J70 Multifunctional Agricultural Drone

Product Manual

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Type 3WWDZ-U35A

Suzhou EAVISION Robotic Technologies Co., Ltd.

To Users

Thank you for choosing the EA-J70 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 Instructions

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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.
- 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%.
- 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.

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 J70 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 2000m).
- 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.
- Agricultural drones belong to civil agricultural drones. Before use, please carefully read the relevant regulations of the national agricultural drone management regulations and local airspace control regulations. Once you use this product, it means that you have read the relevant regulatory documents. Eavision Robotic shall not be liable for any legal responsibilities arising from the illegal use of this product. According to the "Interim Regulations on the Management of Unmanned Aerial Vehicle Flights", civil agricultural drones shall be registered and filed with the civil aviation management agency. For those that fly without registration, the public security organs shall order corrections and may impose a fine of less than 200 yuan; in serious cases, a fine of 2,000 yuan to 20,000 yuan shall be imposed. Registration website: https://uom.caac.gov.cn.

List of Items

Please check the items of EA-J70 you received as per the sales package.

EA-J70 Agricultural Drone

EAV-RC60 Remote Controller Set

EAV-CTB29000A Intelligent Flight Battery

Charger

EAV-C55-9000 Cooling

EAV-SUT60 Surveying Tool

Lifting Set

EAV-BAS60 Base Station

EAV-SPD70 Spreader

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

Product Overview

Product description

The new EA-J70 agricultural drone from Eavision is an all-in-one multifunctional agricultural drone integrating plant protection, spreading, mapping, and hoisting. 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 hoisting 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 hoisting capacity is 60 Kg, equipped with a high-strength hoisting 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 hoisting flights. A dedicated guidance device is provided, enabling one-click location of the takeoff point and hoisting point, and autonomous flight, greatly reducing the hoisting operation difficulty and improving hoisting efficiency.

- Integrated Pesticide Box: The standard pesticide box has a rated capacity of 37.5 L. It is equipped with dual electromagnetic impeller pumps, and the maximum flow rate can reach 24 L/min.
- The spreading system can be quickly replaced with the spraying operation system. The 70 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 hoisting guidance, meeting the needs of more scenarios such as no-network, weak-network, and mountain-blocked areas.

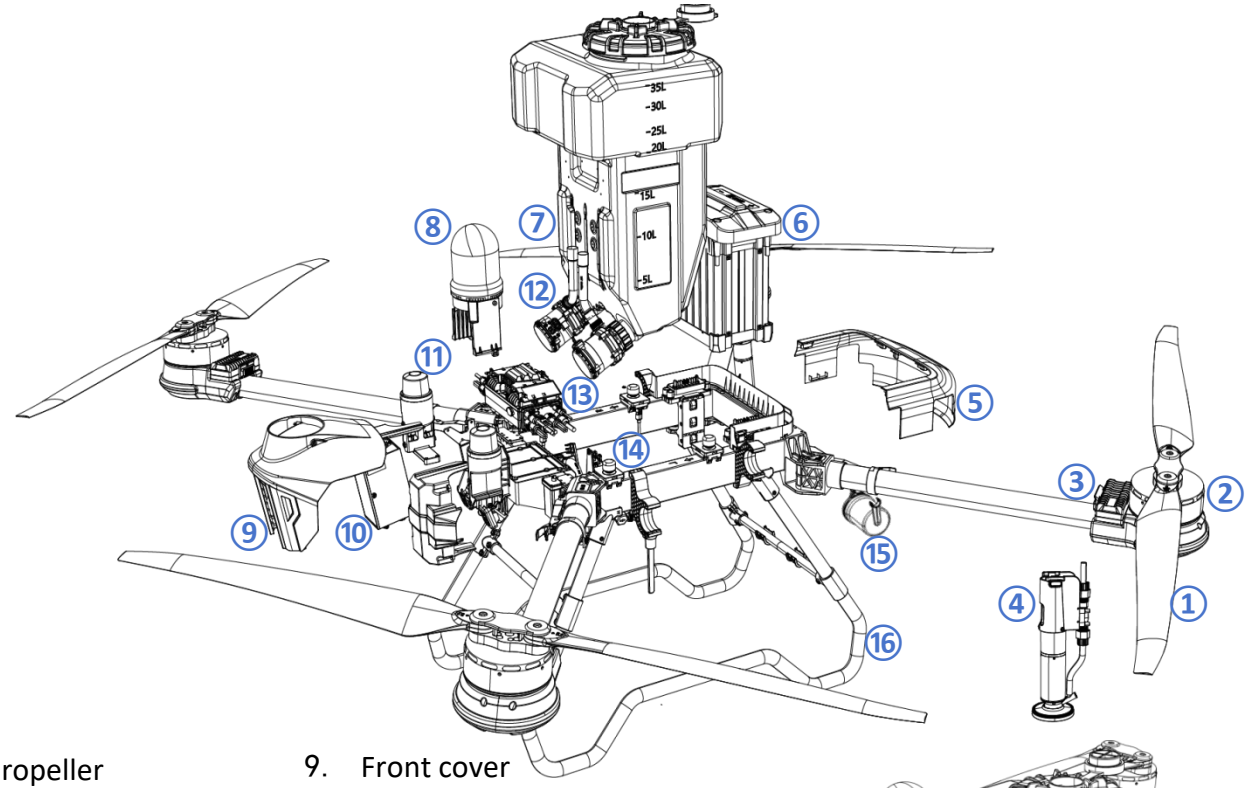
- It adopts the industry-innovative CTB integrated shell-core super-charging battery with a blade-like battery structure design. The battery cells have independent heat dissipation, and the heat dissipation area is increased by 7 times, enabling rapid heat dissipation and greatly improving the battery cycle efficiency. The dual-interface design for charging and discharging solves the problem of overheating at the interface during high-temperature operations in summer.
- Integrated cooling charger, dual axis unidirectional large fan, 5C charging, can be fully charged in up to 9 minutes, greatly improving charging efficiency. Realize dual electric cycle operation in a high temperature environment of 40 ℃. The charger has a custom charging power setting mode of 1800W-9000W, with free switching between fast and slow charging modes. It also supports generators and traditional rural circuits, which can meet the needs of all scenario operations.

Agricultural Drone

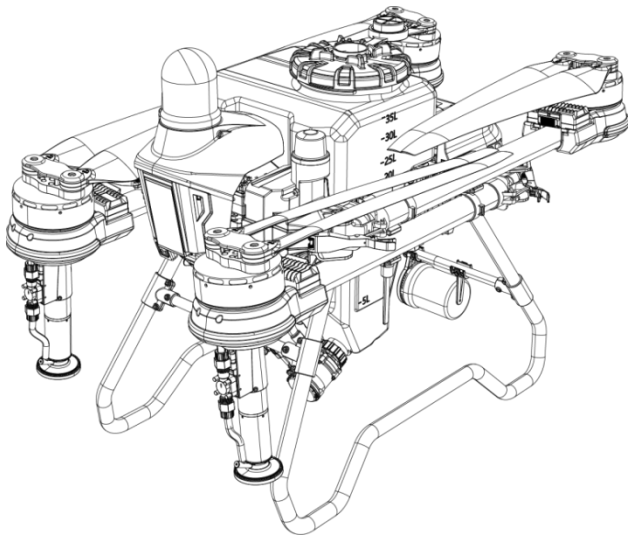
Overview

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 hoisting 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, hoisting, 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.

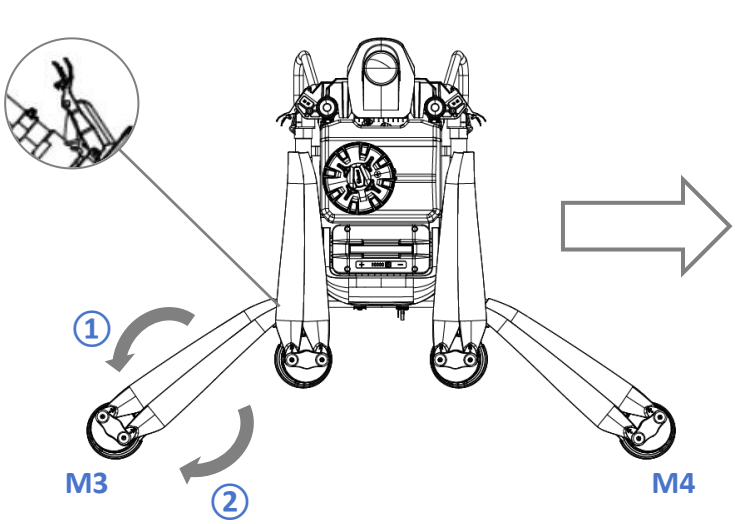
Agricultural Drone Components

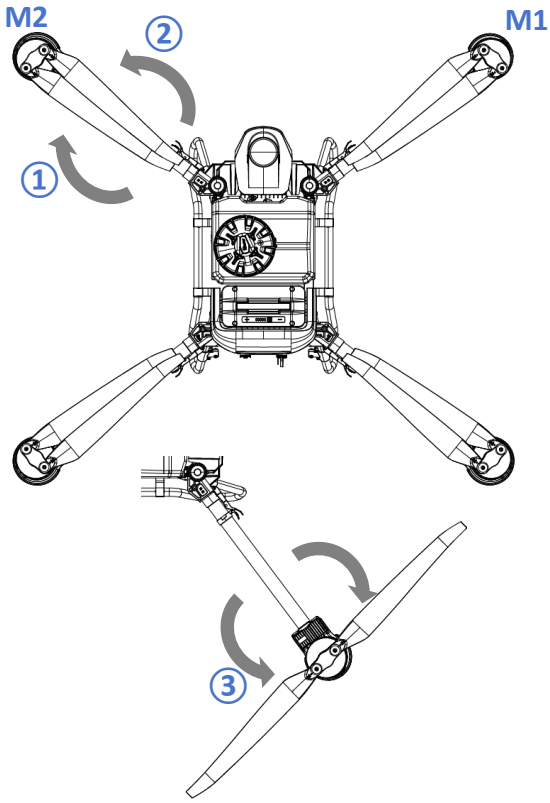


1. Propeller
2. Power Motor
3. Power ESC
4. Mist nozzle assembly
5. Rear cover
6. Battery
7. Tank
8. Upper Rotating Radar
9. Front cover
10. Forward Lidar
11. GNSS Antenna cap
12. Pump
13. Main Controller
14. Load Cell
15. Rear Rotating Radar
16. Landing Gear



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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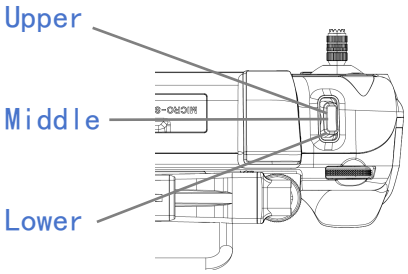
- When folding the drone arms, fold the arms M1 and M2 first, then M3 and M4, and ensure that the arms are snapped into the semi-circular slots on the side of the aircraft. Otherwise, the arms may be damaged.
- The arm fasteners must be fastened tightly and have a detection function, and if not fastened, 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 J70 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 70L 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 includes field spraying and fruit tree spraying mode, standard field double sprinkler spraying, optional mountain four sprinkler spraying, the water allocation to four sprinkler, switch the mode through the 60 APP, and use the atomization effect of the normal temperature, and the spray particle size can be continuously adjusted from 10-300um. Detailed operation steps are visible in the flight chapter.

Lifting Operation Mode

During multi-scenario operations, the agricultural drone is equipped with a hoisting device for agricultural plant protection hoisting. The hoisting function realizes automatic guidance, with a maximum load-bearing capacity of 60 Kg. It is also equipped with a high-strength hoisting rope and an automatic hook-release device, enabling quick-release and quick-mount, reducing the hoisting operation difficulty and improving hoisting 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

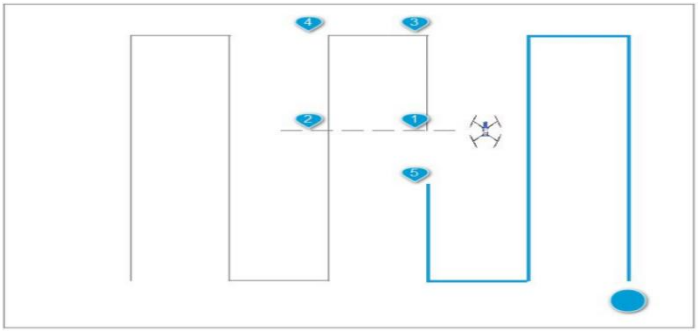
1. After clicking the resume operation point, the following waypoints will appear. The user can manually select a single waypoint, and the agricultural drone will continue the operation.

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

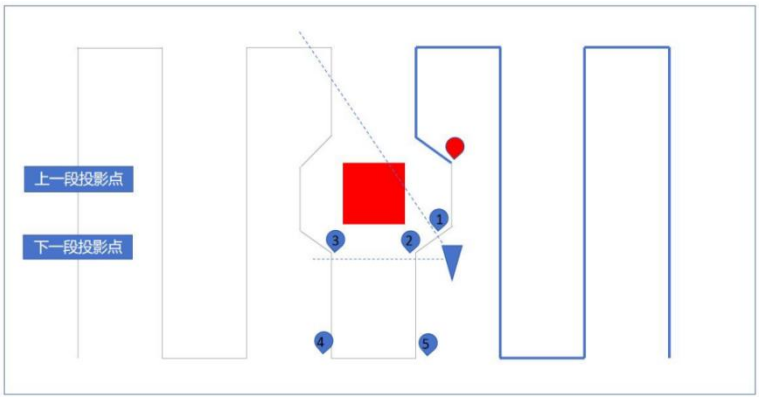
b) The intersection point of the current position of the agricultural drone perpendicular to the next un-operated route is [Waypoint 2].

