EA-20XEP Agricultural Spraying Drone

User Manual v2.4

2023.7

3WWDZ-20D

Intelligent Quadrotor Agricultural Spraying Drone

Suzhou EAVISION Robotic Technologies Co., Ltd.

To Users

Thank you for choosing EA-20XEP, 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. Drone operation license issued by EAVISION is required for users to operate the drone.

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

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

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

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

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

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

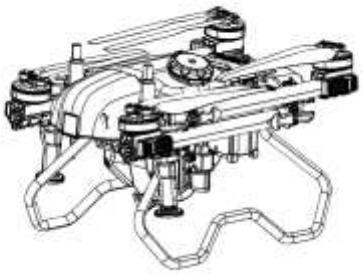
- Make sure that your operations do not violate any applicable laws or regulations, and that you have obtained all appropriate prior authorizations. Consult the relevant government agency or authority before flight to ensure you comply with all relevant laws and regulations.
- Make sure that the battery 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.

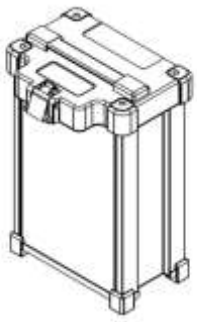
- Make sure you comply with all relevant laws and regulations before flight. Factory settings for the drone: 20m of max altitude, 10m/s of max speed, and 2000m of max distance.
- Please take attention that changes or modification not expressly approved by the party responsible for compliance could void 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.

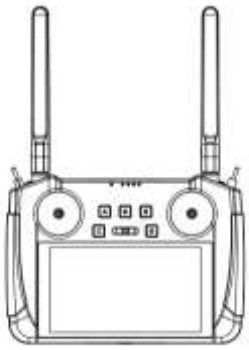


EA-20XEP Drone×1

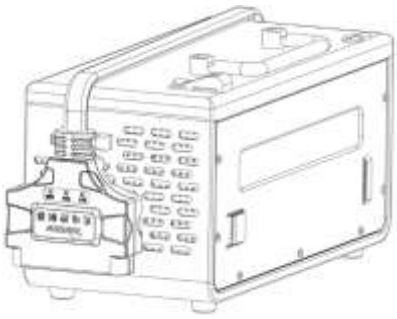


Smart Batteries×2

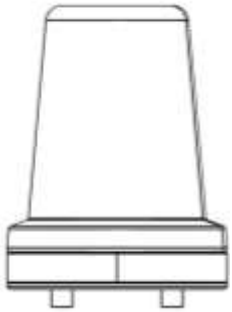
(Including spray tank and propeller holders)



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



Smart Charger×1



Locator×1
(In the tool box)

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

Product description

The new generation of the EA-20XEP comes with leading binocular vision system and ultra-low terrain follow technology, allowing the drone to automatically avoid obstacles in fertile blocks, 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 IP66, which contributes to easier cleaning and higher efficiency of operation.

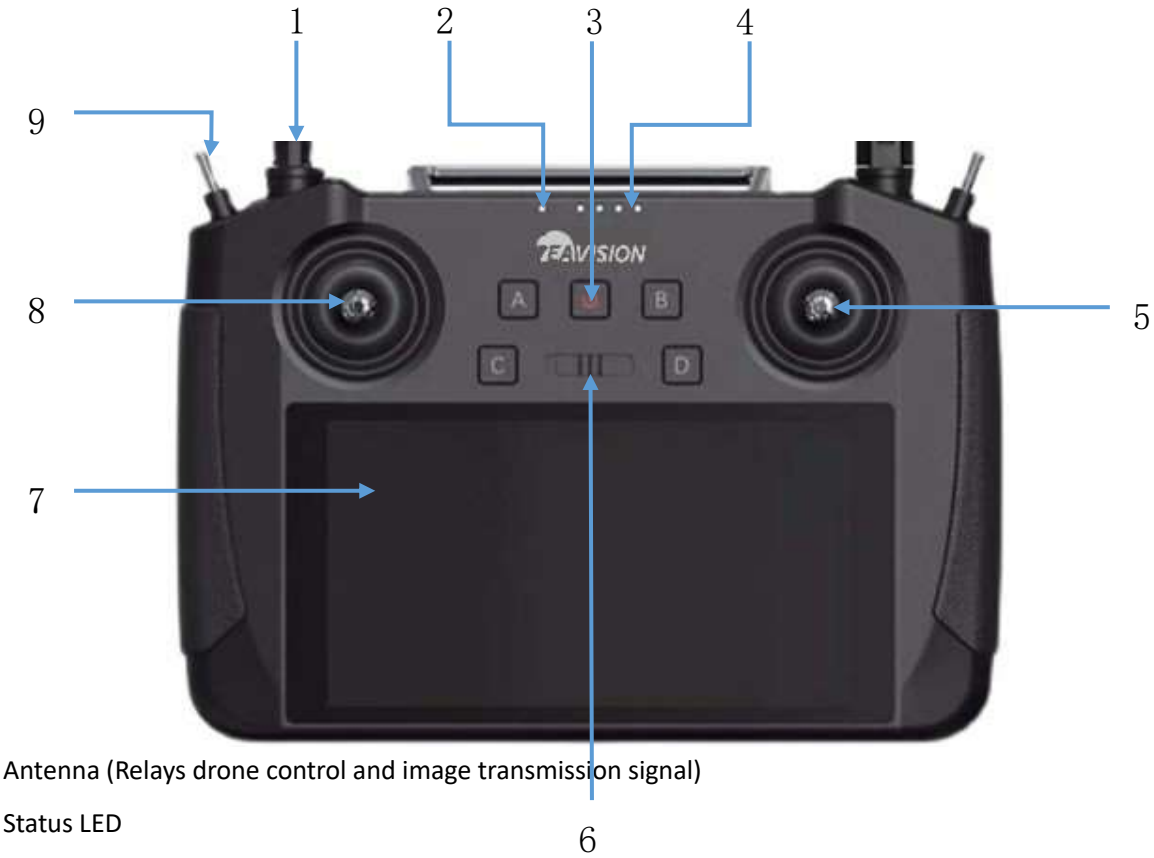
Remote Controller

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 drone 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 drone movement)
9. 3-Stage switch (auto mode/manual mode)

Remote controller interface

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.

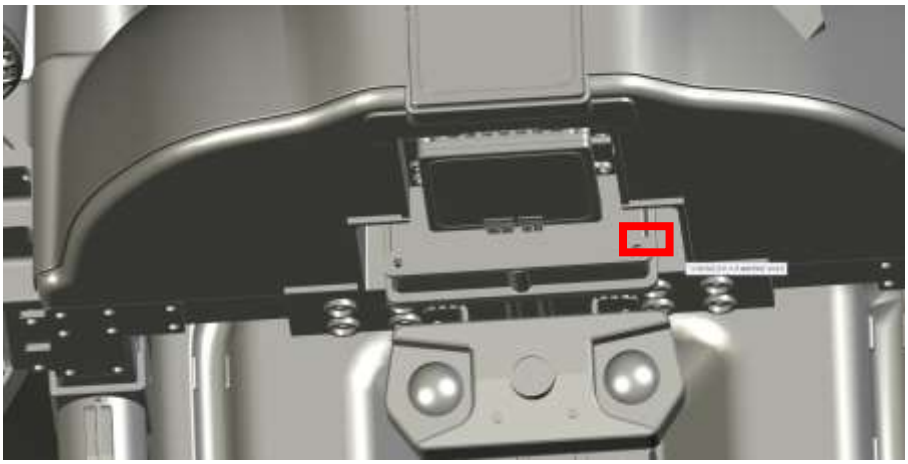
This section explains how to control the orientation of the drone through the remote controller. Control can be set to Mode 1 (American standard), Mode 2 (Japanese standard), or Mode 3 (Chinese standard). Below refers to Mode 1 (American standard).

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.

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.

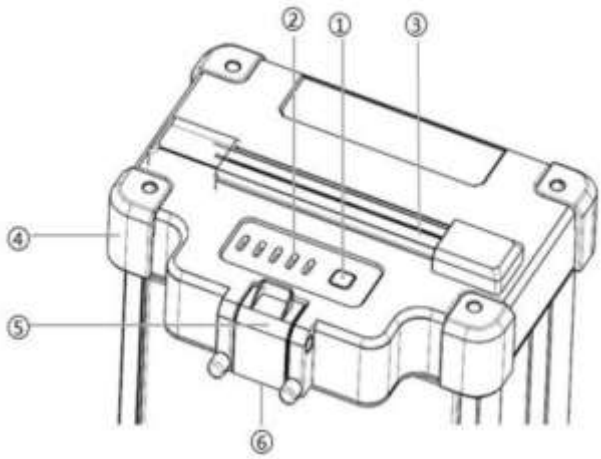
5. Do not cut off the power of the remote controller when the drone motor is still running.
6. Always check the battery level of the remote controller before operation.

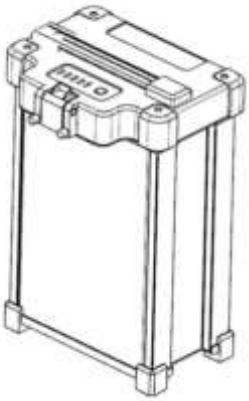
Smart Battery

Smart battery overview

EA-20XEP 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 20000mAh and the nominal voltage is 48.75V.

Smart battery components





1. Power Button
2. LED Indicator

From left to right are power LED1, LED2, LED3, LED4, fault light

4. Handle
4. Silicone Protective Cover
5. Clamp
6. Power Interface

Battery function

JM1-20000mAh 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.

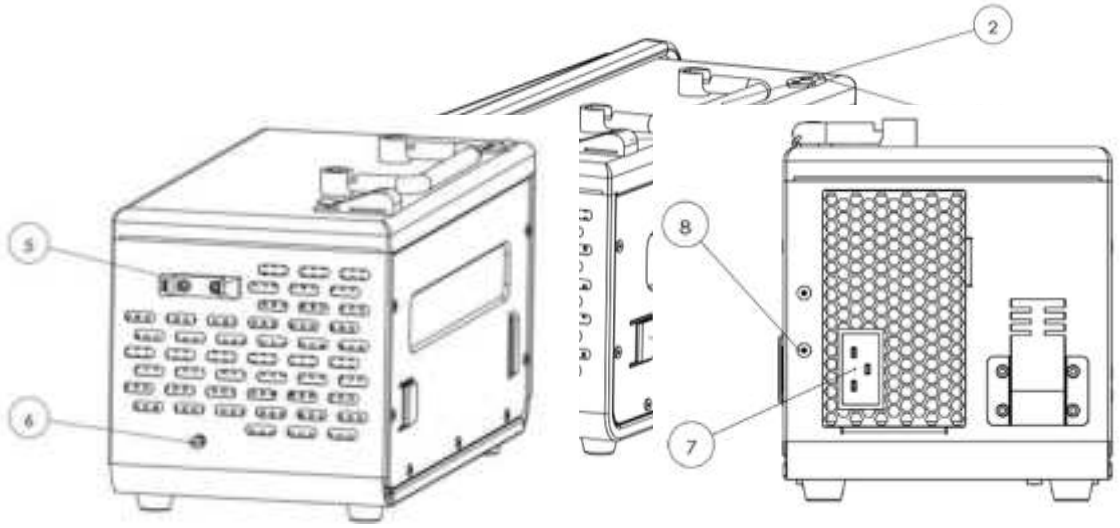
13. If the battery interface is dirty, wipe it with a dry cloth, otherwise it will cause poor contact, resulting in energy loss or charge failure.
14. Do not reversely connect the positive and negative poles of the battery, otherwise abnormal charging of the battery may cause overheating, explosion, 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

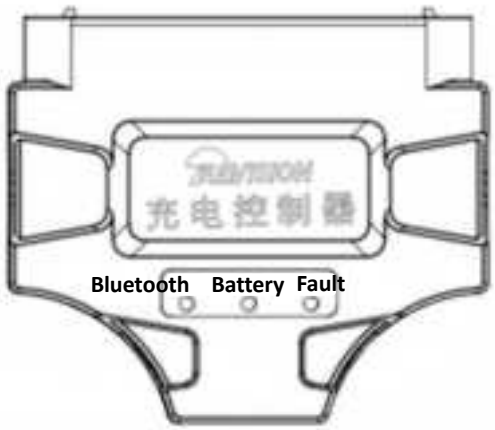
The maximum charging power of the four-channel JM-C2-3000W smart charger can reach 3000W. After connecting to the charging management App through Bluetooth, users can monitor the status of the charger and battery cells in real time. The intelligent charging management system can adjust the charging current 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. Handle
3. Clamp
4. Slot
5. Cable Clip
6. Locating Pin
7. Power Input Interface
8. Ground 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.

Specifications

Adaptive battery model	JM1-20000mAh-48.75V
Input voltage/power	AC90~290V /45-60Hz
Charging voltage	55.9 V
Output voltage	30-55.9 VDC
Max Charging current	55A
Input power	220V 3000W
	110V 1100W
Weight	Approx. 5.5Kg
Operating temperature	-10℃ - 55℃

Charger use

Checklist before use

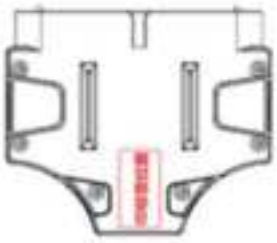
Appearance check

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, as Pic 1 shows.

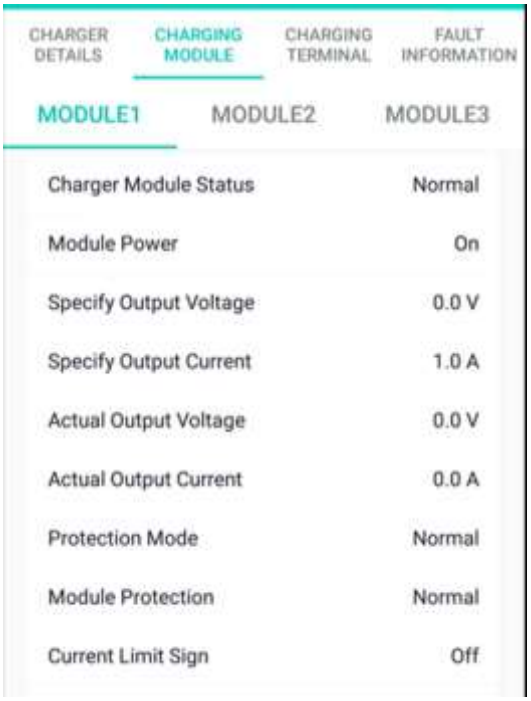
   Note: you can find the corresponding charger ID at the back of the charge controller



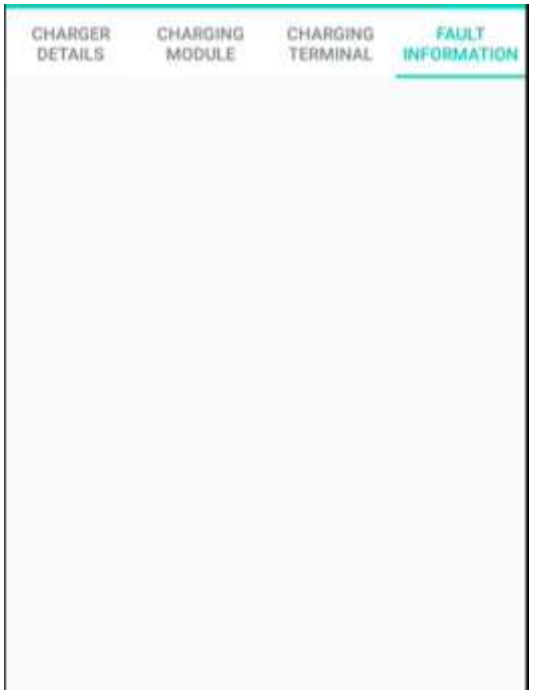
4. After connecting to the Charger Management app, click Charger Details, Charging Module, Fault Information respectively. Pictures 2, 3, and 4 indicate that the charger is functioning properly.

Pic 1

Pic 2


CHARGER DETAILS
CHARGING MODULE
CHARGING TERMINAL
FAULT INFORMATION
MODULE1
MODULE2
MODULE3
Charger Module Status
Normal
Module Power
On
Specify Output Voltage
0.0 V
Specify Output Current
1.0 A
Actual Output Voltage
0.0 V
Actual Output Current
0.0 A
Protection Mode
Normal
Module Protection
Normal
Current Limit Sign
Off

Pic 3


CHARGER DETAILS
CHARGING MODULE
CHARGING TERMINAL
FAULT INFORMATION

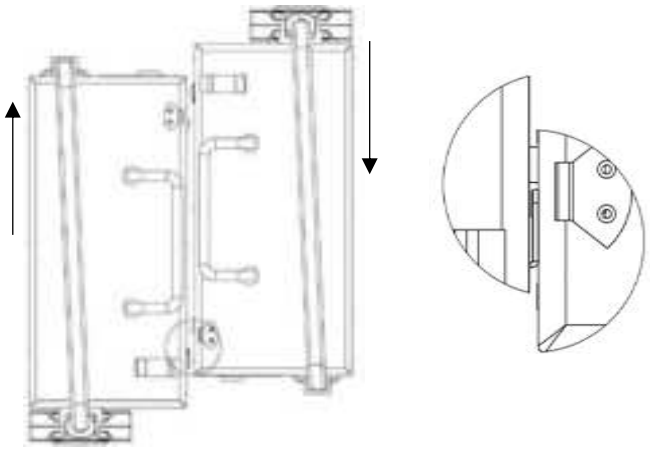
Pic 4

Charger Use

Storage & transport

Charger transport

1) The charger can be transported individually using the handle.
2) Two chargers can be combined and transported using the slots and clamps: align one side of the slot of the two chargers and slide them together to insert the slots. Then use the clamps to secure the two chargers.

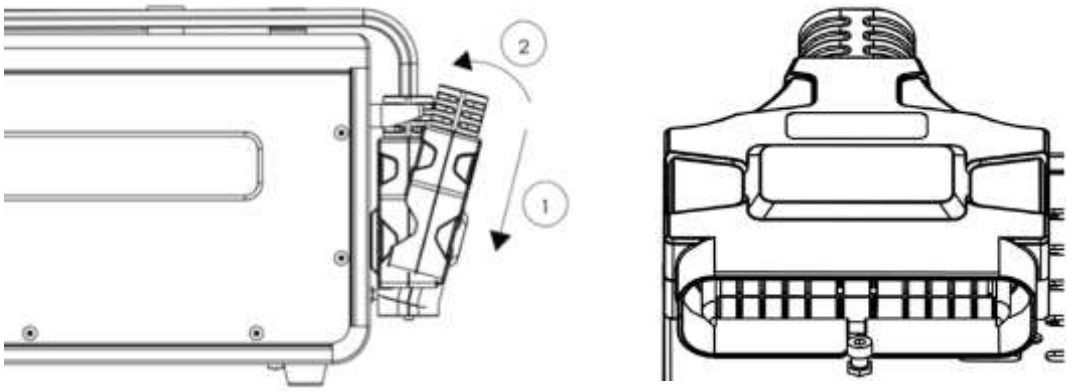


Long-term storage

Ensure that the storage area is clean and dry.

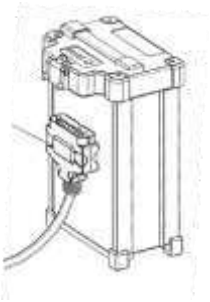
Charging controller storage

1) Tilt the charging controller and insert it into the locating pin.
2) Rotate the charging controller and insert it into the cable clip for storage.



Charging

1) Insert the AC power cable of the charger.
2) Plug the charging controller into the battery interface, with the LED display facing outward. Wait for a few seconds for the battery to start charging automatically.



Note:

1. Make sure the LED display faces outward.
2. The plug of the cable needs to be firmly inserted into the battery interface.

Charging warning

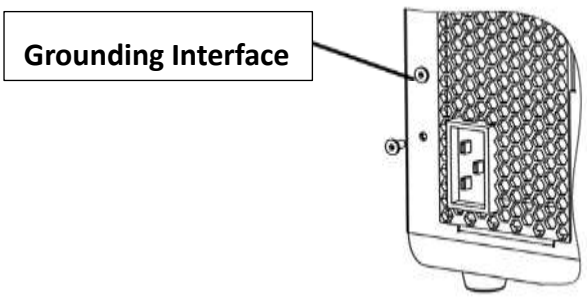
After inserting the battery, observe whether the battery's warning light (red) is illuminated. Open the app and check for any alarms or abnormalities. If yes, disconnect the battery.

⚠ When the warning light turns red, stop charging immediately and check the App alarm information.

Charging complete

1) When charging is completed, unplug the battery.
2) Then unplug the power supply cable.

Note: 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.



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.

Maintenance

- To ensure safe use and optimal performance of the charger, users should regularly maintain the charger.
- 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.

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. The AC power cord of the charger is rated at 16A. Please ensure that the power socket provides power higher than 16A.
8. 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.
9. 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.

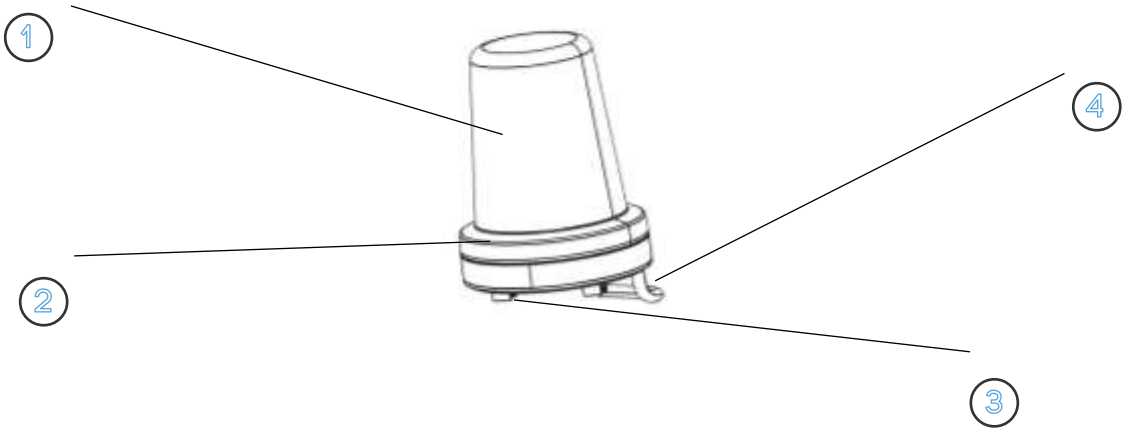
10. When the plug is not inserted into the battery, the battery plug has a high current output and cannot be touched. The plug should be kept clean to avoid charging malfunctions caused by dust, dirt, or pesticides.

