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Guangzhou TokSurvey Information Technology Co.,ltd

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P8 Series Quick User Guide

Guangzhou TokSurvey Information Technology Co.,ltd

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Certificate

CE This product has been tested and found to comply with European Council Directive 2014/53/EU, thereby satisfying the requirements for CE Marking and sale within the European Economic Area (EEA).

FC This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

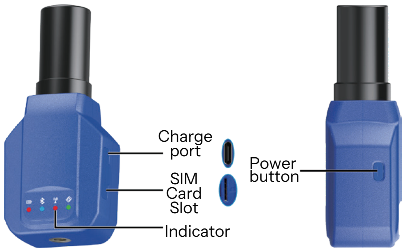
Contents

1. Overview of P8 series

P8 series is a portable intelligent positioning terminal based on Beidou high precision positioning technology. The ABS+PC body, IP67 protection, and 141g weight make it easy to carry. It is characterized by ultra-low power consumption. It is equipped with an integrated 1800mAh lithium battery, which can be used continuously for more than 8 hours after being fully charged.

1.1 Appearance

The appearance of P8/P8Pro is below:

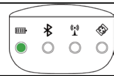
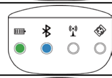
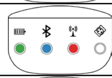
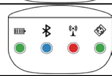


Item	Name	Function or status
	Power Button	Short press for 1 second in power-off state to display battery level with indicator light. Press and hold for 3 seconds in the off state to power on; Press and hold for 5 seconds in the power on state to power off.
	Bluetooth Light	Bluetooth connected: Blue light on Bluetooth disconnected: Blue light off Bluetooth error: Fast flashing blue light
	Satellite Light	Satellite reception status: green light blinking every 1 second No satellite reception: green light off
	Differential Light	Received differential data: red light blinking No differential data received: red light off

	Power light	Power on: Green light on Low battery: Red light flashing Charging: Red light on Fully charged: Green light on
	Charge port	Type-C interface, supports up to 18W PD fast charging.
	SIM card slot	External SIM card, supports 4G full network coverage.

1.2 Power

In shutdown state, press and hold the power button for one second to estimate the battery level based on the number of illuminated lights.

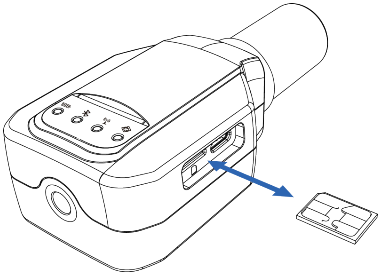
Indicator Lights	Battery level
	0 % - 25 %
	26 % - 50 %
	51 % - 75 %
	76 % - 100 %

1.3 Startup and Shutdown

Power On: In the power-off state, press and hold the power button for three seconds until the power indicator light remains on.

Power Off: In the power-on state, press and hold the power button for five seconds until all indicator lights turn off.

1.4 Card Inserting



The device supports network operation mode.
How to insert the SIM card?
1.Open the rubber cover;
2.Insert the SIM card into the card slot following the indicated markings (chip facing the indicator light, notch facing the slot);
3.Close the rubber cover.

1.5 Charging

The device comes with a Type-C charger that supports up to 18W PD fast charging. It takes 4 hours to fully charge the battery, and the power status indicator light shows:
· Red light: Battery is charging
· Green light: Battery is fully charged
To charge the battery: Open the rubber cover, connect one end of the data cable to the Type-C port and the other end to the charger.
Note: For the safety of your device, please use the provided adapter or a brand adapter that complies with 3C certification for charging.

1.6 Abnormal State

When the device encounters anomalies such as expired registration code, restricted area, positioning configuration failure, or network errors, the LED indicator light will flash simultaneously.

Expired Registration Code: Provide the device ID to the distributor to obtain a new registration code. Refer to Section 3.1 for registration instructions.
Restricted Area: Provide the device ID to the distributor to obtain the correct region code. Refer to Section 3.3 for re-registration.
Positioning Configuration Failure: Please restart the device to restore normal operation. If the issue persists, contact the distributor for assistance.

Network Error:
1.Check if the SIM card is properly inserted.
2.Verify if the SIM card has internet connectivity.
3.Ensure that the APN parameters are correctly filled in.

1.7 Tilt Measurement (P8Pro/P8Global)

The tilt measurement function requires a device with an inertial navigation feature
1.Device accuracy can be maintained within 2cm within a tilt range of 60 degrees;
2.The calibration process is straightforward, requiring only rocking the center pole back and forth in place;
3.It supports pole calibration, which can eliminate measurement errors caused by center pole curvature.
Open the point survey page，enter the antenna height(pole

height) in the bottom bar, and then activate the tilt measurement function by tapping the  in the lower-left corner. When activated, the icon should turn green. At this point, make sure the device is in a fixed state. Follow the on-screen prompts to sway the pole back and forth for 5-10 seconds until the  or  turns green like  , which indicates that the device is ready for tilt measurement.

Figure 1.7-1

Figure 1.7-2

Figure 1.7-3

When using tilt measurement for the first time, it is necessary to perform pole calibration to eliminate errors caused by center pole curvature. Click on 'Device,' then click on 'Inspection accuracy,' and finally, click on 'Pole Calibration.' Set the antenna height and follow the calibration steps and on-screen prompts to calibrate the pole.

For the same device and the same pole, pole calibration only needs to be done once, and it can be skipped in subsequent

measurements as long as the setup remains unchanged.

