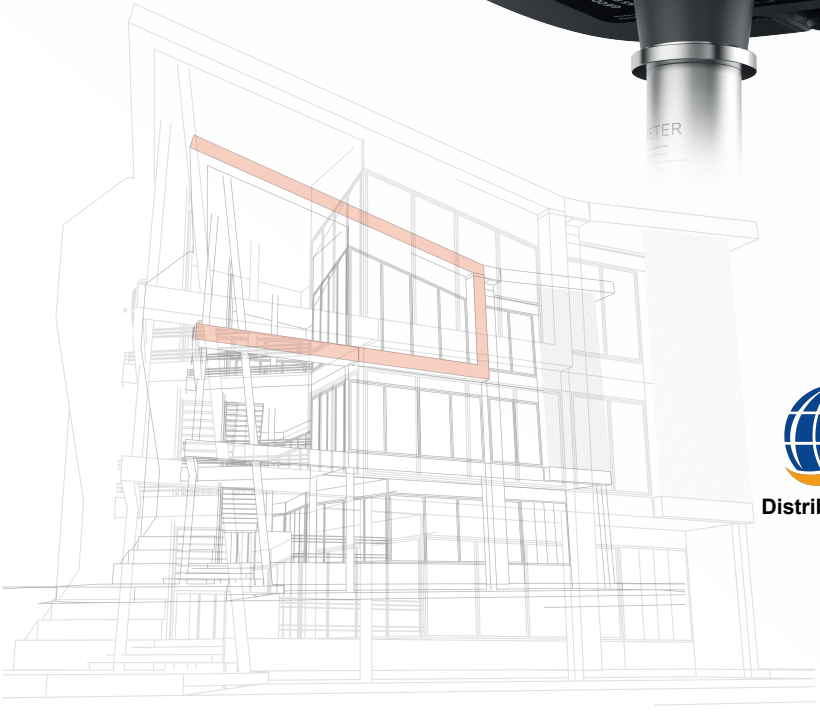
ALLYNAV

R26 Pro

USER MANUAL



RMS GEOESPACIAL

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Foreword

Introduction

Thank you for choosing the RTK product from Shanghai AllyNav Technology Co., Ltd. To learn more about the intelligent RTK or other products of us, please visit our official website at www.allynav.com.

This manual introduces the RTK product and its associated operating software and provides details on how to set up, connect, configure, and use the product. In case of any discrepancies between the icons and images in this manual and the actual product, please refer to the actual product. To ensure optimal use of our RTK product, we recommend you read this manual carefully before operating the device.

Company Profile

Shanghai AllyNav Technology Co., Ltd. is a high-tech company specializing in research and development, production, sales, and service. Based on GNSS satellite navigation technology, we are committed to expanding the applications of GNSS and providing our clients with comprehensive and diverse high-precision navigation and positioning solutions. AllyNav closely follows the global development trends of the four major satellite navigation systems, deploying high-precision applications across various industries. We strive to meet the diverse needs of various sectors . Our products are applied in precision agriculture, intelligent transportation, geographic information, surveying and mapping, and more.

Our core team members have been recognized with numerous national, provincial, and ministerial-level awards for their contributions to science and technological advances progress, with more than 10 years of experience in satellite navigation research and development, industry applications, product promotion, and technical service. Our primary products and services include high-precision GNSS boards, high-precision GNSS receivers, wireless data transmission devices, integrated navigation products, deformation monitoring systems, autonomous driving systems, intelligent navigation, variable control, solutions, and related software development.

Disclaimer

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Except for the liabilities stated in the Company's product general sales terms and conditions for its products, the Company assumes no other liabilities. Nor does the Company grant any express or implied warranties, with respect to the sale and/or use of its products, including fitness for a particular purpose, merchantability, or non-infringement of any patent, copyright, or other intellectual property right. The Company reserves the right to modify product specifications and descriptions at any time without prior notice.

User Notice

- Before using this product, carefully read all user materials provided to ensure you understand how to use the product and are aware of all safety precautions.
- When installing the base station equipment, ensure that the base station receiver and other components are properly waterproofed for long-term operation. The base station antenna must be placed outdoors in an open-air environment during operation or testing.
- Do not connect or disconnect any cables, including the base station antenna or serial port cables, while power is on.
- Connect your device strictly in accordance with the manual. Firmly hold the connector and gently insert and remove when connecting or disconnecting cables. Avoid pulling, forcing, or twisting cables, as this may damage pins.
- When powering the product (system), observe the power requirements for the device (power supply voltage should be 9～36V).
- The base station radio transmitter may generate heat during operation. Avoid burns and ensure proper ventilation by eliminating or reducing unnecessary covering on the surface of the radio.
- When operating the radio transmitter for a long time, maintain a distance of at least 2 meters from the transmitting antenna to avoid radiation.
- Users must apply appropriate lightning protection measures to prevent lightning strikes when installing the antenna outdoors.

- Do not use damaged cables. Replace damaged cables promptly with new ones to avoid harm and ensure optimal performance.
- Damage to the device caused by force majeure (lightning, high voltage, impact) is not covered by the warranty.
- Do not disassemble the product. Doing so will void the warranty.