Locator

Locator overview

EAVISION locator 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 locator to the remote controller.

Locator components

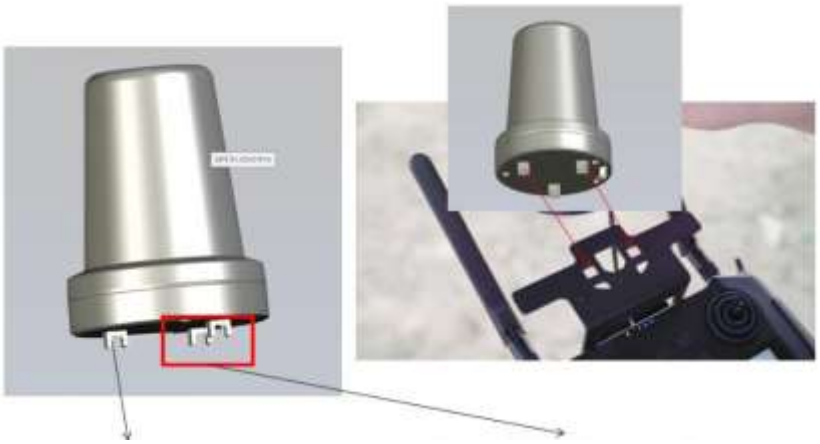


1. Antenna Cap 2. Magnetic Base 3. Fixed Slot 4. Connecting cable

Locator operation

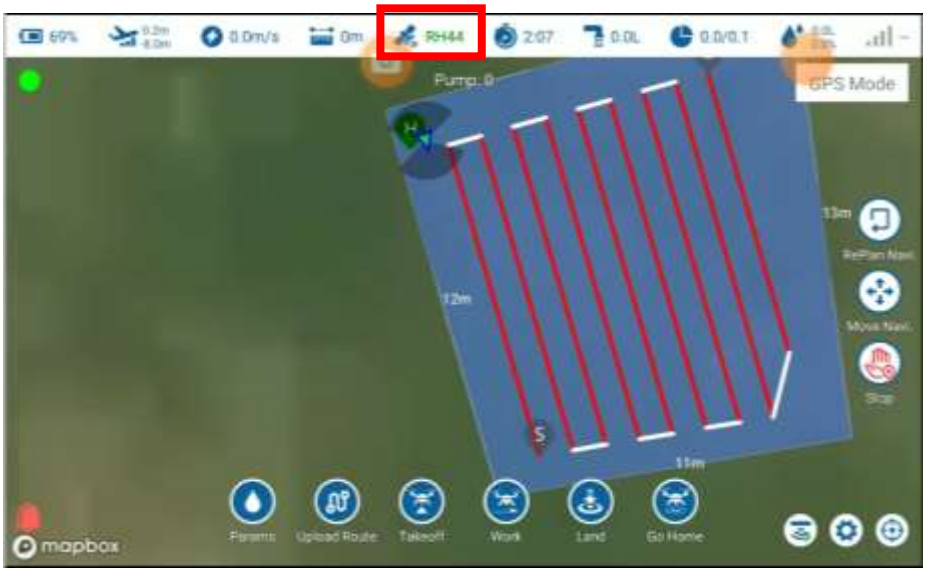
1. Connect the connecting cable through 4P DATA port on the remote controller.

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



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

3. Check for the RTK status of locator before operation.



RTK Base Station

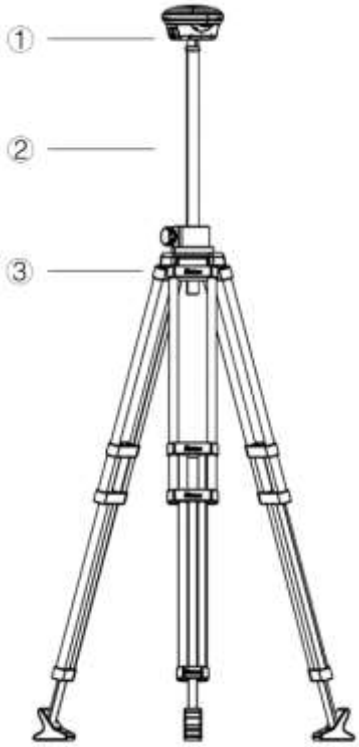
Product overview

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 locator, it ensures the autonomous operations of the drone in areas with weak or no network.

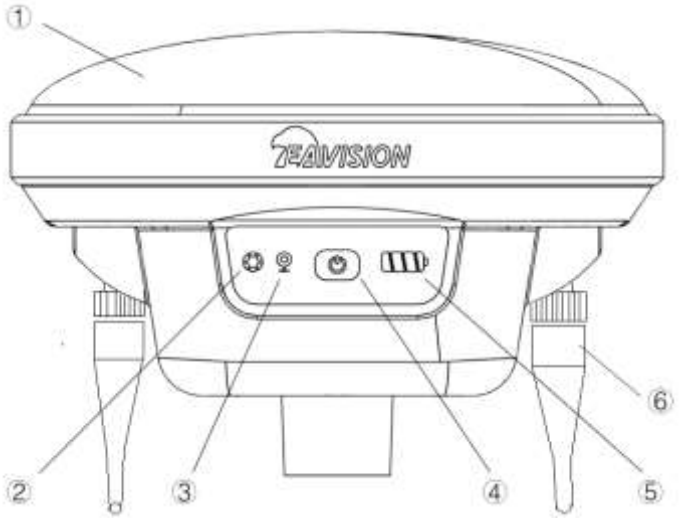
Specifications

Product model	EAV-BAS30
Dimensions (Tripod excluded)	147*147*102mm
Weight (Tripod excluded)	1kg
GNSS	BDS B1/B2 GPS L1/L2 GLONASS L1/L2 Galileo E1/E5b
Frequency band	2.4GHz
Start-up time	2min
Communication distance	1.5km
Position accuracy	0.1m
Differential data format	RTCM 2.x/3.x
Duration	20h
Charging voltage	4.2V/2.5A
IP rating	IP54
Nominal capacity / voltage	28000mah/3.7V

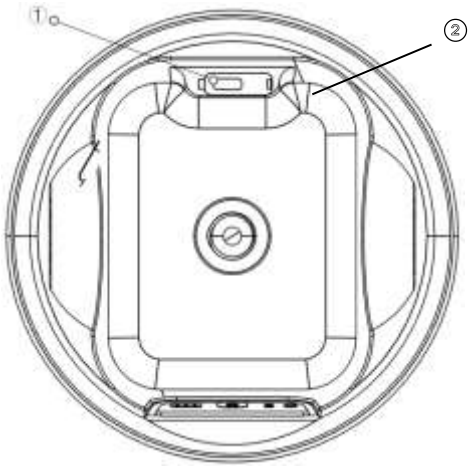
List of items



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

②Shutdown Switch

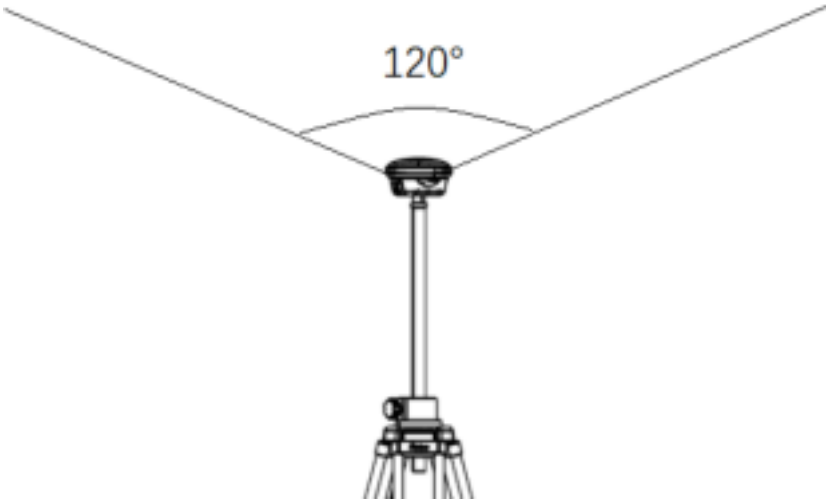
LED description

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

① Extend the tripod to set the base station to an appropriate height.

② Assemble the 2.4G antenna and make sure it's tightened firmly.

③ Make sure the shutdown switch is turned on.

④ Press and hold the power switch for 3s until the battery level LED flashes, then press to power on.

⑤ 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.

⑥ 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) Locator connection

a) Mount the locator to the remote controller.

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

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

4) Base station status check

a) Open EAVISION, enter Settings page.

b) Click RTK base station Settings to check the parameters.

5) Connect the locator and base station.

a) Ensure the parameters after successful connection to the locator and base station

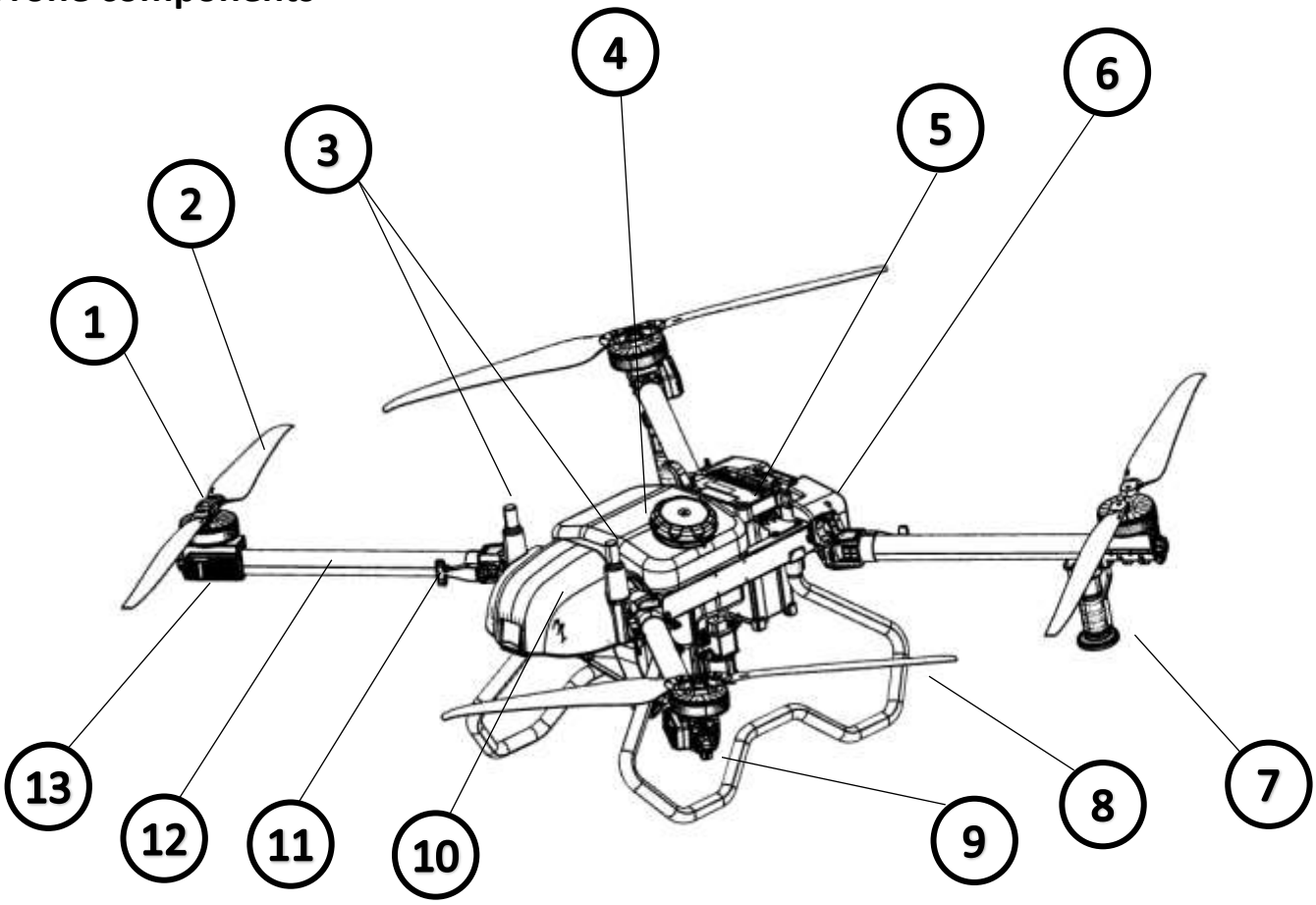
b) The drone will then connect to the locator and base station automatically.

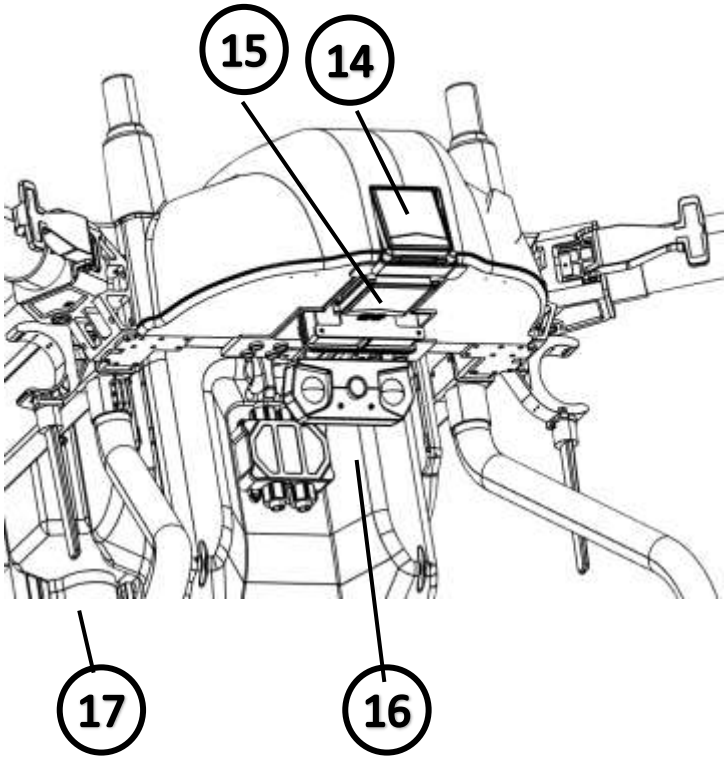
6) Base station charging

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.

Drone

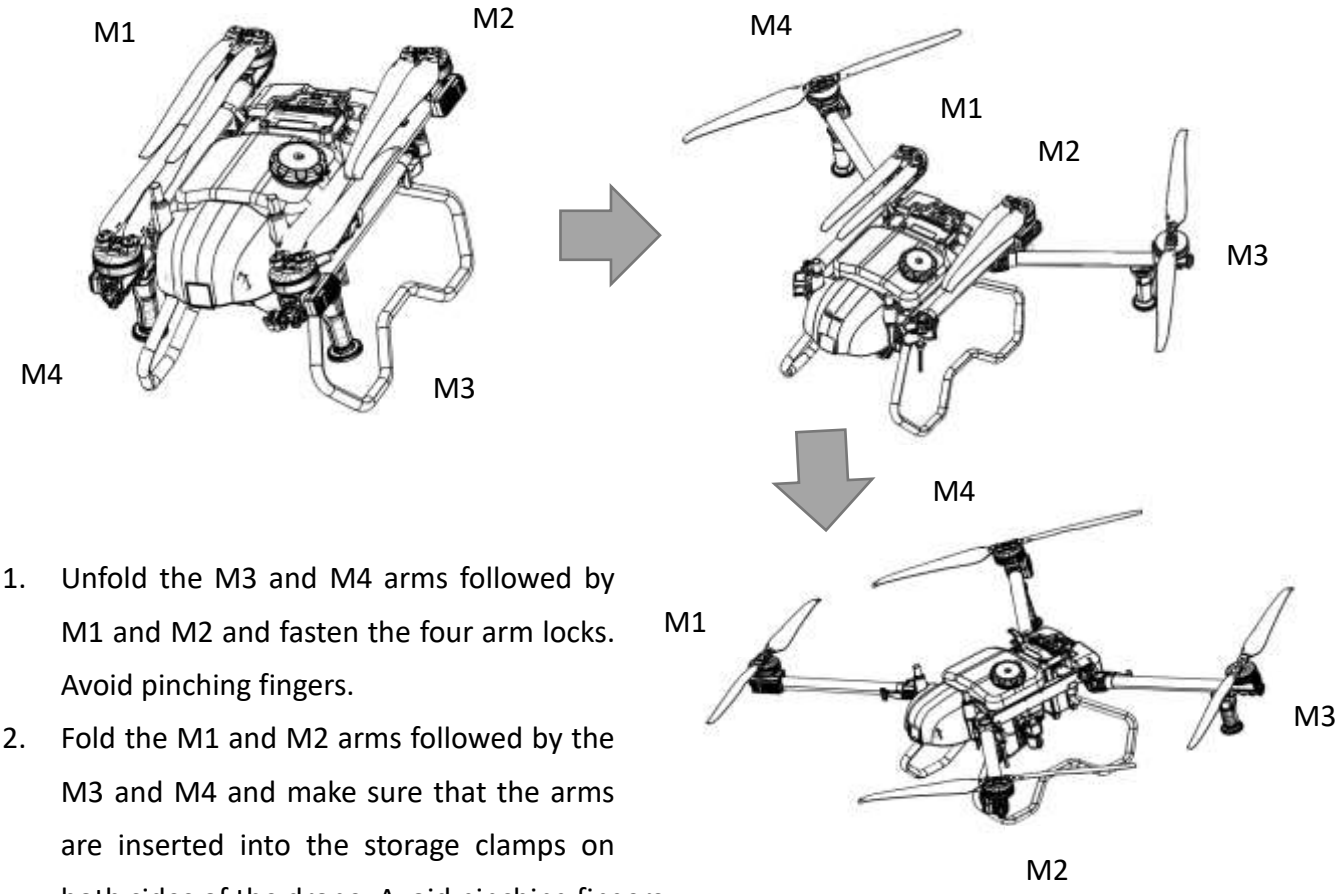
Drone components





1. Motor
2. Propeller
3. RTK Antenna
4. Terrain following Radar
5. Battery
6. Back Radar
7. Mist Nozzle
8. Landing Gear
9. Rear Navigation Light
10. Cover
11. Arm Locks
12. Frame Arm
13. ESC
14. Front Radar
15. Downward
16. FPV Camera
17. Receiver 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.

Start Operation

Preparation

Before operation, please make the following preparations to ensure that all devices are complete, functioning properly, and nothing is missing or forgotten.

Product	Item	Description
Drone	Radars	Make sure the radars are intact and clean, and the cable connection is normal.
	Night lights &FPV	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.
Locator	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
	Front radar &downward radar	Make sure the radars are intact and clean, and the cable connection is normal.
	Back radar	Make sure the radar 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.

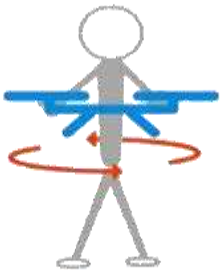
Remote controller	Remote controller	Make sure the remote controller is with full battery level and can be powered on properly.
	Locator	Make sure the locator can be connected to the remote controller stably, and the cable connection is normal.
Base station	Base station	Make sure the base station can be connected to the remote controller and locator stably.

Calibration

Magnetometer Calibration

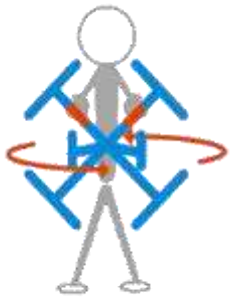
After the installation and system function test, you can take some fly test outside. Magnetometer calibration is necessary before the fly test as the following steps:

- Connect the devices to the remote controller, enter EAVISION, go to page Settings -> Calibration, click Mag Calibration button. The LED will then turn green in magnetometer calibration mode.



Horizontal Rotate

- Rotate the drone horizontally until the LED turns blue and enters the vertical calibration mode.



Vertical Rotate

- Rotate the drone vertically until the LED turns flashing blue. If the LED turns red, it means the calibration is failed and need to be calibrated again.

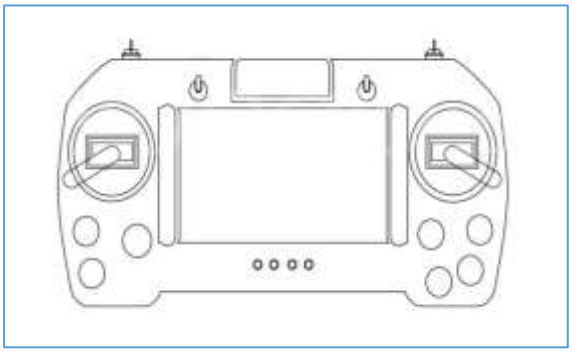
Flowmeter Calibration

Fill the tank with water up to 10L for example, then set Tank Volume as 10 on page Pump. Fill Tank Volume with 10 and Flowmeter coefficient with 0, then click the Calibration Flowmeter button. Wait work until no water is spraying out, then click Confirm button.