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 J70 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

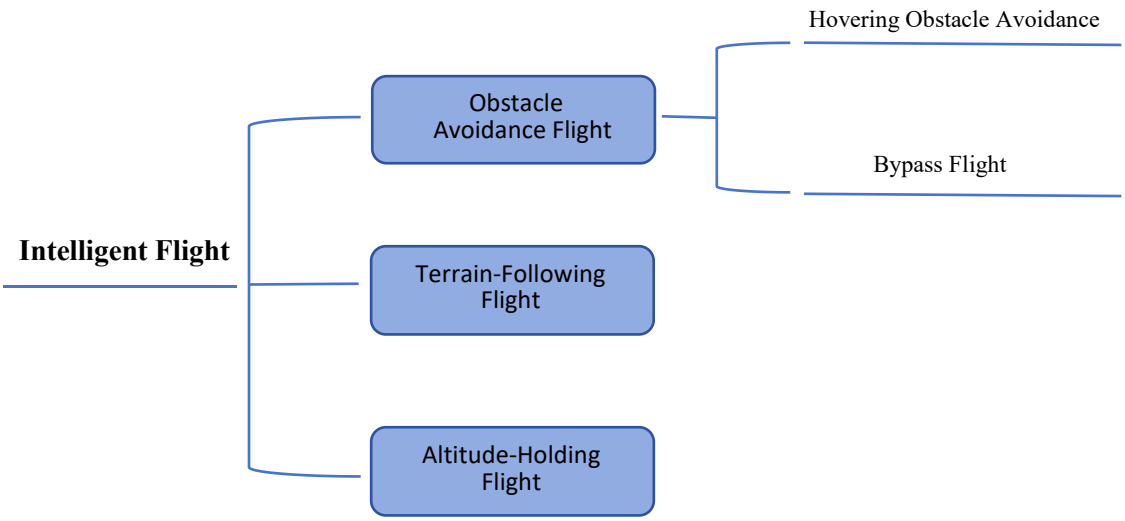
during the agricultural drone's operation to ensure the uniformity of the plant protection spraying operation effect.

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



Detection Range

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.

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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°)

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- 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

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- 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.

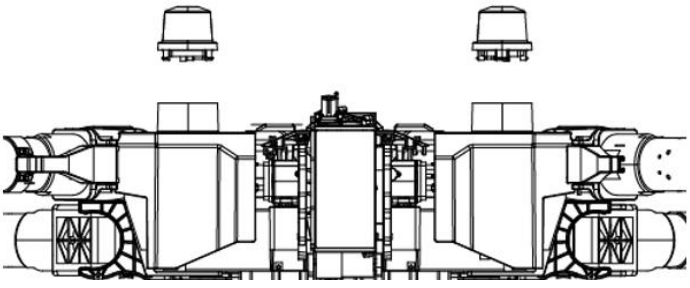
- The low-battery warning function can be set in the“⚙” power management in the upper-right corner of the APP operation interface.

- 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

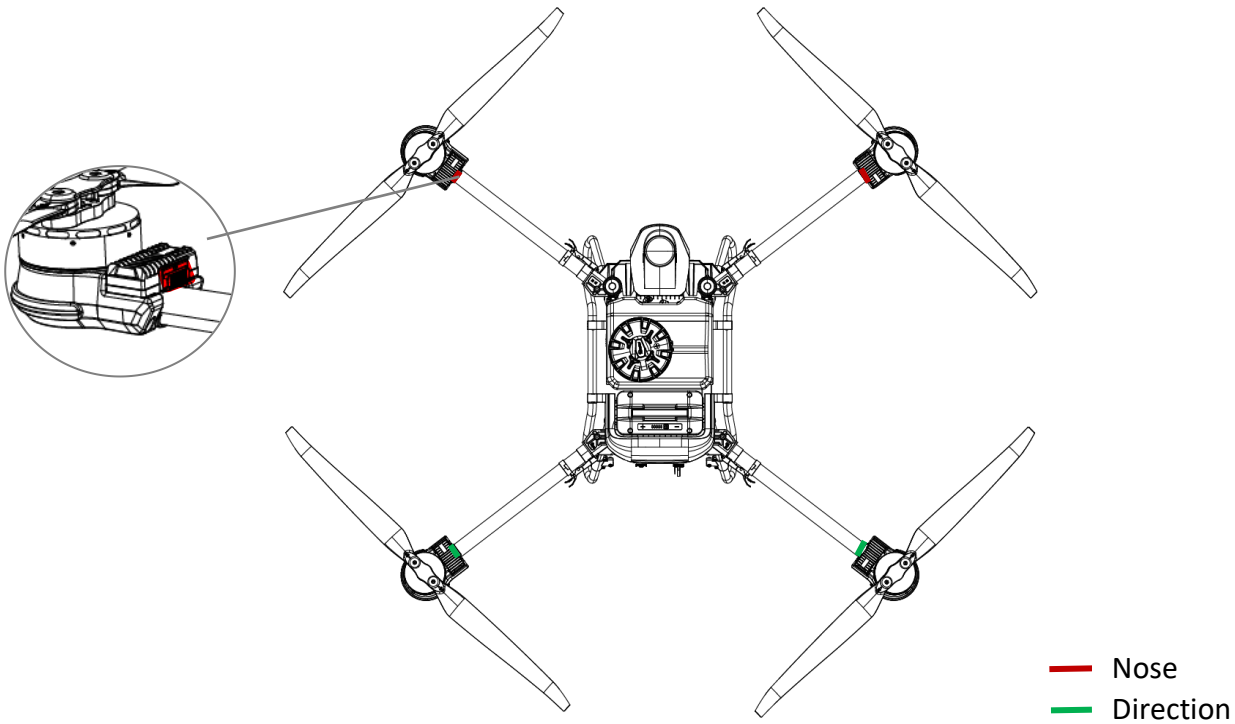
No-Network RTK needs to be used in conjunction with the Extreme Link Communication Station (base station function). Refer to the Extreme Link Communication Station Chapter of this manual to complete the frequency pairing and installation of the agricultural drone and the base station function.

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.



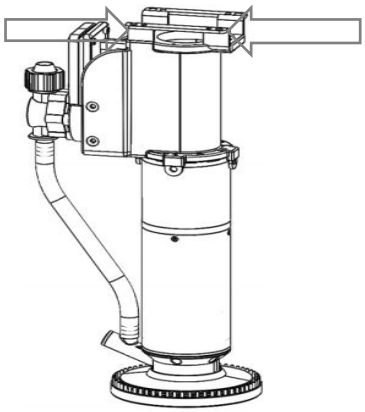
Nozzles and Spray Disks

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

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

Spray Disk Type

There are two types of nozzles: dual nozzles and quad nozzles. To switch the nozzles, simply remove the water pipe and screws to replace the nozzle.



Spraying Disk Types

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

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

- Replace the high atomization spray disk with high flow rate one to avoid damage when the droplet size is set to over 200μm.
- Switch to spraying disk for high atomization when the flow rate of dual nozzles is set to over 16L/min.
- Do switch to spraying disk for high atomization when the flow rate of a single nozzle is set to over 6L/min.

Backup Battery

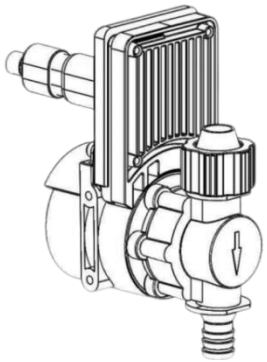
The drone is equipped with a backup battery, which will be charged automatically after powering on the drone, and will power the entire modules when replacing the main battery, saving the time to wait for a self-check after changing the main battery, thereby improving operational efficiency.

⚠

- Turn off the backup battery after completing the operation.
- Click " ⚙ " on the upper right corner of the screen and turn off the backup battery. And it will be turned off successfully 40 seconds later.
- The shutdown sequence is to first turn off and remove the main battery and then turn off the backup battery.

Solenoid Valve

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



Dual Electromagnetic Vane Pump

The electromagnetic vane pump in the drone operates by driving the liquid to rotate at high speed using the working vane. The maximum flow rate for a single pump is 12L/min.

The atomization capability of an individual nozzle is limited, with smaller droplet sizes requiring higher rotation speeds, which in turn restrict the flow rate. Choosing smaller droplet sizes can affect the flight speed, spray width, or spray rate.

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 of utmost importance, as the calibration results directly affect flight safety. Failure to calibrate the compass may lead to abnormal operation of the agricultural drone.
- When calibrating, ensure that the location is open and far away from large buildings, manhole covers, high-voltage lines, wire fences, mobile phone transmitters, cars, and magnetic minerals.
- Operators should be without mobile phones, keys, or metal objects, and the notebook and test wires being used should not be near the flight controller's GPS during operation.
- After successful calibration, place the drone on the ground. If the calibration is unsuccessful, reposition and recalibrate.

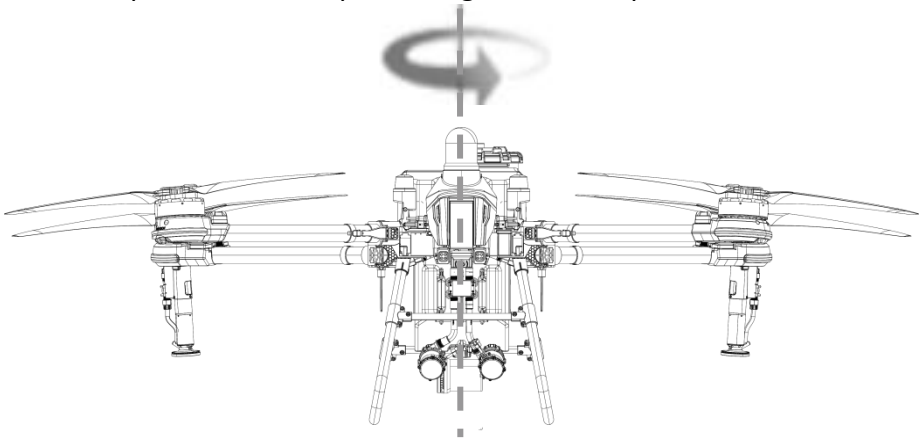
Calibrating the compass

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

1. Click Device Management, and then Drone, scroll down to the bottom of the menu, and select the Calibrate button in Compass Calibration.
2. Power on the flight controller, and wait until the Start Calibration button becomes clickable.
3. Click on the Start Calibration button while keeping the drone level. Lift the drone about 1 meter off the ground and then slowly (less than 30 degrees/second) rotate it horizontally. If the horizontal calibration

is successful, proceed to the next step.

4. If the calibration fails, please start the process again from step 2.



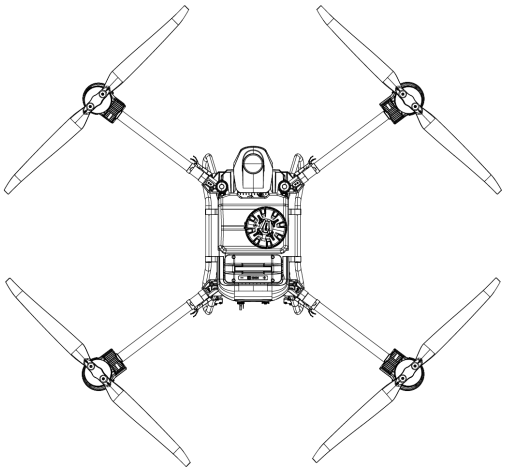
Firmware Upgrade

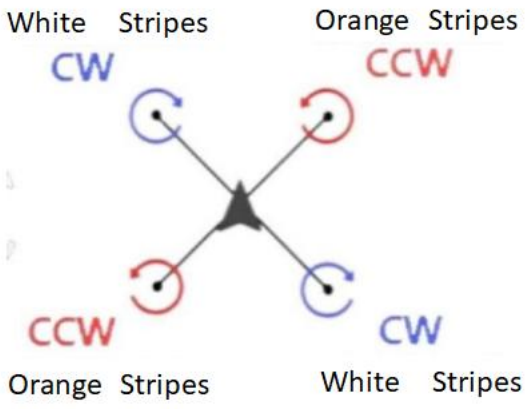
Firmware Upgrade: Modifying and replacing the underlying software to enable the hardware to add new functions or operate better.

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





⚠

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

Remote Controller

Remote controller overview

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

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

Preparing the Remote Controller

Mounting the SIM Card

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

Mounting Steps：

①Remove the dongle compartment cover.

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

③Reattach the cover firmly.

