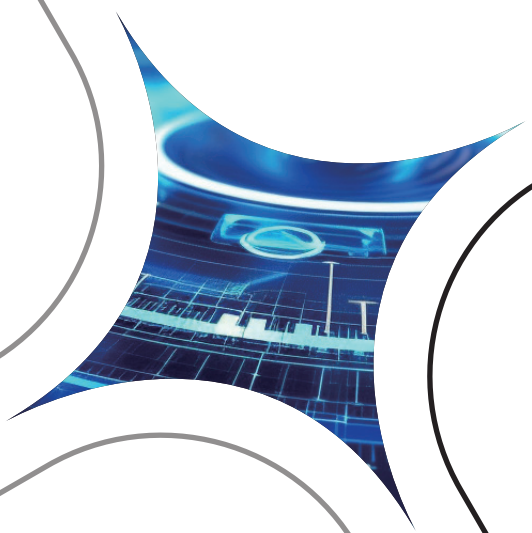
WANJI



WANJI

SmartNavi APP

User Manual

http://www.wanji-imp.com/

Empowering a New Era of Smart Operation

Table of Contents

1. Getting Started & Safety Precaution 2

1.1 Safety Compliance & Regulatory Guidelines 2

1.2 Hardware Status & Environmental Deployment 2

1.3 Connectivity & System Configuration 2

1.4 App Acquisition & Installation 2

2.Account Configuration & Authentication 3

2.1 Account Registration 3

2.1.1 Email Registration 3

2.2 Login Security 4

2.3 Group Management & Collaborative Control 4

2.3.1 Adding a Group 4

2.3.2 Group Details 5

2.3.3 Inviting Group Members 5

2.3.4 Group Member Management 6

2.3.5 Dissolving and Exiting Groups 7

2.3.6 Renaming Groups 7

2.3.7 Switching Groups 7

2.4 Personal Profile & Security 8

2.4.1 Change Avatar 8

2.4.2 Change Nickname 8

2.4.3 Change Password 9

2.4.4 Logout 9

3. Deployment & Task Execution 10

3.1 Hardware Pairing & Interconnection 10

3.1.1 Adding a Device 10

3.1.2 Adding a Base Station 11

3.1.3 Base Station Binding 12

3.2 Spatial Mapping & Area Planning 13

3.2.1 Boundary Mapping 13

3.2.2 Obstacle Avoidance Planning 16

3.2.3 Home Base Configuration 20

3.3 Path Generation & Optimization 21

3.4 Operational Control & Monitoring 22

3.4.1 Start the task 23

3.4.2 Pause the task 23

3.4.3 Stop the task 24

3.4.4 Recall 24

3.4.5 Re-start the task 25

3.4.6 Breakpoint Resume 25

3.4.7 Delete Area 25

3.5 Task Resource Sharing 26

4.Advanced Features & Spatial Management 27

4.1 Workspace Modification & Refinement 27

4.2 Spatial Calibration & Offset Correction 28

4.3 Advanced Task Configurations 29

4.4 Organizational & Collaborative Control 29

5.Portable Locator Operations 30

5.1 Locator Initialization & Connection 30

5.2 Mapping Modes with Locator 31

5.3 Binding Locator & Task Synchronization 32

5.3.1 Binding Locator 32

5.3.2 Task Synchronization 33

6.Troubleshooting & Diagnostic 34

6.1 System Status Self-Check 34

7.Preferences & Notification Management 35

7.1 Language & Localization 35

7.2 Message Center 36

7.3 Operation History & Statistics 37

Welcome!

Thank you for reading the "SmartNavi" APP User Manual developed by WANJ

1. Getting Started & Safety Precaution

Prior to initiating the "SmartNavi" system, users must ensure that all preliminary conditions are met to guarantee autonomous navigation accuracy and operational safety.

1.1 Safety Compliance & Regulatory Guidelines

1)Documentation Review: Operators must thoroughly read and understand this User Manual and the Safety Guard Guide before their first operation.
2)Site Inspection: Ensure the working area is clear of debris, loose wires, pets, or individuals. The environment must be free from significant electromagnetic interference.
3)Emergency Awareness: Familiarize yourself with the "Emergency Stop" and "Recall" functions within the APP to mitigate unforeseen risks.

1.2 Hardware Status & Environmental Deployment

1)Base Station Placement: The Base Station must be installed in an elevated, open-air location with a 360° unobstructed view of the sky to ensure optimal GNSS satellite reception. Avoid placement near high-voltage lines or large metal structures to prevent Signal Attenuation.
2)Device Integrity Check: Verify that the device is powered on, with sufficient battery levels and no visible mechanical damage to the cutting deck or drive system.

1.3 Connectivity & System Configuration

1)Communication Link: Enable Bluetooth (BLE 4.2 or higher) on the mobile device. Maintain a direct line-of-sight distance within 10 meters during the initial pairing process.
2)Network Stability: A stable 4G/5G or Wi-Fi connection is required for real-time map synchronization and cloud-based data telemetry.
3)System Permissions: The APP must be granted "Always Allow" access to Precise Location and Background Data Usage to maintain the integrity of the operation log.

1.4 App Acquisition & Installation

This chapter guides users through the initial software setup, from installing the "SmartNavi" App to configuring secure access and collaborative group permissions.
1)Android: Scan the QR code provided. Ensure that "Install from Unknown Sources" is enabled in your system settings if required.
2) IOS: Search for "SmartNavi" in the Apple App Store.
3)To ensure smooth rendering of real-time maps and stable Bluetooth connectivity, the device should run Android 8.0+ or iOS 12.0+ with Bluetooth 4.2 support or higher.

⚠ Note

Upon first launch, the App will request the following permissions. "Always Allow" is recommended for optimal performance:
oPrecise Location: Required for Bluetooth searching and RTK map synchronization.
oBluetooth Access: Essential for peer-to-peer communication with the mower and base station.

2.Account Configuration & Authentication

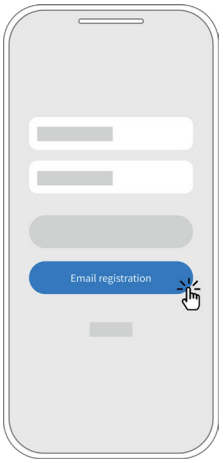
2.1 Account Registration

Users must create a WANJ ID to securely store mapping data and synchronize device configurations to the cloud.When opening the app for the first time, a login prompt will appear. Please tap the "Confirm" button to enter the login page.

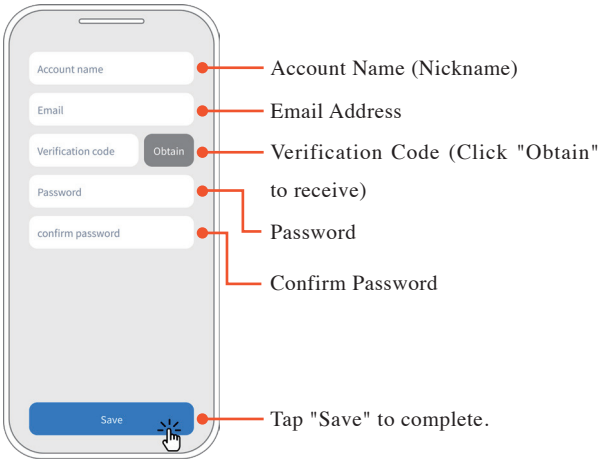


2.1.1 Email Registration

1 On the login page, tap the "Email Registration" button to enter the email registration page.

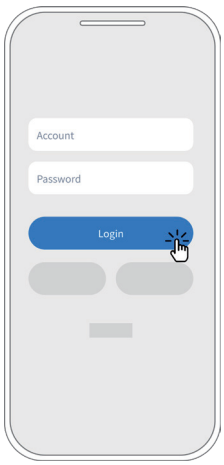


2 Fill in the details



2.2 Login Security

The system supports encrypted password login. For account safety, do not share your credentials. One account can be logged into multiple devices, but only one active control session is permitted at a time.Enter your email and password on the login page, then tap the "Login" button.



2.3 Group Management & Collaborative Control

The system features a hierarchical permission architecture for multi-user coordination.

Role Definitions:

oOwner: Full authority over device binding and member management.

oAdministrator: Can edit boundaries and start/stop tasks

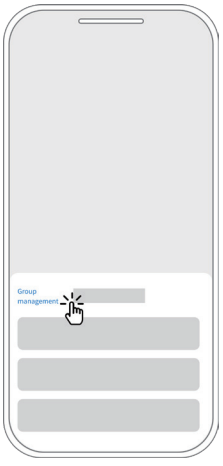
oMember : View device status and start/stop tasks only.

2.3.1 Adding a Group

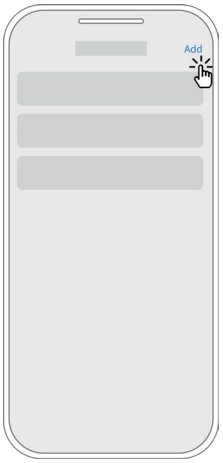
1 Tap the group name in the top left corner of the home page to reveal the group selection popup (a default group is created upon account creation).



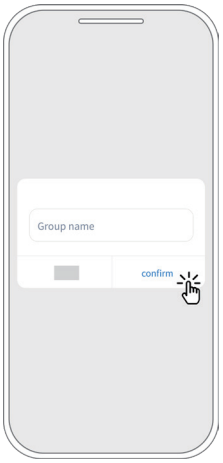
2 Tap the "Group Management" button in the top left of the popup to enter the Group Management page.



