

# FOXTECH GAIA 160MP

User Manual (Pixhawk Version)

V1.0 2023.03



**FOXTECH**

# Description

## Disclaimer

Thank you for purchasing this product. you can log in to the website for the latest product information, technical support and user manual. It is recommended that you download and use the latest version of the user manual. This manual is subject to change without notice.

You can also get product usage information or technical support through official customer service. Due to different production batches, the appearance or function parameters are slightly different and will not affect the normal use of the product.

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# Product Profile

## Introduction

GAIA 160MP is a multipurpose heavy-lift platform. GAIA 160MP Heavy Lift hexacopter is sturdy and has very good stability. It is made of carbon fiber material which features light weight and high strength, and only the cover is made of glass fiber. The arm of GAIA 160MP is pluggable, it can be locked with the quick locking hooks. This detachable design makes it easy to transport and quick to setup.

GAIA 160MP heavy-lift drone is equipped with powerful motor and high efficiency 30 inch propeller to ensure long flight time, this heavy-lift drone is able to carry a lot more weight than your typical quadcopter, max thrust of one rotor can reach 13kg. GAIA 160MP is equipped with dual folding landing gear system, it has enough space between the center board and the ground. So this strong body can be equipped with many equipments, like searchlights and loading box, and can be applied in fields like reconnaissance mission, emergency rescue etc.

Besides this, GAIA 160MP also can be used for professional filming and aerial photography, this GAIA 160MP can load with DJI Ronin 2 gimbal, which is compatible with many mainstream DSLR and professional cameras with cinema grade glass, like RED Dragon, Canon C300 and Sony FS7 etc. The motor and ESC adopt the water-resistant design, and can be applied in different weather conditions. Also the closed fuselage structure can protect GAIA 160-MP from the rain and dust, and also make it easy to care for.



## Specifications

### Aircraft

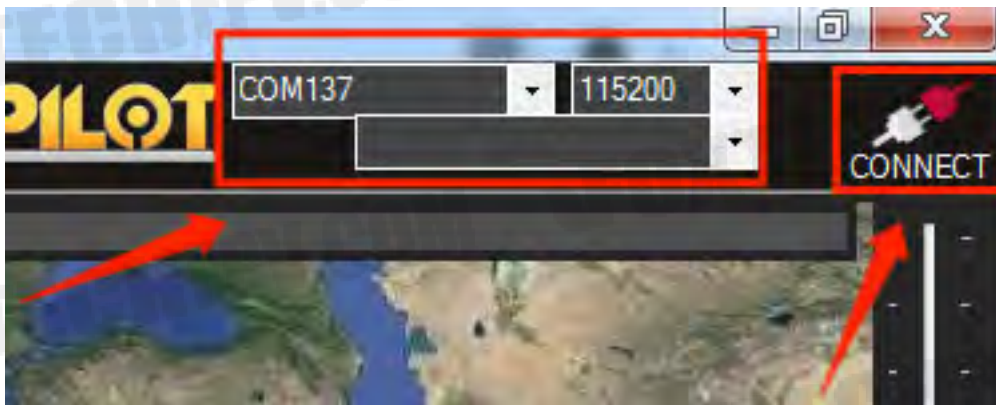
#### Structure

Item Name	GAIA 160MP
Wheelbase	1620 mm
Frame Weight	5.8 kg(With Landing Gear)
Take-off Weight	48kg
Flight Time	45 min(4*6S 25000 mAh)
Max Effective Load	20 kg
Max Flying Speed	12 m/s
Battery	4*6S 25000 mAh
Max Lifting Speed	4 m/s
Max Descent Speed	2 m/s
Suggested Flight Altitude	500 m
Working Temperature	-10°C~55 °C
Hover Precision	Vertical Direction $\pm 0.5$ m, Horizontal Direction: $\pm 1.5$ m

# Mission Planner Basic Operation

## Connect To The Mission Planner

Data transmission connection method: usually use USB to connect the data link of the ground station you need to select the corresponding COM port, and set the baud rate on the right side to 115200; while if using WIFI or Bluetooth to connect the data link of the ground station, it is in the device list Select the corresponding type and fill in the IP address to connect. For specific parameters, please refer to your data link instructions first.



## Basic Hardware Calibration

Check the items shown in the upper left section, including RC signal quality, flight mode, battery voltage, GPS status, etc.