Product Features

> Efficient operation

- No complex calibration procedures such as rotation or leveling.
- Simply hold the device, keep the bottom of the surveying rod stationary, and gently rock it back and forth along a single direction for approximately 1-2 seconds to initialize the internal inertial measurement unit for tilt compensation.
- It is not necessary to verify to check the bubble for tilts up to 60º (operation within a 30° tilt range is recommended for optimal accuracy.)
- At least 20% improvement in surveying efficiency
- At least 20% improvement in stakeout efficiency
- Significant reduction in operator fatigue

> Consistently High Accuracy

- The receiver, integrated with an inertial measurement unit, ensures real-time and interference-free tilt compensation, unaffected by magnetic fields or surrounding metallic structures.
- 2.5CM accuracy in tilt compensation.
- Base station shift warnings to prevent operator errors

Contents

I. Product Description

1.1 Buttons and indicators of R26pro

 Function button: Press and hold both the Function button and the Power button simultaneously for 3 seconds to restore factory settings

 Recorder LED: Red, flashes when the static logging mode is enabled, otherwise off

 Satellite indicator: Red, flashes when receiving satellite signals; otherwise off

 Differential LED: Red, flashes once per second when the radio or 4G module is receiving or transmitting data. It does not flash when no differential data is being received or transmitted

 Power LED: tricolor light. The light blue is constantly on when charging; the green is constantly on when fully charged; the red remains is on during operation; the red flashes when battery level is below 10%

 Power button: Press and hold for 3 seconds to power on. To power off, press and hold for 3 seconds with voice prompt for confirmation. Release the button, then briefly press it to shut down; or press and hold the button for 3 seconds to enter self-test mode

1.2 Bottom panel description of R26pro

 Dust plug

 Type-C connector and SIM card slot

 UHF radio antenna connector

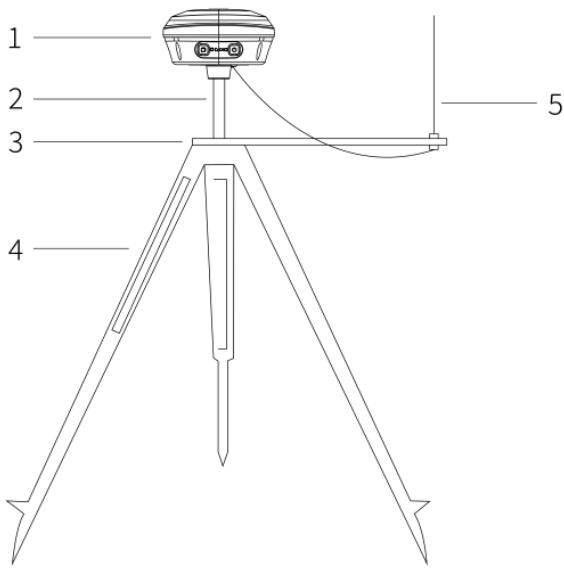
II. RTK Surveying Workflow

2.1 Device setup

2.1.1 Base station setup

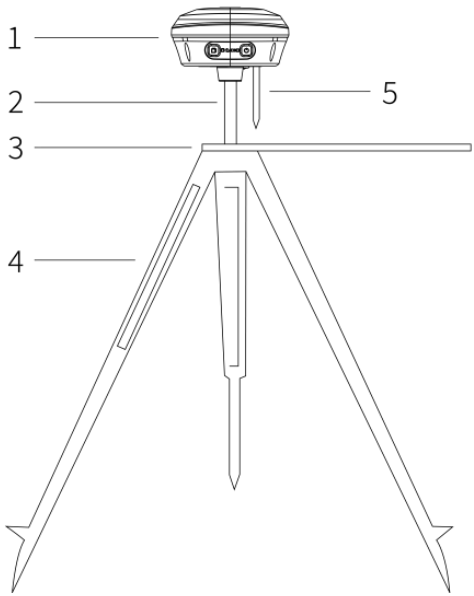
Set up a tripod over a known or an unknown point. Mount the base station receiver on the tripod's extension rod or on the tripod base. For known points, a separately purchased base is required for centering and leveling.

A base station setup with Internal radio and whip antenna is shown below:



1. Receiver 2. 25CM extension rod 3. Extension plate 4. Tripod 5. Whip antenna

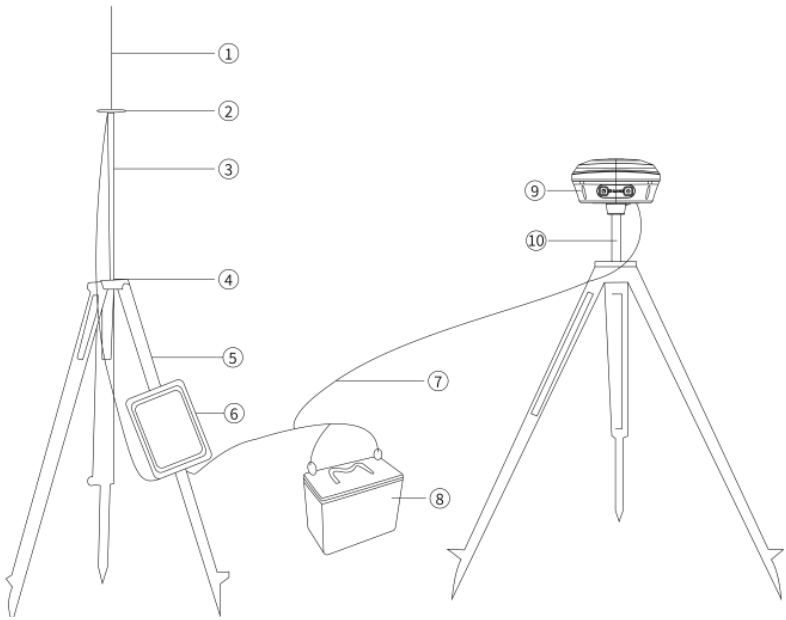
A base station setup with Internal radio and rod antenna is shown below:



1. Receiver 2. 25CM extension rod 3. Extension plate 4. Tripod 5. Rod antenna

Note: Both rod and whip antennas are connected to the receiver's RADIO port.