Manual Mode

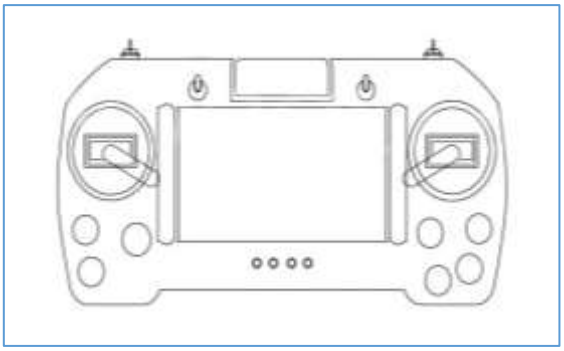
Takeoff

The Combination Stick Command (CSC) listed below is used to start and stop the motors. Wait for good satellite signal and ensure that there are no alarms displayed on the app. Unlock the drone performing the CSC in one continuous motion. The motors begin to accelerate at an idle speed. Release both sticks simultaneously.



Landing

When the drone has landed, push and hold the throttle stick down. You can also perform the CSC below.



Work Tasks

The status bar at the top displays the current status of the drone.

① Battery level: tapping the battery icon will display detailed information.

② Height: the upper value represents the height above ground level, and the lower value represents the altitude.

③ Flight speed: it indicates the horizontal speed.

④ Distance from home: distance from the HOME point

⑤ GPS satellite count: tapping the GPS satellite icon will pop up a window showing satellite/radar information.

⑥ Fly Time: it will reset when power is off.

⑦ Flow rate (L/min): it indicates the flow rate of the pesticide.

⑧ Work area: indicating the work area of the current sorties/total area of the block.

⑨ Total pesticide (L): it indicates the amount of sprayed pesticide.

⑩ Signal strength: it indicates the communication between the remote controller and the drone.

Box 11: Alarm shows the current alarm status of the flight controller, no alarm information will be displayed if there are no alarms.

Box 12: Mode shows the current flight mode of the drone.

Box 13: Notification

Box 15: Command operation: return, land, and AB angle (set the angle for AB points when marking in AB mode).

Box 16: Obstacle avoidance and terrain following switch.

Box 17: Clear the AB point.

Box 18: Enter settings interface.

Box 19: One-click centering.

⚠ Note: The effectiveness of the perception and obstacle avoidance system is influenced by factors such as environmental terrain, obstacle material/size/angle/location, and electromagnetic wave reflectivity. Therefore, the obstacle avoidance function only serves as an auxiliary means to avoid obstacles and should not be used as a regular application function. Any consequences arising from the failure or failure to avoid obstacles are not the responsibility of EAVISION. When using this product, please pay attention to obstacles in the terrain.

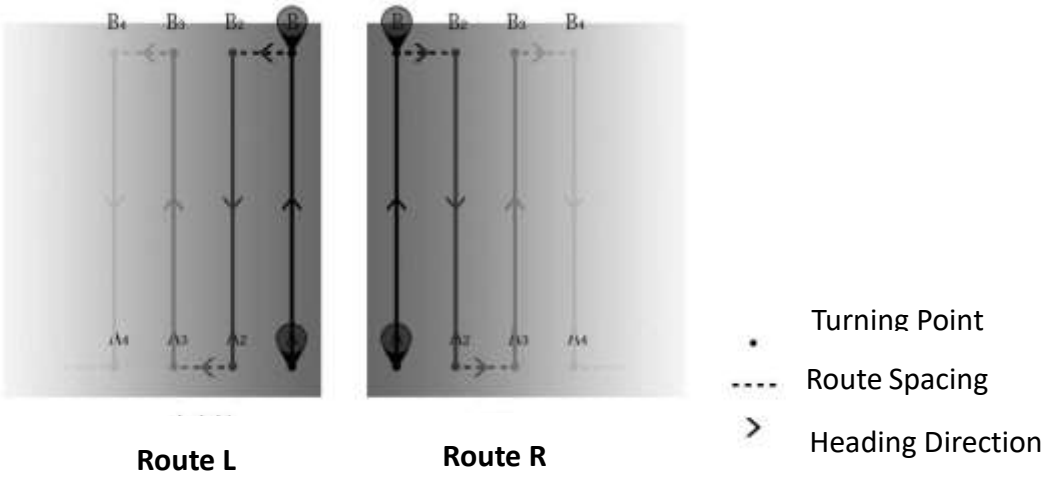
AB Mode

AB mode automatically copies AB routes for flight after user defines point A and point B. In AB mode, it supports radar terrain-following and radar obstacle avoidance. Route length, height, heading yaw can adjusted during the flight.

AB Mode Operation

- Click  at the lower right corner on Manual page to clear the last AB points information to ensure that there is no AB points inside the flight controller (LED will flash purple if AB points exist).
- Manually take off and fly to the first starting point. In GPS hover mode, switch channel 6 from default to point A to record position A. After recording of point A, Purple LED will flash 1 time.
- Move the drone to point B and the pump will turn on automatically. In GPS hover mode, channel 6 switch from point A to point B to record position B. After recording point B, the purple LED will flash 2 times.
- After the recording is completed, switch channel 5 to AB mode, and then push the roll joystick leftward/rightward. AB mode begins and the drone will continue to fly by changing ridges to left/right.
- Switch Channel 5 to Attitude/GPS mode can exit AB mode (at this time, channel 6 is at point B, it is recommended to return to default position). In order to re-record AB points, it is necessary to click  at the lower right corner on Manual page to clear current AB points. The purple LED will turn off if the AB points are cleared successfully.
- After returning from the current AB mode operation, if you need to resume flying from the last stopped point in AB mode, there is no need to clear the AB points. Just take off in GPS mode and switch the mode channel (CH5) to AB mode. The drone will automatically fly to the last point and continue the operation.

Chart: AB Mode



Route L **Route R**

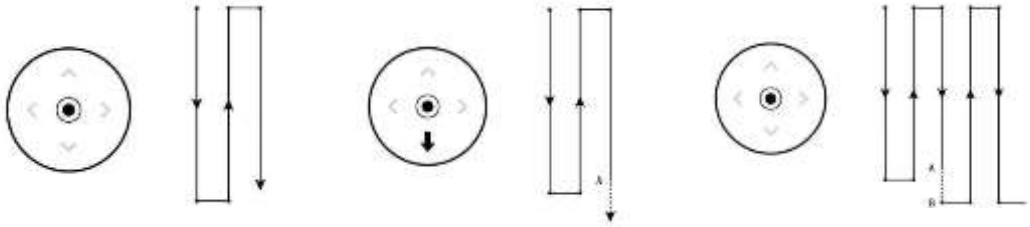
Real-time Adjust in AB Mode

1) Ridge length

To adapt to irregular blocks, the length of AB points can be adjusted in real time by pull/push pitch joystick during flight. Adjust operation as follows:

Extension/Shortening of AB length: when the drone flies to the edge, pull/push the pitch joystick, the drone will move slowly at a speed of 2m/s. When the extension position is reached, the pitch joystick should be back to the center, the drone will stop flying forward to turn left/right, and then start to copy the corresponding line. AB point extension is completed.

Chart: AB Mode Adjust Length



2) Height Adjust

The throttle joystick keeps center position to make the drone flying with the same height (keep the same height relative to ground if radar terrain-following is enabled). The drone will climb if the throttle is up and descend if throttle is down.

3) Heading Adjust

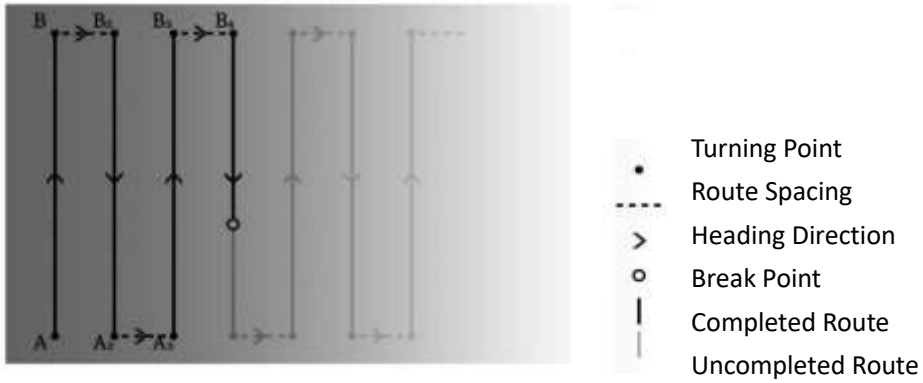
The drone heading is locked if rudder joystick is in the middle. Turn to left or right to change the drone heading.

Break-point-continue in AB Mode

When AB mode is quit for some reason. it needs to continue executing AB mode following the steps below:

Take off manually in GPS mode, switch Channel 5 to AB mode, then the drone enters Break-point-continue mode and goes to the position where it quit in last AB mode.

Chart: Break-point-continue in AB mode

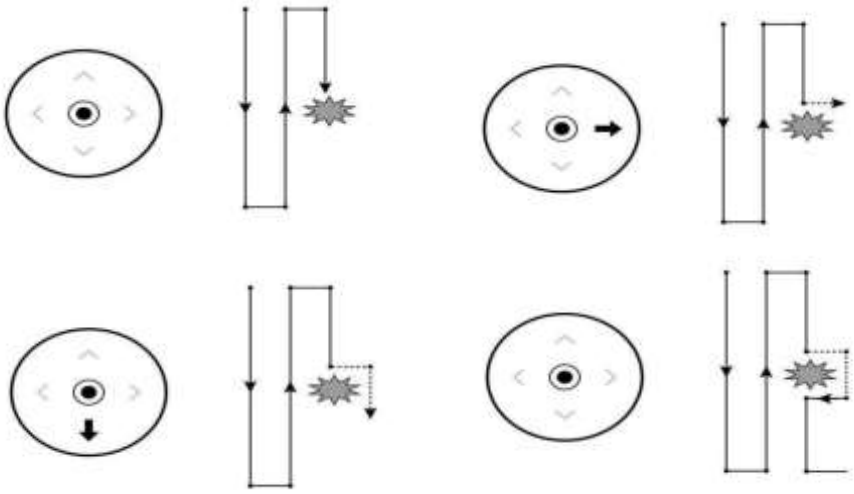


Obstacle Avoidance in AB Mode

1) Manual Obstacle Avoidance

In AB mode, if there exist obstacles in future trajectory, switch manual mode first. Turn the roll joystick left or right (depend on which direction to pass through the obstacle) to change the heading direction, then climb or descend to detour. Return all the joysticks to middle to continue the AB task.

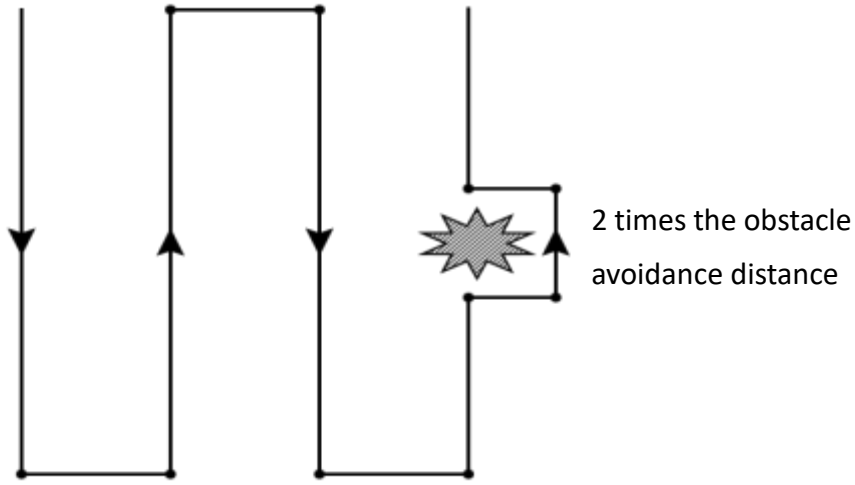
Chart: Manual Obstacle Avoidance in AB Mode



2) Automatically Obstacle Avoidance

If the drone is installed with obstacle avoidance radar, when the radar detects obstacles in front/back, the drone will automatically choose hover/detour according to the obstacle avoidance action set by APP. If hover is selected, the remote controller can get control if roll/pitch joystick is turned, and resume the route if all the sticks are back in middle. If detour is chosen, the drone will shift to one side until there is no obstacle in front of it, and then fly forward for 2 times the obstacle avoidance distance set by APP with +5 meters plus.

Chart: Radar Obstacle Avoidance in AB Mode



AB-T Mode

To facilitate the operation in non-rectangular blocks, an AB-T mode has been added on top of the AB mode. By adjusting the angle of the AB points during marking, the drone's flight route can be changed to adapt to more complex land blocks.

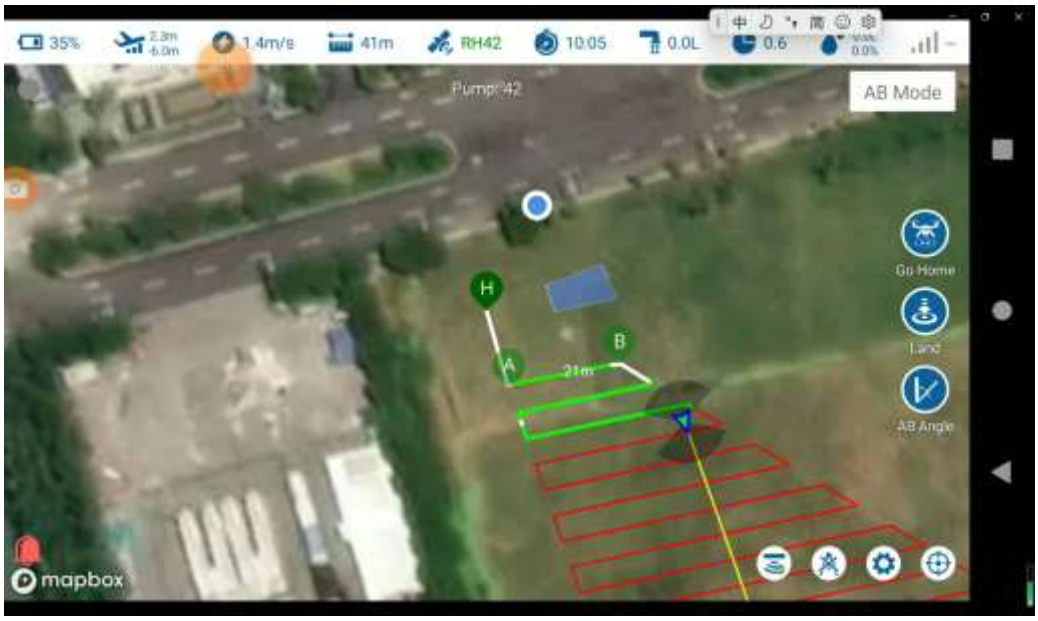
AB Mode Operation

- Click  at the lower right corner on Manual page to clear the last AB points information to ensure that there is no AB points inside the flight controller (LED will flash purple if AB points exist).
- Manually take off and fly to the first starting point. In GPS hover mode, switch channel 6

from default to point A to record position A. After recording of point A, Purple LED will flash 1 time.

- After recording point A, rotate the drone in place to align the front towards another edge of the block, away from the AB direction. Click the AB angle button to record the angle of point A.
- Move the drone to point B and the pump will turn on automatically. In GPS hover mode, switch channel 6 from point A to point B to record position B. After recording point B, the purple LED will flash 2 times.
- After recording point B, rotate the drone in place to align the front towards another edge of the block, away from the AB direction. Click the AB angle button to record the angle of point B.
- After the recording is completed, switch channel 5 to AB mode, and then the roll joystick gives a full left/right action. AB mode begins and the drone will continue to fly by changing ridges to left/right.
- Switch Channel 5 to Attitude/GPS mode can exit AB mode (at this time, channel 6 is at point B, it is recommended to return to default position). To re-record AB points, it is necessary to  click at the lower right corner on Manual page to clear current AB points. The purple LED will turn off if the AB points are cleared successfully.
- After returning from the current AB mode operation, if you need to resume flying from the last stopped point in AB mode, there is no need to clear the AB points. Just take off in GPS mode and switch the mode channel (CH5) to AB mode. The drone will automatically fly to the last point and continue the operation.

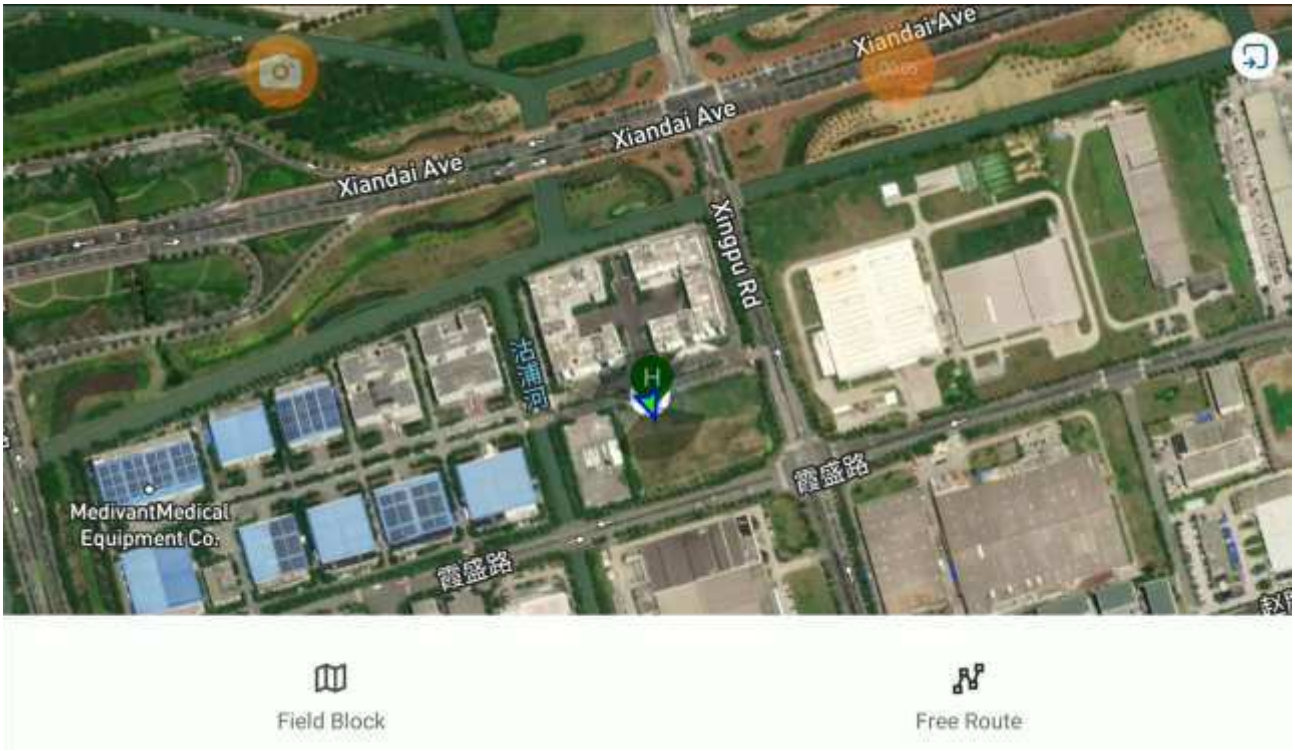
Chart: AB-T Mode



Block mapping

Before automatic operation, the block boundary and the obstacles need to be mapped. Click Mapping to enter the mapping page.

Chart: Mapping Block Type Selection



Select the type of land to map:

Field Block: map the boundary of the block for the large fields, and then plan the route to work within the block.

Free route: for irregular spraying, such as spraying irregular fruit trees, the drone needs to hover on the trees for spraying.

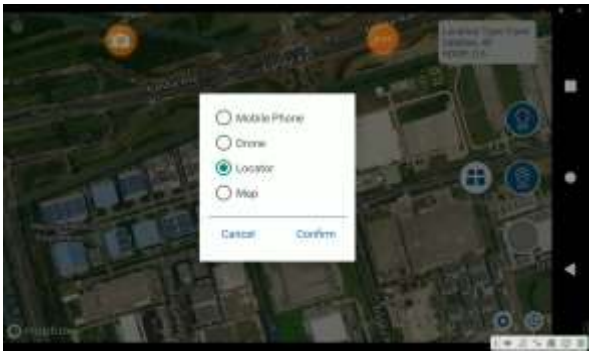
The APP supports 6 block mapping methods, including mobile phone / remote controller / drone /RTK base station /locator / map, among which the drone / RTK base station /locator can support RTK high-precision marking (with optional RTK version)

Below is an example of how to perform high-precision RTK block mapping using a locator.

1) Power on the base station and the drone, then turn on the remote controller after connecting the locator.

2) Return to the main interface, and then enter the mapping page, select the Field Block / Free Route, and then click  at the bottom right corner, select Locator, then click Confirm. After successful connection, the positioning status and location of the marking device will be displayed on the map.

Chart: Marking Mode Selection



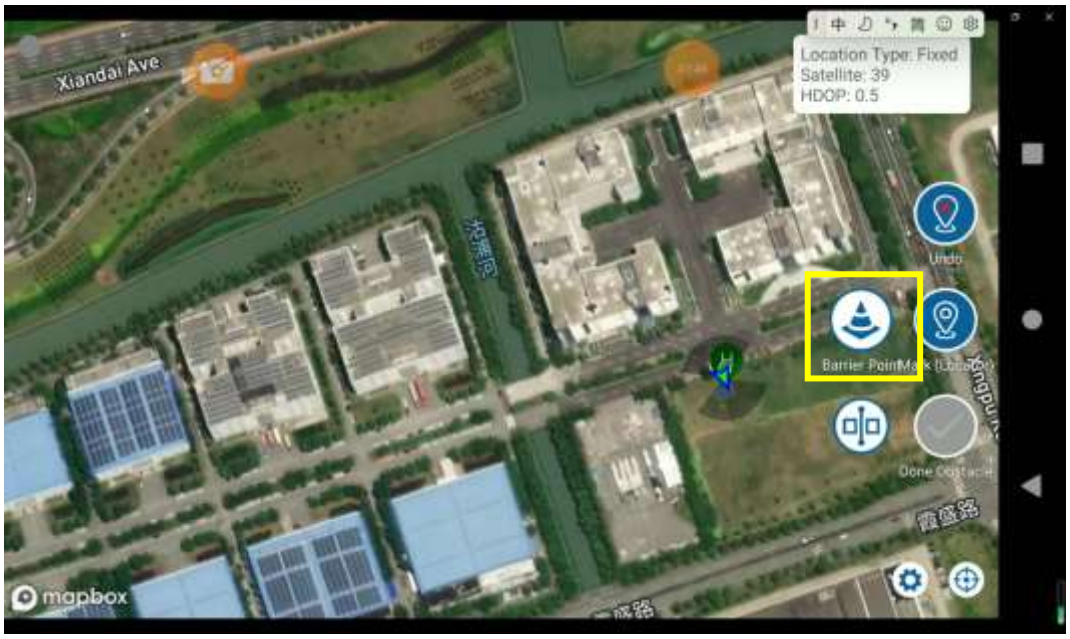
3) Click ① Edge Point, then ② Mark to record points along the boundary until all boundary points are recorded. If a point is marked incorrectly, click on the Undo button to remove the previous point and re-mark it.