3 Tap the "Add" button in the top right corner to open the group name popup.

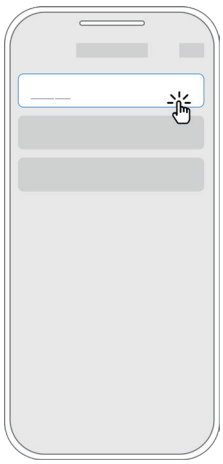


4 Input the name and tap "Confirm" to finish adding a group.



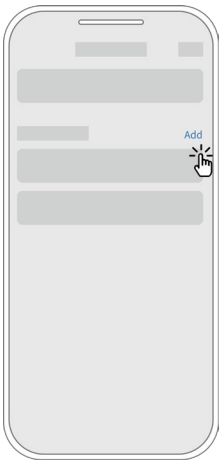
2.3.2 Group Details

Click on a group name in the management page to enter its details.

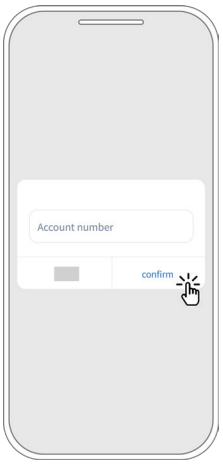


2.3.3 Inviting Group Members

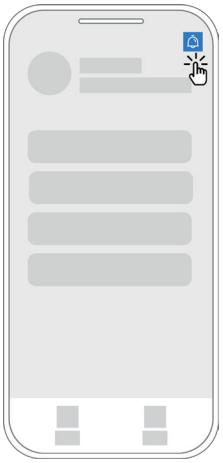
1 If you are the Creator, tap the "Add" button on the group details page.



2 Enter the mobile number of the member you wish to invite and tap "Confirm".



3 Accepting: The invitee must go to the "Me" page, tap "Messages" in the top right.

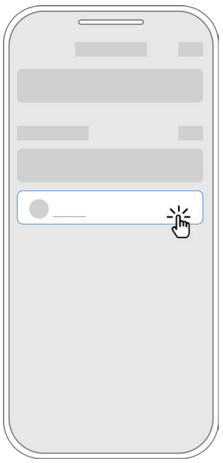


4 Find the invitation, and tap "Agree".

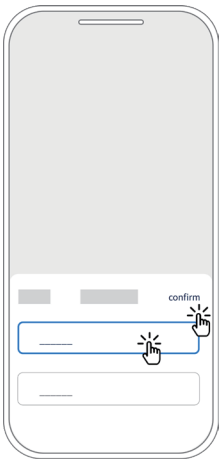


2.3.4 Group Member Management

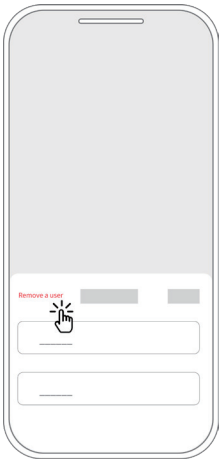
1 If you are the Creator, tap a member's name in the group details to open settings.



2 You can select permissions and tap "Confirm". (Only Creators and Admins can create new operation areas, share areas, or start tasks; ordinary members can only start tasks).

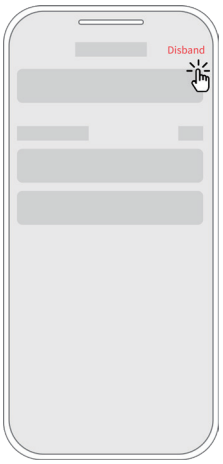


3 To remove a member, tap "Remove a user".

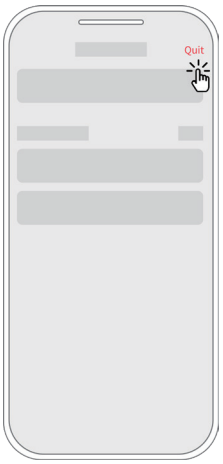


2.3.5 Dissolving and Exiting Groups

1. Dissolve: If you are the Creator, tap the "Disband" button in the top right of the group details page.



2. Exit: If you are not the Creator, tap the "Quit" button in the top right to leave the group.



2.3.6 Renaming Groups

If you are the Creator, tap the group name in the details page, enter the new name, and tap "Save".

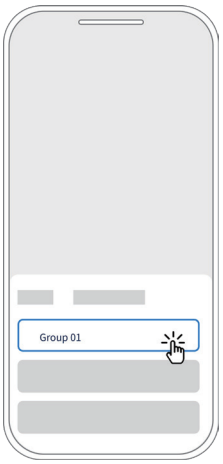


2.3.7 Switching Groups

1. Tap the group name on the Home page top left.

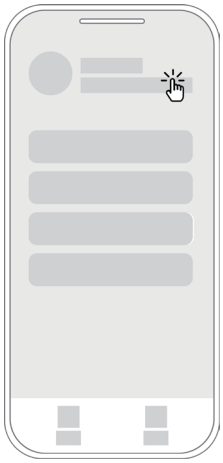


2. Select the desired group from the list in the popup.



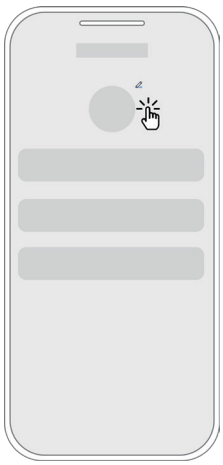
2.4 Personal Profile & Security

Managing user profile details, including nickname, avatar, and account security settings (password updates or account logout).Tap the "Avatar" bar at the top of the "Me" page.



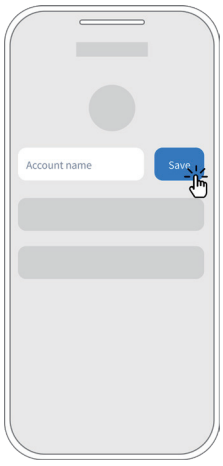
2.4.1 Change Avatar

Tap "Avatar" and select an image.



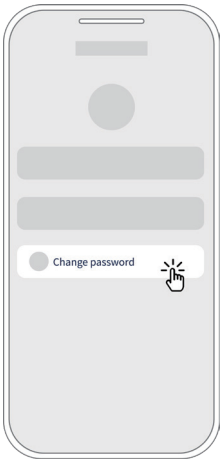
2.4.2 Change Nickname

Input new name and tap "Save".

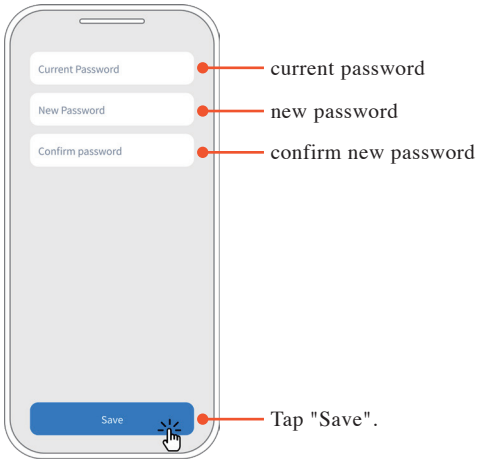


2.4.3 Change Password

1. Click on the "Change Password" button to navigate to the password change page.

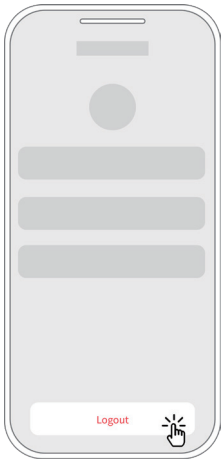


2. Fill in the password change page



2.4.4 Logout

Tap the "Logout" button at the bottom.



3. Deployment & Task Execution

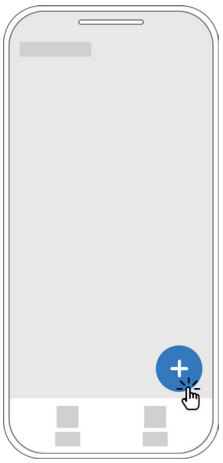
This chapter provides detailed instructions on integrating hardware, constructing high-precision spatial maps, and initiating autonomous operational tasks.

3.1 Hardware Pairing & Interconnection

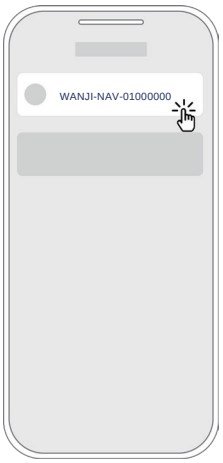
Communication links between the APP, device, and base station must be established prior to task planning.

3.1.1 Adding a Device

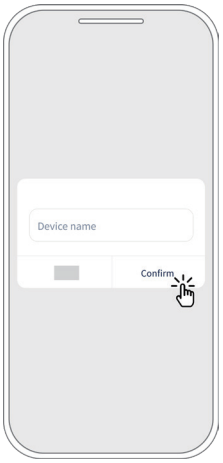
1 Tap the "Add" button at the bottom of the Home page to enter the Add Device page.



