Boying Mobile Phone Ground Station User Manual (V 3.0)

Boying Aeronautics Technology Co., Ltd.

Statement

Notice

❖ Users will be deemed to have accepted this statement by using the PALADIN Android mobile phone ground station.

❖ Users should read this manual carefully before using the mobile phone ground station. If have any questions, please contact us.

❖ Boying reserves the right to modify any part of this manual without prior notice to users in order to provide users with the latest and most advanced products. Users can download the latest information through Boying Aeronautics official website.

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Technical Support

If have any questions about this manual or PALADIN products, please call: 15011162722 or send e-mails to sunlifeng@byaero.com, or visit our website www.byaero.com, we will solve problems in the first time!

Legends

🙂 hint: explanations of problems or phenomena, or links to other contents related.

🔴 warning: some issues or phenomena that require special attention.

Introduction of this APP

Features

Boying Mobile Ground Station is a mobile APP that integrates functions such as flight debugging, calibration, adjustment, route planning and condition monitoring.

Installation Environment

Mobile phone Android 5.0 and above

Supporting Hardware Equipment:

Handheld surveying and mapping box, digital transmission - Bluetooth relay, OTG digital transmission, digital transmission - Bluetooth module, Fengying remote controller, Siyi remote controller, RTK base station, RTK surveying and mapping station

Paired Device

Turn on the Bluetooth, and make sure the flight control is powered on. Search for the corresponding device name on the mobile phone and pair it. The pairing password defaults to "1234".

Connecting Device

Click "Not Connected" on the interface, the connection options will pop up. Options include connecting the drone, connecting the handheld surveying and mapping device, connecting the RTK surveying and mapping device, and connecting the RTK airborne end. Users can select the device type according to actual needs.

Introduction of Interface

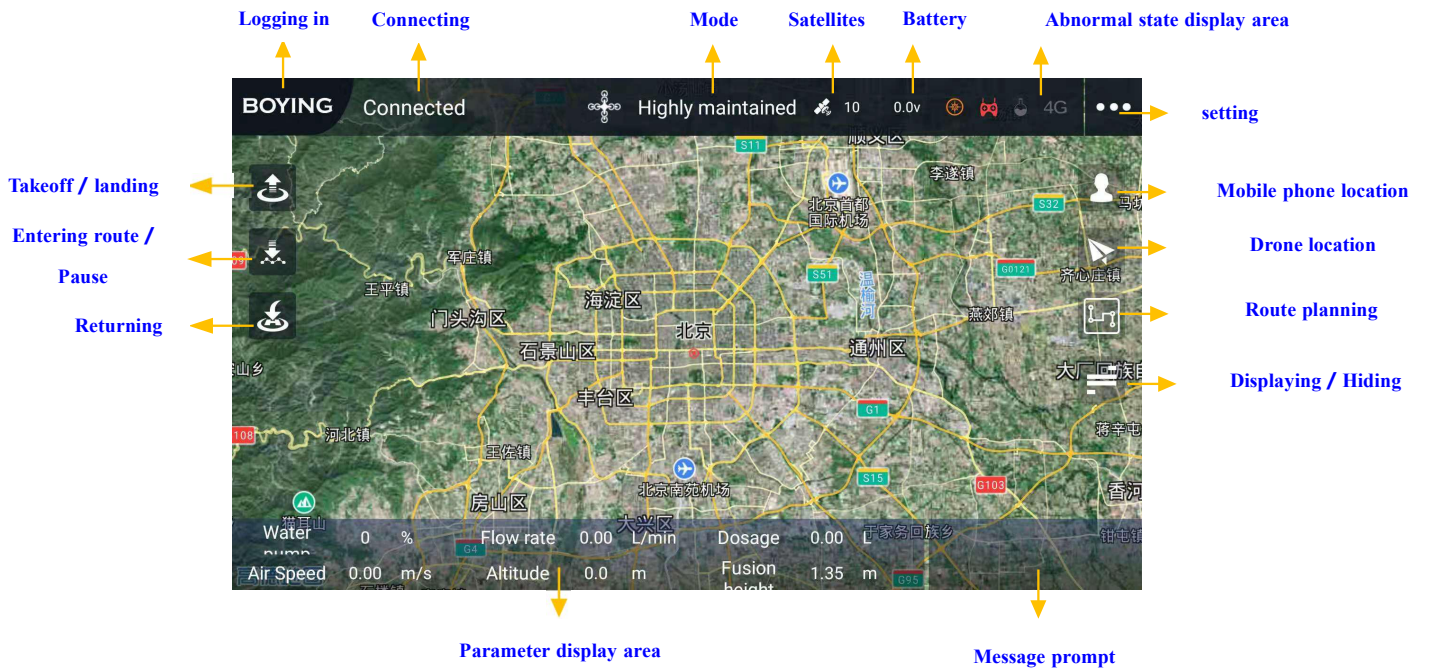The interface to connect the drone is as follows:

Fig 1: Main interface

Click the parameter display area to see the custom parameter display setting page. Users can choose the parameter type to be displayed according to their own usage habits. Up to 6 items can be displayed.

☺ One-click takeoff requires the remote-control throttle to remain in neutral, and the flight mode is available in position hold or GNSS assist mode.

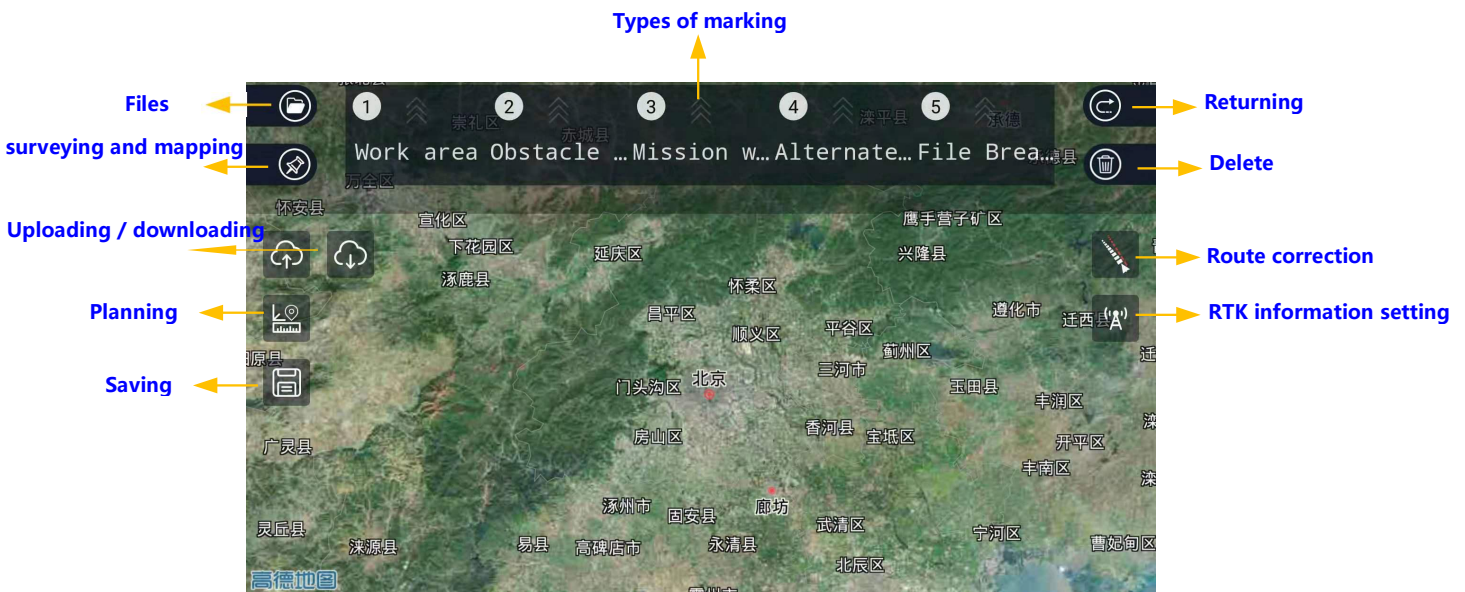Click [icon], enter the route planning interface:

Fig 2: Route planning interface

😊 For contents related cloud network, please consult technical support for relevant information. About pinning the points by surveying and mapping.