Chart: Field Block

4) After mapping the boundary of the polygon, if necessary, obstacles can be marked inside the polygon. Click the marking type button to enter the barrier point mapping mode. Also click the mark button to record the obstacle boundary. After recording the obstacle boundary, click the Done Obstacle button to complete the mapping of the obstacle.

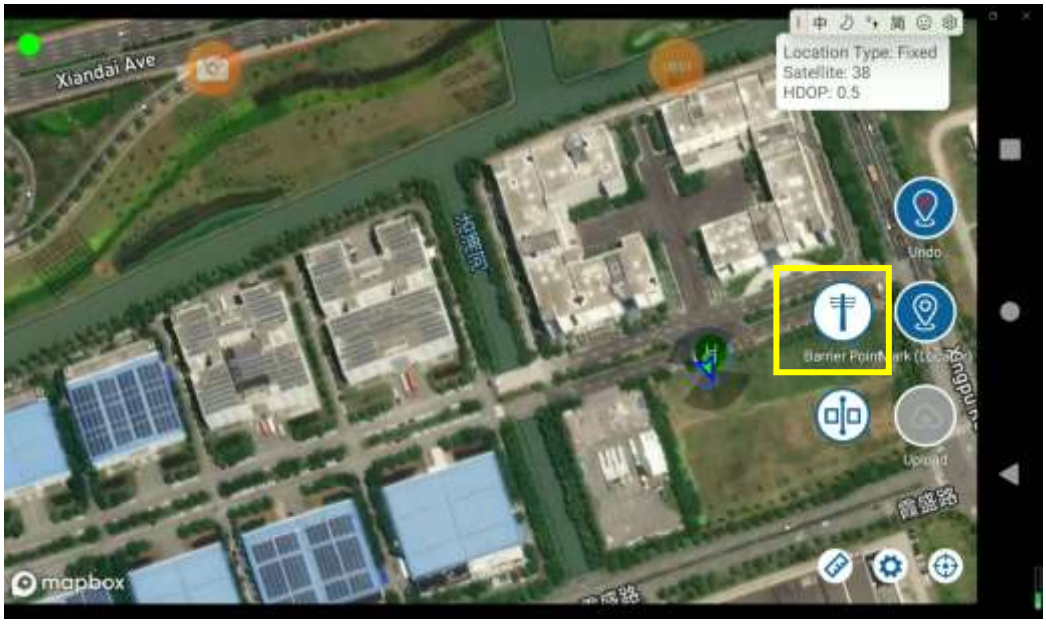
Chart: Obstacle Marking Switch

5) If you need to mapping poles or trees or other circular obstacles, you can click the marking type



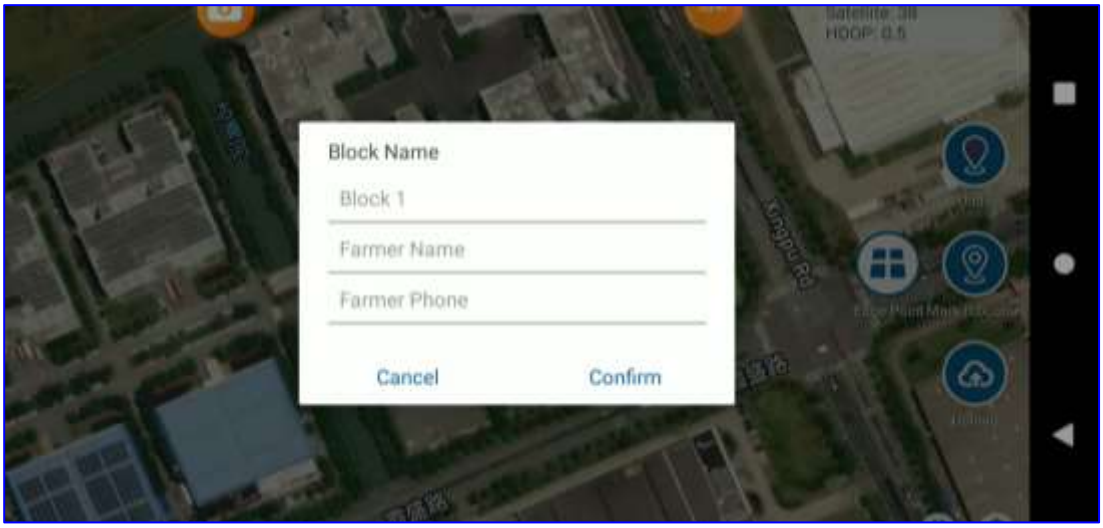
button to switch to the pole obstacle mapping mode (the will appear). Then put the locator in the center of the obstacle, click the mark button, and a polygon obstacle area will be automatically generated. The pole radius can be set by clicking .

Chart: Pole Obstacle Mapping



6) After completing all the mapping, click the marking type button to switch to Edge Point. Then click the upload button, the block information and obstacle information of this mapping will be saved and synchronized to the plant protection network management platform for future operations, as shown in the chart below.

Chart: Block Upload to Server



So far, the mapping work is completed.

Auto Pilot

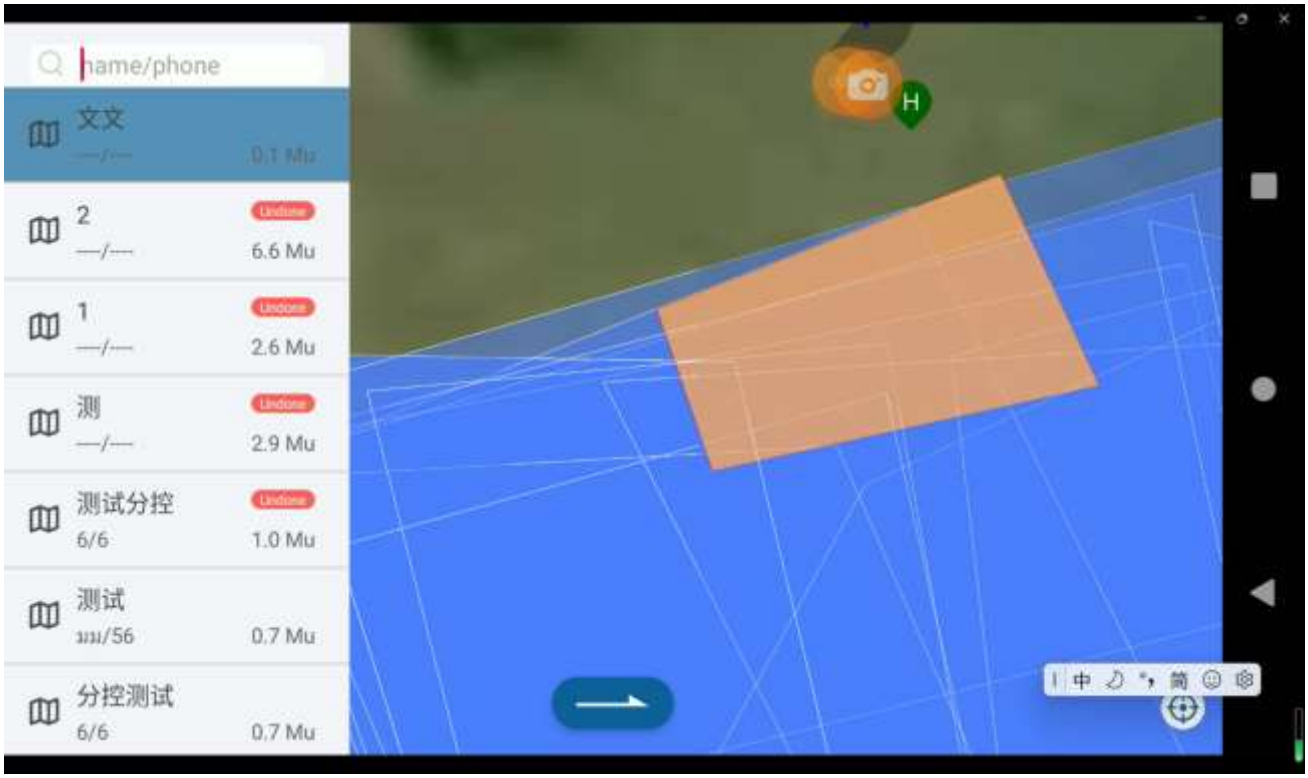
Route Planning

After completing the block mapping, it is necessary to edit the block and generate flight routes. The main attributes for route editing are as follows:

1) Route generation

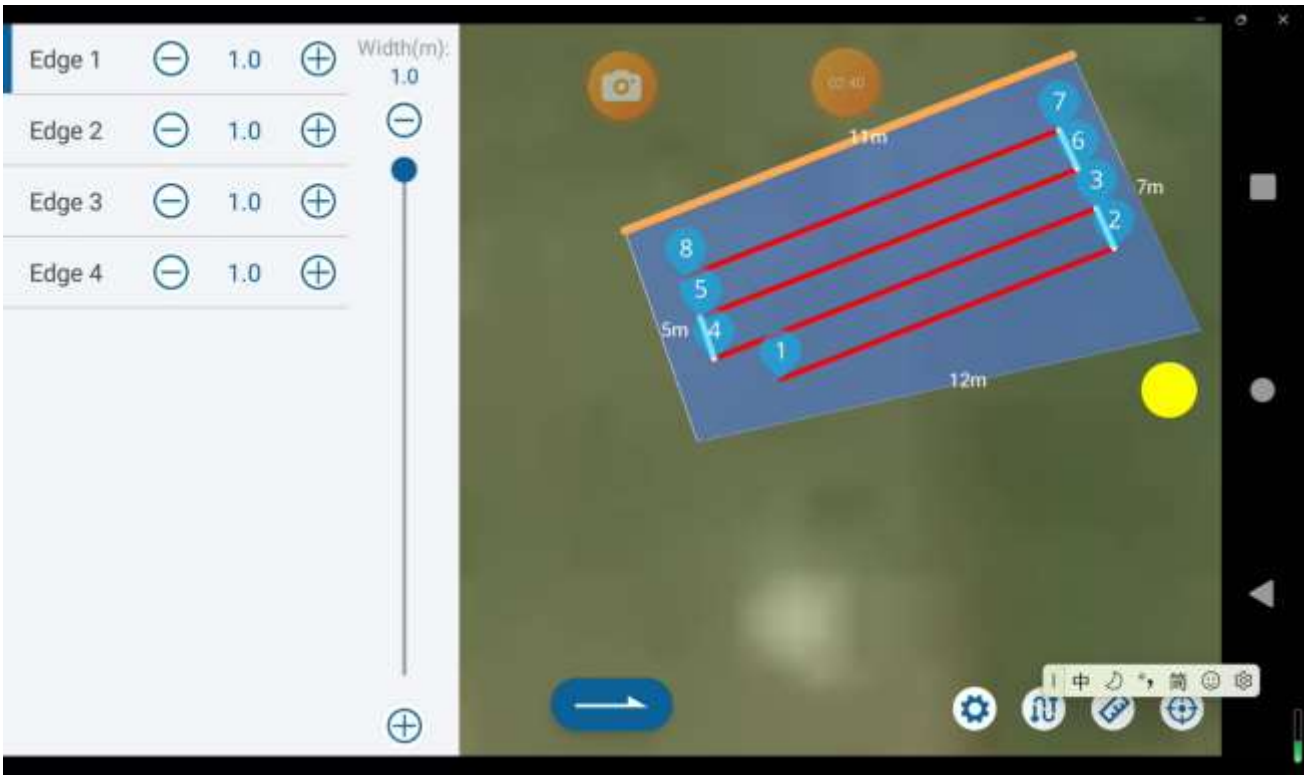
- When entering the Auto Pilot interface, the app will display the block owned by the current account near the current location. The app retrieves the blocks from the plant protection management platform through the network. If the network is not smooth and the retrieval is unsuccessful, you can refresh the list again under the block list. In areas with no network connection, the blocks will be saved locally.
- Select the block in the block lost and click  to plan the block.

Chart: Block Selection

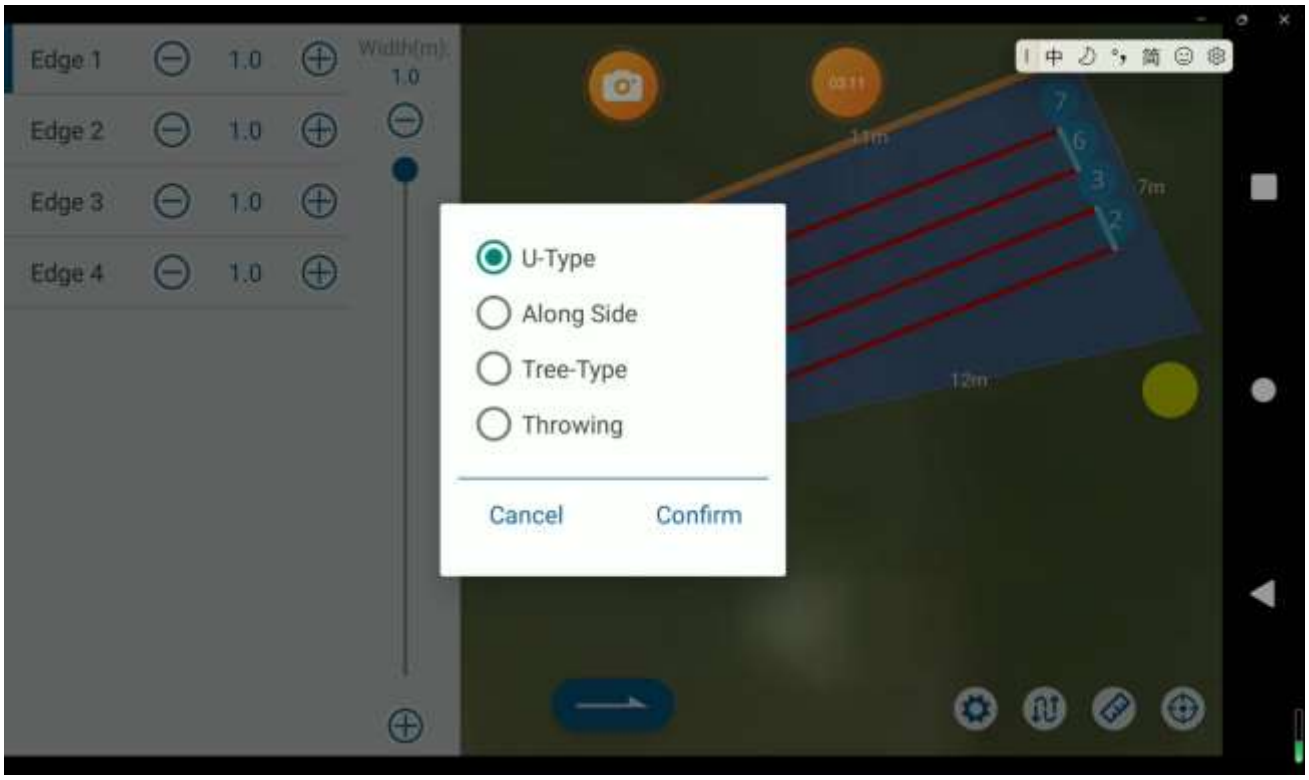


- After entering the block planning interface, you can set the relevant route direction, safe distance, the ridge width, the starting point position and so on.

Chart: Block Planning Parameter Setting



- Select different edges (1 / 2...), and the planned route is parallel to the selected edges (highlight in orange).
- A safety distance can be set for each edge. The safety distance can be adjusted using the plus and minus buttons or by directly entering a numerical value.
- You can select any vertex of the block as the starting point for route. Simply tap near the vertex of the block, and the first waypoint (Waypoint 1) will be automatically planned near that vertex.
- If the route direction of the block boundary does not meet the operational requirements, you can use the angle disk to adjust the route angle.
- Click  to select the route type to be planned in the current block, and you can plan the U-Type / Along Side / Tree- Type / Throwing.



U-Type: plan back and forth u-type route on the block.

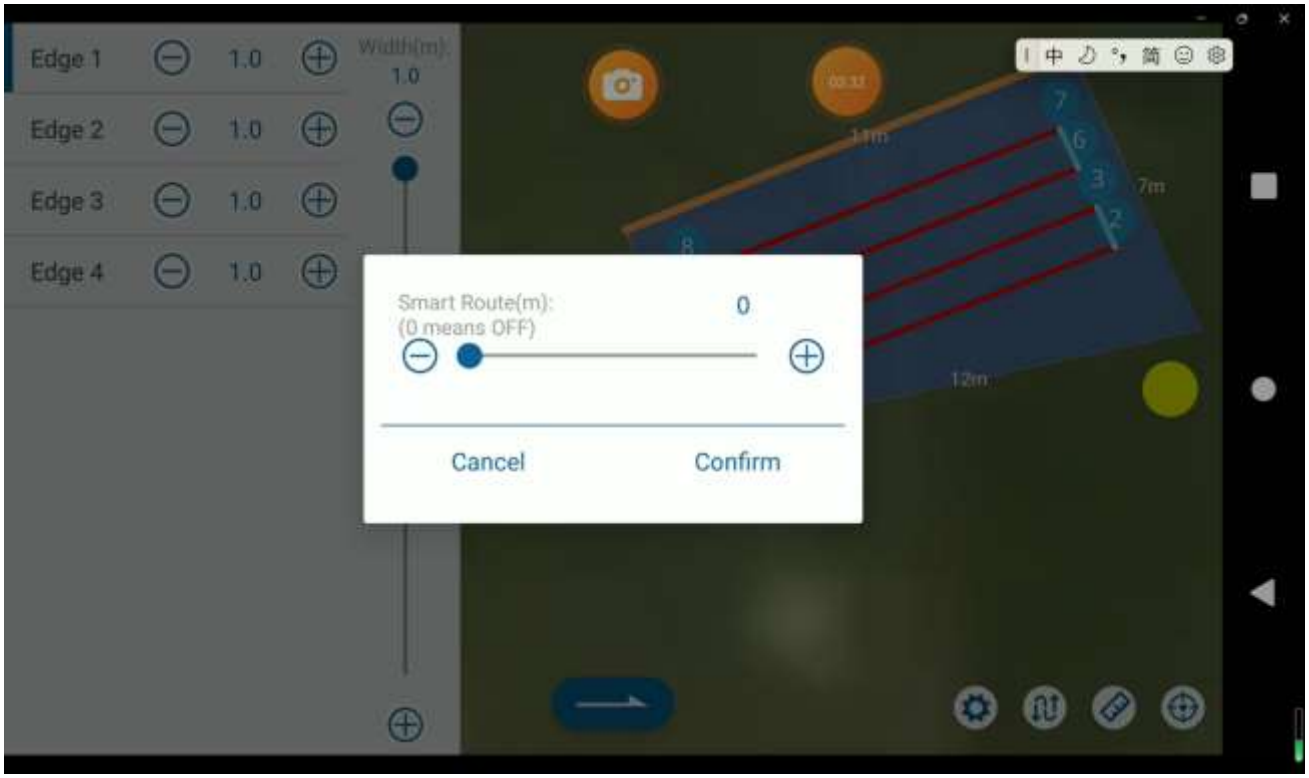
Along Side: a route along the edge of the block for boundary spray

Tree- Type: for works involving rows of fruit trees, you can mark points 1/2/3/4 at the end of one side of the tree rows, and mark 5/6/7/8 at the end of the other side of the tree rows. When planning the tree-type, points 1-8, 2-7, 3-6, and 4-5 will be automatically connected to form a line and plan the flight route.

Throwing: For throwing drone models, you can plan a throwing point at regular intervals along the flight route.

- Click the smart route button to set the maximum route of a single flight. Once the settings are completed, the route planning will be divided into segments. The flight route for each segment will end at a waypoint that is within the maximum route set and close to the starting point. The drone will hover or return. After landing, the next segment of the flight route will also start from a waypoint that is close to the landing point. This feature ensures that each flight segment ends at a waypoint close to the starting point, eliminating the need for the next flight to carry the payload to a distant location. If the smart route is set to 0, the smart planning function will be disabled.