2 Wait for the Bluetooth search. Tap the device name starting with "WANJI-NAV" to connect.



3 Once connected, input a name for the device in the popup and tap "Confirm".

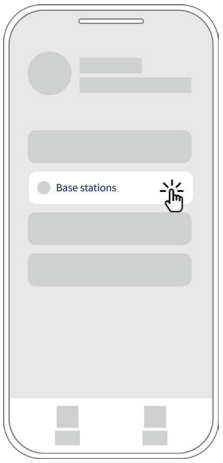


4 The home page will display a list of all added devices.

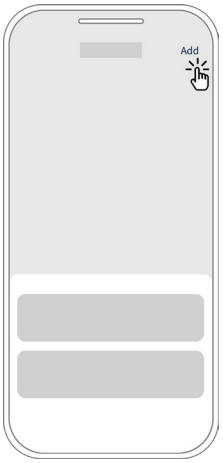


3.1.2 Adding a Base Station

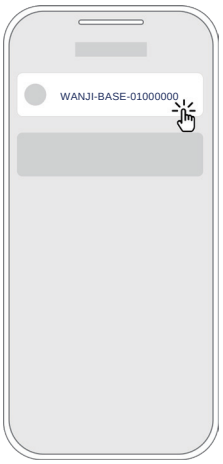
1 On the "Me" page, tap "Base Stations".



2 Tap "Add" (top right).



3 Wait for Bluetooth search and tap the station name starting with "WANJI-BASE".



4 Input a name and tap "OConfirm".



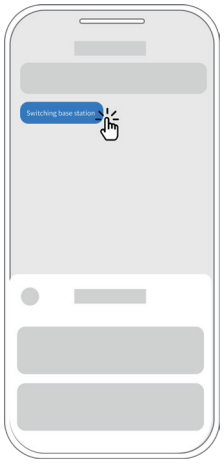
3.1.3 Base Station Binding

Logically bind the mower to a specific base station. This step is critical for ensuring centimeter-level RTK (Real-Time Kinematic) positioning accuracy.

1 Tap the device row on the Home page to enter Device Details.



2 Tap "Switch Base Station" (top left).

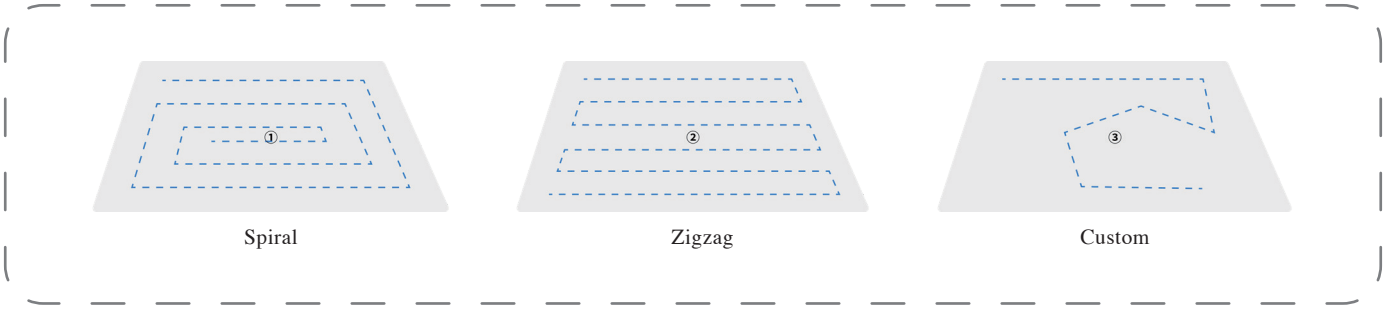


3 Select a base station from the list and tap "Switch Base Station" to complete binding



3.2 Spatial Mapping & Area Planning

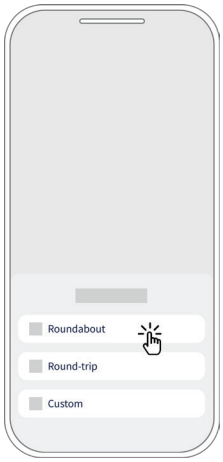
The system supports the construction of digital operational maps through field mapping.Pre-set algorithms include Spiral, Zig-zag, and Custom path planning. Select the optimal mode based on terrain complexity.



1. Click the "+" button in the upper left corner in the operation list at the bottom of the device details page to display the new area pop-up.



2. In the Add Area pop-up, select the working mode and click the corresponding button to navigate to the Add Area page.



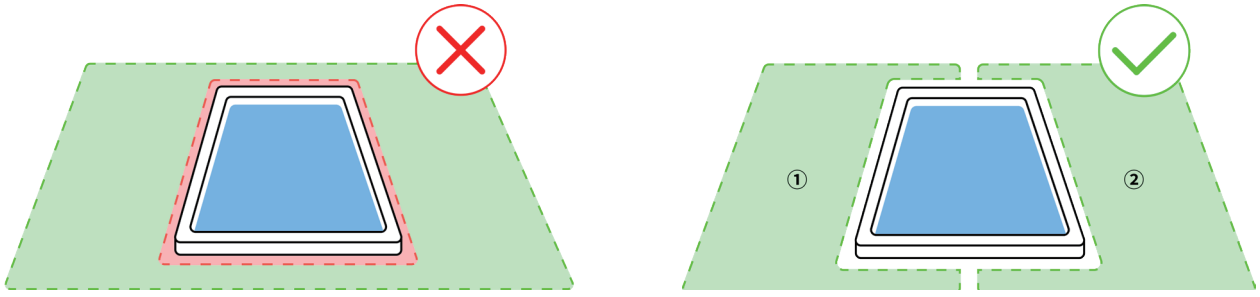
3.2.1 Boundary Mapping

Remote control the device to the perimeter of the workspace. Record key coordinates via the APP interface to automatically generate a closed boundary.



Note

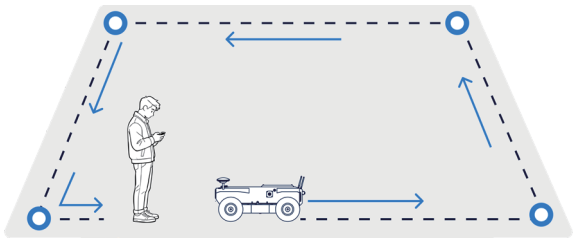
Do not mark giant obstacles (e.g., large pools) as standard obstacles. Instead, plan the area boundaries around them, splitting the area into two if necessary.



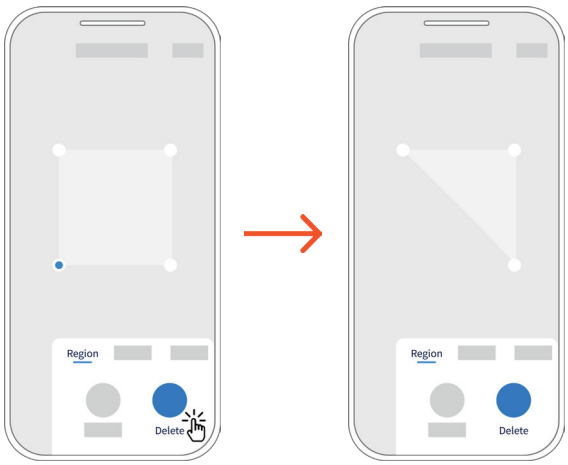
1 Remote control the device to the starting point. Tap "Add a Point".



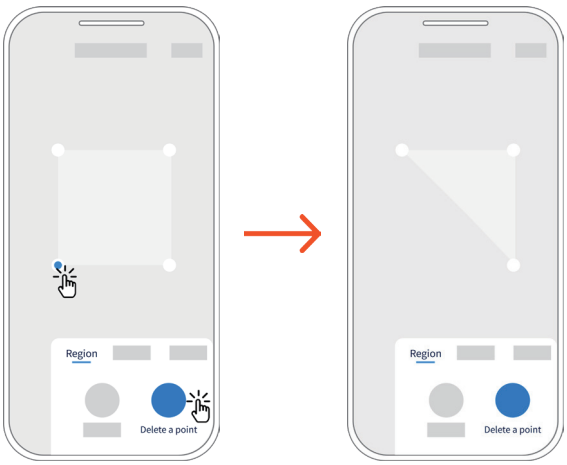
2 Move sequentially (clockwise or counter-clockwise) to corners and add points until the area is closed.



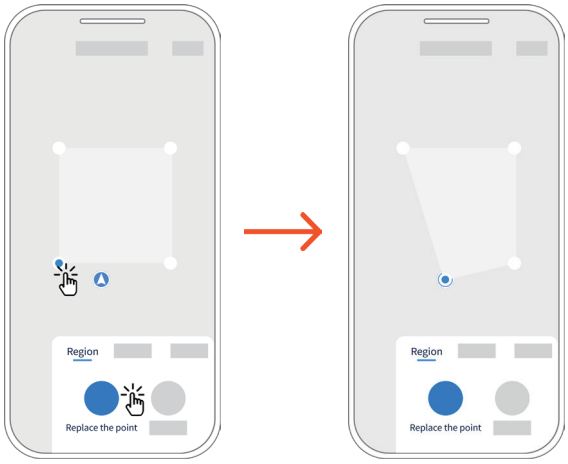
· Tap "Delete" to remove the last point.



· Tap a point on the map and select "Delete a Point" to remove it.



