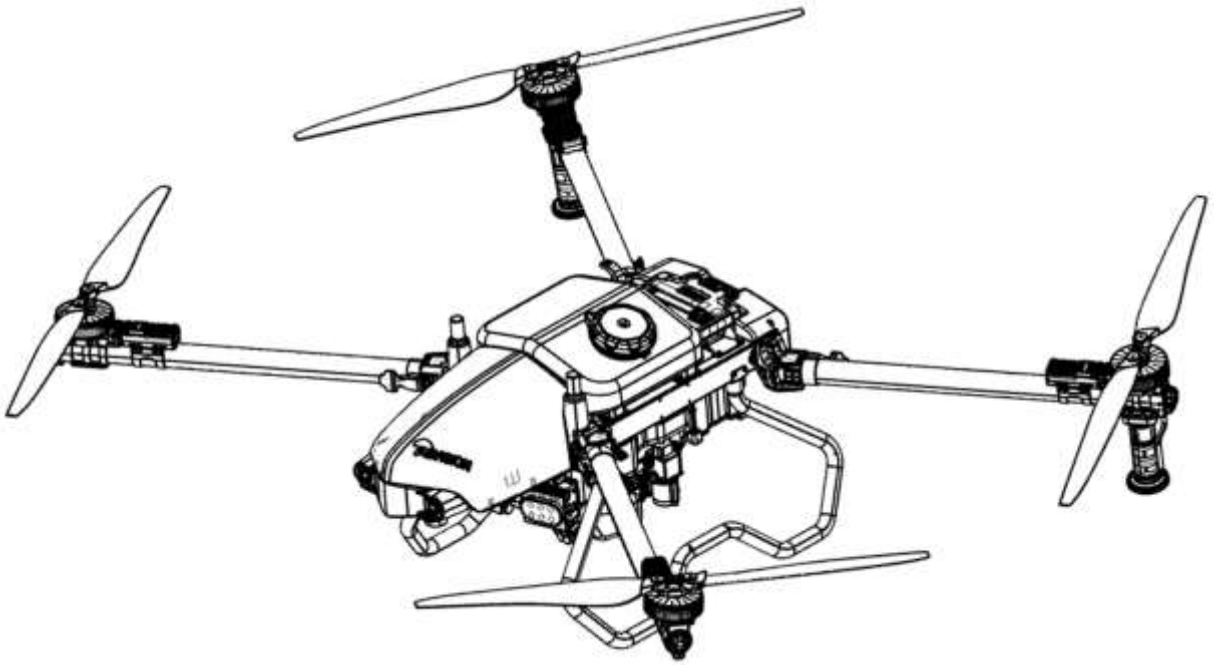
EA-30XP Agricultural Spraying Drone

User Manual V2.0

2023.1



3WWDZ-30C

Intelligent Quadrotor Agricultural Spraying Drone

Suzhou EAVISION Robotic Technologies Co., Ltd.

To Users

Thank you for choosing EA-30XP, the agricultural spraying drone developed and manufactured by EAVISION. To operate the product correctly and avoid damage or serious injury, please read and follow all the instructions in the user manual, and carry out maintenance in a timely and meticulous manner.

Navigate to a Topic

View a complete list of topics in the table of contents. Click on a topic to navigate to that section.

Contents

Disclaimers

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

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

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

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

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

Unmanned aerial vehicle (UAV) operators should abide by the regulations from self-regulatory organizations such as the International Civil Aviation Organization, the Federal Aviation Administration, and their local aviation authorities. Once you use this product, it is deemed that you have read the relevant regulations and documents, and EAVISION is not responsible for any relevant legal responsibilities arising from the use of this product in violation of laws and regulations.

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

Safety Notice

Rules for the use of pesticides

- Avoid the use of powder pesticides as much as possible as they may reduce the service life of the nozzle. Be sure to clean the nozzle carefully each time after spraying powder in case of nozzle blockage and damage.

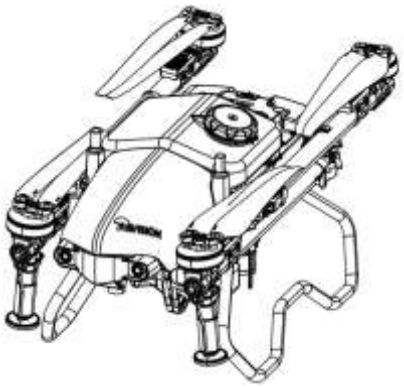
- Pesticides are toxic and needed to be handled in strict accordance with their specifications.
- Residue on the equipment caused by splashes or spills when pouring and mixing the pesticide can irritate your skin. Make sure to clean the equipment after mixing.
- Use clean water to mix the pesticide and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

Operation

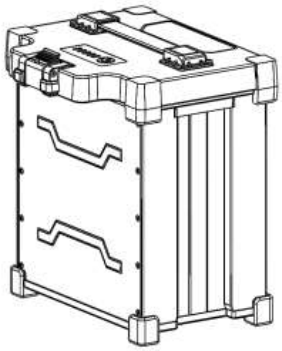
- Make sure that your operations do not violate any applicable laws or regulations, and that you have obtained all appropriate prior authorizations. Consult the relevant government agency or authority before flight to ensure you comply with all relevant laws and regulations.
- Make sure that the battery is firmly inserted into the drone and the arms are unfolded and arm locks are firmly tightened. Avoid flying over or near crowds or hazardous materials.
- Do not fly under the influence of alcohol or drugs or in poor physical or mental condition.
- Do not operate the drone alone outside the training area without sufficient training. Seek help from experienced users before and during flight.
- Stay away from the rotating propellers. And avoid any obstruction, interference or assault from humans, animals or objects during flight.
- Avoid flying near strong electromagnetic sources such as high voltage towers, large power equipment, radio and television transmission towers, and mobile phone base stations. EVASION assumes no liability for damage or injury incurred from operation in such areas.
- Make sure you comply with all relevant laws and regulations before flight. Factory settings for the drone: 20m of max altitude, 10m/s of max speed, and 2000m of max distance.
- Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and
  (2) This device must accept any interference received, including interference that may cause undesired operation.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

List of Items

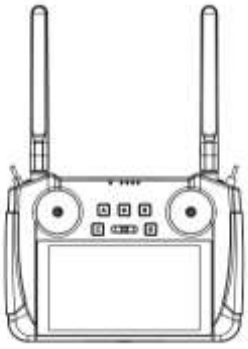
Check that all of the following items are included in the package. If there is any missing item, please contact your dealer promptly.



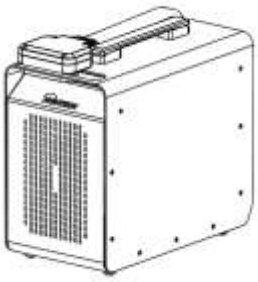
EA-30XP Drone×1
(Including spray tank and propeller holders)



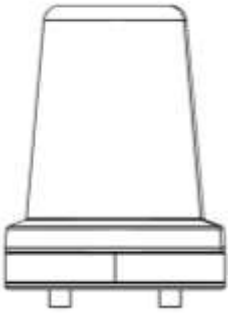
Smart Batteries×2



Remote Controller×1
(Including power adapter and power cord)



Smart Charger×1



Differential Positioning Module×1
(In the tool box)

RTK Mobile Base Station

Tripod

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

Base station box contains RTK mobile base station x 1, tripod x 1 (standard edition)

Product Overview

Product description

The new generation of the EA-30XP comes with leading binocular vision system and ultra-low terrain follow technology, allowing the drone to automatically avoid obstacles in fertile fields, hilly and mountainous terrains. The mist nozzle produces droplets to penetrate various kinds of crops. For spreading operations, users can purchase the optional spread package to transform the drone into spread configuration. The drone has a protection rating of IP67 (IP66 for battery), which contributes to easier cleaning and higher efficiency of operation.

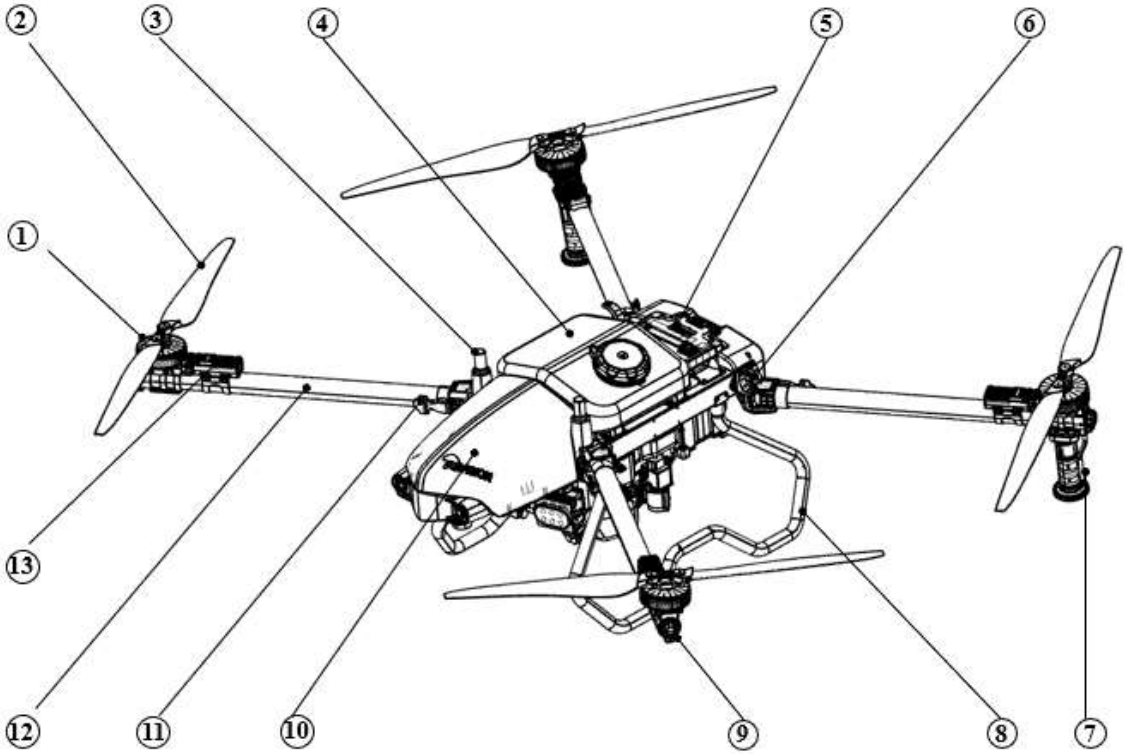
Feature highlights

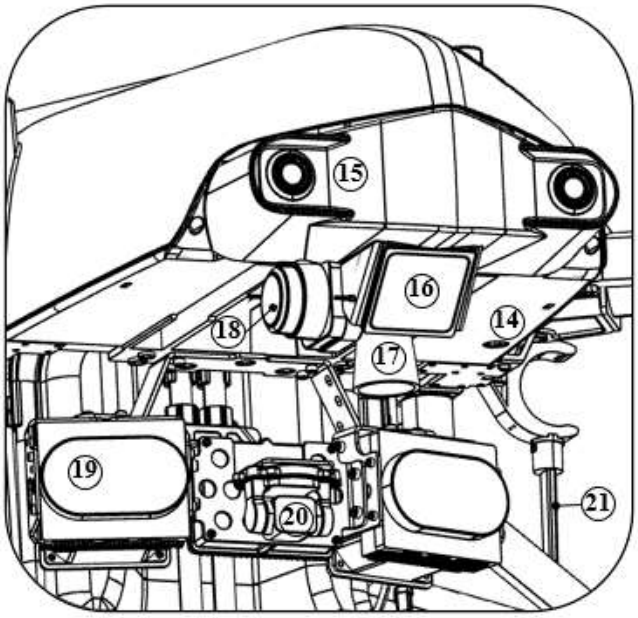
- Consisting of the self-developed flight controller - eaPro and uniCom3.0, EA-30XP highly integrates flight control, environment perception and data transmission, allowing users to check key data from plot surveying to operations through one touch.
- The new power system has increased the load capacity by 12%, and the optimized ESC layout has improved its anti-interference ability to ensure stable and reliable flight.
- The integrated spray tank is with a capacity of up to 32L. When switching to spreader mode, the pump and flow meter can be removed with the whole spray tank to reduce the invalid load.
- The updated spreading system is with a spread capacity of 40L, and can be changed quickly with the spraying system. Equipped with the integrated intelligent weighing system and the blade stirrer, the drone can accurately discharge and avoid getting stuck. The maximum opening valve has been increased by 33%, improving the overall spreading efficiency by 30%.
- The integrated mist spraying system - CCMS-L20000 has effectively reduced cable wear, enhanced the seal structure, and reduced nozzle jam. It can produce droplets to penetrate crops with size ranging from 10 to 300 microns, which reduces drift, increases the pesticide amount on the back of the leaves, improves utilization efficiency of pesticides, and ensures the effectiveness of agricultural protection for all types of crops.
- The updated FPV high-definition camera enables 120° vertical rotation and 130° ultra-wide viewing angle. Its high-stable PTZ guarantees no sense of delay in the video screen. Combined with AR auxiliary function, landscape and tree-shaped obstacles can be displayed at decimeter level, making the flight and surveying more convenient, and manual operation more friendly.
- The new function of three links in one enables fast connection, and instant flight when you turn on the devices. Data transmission link combined with dual-card link, guarantees no fear of signal blockage and weak network.
- The mini magnetic surveying tool - EA-SUT 4.0 uses an integrated antenna to receive accurate position information. Equipped with the magnetic base, the surveying tool can be absorbed to the remote controller support, making the installation easy and convenient. It can also be connected to the remote controller quickly and stably through serial interface.

- With built-in large-capacity battery, the local base station - EA-BAS 3.0 can operate continuously for 20 hours. It can work even longer with the external power supply through the charging socket on the back. Its display panel is concise and clear, and has the cloud base station alignment function: the base station can be placed arbitrarily before operation without affecting the operation accuracy.
- The drone can fly as low as 0.7m from the canopy, shortening the droplet settling distance, significantly reducing evaporation and drift, enhancing the penetration of the liquid, and ensuring the effectiveness of agricultural protection for all types of crops.
- The integrated night flight system - EAV-NTL 3.0 is waterproof and heat resistant. The irradiated area is as much as 400 square meters, and the uniformity of light is increased by 10%, which significantly enhances the ability of autonomous terrain following at night in hilly and mountainous areas.
- The A-B route function enables users to record points A and B in the plot and adjust the parameters manually to plan the route.
- The intelligent resuming flight function optimizes the flight path automatically, effectively reducing full-load and no-load flight time, and increasing operating efficiency by up to 30%.

