs has limitations in obstacle recognition; the success rate of detecting small obstacles (e.g., power lines) decreases. Any collisions or damage resulting from failure to detect such obstacles are not covered under the warranty.

The visual and radar sensors are high-sensitivity components, but they may have certain limitations in specific scenarios. Please note that the following situations are not covered under the warranty.

Malfunctions or failure to operate normally during flight due to contamination, dust, or adhesive buildup on the visual or radar modules are not covered under the warranty.

The effective operating range, terrain-following capability, and avoidance capability of the perception system may vary depending on environmental factors such as ambient light, rain, fog, or sand/塵, as well as the material, position, and shape of the target object. The lower and upper perception systems are used to assist flight operations, while perception systems in other directions are utilized for terrain-following and obstacle avoidance. Except in scenarios involving linear obstacles, withered trees, or thin branches, if the drone sustains damage due to a collision during autonomous flight at speeds below 10 m/s, a free warranty may be issued upon analysis of the drone's log data if the damage is not attributable to human error; for scenarios involving linear obstacles (e.g., power lines with a diameter of 1 cm or greater), if the drone sustains damage due to a collision during autonomous flight at speeds below 7 m/s (the power line recognition criteria are: optimal recognition is achieved when the drone is oriented at a 90° angle to the cable; a 70° angle ensures reliable recognition; collisions at angles less than 70° are not covered by warranty), a free warranty may be issued upon analysis of the drone's log data if the damage is not attributable to human error; to ensure operational safety, it is recommended to mark power lines, guy wires, and similar obstacles as designated obstacles. The AR Safety Assistance feature serves solely as an auxiliary prompt; the pilot must verify the safety of the surrounding environment during actual operations.

pour:

The upward or downward perception system is used to assist in terrain-following flight; if a collision with an obstacle during such flight is attributable to the operator, it shall be considered operator responsibility. 2. Due to the performance limitations of the safety system, the aircraft cannot actively avoid a moving object; any accident occurring in such a scenario shall be attributed to the operator.

3. When both the detouring and terrain-following functions are activated simultaneously during autonomous flight, the operating speed shall be 7 m/s; when operating over plots containing linear

obstacles such as power lines, thin poles, or guy wires, the Field Mode must be enabled to enhance obstacle recognition stability.

4. Trees, linear obstacles, or other obstacles located along the plot boundary, or obstacles surrounding the takeoff point: any collision occurring within a radius of 5 meters from the plot boundary is not covered under the warranty.

5. Situations in which a drone, due to failure to comply with operational requirements during flight, collides with an obstacle and sustains damage, rendering it ineligible for warranty service:

[Obstacle]During flight, if the turn point is too close to an obstacle (within 6 meters), the drone may be unable to avoid the obstacle or may collide due to an unintended upward climb; in such cases, warranty service will not be applicable.

[Speed Limit]In the event that, during normal flight operations, the operating procedures are not followed, or if a collision occurs due to incorrect terrain parameter settings, or if the aircraft collides with a linear obstacle without selecting a route with overhead power lines, or if the aircraft falls into water without selecting a route with water surface, the customer is not eligible for warranty service.

When moving the drone between sites or switching between different survey areas, both the main power supply and the auxiliary power supply must be fully turned off. Failure to do so may cause abnormal positioning data for the drone, which could lead to issues such as unstable attitude, drift, or misjudgment during takeoff for the next survey area or flight mission. Should the drone malfunction or any other safety incident occur as a result of non-compliant operation, no warranty service will be provided for any resulting losses.

If a drone reports an anomaly, and the operator requests manual takeover but fails to do so, resulting in the drone crashing due to loss of control while hovering due to low battery level, no warranty service shall be provided.

Note: The success rate of agricultural drones when avoiding small obstacles (such as power lines) may decrease; please exercise caution. In the event of a collision with a small obstacle, our company shall not be liable under any warranty for such incident.

Nozzle Disclaimer

The following situations are not covered under warranty:

1. Nozzles can spray powdered pesticides, but doing so significantly reduces their service life. After each use with powdered pesticides, the nozzle must be thoroughly cleaned; failure to do so may cause clogging, damage, or motor burnout, and reduced nozzle lifespan is not covered.