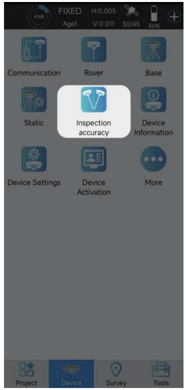


Figure 1.7-4

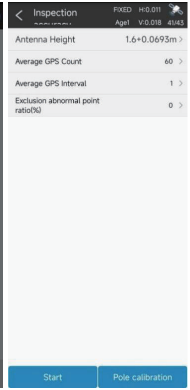


Figure 1.7-5

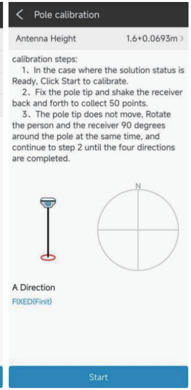


Figure 1.7-6

Note:

1.When performing pole calibration, make sure to set the antenna height first, otherwise, the calibration data will be incorrect.

2.Tilt measurement initialization must be done in a fixed solution state.

3.When initiating tilt measurement, sometimes the tilt icon may change from green to red as you move and rotate. In this case, follow the on-screen prompts to shake the center pole back and forth until the icon turns green before collecting data.

4.During tilt measurement, if the tilt angle exceeds 60 degrees, you will receive a notification of excessive tilt. In this case, the accuracy of the collected points cannot be guaranteed within 2cm.

2. Basic Operation of tSurvey Software

2.1 Installation and uninstallation of software

Installation Process:

Download the tSurvey software installation package (*.apk) for Android.

Copy the tSurvey software installation package to your mobile device or tablet.

Locate the software installation package using your device's file manager and tap on it to begin the installation.

Click on the tSurvey software on your device's home screen to open the software (At the first time you launch it, you'll need to create a project; subsequent launches will automatically open the last used project).

Uninstallation Process:

Long-press the software on your device's home screen and drag it to the "Uninstall" option box, then click "OK" to complete the software uninstallation.

2.2 Project Management

Click on "Project" → "Project Management," as shown in Figure 2.2-1. Project Management includes functions such as creating a new project, removing a project, opening a project, and opening projects stored on external drives.

To create a new project, click on "New Project," as shown in Figure 2.2-2. You'll need to provide basic project information such as project name, operators, project description, etc. You can also modify the project's storage path on the disk (default path: Internal Storage → tSurvey → Project). Click "Next" to proceed and input the coordinate system parameters for the project, as shown in Figure 2.2-3. Click "OK" to complete the project creation process.

Clicking on a project in the project list reveals options to "Remove," "Share," and "Open," as shown in Figure 2.2-4. Clicking "Remove," as depicted in Figure 2.2-5, removes the project from the list. If you choose to delete associated data files, the project's data on the disk will also be deleted. If you don't select this option, the project will only be removed from the list, and you can still access it later by opening other projects. Clicking "Share," as shown in Figure 2.2-6, allows other devices to access project data through sharing codes or QR code scanning.

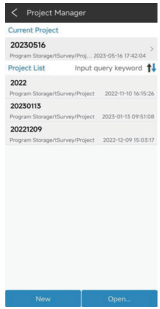


Figure 2.2-1

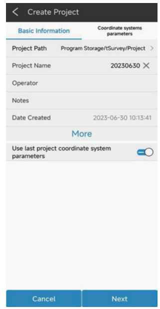


Figure 2.2-2

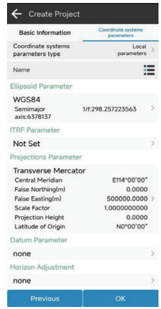


Figure 2.2-3

Figure 2.2-4

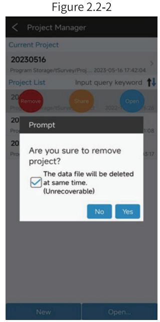


Figure 2.2-5

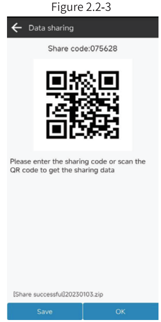


Figure 2.2-6

2.3 Communication

Click on "Device" → "Communication," as shown in Figure 2.3-1. Choose the device manufacturer, model type, and connection type. Then select device parameters, as shown in Figure 2.3-2. Click "Connect" to establish the device connection, as depicted in Figure 2.3-3. Once the device connection is successful, you will return to the main software interface, as shown in Figure 2.3-4. To disconnect the device, go back to the communication and click "Stop," as shown in Figure 2.3-5

1.Connection methods include Bluetooth, WiFi, serial port, TCP client, etc.

2.Clicking "Device" takes you to Bluetooth search and selection, as shown in Figure 2.3-2. You can select the desired device for connection. The frequently used device list displays the top 5 devices based on connection frequency, making it easier for users to find and connect to devices quickly.

3.After successfully connecting the device, click "Debug" to view communication data between the software and the device, as shown in Figure 2.3-6. You can send device debugging commands to the device and troubleshoot issues related to device positioning using communication data.