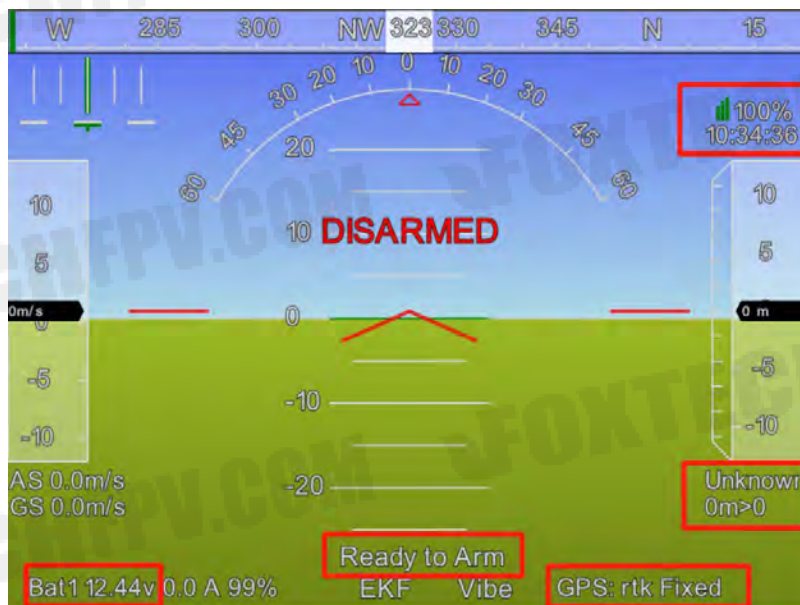
The RC signal quality should be 100%;

The flight mode should agree to the current status of the RC three-position switch;

The battery voltage should be above 48 V;

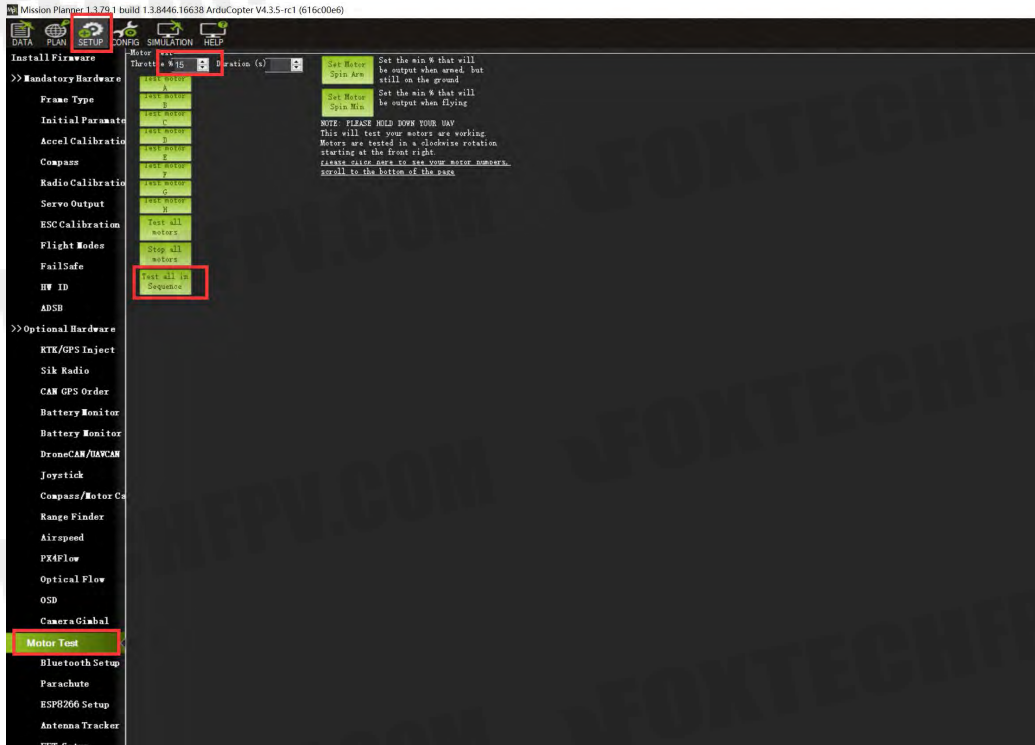
The GPS status should display rtk Fixed or 3D Fix if there is no RTK module onboard;

The Ready to Arm alert should be white if all the items are fine.