2. Nozzles are high-speed rotating components. Care must be taken during handling and transport. Damage caused by obvious bumps, collisions, or deformation is not covered.

3. Damage caused by external factors such as drops, collisions, immersion in water, fire, or other incidents not related to the product itself is not covered.

4. Improper or unconventional use, such as running the spray disc idle for more than 5 minutes causing overheating and damage, is not covered.

5. Damage resulting from installation or removal not performed according to official website or after-sales guidance is not covered.

6. Damage caused by environmental factors such as dust, sand, or cotton debris that may obstruct nozzle rotation is not covered.

7. Inability to provide nozzle serial number, drone model, operational area, invoice, or other relevant purchase and usage information is not covered.

Other Disclaimers

1. Any rollover or tipping caused by unsecured arm locks is not covered under the warranty.

2. Damage to the frame, nozzles, motors, etc., due to improper maintenance is not covered under the warranty:

(1) Frame screws and accessories not maintained as required, causing frame looseness.

(2) Rear distribution board interfaces and battery connectors damaged or soiled due to lack of maintenance.

3. Damage to the drone caused by improper maintenance, such as uninstalled motor screws, incorrect motor installation angles, wrong motor direction affecting flight control, reversed propeller installation, or incorrect flight controller GPS installation, is not covered under the warranty.

4. Crashes caused by manual control without sending a mission or flight path are not covered under the warranty.

5. If the user cannot provide the information required to request warranty service, and the cause of the fault cannot be determined (e.g., damaged photos or videos, frame number, flight logs—if logs are missing or overwritten after a crash), the case is not covered under the warranty.

6. Flying above the maximum set altitude limit is not covered under the warranty.

7. Other faults or damage caused by factors outside of the product’s design, manufacturing, or quality are not covered under the warranty.

8. Damage caused by insufficient battery power or intentionally using a faulty battery is not covered under the warranty.

9. The spreader cannot guarantee compatibility with all types of materials or application rates. Any issues with spreading seeds that are not suitable for the spreader are not the company's responsibility.
10. If an incident is not reported within 48 hours, it will be considered as an automatic waiver of this warranty service. (In case of force majeure preventing timely reporting, users may contact Eavision customer service for coordination.)

3.5 Principles of After-Sales Service Charges and Payment Methods

1. After-sales services are provided in accordance with national laws and regulations as well as the terms specified in the sales contract.
2. During the warranty period, the company provides after-sales services including repair, installation, debugging, and maintenance.
3. After completion of after-sales service, the user shall remit payment to the company's designated bank account via wire transfer within three days. Any wire transfer fees shall be borne by the user. If payment is not received within seven days after service completion, the company will charge a late fee, calculated as 1% of the total after-sales service fee per day.
4. If a user defaults on payment for after-sales services without reason for two consecutive times, the company has the right to suspend providing paid after-sales services to that user.
5. During the product warranty period, Eavision is responsible for one-way shipping costs; shipping costs are borne by the user. For products beyond the warranty period, if parts are unavailable, Eavision may choose to return the product, and the shipping cost will be borne by the user.
6. After-sales repairs are handled by the Eavision After-Sales Support Center or an authorized service station. Products will undergo fault inspection to determine the cause and responsibility. If the fault is due to the product's own quality defect, Eavision is responsible for repair or replacement. If the problem is outside the warranty scope, Eavision will charge the user for inspection, parts, labor, and shipping fees according to the specific issue.
7. If the user provides an incorrect shipping address or if the recipient refuses delivery, any additional costs or losses will be borne by the user. If the courier fails to deliver or returns the package to Eavision, Eavision will store it and charge a storage fee of CNY 150 per day from the return date. Once storage fees equal the remaining product value, Eavision has the right to dispose of the product. (Remaining product value = Original price − This repair cost).