Adjusting the Antennas

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

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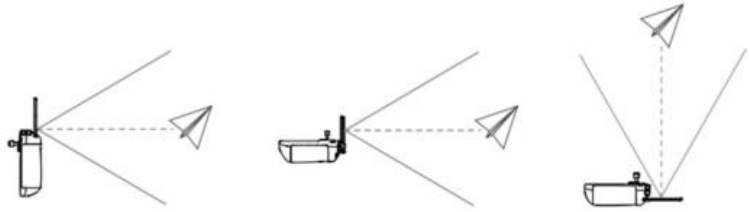
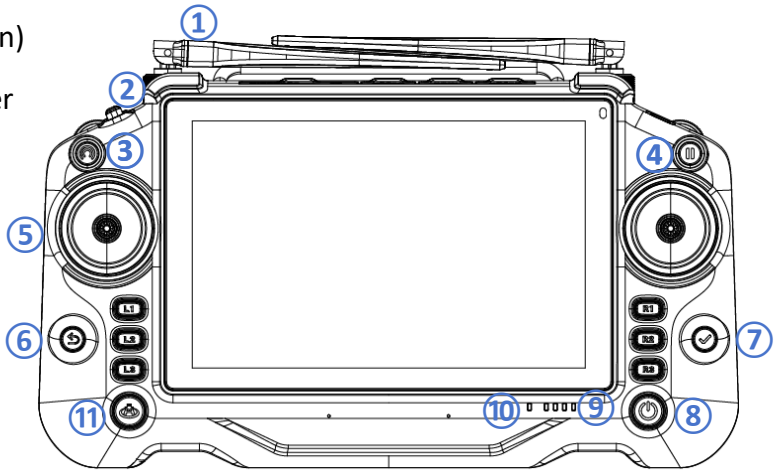
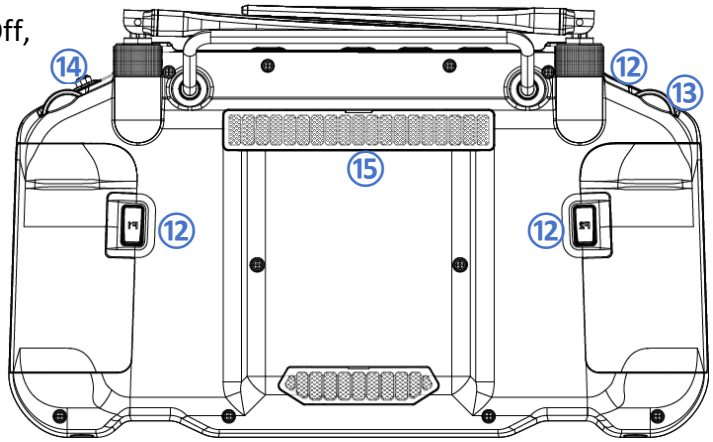
- During operations, please avoid covering the remote controller antenna or obstructing signal transmission in any way.
- The top end of the remote controller antenna is the weakest point for signal transmission, so avoid pointing it towards the drone. Antennas should not cross each other.
- Proper antenna use: The remote controller antenna should be oriented vertically, pointing upwards from the remote controller screen, and keep the flat surface of the antenna facing directly towards the drone.

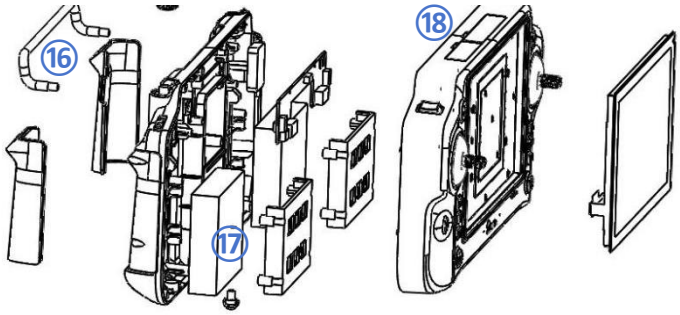


Remote Controller Component



1. 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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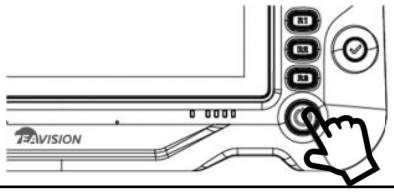
- Independent port for external display
- USB Port (for External U Disk)
- SIM Card Slot (for Mobile Network Access)
- Type-C Port (for Remote Controller Charging)

Using the Remote controller

Powering the Remote Controller On and Off

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

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



- 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 Battery

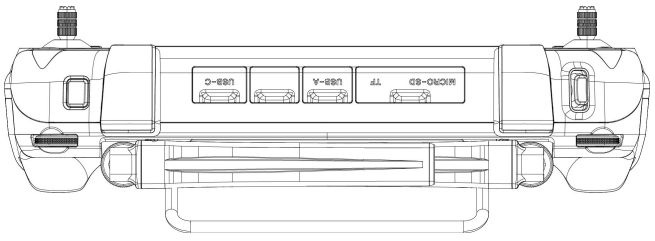
Charge the battery with the original power adapter when the remote controller is powered off.

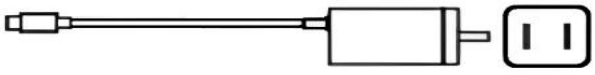
1. Use Type-C fast charging cable to connect the remote controller and adaptor.

2. The Battery Level LEDs flash when charging.

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

- Please use the original charger.
- The battery will deplete when stored for an extended period of time. Recharge the battery at least once every three months to prevent over discharging.

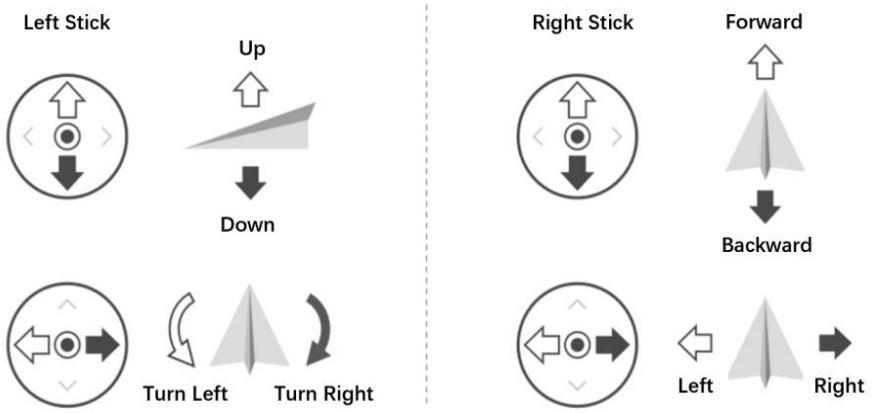




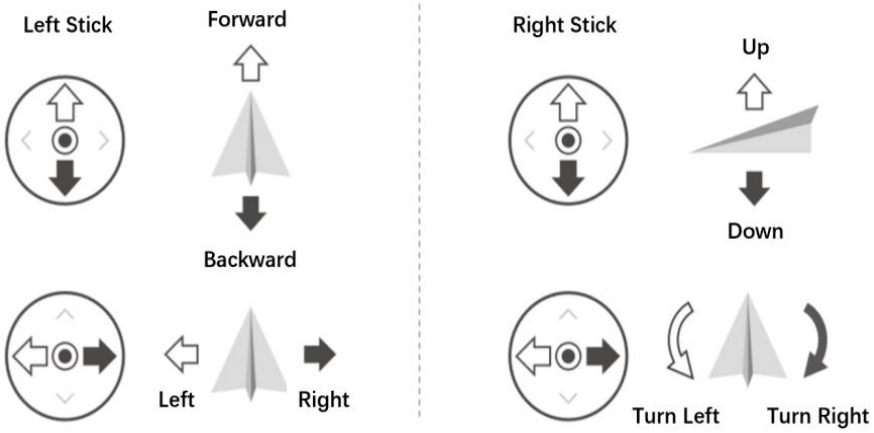
Operating the Drone

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

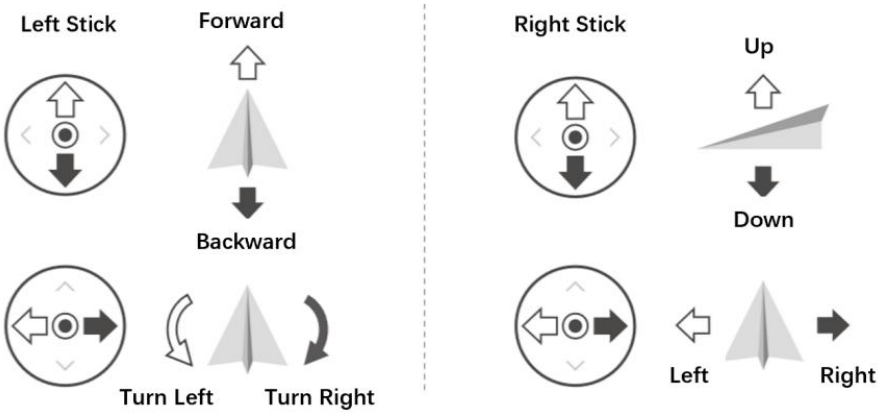
American Mode



Chinese Mode

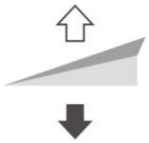
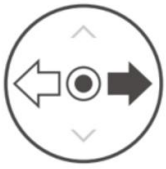


Japanese Mode



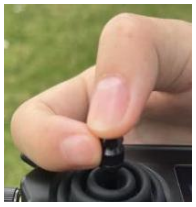
The remote controller is factory-defaulted to American Mode. This manual provides instructions on operating the remote controller based on the American Mode.

- 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 (American Mode)	Drone	Remarks
Left Stick 		Throttle Stick: Move the left stick vertically to control the elevation of the drone. Push up to ascend and push down to descend. Use the left stick to take off when the motors are spinning at an idle speed. The drone hovers in place if the stick is in the center position. The further the stick is pushed away from the center position, the faster the drone changed elevation.
Left Stick 		Yaw Stick: Move the left stick horizontally to control the heading of the drone. Push left to rotate the drone counterclockwise and push right to rotate clockwise. The drone hovers in place if the stick is in the center position. The further the stick is pushed away from the center position, the faster the drone rotates.
Right Stick 		Pitch Stick: Move the right stick vertically to control the pitch of the drone. Push up to fly forwards and press down to fly backwards. The drone hovers in place if the stick is in the center position. Push the stick further for a larger pitch angle and faster flight.
Right Stick 		Roll Stick: Move the right control stick horizontally to control the roll of the drone. Push the stick left to fly left ad right to fly right. The drone hovers in place if the stick is in the central position. Push the stick further for a larger roll angle and faster flight.

Stick Fingering

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



Stick Mode Switch

Change the stick mode in the app settings.

Remote Controller Warning Sounds

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

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

Touch Screen Operations

Home Page

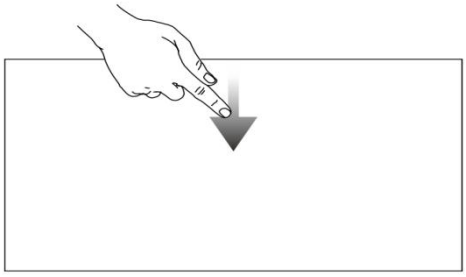
The top-status bar on the home page displays the time, network connection status, and the remaining battery level of the remote controller.

Operations

- To go back: Swipe up and tap the bottom-right corner.
- To return to the home screen: Swipe up and tap the bottom-center.
- To access the task center: Swipe up and tap the bottom-left corner.

Quick Panel Interface:

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

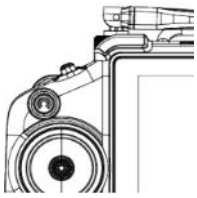


1. Bluetooth: Single tap to enable/disable Bluetooth connection. Long press for Bluetooth connection settings.
2. Screen Recording: Activate screen recording functionality.
3. Mobile Data Toggle: Turn mobile data on or off; used for the agricultural drone app's network requirements.
4. Screen Brightness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

Remote Controller Pairing

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

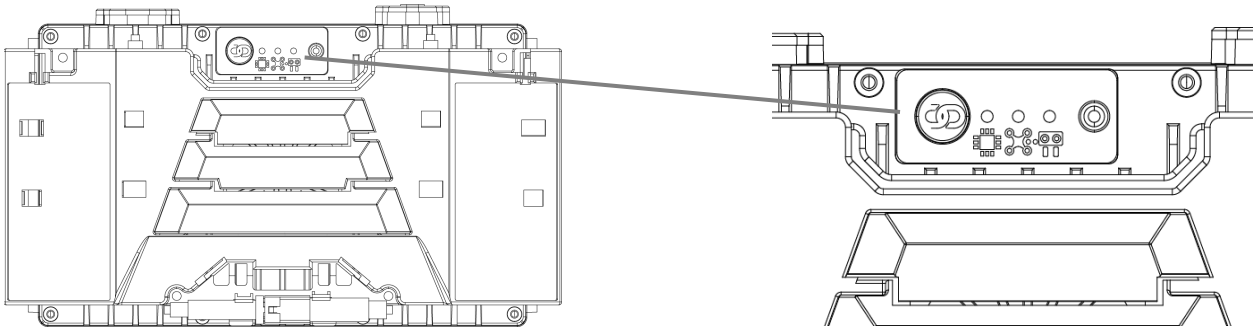
1. Remove the front casing of the agricultural drone.
2. Press the pairing button in the upper-left corner of the remote controller for 3 seconds. The pairing status indicator light turns red-green alternating flash.



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.