## Motor Test

Run the motor test under *SETUP>MOTOR TEST>fill in a number between 15~20 in the throttle box>Test all in sequence*



## Compass Calibration

Run the compass calibration under *SETUP>Mandatory Hardware>Compass>choose Relaxed in Fitness box>Click Start*



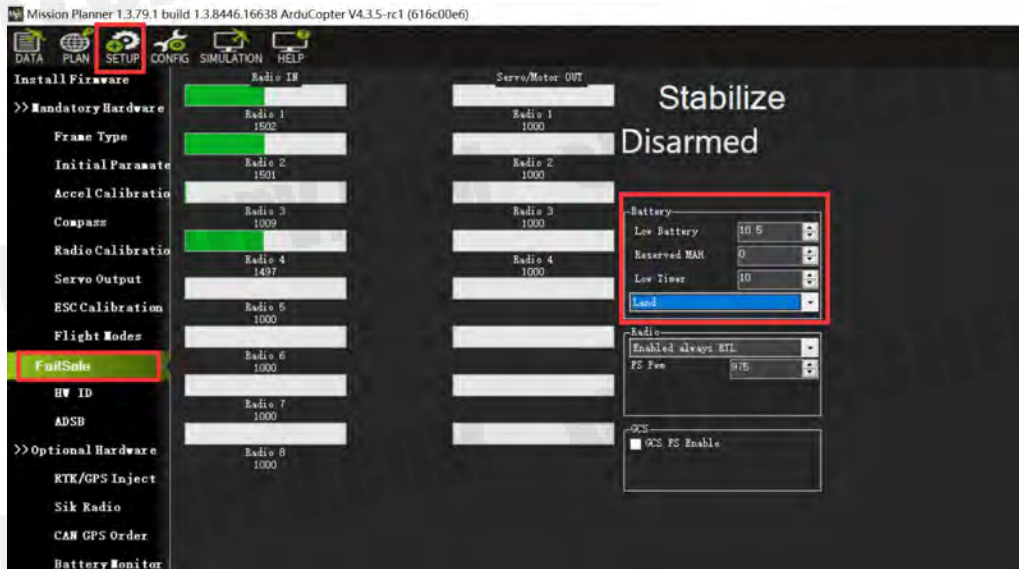
## Radio Calibration

Run the radio calibration under *SETUP>Mandatory Hardware>Radio Calibration>Calibration Radio*



## FailSafe Setting

Set the fail insurance of the battery under *SETUP>Mandatory Hardware>FailSafe>Battery*.



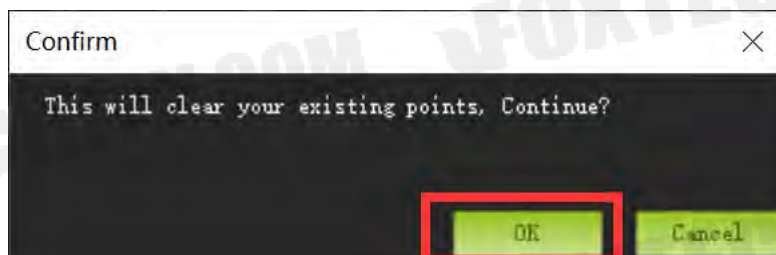
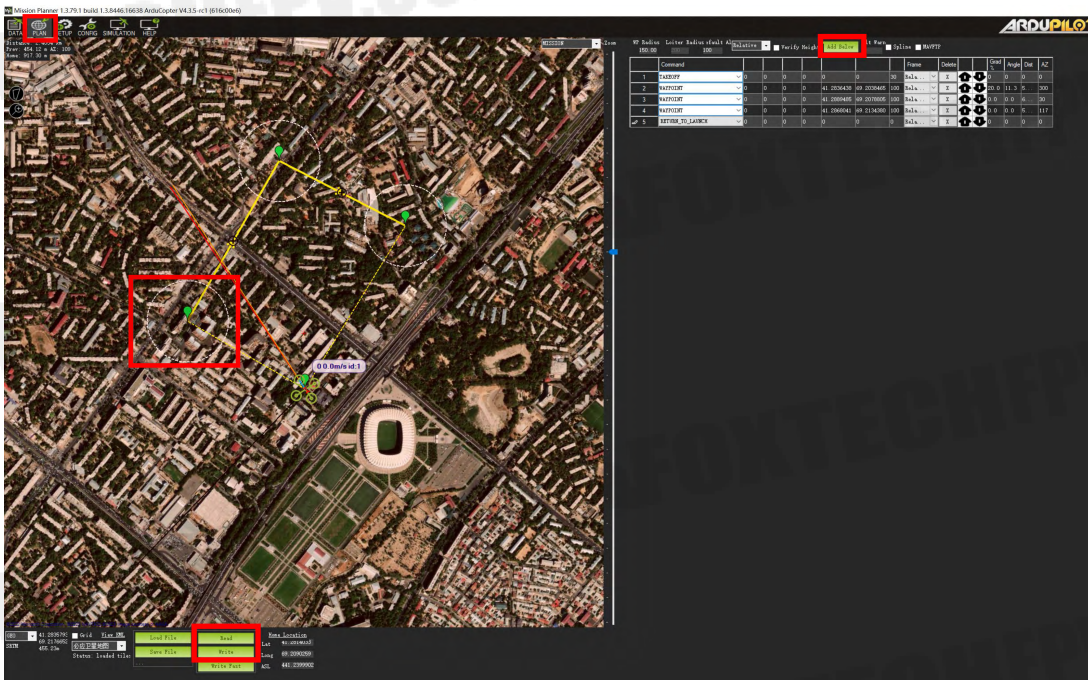