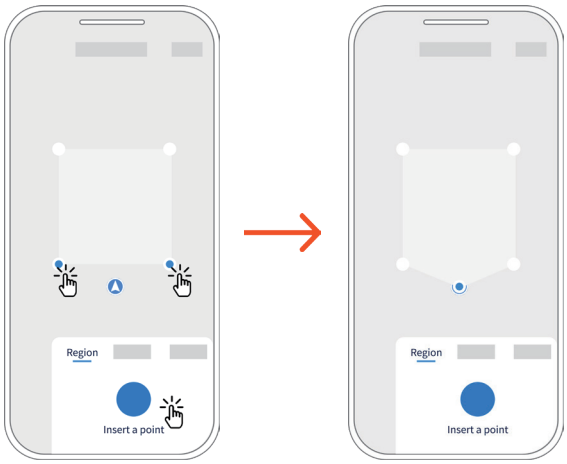
· Tap "Replace the Point" to move it (move device to new spot -> tap Replace).



· After updating the selected area endpoint, click on this endpoint to exit the replacement mode.



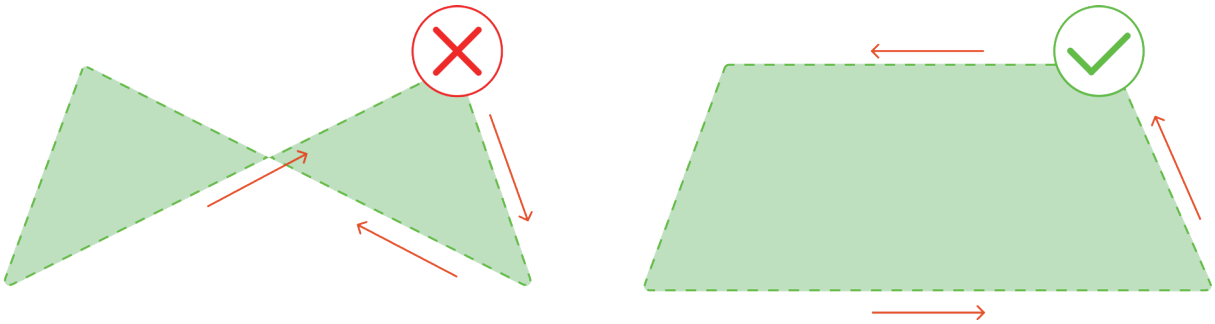
· Tap two adjacent points, move device to a new spot between them, and tap "Insert a Point".



Note

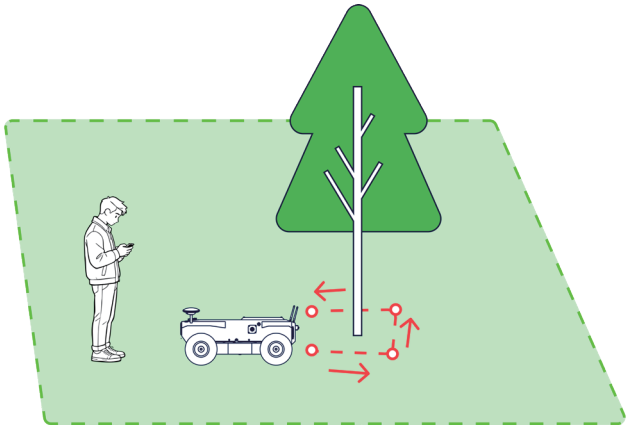
·Keep the phone active.

·Do not cross the path (self-intersection).

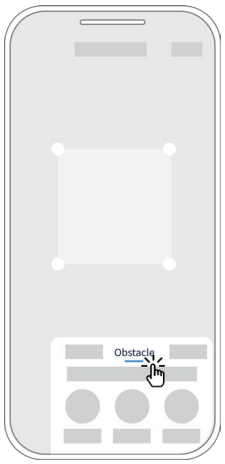


3.2.2 Obstacle Avoidance Planning

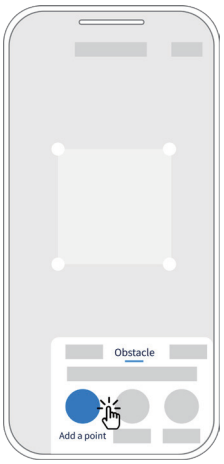
Multi-point Mode: Designed for irregular obstacles; delineate "No-Go Zones" by mapping multiple perimeter points.



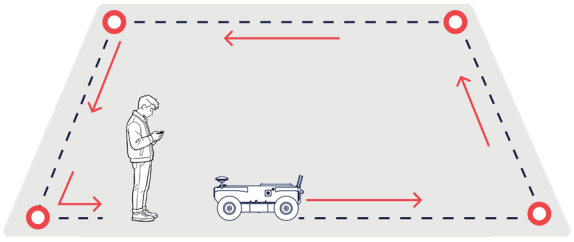
1 In the New Area page, tap "Obstacle" to switch modes.



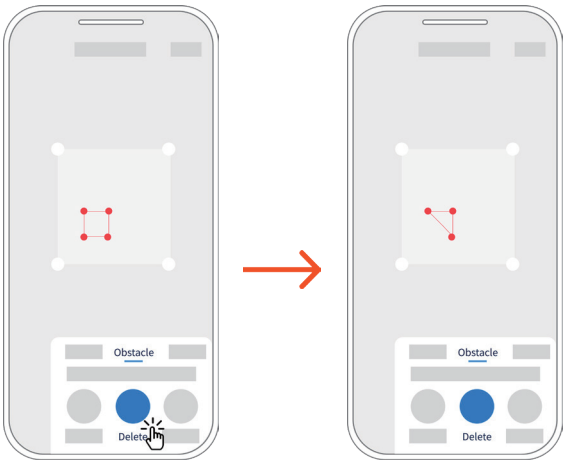
2 Move device to edge -> "Add a Point"



3 Move sequentially (clockwise or counter-clockwise) to corners and add points until the area is closed.



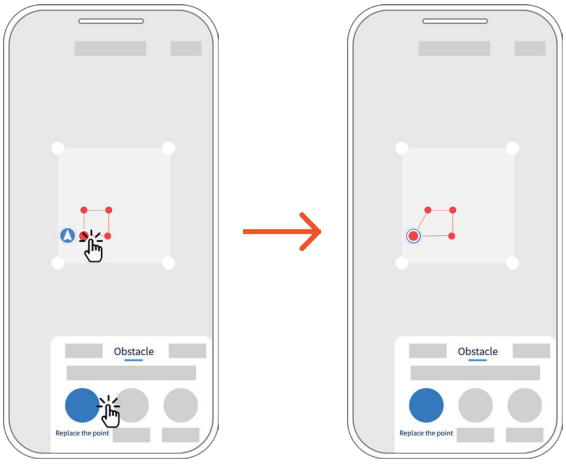
· Tap "Delete" to remove the last point.



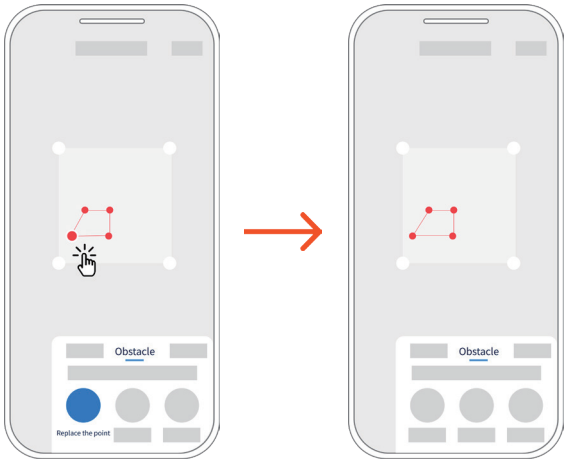
· Tap two adjacent points, move device to a new spot between them, and tap "Insert a Point".



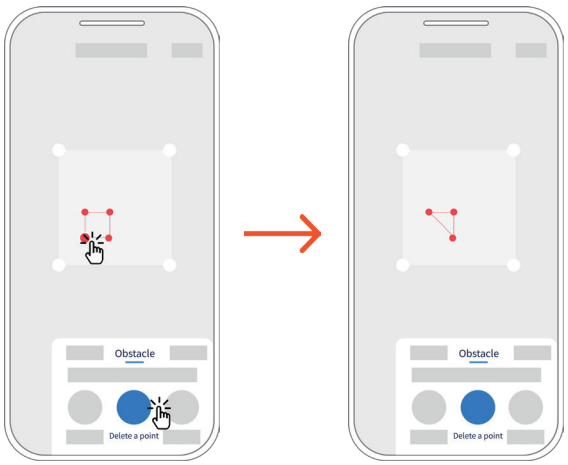
· Tap "Replace the Point" to move it (move device to new spot -> tap Replace).



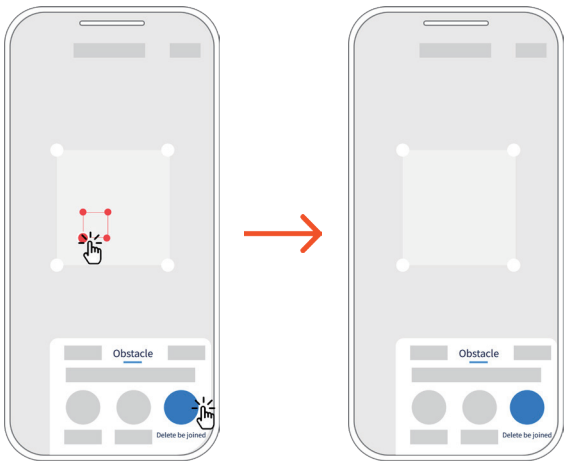
· After updating the selected area endpoint, click on this endpoint to exit the replacement mode.