8. To avoid logistics risks, do not return severely damaged batteries (damaged, swollen, or leaking). If returned, the user bears the logistics risk. Once received, Eavision will scrap such batteries and they will not be returned or replaced.
9. Users who ship products without Eavision's consent shall bear any resulting shipping or storage costs.
10. If the product has water damage and Eavision determines it is unrepairable, Eavision will promptly notify the user for replacement. If the situation meets warranty replacement criteria, Eavision will replace it; otherwise, Eavision may return the product to the user, and the user will bear the shipping cost.
11. Before shipping the product, users should remove personal items or decorations attached to the product (including but not limited to decorative stickers, UAS stickers, paint, etc.). Eavision is not responsible for damage or loss of such personal items or decorations.
12. During shipping, Eavision is responsible until the customer signs for the product. To protect the user's rights, the user should inspect the product upon receipt for any damage (including damage caused by logistics). If the outer package is damaged, keep evidence and notify Eavision within 24 hours of signing. Otherwise, the product will be considered intact and functioning normally.
13. When returning a product, users should use Eavision's designated logistics company to ensure transport safety. If the user chooses another logistics company, any impact on repair progress or other losses will be borne by the user.
14. When a product is notified for paid repair, the user must complete payment or return notification within 15 business days of receiving the notice or message. If not completed within 15 business days, Eavision will charge a warehouse storage fee of CNY 150 per day. If payment or notification is not completed within 30 calendar days, it will be considered as the user abandoning the product, and Eavision has the right to dispose of the product and terminate after-sales service.
15. To ensure timely after-sales service, users should contact Eavision support technicians and provide the logistics tracking number when sending the product to avoid product loss or delays in repair due to missing product information after returning it.

3.6 Accidents and Liability Statement

1. Battery-related: If a battery experiences impacts (non-quality-related crash), water immersion, high-temperature baking, unauthorized disassembly, overcharging/discharging, or other abnormal usage or maintenance behaviors that cause flammability, explosion, leakage, or other safety hazards, any resulting loss or liability is entirely the responsibility of the user. The company bears no compensation or legal responsibility. Do not attempt to repair deformed or leaking batteries; they must be disposed of directly.

Any accidents caused by violating this rule are the user's responsibility. Post-crash batteries must undergo comprehensive inspection according to the "Battery Inspection Plan." Batteries that are swollen, leaking, or deformed must not be repaired or reused for flight operations; any incidents resulting from violations of these requirements are the user's responsibility.

2. Flight Safety: Drone operators must always pay attention to flight site safety. Prior to flight, a comprehensive site inspection must be conducted to ensure there are no obstacles, people, or animals, and all safety measures and protective gear must be followed. Any damage to drones, personal injury, or property loss caused by the operator's failure to ensure site safety or by improper operation is the responsibility of the operator or user, not the company. The company is not liable for accidents resulting from operators not following the product manual, user guide, or safety regulations, including forced flights under adverse weather conditions or exceeding the drone's specified flight limits.

3. Storage and Repair Risks: If the product is stored at locations not designated or recommended by the company, or if repairs are conducted through non-official channels, the company is not responsible for any losses, including fire, theft, or product damage, that occur during storage or repair. For customer-submitted products, the company is not liable for losses caused by unforeseen or unavoidable events (e.g., natural disasters, accidents) leading to fire, explosion, product damage, loss, or other related losses.

4. Training-related Accidents: The company is not responsible for any accidents or losses arising from incomplete, non-compliant, or poor-quality training conducted by agents. Customers should directly resolve such issues with the relevant agent.

5. Other Risks: The use of the company's products may involve multiple risks, including but not limited to technical and environmental risks. Customers should fully understand and evaluate these risks. The company is not liable for product failures, data loss, service interruptions, or other losses caused by unforeseen or unavoidable factors (e.g., natural disasters, war, government actions, cyberattacks, power outages). Unauthorized modifications, disassembly, repairs, or use of non-original components void the warranty, and the company is not responsible for any resulting issues, losses, or liabilities.

6. Data and Privacy: Data generated during the use of the company's products remains the property of the customer. The company will take reasonable technical and management measures to protect data security; however, due to technical limitations or force majeure, data loss, leakage, or tampering may occur, for which the company is not responsible.

3.7 Disputes

If there are objections to the above provisions, complaints may be submitted to local agricultural mechanization authorities or consumer protection organizations. If mediation fails, arbitration may be

applied for in accordance with the “Arbitration Law of the People’s Republic of China,” or a quality inspection agency for agricultural machinery products may be commissioned for inspection or appraisal. The responsible party shall bear the costs of quality inspection, appraisal, and transportation.