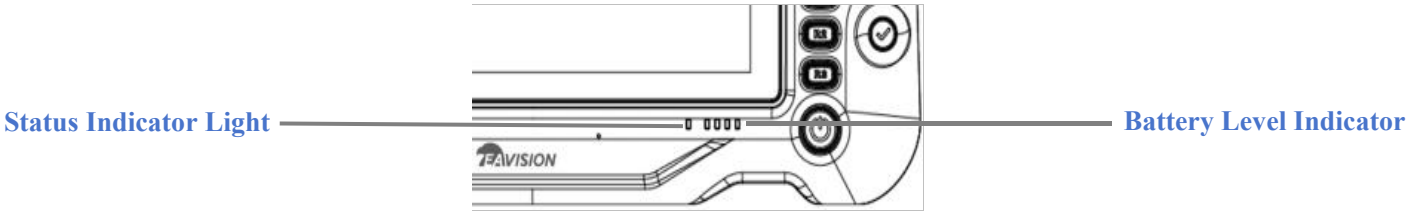
4. Wait for about 30 seconds. When the pairing status indicator light of the remote controller turns green and stays on, and the indicator light of the main controller turns blue and stays on, it indicates that the pairing is successful.

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

Precautions for Using the Remote Controller

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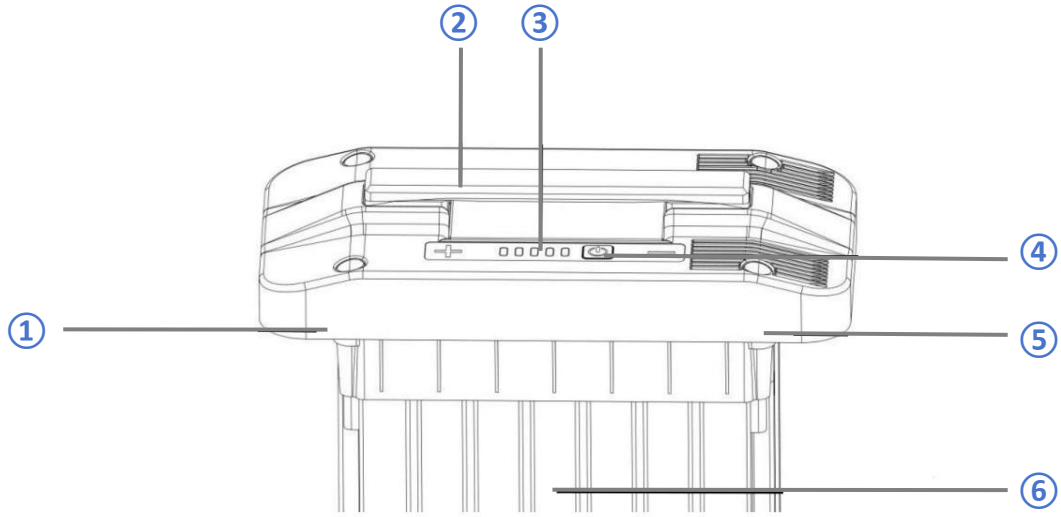
- Do not use the remote controller to control the agricultural drone in crowded places, areas with many obstacles, places with strong magnetic fields or signal interference sources, or other areas that may cause unnecessary economic losses or even personal injuries.
- During operation, do not cover the 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.

Smart Battery

Smart Battery Overview

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

Smart Battery Components



1. Positive Power Interface
2. Handle
3. LED Indicator：From left to right are power LED1, LED2, LED3, LED4, fault light
4. Power Buttons
5. Negative Power Interface
6. Independent heat dissipation battery cells

Battery Function

EAV-CTB29000A Smart Flight Battery has the following functions:

1. Battery level display: press the battery power button to check the current battery level.
2. Efficient Cooling: With the support of charging heat dissipation, efficient cooling is achieved, maintaining the battery within the optimal operating temperature range of below 60°C.
3. Intelligent transmission: the battery information, such as voltage, battery level can be obtained in real time through the intelligent charging app to ensure that the drone can work properly.

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

Battery Use

Turning on and off

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

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

2. In the power-on 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) The battery will be kept on if there is no operation during LEDs flashing.

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

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

LEDs flash, then press the power button to turn off the battery, and then disconnect the battery from the drone.

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

Checking battery level

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

LED1（Green）	LED2（Green）	LED3（Green）	LED4（Green）	LED5（Red）	Current Battery Level
On	On	On	On	Off	85%--100%
On	On	On	Off	Off	65%--85%
On	On	Off	Off	Off	45%--65%
On	Off	Off	Off	Off	20%--45%
Flash quickly	Off	Off	Off	Off	20%

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

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

💡

- The fast-flashing frequency is 5Hz, on for 0.2 seconds and off for 0.2 seconds.
- When charging battery, the LED will flash to indicate the charging status. After charging, please disconnect the battery from the charging devic.

Warning prompt

The battery status LED can display information about battery protection triggered by abnormal charging.

After troubleshooting, please press the battery switch to cancel the LED protection prompt, and re-plug in the charging device to resume charging. If the charging temperature is abnormal, wait for it to return to normal, and the battery will automatically resume charging without re-plugging in the charging device.

LED1	LED2	LED3	LED4	LED5 (Fault Indicator）	Description
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

Battery Storage & Transport

- After each flight, disconnect the drone from the battery, check the battery power interface and clean up the debris.
- Make sure the battery is powered off and disconnected from the drone or other device before transportation.
- Keep batteries out of the reach of children. If a child accidentally swallows a part, seek immediate medical attention.
- Do not place batteries near heat sources, in direct sunlight or in a car on a hot day.
- Store the batteries in a dry environment. Do not place the battery in water or in a place where water may leak.
- Do not store or transport batteries together with metal objects (such as glasses, watches, metal necklaces, hairpins, etc.), inflammable or explosive materials.
- Put the battery on flat ground to avoid damage to the battery from sharp objects.
- Do not store the battery for a long time after being completely discharged in case of over-discharging.
- For long-term storage, please disconnect the battery from the drone.

Battery Disposal

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

Precautions for Use

1. Do not use the battery near a heat source, such as in direct sunlight or in a car on a hot day
2. Keep the battery away from any liquid. Do not immerse the battery in water or get it wet. Never use the battery in the rain or in a wet environment. When the interior of the battery meets water, a decomposition reaction may occur, causing the battery to spontaneously ignite or even explode.
3. Batteries with bulging, leaking or damaged packaging are strictly prohibited. If the above situation occurs, please contact local dealer for further processing.
4. Keep the battery off before mounting or removing the battery from the drone. Do not remove or insert the battery while the battery is turned on, otherwise the power connector may be damaged.
5. The battery should be used between -5°C and 65°C. High temperature may cause the battery to catch fire or even explode. If the temperature is too low, the battery performance will be seriously degraded and cannot be used. Use the battery when it returns to normal temperature.
6. Do not use the battery in a strong electromagnetic environment. Otherwise, the battery protection board may be abnormal, resulting in serious failure of the drone.
7. Do not disassemble or puncture the battery with sharp objects in any way, otherwise it will cause the battery to catch fire or even explode.
8. Stay away from the battery leakage as it’s highly corrosive. If the internal liquid splashes on human skin or eyes, please rinse it off with clean water and seek medical attention immediately.
9. Do not use the battery again after it is dropped from the drone or hit by external force.
10. If the battery accidentally falls into the water during flight or under other circumstances, please remove the battery immediately and place it in a safe open area, and keep away from the battery until it is completely dry. Dried batteries should not be used again and should be disposed of properly according to the disposal methods in the user manual.
11. Do not use wires or other metal objects to cause battery short circuit.
12. Do not hit the battery or place heavy objects on the battery or charging device.

13. If the battery interface is dirty, wipe it with a dry cloth, otherwise it will cause poor contact, resulting in energy loss or charge failure.
14. Do not reversely connect the positive and negative poles of the battery, otherwise abnormal charging of the battery may cause overheating, explosion, or fire. Do not use generic batteries, and please contact the consumer service or designated dealers for replacement. Users are solely responsible for battery error and flight failure resulting from their use of generic batteries.
15. Batteries are dangerous goods. Do not stack other items on the battery, or sit on the battery or the package containing the battery, otherwise the battery may be damaged or even become dangerous.
16. The battery is heavy, please place it carefully to avoid tipping over and damaging the side of the battery. If the battery is toppled and damaged, immediately place the battery in an open area away from combustibles and crowds. Half an hour later, soak the battery in water for more than 24 hours. Make sure the battery is completely depleted before disposal.

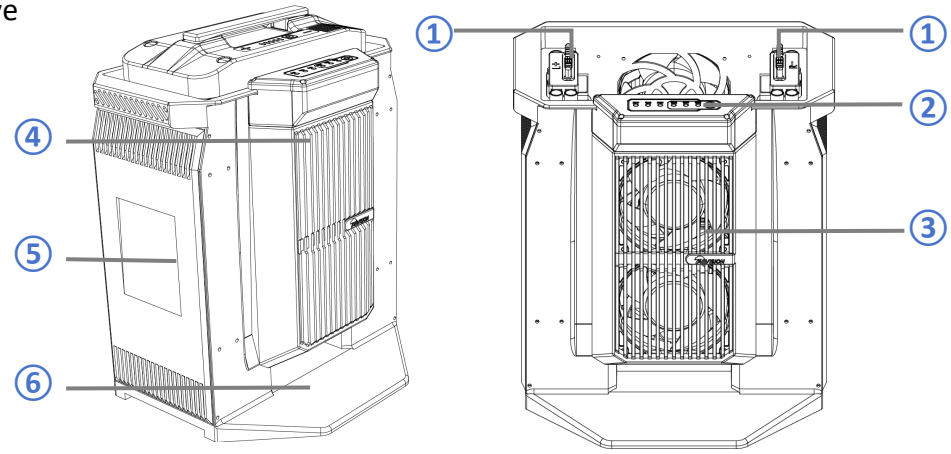
Cooling Charger

Overview

The smart battery can be fully charged in 9 minutes with the JM-C55 cooling charger. With two batteries and one charger, users can charge one battery while operating with another, making it extremely efficient. The maximum charging power of the charger can reach 9000W, and the charger has multiple intelligent protection functions to avoid damage from over-temperature, over-voltage, under-voltage, short circuit and ensure charging safety.

Cooling Charger Components

1. 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 3600W. 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 3600-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 9500-watt Eavision generator is used, insert the generator plug, and the cooling charger will automatically use a 9500-watt power to charge the battery. When the battery capacity is 30% remaining, the charging time is approximately 9 minutes.

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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.

6. After charging is completed, unplug the connection of the battery first, and then the power supply cable.

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.

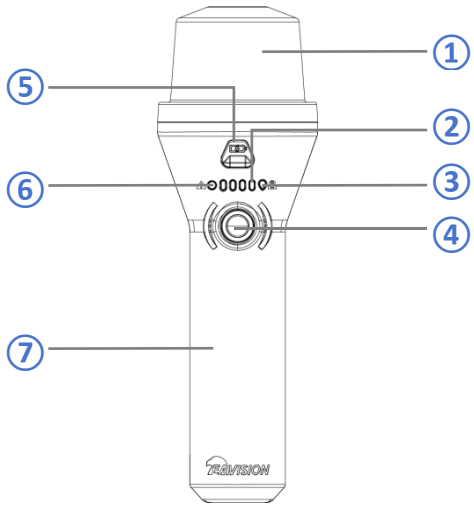
Handheld Mapping Device

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.

Use 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.

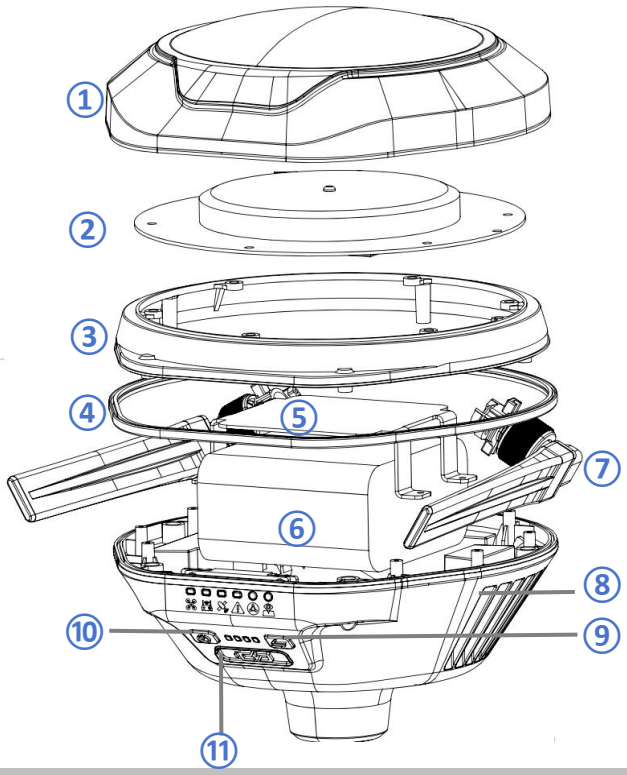
SuperLink Communication Station

Super Link Communication Station Overview

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

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 (10Hz)	Device initialization
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

Use steps

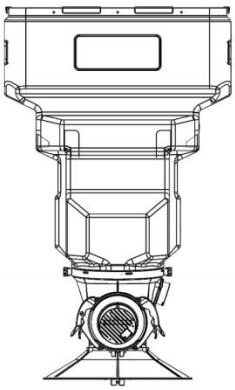
1. Power on the Extreme Link Communication Station.
2. Pair the remote controller with the drone.
3. Pair the remote controller with the Extreme Link Communication Station.
4. Switch the mode (the default mode is the base-station mode, and the mode is not saved after shutdown).