Drone

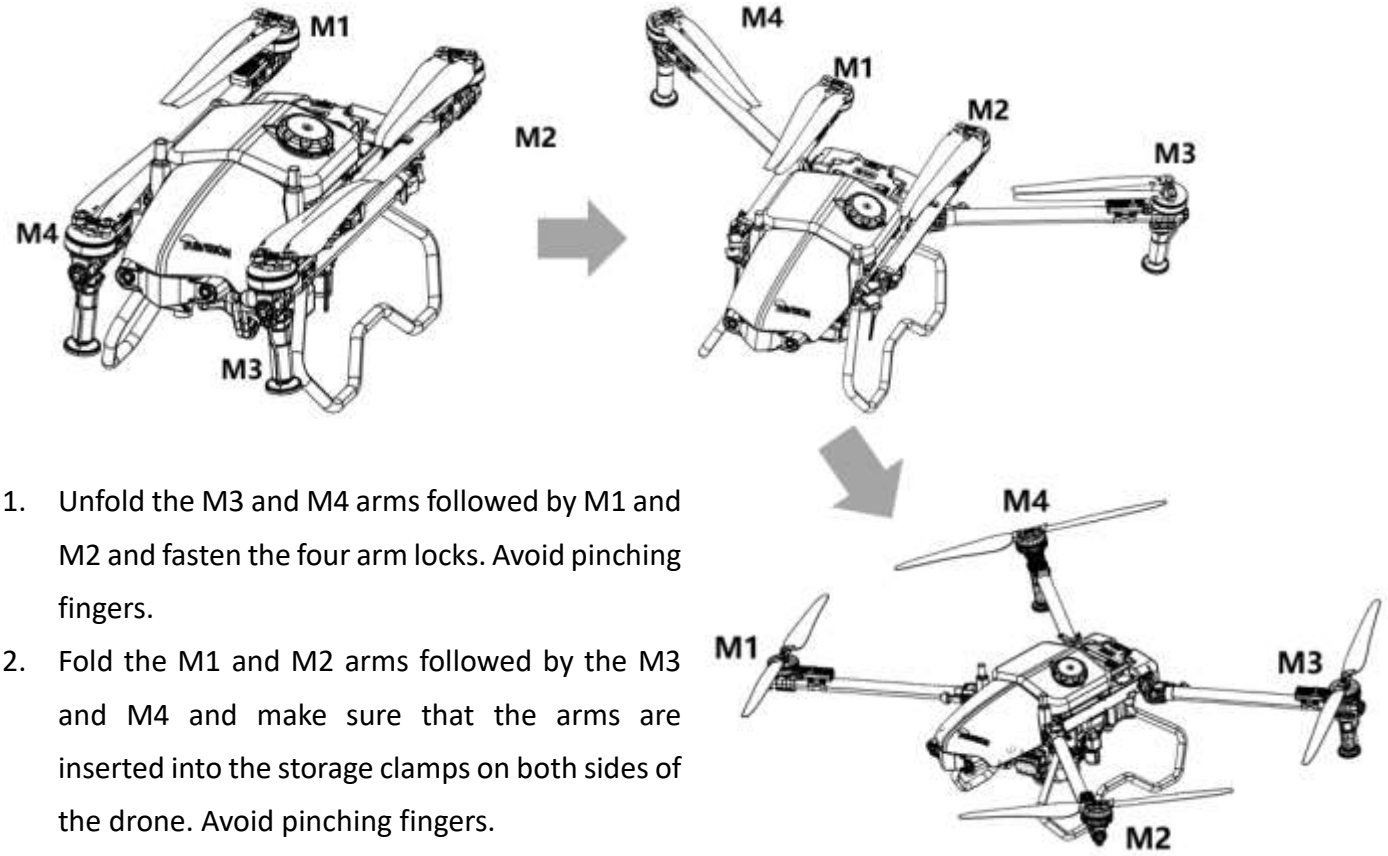
Drone components





1. Motor
2. Propeller
3. RTK Antenna
4. Spray Tank
5. Smart Battery
6. Arm Storage Clamp
7. Mist Nozzle
8. Landing Gear
9. Rear Navigation Light
10. Cover
11. Arm Locks
12. Frame Arm
13. Electronic Speed Control
14. Backup Power Switch
15. Binocular Lens
16. Millimeter wave radar
17. Ultrasonic Radar
18. Lidar
19. Night Navigation Light
20. FPV Camera
21. Antenna

Preparing the drone



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

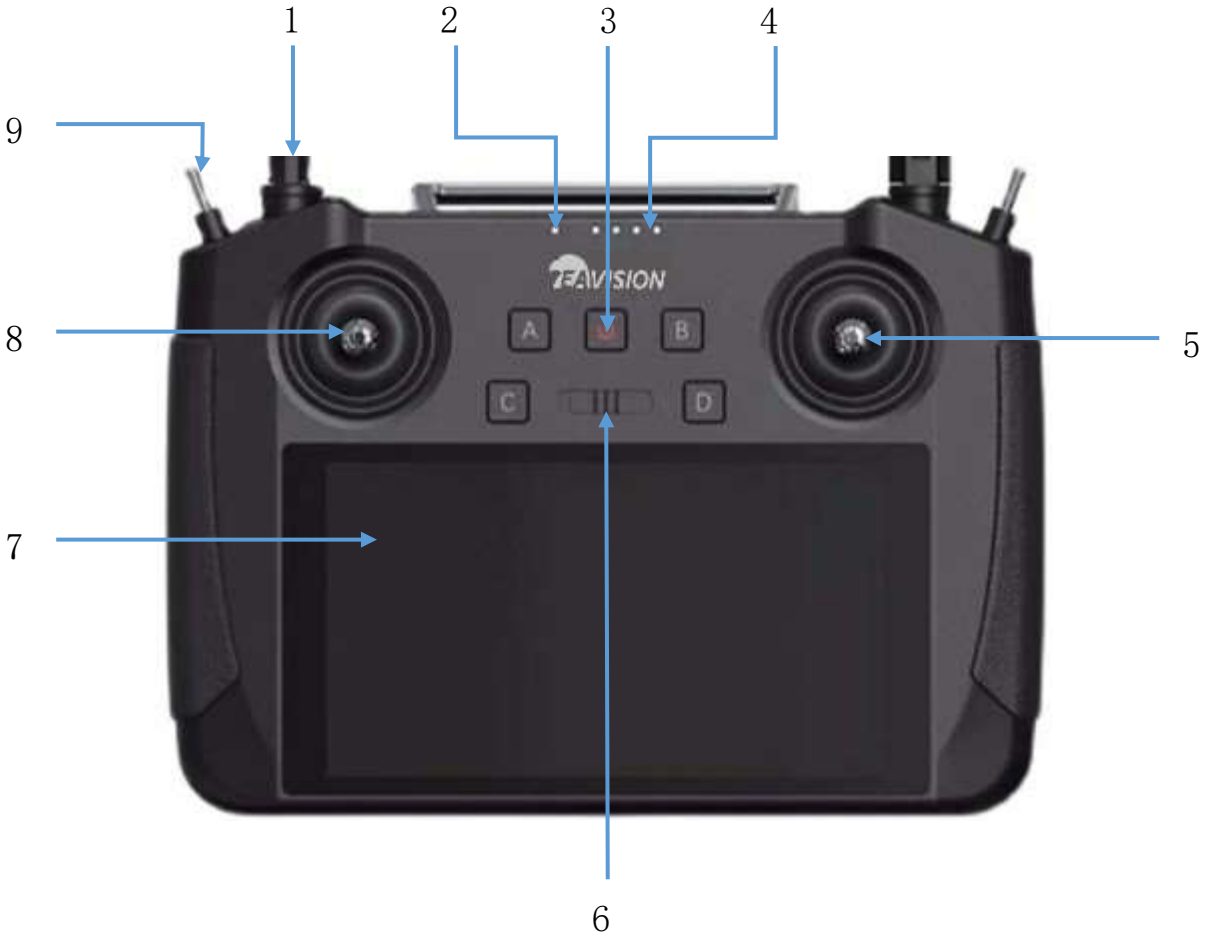
Remote Controller

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 1.2 to 1.8 kilometers. Its powerful computing performance reduces video transmission display delay to 180ms with Qualcomm eight-core CPU.

The remote controller uses a 5.5 inch 1920*1080 high-definition display with a maximum screen brightness of 1000cd/㎡, nearly twice that of a common smartphone, and is still clearly visible in direct sunlight.

Remote controller components



1. Antenna (Relays drone control and image transmission signal)
2. Status LED
3. Power button
4. Battery level LED
5. Right joystick (controls UAV movement)
6. Spray switch (in manual operation mode, switch to start or stop spraying)
7. Touch screen (Tap to select. Android-based device to run Smart AG Pro App)
8. Left joystick (controls UAV movement)
9. 3-Stage switch (auto mode/manual mode)

Remote controller top interface

Remote controller bottom interface

Remote controller operation

Turning on and off

1. When the remote controller is powered off, press the power button to check the battery level of the internal battery. Recharge before use if the battery level is low.
2. When the remote controller is powered off, press the power button to lighten the battery level LED, then press and hold to power on the remote controller. Wait till all LEDs to light up in sequence.
3. When the remote controller is powered on, press and hold the power button for about 2 seconds until the shutdown button pops up. Tap it to turn off the remote controller.

- Screenshot: when the remote controller is powered on, press and hold the power button for about 2 seconds until the screenshot button pops up. Tap it to screenshot.

- Standby: when the remote controller is turned on, press the power button to switch to the energy-saving mode.
- It takes about 90 seconds to power on the remote controller for the first time. And it takes about 30 to 35 seconds to change battery during operation (with backup battery).

Charging

Charge the battery with the AC 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 Status LED turns solid red when charging.
3. The Status LED turns solid green when fully charged.

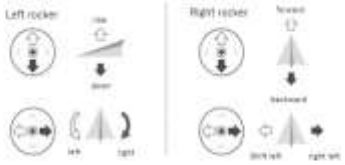
- The remote controller cannot be charged with the 5V adaptor, please use the original charger.
- Make sure the remote controller is powered off when charging, otherwise, it will be overheating.

Operating the drone

You can set the joystick under System Settings of Siyi Remote Controller.

This section explains how to control the orientation of the drone through the remote controller. Control can be set to Mode 1 (American standard), Mode 2 (Japanese standard), or Mode 3 (Chinese standard). Below refers to Mode 1 (American standard).

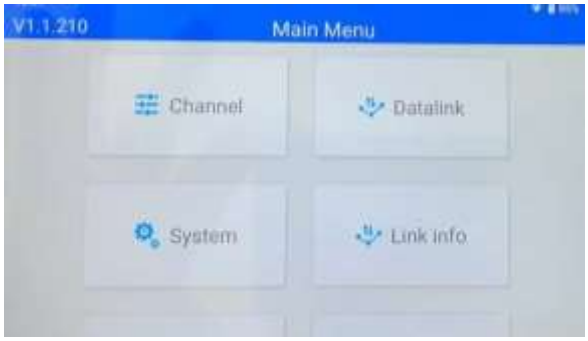
Mode 1

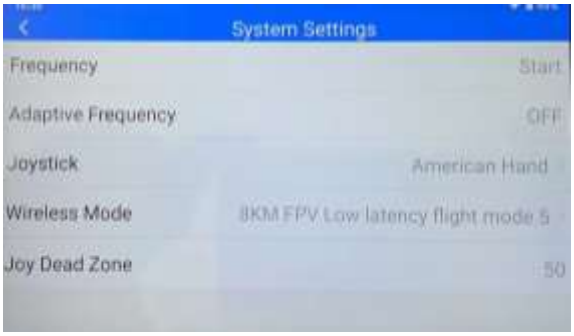


Linking the Remote Controller

The drone has been connected to the remote controller, and you can refer to the instructions below for connection.

1. Enter the System menu in Siyi Remote Controller app, go to System Settings, and tap Start Linking.





2. The Status LED on the remote controller blinks red, indicating that the linking is in progress.
3. Press the linking button in the receiver for 2 seconds until the status LED blinks red.

4. Wait for 5 to 10 seconds for linking, and the status LEDs of the remote controller and receiver will turn solid green.

Operation Control

- Flight mode switch: push the dial in the upper left corner of the remote controller to the top for auto flight, and to the bottom for manual flight.
- Spray button: in manual operation mode, push the dial to the left to stop spraying and the opposite direction to start spraying.
- FPV: turn on SIYI FPV on the remote controller or enter auto mode to display the FPV view. Toggle the 3-stage switch to adjust the FPV angle.

Remote controller LEDs

The status LED indicates different meanings with three colors of light flashing and different flashing frequencies.

Status LED	Description
Red light flashing quickly	Linking
Alternating red-green-yellow flashing slowly	Picture transmission starting up
Alternating red-green-red-green-red flashing	Unexpected shutdown of Android system
Red light flashing slowly	Firmware mismatch
Red light flashing three times	Image transmission initialization failed
Red light flashing four times	Joysticks need to be calibrated
Yellow light flashing slowly	The remote controller power supply voltage is abnormal
Yellow light flashing twice	Remote controller Bluetooth not connected
Solid red light	No transmission with the receiver
Alternating yellow-red flashing Alternating yellow-red-red flashing Alternating yellow-red-red-red flashing	Remote controller temperature first-level alarm Remote controller temperature second-level alarm Remote controller temperature third-level alarm
Alternating green-red flashing Alternating green-red-red flashing Alternating green-red-red-red flashing	Receiver temperature first-level alarm Receiver temperature second-level alarm Receiver temperature third-level alarm
Flashing green light	The faster the flashing frequency, the worse the signal strength

Precautions for use

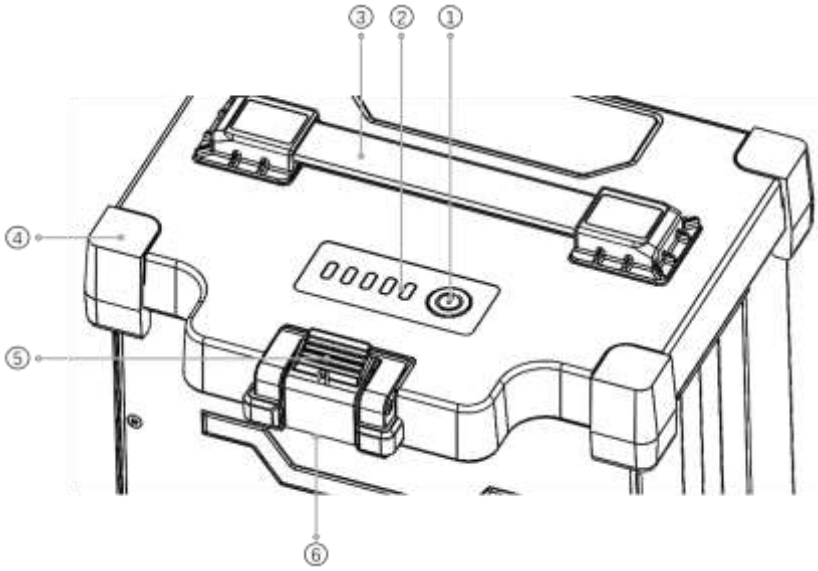
1. Do not use the remote controller to control the drone near crowds, obstacles, strong electromagnetic source, or other areas that are likely to cause unnecessary economic losses or even personal injury.
2. When operating, do not cover the remote controller antenna or block signal transmission in other ways.
3. During operation, keep a visual line of sight between the mid-section of the remote controller antenna and the drone, and the shade of green plants will seriously affect the remote controller signal distance.
4. The top of the remote controller antenna is the part with the weakest signal transmission. When operating, avoid pointing it to your drone.
5. Do not cut off the power of the remote controller when the drone motor is still running.
6. Always check the battery level of the remote controller before operation.

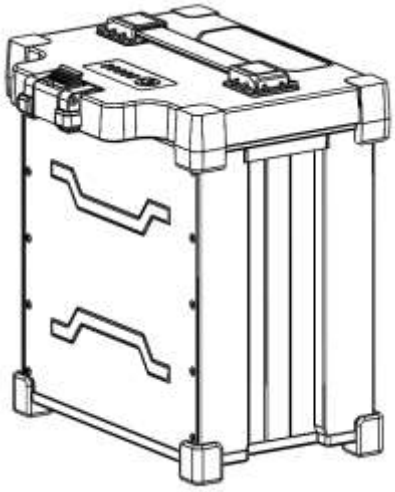
Smart Battery

Smart battery overview

EA-30XP intelligent flight battery adopts a new high-energy density battery cell and an advanced battery management system to provide sufficient power for the drone. Metal casing and silicone protective cover effectively protect the battery. The battery capacity is 29000mAh and the nominal voltage is 51.8V

Smart battery components





1. Power Button
2. LED Indicator
   From left to right are power LED1, LED2, LED3, LED4, fault light
3. Handle
4. Silicone Protective Cover
5. Clamp
6. Power Interface

Battery function

JM2-29000mAh Smart Flight Battery has the following functions:

1. Battery level display: press the battery power button to check the current battery level.
2. 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.
3. 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.
4. 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.