Chart: Smart Route

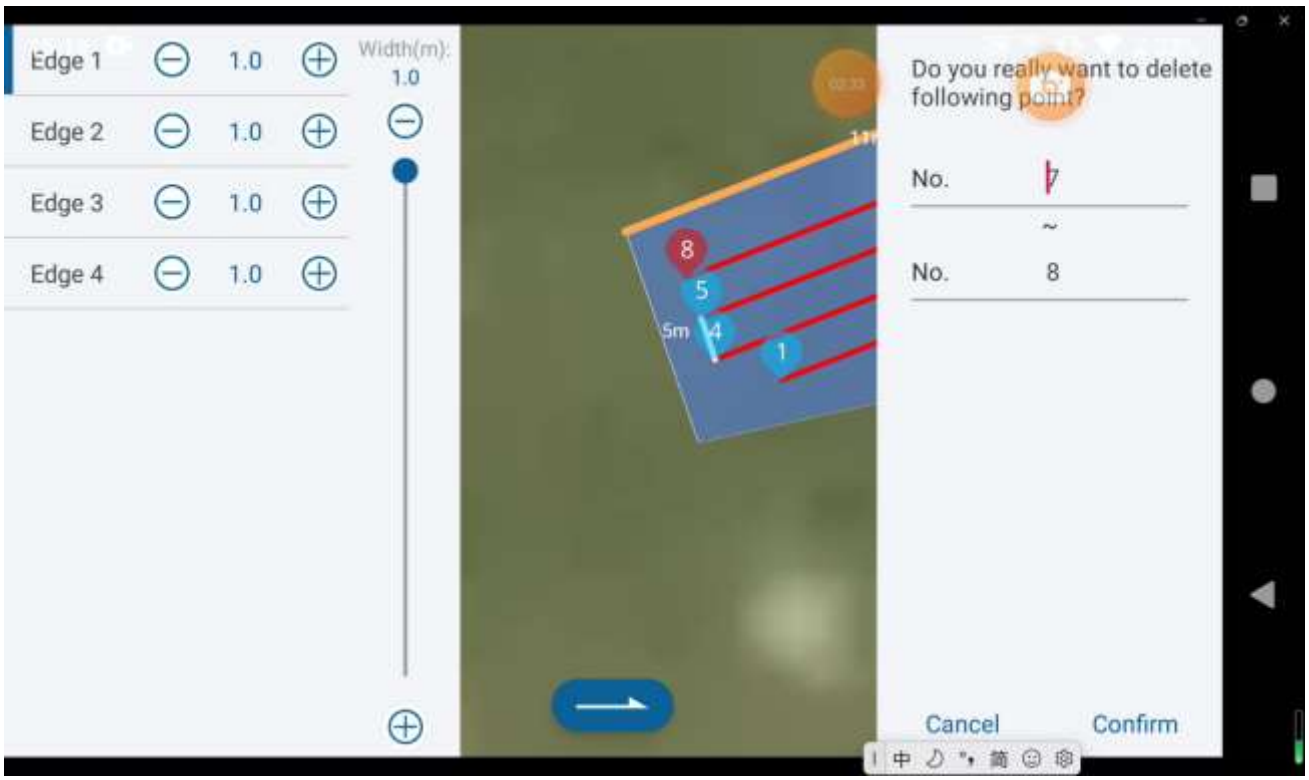


- By clicking on the safety distance button, you can set the safety boundary distance uniformly, as well as the obstacle safety distance. The boundary safety distance represents the inward offset distance, while the obstacle safety distance represents the outward offset distance near obstacles.

2) Waypoint deletion

In the actual work process, there may be multiple flight routes within a block that are not required for work. You can delete these unused flight routes by clicking on the waypoint number icon and entering the ending point number to be deleted in the prompt box, then confirm, as shown in the following chart.

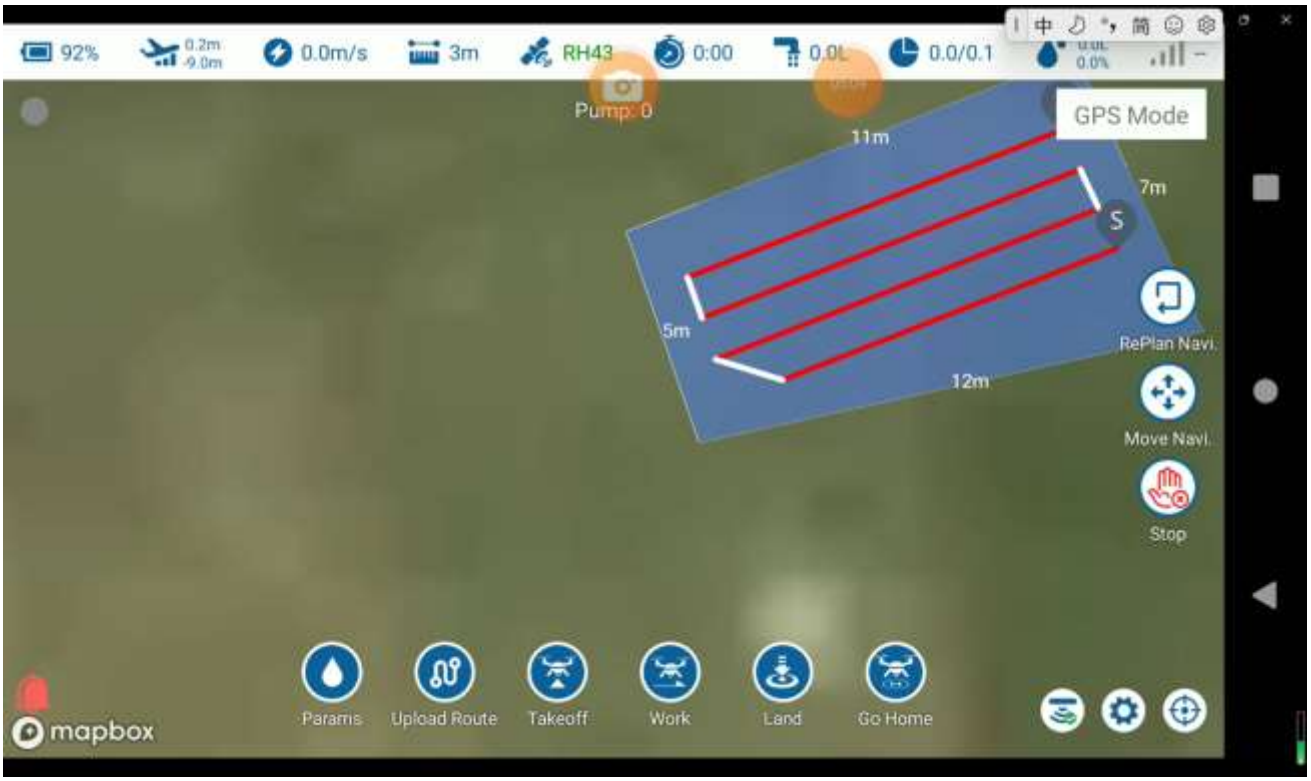
Chart: Waypoint Deletion



Auto Pilot

After completing the route planning, click  to finish the planning and enter the route work interface, as in the chart shown below.

Chart: Auto Pilot



After ensuing that the route is normal, click Param to set the height / speed / spray of the route, then click Upload Route, and then Takeoff and wait for the drone to take off automatically. After that, click Work to start operating according to the scheduled route.

Replan Navi.: it's for works with breakpoints located far away. Clicking on Replan Navi. will re-plan the starting waypoints at a closer distance to the drone, and then begin the work. After replanning the route, remember to upload the flight route again.

Chart: Replan Navi.

Move Navi.: adjust the overall deviation of the plot. You can use the Move Navi. function to move the entire flight route.

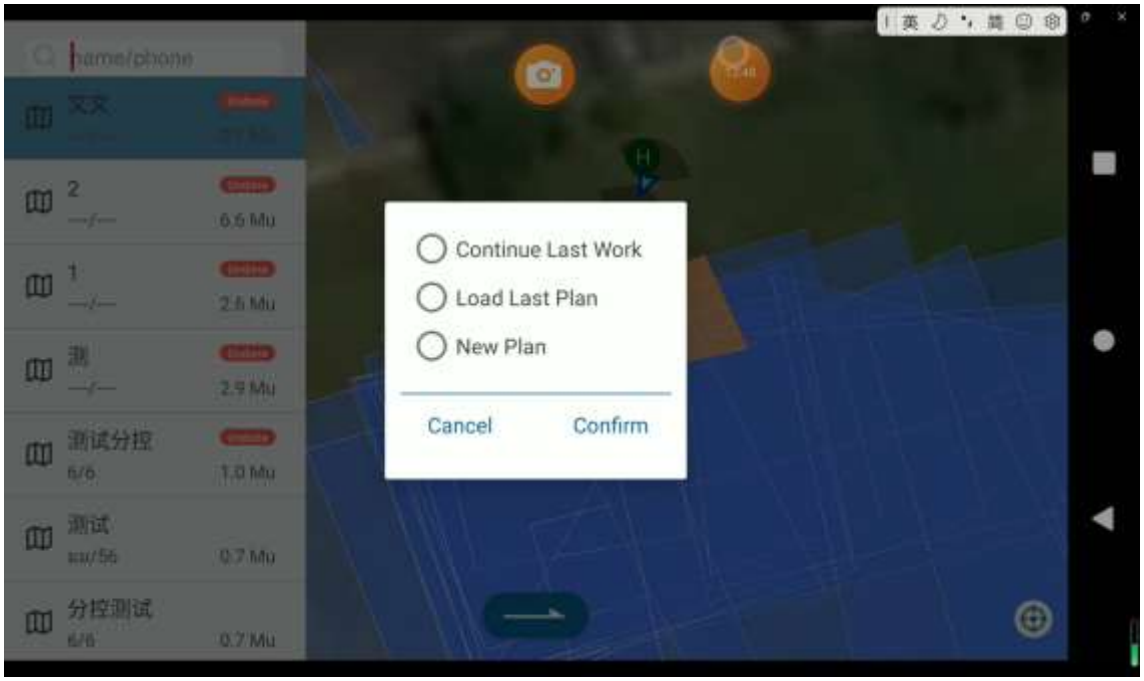
Stop: during the flight route, you can click on the stop button to pause the flight route.

Note: for drones with night lights, you can click on the switch button to turn on or off the lights. And for drones with FPV, you can click on the snap button to take photos or record videos.

Shortcut key: click  to turn on or off radar/obstacle radar, and choose manual height control mode.

- If the flight route is not completed and the drone returns for battery replacement or tank refill, when resuming the operation, there is no need to upload the flight route again. After the drone takes off, simply click Work again, and the drone will fly to the last waypoint of the previous flight route.
- Even if equipped with obstacle avoidance radar, the radar obstacle avoidance is automatically disabled during the process of flying to waypoint 1.
- The ridge turning mode during the operation can be selected as either a L-turn or a U-turn.
- During the flight route, real-time adjustments of throttle and heading are supported, and obstacle avoidance can be controlled using the remote controller.
- The pump mode can be set as a fixed or dynamic mode.
- If the block is not fully completed and you need to continue the operation on the next day, simply select the same block next time. The app will prompt you to choose to continue last work, load last plan, or use new plan. By selecting Continue Last Work, the app will retrieve the previous operation information from the background and continue the unfinished task.

Chart: Continue Last Work

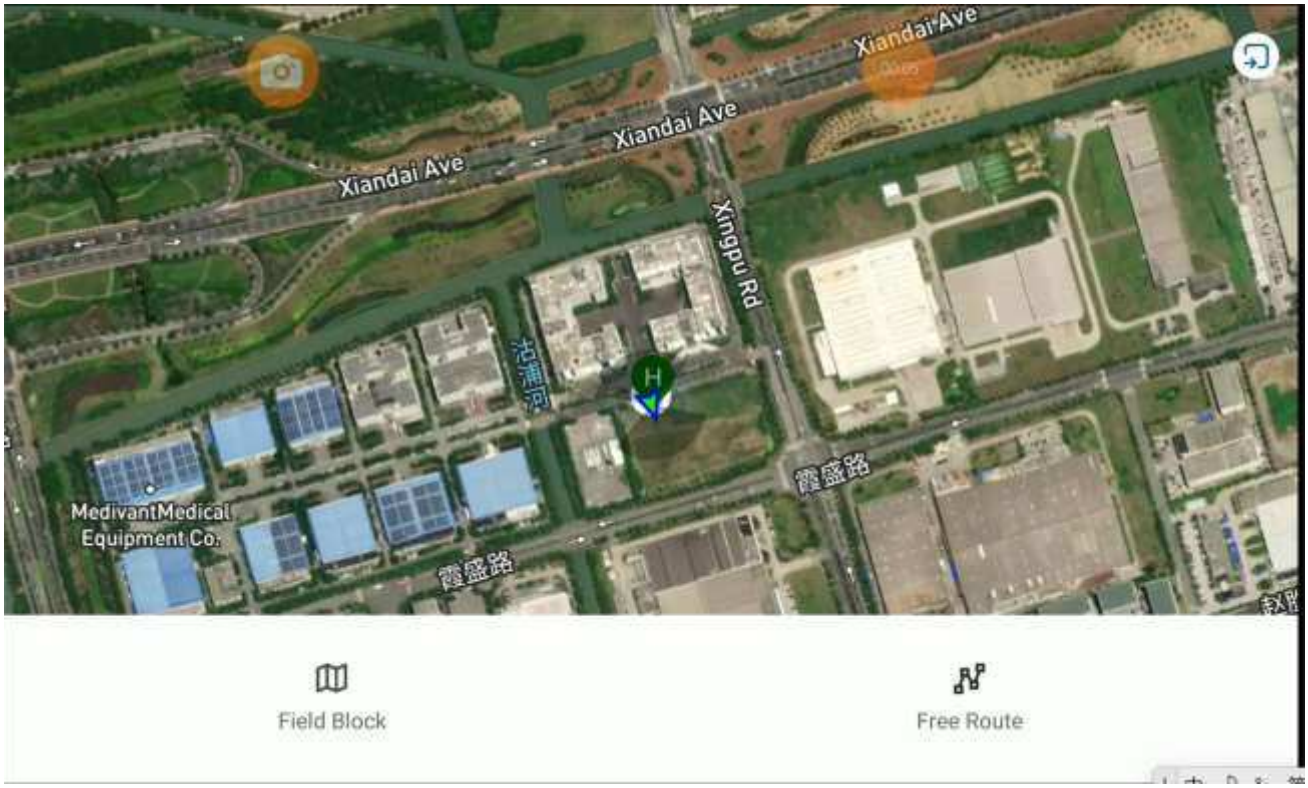


Auto Pilot – Tree Mode

The tree mode is used to map the longitude, latitude, and height (including relative height and altitude) of each tree using a mapping drone or EAVISION drone). These measurements are then used to plan the flight route. In this mode, you can set whether to spray the flight route and the hover time at each waypoint for spraying. It is also possible to pre-map the block and generate usable flight routes, which can be saved as .csv or .kml files and imported into the app for use.

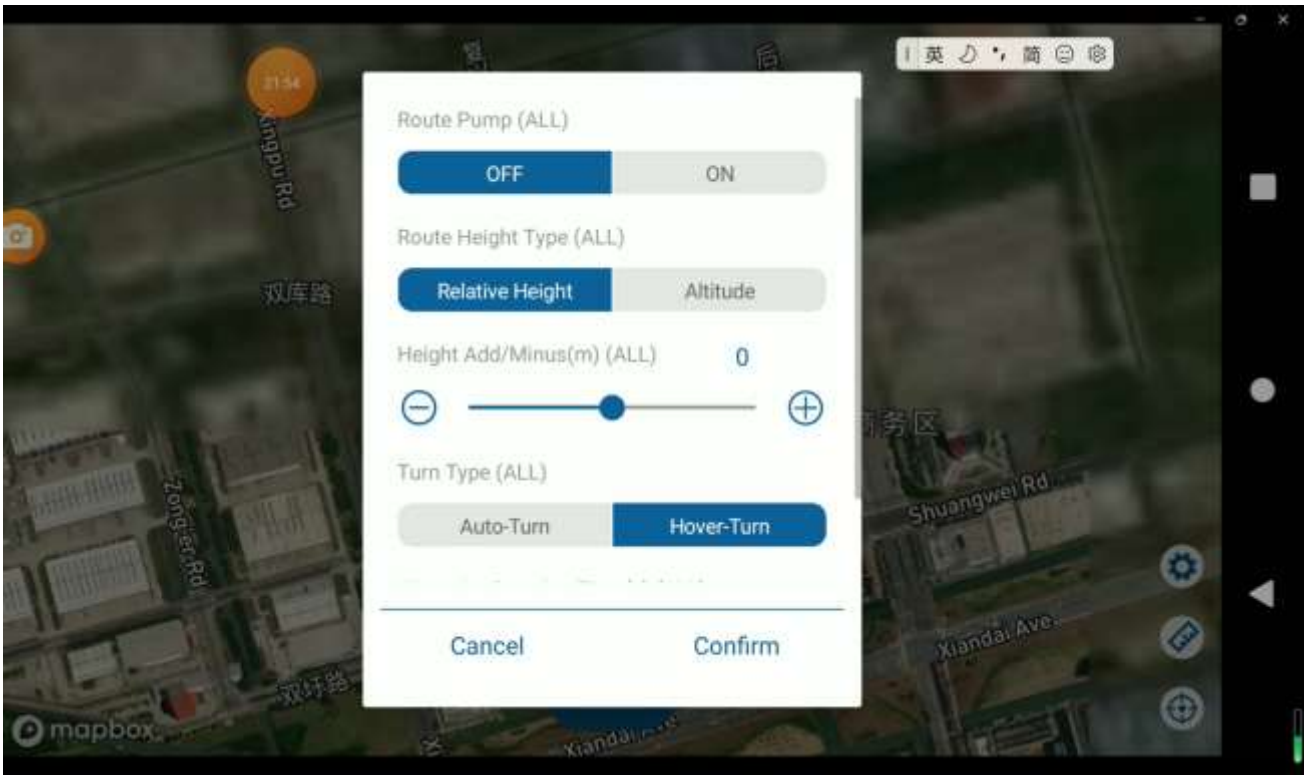
1) Enter Mapping, select Free Route, then mark points or click  on the upper right corner to import a pre-generated waypoint file.

Chart: Free Route



2) Mark waypoints along the desired flight route. The drone will follow the mapped route during the free route.
3) Enter Auto Pilot, select the mapped free route, and set parameters such as the route pump switch and hover time for the free route. Once the settings are complete, upload the flight route and execute the operation.

Chart: Free Route Mapping



Instructions for the use of the APP

Account Registration

Users can set the parameters of the drone through the EAVISION app, which is an Android app that can run on any Android phone or tablet.

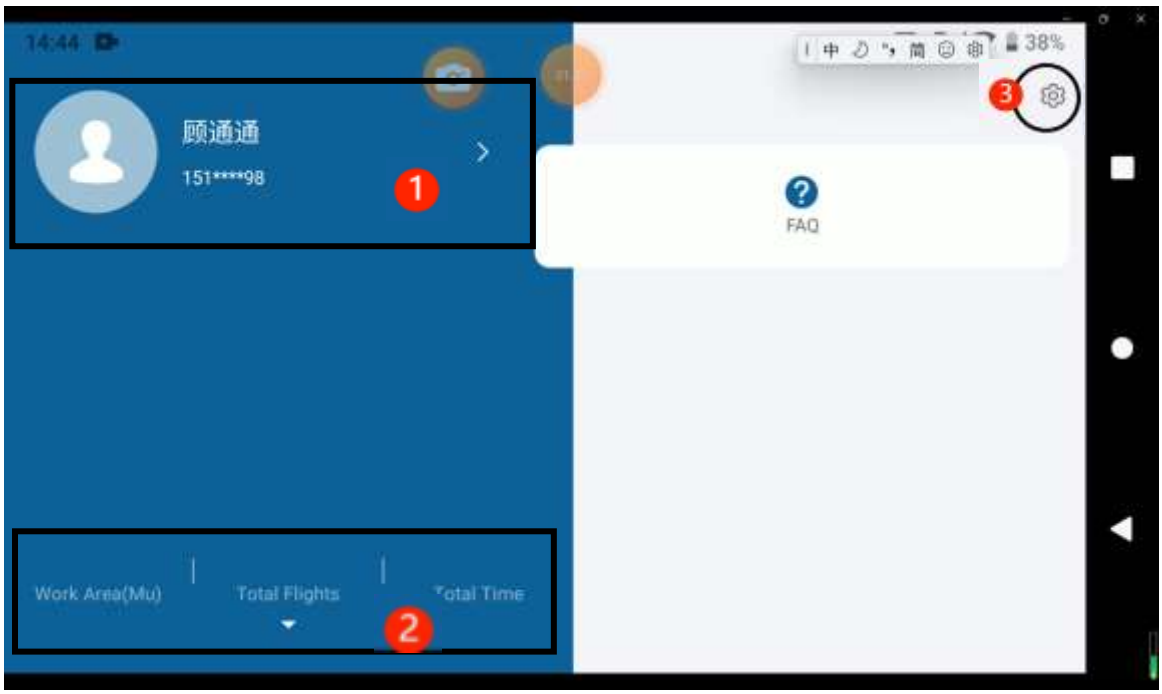
As shown in the following figure, the main interface of the app includes six functional buttons: Settings, Mapping, Manual, Auto Pilot, Manage, and Accounts.

For Manual or Auto Pilot, you need to first create a team or join an existing team in Manage.

Chart: APP Main Interface

Accounts

Chart: Accounts in the app



Click Accounts in the main interface of the app, and you can view the account information, work

status, app version, and others.