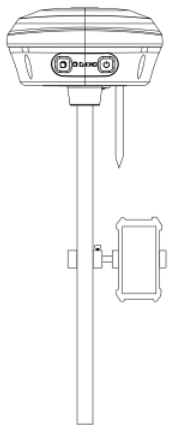
An external radio antenna setup of base station is shown below:



1. Whip antenna 2. Radio antenna mount 3. Radio antenna extension rod 4. Aluminum plate 5. Tripod 6. Radio 7. Power cable + data cable = Combined cable 8. Battery 9. Receiver 10. 25cm Extension rod

2.1.2 Rover setup

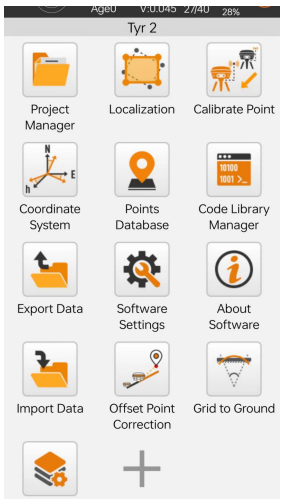
Mount the data recorder bracket on the surveying rod. Secure the data recorder on the bracket and the receiver on the surveying rod.

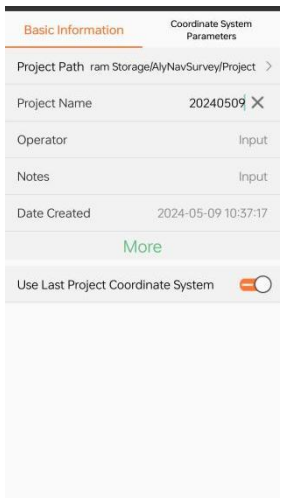


2.2 How to operate the AllyPad

2.2.1 Create/Open a project

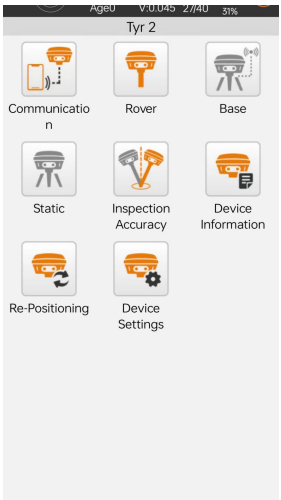
Click Project - Project Management - New. Enter relevant project information and coordinate system parameters. Select the coordinate system and modify central meridian. Click OK to create a new project.

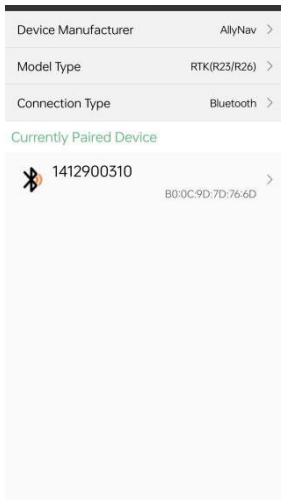




2.2.2 Connect to device

Click Device - Communication Settings. For initial connection, press the blank area under Device Parameters. The software will automatically search for Bluetooth devices. Select the correct RTK device SN and press Connect.

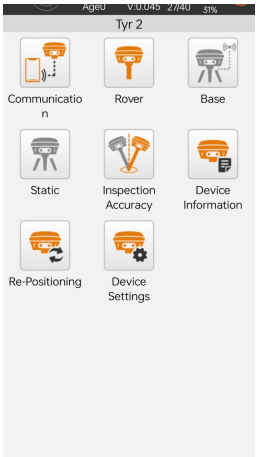


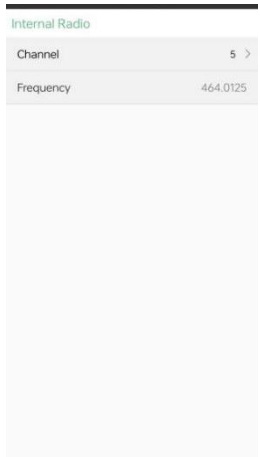


2.2.3 Configure base station and rover modes

1. Base - Internal Radio Mode

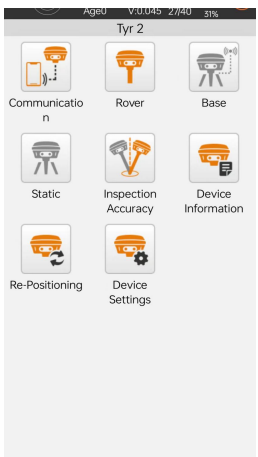
Go to Base Mode, select Internal Radio, and configure the channel frequency and other relevant settings