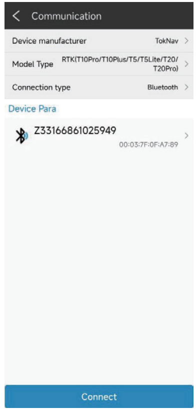


Figure 2.3-1

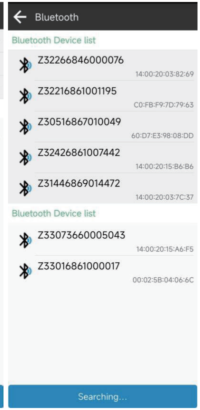


Figure 2.3-1

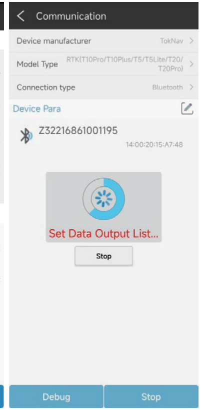


Figure 2.3-1

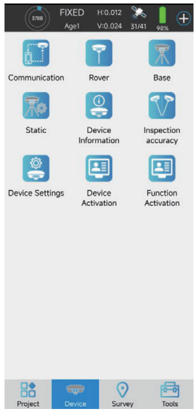


Figure 2.3-4

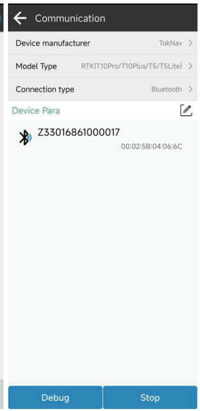


Figure 2.3-5

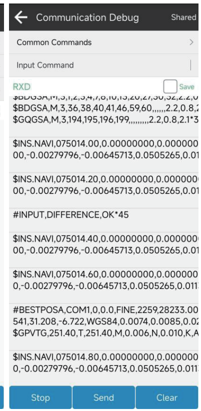


Figure 2.3-6

2.4 Configuration of Rover

Click on "Device" → "Rover," as shown in Figure 2.4-1. GNSS positioning devices can calculate position coordinates by receiving satellite signals. Under certain atmospheric conditions, the device can only achieve single-point positioning with limited accuracy. To ensure high-precision positioning, in addition to satellite signal reception by the GNSS device, it needs to receive signals from another fixed GNSS device nearby. This secondary device's signal serves as a reference signal. By using the reference signal's known coordinates and atmospheric influence, the two sets of GNSS devices can calculate high-precision positions. The stationary GNSS device is called the base station, while the mobile one is referred to as the rover. The data transmitted from the base station to the rover is termed differential data, and the transmission method is known as a data link. Setting the rover mode configures the GNSS device as a rover. It involves transmitting the base station's GNSS satellite signals to the GNSS device through specific means, achieving high-precision positioning.

In addition to configuring differential data transmission, you can set basic parameters for GNSS, such as the Elevation mask and whether to enable PPK. Clicking on the basic parameter content takes you to the parameter editing interface, as shown in Figure 2.4-2. You can set to exclude satellite signals with an elevation angle below a certain value to improve accuracy under low angle conditions. PPK (Post-Processed Kinematic) parameters involve recording GNSS raw observation data in the receiver and using post-processing algorithms to calculate high-precision coordinates.

Differential data settings primarily configure the transfer of differential data from the base station to the current device, providing the necessary conditions for high-precision positioning. Data link methods include built-in radio, host network, and rover network. Specifically:

1.Rover Network: As shown in Figure 2.4-1, this involves obtaining differential data through the network of the device where the software is installed. It retrieves data from a specified server address using a protocol, then sends it to the GNSS device via the software's communication connection for high-precision calculation. Clicking on the parameters allows you to modify and edit the settings, similar to host network configuration. No APN parameters need to be configured. Once parameters are set, obtain access points and select the desired one for connection, as shown in Figure 2.4-6. Start the connection process; if configurations are correct, the data reception progress bar will show activity. If the progress bar doesn't move, review your settings.

2.Host Network: As shown in Figure 2.4-3, this involves obtaining differential data via the GNSS device's SIM card network. It uses a protocol to retrieve data from a specified server address for high-precision calculation. Clicking on the parameters below the data link allows you to modify and edit settings, as shown in Figure 2.4-4. The connection mode uses differential data transfer protocols like NRTIP and TCP client. Input server IP, port, username, password, and other connection parameters. The SIM network requires configuring APN parameters. CORS server parameters can be selected from the server management list, as shown in Figure 2.4-5, or you can manually add CORS server parameters. After correctly configuring the server address, obtain access point lists and select the appropriate one to acquire differential data. Besides obtaining access points through the host network, you can also use your mobile phone's network if available.

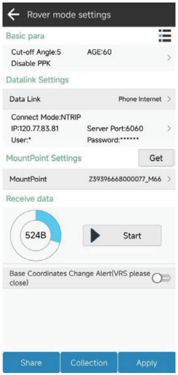


Figure 2.4-1

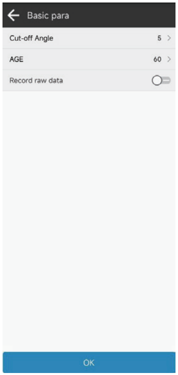


Figure 2.4-2

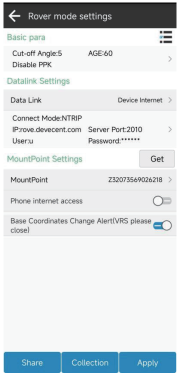


Figure 2.4-3

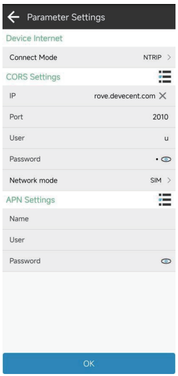


Figure 2.4-4

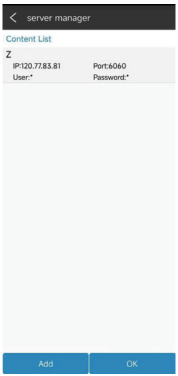


Figure 2.4-5

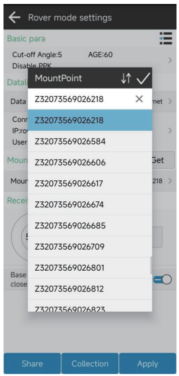


Figure 2.4-6

2.5 Point Survey

Click on 【Survey】 → 【Point Survey】, as shown in Figure 2.5-1. This function allows you to measure, collect, and store positioning data output by the GNSS device within specific accuracy limits into a coordinate point database. In the "Point Survey" interface, the title bar displays fundamental information about the GNSS device's current positioning output. This includes details such as the current solution status, differential delay, HRMS, VRMS, and the number of received satellites. Below the title bar, you'll find a status bar displaying other essential information. The displayed content can be customized in the settings based on user preferences. By default, the Point Measurement interface displays North, East, and Height coordinates, as well as base station distance information.