· Tap a point on the map and select "Delete a Point" to remove it.



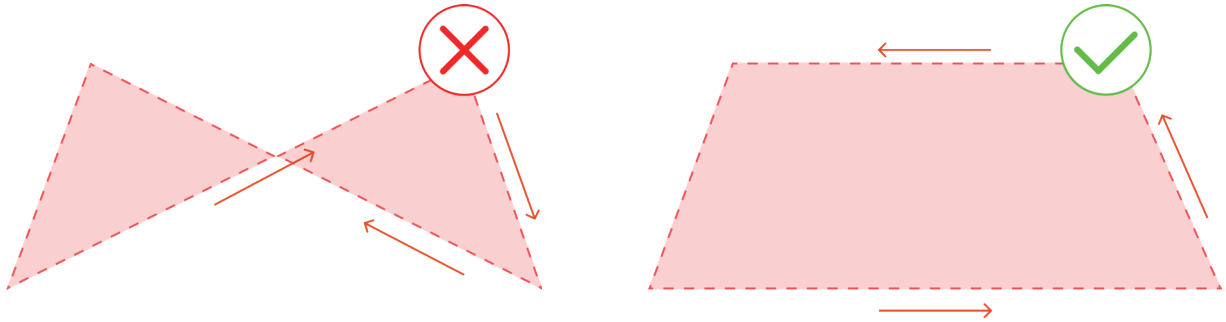
· Click on the obstacle endpoint on the map, then click the "Delete be joined" button below to remove the obstacle area where the selected obstacle endpoint is located.



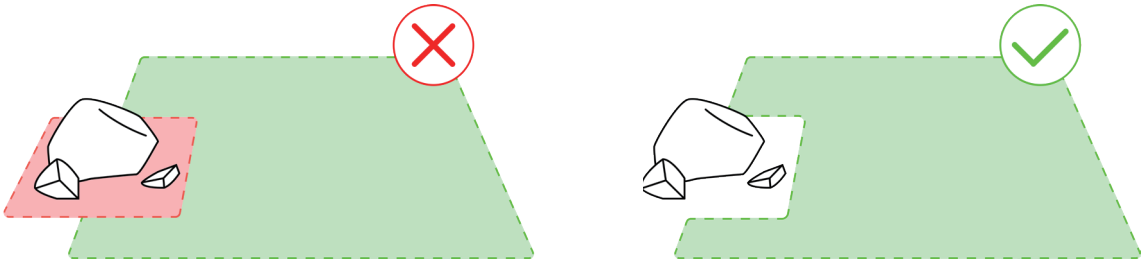
⚠ Note

·Keep the phone active.

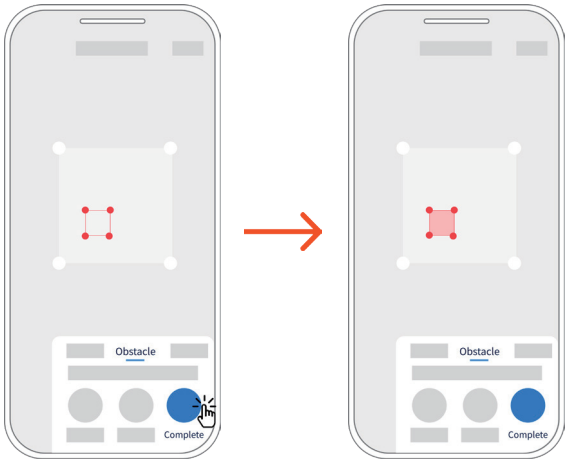
·Do not cross the path (self-intersection).



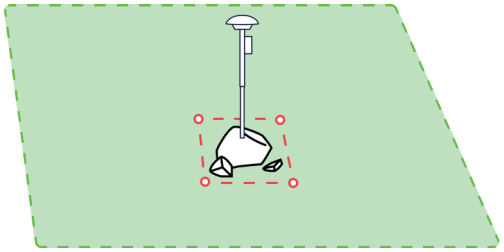
·Obstacles must be fully inside the operation area boundaries.



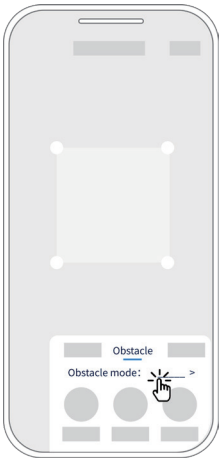
4 After marking all endpoints of the current obstacle, click the "Complete" button to save the current obstacle area.



Single-point Mode: Designed for regular objects (e.g., trees); mark a center point and set a diffusion radius (in cm) to quickly generate a circular exclusion zone.(This function is typically used by the portable locator)



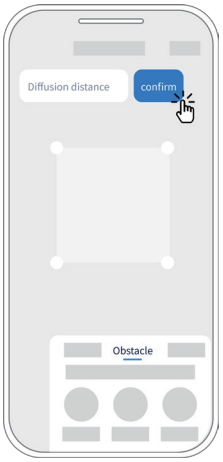
1 For trees/poles. Tap "Obstacle Mode" row



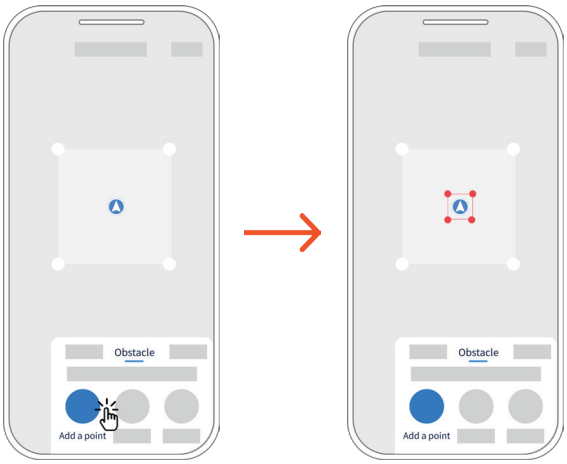
2 Select "Single point obstacle".



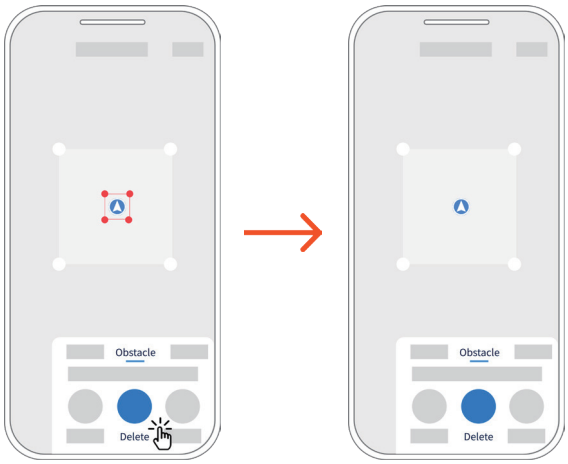
3 Enter the diffusion distance (cm) and click the "Confirm" button (the diffusion distance refers to the distance between the edge of the square and its center point).



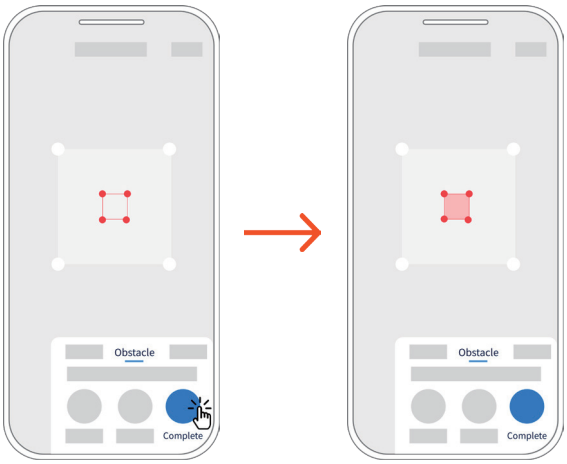
4 Remotely move the device to the intended center point position, and click the "Add a Point" button to quickly plan a square obstacle area.



5 You can click the "Delete" button to cancel the entire square obstacle. You can also edit the area endpoints of this obstacle, and the operation steps are the same as those of the multi-point mode.



6 After marking all endpoints of the current obstacle, click the "Complete" button to save the current obstacle area.

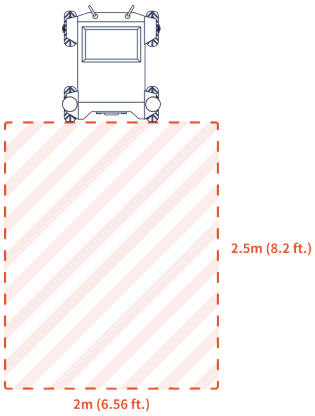


3.2.3 Home Base Configuration

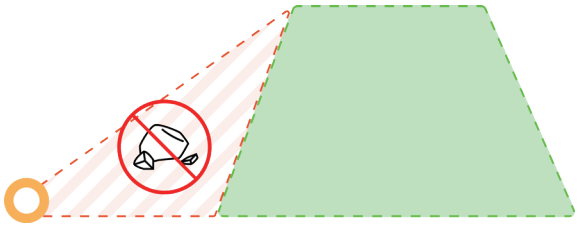
Mark the final docking position.