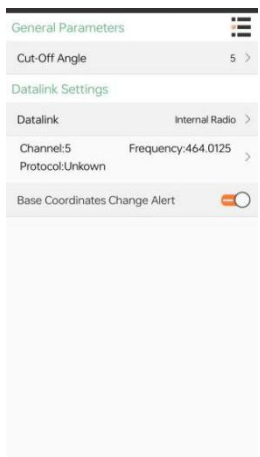




2. Rover - Radio Mode

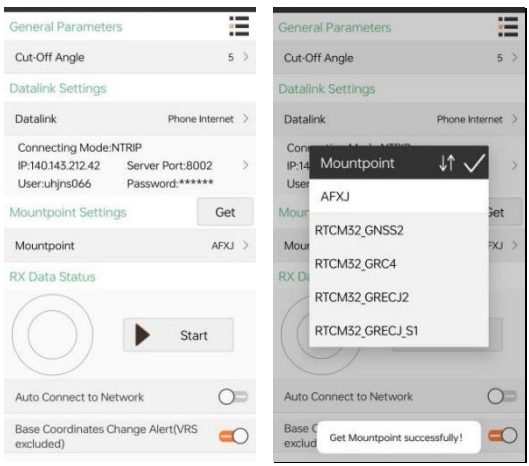
Go to Rover Mode, select Internal Radio, and configure the channel frequency and other relevant settings





3. Rover - CORS Login

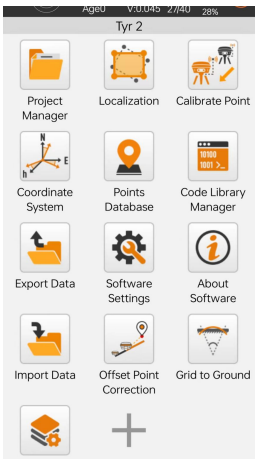
Go to Rover Mode, select Data Recorder Network or Receiver Network, and then access the Datalink Settings. Enter the required IP address, port, username, and password.

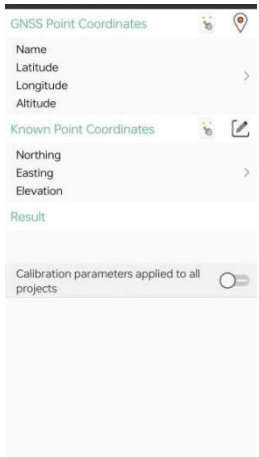


2.2.4 Parameter configuration

1. Localization

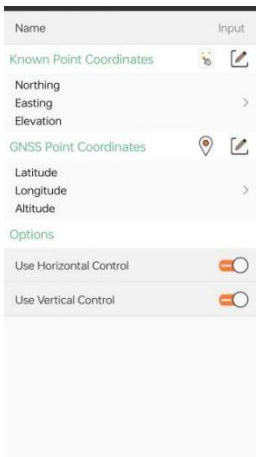
Go to localization and press Add. Select the control point you entered for the known coordinates and the collected point for GNSS coordinates. Click Calculate to obtain the transformation parameters.

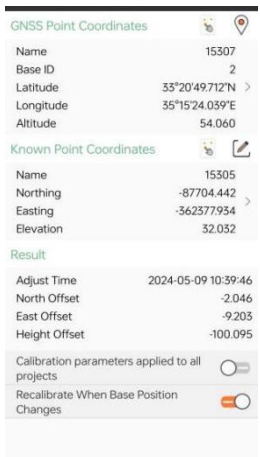




2. Calibrate Point

Perform calibrate point if the base station is moved or powered off and restarted.

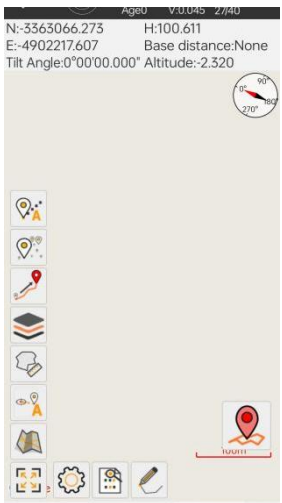




2.2.5 Surveying work

1. Point survey

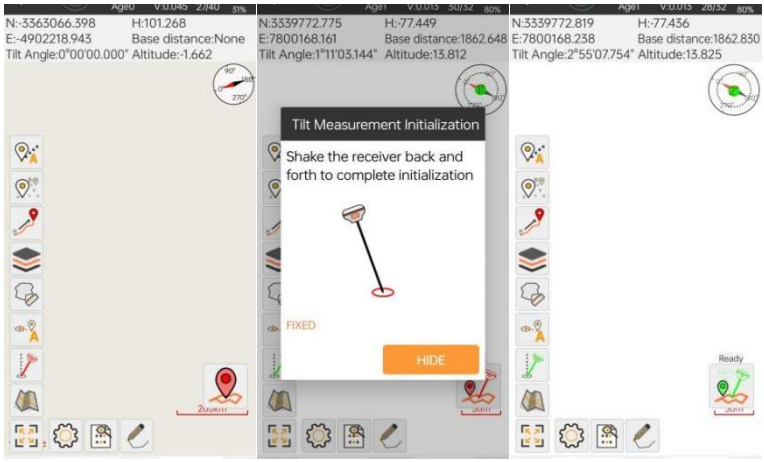
Select Survey - Point Survey to access the point survey interface. Enter the point name, rod height, and other required information. Center the surveying rod and press to record the point. View collec oints in the coordinate database.