Surveying and mapping

How to do?

If users map for the first time, click ⊕ directly. There are 3 methods for pinning points on the right side of the screen. From top to bottom, they are pinpointing by the device, mobile phone screen, and the drone. Decide the method of pinning points, select the point type, and then perform pinpointing operation. Users can switch different point types in the process. The point types are divided into: work area point, obstacle area point, mission waypoint, and alternate point.

🔴 File breakpoints can only be deleted and cannot be added via ground stations.

😊 When selecting a device to survey and map, the ground station will automatically identify the connected surveying and mapping device.

After the marking, users can view all the points of the current type in the list. In the interface of Figure 2, select any waypoint type, for example [Obstacle], all area and point information will be displayed directly. Among them, in the process of mapping the obstacles, it is necessary to pay attention to the obstacle area first, and then mark the obstacle points. The obstacle area can be marked indefinitely, and each obstacle area can only contain up to 4 obstacle area points. As shown below:
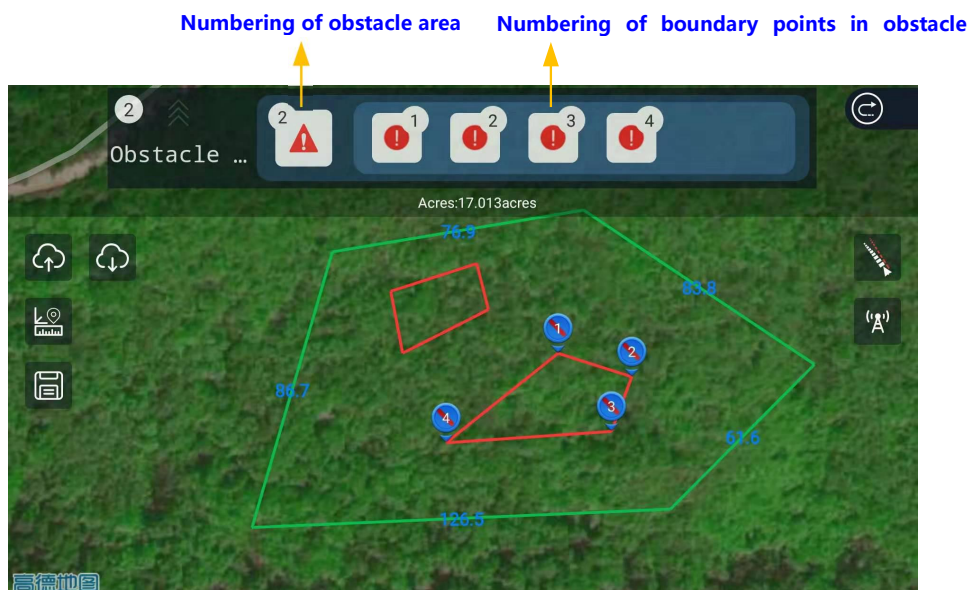
Fig 3: Surveying and mapping the points in the obstacle area

Deletion of surveying and mapping information

Swipe up the icon at a point in the list to quickly delete the corresponding point. As shown below:
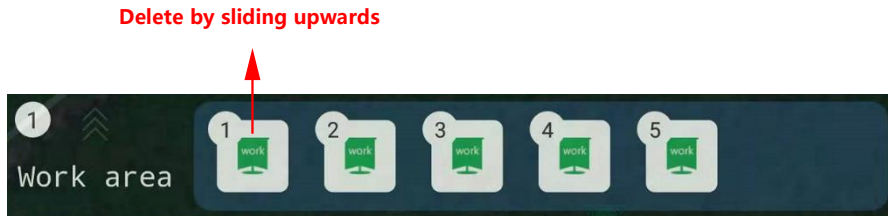