The central area of the interface is where measurement data is plotted. You also have the option to display network maps. The electronic compass in the upper-right corner acts as a handheld compass, aiding in determining direction when needed. In the lower-left corner of the plotting area, you'll find the display for functional collection. These menu options can be customized in the settings to show functions you frequently use for quick access. The lower-right corner displays the scale of the plot. The icon above the scale is the trigger button for the measurement collection function. You can customize the position of this button based on your preference for more convenient access. Clicking this button initiates the measurement function, as demonstrated in Figure 2.5-2.

Beneath the plotting area, there's a space for inputting the point's name, code, antenna height setting, and access to

the coordinate point database. This is typically where you input the required information for measurement collection. The " " can be clicked to select predefined codes from the code library for quicker attribute input as shown in 2.5-3.
Clicking on the antenna height display enables you to edit the antenna height information as shown in figure 2.5-4. Proper antenna height settings ensure that the GNSS device's phase center coordinates are adjusted accurately to reflect the ground position of the measurement target. If the antenna information is incorrect, you can click on the antenna information section to choose the correct antenna type from the antenna management section (especially useful when the GNSS device doesn't provide antenna information or when using an external antenna).
Click on the " " to access CAD graphic measurement, as shown in Figure 2.5-5. In this mode, you can convert measurement points into various data graphic types such as lines, polylines, arcs, polygons, circles, and curves during the measurement process.
Click on the " " to access the point library function, as shown in Figure 2.5-6. In this section, you can view the details of the measured points.
Click on " " to enter the measurement settings interface, as shown in Figure 2.5-7. Here, you can set the collection restrictions for measurement, such as solution status, HRMS limit, VRMS limit, PDOP limit, differential delay, etc. Users can set these conditions based on the required accuracy for their tasks. Setting the smoothing point number involves collecting multiple positioning points to calculate an average value to improve accuracy.
Additionally, you can set default point names and default

codes. Information display settings allow you to configure what information is displayed in the status bar. Users can customize this to focus on the information that matters most to them, as shown in Figure 2.5-8.
Function menu settings enable users to display commonly used functions on the left-hand menu bar, making it quick and convenient to access certain features, as depicted in Figure 2.5-9. These functions include tilt measurement toggle, network map selection toggle, map zooming options, centering, screen point selection, CAD text annotation, length and area measurements, map background color settings, CAD layer settings, coordinate conversion tool, calculator tool, and more. Clicking on the menu icons on the left triggers the respective functions.
Click on " ", as shown in Figure 2.5-10, to automatically center the current location on the screen. Clicking again enables automatic map rotation according to the direction of travel.
Click on " ", as shown in Figure 2.5-11, to choose the desired network map for display.
Click on " ", as shown in Figure 2.5-12, to enable/disable the tilt measurement function. When it's turned on, " " will be green. To activate the tilt measurement, the device needs to be in a fixed solution status. Follow the popup instructions to shake the pole back and forth for about 5 to 10 seconds until " " turns " ", indicating that the tilt measurement is ready to be performed.

NOTES:

1.When calibrating the pole, make sure to set the antenna height parameter first; otherwise, the calibration data may be incorrect.

2.Tilt measurement initialization must be done in a fixed solution state.

3.When you activate tilt measurement, sometimes the tilt icon might turn from green to red as you move and rotate. In such cases, follow the prompt to shake the pole back and forth until the icon turns green again before collecting data.

4.During tilt measurement, if the tilt angle exceeds 60°, you'll receive a warning about excessive tilt. In such cases, the accuracy of points collected cannot be guaranteed within 2cm.