Work Area: total work area for the current account

Total Flights: total flights for the current account

Total Time: total work time for the current account

Chart: Personal

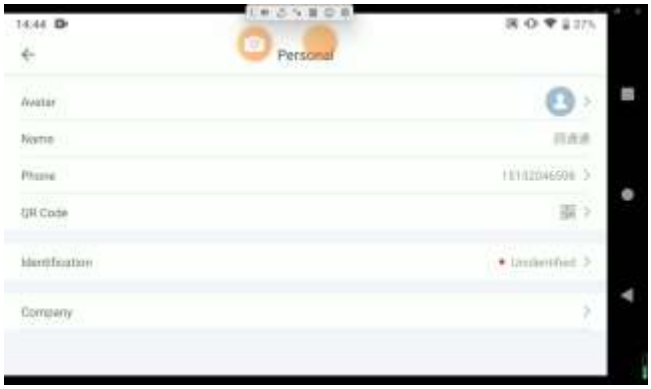
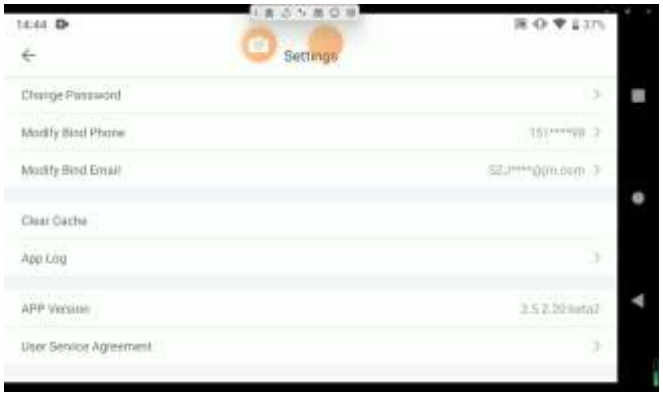


Chart: Settings

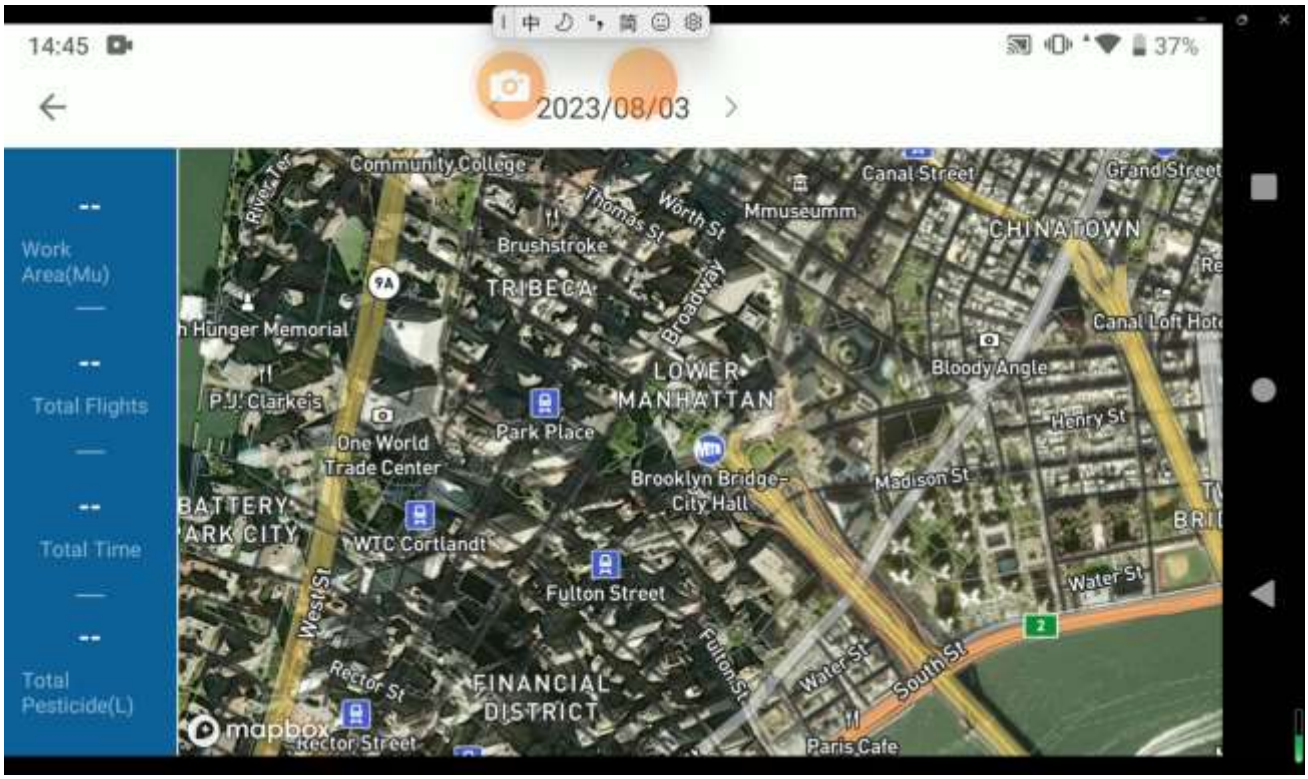


Click ② in Accounts to check all work trajectories, work area, and other information. Short pressing on a specific sortie allows you to view the flight record details. Long pressing on the screen enables you to select multiple sorties to be displayed on the map. You can also choose to display daily reports or work trajectories within a specific time.

Chart: My Sorties

Chart: Flight Record

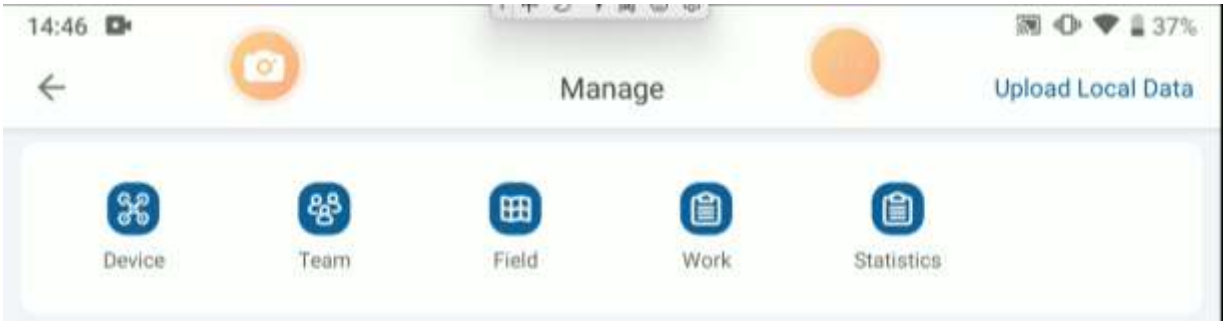
Chart: Daily Report



Manage

It contains Device, Team, Field, Work, and Statistics.

Chart: Manage

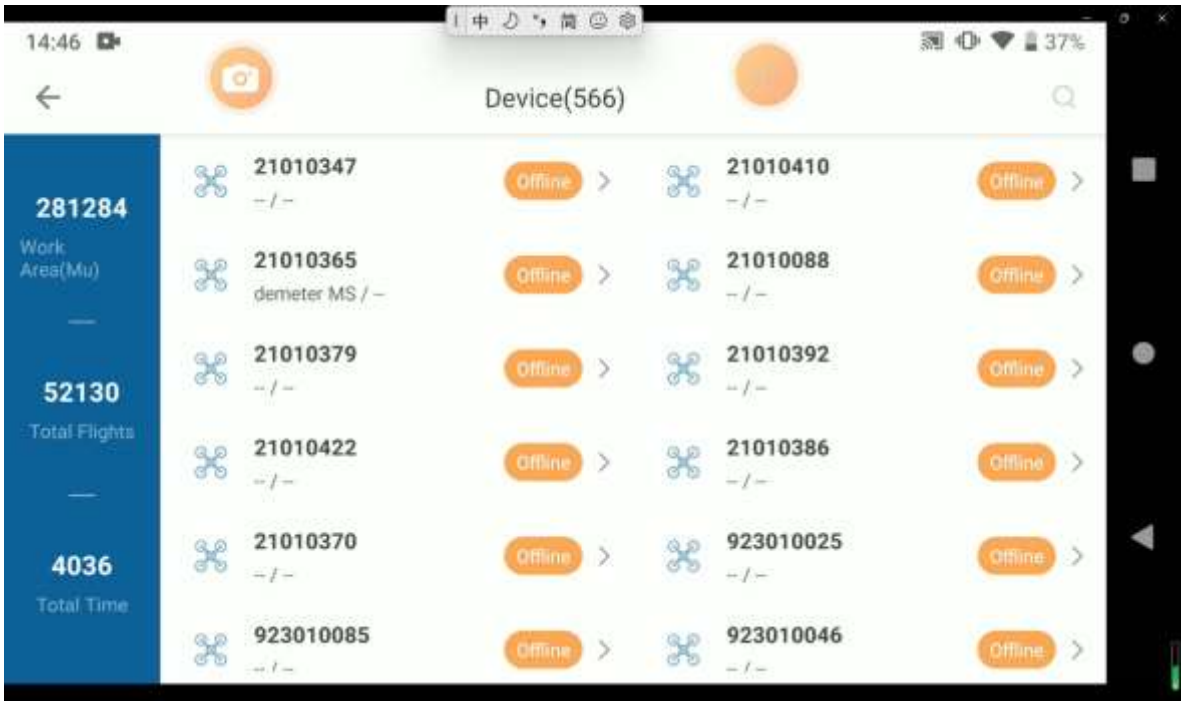


Device

Click Device and you can view the statistics of the account on the left: work area, total flights, and total time. These statistics are calculated from the date of registration of these drones in this account. For new drones, the activation date is the same as the registration date. For second-hand drones, the date of transfer to this account is considered as the registration date.

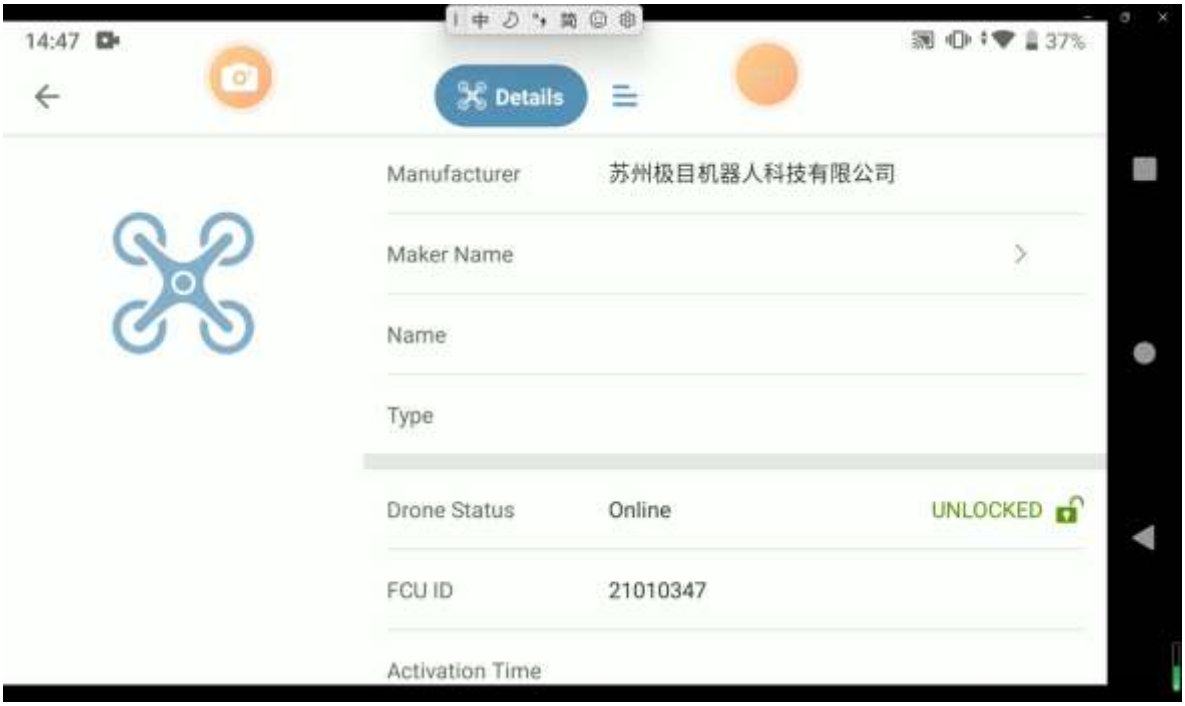
If you have device management permissions, you can see all the drones under your account. If not, you can only view the drones that have been assigned to you by the manufacturer.

Chart: Device



The device list displays all the activated drone numbers for this account. Click on the drone number, and you will see the details of that drone.

Chart: Details



Name: name can be modified

Assign Pilot: if you have device management permissions, you can assign the selected drone to subordinate employees. If you are a team manager, you can assign the selected drone to team members.

Drone Status: offline, locked, online, working.

Offline: the drone is not powered on

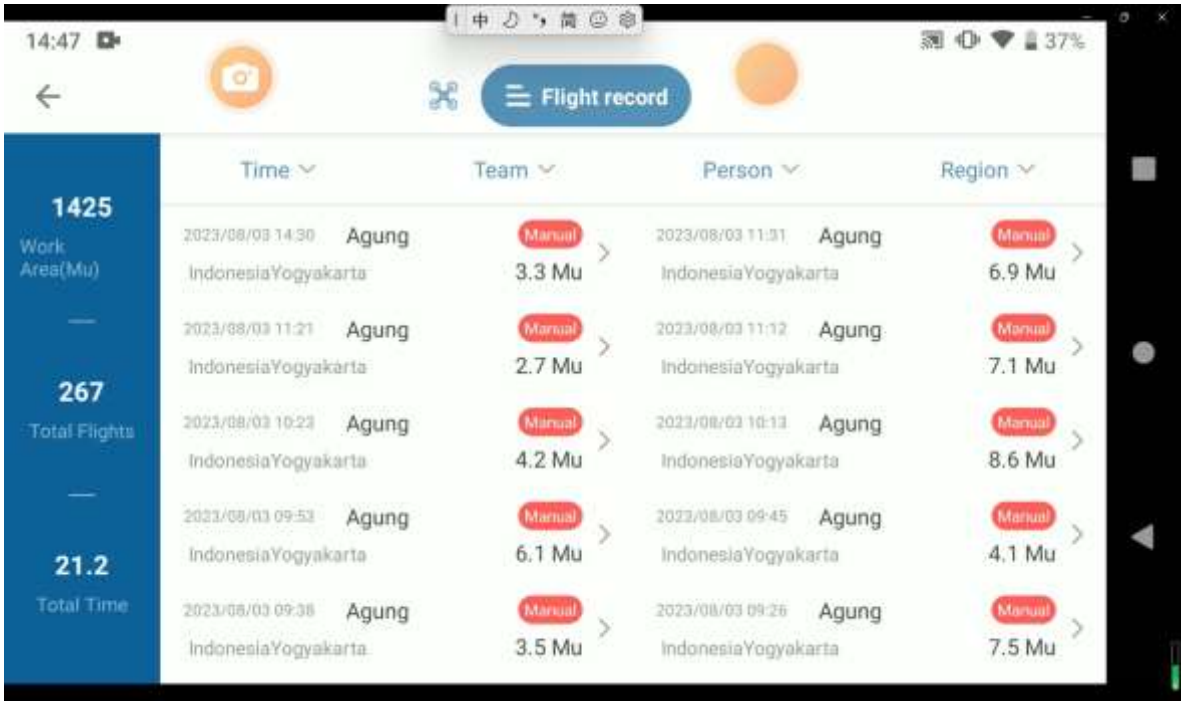
Online: the drone has been powered on but not flying

Working: the drone is in flight

Locked: the drone is locked by the manufacturer/operator and cannot take off for operation.

Transfer: drones can be transferred between the operator accounts. Click on the transfer at the bottom of the page, then scan the QR code of the recipient operator account to transfer the drone to them.

Chart: Flight Record



Flight Record: you can view the flight records of the current drone number. You can also filter the data based on time, team, person (selecting members within the team), and region.

Select a flight record from the list, and you can view the flight record details, where you can replay

the flight trajectory and review the drone status during flight.

Device activation

For newly unboxed devices, activation is required before use. The drone needs to be powered on and connected to EAVISION app. In the app, go to Manage - Device, where the currently connected drone number will be displayed. Once activated, this drone number will be associated with the current activated account. The current activated account can view all flight data and manage this drone.

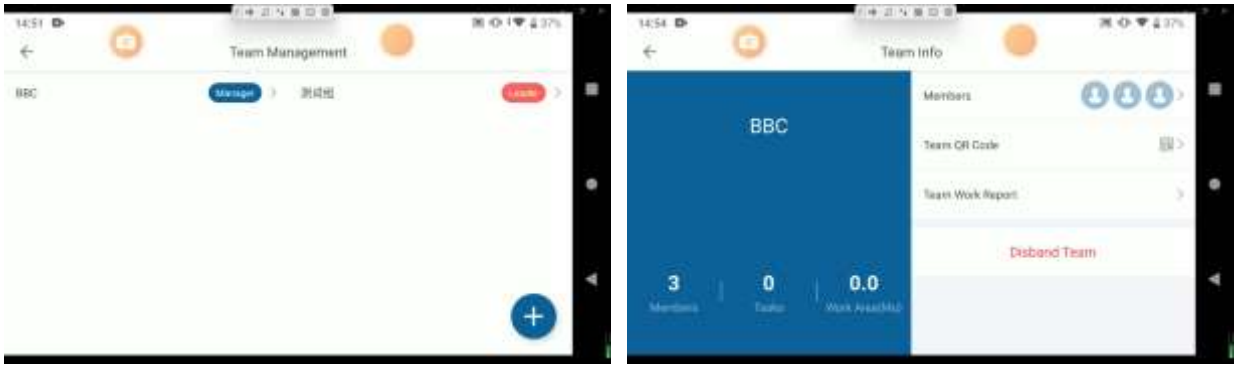
Click on the drone number and then Confirm to activate it. The activated drone will belong to the operator account that was used for activation.

Team

To better manage the plant protection team and optimize data statistics in a more detailed manner, we have established a team management mode. All blocks in the team are shared, and work data can be shared as well. By entering the team interface, you can establish your own team by clicking the “+” icon at the bottom of the page, as shown in the following image.

In the team, there will be manager, leader, and members.

Chart: Team



Click the team to view the team information, including leader, members, tasks and work area.

BBC: this is the team’s name.

Members: you can view the team members and their phone numbers, as well as the time they joined the team. The team leader can transfer and remove team members. For example, as the

operator account is the team leader, the operator account can transfer any team member to be the team leader at any time, and can also remove any team member from the team.

Team QR Code: other registered individuals can join the team by scanning the QR code.

Team Work Report: work area, total flights, and total time are the comprehensive team data. The data in the list represents the detailed data of each team member's individual flights.

Personal Work Report: work area, total flights, and total time are the personal data. The data in the list represents the detailed data of individual flights for each team member.

Team members can only view the overall data of the team, as well as the members and individual work report.

Field

All mapped blocks can be viewed in Field. When modifications are needed, go to Manage -> Field, as shown in the following image. The block list includes individually mapped blocks, blocks shared by other team members, and blocks shared by other employees of the operator company.

Chart: Field

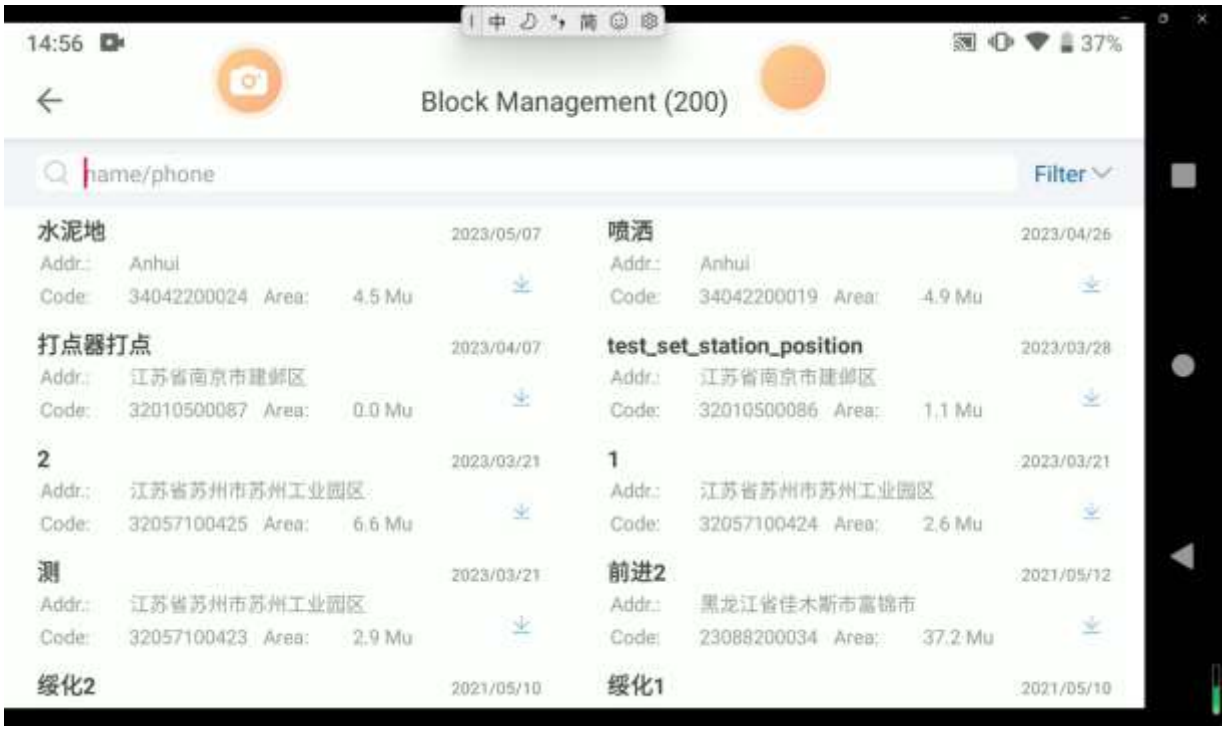
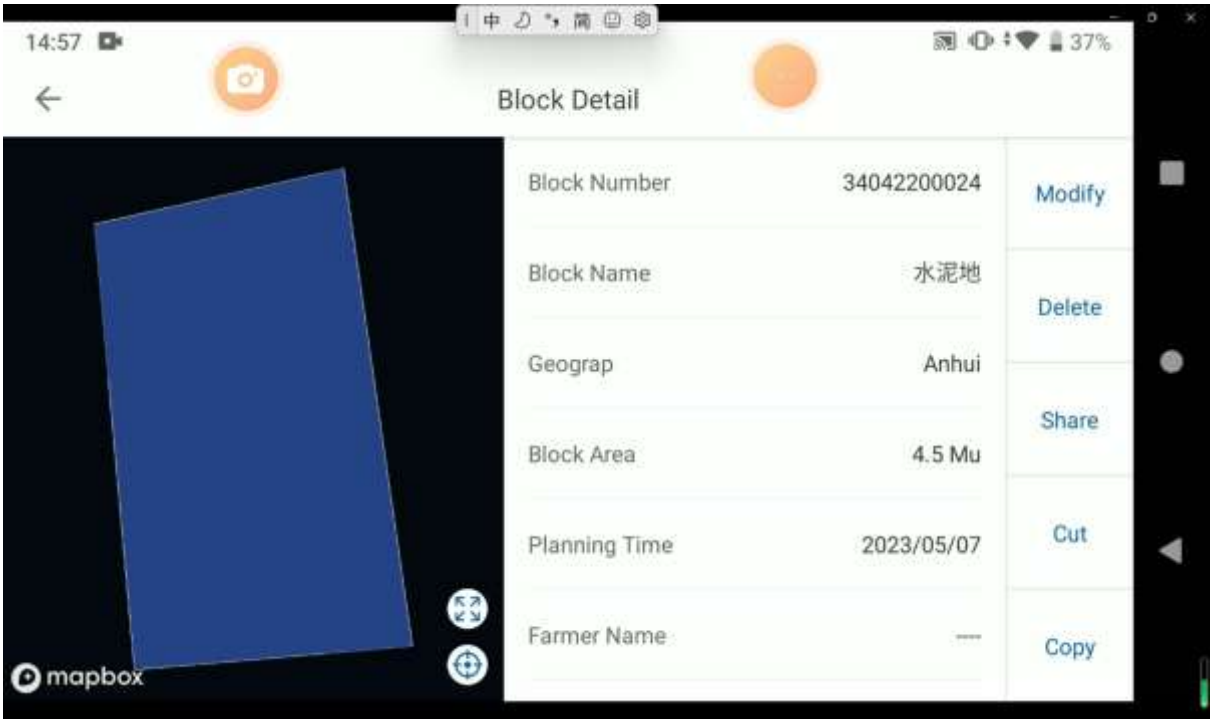


Chart: Block Detail



Select one of the blocks and view the block details. You can modify, delete, share, cut and copy the block.