2. Tilt survey

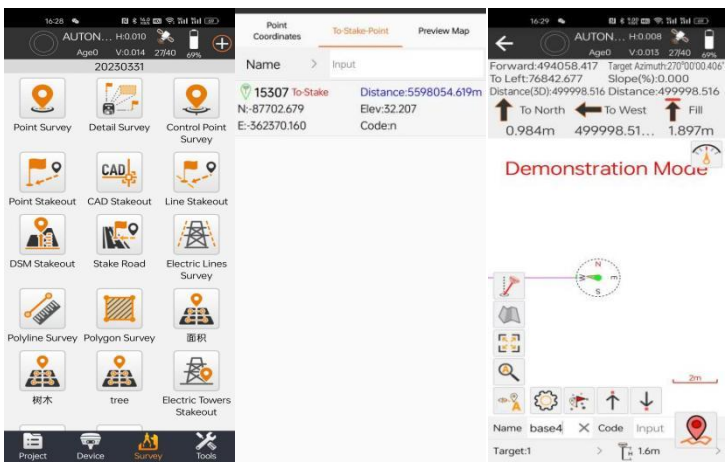
In the Point Survey interface, activate Tilt Survey function. Follow the prompts to calibrate and set the antenna height, which can be adjusted at any time.

Begin point survey when “INS Ready” is displayed.



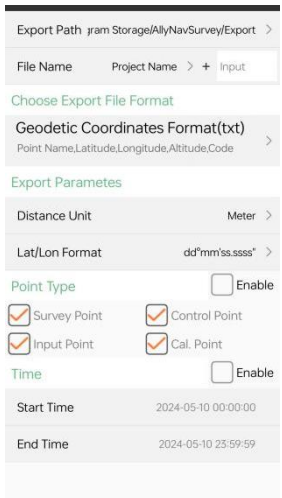
3. Stakeout

Select Survey - Stakeout. Import stakeout points by adding them or selecting from the database



2.2.6 Export data

Select the desired data formats for export (multiple selections allowed) as shown in the figure, and select the export location and enter the desired file name. Click Export to complete the data export process. If multiple formats are selected, the exported files will be saved in a single folder.



2.3 How to operate WEBUI

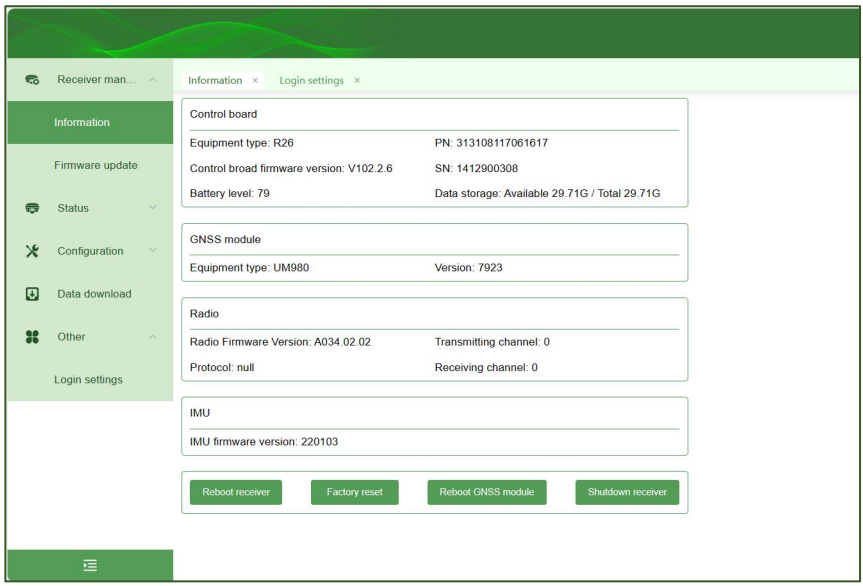
2.3.1 Login and logout

Connect your device to the receiver's WiFi. The default password is 12345678. Enter the IP address (192.168.1.1) in a web browser on your device to access the GNSS receiver's web configuration system login page. See below: Username (admin), Password (password).

2.3.2 Receiver management

Receiver information

Select "Receiver Information" to display the information about hardware parameters of the connected receiver. The interface is shown below:



1) At log in, this page displays the “Receiver Information” by default, including information about the connected receiver and module details.

2) Receiver information includes:

- Device type, SN, PN, motherboard firmware version, data storage, battery level, mainboard firmware version, radio firmware version, and IMU firmware version.
- Operations: The following four types of operations can be performed on the receiver.

Reboot receiver: A prompt is displayed when this button is pressed: "Reboot receiver?" Click "OK" to reboot. "Reboot successful" or "Reboot failed" will be displayed to indicate whether the reboot was successful or not. Click "Cancel" to close the prompt without rebooting.

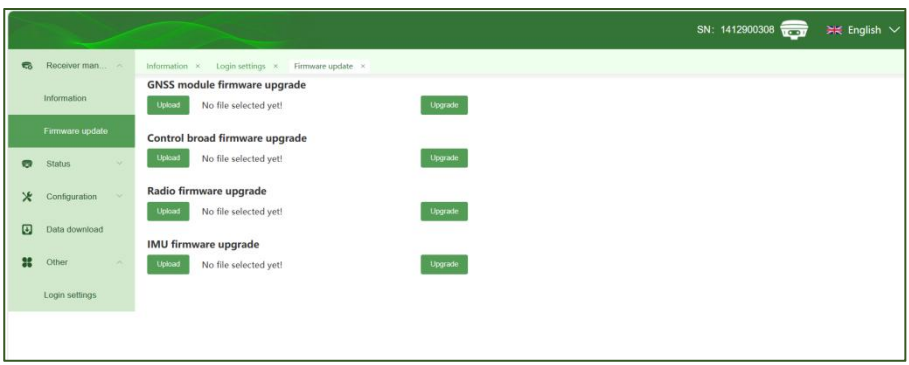
Factory reset: This clears all configured parameters.