Note

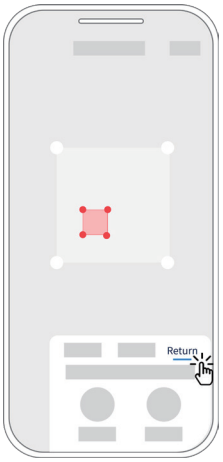
1)Ensure a 2m × 2.5m clear area around the Home Base.



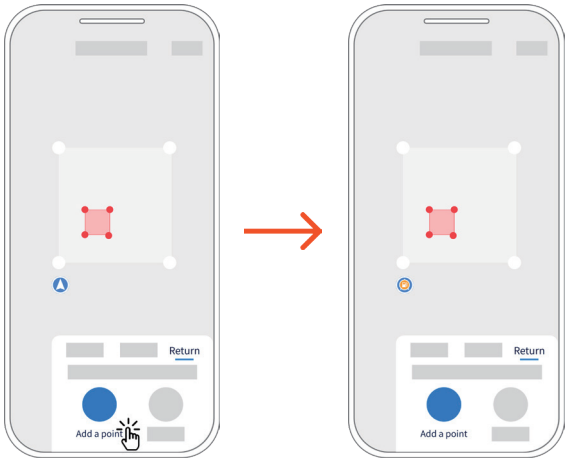
2)The return path is a straight line; ensure no debris/wires between the work area and the return point.



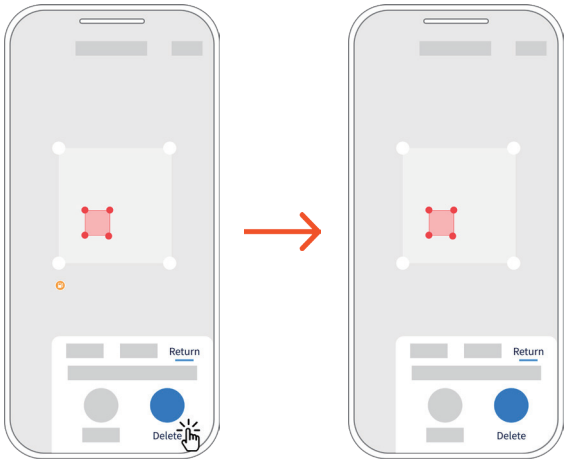
1 Tap "Return" in the function bar.



2 Move device to the location and tap "Add a point".

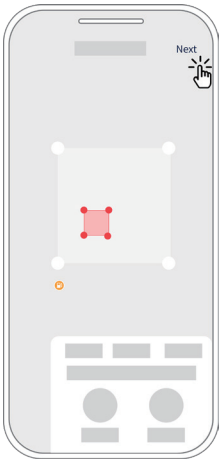


3 Tap "Delete" to remove the point.

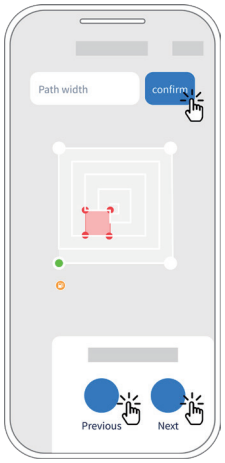


3.3 Path Generation & Optimization

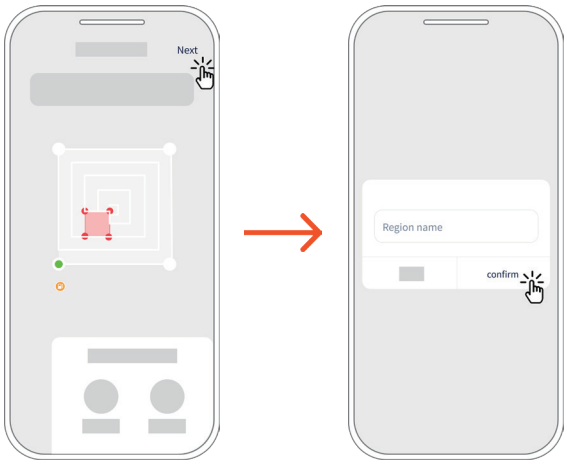
1 After planning the area, obstacles, and return point, tap "Next".



2 Set path width to ensure 100% coverage. Tap "Confirm". Use "Previous/Next" to switch starting points. The system calculates the optimal trajectory.

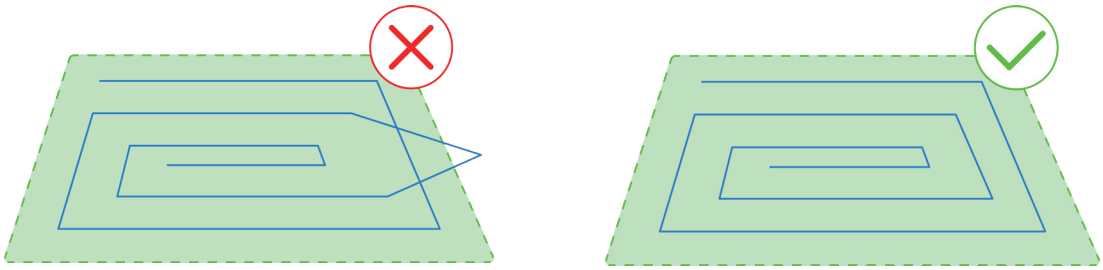


3 Tap "Next", input name the area, and tap "Confirm".



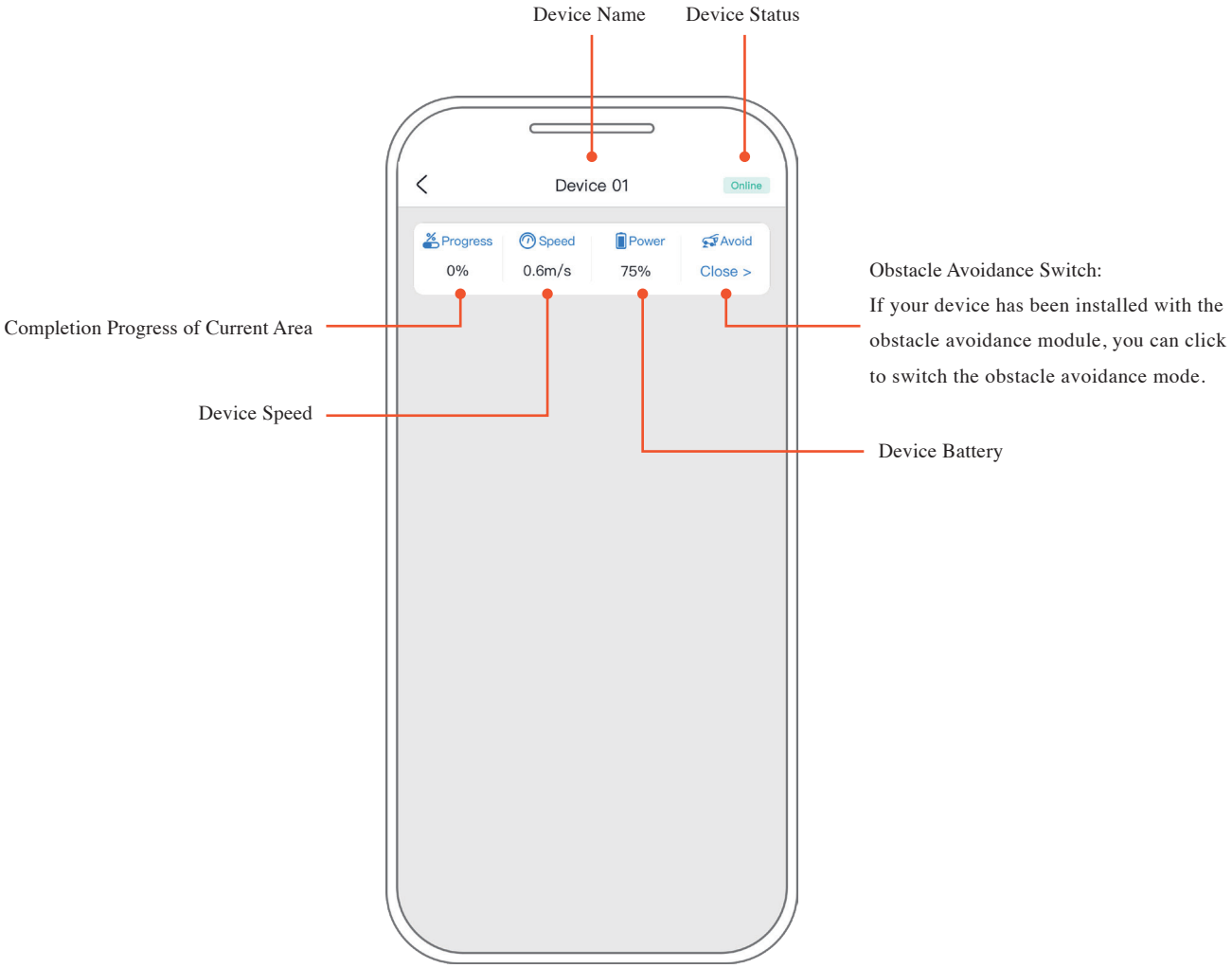
Note

Ensure the generated path is entirely inside the area. If not, adjust width or boundary points.