Modify: you can modify the block shape, add calibration points or barrier points.

Delete: you can delete the block information.

Share: you can share the block to another account

Cut: you can cut the block into multiple smaller blocks

Copy: you can copy the block

Work Detail

The historical flight records of the current block can be viewed by entering the block flight record. Click on the block work list to view the work details, and block area, worked, progress, work status, and pesticide are data for the block.

Block Detail: details of the block

Flight Record: flight records of the block

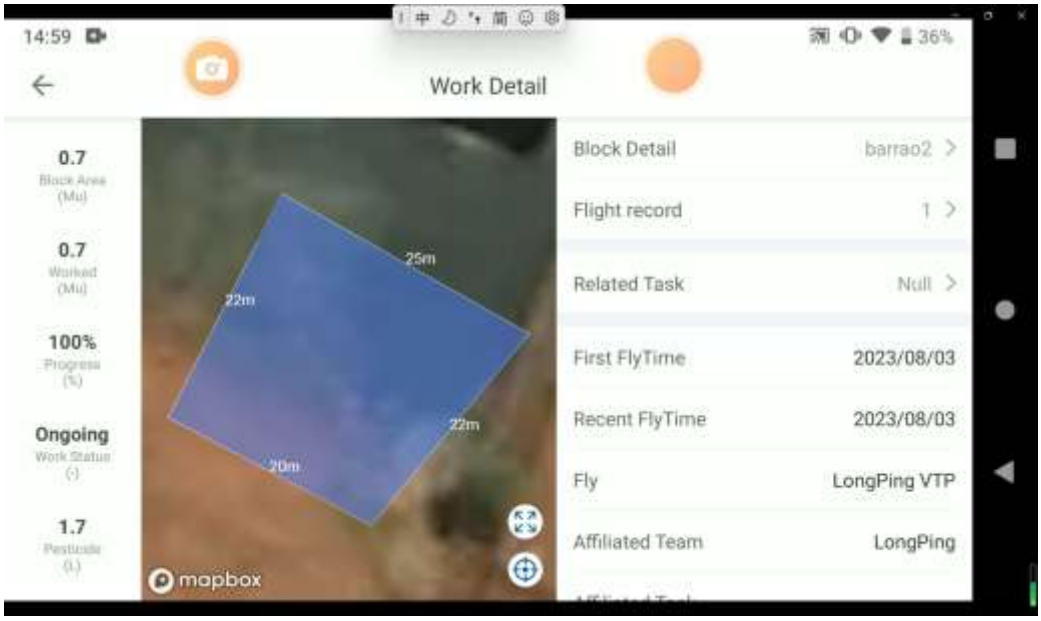
Related Task: relate the records of this block with a task which refers to the tasks listed in the Task

section (please refer to Task in the operator's account).

Note: long press on a block in the block work list for 2 seconds to quickly relate it with a task.

Filter: filter the block work by start time, end time, or team to find the records you need.

Chart: Work Detail

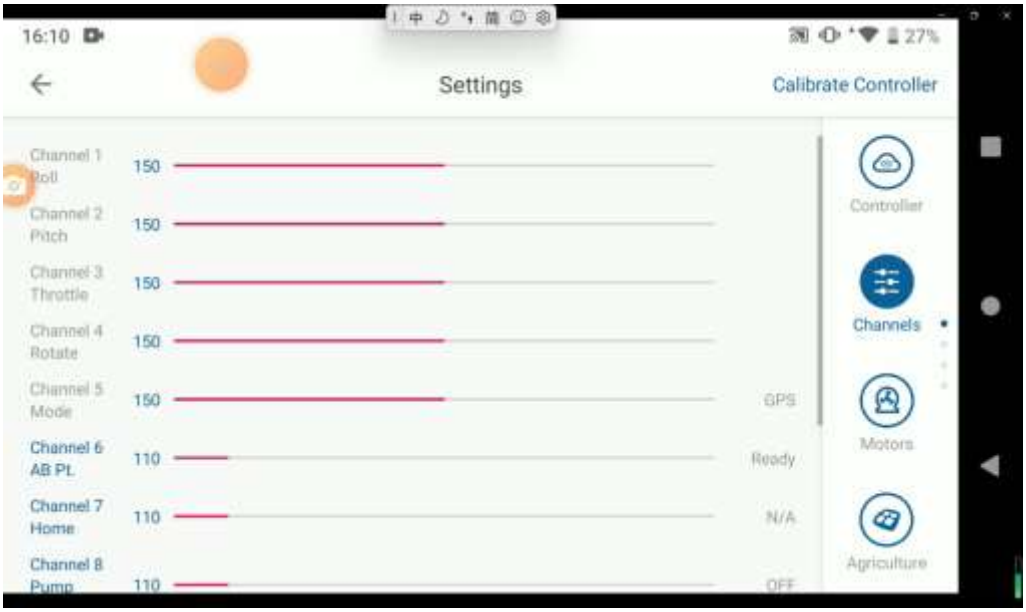


Settings

It includes functions such as controller, channels, motors, agriculture, flight, calibration, RTK station, log, version, debug, pump, battery, drone type, others, and advanced.

Channels

Chart: Channel Check



Channel check is used to test the connection between the remote controller and the drone, as well as to determine if the remote controller is functioning properly. When the user toggles switches or moves the joysticks on the remote controller, the corresponding channel changes will be displayed on the ground station.

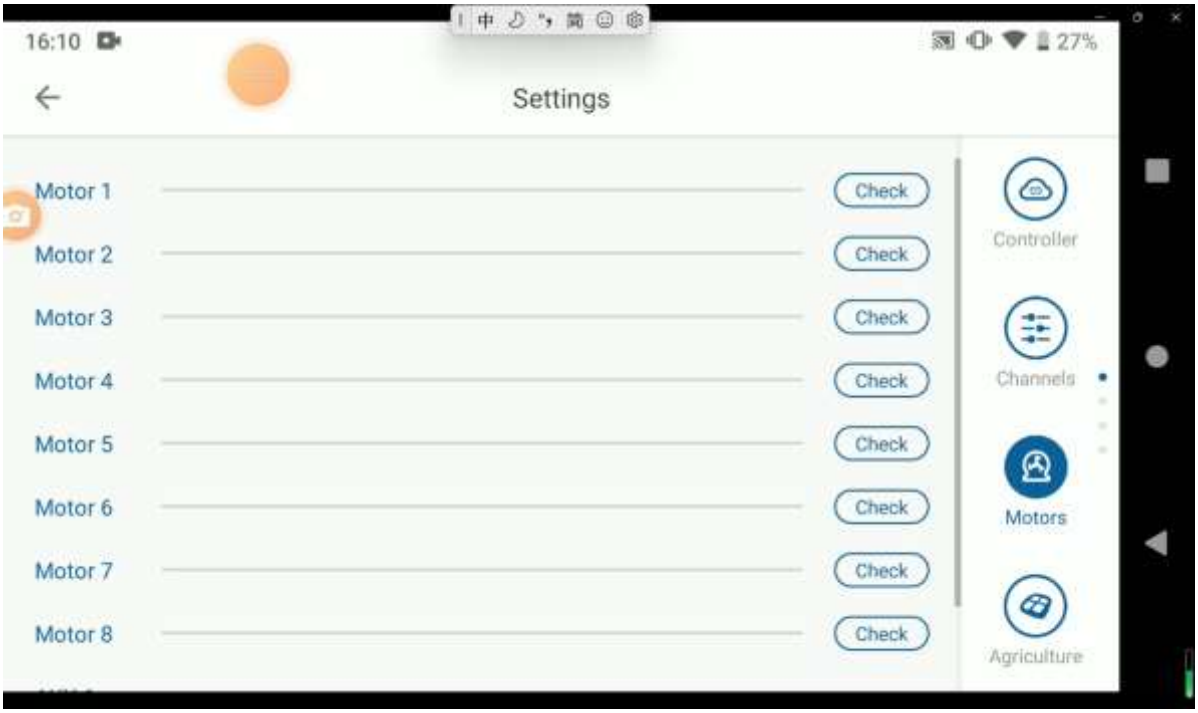
The display data for each channel is as follows:

1) Channels 1, 2, 3, and 4: the green line should be at position 150; the maximum value is 1200, and the minimum value is 100. Channel 2 is a reverse channel.
2) Channel 5: in manual stabilization mode (GPS mode), it should be at 150; in attitude mode, it should be at 110; in AB mode, it should be at 190, with three segments at 110, 150, and 190.
3) Channels 6, 7, and 8: in the default standby position, it should be at 110; with three segments at 110, 150, and 190.

Note: The channel settings are already configured during the factory setup, and it is recommended not to manually change them.

Motors

Chart: Motor Check



Motor check is used to verify if the motors of the drone are functioning properly (not applicable for

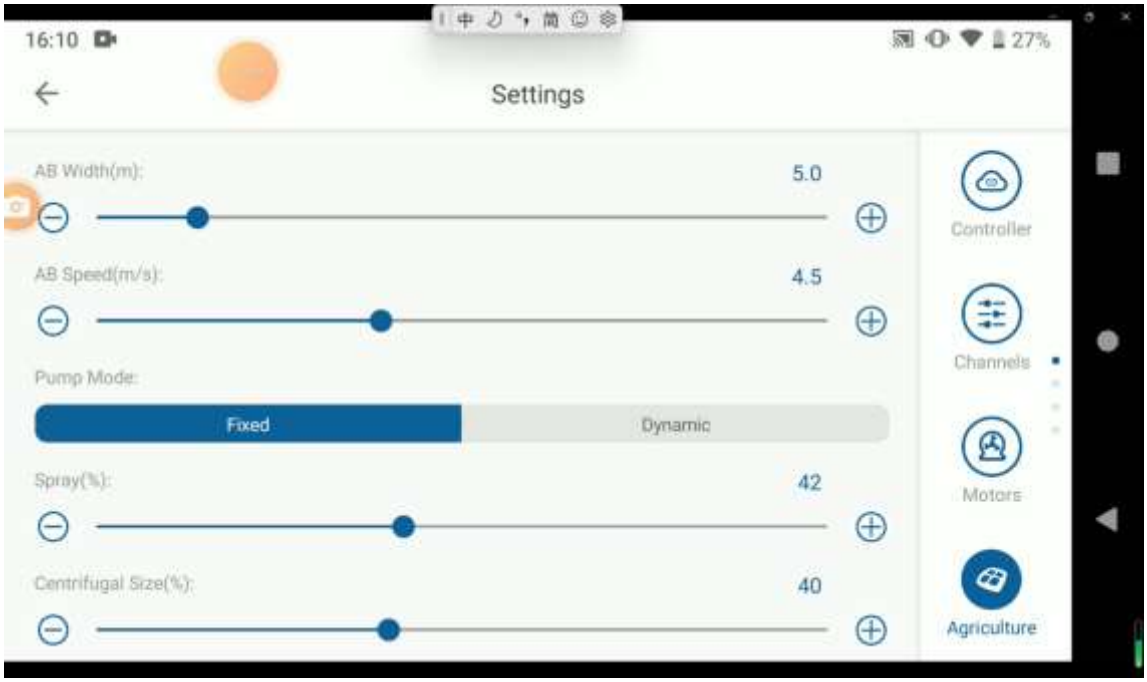
fuel-powered direct drive systems). By clicking on the corresponding check button for each motor, the motors of the drone will spin, and the motor speed will be displayed on the progress bar, allowing users to assess the motor's performance. Up to 8 motors can be checked.

During the motor check, the following points should be examined:

1) Motor rotation direction: odd-numbered motors should rotate counterclockwise, while even-numbered motors should rotate clockwise.
2) Motor speed: observe if the motor speeds are consistent.

Agriculture

Chart: Agriculture Settings

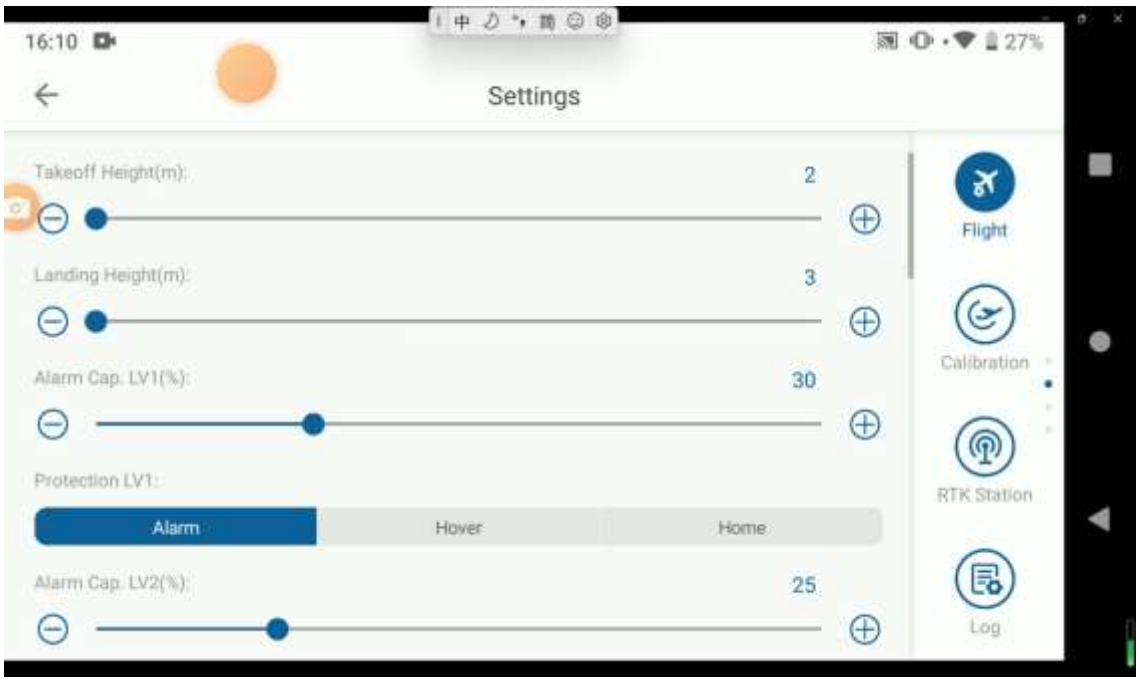


You can adjust AB width (space between route AB), AB speed (maximum speed), and pump mode (for the fixed mode, the working power percentage of the water pump motor can be set from 0 to 100. For the dynamic mode, it depends on the spray volume at the drone's maximum speed.).

You can adjust the parameters by dragging the slider or by clicking the plus and minus buttons for fine-tuning. These two methods can be used to adjust parameters in multiple locations on the ground station.

Flight

Chart: Flight Settings



Takeoff Height: the height that the drone needs to reach in auto mode.

Landing Height: the minimum height for the drone in the automatic return mode. If the drone is below this height, it will ascend first. If it is above this height, it will return directly and then descend.

Alarm Cap. LV1/LV2 & Protection LV1/LV2: set a reasonable voltage alarm threshold. When the voltage drops below this threshold, it will trigger the corresponding voltage protection action. For fuel-powered/hybrid drones, there will also be two levels of fuel level alarm settings and protection actions.

Manual Direction: the heading of the drone can be changed manually in the flight route. It is enabled by default.

Manual Height: the height of the drone can be adjusted manually in the flight route. It is enabled by default.

Radar Sensitivity: in terrain conditions, using this sensitivity will increase the responsiveness of the drone when encountering changes in terrain.

Max Speed: the maximum speed for manual flight in GPS mode.

Obstacle Avoidance Action: when obstacle avoidance is enabled, you can choose between hovering

or detouring obstacles when encountering them.

Fence Height/Radius: the drone can fly within a circular area centered around the takeoff point, with the fence radius as the radius. If it goes beyond this range, an alarm will be triggered, and the drone will return to the takeoff point. The maximum height for flying within the fence is limited to the fence height. If it exceeds this height, the drone will initiate the return procedure.

Low Volume Protection: during the operation, if the pesticide volume becomes low, the system will trigger the low volume protection, allowing the drone to either hover or return to home.

RC Protection: during manual flight, if the remote controller loses control, the system will trigger the corresponding protection mechanism. However, during automatic tasks, the drone will continue the task and will not trigger any protection mechanism in case of remote controller loss.

Protection: in auto mode, if the ground station link fails, the system will trigger the corresponding protection actions.

Done Act.: after completing the task, the system will trigger this action, allowing the drone to either hover or return to home.

Turn Type: a L-turn takes the longest time to complete and provides a smooth turning motion. A U-turn takes the shortest time to complete, with a faster turning speed and a larger turning angle. A conventional turn falls between these two, balancing the time and turning characteristics.

Calibration

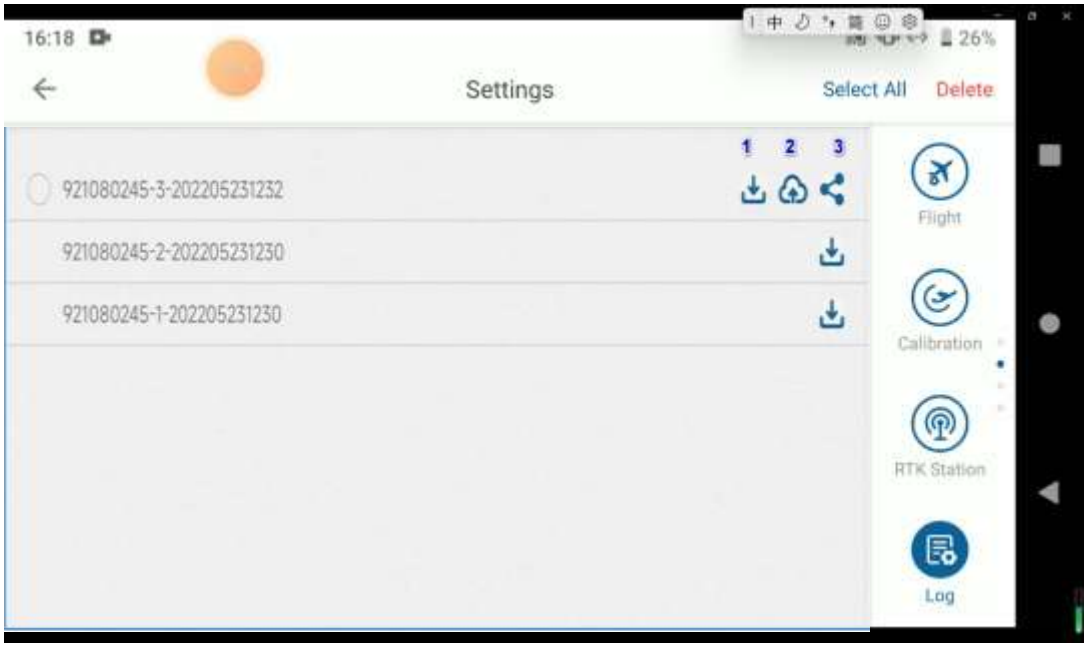
Chart: Calibration

It includes Real Volt., Mag. Calib., Mag. Declination Calib.

1) Real Volt.: this function allows you to adjust the voltage when the battery display is inaccurate, ensuring that the voltage is correctly displayed. You can calibrate the voltage using the battery manufacturer's software or the voltage displayed by a measuring device. Once calibrated, the battery level displayed on the debug and flight pages will reflect the calibrated voltage.
2) Mag. Calib.
3) Mag. Declination Calib.: in the presence of magnetic interference, after performing the magnetic calibration, it is important to observe whether the drone deviates during flight in AB mode or auto mode. Based on the situation, you may need to adjust the angle to ensure that the drone flies straight ahead.

Log

Chart: Log



The log page is used to read the flight logs from the drone, helping drone developers to better identify any issues with the drone.

Note: It is necessary to read the logs when the drone is on the ground and the propellers are locked to avoid any potential danger.

The log list displays all the log files stored in the flight controller's memory. The file name consists of three parts: the flight controller number, the sortie number, and the log file time.

Next to each log entry, there is a download button that allows you to download the log from the flight controller to the local app. Once the download is complete, two additional buttons will appear: the upload button, which uploads the log to a cloud server for manufacturers to access, and the share button, which allows you to send the log file to others through social media platforms like WeChat or QQ.

To delete a selected log, you can press the Delete Log button located in the bottom right corner.

Version

Chart: Version

The version page displays the ground station version, flight controller firmware version, serial number, and other relevant information. It also allows you to check for updates and upgrade the ground station and other firmware versions, including the flight controller firmware.