## Route Planning

Click on PLAN in the upper left corner to open the route planning page.

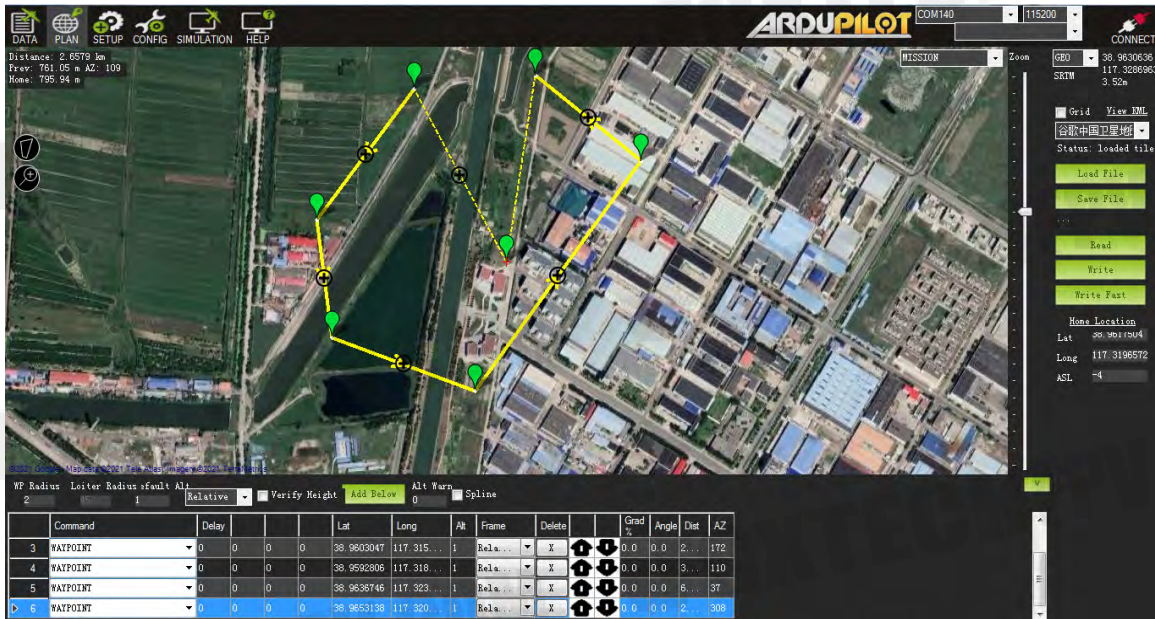
Steps:

- ① Click on the map on the left area to create a new waypoint with the left mouse button, and a corresponding waypoint will appear on the right section;
- ② After adding all the waypoints on the map, and all corresponding waypoints appearing on the right, set the first waypoint to TAKEOFF, and the last waypoint to RETURN\_TO\_LAUNCH;
- ③ Click Write to save the route planning;
- ④ Click Read to override the old route.
- ⑤ Choose OK on the pop-up window that says "This will clear your existing points, Continue?"