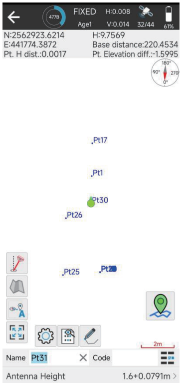


Figure 2.5-1

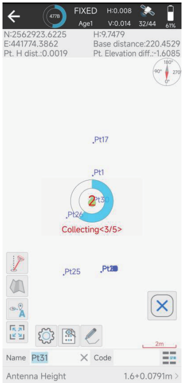


Figure 2.5-2

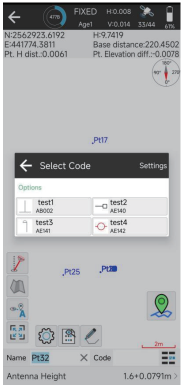


Figure 2.5-3

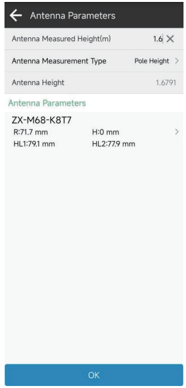


Figure 2.5-4

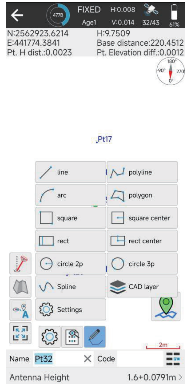


Figure 2.5-5

Figure 2.5-6

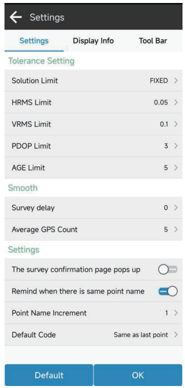


Figure 2.5-7

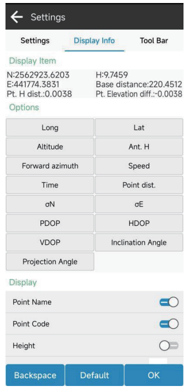


Figure 2.5-8

Figure 2.5-9

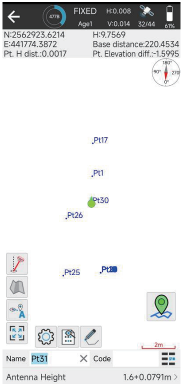


Figure 2.5-10

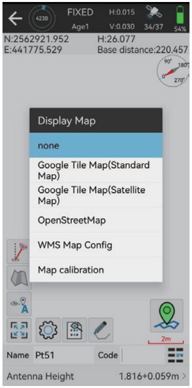


Figure 2.5-11

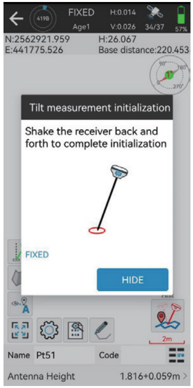


Figure 2.5-12

2.6 Point Stakeout

Click on "Survey" → "Point Stakeout" to enter the stakeout point library interface, as shown in Figure 2.6-1. Stakeout points refer to situations where the coordinates of points are known, and the goal is to locate these points in the field. The interface displays both unstaked and staked points in the pending stakeout points list. By clicking on a stakeout point, you can perform actions like removal, viewing details, and conducting stakeout, as illustrated in Figure 2.6-2. Pending stakeout points are part of the coordinate point library.

Stakeout points share similar functionalities with the coordinate point library, including adding, removing, importing, and exporting points. It's important to note that removing a point from the pending stakeout points list does not actually delete the point from the real coordinate point library. Moreover, you can also select points for stakeout from the entire coordinate point library. After selecting a

point, you will enter the stakeout point interface, as shown in Figure 2.6-3.

Click " " to enter the stakeout settings interface. Within the settings, in addition to the measurement settings, information display settings, and functional menu settings present in point measurement, there are also stakeout settings, as shown in Figure 2.6-4. You can configure the orientation for target indication, whether it's based on cardinal directions (north, south, east, west) or front, back, left, right. Additionally, you can set the prompting range and stakeout tolerance.

The layout of the stakeout point interface is similar to point measurement, with a few distinctions. The status information bar displays the deviation values between the current position and the target in terms of east, south, west, and north. The compass icon is not located in the upper-right corner of the drawing area but rather remains near the current position. Below the drawing area, along with measurement settings functionalities, there are features like "Stakeout Nearest Point," "Stakeout Previous Point," and "Stakeout Next Point" available in the stakeout interface.

Click " " for "Stakeout Nearest Point," as shown in Figure 2.6-5.

Click " " and " " for "Stakeout Previous Point" and "Stakeout Next Point," as depicted in Figure 2.6-6.

What if you want to reach the target point more quickly?

If the you have a good sense of direction and can distinguish between north, south, east, and west in real-time fieldwork, the stakeout compass display can be used. You can directly observe the continuous alignment between your current position and the target point on the compass. Simply walk in the direction indicated to reach the target point. As shown in Figure 2.6-3, you can find the target point Pt4 by walking in the southwest direction.

However, if you don't have a good sense of direction and can't distinguish between north, south, east, and west, there are alternative methods:

Method 1: You can look at the small arrow indicating your current direction. This arrow's orientation corresponds to how the device is positioned. In Figure 2.6-3, the current orientation is pointing south. By rotating the device until the arrow aligns with the line connecting your current position and the target point, you can ensure that your device's orientation matches the direction to the target point. Then, just walk forward in that direction.

Method 2: Double-tap to automatically center the position and enter map rotation mode. Rotate the device to align it with the angle of inclination. When the target point is above your current position on the screen, start walking forward.

These methods provide different ways for users with varying levels of direction sense to efficiently navigate to the target points.

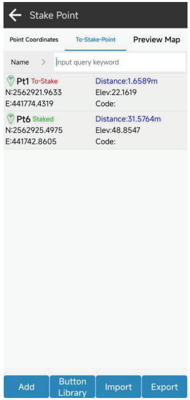


Figure 2.6-1

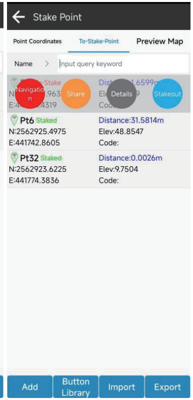


Figure 2.6-2

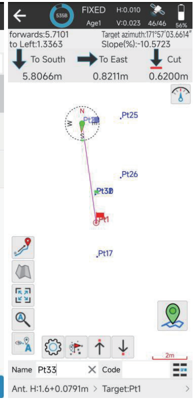


Figure 2.6-3

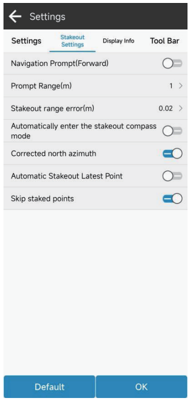


Figure 2.6-4

Figure 2.6-5

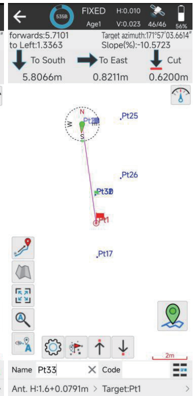


Figure 2.6-6

2.7 Calculating Conversion

Click on "Project" → "Localization," as shown in Figure 2.7-1. The software receives high-precision positions from the GNSS device in terms of latitude and longitude coordinates. However, in practical engineering operations, ground plane coordinates are often required for measurement and applications. If you have specific coordinate transformation parameters, you can directly set the coordinate system parameter values. If you don't have exact coordinate system parameters but have corresponding values for both latitude and longitude and ground plane coordinates, these are known as control points.