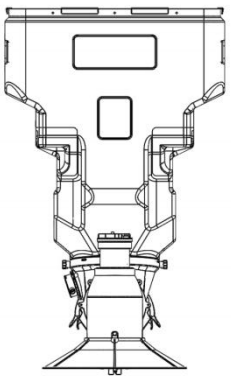
Spreader

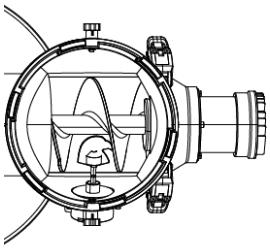
Spreader Overview

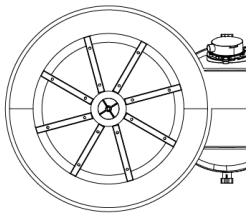
This product is a supporting device for the agricultural drone, suitable for the Eavision EA-J70 series of agricultural drones. It is applicable to spreading dry solid particles with a particle diameter range of 1mm-10mm. It has the advantages of uniform spreading and high efficiency. The spreading rate 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".

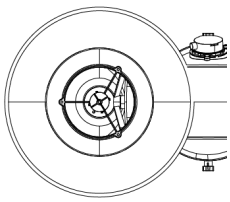
Spreader Components









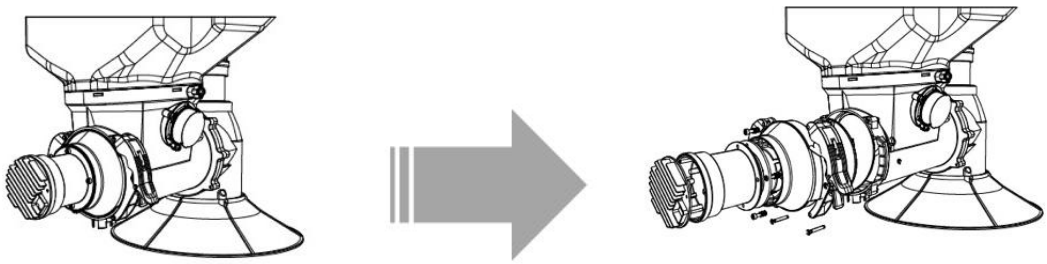


Maintenance

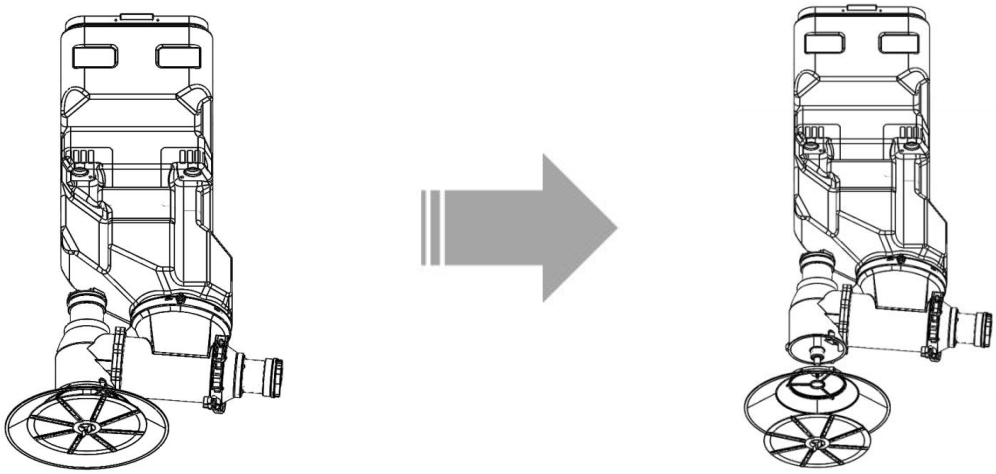
(1) Regularly clean the residue of material particles in the material box and the spreading disk. You can directly rinse them with tap water. After cleaning, use an air spray gun or a clean rag to remove the remaining water stains. Pay attention to avoiding water entering the wire harness connectors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

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

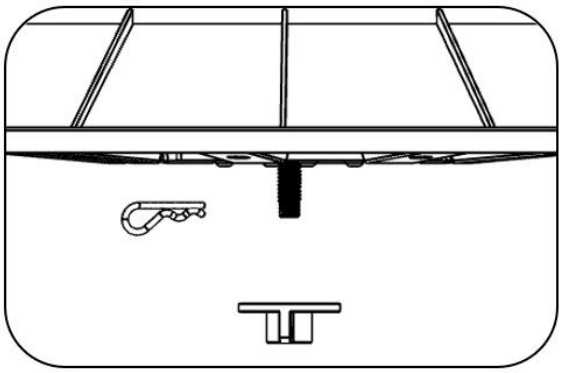
(3) Pull the locking bolt on the spreading disk out of the slot, rotate it 90° in any direction, and snap it into the slot.



(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.

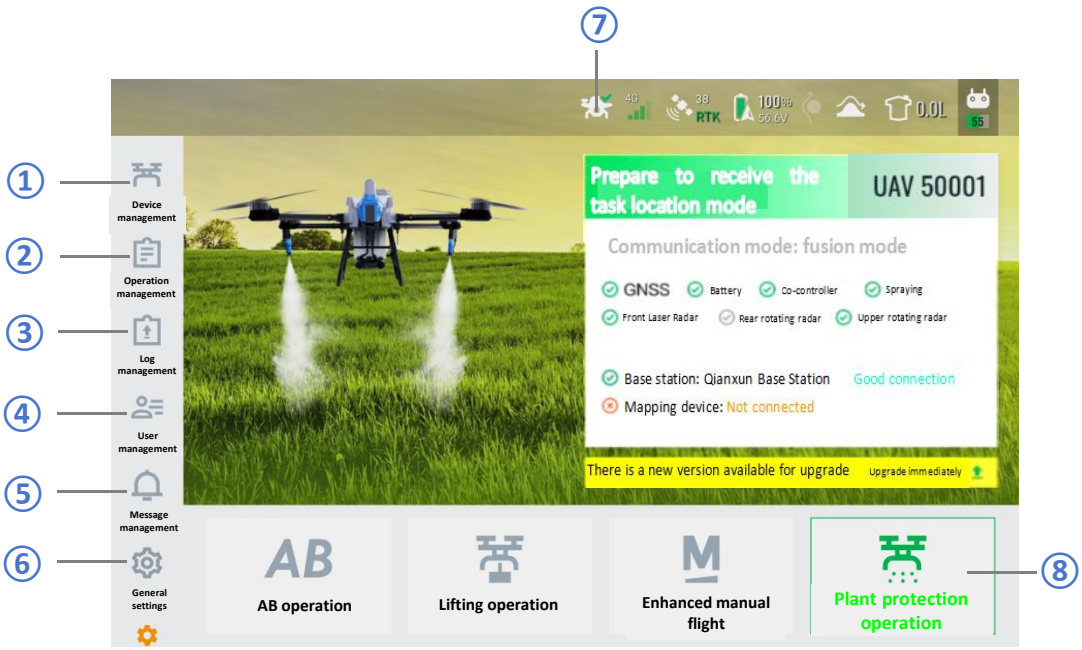
- The disassembly of scrapped products should be carried out by professionals. Relevant parts, such as electrical components, motherboards, metal parts, and plastic parts, should be collected separately and handed over to qualified units or the sanitation department for disposal. Product disassembly and repair should be carried out by professionals. Do not disassemble it yourself.
- The maximum internal load of this spreader is 50Kg. 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, hoisting, 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.

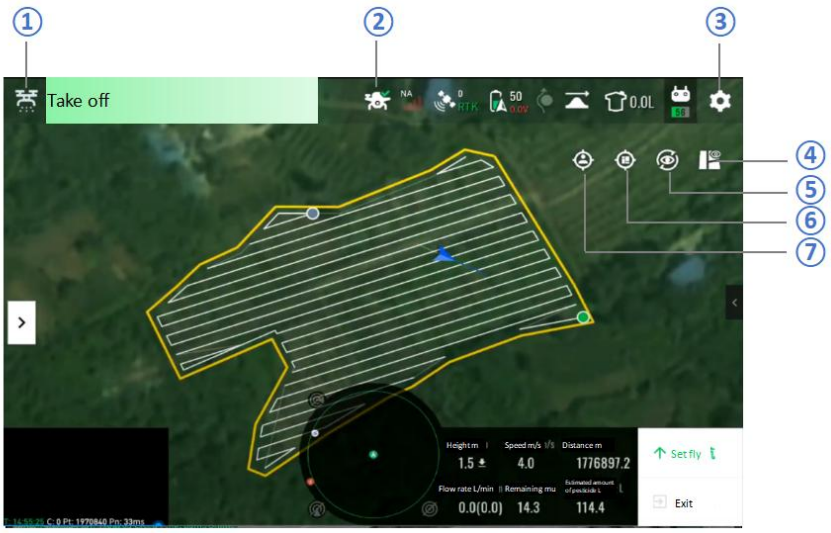
Operation Modes

The agricultural drone has five operation modes, namely plant protection operation, enhanced manual flight, hoisting 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.
- Hoisting Operation: Applied to mountainous hoisting 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.

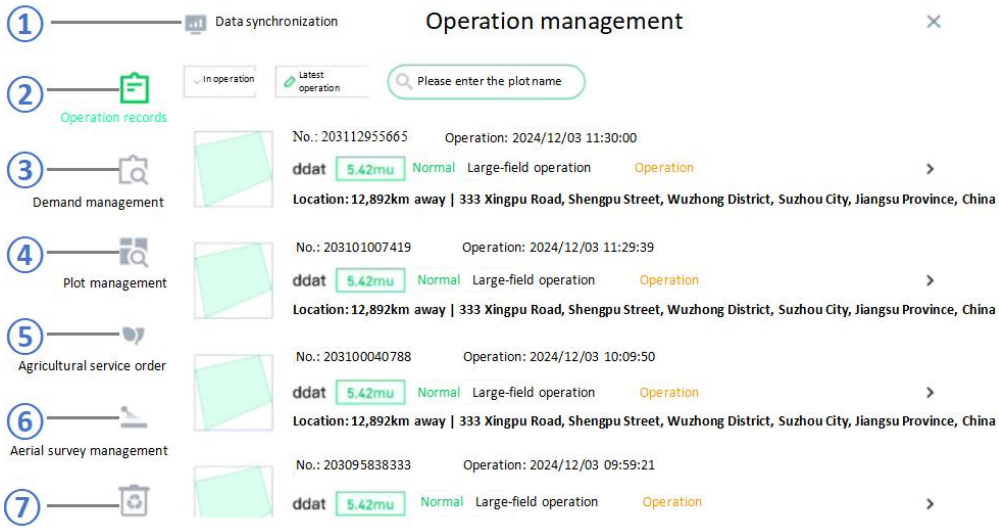
1. Agricultural Drone: View the version number of the agricultural drone, base station connection status, operation equipment, fault analysis, radar display status, calibration and firmware functions, and information related to the drone battery.
2. Mapping Device: Connect to the mapping device via Bluetooth 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. Super 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.

5. Charger: View various statuses and firmware information of the charger.
6. 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.

6. 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.

7. 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.

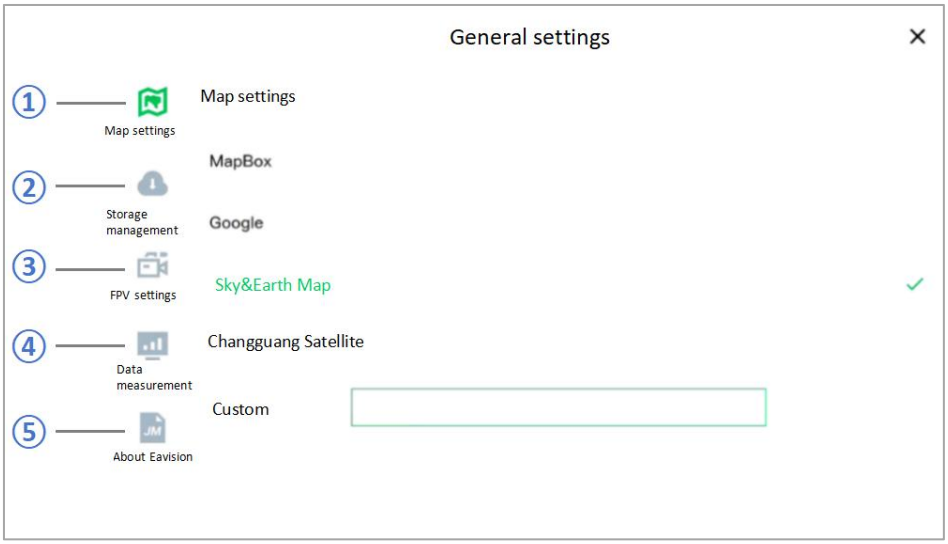
Log Management

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.

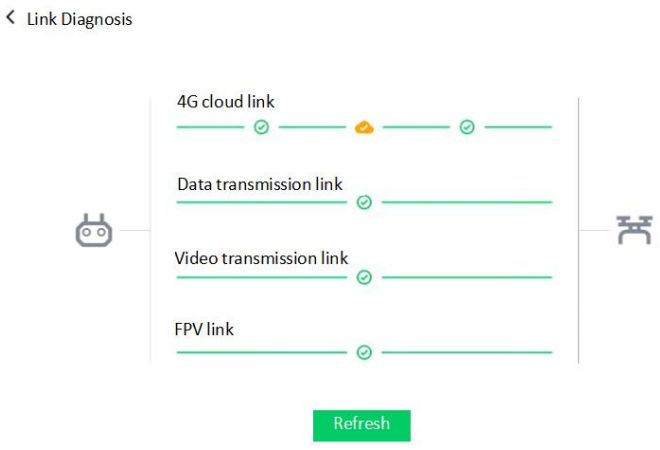
Pre-Flight Preparations

1. Ensure that the batteries of the agricultural drone, remote controller, and handheld mapping device are fully charged, and the generator has sufficient gasoline.
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.
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.