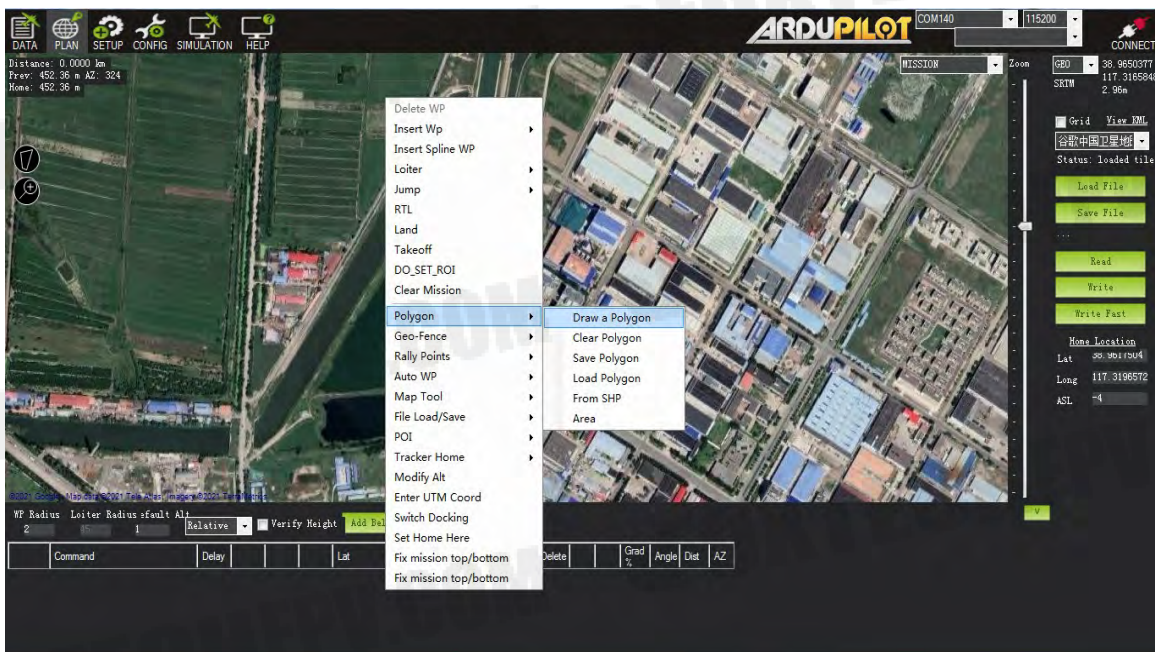
## Automatic Mission Planning

Flight planning is one of the most important functions in MP: the average player can use it to plan the simplest flight missions, including height control of each waypoint, stay time, camera trigger, various condition triggers, channel triggers, and even Automatic take-off and landing planning, etc. Industry users can also do surveying and mapping planning and so on.



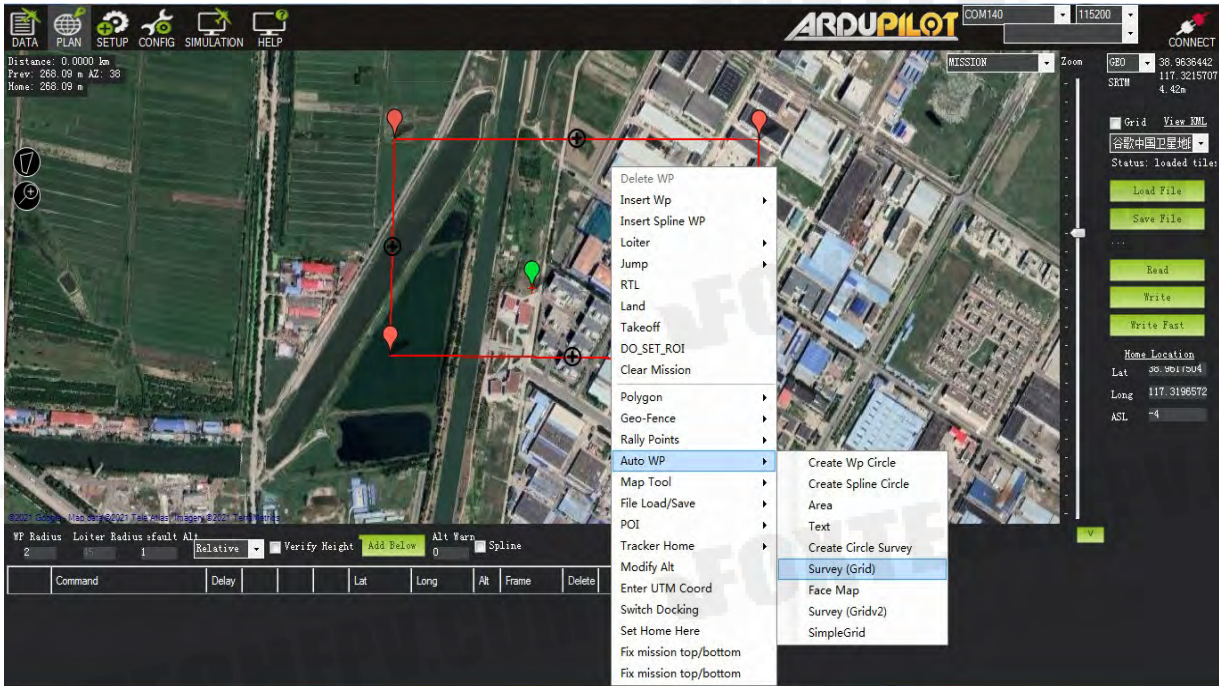
The main explanation here is the mission planning function of the MP ground station, but the waypoint planning concepts of other ground stations are actually very similar.