With control point data available, you can calculate transformation parameters using this feature and apply them to your engineering projects. In the transformation parameter management section, you can manually input and add control points, as illustrated in Figure 2.7-2. You can also import control point parameters in various formats, as shown in Figure 2.7-3.

In the control point list, clicking on a data item allows you to modify and edit control point parameters. Long-pressing on a data item enables multi-selection and bulk deletion of items, as demonstrated in Figure 2.7-4. You can also export control point data as a file to be used by third-party software. After editing the control point parameters, you can perform the calculation for transformation parameters by clicking "Calculate." This will bring up a dialog box to set calculation parameter conditions, as shown in Figure 2.7-5. The parameter transformation process involves ellipsoid datum transformation, horizontal correction, and vertical correction.

You can calculate transformation parameters as a complete set or a partial combination, as long as the calculated parameters fall within the permissible accuracy range. Ellipsoid datum transformation typically involves seven parameters, which are used to transform spatial rectangular coordinates between two ellipsoids. Horizontal correction methods include four parameters and horizontal difference parameters. Vertical correction methods encompass weighted average, plane fitting, surface fitting, and vertical adjustment.

In most cases, if the project area is extensive, ellipsoid datum transformation might be necessary to achieve the required accuracy for all control points. If the project area is relatively small, horizontal correction methods might be sufficient to achieve the desired accuracy.

Once you've configured the calculation conditions and clicked "OK," the software will display the results of the transformation parameter calculation, along with the residuals for each control point, as shown in Figure 2.7-6. After calculating the transformation parameters, you can export the calculation report for project review and verification. If the calculated transformation parameters meet the required criteria, you can apply these parameters to your project, allowing you to proceed with your measurement operations seamlessly.

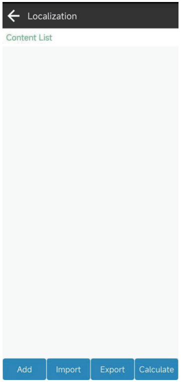


Figure 2.7-1

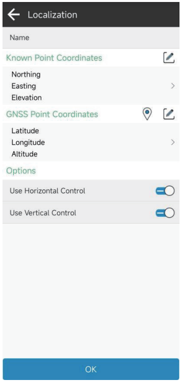


Figure 2.7-2

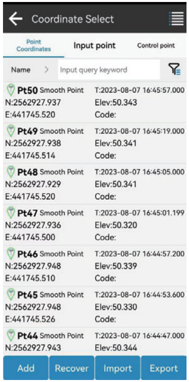


Figure 2.7-3

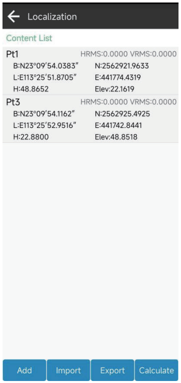


Figure 2.7-4

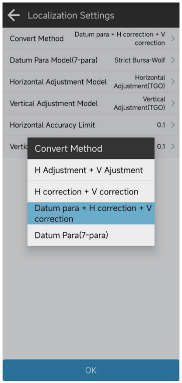


Figure 2.7-5

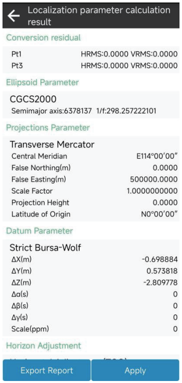


Figure 2.7-6

2.8 Base Station Translation Calibration

Click on "Project" → "Calibration Point," as shown in Figure 2.8-1. In the actual application process, the high-precision positions obtained from the GNSS device are calculated based on the differential data from the reference station. In this context, we understand that the coordinates of the reference station are known. In reality, the high-precision positions output by the GNSS device are relative to the reference station's position.

During the actual application process, besides some users utilizing CORS reference station's differential data, a considerable number of users employ differential data transmitted by their own GNSS devices acting as reference stations. When using this method of establishing one's own reference station, a project might involve starting the reference station multiple times. However, when starting the reference station, its starting position and coordinates might change, and the starting coordinates might not be accurate. Without calibration, the coordinates obtained from these differential data of the reference station might be inaccurate for the mobile station (at the same location, coordinates obtained from previous differential data might differ from those obtained from new differential data).

Hence, when the mobile station receives new differential data from the reference station for measurement operations, a baseline shift calibration is necessary to ensure that the software's obtained coordinates match the coordinates connected to the previous reference station.

After a change in the starting coordinates or position of the reference station, a calibration is needed using a known position. To do this, select a known point from the point database (using the coordinates measured by the reference station at a certain location last time). Then, place the GNSS device at the location of that known point, measure a new position point, and calculate the deviation, as shown in Figure 2.8-2. Once this is completed, the coordinates received by the software will match the coordinates measured during the previous session.

Reminder for Baseline Coordinate Changes and Re-calibration: If you are receiving differential signals from a self-established reference station and the coordinates of the reference station have changed, it indicates the need for baseline shift calibration. In such cases, you should perform the baseline shift calibration again.

Note: CORS virtual reference stations are long-term operational reference stations where the position and starting coordinates remain unchanged. If you are using differential data from CORS virtual reference stations, even if the received coordinates might change, the obtained coordinates will still be accurate, and there is no need for baseline shift calibration.

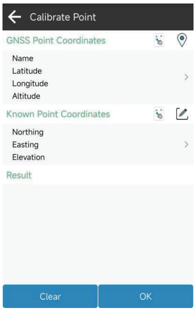


Figure 2.8-1

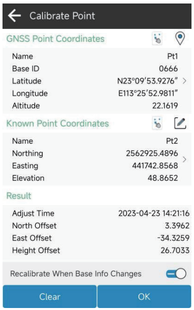


Figure 2.8-2

2.9 Points Database

Click on "Project" → "Points Database, " as shown in Figure 2.9-1 and 2.9-2. Here, you can view and manage the point data within the project (switch between viewing modes using the icon in the upper-right corner). This includes functions such as adding, deleting, sharing, recovering, viewing point details, importing, and exporting.