5. 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.
6. 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 ten days.
7. 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.
8. 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.

Battery use

Turning on and off

1. In sleep mode or shutdown mode, press and hold the power button (T > 3 seconds) until all LEDs flash, then press the power button to turn on the battery.
   1) The battery will be kept off if there is no operation during LEDs flashing.
   2) The battery will be kept off if either operation is performed.
2. In the power-on mode, press and hold the power button (T > 3 seconds) until all LEDs flash, then press the power button to turn off the battery.
   1) The battery will be kept on if there is no operation during LEDs flashing.
   2) The battery will be kept on if either operation is performed.

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

⚠

- Make sure the battery is fully charged before each flight.
- If the drone enters the low battery alarm mode, land and stop flying as soon as possible, and replace the battery.
- In a low temperature environment, it is recommended to preheat the battery to above 5°C before flight, preferably to 20°C. Do not charge or discharge the battery when the temperature is below 0°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	90%--100%
On	On	On	Flash quickly	Off	80%--90%
On	On	On	Off	Off	70%--80%
On	On	Flash quickly	Off	Off	60%--70%
On	On	Off	Off	Off	50%--60%
On	Flash quickly	Off	Off	Off	40%--50%
On	Off	Off	Off	Off	20%--40%
Flash quickly	Off	Off	Off	Off	0%--20%

The flashing frequency is 2Hz, on for 0.25 seconds and off for 0.25 seconds.

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

LED1 (Green)	LED2 (Green)	LED3 (Green)	LED4 (Green)	LED5 (Red)	Current Battery Level
On	On	On	On	Off	99%--100%
On	On	On	Flash slowly	Off	90%--98%
On	On	On	Flash quickly	Off	80%--90%
On	On	Flash slowly	Off	Off	70%--80%
On	On	Flash quickly	Off	Off	60%--70%
On	Flash slowly	Off	Off	Off	50%--60%
On	Flash quickly	Off	Off	Off	40%--50%
Flash slowly	Off	Off	Off	Off	20%--40%
Flash quickly	Off	Off	Off	Off	0%--20%

1. The fast-flashing frequency is 2Hz, on for 0.25 seconds and off for 0.25 seconds. And the slow-flashing frequency is 0.5Hz, on for 1.2 seconds and off for 0.8 seconds.
2. When charging battery, the LED will flash to indicate the charging status. After charging, please disconnect the battery from the charging device.

Warning prompt

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

LED1	LED2	LED3	LED4	LED5 (Fault Indicator)	Description
Off	Off	Flash quickly	Off	Flash quickly	Charging overcurrent / Discharging overcurrent
Off	Off	Flash quickly	Flash quickly	Flash quickly	Short circuit protection
Flash quickly	Off	Off	Flash quickly	Flash quickly	Charging at low temperatures / Discharging at low temperatures
Flash quickly	Off	Off	Off	Flash quickly	Charging at high temperatures / Charging at high temperatures
Off	Flash quickly	Flash quickly	Off	Flash quickly	Prior discharge failed
Off	Flash quickly	Off	Flash quickly	Flash quickly	MOS open circuit / MOS short circuit
Off	Flash quickly	Off	Off	Flash quickly	Unit overvoltage/ Excessive differential pressure / Unit overdischarge
Flash quickly	Off	Flash quickly	Off	Flash quickly	Connector overtemperature (≥80°C)
Flash quickly	Flash quickly	Flash quickly	Flash quickly	Flash quickly	NTC open circuit /short circuit; excessive differential pressure; connector overtemperature (≥100°C); 0V

Off	Off	Off	Flash quickly	Flash quickly	485 communication failure

Battery storage & transport

1. After each flight, disconnect the drone from the battery, check the battery power interface and clean up the debris.
2. Make sure the battery is powered off and disconnected from the drone or other device before transportation.
3. Keep batteries out of the reach of children. If a child accidentally swallows a part, seek immediate medical attention.
4. Do not place batteries near heat sources, in direct sunlight or in a car on a hot day.
5. Store the batteries in a dry environment. Do not place the battery in water or in a place where water may leak.
6. Do not store or transport batteries together with metal objects (such as glasses, watches, metal necklaces, hairpins, etc.), inflammable or explosive materials.
7. Put the battery on flat ground to avoid damage to the battery from sharp objects.
8. Do not store the battery for a long time after being completely discharged in case of over-discharging.
9. 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.

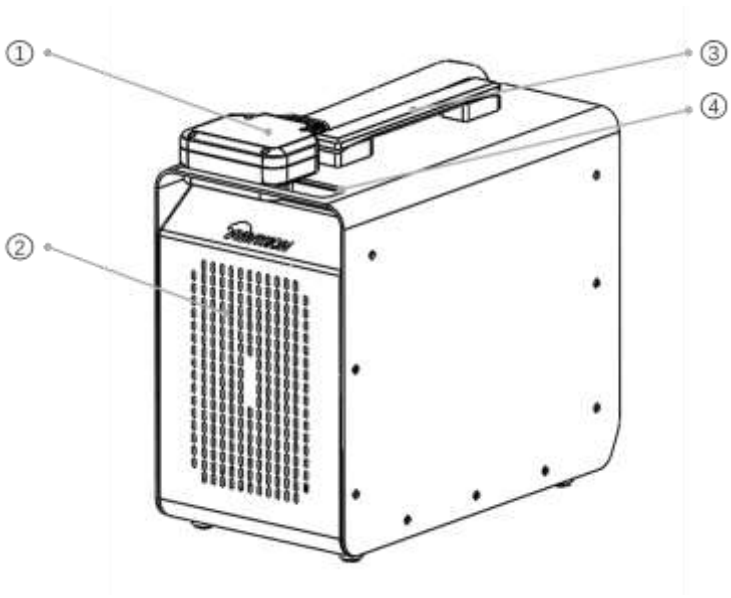
4. Keep the battery off before mounting or removing the battery from the drone. Do not remove or insert the battery while the battery is turned on, otherwise the power connector may be damaged.
5. The battery should be used between -5°C and 65°C. High temperature may cause the battery to catch fire or 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.

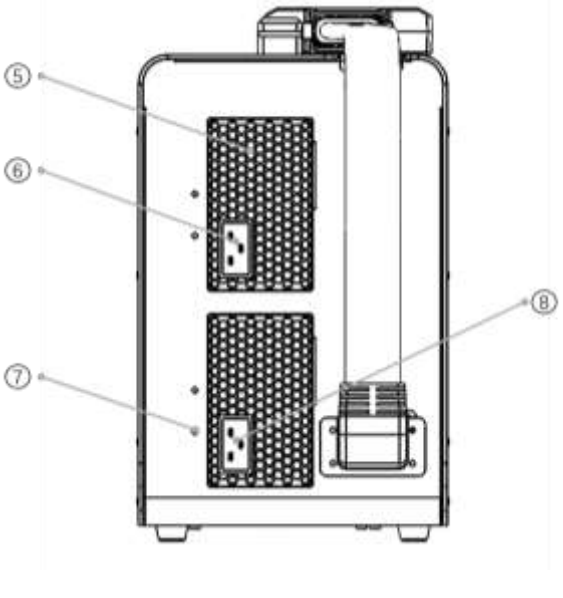
Smart Charger

Smart charger overview

The JM2-29000mAh smart battery can be fully charged in 8-10 minutes with the JM-C3-7000 smart 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 7200W. After connecting to the charging management App through Bluetooth, users can monitor the status of the charger and battery cells in real time. The intelligent charging management system can adjust the charging current according to the battery status, and the charger has multiple intelligent protection functions to avoid damage from over-temperature, over-voltage, under-voltage, short circuit and ensure charging safety.

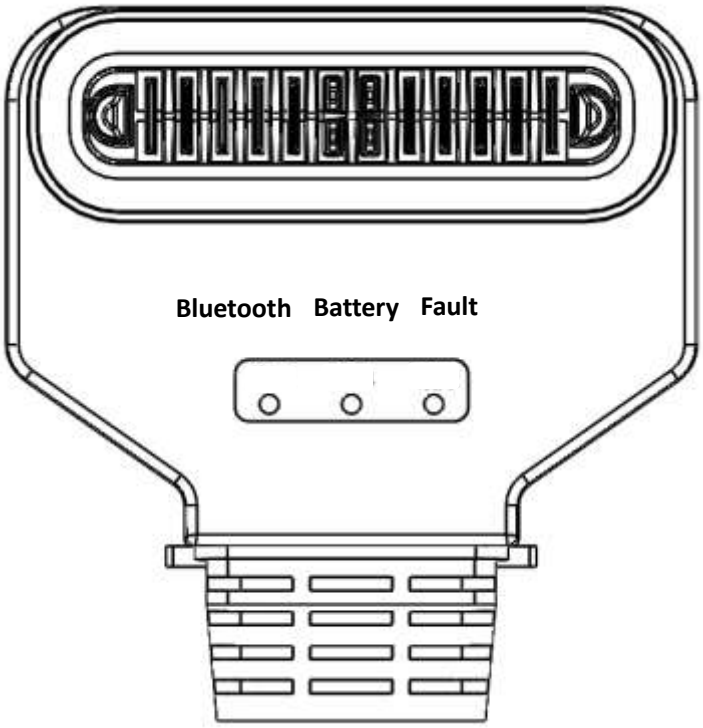




Smart charger components

1. Charge Controller
2. Front Panel Heat Sinks
3. Handle
4. Charge Controller Clamp
5. AC Power Dustproof Screen
6. Power Input Interface
7. Ground Interface
8. Power Input Interface

Charge controller



Battery charge status LED

LEDs indicate the charging status of the inserted channel battery

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

Bluetooth LED

LED indicates Bluetooth connection status

1. Blink green indicates that the app is to be connected.
2. Solid green indicates that the charger is connected to the App.

Fault LED

LED indicates errors

Blink red indicates a charger or battery alarm.

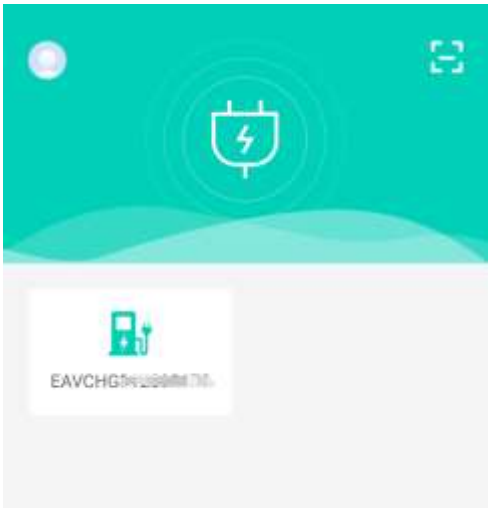
⚠ When the warning light turns red, stop charging immediately and check the App alarm information. Resume charging only after the red light goes out.

Charger use

Checklist before use

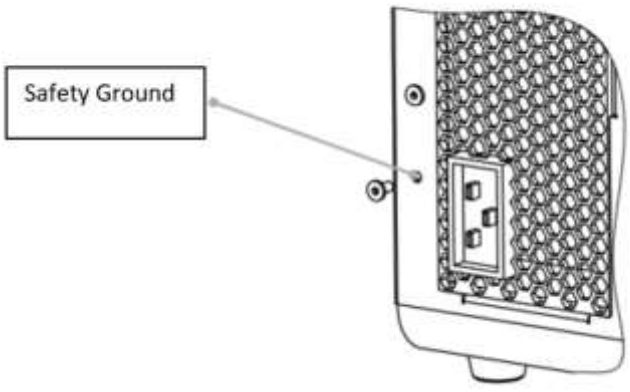
- **Appearance check**
  1. Make sure that the charging controller and power input cables are not broken.
  2. Make sure that the charging controller pins are not misshapen.
  3. Make sure that the generator supply cable and socket are not cracked, chipped, misshapen, or blocked.

- **Power-on check**
  1. Make sure that the fan runs normally after connecting to the power supply.
  2. Check whether the fault LED of the charging controller is off which indicates that the charger self-check is normal.
  3. Turn on the Bluetooth of the mobile phone, open the charging management app, find the corresponding charger ID and connect it, and check the status of the charger.



Use

1. The charger must be well grounded when in use. Please use a grounding wire to ground the shell of the charger. Remove the screw of the grounding interface and fix the grounding wire, as shown in the figure below.



2. Connecting the charger to household electricity or a generator.
3. Insert the charging cable connector into the battery to start charging.

The AC end of the charger is equipped with two power input sockets.

1) In a home environment, make sure that the socket and wiring power support 7000W. It is recommended to use a single plug. The charger will automatically determine and charge with a low power of 3000W to avoid the danger of overloading the home grid due to excessive current. Charging time is about 30 minutes.
2) For generators of 9000 watts or more, the charger will charge the battery with the power of 7000 watts when plugged into the input power socket. Charging time is about 11 minutes.

⚠
- The charger interface can be connected to two household circuits at the same time, one household circuit and one generator, or two generators. When the two sockets are used at the same time, the charging power is superimposed, and make sure the power of the wires and sockets of household circuits are greater than 7000W.
- Before connecting the charger, make sure various ports and input harnesses of the charger are not cracked, chipped, blocked, or misshapen.
- Before charging, make sure the battery is not cracked, chipped, or misshapen, and the port is not blocked.

---

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

Firmware upgrade

1. Make sure no batteries are plugged into the charger.
2. Turn on Bluetooth and connect the app. Tap Upgrade.
3. After the upgrade is completed, unplug the power cord and restart the charger.

⚠
- Do not insert the battery into the charger during the charging upgrade process.
- Do not cut off the power of the charger during the upgrade process, and keep the distance between the device and the charger.
- Please try again if the upgrade fails during the upgrade process.

Storage and maintenance

1. When charging is completed or the charger is not in use, please disconnect the battery charging cable from the charger, disconnect the power cable, and fix the battery charging cable and the controller to a fixed position.
2. The charger can be carried by handle and the charging cable should be secured before handling.
3. Please keep the charger away from direct sunlight, rain or humidity when storing it for a long time.
4. The charger should be stored away from heat sources, high pressure, water, flammable gases, corrosives and other dangerous items.
5. Please clean the charger heat sinks regularly to ensure effective charging.