Schedule 1 Detailed List of "Warranty Service" for EAvision J150 Agricultural Drone Products

SN	Part Name	Warranty Period
1	Solenoid Valve	12 months
2	Extreme Link Communication Station and Its Charger	12 months
3	Point-marking Surveying and Mapping Equipment and Its Charger	12 months
4	Main Control Module	12 months
5	Front Laser Radar/Upper Rotating Radar, Rear Rotating Radar	12 months
6	Frame (Longitudinal Beams, Cross Beams, Front Module Bracket, Rear Enclosure Bracket, etc.)	12 months
7	Pesticide Box	12 months
8	Nozzle	12 months or total spraying of 30,000 L, whichever comes first.
9	Impeller Pump	30,000L
10	Pesticide Box Load Cell	12 months
11	Remote Controller	12 months
12	Power ESC Module	12 months
13	Power Motor	6 months or 200 hours
14	Power battery	12 months or 1500 cycles, whichever comes first.
15	Battery cooling charging station	12 months

Schedule 2 List of Wearable Parts

SN	Part Name	Warranty Period
16	Connector	65 operating hours
17	fastenings, wire, quick-release assembly	1 month
18	Spray pipes, joints, tees, etc.	1 month
19	Landing gear and connector	1 month
20	Propeller	1 month
21	Plastic parts	1 month

Attachment: Warranty Certificate

Suzhou Eavision Robotic Technologies Co., Ltd.					
Warranty Certificate					
(Customer's Copy)					
Product Information	Product Name	EA-J150 Intelligent Agricultural Plant Protection Drone			
	Model Specification	3WWDZ-U70B			
	Place of Production	Suzhou			
	Product Number				
User Information	User Name		User Address		
	Contact Phone Number		Zip Code		
Sales Message	Sales Unit		Sales Address		
	Contact Phone Number		Zip Code		
	Date of Sale		Sales unit price		
	Purchase Invoice Number		Seal of Sales Unit		
Production Enterprise Information	Enterprise Name		Enterprise Address		
	Contact Phone Number		Zip Code		
Certificate of Return and Exchange (record)					
Maintenance Record	Repair Time	Delivery Time	Repair Support	Repair Situation	Repair Unit
Remarks					
1. This certificate shall be stamped by the authorized sales unit of Suzhou Eavision Robotic Technologies Co., Ltd. before it becomes effective.					
2. For details, please refer to the scope of application and detailed list of the warranty.					

Note: For more warranty information, please refer to the warranty terms or contact Eavision staff.

Appendix 1 Product Specification Parameters

Specification Parameter	J150 Product Specification Parameters
Product model	3WWDZ-U70B
Product name	EA-J150
Rotor type	X4 Rotor
Empty weight	75Kg (with battery))
Maximum spraying takeoff weight	145kg
Maximum spreading takeoff weight	149.9kg
Maximum lifting takeoff weight	149.9kg
Maximum wheelbase	2580mm
Main rotor diameter	ϕ1600mm
Working state dimension	3375×3510×950 (Propellers, arms unfolded)
Folding state dimension	1325×795×950Mm (arms folded) 1967×2085×950 (Propellers folded)
Hover accuracy	RTK positioning enabled: ±10cm horizontally and ±10cm vertically RTK positioning not enabled (within 4 minutes): ±10cm horizontally and ±10cm vertically
Return landing accuracy	RTK landing accuracy enabled: ±30cm horizontally; RTK positioning not enabled (within 4 minutes): ±50cm horizontally
No-load hovering time	19 minutes and 30 seconds (5% SOC)
Protection grades	Module IP67, complete machine IPX6K
Corrosion resistance grade	NSS24H
Operating ambient temperature	-10℃～45℃
Humidity of working environment	30%～90%RH
Satellite receiver frequency band	BeiDou B1/B2
Obstacle avoidance ability	Front Laser Radar, Upper Rotating Radar, Rear Rotating Radar; Can identify and avoid obstacles with a diameter of 1cm; It can avoid obstacles at a high speed of 13.8 m/s, and follow the terrain at a speed of 7 m/s in the wire area.
Spray width	4～15m
Length of spray bar	1800mm
Terrain-following slope	90°
Relative maximum speed of safe obstacle avoidance	≤13.8m/s
Autonomous working height	1.5～30m
Maximum tolerable wind speed	12m/s (level 6 wind)
Maximum flight radius	2000m
Power system - motor, ESC	
Operating voltage	18V～63V