Fig 4: Deletion of work area points

Or click to wake up the delete function, click the content you want to delete, and the function is deleted as a whole. As shown below:

Fig 5: Deletion as a whole

Custom waypoint addition

In order to meet more users' needs, Boying provides a custom way to add waypoints. Users can add waypoints anywhere in the specified work area, the system will form a custom route. As shown below:

Fig 6: Custom waypoint addition

☺ Pinning the points means planning, and it can be directly uploaded to execution route of the aircraft.

Route Planning

According to the plots that have been mapped, the route planning operation can be performed. Click to generate the route by default. Users can click the window popping up from the position of "Width", "Speed", "Start" and "Heading angle (Hdg)" on the interface to modify and adjust the route information.

Fig 7: Route planning

Obstacle avoidance plan: If there is an obstacle area in the work area, you can change the obstacle avoidance mode. For details, please refer to the PALADIN Flight Control System User Manual V3.0.

Work area shrinking/obstacle area expansion: If there is a need for overall fine-tuning of the work area and the obstacle area, the overall adjustment of the work area and the obstacle area is made by selecting 'work area shrinking' and 'obstacle area expansion'. The maximum adjustment range is 5 Meter.

Waypoint/route deletion: If need to delete a waypoint or a few routes, return to the mapping interface, select and delete the waypoint you want to edit in the list. As shown below:

Fig 8: Display of mission waypoints

Waypoint/area point move: Select the type of point to be displayed, select the pre-edited point on the manual screen, and set the mobile unit distance to operate. The maximum moving unit distance is 5 meters. As shown below:
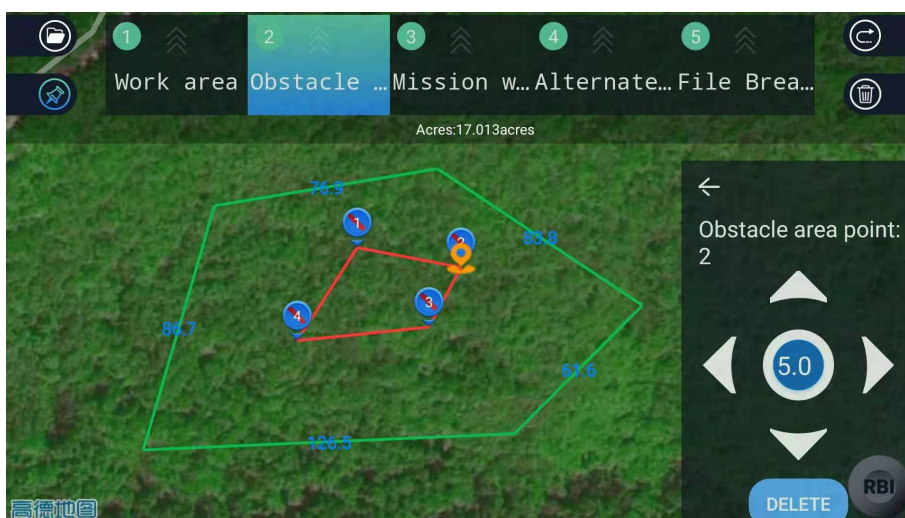

Fig 9: Moving obstacle area point

Route Correction: Correct the planned route to minimize the point error. The operation method is to place the aircraft on the first starting point of the actual route, and click [icon] to complete the correction. The correction distance must not exceed 10 meters.

Correcting the planned route can minimize the positioning error generated when mapping the plot, which greatly facilitates the user's operation. After the route planning is finished, place the aircraft in the calibration position and click [icon] to complete the correction. The whole area and route will be translated to the position of the aircraft-based positioning point as the first waypoint, and then the route can be uploaded to the flight

control.