Adding: As depicted in Figure 2.9-3, manually enter point names, codes, and their corresponding coordinates.

Sharing and **Deleting**: As shown in Figure 2.9-4, you can long-press to select multiple points for deletion or sharing.

Recovery: Restore accidentally deleted point data.

Filtering: Click on "" in the upper-right corner to filter and sort point types, as shown in Figure 2.9-5.

Viewing Point Details: Click on a data item in the list to see detailed information about a point, as shown in Figure 2.9-6 (for Smooth Points). You can also modify point name and code information. For control points, you can generate control point reports here.

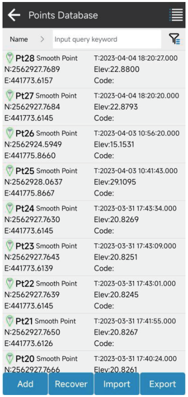


Figure 2.9-1

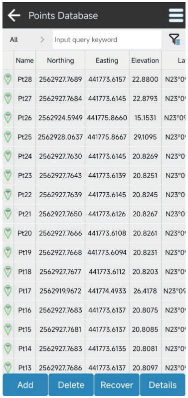


Figure 2.9-2

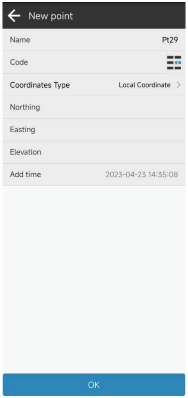


Figure 2.9-3

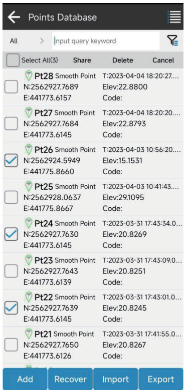


Figure 2.9-4

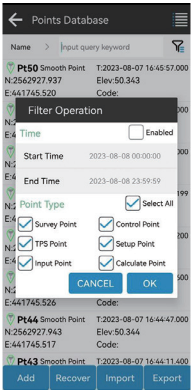


Figure 2.9-5

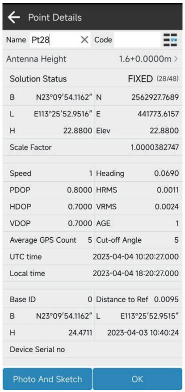


Figure 2.9-6

2.10 Import Data

Click on "Project" → "Import Data," as shown in Figure 2.10-1. This function serves as a unified gateway for data import. Here, you can import data into the coordinate point database, line library, transformation parameter files, code library data, and more. Select the data type and import format, as illustrated in Figure 2.10-2. Next, select the import file to proceed with the data import. You can also add, delete, and share custom formats within the format selection, as demonstrated in Figure 2.10-3.

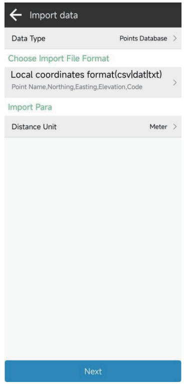


Figure 2.10-1

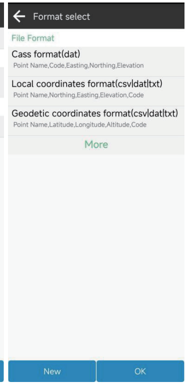


Figure 2.10-2

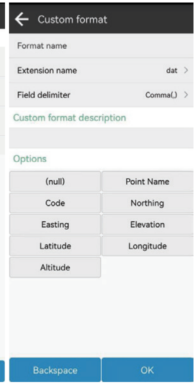


Figure 2.10-3

2.11 Export Data

Click on "Project" → "Export Data," as shown in Figure 2.11-1. This function serves as a unified gateway for data export. Here, you can select the export location, input the export filename, and choose the desired data format to be exported, as illustrated in Figure 2.11-2. Clicking "Export Points" will complete the data export. You can also add, delete, and share custom formats within the format selection, as demonstrated in Figure 2.11-3.

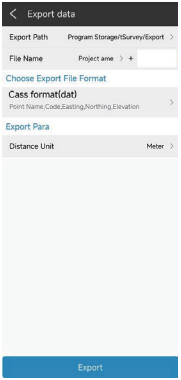


Figure 2.11-1

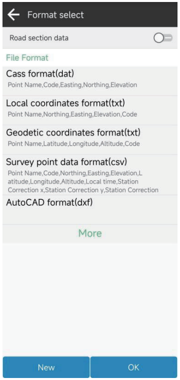


Figure 2.11-2

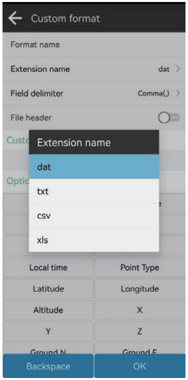


Figure 2.11-3

2.12 Device Information

Click on "Device" → "Device Information, " as shown in Figure 2.12-1. Through this function, you can view the basic information of the GNSS device, including the instrument serial number, firmware version, battery level, registration code expiration date, and more.

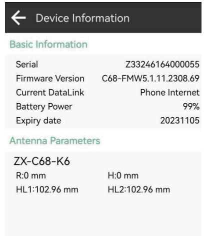


Figure 2.12-1

2.13 Others

1.Click on the "⊕" in the software's title bar to enter a share code or scan to receive data shared from other devices, as shown in Figure 2.13-1.