Precautions for use

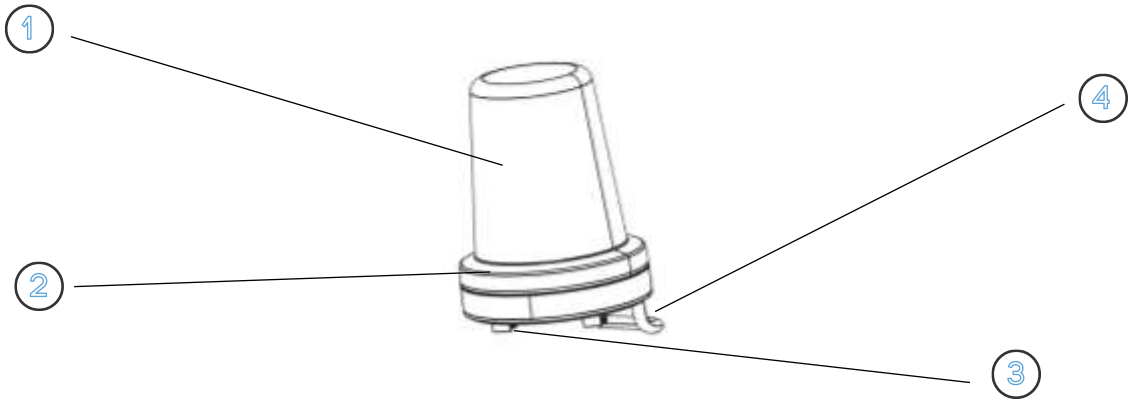
1. The AC power input port and generator plug are with high voltage, and it is strictly forbidden to touch them with hands.
2. The charger is a product with high current, and must be connected to the ground wire to ensure reliable grounding before using.
3. It is strictly forbidden to use this product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

Surveying Tool

Surveying tool overview

EAVISION surveying tool is a product developed for high-precision surveying with an integrated antenna receiving accurate position information. It can be connected to the remote controller quickly and stably through serial interface. The magnetic base makes it easy to absorb the surveying tool to the remote controller.

Surveying tool components

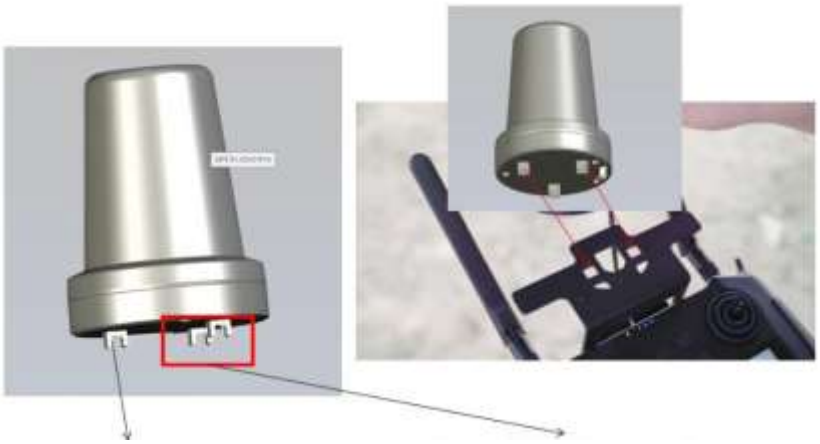


1. Antenna Cap 2. Magnetic Base 3. Fixed Slot 4. Connecting cable

Surveying tool operation

1. Connect the connecting cable through 4P DATA port on the remote controller.

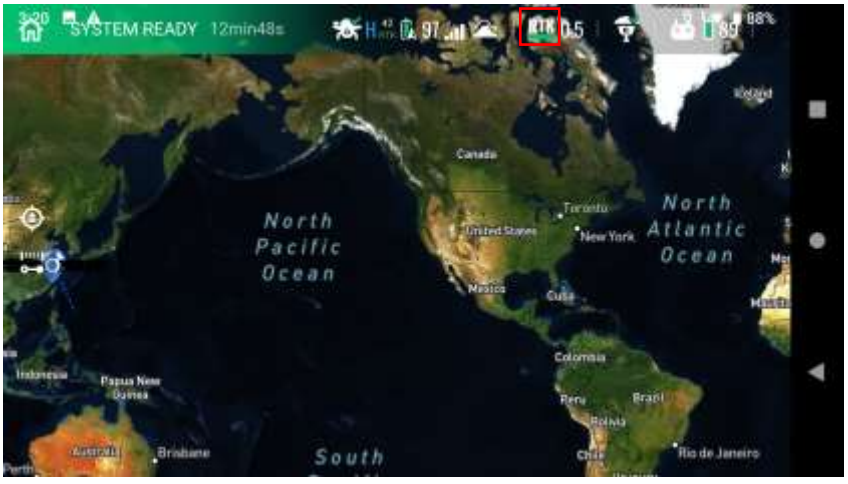
2. Insert the slots beneath the surveying tool into the holes of the remote controller support, and the magnetic surveying tool will be fixed on the support.



The independent slot is in the front Insert the parallel slots into the support

3. After that, enter the app and tap Device Management to check the connection status.

4. Check for the RTK status of surveying tool before operation.

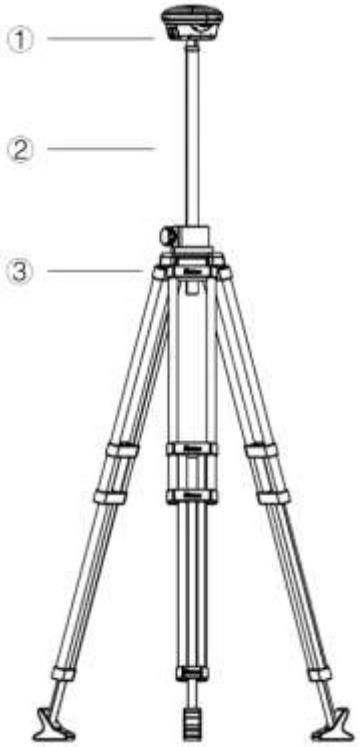


RTK Base Station

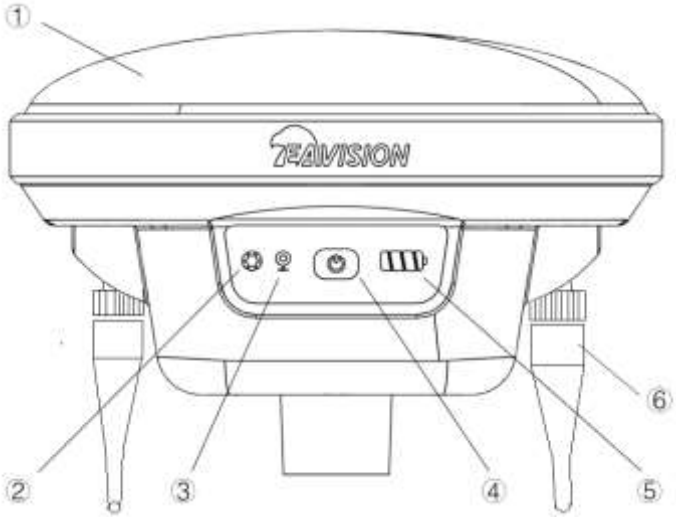
Product overview

EAV-BAS30 is a high-precision satellite signal receiver, which can receive BEIDOU, GPS, Galileo, GLONASS, and other satellite signals. Equipped with the wireless data transmission radio, the built-in high-precision RTK module, and the surveying tool, it ensures the autonomous operations of the drone in areas with weak or no network.

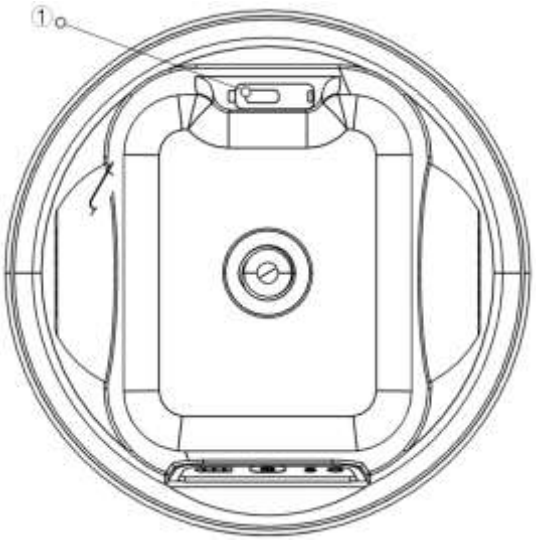
List of items



①Main Body ②Extension Rod ③Tripod



①GPS Antenna ②Status LED ③GPS LED ④Power Switch ⑤Battery Level LED ⑥2.4G Antenna



①TYPE-Charging Port/Portable Charger Port

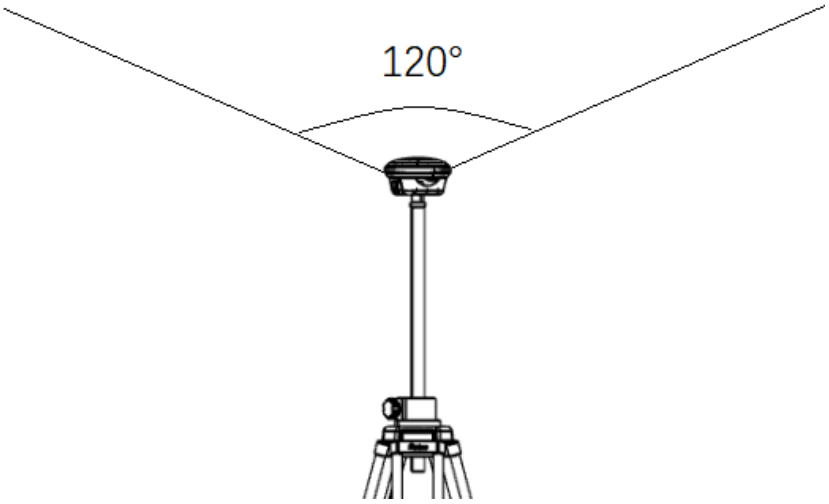
LED description

Base Station UI

	LED Signal	Description
Status LED	Off	Power off
	Solid Blue	Working
	Flashing Blue	Base Station Align Mode
	Solid Red	Initializing
	Flashing Red	Fault
DPGS LED	Off	Power off
	Solid Yellow	Initializing
	Flashing Yellow	Receiving Signal (Number of Satellites ≤5）
	Flashing Blue	GPS Mode
	Solid Blue	RTK Mode

Assemble and use

Set the mobile base station in an open area and keep it horizontal. Make sure there's no obstruction between the remote controller and the base station, and the GPS antenna is unobstructed. Make sure nothing obstructs the area within 120° above the main body of the base station. Set the base station higher for better transmission distance when surveying and operating in hills and mountains.



(1) Base station assembly, power-on, power-off, power check

a) Extend the tripod to set the base station to an appropriate height.

b) Assemble the 2.4G antenna and make sure it's tightened firmly.

c) Press and hold the power switch for 3s until the battery level LED flashes, then press to power on.

d) Press the power switch to check the battery level. Users can only power on the base station after the battery level LED shows the power and is off.

e) Press and hold the power switch for 3s until the battery level LED flashes, then press to power off.

(2) Ready for work

a) Make sure the status LED is normal after powering on the base station.

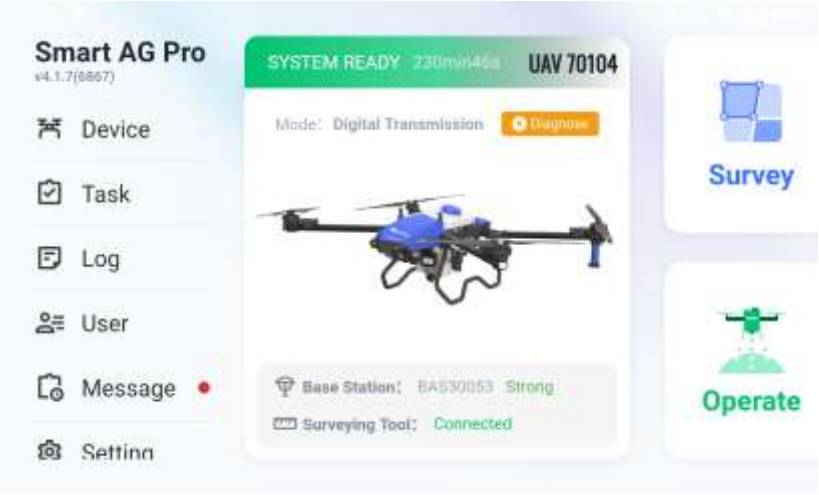
b) It takes about 90s for the base station to enter RTK mode in an open area.

c) The base station is ready for work when the status LED shows solid blue and the DGPS LED shows solid blue.

(3) Surveying tool connection

a) Mount the surveying tool to the remote controller.

b) Enter EAVISION Smart AG Pro app and tap Device.



c) View the connection status of the surveying tool. Make sure the Status shows normal.

(4) Base station status check

a) Tap Base Station, then the dropdown button to choose the type.

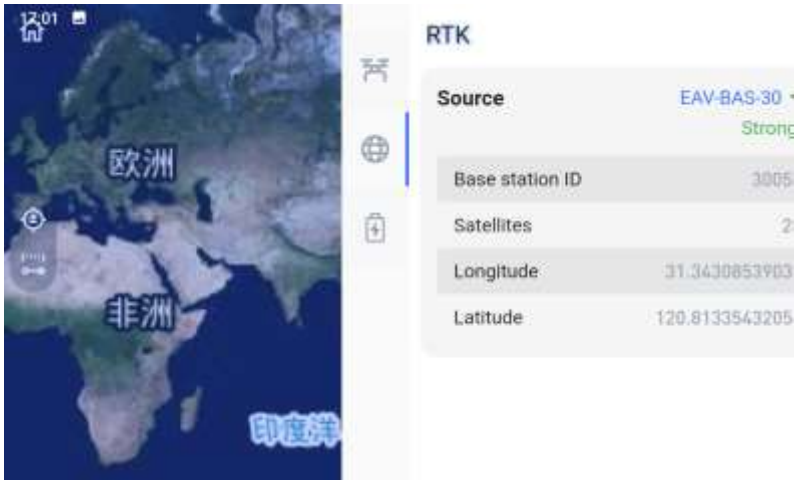
b) Choose EAV-BAS30, tap the icon of the base station and it will be automatically connected. One base station can be connected to multiple remote controllers to offer centimeter-level positioning service

for multiple EAVISION drones.

c) After connecting to the base station, its information can be viewed on the app.

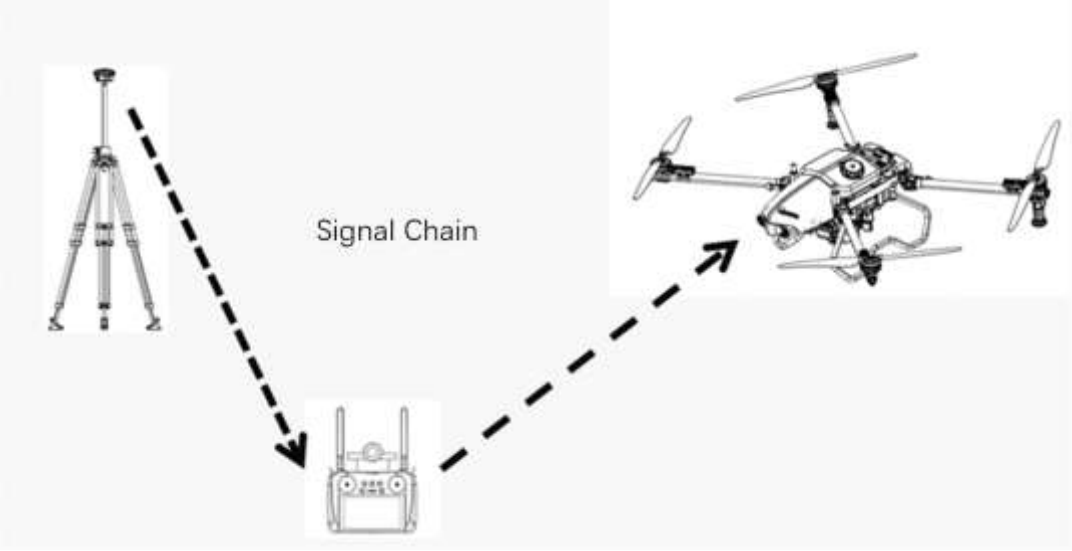
(5) Operations

a) Surveying: enter Survey view, tap Setting to check the RTK connection status of the surveying tool. Start surveying when the RTK connection is normal. Make sure there's no obstruction between the remote controller and the base station to avoid losing the position information.



b) Operations: enter Operate view, tap Setting to check the RTK connection status of the drone. Start operation after the drone is ready to receive tasks without warning prompts.