3.4 Operational Control & Monitoring

The Device Details page displays real-time status



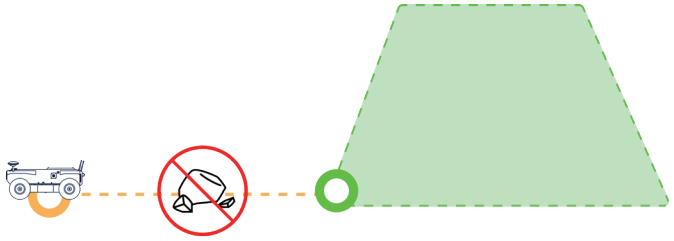
3.4.1 Start the task

Select an area in the list -> Tap "Excute a task".



⚠ Note

Ensure clear straight-line path from Home to Start.



3.4.2 Pause the task

1 Tap "Pause the task" button to pause the current task.



2 Tap "Continue the task" button to resume the current task.



3.4.3 Stop the task

Tap "Stop the task" to end the current task.



3.4.4 Recall

Upon activation, the device will cease its current task and autonomously return to the Home Base via the most efficient route.

1 Tap "Callback". Device returns to Home Point.

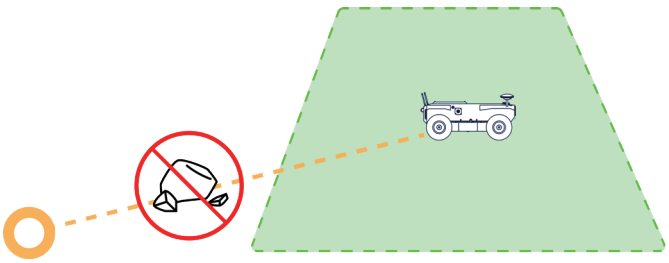


2 Tap "Stop the return" button and the device will stop returning to its home position.



⚠ Note

Ensure straight-line path is clear.



3.4.5 Re-start the task

After completion, tap "Re-start A Task" to repeat the last task.



3.4.6 Breakpoint Resume

If the operation is interrupted by external factors, the system supports the breakpoint resume function. You can click the "Resume the task" button at the bottom of the device details page, and the device will automatically return to the coordinate point where the last interruption occurred and resume the task.



3.4.7 Delete Area

1. Select the area and click the "Delete" button, and a deletion confirmation pop-up will appear.



2. Tap "Confirm" button to delete the area.



3.5 Task Resource Sharing

Completed map resources can be shared with other devices or members within the same group, eliminating the need for redundant mapping processes.

1 Go to "Me" > "Region of the task".



2 Creators/Admins can tap "Share" next to the group name.



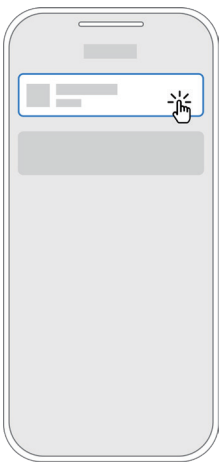
3 In the operation list at the bottom of the device details page, tap "+" button in the upper left corner, and an Add Area pop-up will appear.



4 Tap "Shared area editing" button to navigate to the shared area editing page.



5 Click on the required operation area, and a task type selection pop-up will appear.



6 In the task type selection pop-up, select the required working mode and click the "Confirm" button in the upper right corner to navigate to the Add Area page. For detailed operations, please refer to Section 3.2 Spatial Mapping & Area Planning



4.Advanced Features & Spatial Management

This chapter details the methods for secondary optimization of digital maps and the utilization of system tools to ensure operational consistency in complex environments.

4.1 Workspace Modification & Refinement

The system allows users to dynamically adjust operational parameters and boundaries without deleting the original map data.

1)Boundary Adjustment: If the physical environment changes (e.g., landscaping expansion), users can select specific boundary nodes for translation or re-mapping. The system will update the operational vector in real-time.

2)Obstacle Reconfiguration: Users may enter "Edit Mode" at any time to add new No-Go Zones or modify the buffer parameters of existing obstacles.

3)Attribute Modification: Supports modifying operation patterns (e.g., switching from Spiral to Zig-zag) or adjusting the path overlap ratio within the area attributes.

1 Select the area and click the "Setting" button, and a settings pop-up will appear.



2 Tap "Region editing" button to enter the area editing mode.



3 The operation steps for the area editing mode are the same as those for adding an area. For details, please refer to Section 3.2 Spatial Mapping & Area Planning

4.2 Spatial Calibration & Offset Correction

If the Base Station is relocated or environmental factors cause coordinate drift during long-term operation, a calibration procedure must be executed. Base Station Displacement Compensation: When the Base Station is moved or reinstalled, the user must place the device at a preset "Calibration Reference Point" (typically the Home Base) and click "Area Calibration." The system will spatially align the entire map based on current coordinates, eliminating the need for re-mapping.

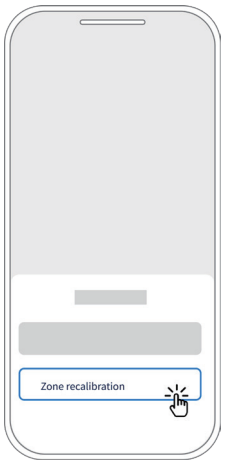
⚠ Note

Ensure that the device is located at the return-to-home point of the area. If the device is not at the return-to-home point, this function cannot be used, and you can only create a new operation area.

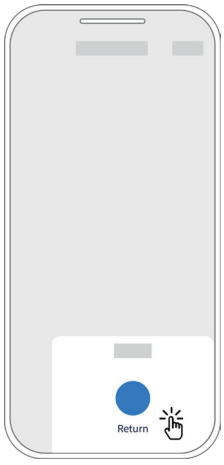
1. Select the area and click the "Setting" button, and a settings pop-up will appear.



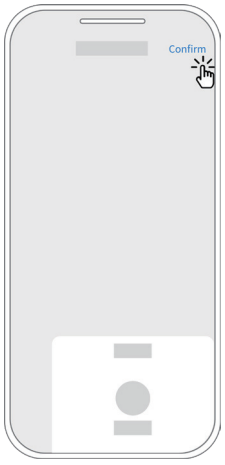
2. Tap "Zone recalibration" button to enter the area recalibration mode.



3. Ensure that the device is located at the return-to-home point of the area, then tap "Return" button, and the offset value will be automatically calibrated.



4. Click the "Confirm" button in the upper right corner to save the calibration result.



4.3 Advanced Task Configurations

1)Breakpoint Memory: The system performs real-time logging of operational progress. In the event of low battery or manual intervention, the system marks the exact "Breakpoint."

2)Mission Resume: Once recovery conditions are met (e.g., fully recharged), the device can resume the task from the breakpoint with a single command, preventing redundant cutting and enhancing efficiency.

4.4 Organizational & Collaborative Control

1)Hierarchical Permission Management: Administrators can grant different levels of access (e.g., View Only, Execute Only, or Full Edit Permissions) based on the responsibilities of group members.

2)Cross-Device Synchronization: Within the same organizational framework, all mapped task resources are automatically backed up to the cloud, supporting synchronization across multiple control terminals to ensure consistency of operational commands.

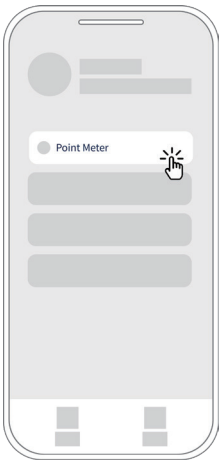
5.Portable Locator Operations

This chapter provides detailed instructions on utilizing the portable locator (mapping tool) to facilitate high-precision spatial mapping, particularly in complex terrains or areas inaccessible to the primary device.

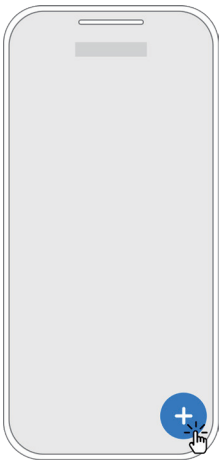
5.1 Locator Initialization & Connection

Before performing any mapping tasks, ensure the locator is successfully integrated into the system link.

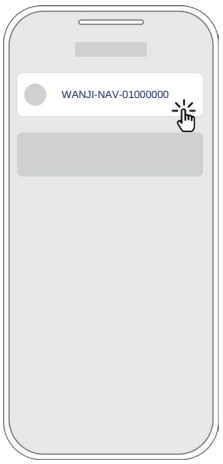
1 "Me" page -> "Point Meter"



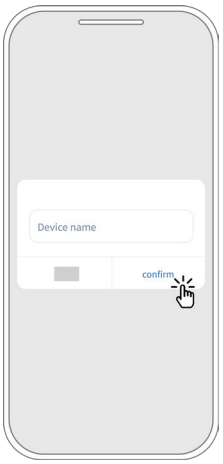
2 Tap the "Add" button to enter the Add Locator page.



3 Wait for the Bluetooth search. Tap the device name starting with "WANJI-NAV" to connect.



4 Once connected, input a name for the device in the popup and tap "Confirm".



5.2 Mapping Modes with Locator

The portable locator offers a more agile interaction compared to remote-controlling the primary device.