- 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:

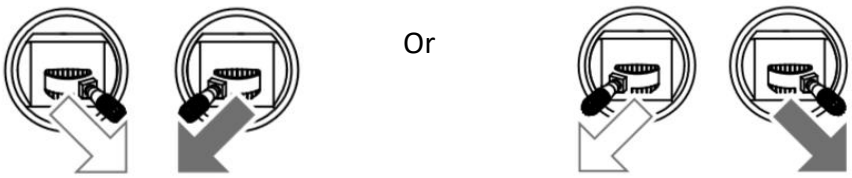
1. Place the agricultural drone in a flat and open area near the operation area, with the operator facing the tail of the aircraft.
2. After adding liquid to the operation box, tighten the lid of the pesticide box.
3. Turn on the remote controller, ensure that the Eavision SmartFarm 60 APP is running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

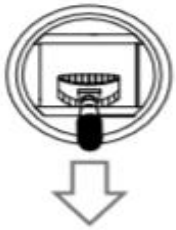
Takeoff

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 thenth 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

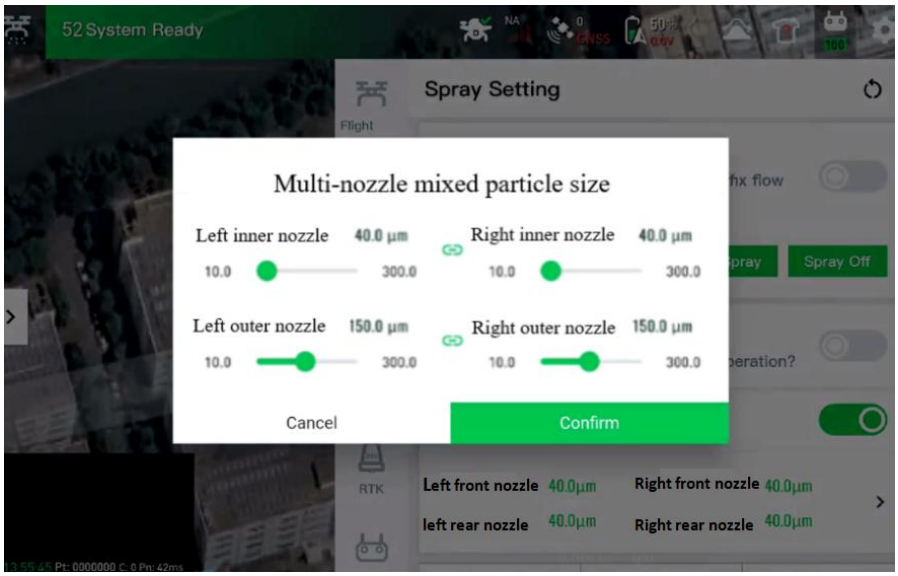
Before the agricultural drone performs autonomous flight, it is necessary to adjust the operation flight parameters. These parameters are closely related to the operation efficiency and quality.

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(Only optional with four nozzle)

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.

⚠

- 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.

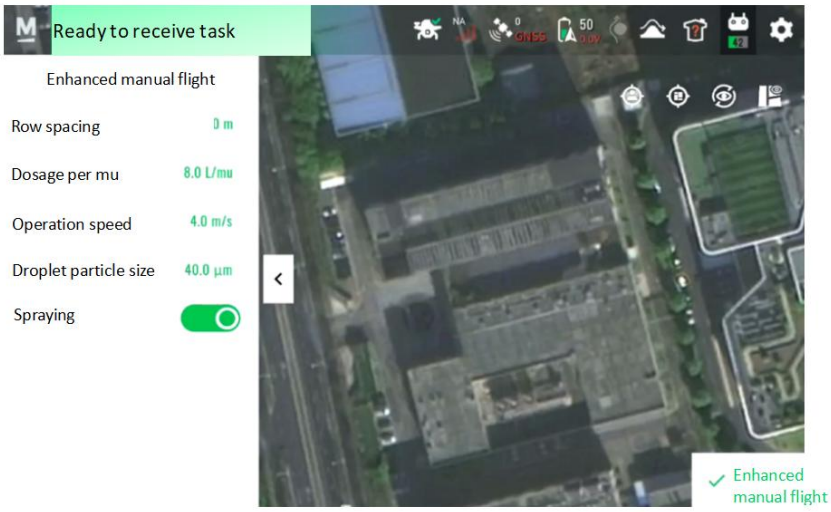
Enhanced Manual Flight Operation

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.

⚠

- 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.

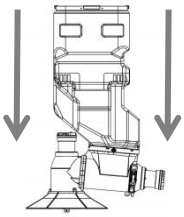
Spreading Operation

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.

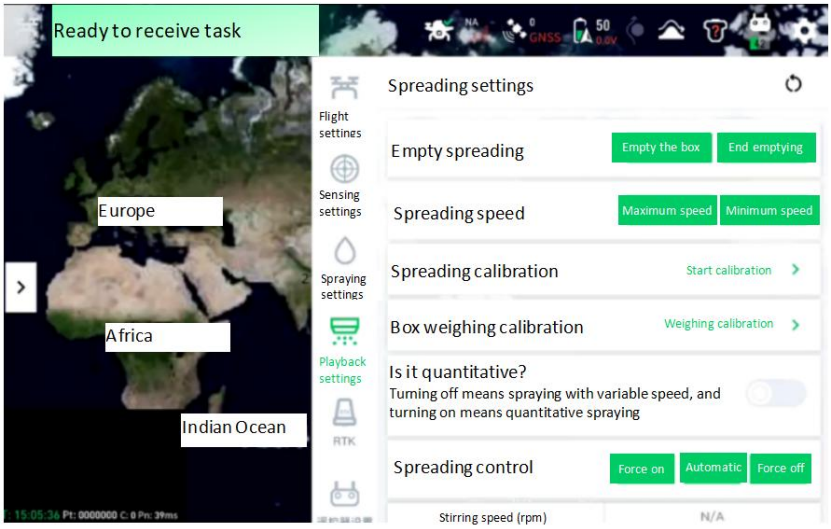
Installation and Use

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.

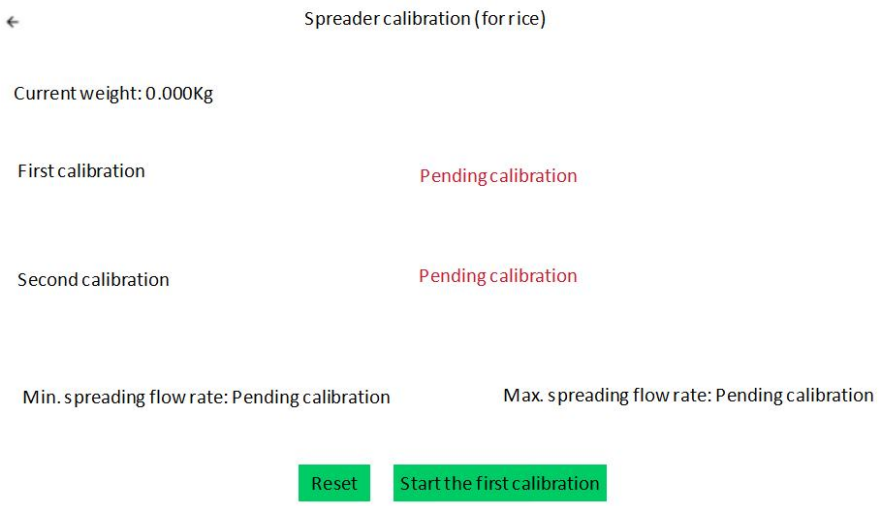
⑤ Click "Confirm", and then enter the countdown. At this time, the software enters the automatic tare-weight mode.

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

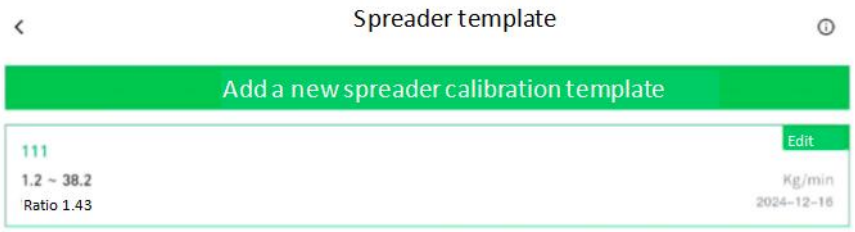
1. Before spreading calibration, place suitable containers around the spreading disk to collect materials. If necessary, remove the spinner to prevent splashing.
2. Add suitable spreading materials.
3. Click "Start Calibration" to enter the flow rate calibration procedure.
4. Click the "New Spreader 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

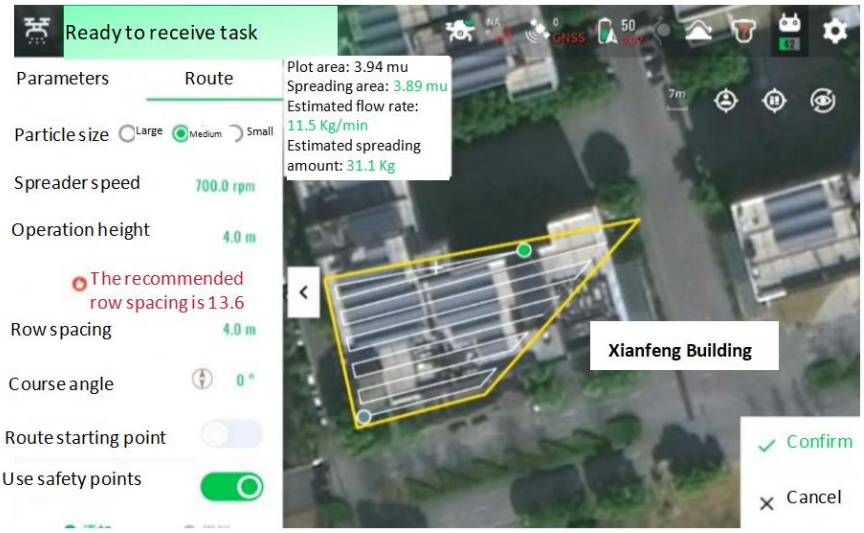
shortage. If a larger spreading amount is required, you can try using an auger rotation speed of 100% for both calibrations and a flow rate calibration time of 10s. But pay attention to adding spreading materials in a timely manner to ensure that the material box will not be empty during the entire calibration 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.

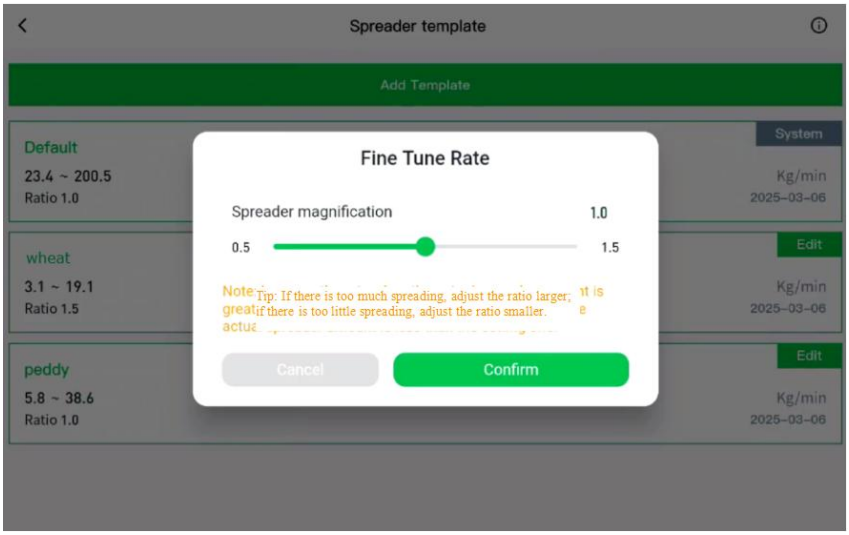


Spreader Parameter Settings

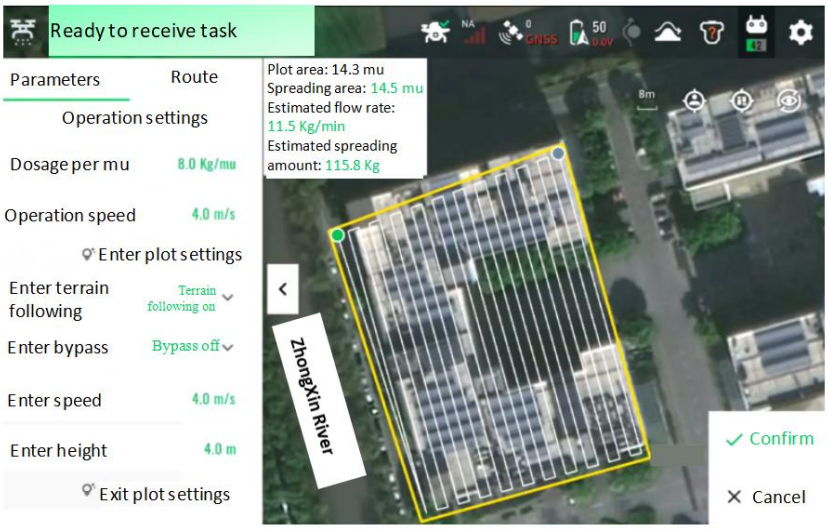
1. If no calibration operation has been performed: On the main page of the Eavision SmartFarm 60 APP, select "Plant Protection Operation", click "Plot", and click "Go to Operation". If it is the first time to use the spreader, a prompt "The spreader has not been calibrated. Please click [Calibrate Now]" 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.