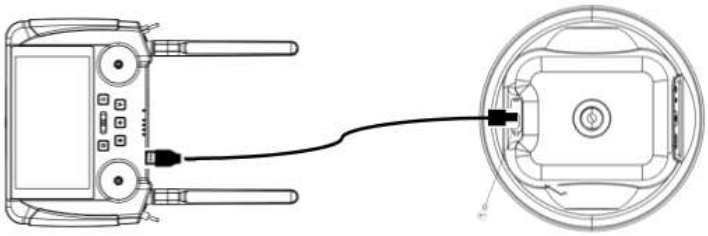
c) Make sure there's no obstruction between the remote controller and the base station, and nothing obstructs between the remote controller and the drone during the operation. Otherwise, the signal at any end may be blocked which may lead to the loss of the RTK positioning signal.



d) Make sure the location of the base station in operation is the same with that of the base station in plot surveying, and the error shall be less than 0.5m, or the operation accuracy will be decreased.

(6) Firmware upgrade

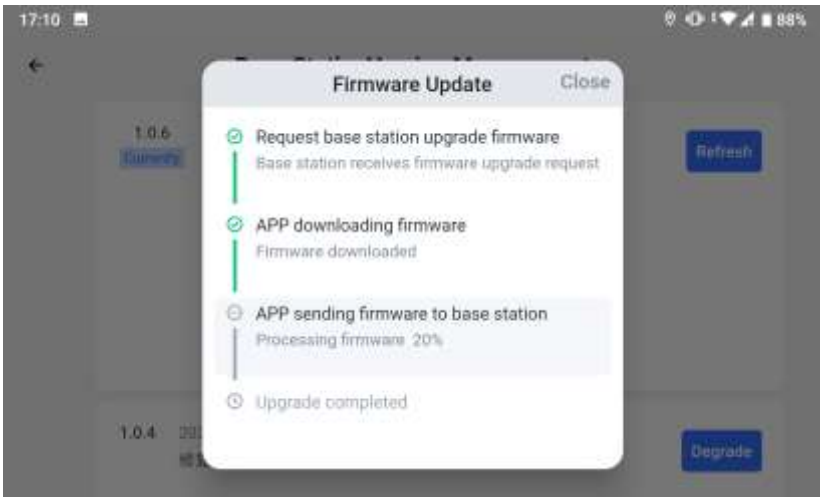
a) Connect the base station with the remote controller through Type-C data cable.



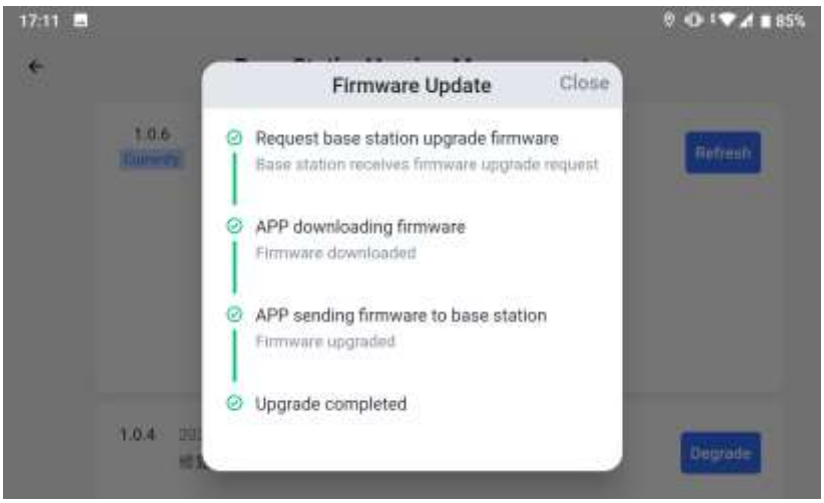
b) Tap Upgrade on Device view.

c) Choose the corresponding firmware, tap Upgrade.

d) The firmware will be upgraded automatically.



e) The system will indicate the upgrade status after that, and the remote controller will restart automatically. Use the base station after the status LED shows solid blue.



(7) Base station location management

Current location data can be kept in the base station, and there's no need to realign next time in the same location. Tap Manage Base Station Location, choose the previous location data, tap Use the Location, and then Save Base Station Location to apply the location data.

(8) Base station charging

Charge the base station with an adapter higher than 5V/3A due to large battery capacity of the base station. Plug a Type-C charger or portable charger into the charging port of the base station, and the base station will be automatically turned on, and the bars of the battery level LED will flash in turns, until the base station is fully charged. The charge time is about 8 hours.

Note: power off the base station manually after the charging is complete to avoid power consumption.

Storage and maintenance

- Clean the base station after use and keep the GPS antenna clean.
- When not in use, keep this product in a dry, ventilated and non-flammable environment.
- Keep away from strong magnetic objects, heat sources, high-voltage electricity, corrosive liquid/gas, flammable and explosive and other dangerous goods.
- Check the battery level every 4 months and charge when necessary. Keep the power at 50% - 60% all the time, which will benefit the battery life.

Precautions for use

- Use the product in an open area, and keep away from crowds, buildings and electromagnetic interference sources.
- Make sure nothing obstructs within 20 meters of the antenna and the base station.
- Set the base station as high as possible when necessary to ensure normal signal.
- Make sure all connectors are firmly connected to avoid the risk of falling of the base station.
- Do not use the product in thunderstorms.
- Keep the location of the base station in strong winds.
- Do not use the base station after falling or crashing.
- Keep away from fire sources, heating furnaces, and other heat sources.
- Do not use bumpy, leaky, or damaged batteries. Contact EAVISION distributors in this case.
- Use the battery when the temperature outdoors is between -10 and 40℃. Higher temperature may

cause fire or explosion, and lower temperature may reduce the performance of the battery.

- Do not disassemble the battery by any means or damage it with a sharp object.
- Do not splash the acid or alkali liquid on the surface of the base station.
- Avoid collision during transportation.
- Check the base station status regularly, and contact the EAVISION distributors in time for damaged base station or antenna.
- Make sure the tripod is set stably.

Start Operation

Preparation

The drone is equipped with a built-in SIM card to ensure the normal operation. And an additional SIM card can be prepared to install into the drone (only for cloud mode).

The system can switch between two operators, bringing better user experience and stable connection to the drone. According to the local operator circumstance, users can install another SIM card to ensure more stable connection to the drone.

Product	Item	Description
Drone	Camera lens	Make sure the camera lens is intact and clean.
	Radars	Make sure the radars are intact and clean, and the cable connection is normal.
	Night lights	Make sure the night lights are clean and no water inside.
	Spray tank	Make sure the spray tank is intact, and the cable connection is normal.
Remote controller	Appearance	Make sure the appearance is not cracked, chipped, or misshapen, the remote controller is with full battery level and can be powered on properly.
	Cloud base station	Make sure the cloud base station service is valid
Surveying tool	Appearance	Make sure the appearance is intact, and the connector is not damaged.
Battery	Battery	Make sure the battery is with full battery level, and the appearance is not cracked or swollen.
Charger	Charger	Make sure the appearance is intact, and the connector is not damaged.
Generator	Generator	Make sure the appearance is intact, and the connector is not damaged.

Base station	Base station	Make sure the appearance is intact with full battery level, and the LED status is normal.

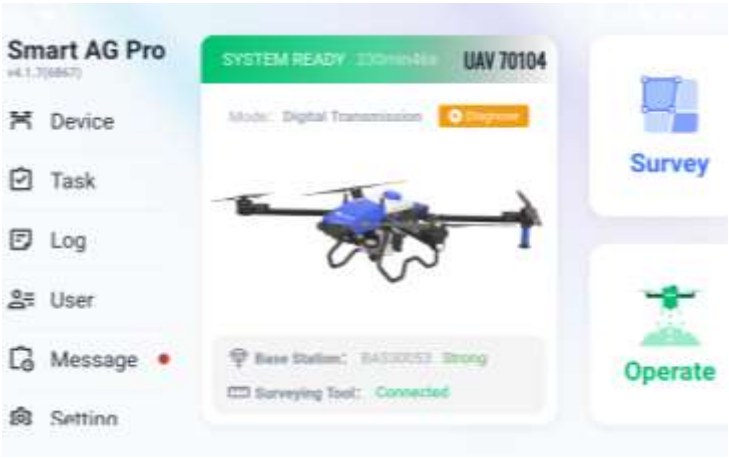
Preflight checklist

1. Appearance check

Product	Item	Description
Drone	Frame and overall appearance	Make sure the appearance is not cracked, chipped, or misshapen
	Camera lens	Make sure the camera lens is intact and clean.
	Radars	Make sure the radars are intact and clean, and the cable connection is normal.
	Night lights	Make sure the night lights are clean and no water inside.
	All modules	Disassemble the cover and check for firmly connection of all modules.
	All connecting cables	Make sure they are connected correctly and firmly.
	Motors and propellers	Make sure they are clean, tightly secured, and can work normally. Propeller blades and arms can be unfolded and the clamps are locked tightly.
	Battery, spray tank	Make sure they are secured firmly in place
	Pipes	Make sure the pipes are not blocked, damaged or leaky.
	Nozzles	Make sure the nozzles work properly, no blockage or jam.
Remote controller	Remote controller	Make sure the remote controller is with full battery level and can be powered on properly.
	Surveying tool	Make sure the surveying tool can be connected to the remote controller stably, and the cable connection is normal.

2. Connection status check

Go to the main page, tap Diagnose above the picture of the drone, and you can check the connection status of the drone.



Drone connection modes: data transmission mode, disconnection mode

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

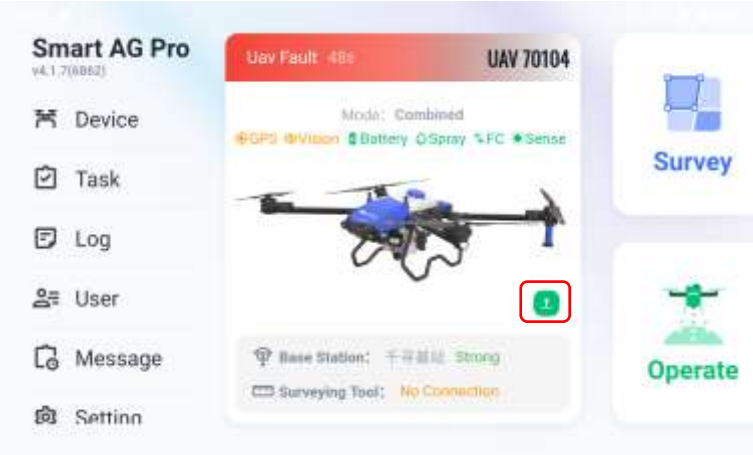
- Disconnection mode: the drone has been disconnected from the remote controller, and unable to fly

3. Upgrade check

(1) After connecting to the drone, a popup will show on the main screen of the app which displays the software upgrade information.

(2) Upgrade process

① Click the up-arrow icon at the lower right corner of the drone on the main screen to upgrade.



② Or click Device Management on the main screen to upgrade.

③ Click Upgrade and the new firmware version will be displayed. Click the version to upgrade if needed.

Operation Environment

1. It is recommended to fly with wind speed lower than 6m/s to avoid personal and property damage and ensure spraying effect, and operate with wind speed lower than 3m/s for herbicides, fungicides and insecticides that are prone to drift.
2. Do not use the drone in adverse weather conditions such as winds exceeding 6m/s, heavy rain (precipitation rate exceeding 25mm in 12 hours), fog, snow, lightning, tornadoes, or hurricanes.
3. Only fly in open areas. Tall buildings and steel structures may affect the accuracy of the compass and the GNSS signal.
4. Pay attention to utility poles, power lines, and other obstacles. Do not fly near or above water, people, or animals.

5. Maintain VLOS of the drone at all times, and avoid flying near obstacles, crowds, animals, and bodies of water.
6. Avoid flying in areas with high levels of electromagnetism, including mobile phone base stations and radio transmission towers.
7. Do not fly over 3km above sea level.
8. EAVISION Smart AG Pro app will intelligently recommend the payload weight limit for the tank according to the current status and surroundings of the drone. Do not exceed the recommended payload weight limit when adding materials to the tank. Otherwise, the flight safety may be affected.
9. Make sure that there is a strong GNSS signal and the DGPS antennas are unobstructed during operation.
10. **Do not operate the drone indoors.**
11. **Only obstacles with a diameter of over 5cm can be sensed by the drone. Do record power lines, branches, and other small obstacles before operation.**
12. **Do not exceed the max obstacle avoidance speed of 5m/s.**

Flight Limits

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

Calibrate

Calibrate the weight sensor

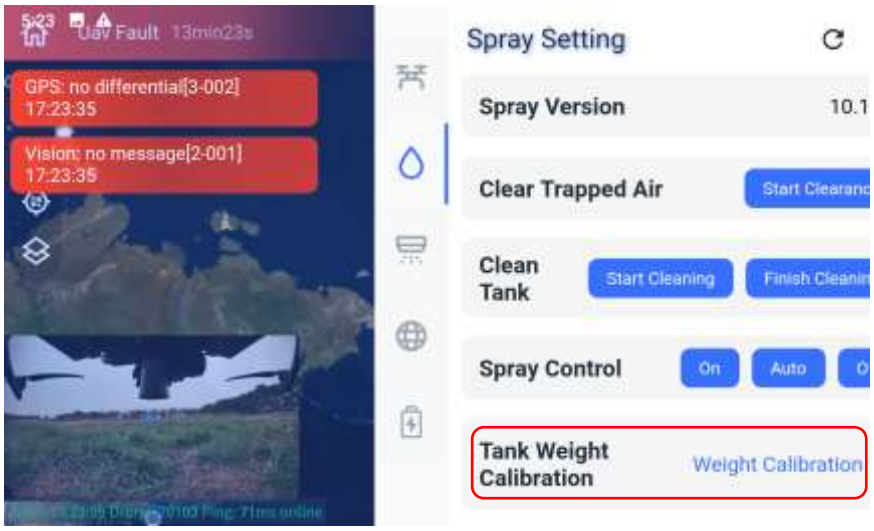
The weight sensor has been calibrated before shipment. Users shall calibrate when the app indicates the liquid amount has not been calibrated or the number is not 0.

1. Preparation

Put the drone horizontally in an open area, and avoid tilting or shaking during calibration.

2. Calibration

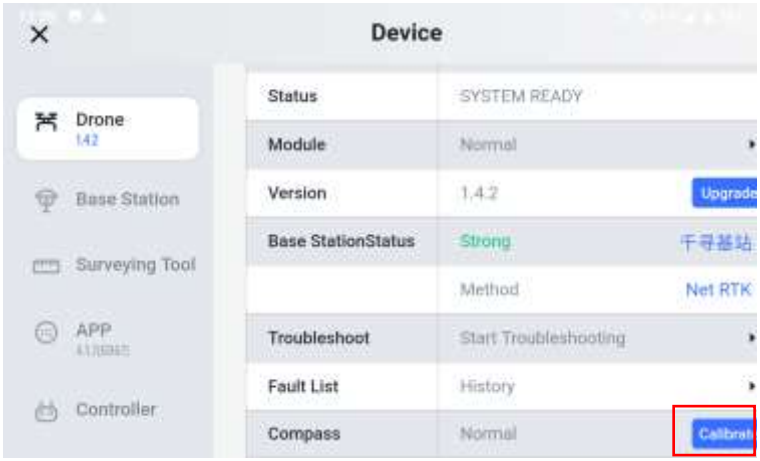
1) Tap Weight Calibration to enter the operation view.