☺ The correction distance cannot exceed 10 meters.

Upload and download

After planning the route, the user can upload, download, save or conduct other operations on the route. Clicking ⬆, the route will be uploaded automatically to the flight control system. This operation must be performed after the route is planned. Otherwise, the flight controller will not perform the user's planning route.

🔴 The function of uploading and downloading routes can only be performed in non-autonomous mode.

File saving and deleting

The user can save the planned waypoint file and click 💾 to enter the name. You can also open the saved file and upload it directly to the flight control system. Click ⭕ to open the file save directory, select the waypoint file, or slide the file to delete it. As shown below:
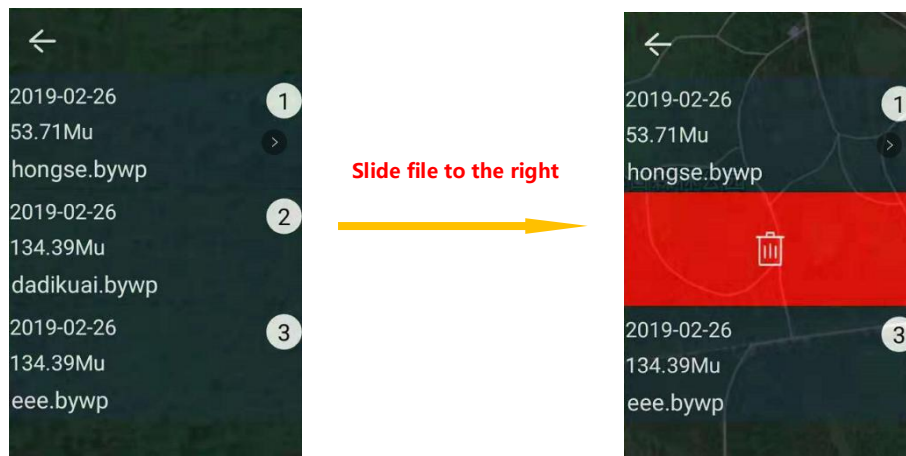

Fig 10: Delete the waypoint file

Setting

Task summary

It is mainly used for statistical work of the operation area (1 mu = 0.165 acre), the operation time and the amount of pesticide dosage. Click "End Task", then the number of Mu and the amount of pesticide under the main interface of the flight data will be cleared to zero, and will be accumulated in the total number of

histories. This function can only be effective if the drone is connected.

Rack setting

Provides ten common rack type settings and motor test functions, and supports settings for attitude angle, main control installation direction and heading correction.

Remote controller calibration

Provide remote controller calibration function, and set the flight mode of the 5-channel 3-section gear of the remote controller, and support 4 modes to choose.

Calibration settings

Calibration settings include accelerometer calibration, level correction, dynamic balance detection, and flow meter calibration.

🙂 Magnetic compass calibration works by repeating channel 5 through the remote controller, no need for ground station operation.

Control sensitivity

Supports roll, pitch, heading, altitude, throttle, remote controller and other sensitivity adjustments.

🔴 This function is suitable for users who are familiar with the flight control sensitivity parameters. Novice users are advised to use with the guidance of technical support.

Security Settings

This setting includes battery parameter settings, data transfer, remote controller, dose detection fault protection settings, and flight limit functions. When the flight limit function is off, the maximum flight height of the aircraft defaults to 30 meters. After turning on, it is executed according to the set parameters.

Agriculture setting

There are many contents in the agriculture setting, including AB point setting, position maintaining speed sensitivity setting, autonomous mode parameter setting, water pump setting, flowmeter setting, and common function setting, such as terrain following, manual obstacle avoidance, automatic obstacle avoidance, Mu (1 mu = 0.165 acre) usage setting, idle speed setting, line feed mode, etc. It is recommended that users use the listed functions selectively according to actual needs.

System settings

Users can view flight control, ground station, firmware number, total flight time, and image transmission and language settings.