When the drone is powered on and the app is connected to the remote controller, you will receive a prompt for any available updates. If there are updates, you can go to the version page and click Check to download the latest firmware version and proceed with the upgrade installation. After a successful installation, remove the drone's battery, reconnect it, and restart the drone before updating any other firmware.

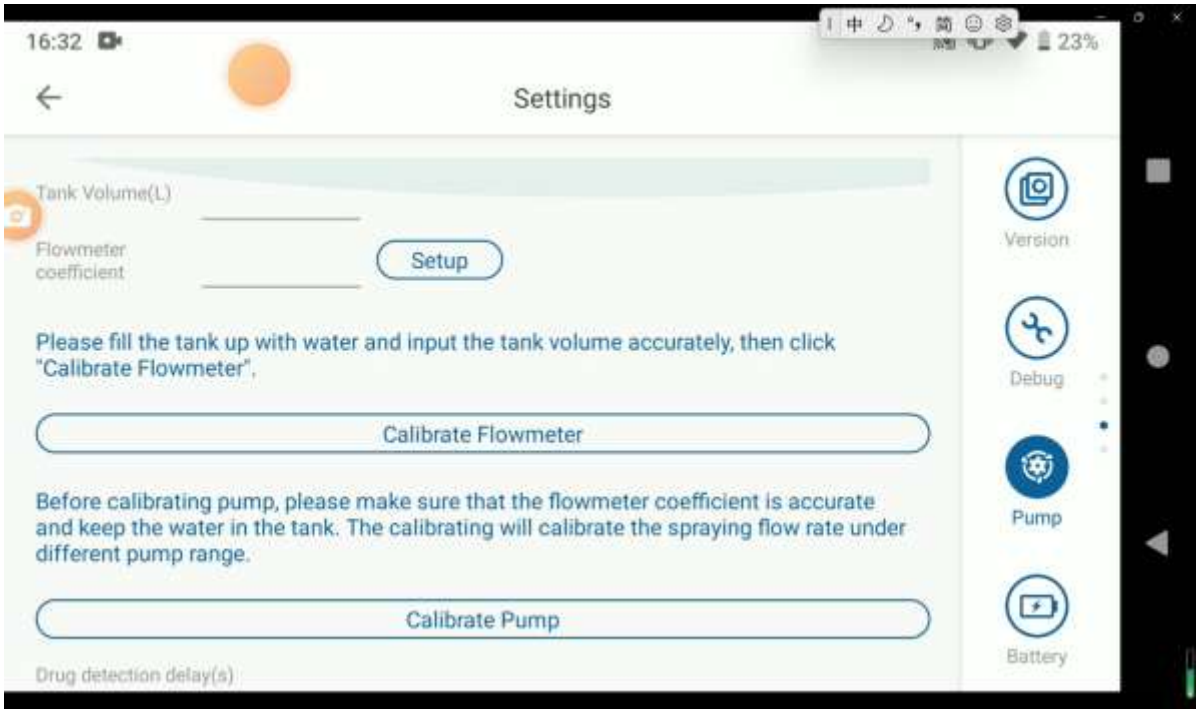
If the update process is interrupted or incomplete, it may result in incomplete firmware writing and unknown issues with the drone. In such cases, please manually refresh the drone firmware.

Debug

Chart: Debug

Pump

Chart: Pump Settings



This function is used to calibrate the tank volume and the flowmeter coefficient. It is necessary to

recalibrate after replacing the water pump or flowmeter.

Flowmeter calibration:

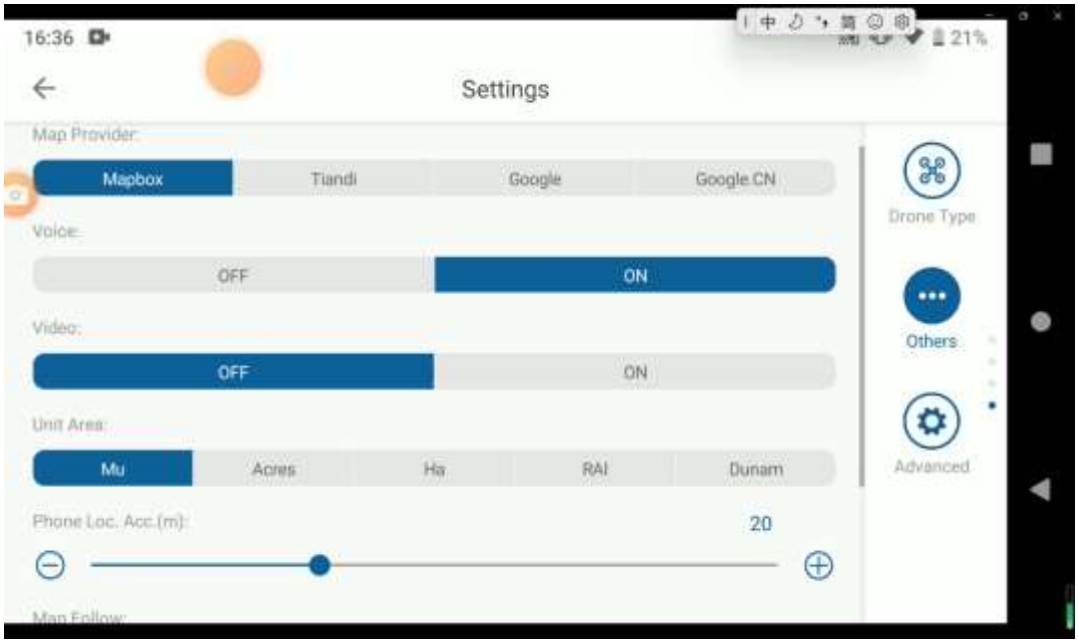
Fill the tank with water, for example, if the tank volume is 10L, fill the water tank precisely to 10L. Go to the Calibrate Pump page, enter the tank volume as 10 and the coefficient as 0. Then click on Calibrate Flowmeter. The water pump will automatically start spraying water. Wait until all the water in the tank has been sprayed and the water pump automatically shuts off. This will complete the calibration of the flowmeter.

Others

In Others, users can choose the map provider and turn on or off the voice, while video display is only available for drones with optional FPV.

Note: for Chinese users, the map provider used is Mapbox. However, for international users who have access to Google Maps on their mobile devices, they can switch to Google when operating drones abroad.

Chart: Settings



System Test

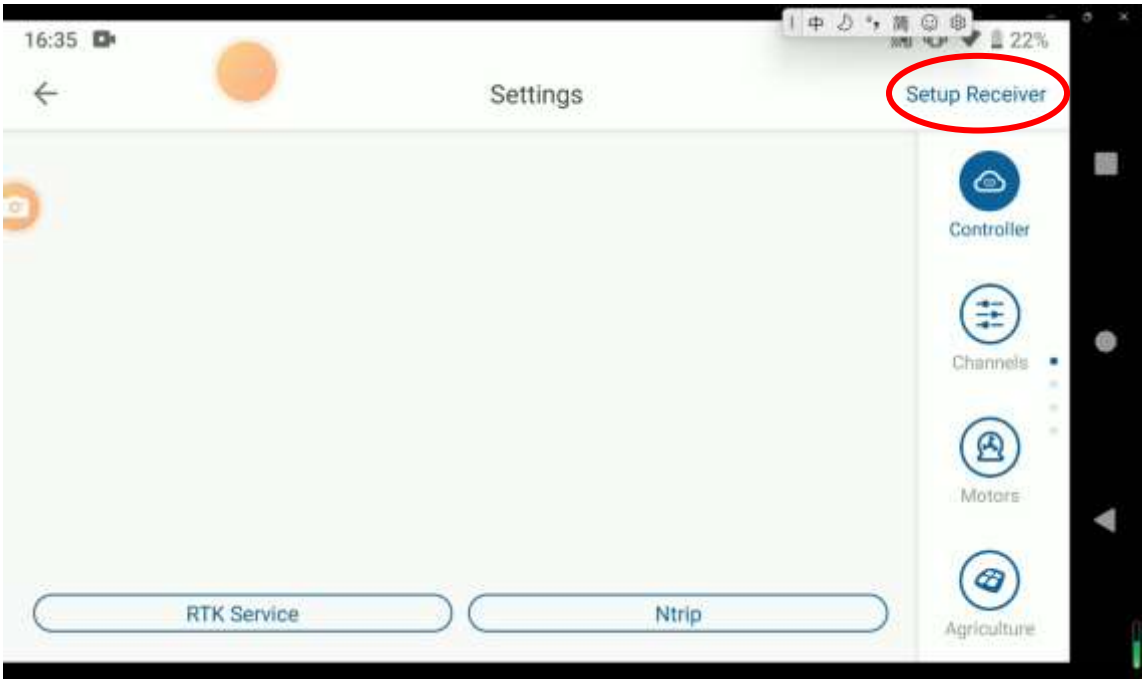
After the components are connected, it is necessary to check the system function, which must be done in the condition of propeller removed.

Communication Check

Power on the drone and the remote controller. Open EAVISION APP and enter Settings --> Remote Controller --> Bluetooth. Select the Bluetooth of the remote controller, and after the connection is successful, the voice will prompt "the remote controller is connected". Each channel's value of remote controller can be viewed on the Channels page, and the flight information can be viewed on the Debug page.

If there is no channel data displayed after connecting the remote controller, please check the following:

1. Check if the remote controller and the receiver have been successfully linked.
2. Verify that the connection between the flight controller and the receiver is correct, with the flight controller's Tx connected to the receiver's Rx, and the flight controller's Rx connected to the receiver's Tx.
3. Ensure that the communication rate of the receiver is set correctly. Alternatively, click on the setup receiver button.



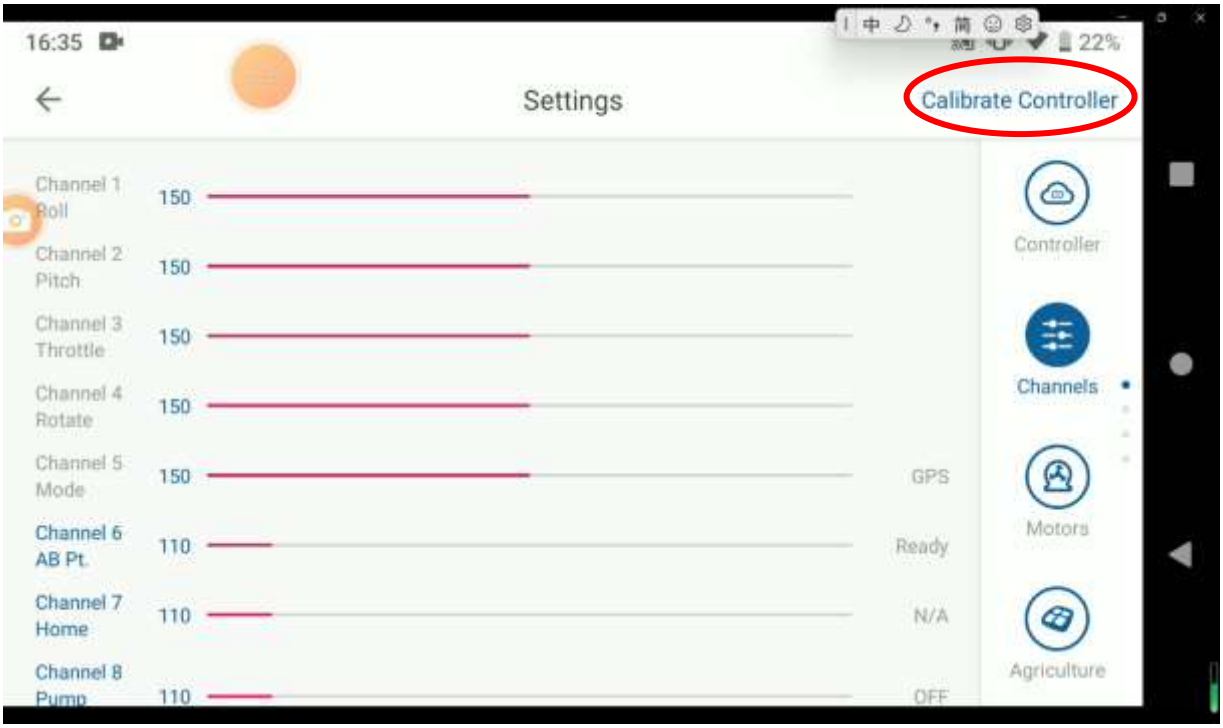
4. Check if the flight controller is in upgrade mode. (The LED light will flash white 5 times, and the AP will announce that it is in the process of upgrading after connecting to the drone.)

Calibrate Controller

Check whether each channel of the remote controller is correct according to the value in APP. If the positive and negative definition of the channel is inconsistent with the display of the APP, this channel must be reversed. Check whether the range of channel 1/2/3/4 is between (100, 200) and whether the range of channel 5/6/7/8 is between (110, 190). The error of each channel shall not exceed 3%. If it exceeds 3%, the remote controller shall be calibrated as the following steps:

- First, the positive and negative settings of each channel are completed and correct, the fine-tuning of all joysticks on the remote controller are reset to zero, and all channel curves are set as default.
- Put the joystick and the key switch into the middle position, and click Channels, then Calibrate Controller, the app will prompt you to place all joysticks and key in the middle position. Click Confirm, and the app will announce the voice prompt for remote controller calibration, and the purple LED indicator will flash 3 times. Then push the corresponding joystick and key of all channels (1-8 channels) to make them move to the maximum working range and repeat for several times.
- After completing the above operation, click Confirm to exit the remote controller calibration, and the LED flashes normally (the purple LED is off). Then the calibration is completed.

After completing the remote controller calibration, check whether the settings and calibration are correct according to the instructions on the APP.

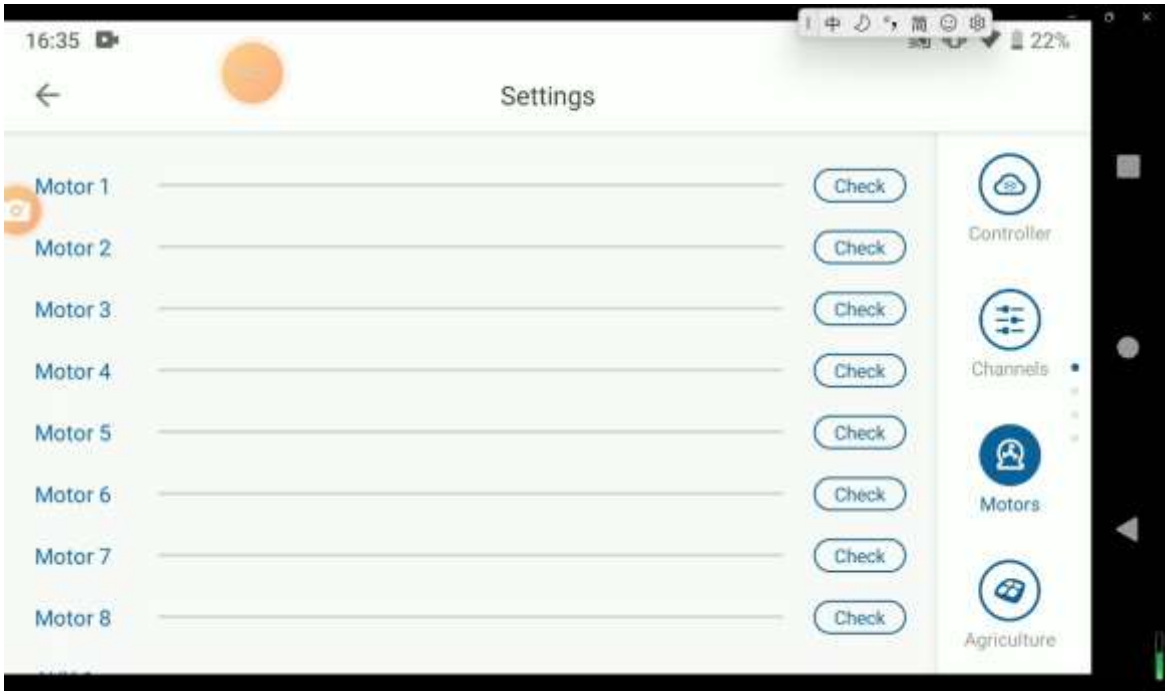


Motor Test

Motor Test

Power on the drone, click the check button of motor 1-8 on Motors page to check whether the motor rotate direction is correct.

If there is signal output display on the APP but the motor does not rotate, try to raise the Idle Speed level of the motor on Advanced --> Algorithm page.



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. During operation, the set emergency obstacle avoidance parameters may not take effect immediately due to signal or other factors. In case of special circumstances, please switch to manual mode immediately and land in a safe area.
11. When using the single-side safety distance function during block operations, it may cause issues with the automatic flight route planning. Therefore, it is important to ensure that the block planning is correct before takeoff. If you notice that the flight route extends beyond the boundaries of the block or any other abnormal situations, please immediately stop the operation to avoid compromising flight safety.
12. **Do not operate the drone indoors.**
13. **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.**
14. **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.

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 i. 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 flowmeter.
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	**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.
11	**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. 3) to test and continue operations if it works.
12	**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.

13	**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.
14	**Fine Tuning**	3) Fine tune if the drone and obstacles are clearly visible. 4) If you can't see the drone and obstacles, nor the operation environment of the drone, tap Go Home. 5) If you can't return, make a forced landing. 6) After landing, check whether all sensors are clean, notify the backend to process the block, and upload the flight log.
15	**Forced Landing**	7) Make sure it is safe to land the drone, then follow the voice instructions to operate. 8) 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. 9) 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.
16	**Request for Exhausting**	10) Check pipes for leaks. 11) Check whether the water pump is working properly. 12) If the problem persists, please contact customer service, and upload the relevant data.
17	**Battery Failure**	13) 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. 14) If the problem persists, please contact customer service, and upload the relevant data.
18	**Other Warning Prompt**	15) Process according to the prompt, and then restart the system. 16) 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 spraying drone are the drone body, battery, charger, locator 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	Locator 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="4">Product Information</td><td>Product Name</td><td colspan="4">EA-20XEP Smart Agricultural Drone</td></tr>
<tr><td>Model</td><td colspan="4">3WWDZ-20D</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>
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<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-20D**
Rotor type	Quadrotor
Weight of drone	25.4kg (without battery)
Max spray payload weight	67.1KG
Max wheelbase	1945mm
Working dimensions	2250×2600×610mm (Arms unfolded, propellers unfolded) 1305×1640×600mm (Arms unfolded, propellers folded) 915×645×600mm (Arms folded)
Hovering accuracy	RTK enabled: horizontal ±10cm, vertical ±10cm
Landing accuracy	RTK enabled: horizontal ±30cm
No-load hovering time	14min41s (5%SOC)
Full-load spray hovering	6min37s (5%SOC)——20KG
Full-load spread hovering time	5min4s (5%SOC)——30KG
Waterproof level	IP66
Satellite receiver	GPS, GLONASS, BeiDou, Galileo
Obstacle avoidance	Obstacle surmounting in the forward and backward direction + Auto terrain following
Obstacle avoidance speed	6m/s
Max operating speed	15m/s (auto mode), 10m/s (manual mode)
Max wind resistance	6m/s
Max service ceiling above sea level	3000m
Max flight radius	2000m
Propulsion system - motor	
Stator size	111×15mm
Motor KV value	95 rpm/V
Operating voltage	53.6V
Smart protection	Power protection, overvoltage, stall protection

Max pulling	≥35kg (when voltage ≥46V)
Communication capability	Bus communication
Communication data	Voltage, current, rotary speed, PWM, fault code
Rated power (single motor)	2400W
Operating temperature	≤60℃ (when environmental temperature ≤30℃)
Max power Consumption	9600W (spray), 11544W (spread)
Single power efficiency	8g/W (17kg), voltage 46V--58V
Power response time	≤0.1s
Propulsion system - propeller	
Diameter	Φ1041mm
Number of rotors	4
Rotor material	Composite materials
Mist spraying system - spray tank	
Rated volume	20L
Tank weight	3.2kg
Material	PE
Features	Integrated diaphragm pump, flowmeter, new spray board
Mist spraying system - nozzles	
Model	CCMS-L20000
Spray bar length	1720mm
Number of nozzles	2
Droplet size	20 ∽ 250μm
Max spray width	3m ∽ 8m
Mist spraying system - water pumps	
Liquid pump form	Diaphragm pump
Rated power	120W
Operating voltage	≤0.57 ± 10%Mpa

Operating current	≤2.5A
Flow rate	5L/min*2，±5%
Obstacle avoidance radar	
Model	TR24DCA100
Dimensions	66×67.5×16.5mm
Weight	Approx. 109.5g
Transmission frequency	24GHz
Waterproof level	IP67
Horizontal beam width	±28°
Vertical beam width	±14°
Mapping range	>10m, able to detect a 1cm wire >15m, able to detect a 15cm diameter power pole >15m, able to detect a 10cm diameter tree
Mapping accuracy	0.1m
Operating voltage	9~50V
Operating temperature	-40 ∽ 65℃
Power consumption	3W
Terrain following radar	
Model	TR24DA100
Dimensions	82.4×74.2×20mm
Transmission frequency	24GHZ
Waterproof level	IP67
Horizontal beam width	40°
Vertical beam width	23°
Mapping range	0.5~25m
Mapping accuracy	±0.1m
Operating voltage	5~15V
Operating temperature	-40~85℃
Power consumption	1.5W

Battery	
Type	Lithium-ion
Capacity	25℃, 20000mAh
Weight	6.75KG
Voltage	48.75V
Energy	975Wh
Charging/discharging environment temperature	3℃~55℃
Battery charge time (fast charging)	18Min
Overvoltage/temperature protection	4.4V
Overvoltage/temperature protection	Battery temperature≤55℃, allow 3C (maximum) charging. Over-temperature protection when temperature ≥ 62℃
Discharge short circuit protection	LV1 Alarm: 150A/20S; LV2 Alarm: 165A/10S LV3 Alarm: 180A/5S; ＜130A/20S alarm cleared
Over-temperature protection	≥62℃/2s protection enabled, ＜57℃/2S restored
Over-temperature warning	≥77℃/2s alarm enabled (no protection action)
Waterproof level	IP66

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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