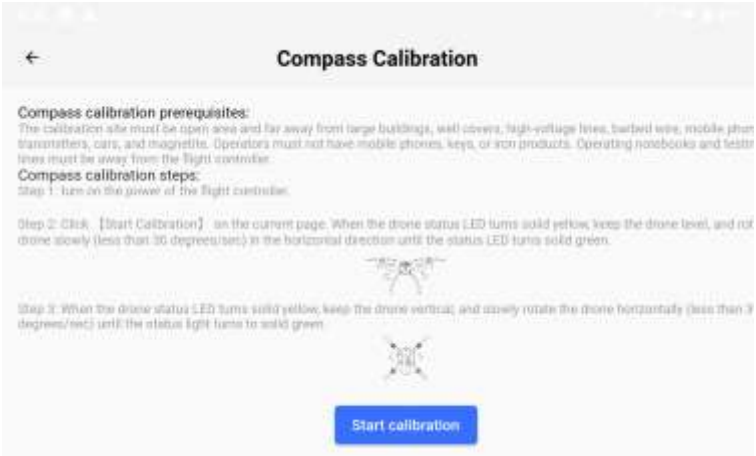
2) The system will show “Please raise the tank. Keep the weight sensor 5~10cm away from the drone side rail.”
3) Tap Confirm. The countdown begins, and the system will calibrate automatically.
4) After the countdown, the system will show “Please put the spread tank horizontally. Note: Keep the bottom of the spread tank clean and horizontal.”
5) Tap Confirm. The countdown begins, and the system will tare automatically.
6) Tap Confirm and check whether the weight number shows 0 on the main screen once the calibration is completed successfully.
7) Users can proceed spreading now.

Calibrate the compass

1. Enter EAVISION Smart AG Pro app, tap Device Management on the main page, and then tap Calibrate the Compass.



2. The compass calibration instructions will show here.

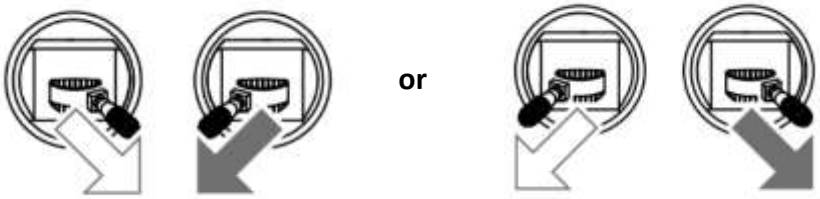


3. Tap Start Calibration to procced according to the prompts.

Manual Mode

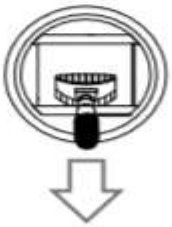
Takeoff

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



Landing

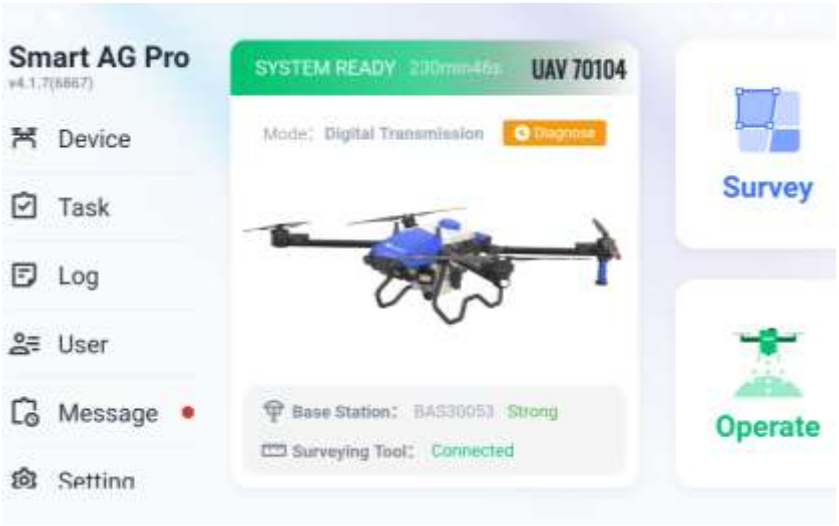
When the drone has landed, push and hold the throttle stick down. The motors will stop after three seconds.



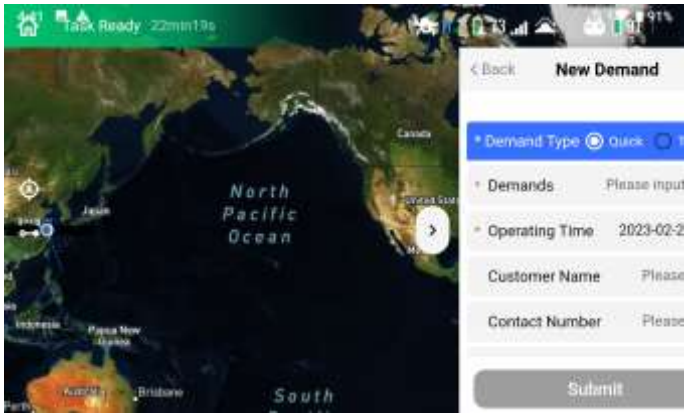
⚠
- Spinning propellers can be dangerous. Stay away from spinning propellers and motors. DO NOT start the motors in confined spaces or when there are people nearby.
- Keep your hands on the remote controller when the motors are spinning.
- After landing, power off the drone before powering off the remote controller.

Auto Mode

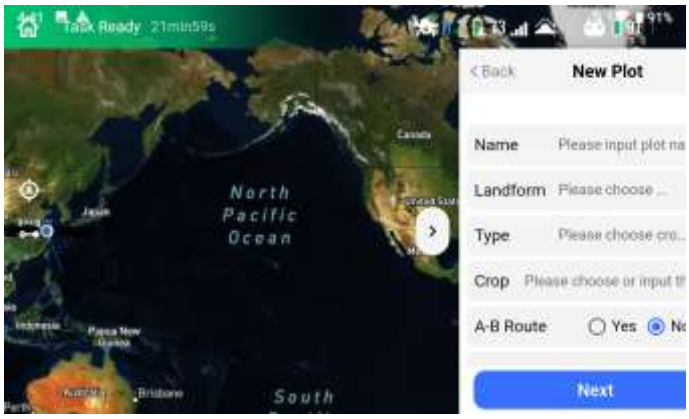
1. Plots survey
   1) Power on the remote controller and mount the surveying tool.
   2) Log in EAVISION Smart AG Pro app.
   3) Tap the device, connect according to the prompts, and the connection status of surveying tool will show on the main page.
   4) Click Survey at the upper right corner, and select New Demand



   5) Fill in the information and submit.



6) Tap New Plot, fill in the plot and crop information, then submit.



7) The default boundary points can be used to record plot boundary during surveying, and it's recommended to choose RTK mode.

8) After that, tap Point Type, and choose Normal Obstacle or Circular Obstacle if there is farmhouse, utility poles, and other obstacles. Boundary points and obstacles points can be selected and adjusted.

9) Tap Save to complete plot survey.

2. Functions of Survey

1) Boundary point types: normal boundary point, normal obstacle, circular obstacle, non-spray area

a) Normal boundary point: it is used to record normal boundary points. 3 or more points need to be recorded to form a plot, and points can be deleted, revoked or fine-tuned.

b) Normal obstacle: points need to be inside the plot. 3 or more points need to be recorded to form an obstacle, and points can be deleted, revoked or fine-tuned.

c) Circular obstacle: tap the target location, and a hexagon with side length of 1.5m will appear to record obstacle points, and 2 fine tuning points will be generated. Tap the center fine tuning point, and the Fine Tuning button on the right to adjust the overall location. Click the right fine tuning point of the hexagon, and the Fine Tuning button on the right to adjust the size of the obstacle. Tap the obstacle to delete it.

d) Non-spray area: 3 or more points need to be recorded to form a non-spray area. The spray function will be disabled by default in the area, and automatically enabled outside the area.

Note: the non-spray area must be recorded inside the plot.

2) Types of adding points: hand drawn, RTK and drone

a) Hand drawn surveying: it is convenient without going to the target location for surveying. However, the hand-drawn precision is low, and can only form ordinary plots, and cannot generate high-precision plots.

b) RTK surveying: it's with the highest precision and can generate high-precision plots.

c) Drone surveying: it can generate high-precision plots. Users need to manually operate the drone to fly to the boundary points to add points.

3) Hand drawn route

After plot planning, tap Hand Drawn Route, then New Route, and select Hand Drawn Route to generate hand drawn routes through adding waypoints in order.

Note: Hand Drawn Route function can only be applied to surveyed plots.

4) Spot-spray Route

After plot surveying, tap Hand Drawn Route, then New Route, and select Spot-spray Route to add crop points, and then perform Spot-spray operations.

5) Edit

Tap Edit to adjust the planned plot.

6) Transfer

Tap Transfer to transfer the plot to another demand.

7) Copy

Tap Copy to copy current plot.

8) Present

Tap Present, enter another pilot's account, and the plot will be presented to another pilot.

9) Split

Tap Split to split current plot.

10) Merge

Tap Merge to merge two plots into one. The merged channel shall be within 50m and the merging points must be within the plot. Save after merge completed.

11) Navigate

12) Tap Navigate and jump to the map page to locate the current plot.

13) Calibrate

There are three types of Calibration modes: add points, select points, and translate. Tap "?" on the right to check the tutorial.

a) Add points: add points through hand drawn mode, then locate the actual position with the surveying tool. The whole plot will be calibrated based on the error between the hand drawn points and the actual points.

b) Select points: select the points on the app, then locate the actual position with the surveying tool. The whole plot will be calibrated based on the error between the selected points and the actual points.

c) Translate: tap Translate and the interface will be moved. Users can translate the plots according to their actual needs, and translate at most 0.5m every time.

3. Functions of Operate

3.1 Takeoff Height Setting

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

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

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

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

3.2 GoHome Height Setting

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

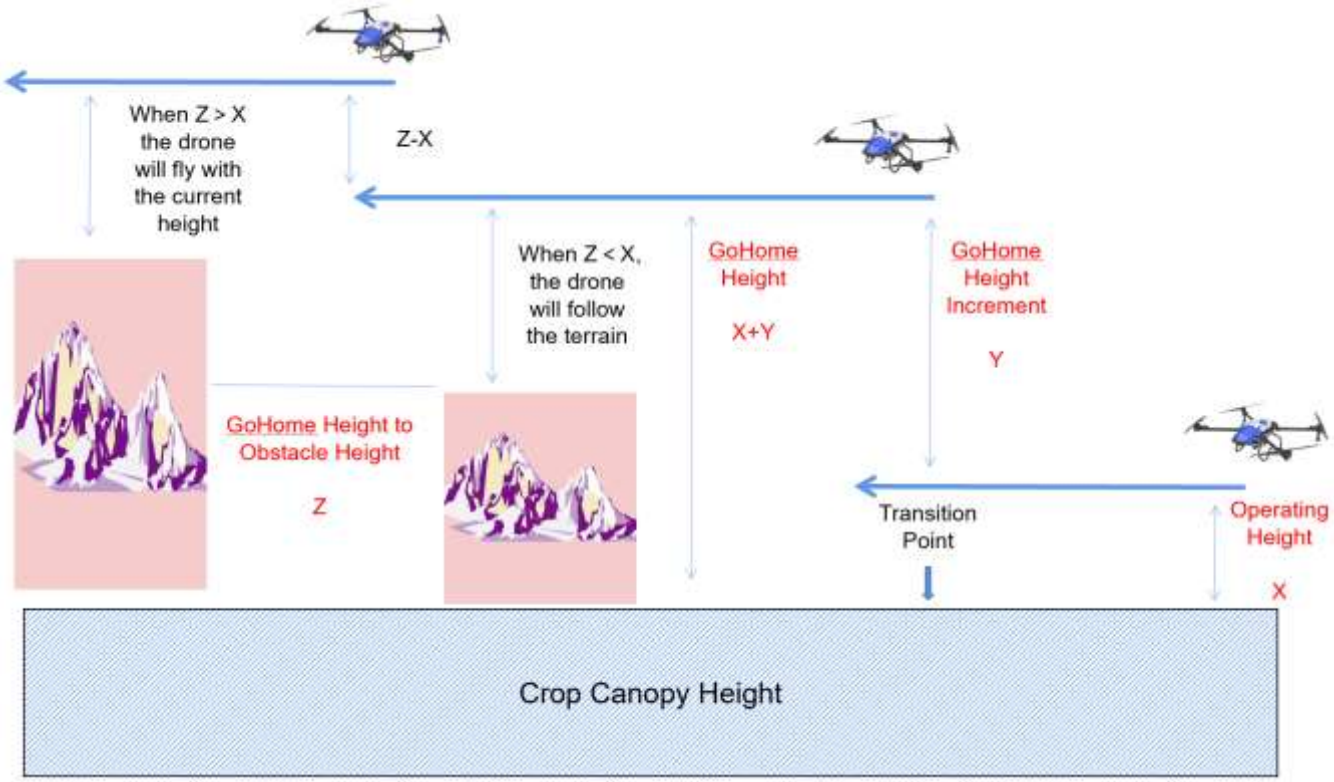
3. The principle of GoHome height is as follows,

Let's say the operating height is X, GoHome height increment is Y, then GoHome Height = X + Y. And GoHome Height to Obstacle Height is Z.

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

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

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



4. GoHome height increment can be set in two ways.

(1) Tap the setting icon at the upper right corner of the main page, set parameters, restart the app, and these parameters will be applied to the plot operations.

(2) Set the GoHome height increment on the operation page, and it can be only applied to current task. When reusing the plot, the last parameter setting will be used by default.

3.3 Route split

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

3.4 Intelligent Avoidance

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

Intelligent Avoidance function.

- Intelligent Avoidance on: the drone can sense obstacles with a diameter of over 5cm, and perform Intelligent Avoidance function.
- Intelligent Avoidance off: the drone will surmount obstacles.

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

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

A-B Route Operation Mode

A-B route operation mode is a semi-auto operation mode which is suitable for large triangular or rectangular areas without obstacles. In this mode, the drone will fly according to the route generated automatically by the system based on given length and direction without plot surveying in advance. And it will follow the terrain and avoid obstacles autonomously during the whole process.

Operation Procedure:

1) After connecting to the drone, log in EAVISION Smart AG Pro app and tap Operate.
2) Select A-B Route.
3) Fly the drone to the target location in the plot, and tap Point A or B onscreen, then adjust heading. The system will automatically form a line from A to B and extend the route leftwards or rightwards.
4) Adjust the operating parameters in Setting page and choose the proper route space.
5) Tap Operate to start operation.
6) Stop operation manually and tap to return when the drone flies to the plot boundary.
7) Due to low battery, empty tank, roll stick or pitch pushing, and other issues, the drone will pause the A-B route operation and record a breakpoint. When the drone is ready to resume operation, tap Continue on the app, and it will fly to the breakpoint and resume the A-B route operation.