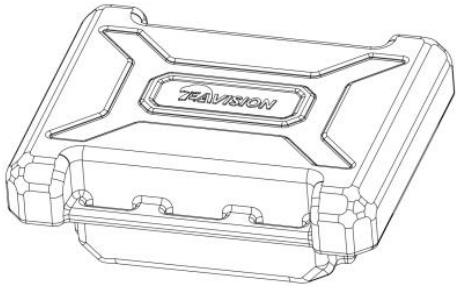
Hoisting Operation

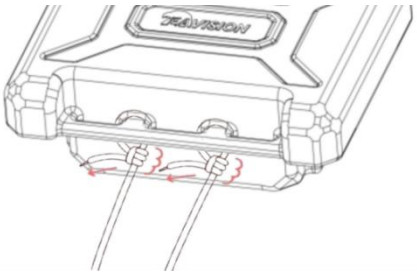
The hoisting operation can be applied to mountainous hoisting scenarios where manual transportation is difficult and inefficient. It solves potential problems such as manual point-finding by users, difficult

operation, high energy consumption, and long-term hoisting safety. The J70 can support full-autonomous hoisting operations, which not only improves efficiency but also greatly guarantees safety.

Installation Preparation

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





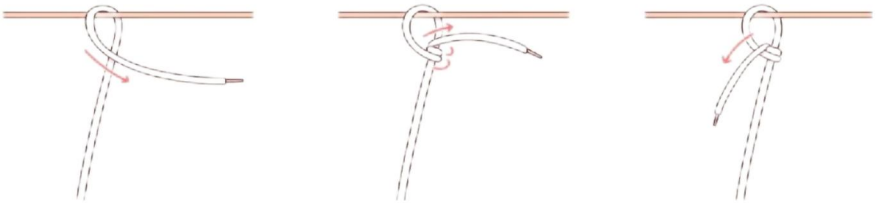
3. Place the ropes and the lifting installation module inside the frame and ensure that the length of the ropes is between 5-10m.

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

Anchoring Hitch

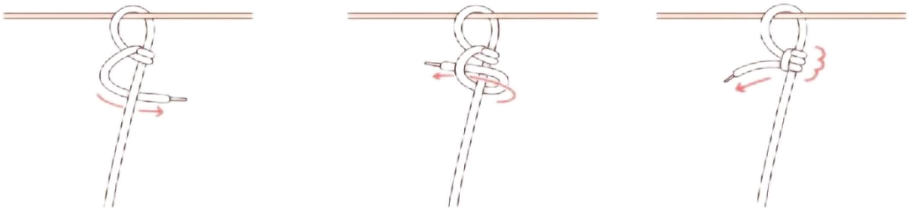
a) Pass the rope around the object to form a loop, with the rope end above the rope.

b) Wrap the rope end around the loop twice.



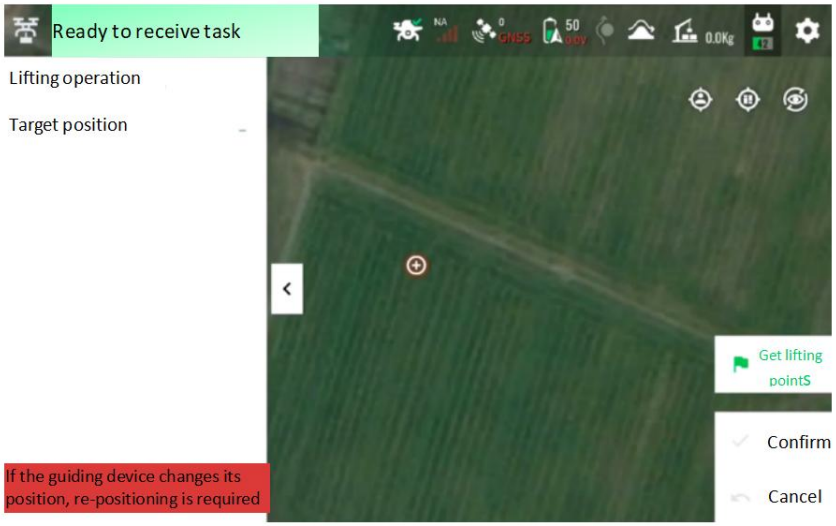
c) Place the rope end aside, overlapping it below the rope and forming a small hole with the rope.

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

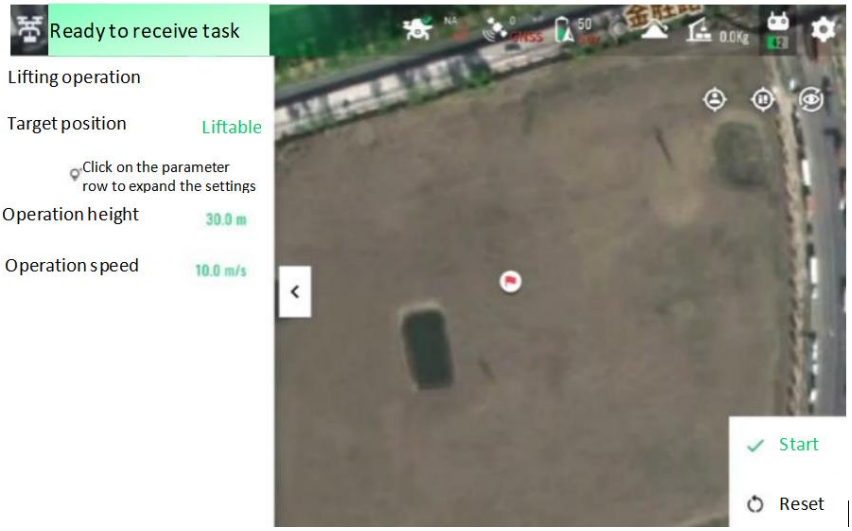


Usage Process

1. Enter the homepage of the "Eavision SmartFarm 60 APP".
2. Click the function-switching button in the lower-right corner.
3. Select the hoisting operation.
4. Obtain the hoisting 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 hoisting 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 hoisting flight, click "⚙" and select "Sensing Settings" to turn on the intelligent terrain-following mode.
- Try to use automatic hoisting as much as possible, as it is more efficient and safer than manual hoisting.
- When landing, switch to manual flight and operate the joystick gently.
- When the automatic hoisting 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.

Hoisting Precautions

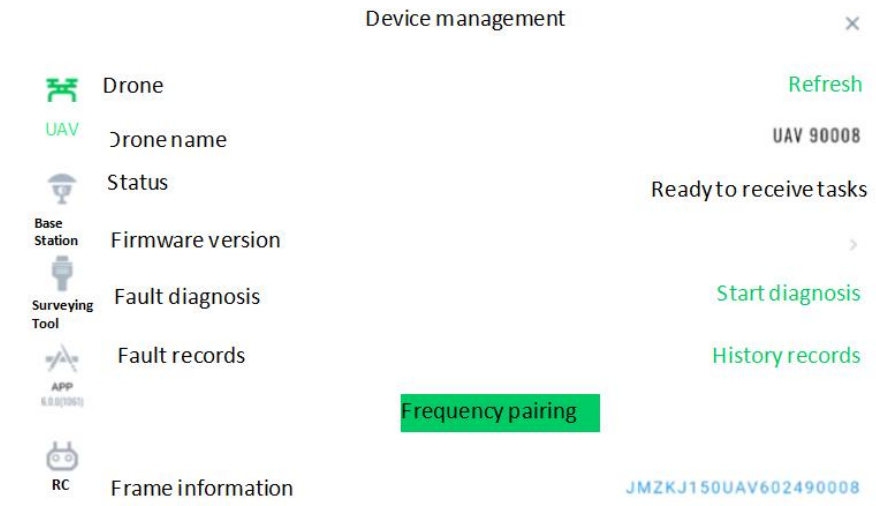
- First, ensure that the nozzles have been removed.
- It is strictly prohibited to hoist loads exceeding 60kg.
- When manually hanging heavy objects for hoisting, it is strictly prohibited to exceed a speed of 7m/s and a height of 30m (true altitude).
- It is strictly prohibited to manually/autonomously 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 hoisting 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 hoist non-agricultural operation goods such as building materials and photovoltaic panels during the hoisting 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

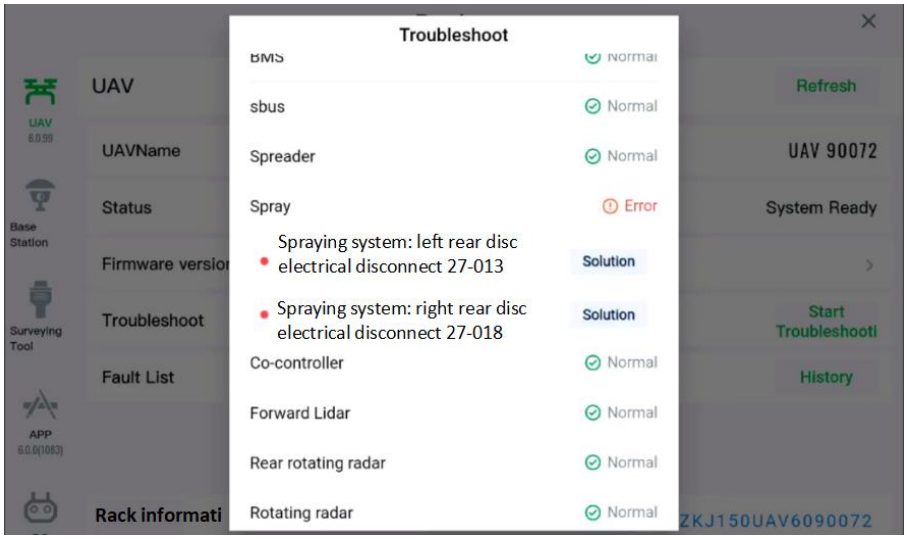
When an unexpected situation such as the inability to take off occurs during the application of the agricultural drone, you can conduct a preliminary troubleshooting in the fault-checking section to quickly resume operation and ensure operation efficiency.

Usage Process

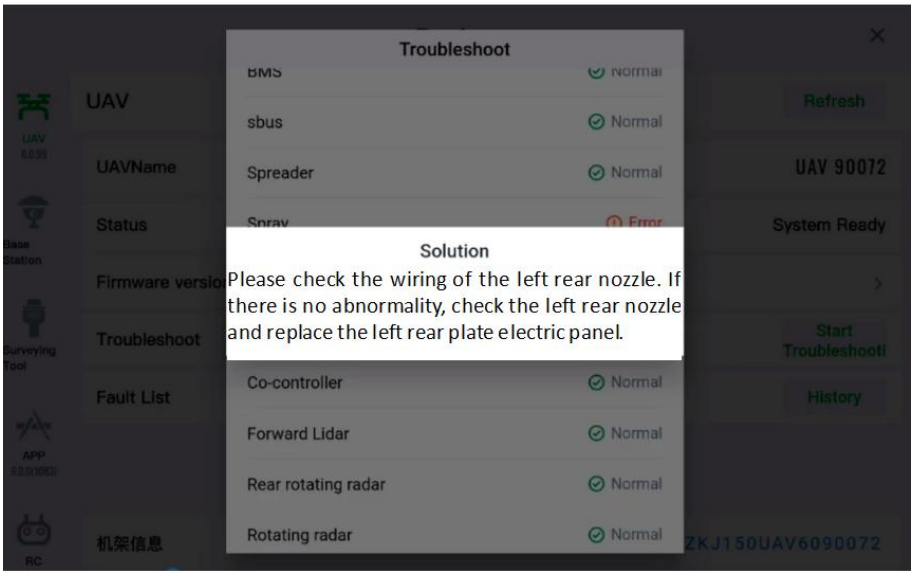
1. When the agricultural drone has a fault and prompts "Fault-Cannot Take Off", do the following:
2. Click "Device Management", and then click the "Start Diagnosis" button in "Fault Diagnosis".



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



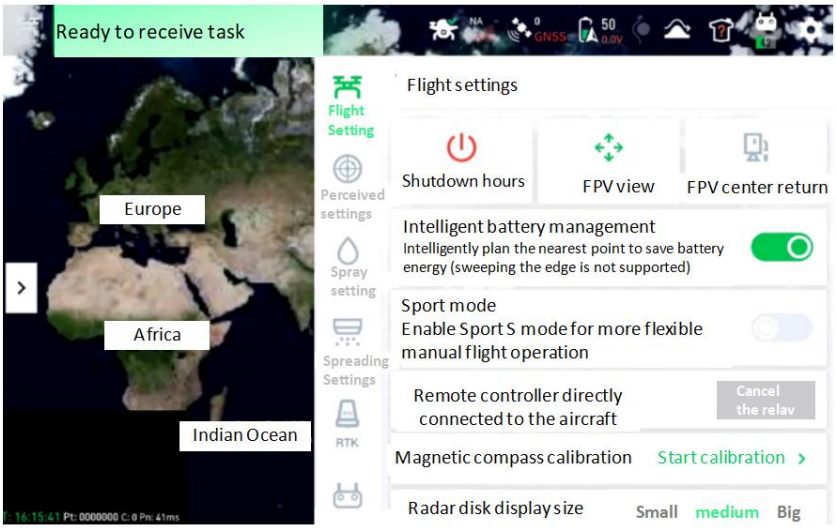
4. Click "Solution" and solve the corresponding fault according to the prompts.