Board reset: This resets the receiver's positioning board and then receives satellite signals again and collects positioning data.

Shutdown receiver: This shuts down the receiver.

Firmware update

Update firmware including the mainboard, GNSS, radio, and IMU.



Select file: Click “Upload” to open a pop-up window to select local files. There are no restrictions on the file type.

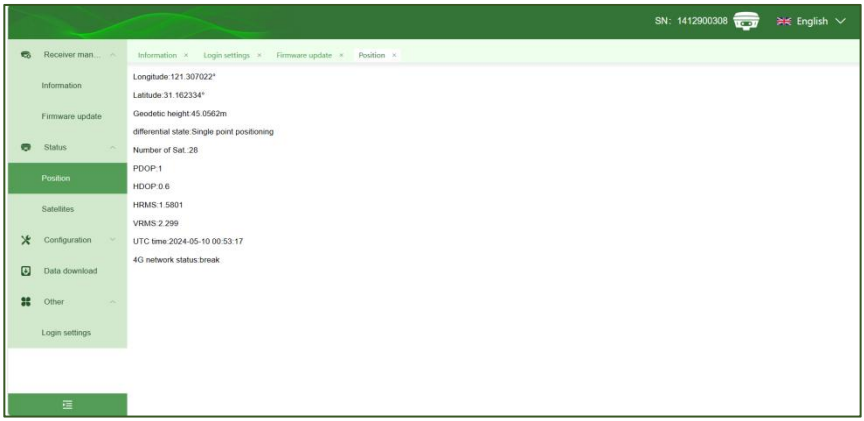
Note: The file size should not exceed 2M. If the file is larger than 2M, a message will be displayed, prompting you to select a smaller file. After selecting a file, the file name will be displayed on the screen.

Firmware update: Click “Firmware Update” to begin the update process. The page will display a loading indicator. A pop-up message will appear when completed indicating whether the update was successful or not.

2.3.3 Receiver status

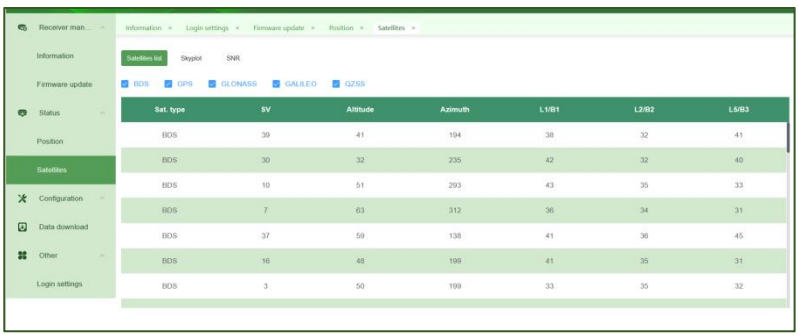
Position information

Click **Position** in the menu bar to access this page, which displays the receiver’s latitude and longitude, elevation, number of satellites, UTC time, and more. The interface is shown below:



Satellite information

Click **Receiver Satellites** to access this page, which displays a list of all satellites being tracked by the receiver, a sky plot of satellite, and signal-to-noise ratios for satellites. The list of satellites is shown below:



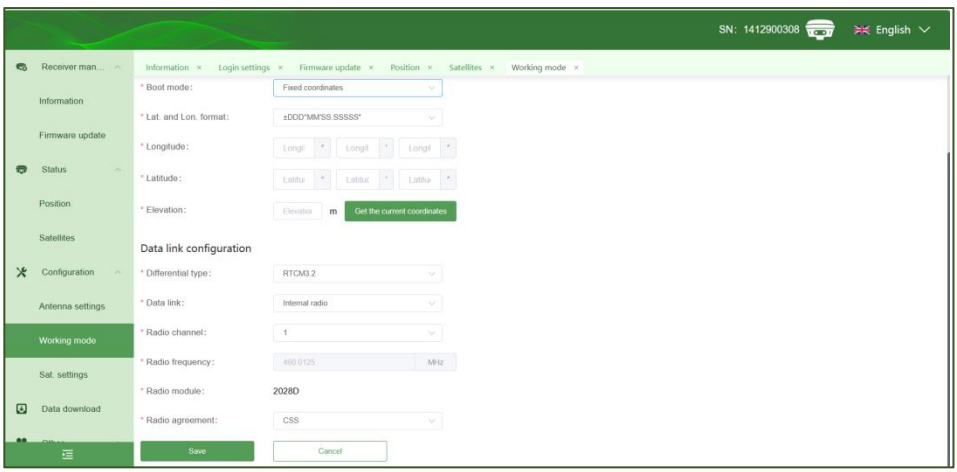
2.3.4 Receiver configuration

Working mode

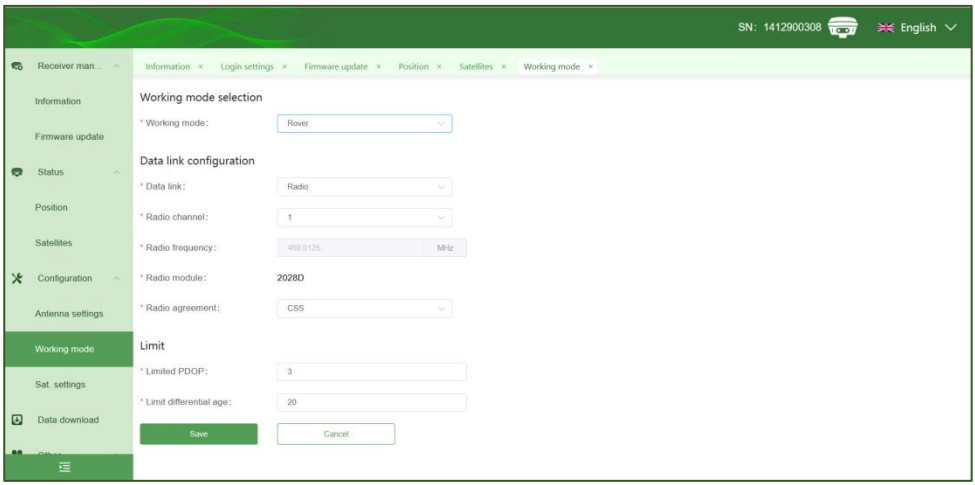
Set the working mode of the receiver. Base station and rover settings are currently supported.

Set the receiver to base station mode. Set the receiver's location (by manually entering or by receiving the position). Configure the datalink settings, including the correction of data format, the datalink, and the transmission protocol (TCP and Ntrip are supported). Click **Start and Save Configuration** after configuration.

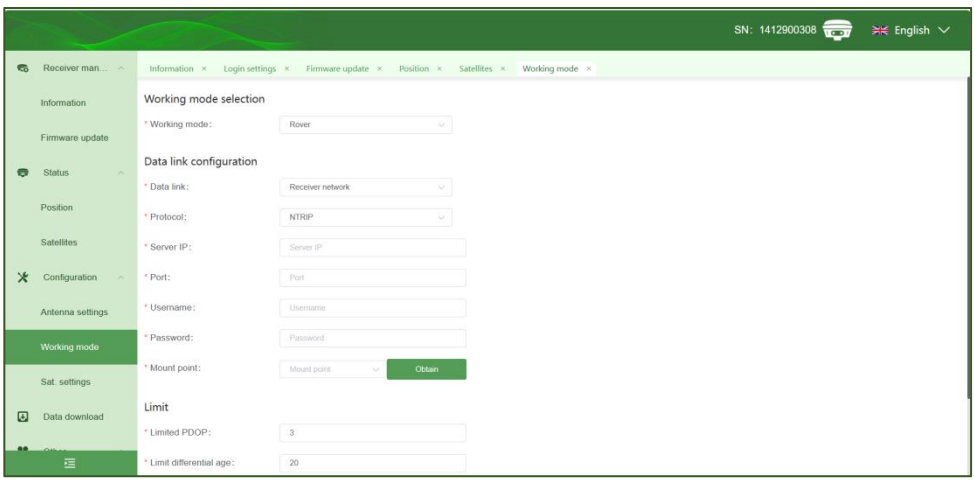
Base station: Fixed coordinates; radio mode.