Rated power	5kW
Motor KV value	60KV
Stator size	167.1×65.6mm
Maximum pulling force	73kg (single motor)
Power system - propeller	
Propeller type	6324
Rotor number	4
Rotor material	Carbon fiber reinforced polymer
Mist spraying system - pesticide box	
Rated volume	70L
Full load volume	73L
Pesticide box weight	6kg (including pump and flowmeter)
Material	PE
Mist spraying system - nozzle	
Nozzle model	EAV-CCMS60
Number of nozzles	2 or 4
Size	ϕ95mm*172mm
Weight	1110g
Atomized particle size	10～300μm
Mist spraying system - water pump	
Liquid pump form	Impeller Pump
Quantity	2
Rated power	≤200W
maximum flow	40L/min, ±5%
Mist spraying system - solenoid valve	
Operating voltage	Operating voltage DC58V, maintaining voltage DC16V.
Operating current	Action current 0.7A, maintaining current 0.25A
Life	≥ 400,000 times (laboratory environment, 30℃, energized 10s every 10s)
Rated power	4W
Mist spraying system - flowmeter	
Precision	≤3%
Measuring velocity range	1～40L/min
Operating voltage	6～28V
Load Cell	
Quantity	4
Maximum weight that a single can bear	100kg
Display range (APP)	0～100kg
Composite error	±0.05% F.S
Sensitivity	2.30±0.15mv/V
Front Laser Radar - Scope128	
Horizontal field angle	70°
Vertical viewing field	180°

Limit detection distance	150m
Outdoor effective distance	80M (70klux, 10% reflectivity)
Horizontal angular resolution	0.54°
Vertical angular resolution	0.17°
Ranging accuracy	±3cm
Maximum power	35W
Laser grade	Class1 human eye safety
Upper Rotating Radar - 360° Active Phased Array 4D Millimeter Wave Radar	
Horizontal field angle	360°
Vertical viewing field	140°
Limit detection distance	80m
Outdoor effective distance	60M (10% reflectivity)
Range resolution	0.1m
Maximum power	15W
Rear Rotating Radar - 360° Active Phased Array 4D Millimeter Wave Radar	
Horizontal field angle	50°
Vertical viewing field	270°
Limit detection distance	80m
Outdoor effective distance	60M (10% reflectivity)
Range resolution	0.1m
Rated power	12W
FPV	
Product Model	EAV-FPV60
FOV	120°*160°
Maximum resolution	2K 30fps
Video format	H.265
Video delay	720P@30FPS not more than 180ms; 1080P@30FPS not more than 250ms
Functional characteristics	Electronic Virtual Gimbal, shock absorption and water ripple resistance
Infrared Lamp	
Quantity	2
Power	40W
Wavelength	850nm
Viewing angle (FOV)	100°
Headlamp	
Quantity	2
Power	15W
Luminous angle	120°
Lux	300
Spreader	
Product Model	EAV-SPD100
Box capacity	100L

Spreading width	3～8m
System weight (including box)	≤5kg
Anti-blocking rotation (the three listed formulas are evenly mixed and discharged smoothly)	1) 50% diammonium sulfate + 50% small urea particles, and 1% herbicide solution based on the total mass 2)50% diammonium sulfate + 33% potassium sulfate + 17% large urea particles 3) 50% bio-fertilizer + 50% small urea particles, and 1% herbicide solution based on the total mass
Operating voltage	47～58.8V
Operating current	0～25A
Maximum spreading velocity	240kg/min
Maximum power of spinner	395W
Maximum power of auger	565W
Rotation speed range of turntable	200RPM～1000RPM
Accuracy of turntable rotation speed	≤5%
Maximum weighing range	100kg
Weighing resolution	≤50g
Rotation speed range of auger	0～450RPM
Maximum discharging speed	240kg/min (compound fertilizer)
Suitable material particle size	1～10mm
Spreading boundary accuracy	±0.1m
Range of dosage per mu	0.2～50kg/mu
Accuracy of mu dosage	≤10% (wet material) ≤5% (dry material)
No-discharging detection time (including material shortage and blocked rotation)	≤500ms (The time from the actual material stoppage to the alert/hover/breakpoint generation)
Handheld Mapping Device	
Product Model	EAV-SUT60
Size	210*65*65mm
Weight	317g
Communication mode	Bluetooth communication
Battery life	＞8h
Charging Time to Full	2～3h
Operating voltage	7.4V
Protection grades	IP54
Bluetooth connection distance	10m
Communication band (Bluetooth)	2.4GHz
Positioning update frequency	10Hz
Positioning accuracy	0.01m+1ppm
First positioning time (cold start)	＜26s
RTK convergence time	≤15s
Time for restoring the fixed solution after losing satellites and network	≤1min