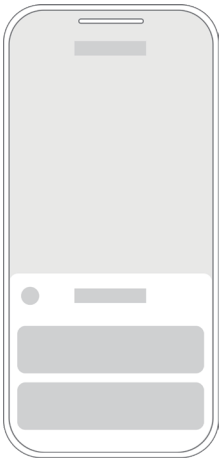
1)Boundary Collection: Hold the locator and walk along the perimeter of the workspace. Press the "Record" button at key inflection points; the system will capture high-precision coordinates in real-time and automatically connect them to form a boundary.

2)Obstacle Marking: For isolated objects, place the locator at the center and use "Single-point Mode" to generate a No-Go Zone. For irregular areas, carry the locator around the object's perimeter to complete a closed exclusion zone.

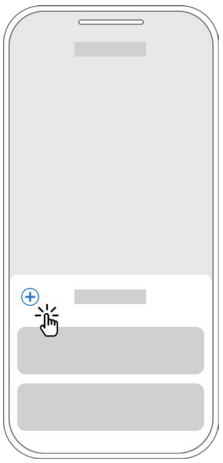
1 Click the locator name on the locator page to enter the locator details page.



2 The list below the locator details page is the operation area list under the locator. You can click to view the area details.



3 Ensure the locator is powered on with normal signal and positioning. Click the "+" button in the upper left corner in the operation area list at the bottom of the locator details page to display the new area pop-up.



4 Select the type you need in the new area pop-up and click to enter the new operation area page. The operation steps for adding a new area using the locator are the same as those for adding a new area using the device, except that there is no need to plan the return-to-home point and path. For details, please refer to Section 3.2 Spatial Mapping & Area Planning

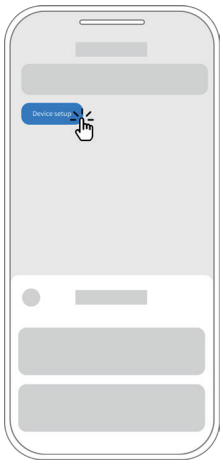


5.3 Binding Locator & Task Synchronization

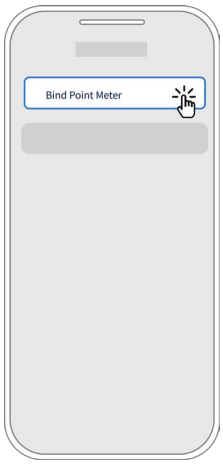
5.3.1 Binding Locator

After binding the locator, the lawn mower can directly call the map of the locator to generate routes without on-site re-mapping.

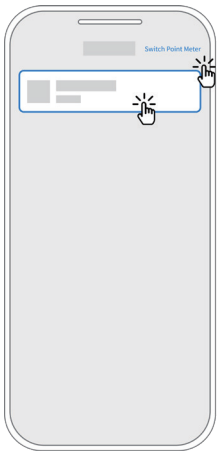
1. Click the "Device Settings" button in the upper left corner on the device details page to enter the device settings page.



2. Click the "Bind Point Meter" option on the device settings page to enter the bind locator page.



3. Select the required locator on the bind locator page and click the "Switch Point Meter" button in the upper right corner to complete the binding of the locator.



5.3.2 Task Synchronization

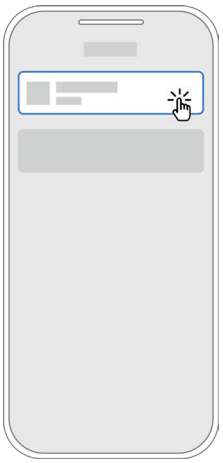
1. Ensure the device is powered on with normal signal and positioning. Click the "+" button in the upper left corner in the operation list at the bottom of the device details page to display the new area pop-up.



2. Click the "Locator Area Edit" button in the new area pop-up to enter the locator area editing page.



3. The locator area editing page lists the operation areas under the locator bound to the device. Click the required operation area to display the operation type selection pop-up.



4. Select the required operation mode in the operation type selection pop-up and click the "Confirm" button in the upper right corner to enter the new area page. For detailed operation steps, please refer to Section 3.2 Spatial Mapping & Area Planning

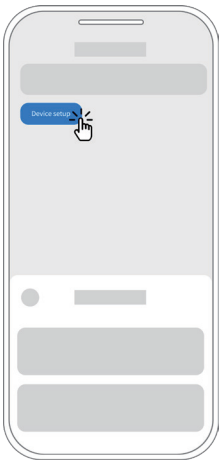


6.Troubleshooting & Diagnostic

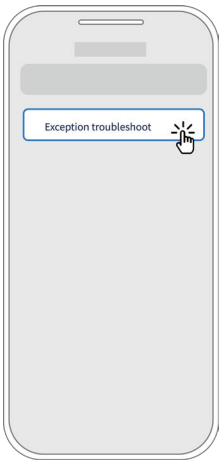
This chapter is designed to assist users in identifying and resolving operational exceptions. The system is equipped with advanced self-diagnostic capabilities to facilitate independent troubleshooting.

6.1 System Status Self-Check

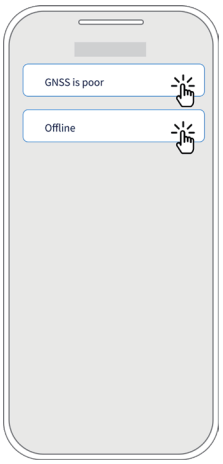
1. Click the "Device Settings" button in the upper left corner on the device details page to enter the device settings page.



2. Click the "Anomaly Troubleshooting" option on the device settings page to enter the anomaly troubleshooting page.



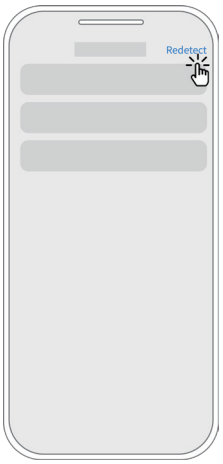
3. Click the problem you encountered on the anomaly troubleshooting page to display the device connection pop-up.



4. It will automatically search for devices via Bluetooth. Wait for the search and click the device name starting with "WANJI-NAV" to connect.



5. You can click the "Re-detect" button in the upper right corner to re-detect.

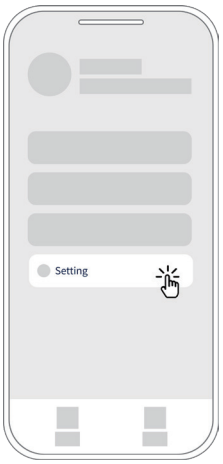


7.Preferences & Notification Management

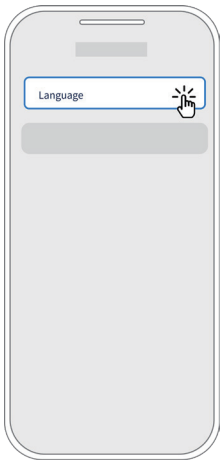
7.1 Language & Localization

The system supports multi-language switching to accommodate the operational habits of users worldwide.

1 Click the "Settings" button on the "Me" page to enter the settings page.



2 The default language is consistent with the mobile phone system language. If you want to modify the language, click the "Language" row to display the language selection pop-up.



3 Click the desired language to complete the language switch.



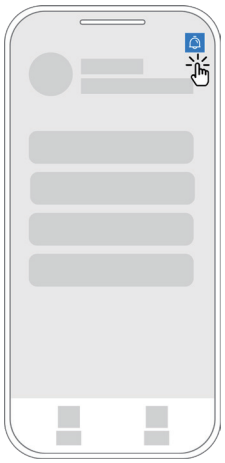
7.2 Message Center

The APP integrates an intelligent message processing system to ensure users stay informed of real-time device status.

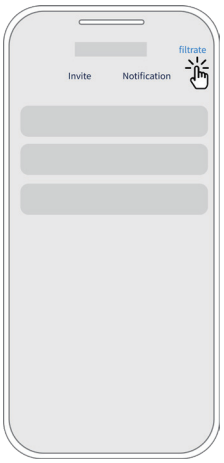
1)Group Invitation: Receiving group invitation information and handling it.

2)Task Notifications: Status feedback upon mission initiation, pause, and successful completion.

1 Click the "Message" button in the upper right corner on the "Me" page to enter the message page.



2 The message page can view all group invitation messages and device operation notifications under the current account. You can click the "Filter" button in the upper right corner to filter by group or date.

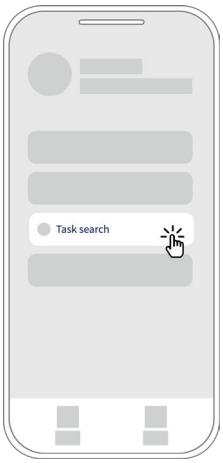


7.3 Operation History & Statistics

1)History Logs: The system automatically records the start/stop time, path coverage, and total area for every task.

2)Data Traceability: Users can access historical mission maps to review the path coverage, enabling an accurate evaluation of operational efficiency.

1 Click the "Task Query" button on the "Me" page to display the filter pop-up.



2 Select the specific operation area and device in the filter pop-up and click the "Confirm" button in the upper right corner to complete the filtering.



3 On the task query page, the bottom is the list of queried task records. Click to display the specific operation path of the task on the map above.



The manufacturer reserves the right to update the application and this manual at any time. The application interface displayed in the user manual is for reference only. The actual product and functions may vary. Please visit www.wanji-imp.com to obtain the latest user materials.