⚠

- In A-B route operation mode, users shall not push the roll stick to adjust the drone position during the operation.
- When using the roll stick, the system will switch to manual mode and record a breakpoint. Tap Continue in the app, and the drone will fly to the breakpoint to resume the semi-auto operation.
- In A-B route operation mode, the drone cannot sense plot boundary and obstacles, and users shall manually avoid obstacles and stop operation outside the plot boundary.

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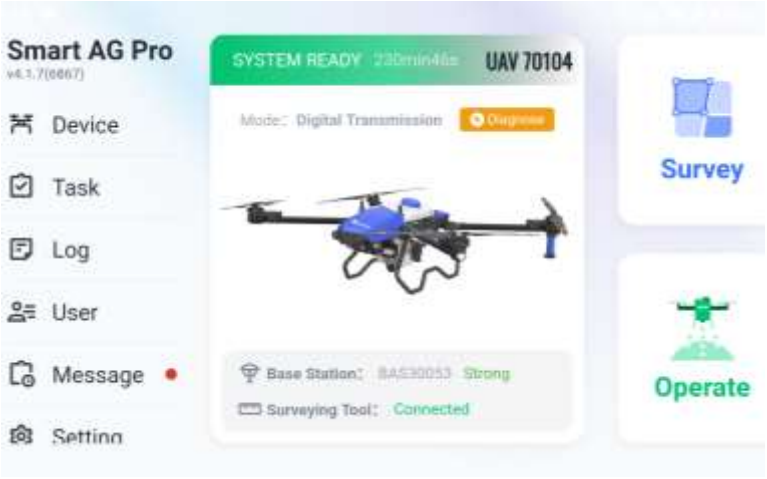
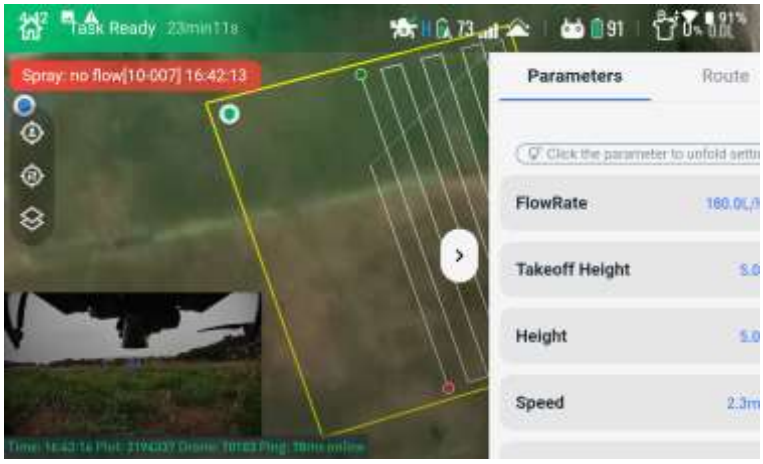
4. Flight Operations

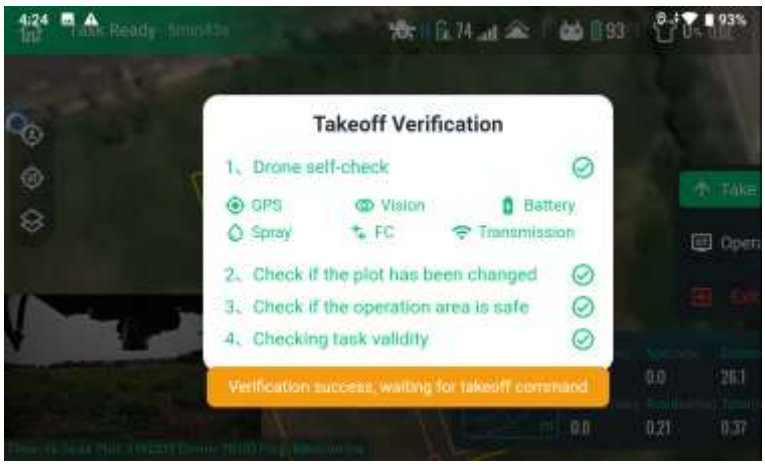
1) Enter EAVISION Smart AG Pro app, tap Operate, and choose the demand and plot, the system will automatically generate the route based on the plot boundary and obstacles. Users can adjust Spray Amount, Operating Height, Speed, route spacing, and other parameters.





2) After setting the parameters, tap Start Operation, and the system will upload the task data to the drone.

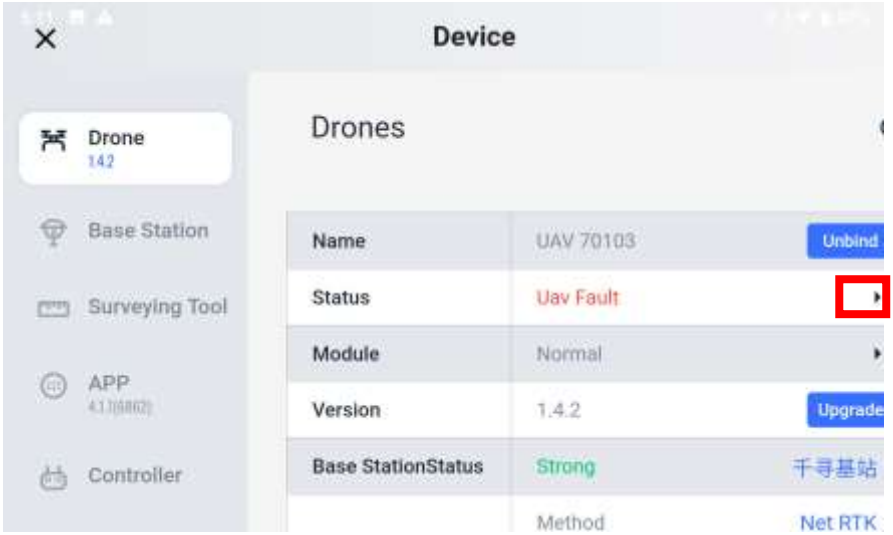
3) Tap Take off, and the drone will perform auto check. After that slide to fly.



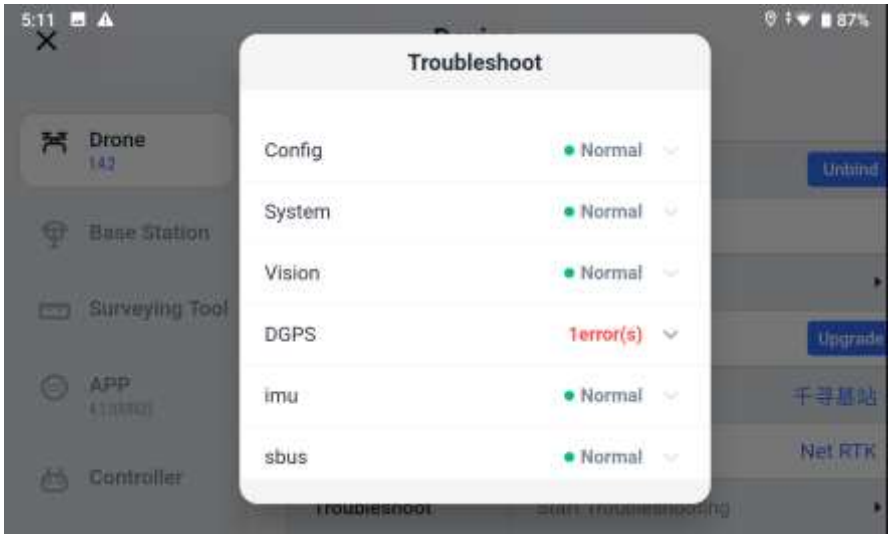
5. Troubleshooting

1) When a problem occurs, the system will prompt "Unable to takeoff". You can check the cause of the fault in the status bar.

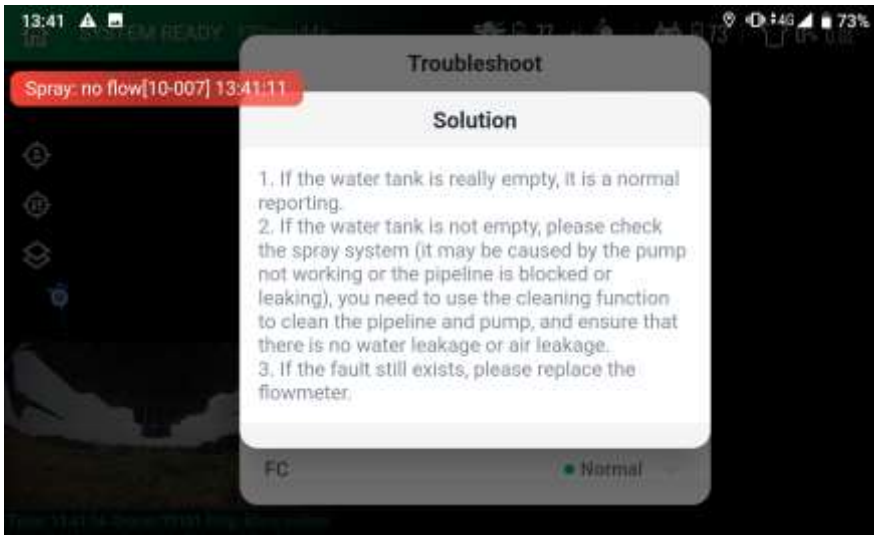
2) Tap Device Management, then the arrow on the right of the fault in the status bar.



3) Details of the fault can be checked here.



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



6. Shutdown Procedure

1) After landing, wait for all propellers to stop spinning, power off the drone and then lift the battery up.

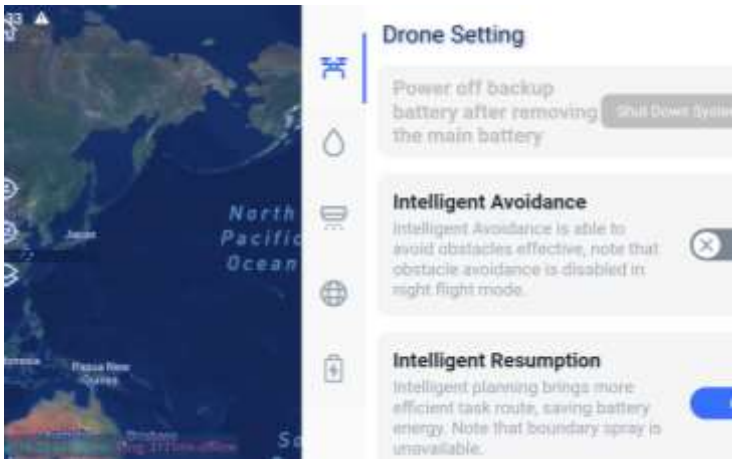
2) Backup battery shutdown

6.2.1 Power off through pressing the power button

Press and hold the backup power button till the indicator is off.

6.2.2 Power off through the app

Tap the setting icon at the upper right corner of the main page, then tap Shut Down System, and the backup battery will be powered off.



6.2.3 Remote controller and surveying tool shutdown

Press and hold the power button of the remote controller till all indicators are off. Disconnect the cable connecting the remote controller and the surveying tool, and put the remote controller and the surveying tool into the tool box.

6.2.4 Fold the propeller blades and arms.

7. Transportation

1) Fold the arms and propellers before transporting.

2) Keep a distance between the camera and the shipping container to prevent damage from bumps.

3) Avoid damage to drone resulting from shifting back and forth during transportation.

4) Place the drone stably before transportation.

8. Pesticide disposal

The safety instructions provided by the pesticide manufacturer should be followed to handle the disposal of pesticides.

Maintenance

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

1. Clean all parts of the drone at the end of each day of spraying after the drone returns to a normal temperature. DO NOT clean the drone immediately after operations are completed.
   1) Fill the spray tank with clean water or soapy water and spray the water through the nozzles until the tank is empty. Repeat the step three times.
   2) Use a clean and soft cloth to wipe the camera lens, distance sensor and other sensor components.
   3) If there is dust or pesticide liquid on the motors, propellers, or heat sinks, wipe them with a wet cloth before cleaning the remaining water residue with a dry cloth.
   4) Store the cleaned drone in a dry environment.
2. Wipe the surface and screen of the remote controller with a clean wet cloth that has been wrung out with water daily after operations.
3. Inspect the drone every 100 flights or after flying for over 20 hours:
   1) Check for and replace worn propellers.
   2) Check for loose propeller. Replace propellers and propeller washers if needed.
   3) Check for aging plastic or rubber parts.
   4) Check for loose sensor parts and tighten them firmly.
   5) Check for loose wiring harness connectors and tighten them firmly.
4. Inspect the drone daily after operations:

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

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

3）If there is dust on the surface of nozzles that affects the heat dissipation, wipe it with wet cloth that has

been wrung out with clean water or soapy water.

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

Troubleshooting

No	Fault	Troubleshooting Instructions
1	**Navigator Failure**	1） Re-power on (make sure the entire system is powered off and then power on again). If it works, you may continue operations. 2） If the problem persists, the drone should be powered off (including backup batteries), and the drone will be powered on again after moving the drone to another place. If it works, you may continue operations. 3） If the problem persists, please contact customer service, and upload the relevant data.
2	**Altitude Sensor Failure**	1） Power on the drone again (make sure that the entire system is powered off and then power on again). If it works, you may continue operations. 2） If the problem persists, check whether the height sensor is obstructed and whether the sensor is clean, clean the sensor with a cloth and power on again. 3） If the problem persists, please contact customer service, and upload the relevant data.
3	**Distance Sensor Failure**	Clean the lens of the distance sensor with a clean damp cloth.
4	**Remote Controller Failure**	1） Check whether the remote controller is turned on with batteries of sufficient power. 2） Check whether the remote controller is linked to the drone. Power off the drone and then on again. If it works, you may continue operations. 3） If the problem persists, please contact customer service, and upload the relevant data.
5	**Takeoff Failure**	1） Check and make sure that there are no foreign objects in and beneath the height sensor, and the interior of the height sensor is clean, and power off the drone and then on again. If it works, you may continue operations. 2） If the problem persists, please contact customer service, and upload the relevant data.
6	**Pump Failure**	1） Power off the drone and then on again. If it works, you may continue operations. 2） If the problem persists, please turn on the cleaning function to clean the spray system, observe whether the left/right water pump can be turned on and off, whether the left/right centrifugal motor is filled with water, and whether the rotor is blocked. If the problem is solved, you may continue operations. 3） If the water pump/centrifugal motor cannot be turned on normally or the motor is blocked, contact customer service for replacement.
7	**Nozzle Failure**	1） Turn on the cleaning function to clean the water pump and tap lightly on the pump body.