- In the MP mission planning interface, create a multi-waypoint area





- In the area, click the right mouse button to open the menu and select Automatic Waypoint Survey(Grid)



- The mission planner will display the configuration interface. This interface defines the camera parameters and automatically calculates the shooting distance. DO\_SET\_CAM\_TRIGG\_DIST command parameters, you can also set the parameters according to the actual situation.



If you accept these parameters, please click accept, the mission planner will generate a series of waypoints covering the designated area, including the take-off point and the landing point. Call DO\_SET\_CAM\_TRIGG\_DIST command to set the distance of the camera shutter command, and finally call DO\_SET\_CAM\_TRIGG\_DIST again to set the parameter back to 0 and stop taking pictures; note that the parameters of two call are different.

# Flight

## Flight Environment

1. Do not use the aircraft in adverse weather conditions including rain, snow, fog, and strong wind.
2. Only fly in open areas. Tall buildings and steel structures may affect the accuracy of the GPS signal.
3. Avoid flying near obstacles, crowds, high voltage power lines, trees and water.
4. Avoid flying in areas with high levels of electromagnetism, including mobile phone base stations and radio transmission towers.
5. Aircraft and battery performance is subject to environmental factors such as air density and temperature.

## ARM the drone

Before the drone takes off, it must be unlocked. This will power all motors and actuators. Before unlocking, please make sure to test in an empty environment to avoid accidents. Check in detail whether the hardware installation is correct (especially whether the arm is locked in place, the battery compartment cover is tightly locked, whether the landing gear is locked, whether the external load is installed firmly, the direction of the propeller, etc.). After confirming that there is no problem, perform the following steps :

- Turn on your rc transmitters
- Insert the battery into the aircraft. The flight control status light should flash red and blue alternately (self-check process). Do not move the aircraft during the self-check.
- Pre-Arm will run automatically. After a normal self-check, the blue light or green light will flash, indicating that the Pre-arm has no error and can be unlocked. If the yellow light is flashing, please refer to the FAQ summary to eliminate the error.
- Set the correct mode: Set the mode to Stabilize, AT Hold or Loiter (outdoor GPS lock is required). Novices are recommended to use Stabilization or Altitude hold mode.



**For this product, press the A button on the bottom of the remote control to enter Althold mode**

- Unlock the safety switch: Press and hold the unlock safety switch until the safety LED is always on (flashing means lock and does not output pwm signal, and always on means unlocking and output pwm signal) (the safety switch of this product is disabled, so the user can omit this step)
- Arm the aircraft: There are two ways to unlock the autopilot, which can be unlocked through the ground station or the remote control.

Unlock through the remote control, lower the RC throttle to the lowest position, and the YAW channel to the far right for 2 seconds to unlock it, and then return the YAW channel to the center.

Unlock through the ground station. Under the premise that the autopilot has a link to the ground, there is an action tab at the bottom of the HUD window of the ground station. Click the unlock button inside to unlock.