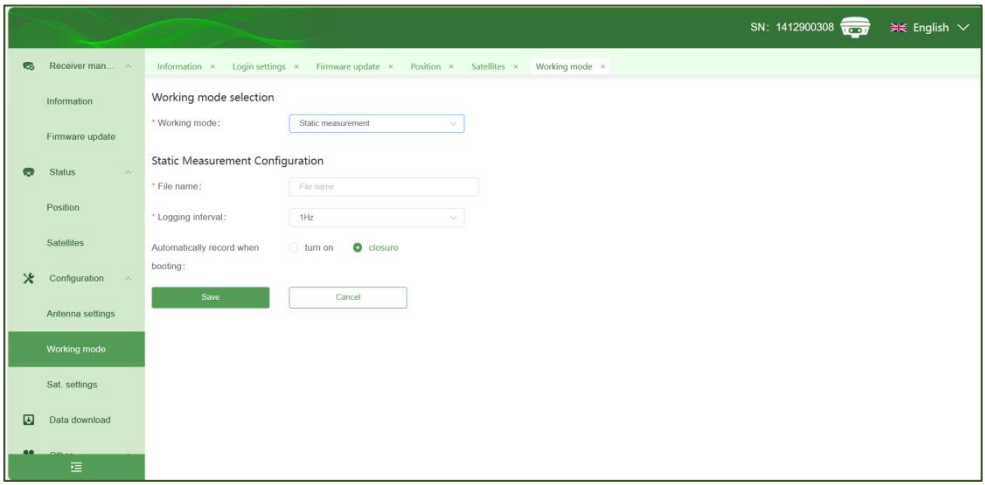
Rover: Radio mode



Rover: Network link mode

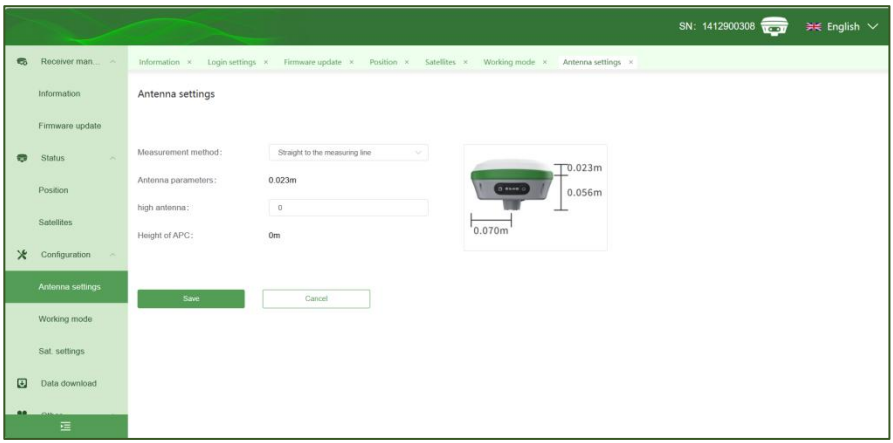


Static: Working mode



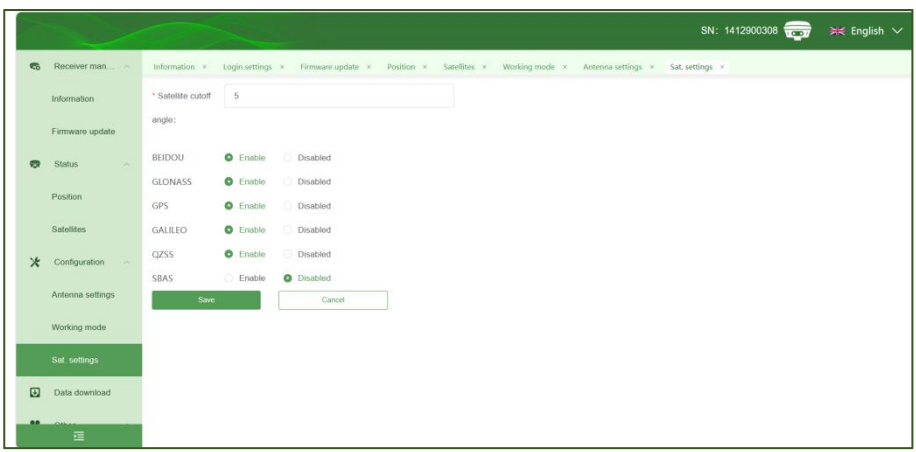
Antenna height settings

Click **Antenna Settings** to access this page, where you can configure the antenna measurement method and enter the antenna height. The platform will automatically calculate the antenna phase center height. Click **Save** to save the settings.



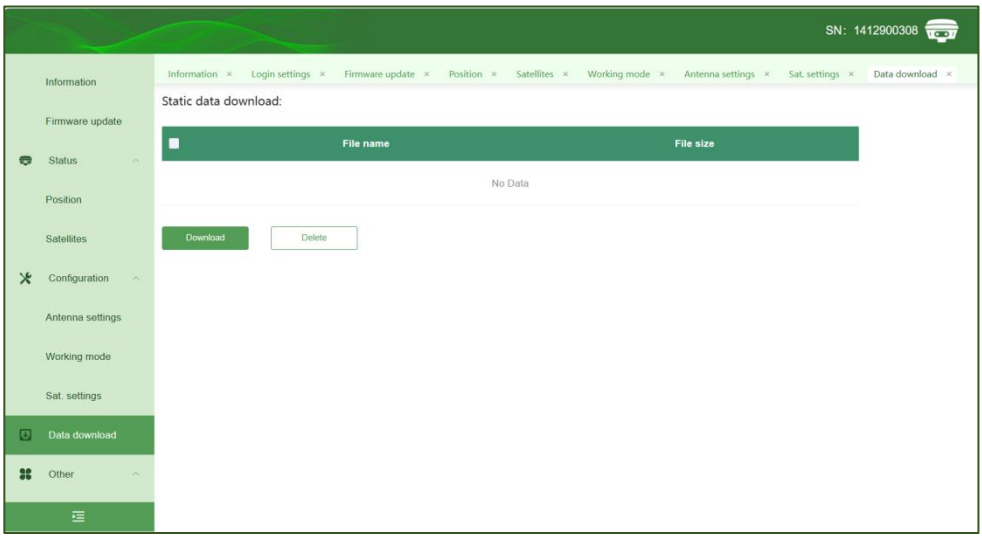
Satellite settings

Click **Sat. Settings** in the menu bar to access this page, where you can enable or disable satellites and set the satellite cutoff angle. Click **Save** to save your settings.



2.3.5 Data download

Download static data from the receiver.



2.3.6 Language settings

Click Flag icon in the WebUI. Select your desired country to switch the interface language. The language displayed by the receiver and voice prompts will be updated accordingly. Five languages are currently supported for voice prompts (Chinese, English, Russian, Turkish, and Spanish).

III. Firmware Update

If a firmware update is required for the receiver, it can be performed either through the WEBUI or using a data cable.

IV. Advanced Functions

The advanced functions include a base station shift warning. We recommend you become familiar with the basic functions before operating the device, or operate the device under the guidance of a professional.

4.1 Base station shift warning

If the base station is tilted or moved by impact, AllyPad will alert the user that the base station coordinates have changed. The coordinates that are collected after a base station shift will be inaccurate. Power cycle the base station and correct its position before continuing work.

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