connection	
CTB integrated shell-core supercharging battery	
Model	EAV-CTB45Ah
Weight	17.8±0.5kg
Rated capacity	45000mAh
Dimensions	167×337×369.5mm (range of change is ±0.1mm)
Charging current	225A (5C, ambient temperature: 15℃ - 60℃)
Fully charged voltage	59.92V
Discharging current	450A (10C, ambient temperature: -5℃ - 60℃)
Charging Time to Full	9min（30%～95%）
Waterproof grade	IP65
Intelligent protection	Short circuit protection, overcharge protection, overcurrent protection, fire protection
Cooling Charger	
Model	EAV-C60
Size	330×339×450
Weight	19kg
Maximum charging power	12400W (double socket) 3600W (single socket)
Input voltage	AC90～264V, full range voltage input
Output voltage	40～61V
Output current	225A
Charging speed	For generators above 13,000 W, it takes about 9 minutes
Intelligent protection	PFC power correction, over-voltage protection, over-temperature, short-circuit, fan stall protection, etc.
Fan air volume	318CFM*2
Maximum number of revolutions of fan	7200RPM
Fan rated power	120W*2
Fan voltage	DC48V
Fan current	2.5A
Suitable battery	EAV-CTB45Ah
Heat dissipation effect	The ambient temperature is ≤40℃, and the high temperature protection of 65℃ (battery core temperature) is never triggered during the battery charging after operation
RC remote controller	
Product Model	EAV-RC60
Size (antenna folded)	268*147*53mm
Weight	≥1.5kg
Operating system	Android 12
Wireless communication	Bluetooth 5.2, WIFI 6E, GNSS, domestic version 4G
Processor	64-bit Qualcomm 8-core CPU, 6nm process
Communication frequency band	2.4GHz
Maximum communication distance	3000m

High definition image transmission	Support 1080p@60fps and H.265/H.264 coding.
Storage	8G+128G
Display screen size	7.02 inches
Display screen resolution	1200×1920 px
Maximum brightness of screen	1500cd/㎡
Battery capacity	12000mAh
Charging time	＜3h
Battery life	> 8h, supporting mobile power charging
Charging power	65W
Protection grades	IP54
Functional interface	USB-A, TYPE-C, TF card, SIM card (domestic version)
Relay	
Product Model	EAV-BAS60
Size (antenna folded)	160*154*120mm
Weight	1117.4g
Communication frequency band (wireless)	2.4GHz
Communication mode	Bluetooth communication
Bluetooth connection distance	10m
Communication band (Bluetooth)	2.4GHz
Positioning update frequency	10Hz
Positioning accuracy	0.01m+1ppm
First positioning time (cold start)	＜26s
RTK convergence time	≤15s
Time for restoring the fixed solution after losing satellites and network connection	≤1min
Battery life	＞8h
Charging power	65W
Charging Time to Full	2～3h
Operating voltage	7.4V
Battery capacity	12000mAh
Protection grades	IP54

Note: The above are not the standard configuration parameters of the model. The actual configuration shall be subject to the contract and the acceptance list. In case of any subsequent upgrade or change of the performance parameters, no further notice will be given.

Contact Us

WeChat Official Account of Eavision Robotic

Official Learning Platform of Eavision Academy

Before this manual is delivered for printing, the pictures, technical materials, data and instructions in this manual have all been carefully checked as necessary. However, in order to continuously conduct research and development and make improvements to this product and/or this manual so as to meet customers' needs, we reserve the right to make changes when necessary without prior notice. Thank you for using the products of our company.

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