- ARM Successfully : The propeller will spin up at idle speed to remind that it has been successfully unlocked.
- Take off: raise the throttle to take off, and control the direction according to the attitude (if the novice is not familiar with the control, you can practice the flight simulator first, so as to avoid the explosion of the aircraft and the loss of personnel and property)



**If there is no operation within 15 seconds after unlocking, it will be automatically locked. After unlocking, the ideal attitude is too different from the actual attitude it will be automatically locked.(Such as hitting the roll bar sharply or shaking the aircraft with your hands )**

## Disarm the drone

Perform the following operations to disarm the drone:

- Check your flight mode switch, set to Stabilize, Alt Hold or Loiter.
- Keep the throttle at the lowest and the direction YAW to the left.
- Unplug the aircraft battery
- Turn off the remote control transmitter

## Take-off Precautions

It is best to use the Stabilize mode to take off for the first time. Make sure that the aircraft is flying normally before switching to another mode. The throttle control mode of the stable mode is linear, so the range of throttle control needs to be relatively small.

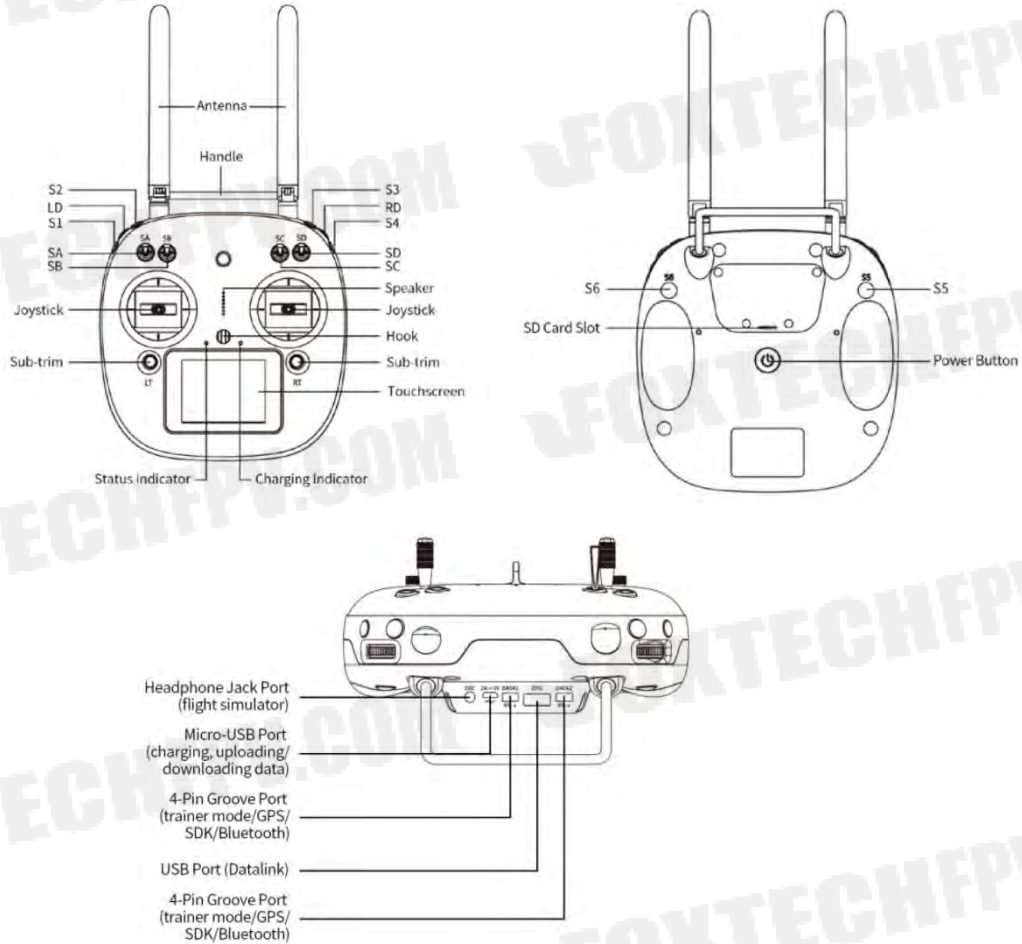
After flying in the stable mode for a period of time, if the altitude stays above 1 m, you can switch to other functional modes such as altitude hold, fixed point, etc. The throttle control logic of altitude hold and fixed point modes is different. There is a dead zone in the neutral position of the throttle to maintain altitude , Push up, the plane goes up, push down, the plane goes down.



**Note: Before switching to another function mode, you must first understand the characteristics of the flight mode.**

# Appendix

## DA16S+ Remote Controller



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