- 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 rowspan="2">Flight Area Coordinates
Fill in the coordinates of the</td><td>Latitude</td><td colspan="2" rowspan="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>Longitude</td></tr>
</table>

<table>
<tr><td>center point of the restriction-lifting area</td><td colspan="6"></td></tr>
<tr><td>The start and end time of the flight
Fill in according to the actual needs</td><td colspan="6">Example: From January 1, 2019, to March 1, 2019</td></tr>
<tr><td rowspan="3">Applying Unit Review Opinion</td><td>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>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>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>Reviewer</td><td>Reviewer</td><td>Reviewer</td></tr>
<tr><td>Contact Information</td><td>Contact Information</td><td>Contact Information</td></tr>
</table>

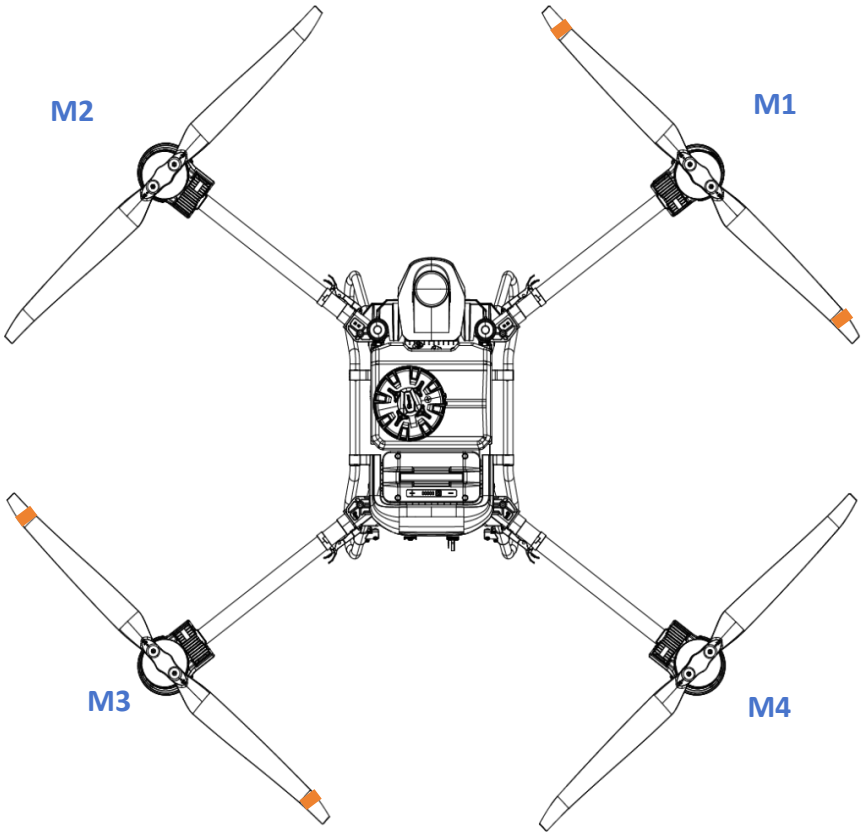
2. Obtain approval from the local authorities (public security, air traffic control).
3. Report the restriction-lifting location of Eavision Robotic.

Safety Signs

Drone Signs

Drone Signs

1. ESC high temperature sign



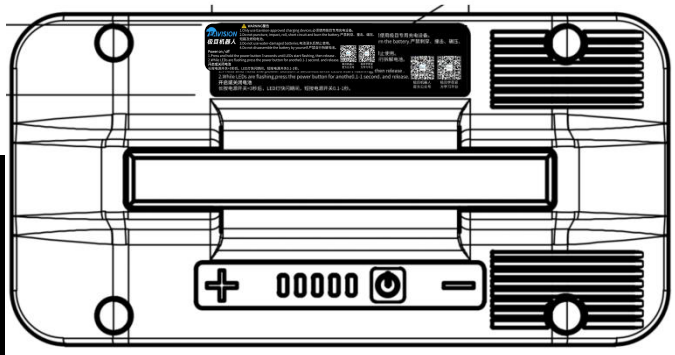
2. Propellers

⚠

- Install the M1 and M3 (blades with orange stripes on) counterclockwise (CCW), and M2 and M4 (blades with white stripes on) clockwise (CW).
- The propeller blades are sharp, please handle them with care to avoid any cuts.
- Spinning propellers can be dangerous. Stay away from spinning propellers and motors. DO NOT start the motors when there are people, animals and other obstacles nearby.
- Do not approach the propeller until it stops spinning to prevent any injuries.

Battery Signs

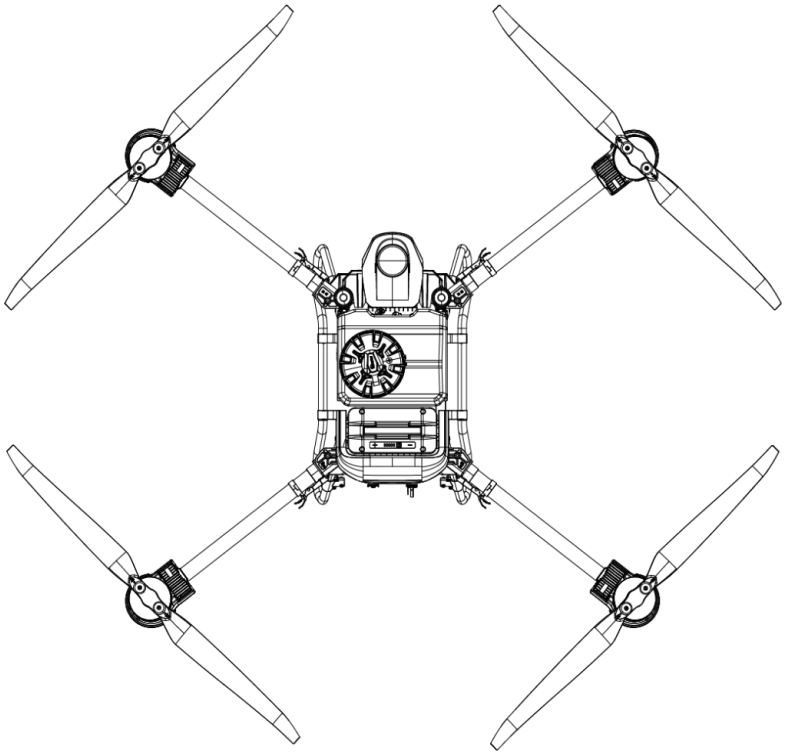
1. Battery Usage signs



Spray Tank Signs

1. Spray tank usage signs

2. Pesticide usage signs



Maintenance Instructions

To avoid potential harm and losses, please abide by the following instructions:

1. After the operation is completed every day, wait for the agricultural drone to return to normal temperature before cleaning the entire machine. Do not clean the agricultural drone immediately after the operation.

(1) Fill the operation box with clean water or soapy water and spray it out completely. Repeat this process three times to clean the spraying system pipeline of the agricultural drone.

(2) Use a clean soft cloth to wipe the camera lens, distance sensors, and other sensor components.

(3) If there is dust, liquid pesticide, etc. attached to the surface of the motor, propeller, or heat sink, it is recommended to clean the surface with a damp cloth and then dry the water stains with a dry cloth.

(4) Store the agricultural drone in a dry place.

2. After the operation is completed every day, use a clean damp cloth to wipe the surface and display screen of the remote controller.

3. Every 20 flight hours or 100 take-off and landing cycles:

(1) Check whether the propellers have cracks. If there are cracks, replace them with new ones.

(2) Check whether the propellers are loose. If they are loose, replace the new propellers and gaskets.

(3) Check whether the plastic and rubber parts are aging.

(4) Check whether the sensor components are loose. If they are, fasten them.

(5) Check whether the wire harness connectors are loose. If they are, fasten them.

4. After the daily operation is completed:

(1) After the spraying operation is completed every day or when the transfer time is more than 4 hours, be sure to clean the nozzles and pipeline system to prevent blockage, which may reduce the service life of the nozzles or cause damage.

(2) Check whether there are foreign objects on the nozzle turntable, whether the spray disk and screws are loose, and check the dynamic balance of the spray disk and whether there are abnormal noises.

(3) Clean the metal surface of the nozzles to remove dirt that may affect heat dissipation. You can use clean water or soapy water for wiping.

(4) Check whether the nozzles are installed firmly and whether the rubber of the shock-absorbing mounting seat is aging and cracked. If so, replace them in a timely manner.

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.

Table 1 Warranty List of EAVISION J70

Serial No.	Components Name	Warranty Period
1	Solenoid Valve	12 months
2	"Super Link" Communication Repeater & Its Charger	12 months
3	Surveying Took & Its Charger	12 months
4	CPU Control Module	12 months
5	Forward Lidar/Upper Rotating Radar, Rear Rotating Radar	12 months
6	Frame (Beams, Front Module Bracket, Rear Bracket)	12 months
7	Spray Tank	12 months
8	Nozzle	12 months or 22000L, whichever is earlier
9	Water Pump	30000L
10	Weight Sensor	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 is earlier
15	Cooling Charger	12 months

Table 2 List of Wearing Parts

Serial No.	Components Name	Warranty Period
16	Connectors, Wires	1 month
17	Hoses, Joints, Tees, etc.	1 month
18	Hardware, including Landing Gear	1 month
19	Propeller Blade	1 month
20	Plastic Parts	1 month

Attachment: Warranty Certificate

Suzhou Eavision Robotic Technologies Co., Ltd.					
Warranty Certificate					
(Customer's Copy)					
Product Information	Product Name	EA-J70 Intelligent Agricultural Plant Protection Drone			
	Model Specification	3WWDZ-U35A			
	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 Specifications

Specification Parameter	J70 Product Specification Parameters
Model	3WWDZ-U35A
Product Name	EA-J70
Rotor type	X4 Rotor
Empty Weight	56.8kg(with battery)
Maximum spraying takeoff weight	94.3kg
Maximum spreading takeoff weight	108kg
Maximum hoisting takeoff weight	117kg
Maximum wheelbase	2260mm
Main rotor diameter	ϕ1430mm
Working dimension	2880×3200×900（Propellers, arms unfolded）
Folding dimension	1200×670×900mm（arms folded） 1720×1860×900mm（Propellers folded）
Hovering accuracy	RTK enabled: ±10cm horizontally and ±10cm vertically. RTK disabled (within 4 minutes): ±10cm horizontally and ±10cm vertically
Landing accuracy	RTK enabled: horizontal ±30cm RTK disabled (within 4 minutes): horizontal ±50cm
No-load hovering time	15min15s
Waterproof level	IPX6K (IP67 for modules)
Anticorrosion level	NSS24H
Operating temperature	-10℃～45℃
Operating moisture	30%～90%RH
Satellite receiver frequency	BeiDou B1/B2
Obstacle avoidance	Forward Lidar/Upper Rotating Radar, Rear Rotating Radar :sense and avoid obstacles with a diameter of 1cm. High-speed obstacle avoidance at 13.8 meters per second and terrain-following in wire zones at 7 meters per second.

Spray amplitude	4～10m
Length of spray bar	1730mm
Terrain-follow slope	≤90°
Relative maximum speed of safe obstacle avoidance	≤13.8m/s
Autonomous Operating Altitude	1.5～30m
Max wind resistance	12m/s(level 6 wind)
Max flight radius	2000m
Propulsion system—motor, ESC	
Operating voltage	18V～63V
Rated power	4kW
Motor KV value	60KV
Stator size	138×25mm
Max pulling (single motor)	53kg(single motor)
Propulsion system - propeller	
Model	5620
Number of rotors	4
Rotor material	Nylon + Carbon Fiber
Mist spraying system - spray tank	
Rated volume	35L
Full-load volume	37.5L
Tank weight	5kg（pump and flow meter included）
Material	PE
Mist spraying system - nozzles	
Model	EAV-CCMS50
Number of nozzles	2 or 4
Size	Φ85mm*172mm
Weight	986g
Droplet size	10～300μm
Mist spraying system - water pump	
Liquid pump form	Impeller Pump

Quantity	2
Rated power	≤200W
Maximum flow	24L/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	1～24L/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
Forward Lidar—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	Class1Human 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-SPD70
Box capacity	70L
Spreading width	3～8m
System weight (including box)	≤8kg
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	0～25 A
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）
Surveying Tool	

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 connection	≤1min
CTB integrated shell-core supercharging battery	
Model	EAV-CTB29000A
Weight	11.8±0.5kg
Rated capacity	29000mAh
Dimensions	139×305×249mm（range of change is ±0.1mm）
Charging current	150A（5C,ambient temperature:15℃～60℃）
Fully charged voltage	59.92V
Discharging current	300A（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-C55

Size	330×339×450
Weight	19kg
Maximum charging power	9000W(double socket) 3600W(single socket)
Input voltage	AC90～264V, full range voltage input
Output voltage	40～61V
Output current	150A
Charging speed	Approximately 9 minutes with a generator of 9000 watts or higher
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-CTB29000A
Heat dissipation effect	The ambient temperature should not exceed 40°C, and during the battery charging process after operation, it should never trigger the high-temperature protection at 65°C (cell temperature).
Remote controller	
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)
Base station	
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

The official We Chat official account of Eavision Robotic

The 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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