		2） Pull out the water pipe from the end of the nozzle, observe whether the water output on both sides is the same when cleaning, and whether there is water leakage or air leakage. 3） Switch on the pump manually and check the pump temperature, contact customer service for replacement if needed. 4） Replace the flow meter.
8	**GPS Failure**	1） Power off the drone and then on again. If it works, you may continue operations. 2） If the problem persists, put the drone in an open place away from the launching tower, high-voltage line, military base, and power on again. If it works, you may continue operations. 3） If the problem persists, please contact customer service, and upload the relevant data.
9	**Weak GPS Signal**	1） Test the drone in an open area, and make sure nothing obstructing the area of more than 45 degrees between the sky horizon and the drone. Then re-power on to test. 2） Make sure that there are no launching towers, military bases, or high-voltage power lines nearby. 3） If the problem persists, please contact customer service, and upload the relevant data.
10	**Vision Sensor Abnormal**	1） Make sure that there is an official 48V power supply connected to the drone (the flight controller light is on). 2） Check if the camera light is on. If not, please power on the system again. 3） If the problem persists, please contact customer service, and upload the relevant data.
11	**Task Verification Failure**	1） Make sure APP parameters are set correctly, and the distance between the takeoff point and the waypoint is within 1,500 meters. 2） Check whether the 4G signal is normal. 3） Restart the APP and send the task again. 4） Power on the drone again. 5） If the problem persists, please contact customer service, and upload the relevant data.
12	**Landing Failure**	1） Push and hold the throttle stick of the remote controller down, and switch to manual mode at the same time to stop the motors. 2） Upload logs and contact the customer service. Move the drone to a flat place to power on to test and continue operations if it works.
13	**Exceeding Maximum Altitude Settings**	1) Switch to manual mode or use fine-tuning to adjust the operating height, then switch back to auto mode. 2) Before switching back to auto mode, make sure the height displayed by the APP is basically the same as the actual operating height.
14	**Failure to Locate Safe Zones**	1） Check whether there are obstacles between the take-off point and the operation area, if not, you may continue operations. 2） If there are obstacles between the take-off point and the field, it is strongly recommended that the user reselects the take-off spot.

15	**Fine Tuning**	1） Fine tune if the drone and obstacles are clearly visible. 2） If you can't see the drone and obstacles, nor the operation environment of the drone, tap Go Home. 3） If you can't return, make a forced landing. 4） After landing, check whether all sensors are clean, notify the backend to process the plot, and upload the flight log.
16	**Forced Landing**	1） Make sure it is safe to land the drone, then follow the voice instructions to operate. 2） If there are obstacles or water below, use the APP fine-tuning function to guide the plane to the nearest safe zone for forced landing. 3） Skilled pilots can switch to manual and fly to the nearest safe landing. Note that if it is a forced landing due to insufficient power, you must land as soon as possible, otherwise the drone will fall when the power is exhausted.
17	**Request for Exhausting**	1） Check pipes for leaks. 2） Check whether the water pump is working properly. 3） If the problem persists, please contact customer service, and upload the relevant data.
18	**Battery Failure**	1） Use another fully charged smart battery to power on the drone again. Before inserting the battery, make sure that there are no grass clippings, soil, stones, or liquid residues in the drone's battery socket. Make sure the battery is firmly inserted. If it works, you may continue operation. 2） If the problem persists, please contact customer service, and upload the relevant data.
19	**Other Warning Prompt**	1） Process according to the prompt, and then restart the system. 2） If the problem persists, please contact customer service, and upload the relevant data

List of dangers and hazards

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

Warranty Service

Dear users:
Thank you for using EAVISION products, please read the user manual and other documents carefully after purchasing the drone to ensure safe and reliable operation.

Warranty Rules

This product follows the principle of whoever sells it is responsible for the warranty service.

- EAVISION provides one-year warranty for its products (wearing parts excluded). For warranty periods of components and wearing parts, please refer to table 1 (P40) table 2 (P40).
- The main components of EAVISION Agricultural UAV are the UAV body, battery, charger, mapping device and remote controller.
- The warranty period will start on invoice day. After warranty period expires, EAVISION will consistently provide paid maintenance and after-sales services.

1. Repair
All products (parts) within the warranty period shall be repaired free of charge by the designated repairer,

and shall be subject to the supervision of the manufacturer and the seller in accordance with the contract.

2. Replacement

1) Within 15 calendar days of receiving the product and without using the product if the product does not match the original description of the product in one or more significant respects, users can request replacement service with shipping costs borne by the sales agent.
2) During warranty period, users can request replacement service if the repair work of agricultural machinery have not been finished after 30 working days from the date of repair. And the seller shall replace the product of the same model and specification free of charge with the warranty certificate, maintenance and repair records and purchase invoice.
3) During warranty period, if the agricultural machinery cannot work properly due to the same quality problem after being repaired twice; or within 30 days from the first operating season of the agricultural machinery purchase, except for the wearing parts, users can request replacement service for the relevant main components or systems for free with the warranty certificate, maintenance and repair records, and the purchase invoice.

3. Return

1) If the manufacturer and seller have not clearly informed the scope of application of this drone and thus causes the drone malfunction, users can ask for return with the purchase invoice within 30 days of the first operating season of the product purchase date, and the seller shall refund according to the purchase invoice amount.
2) Users can ask for return if replacement cannot be done due to short supply of the same products.

4. What is not covered

The following scenarios are outside the scope of warranty:

1) Users cannot prove that the product is within the validity period of the warranty.
2) The product is out of warranty period.
3) The machine code, factory label and other signs are inconsistent with the information on the order, or there are signs of tearing or alteration, and the source cannot be proved.
4) Product damage resulting from failure to follow the user guide to properly use and maintain.
5) Equipment failure or damage caused by the user or operator disassembling the flight controller, CPU control module, power supply module, GPS and transmission module, camera module, height sensor, distance sensor, frame, power ESC module, and power motor without authorization.
6) Equipment failure or damage caused by abnormal factors such as product water ingress.
7) Damage caused by the user or operator's unlicensed operation, improper operation or not following the instructions.
8) The user or operator performs that does not meet the requirements of official instructions and guidelines.
9) Direct or indirect failure or loss caused by unairworthy flight, such as equipment aging alarm, bad weather, complex electromagnetic environment or strong interference source, take-off when

exceeding the maximum payload weight.

10) Direct or indirect failure or loss caused by force majeure such as natural disasters, wars, terrorist attacks, riots, and coups.
11) Failure or damage not caused by the design, manufacture, quality, etc. of the product itself.
12) All loss of rental equipment due to theft, robbery, etc.
13) After the error occurs, the user repairs by himself or entrusts a non-official repairer to repair the machine, resulting in the inability to make a technical appraisal of the cause of the failure.
14) After contacting EAVISION customer service for replacement service, the corresponding item was not sent within 7 calendar days.

- If the product needs to be repaired or tested, please back up the data of the machine in time. EAVISION is not responsible for damage caused by data loss.
- The user should make a qualified acceptance and test after receiving the product, and check the tools, accessories and fittings that come with it.
- The user should receive training on operation, maintenance and safety precautions from the sales agent before use.
- Users should provide accurate and valid user information to the sales agent when purchasing the machine, so that the sales agent can go through the relevant registration and agreement procedures.
- Users can inquire about repair or replacement for product or parts that are outside the scope of warranty, and pay for the service if needed.

5. After-sales service charging principle and user payment method

1) EAVISION provides after-sales service in accordance with the terms listed in the sales contract.
2) During the warranty period, EAVISION provides free after-sales service such as installation, commissioning, and maintenance.
3) After the after-sales service is completed, the user should remit the money to the company by wire transfer within three days, and the corresponding handling fee shall be borne by the user. If the user fails to pay the fee seven days after the completion of the service, the company will charge a late fee, which is the total after-sales service fee multiplied by 1% per day.
4) If the user defaults on after-sales service fees twice without any reason, EAVISION has the right to suspend the provision of paid after-sales service to the user.

6. Special cases

If EAVISION launches other preferential sales policies, it will be implemented according to its specific provisions.

Table 1 Warranty List of EAVISION Drones

Serial	Components Name	Warranty Period
1	Flight Control Module	12 months
2	CPU Control Module	12 months
3	Power Supply Module	12 months

4	GPS and Transmission Module	12 months
5	Camera Module	12 months
6	Distance Sensor	12 months
7	Spray Control Module	12 months
8	Base Station and Charger	12 months
9	Mapping Device and Charger	12 months
10	Frame	12 months
11	Spray Tank	12 months
12	Nozzle	12 months or 22000L, whichever is earlier
13	Water Pump	10000L
14	Weight Sensor	12 months
15	Remote Controller (Including Receiver)	12 months
16	Power Battery Charger	12 months
17	Power ESC Module	12 months
18	Power Motor	12 months
19	Power Battery	12 months or 1000 cycles, whichever is earlier
20	Night Flight Light	12 months or 200 hours, whichever is earlier

Table 2 List of Wearing Parts

Serial No.	Components Name	Warranty Period
21	Connectors, Wires	1 month
22	Hoses, Joints, Tees, etc.	1 month
23	Hardware, including Landing Gear	1 month
24	Propeller Blade	1 month
25	Plastic Parts	1 month

Nozzle Warranty Special Instructions

Products are not covered by the warranty under the following circumstances:

1. Damage caused by nozzle blockage due to spraying with powder pesticides.
2. Damage caused by bumping, striking, or cracking the nozzle during transportation.
3. Product damage caused by drop, collision, water, fire, etc.
4. Damage caused by extreme or improper use, such as idling spinner disc for more than 5 minutes.
5. Damage caused by installation and disassembly not in accordance with the official instructions.
6. Damage caused by nozzle blockage in adverse weather such as sandstorm.
7. Damage caused by failure to follow official care and maintenance instructions.
8. Users are unable to provide the nozzle number, drone model, number of hectares operated by the drone, invoice and other relevant information on the use of the drone.

Warranty Certificate

<table>
<tr><td colspan="6">Suzhou EAVISION Robotic Technologies Co., Ltd
Warranty Certificate
(Customer)</td></tr>
<tr><td rowspan="3">Product Information</td><td>Product Name</td><td colspan="4">EA-30XP Smart Agricultural Drone</td></tr>
<tr><td>Model</td><td colspan="4">3WWDZ-30C</td></tr>
<tr><td>Manufactured In</td><td colspan="4">Suzhou, China</td></tr>
<tr><td>Serial Number</td><td colspan="4"></td></tr>
<tr><td rowspan="2">User Information</td><td>Name</td><td></td><td>Address</td><td colspan="2"></td></tr>
<tr><td>Phone Number</td><td></td><td>Email</td><td colspan="2"></td></tr>
<tr><td rowspan="4">Sales Information</td><td>Seller</td><td></td><td>Address</td><td colspan="2"></td></tr>
<tr><td>Contact Number</td><td></td><td>Email</td><td colspan="2"></td></tr>
<tr><td>Sales Date</td><td></td><td>Unit Price</td><td colspan="2"></td></tr>
<tr><td>Invoice Number</td><td></td><td>Seller Stamp</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Manufacturer Information</td><td>Manufacturer Name</td><td></td><td>Address</td><td colspan="2"></td></tr>
<tr><td>Phone Number</td><td></td><td>Email</td><td colspan="2"></td></tr>
<tr><td>Return Proof (Record)</td><td colspan="5"></td></tr>
<tr><td>Maintenance Records</td><td>Repair Date</td><td>Delivery Date</td><td>Failure Description</td><td>Repair Details</td><td>Repairer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Remarks:
1. This certificate is valid when it is stamped by the authorized seller of Suzhou EAVISION Robotic Technologies Co., Ltd.
2. For details, please refer to the applicable detailed list of warranty service.</td></tr>
</table>

Specifications

Product model	3WWDZ-30C
Rotor type	Quadrotor
Weight of drone	41.2kg (with battery)
Maximum spray payload weight	71.2kg
Maximum spread payload weight	76kg
Maximum wheelbase	2200mm
Working dimensions	2400×2810×670mm 1450×1880×620mm (Arms unfolded, propellers folded) 1260×630×620mm (Arms folded)
Folding size	1260mm×630mm×620mm
Hovering accuracy	RTK enabled: horizontal ±10cm, vertical ±10cm RTK disabled (within 4 minutes): horizontal ±10cm, vertical ±10cm
Landing accuracy	RTK enabled: horizontal ±30cm RTK disabled (within 4 minutes): horizontal ±50cm
No-load hovering time	19.09min (5%SOC)
Full-load spray hovering time	8min (5%SOC)
Full-load spread hovering time	7min (5%SOC)
Waterproof level	IP67 (IP66 for battery)
Anticorrosion level	NSS24H
Operating temperature	-10℃~45℃
Operating moisture	30%-90%RH
Satellite receiver frequency	RTK: GPS L1/L2，GLONASS L1/L2，BeiDou B1/B2，Galileo E1/E5 GNSS: GPS L1/L2，GLONASS L1/L2，Galileo E1/E5
Obstacle avoidance	Obstacle circumventing and obstacle surmounting in the forward direction. Sense and avoid obstacles with a diameter of 5cm
Obstacle avoidance speed	≤5m/s
Max operating speed	5m/s (avoidance on), 10m/s (avoidance off/manual mode), 6m/s (night flight mode), 4m/s (night light mode)
Max wind resistance	6m/s
Max service ceiling above sea level	below 1000m for 30kg, 1500m for 27.5kg, and so on, max 3000m for 20kg
Max flight radius	2000m

Propulsion - motor	
Stator size	111×18mm
Motor KV value	85 rpm/V
Operating voltage	51.8V
Max pulling (single motor)	38kg
Rated power (single motor)	3000W
Propulsion system - propeller	
Diameter	43*14 inch
Number of rotors	4
Rotor material	Composite materials
Mist spraying system - spray tank	
Rated volume	30L
Full-load volume	Approximately 32L
Tank weight	4kg (water pump, flow meter included)
Material	PE
Mist spraying system - nozzles	
Model	CCMS-L22000
Spray bar length	1720mm
Number of nozzles	2
Droplet size	10 - 300μm
Maximum spray width	3m - 8m
Mist spraying system - water pumps	
Liquid pump form	Diaphragm pump
Number of pumps	2
Rated power	120W
Operating voltage	0.8 – 1.2MPa
Max flow rate	10L/min, ±5%
Mist spraying system – flow meter	
Accuracy	5%
Weight sensor	
Max range	120kg
Accuracy	0.2kg
Binocular vision	

Field of view (FOV)	Horizontal ± 60°, vertical ± 35°
Obstacle avoidance speed	≤5m/s
Millimeter wave radar	
Square wave width	±34°
Pitch width	-6.5° – +3°
Mapping range	0.1 – 30m
Mapping accuracy	0.002m
Operating voltage	5 – 12V
Operating temperature	-40 – 85℃
Power consumption	2W
Lidar	
Mapping range	0.15 – 40m
Mapping accuracy	2 – 10cm
Scan angle	0° – 360°
Horizontal parallelism	±0.1° – ±0.3°
Battery	
Model	JM2 Li-ion (29000mAh, 51.8V)
Weight	10.8kg
Capacity	29000mAh
Voltage	51.8V
Warranty	One year or 1500 cycles, whichever comes earlier
Battery fill time	11min（30% – 95%）
Waterproof level	IP65
Smart protection	Short circuit protection, overcharge protection, overcurrent protection, fire protection, etc.
Charger	
Model	JM-C3-7000
Charging power	7000W (220V power supply)
Input voltage	90 – 290V
Output voltage	58.8V
Output current	120A
Weight	Approx. 13kg
Dimensions	400×300×240mm
Smart protection	Over temperature, over voltage, under voltage, short circuit, fan stall protection, etc.
Remote Controller	
Weight	850g

Maximum transmission distance	1.2km
Screen	5.5-inch, 1920×1080
Maximum brightness	1000cd/m^2
Battery capacity	10200mAh
Charging time	6h
Duration	12h
Charging method	20W PD
Operating temperature	-10℃－55℃
Waterproof level	IP53
FPV camera	
FOV	130°
Rotation angle	120°
Video format	H.265
Max resolution	1080P/30fps
Video Delay	180ms
Night flight system	
Illumination angle	Horizontal ± 130°, vertical ± 60°
Illuminated area	Approx. 400m^2
Illumination distance	20m
Light intensity	700LUX@5m direct light
Cooling method	Heat sinks + air cooling
Surveying tool	
Dimensions	40*40*60mm
Weight	60g
Signal	GPS/BEIDOU/GLONASS/GZSS
Max transmission distance	1.5km

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

Contact Us

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

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