2.Click on the " " in the software's title bar to access the mobile station settings, as shown in Figure 2.4-1.

3.Click on the "固定 延迟1" in the software's title bar to access the communication settings function, as shown in Figure 2.3-5.

4.Click on the "H:0.006 V:0.011" in the software's title bar to view the device's output positioning information, as shown in Figure 2.13-2. You can switch to view the base station information as well as the star chart and satellite constellation information, as shown in Figures 2.13-3, 2.13-4, and 2.13-5. Since the differential data does not transmit the antenna parameters of the base station but only the emission phase center coordinates, you can input the corresponding antenna parameters of the base station to obtain its ground coordinates.

5.Click on the " 38/38" in the software's title bar to view the device's satellite reception information, as shown in Figure 2.13-5.

6.In the star chart and satellite constellation view, clicking on the "Settings" in the title bar allows you to adjust the satellite system settings, as shown in Figure 2.13-6.

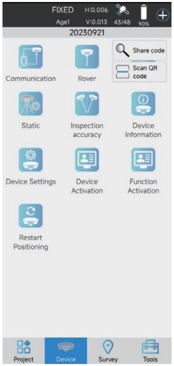


Figure 2.13-1

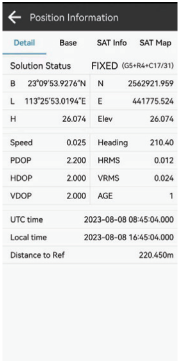


Figure 2.13-2

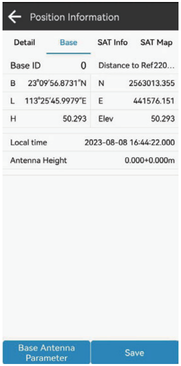


Figure 2.13-3

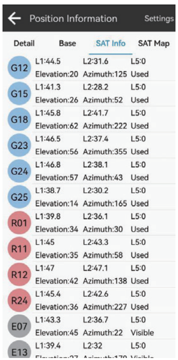


Figure 2.13-4

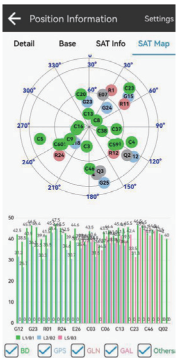


Figure 2.13-5

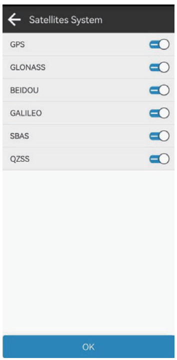


Figure 2.13-6

3. Device Activation and Software Activation

3.1 Device Activation

Click on "Device" → "Device Activation," as shown in Figure 3.1-1. If your GNSS device has expired, you can obtain the device registration code from the dealer and use it here to authorize and register the device.

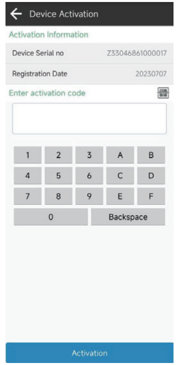


Figure 3.3-1

3.2 Software Activation

Click on "Project" → "About Software," as shown in Figure 3.2-1. Here, you can find information about software registration, software version, copyright information, and more. You can perform actions such as software activation, license transfer, checking for new versions, and providing feedback.

Software Activation: As depicted in Figure 3.2-2, you can input your activation code or scan the QR code for software activation.

Check Latest Version: If a new version is available, a notification will pop up, and you can click "Update" to install the latest version. If no new version is available, it will indicate that you already have the latest version.

TransOut Activation: If you need to transfer your license to a new device, you can initiate the license transfer from the old device. Then, in the software activation section of the new device, you can input the transferred activation code or scan the QR code generated during the transfer process.

Feedback: As shown in Figure 3.2-3, to improve our service, if you encounter any issues while using the software, you can provide feedback to our technical team through this section. Please remember to include your contact information (primarily email), provide a detailed description of the issue, and attach any relevant files (images, videos, documents, etc.) if applicable. Thank you!

Figure 3.2-1

Figure 3.2-2

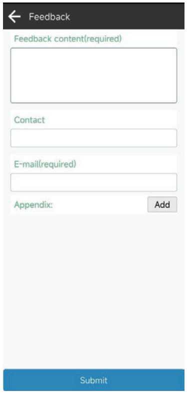


Figure 3.2-3

3.3 Function Activation

Click on "Device" → "Function Activation," as shown in Figure 3.3-1. If your GNSS device is subject to regional restrictions, you can obtain the appropriate feature code from your dealer and use it to perform authorization registration in this section.

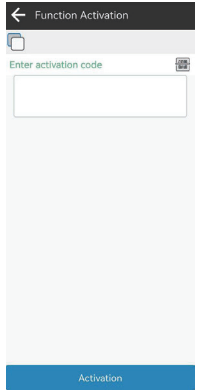


Figure 3.3-1

4. Specification

4.1 P8/P8Pro

ITEM		SPECIFICATION
HARDWARE SYSTEM		ESP32 + ASR ARM
OS		FreeRTOS
GNSS	GPS	L1C/A, L2C, L2P(Y), L5
	GLONASS	G1, G2
	BDS	B1I, B2I, B3I, B1C, B2a
	GALILEO	E1, E5a, E5b
	QZSS	L1C/A, L2C, L5
	SBAS	L1C/A
	Channel	1408
	Data Format	NMEA-0183
	Correction I / O Protocol	RTCM3.X
	Data Update Frequency	5Hz
POSITIONING ACCURACY	Single (RMS)	Horizontal: 1.5m
	RTK(RMS)	Horizontal: 0.8cm+1ppm Vertical: 1.5cm+1ppm
SYSTEM	Network	Multi-network Compatible LTE FDD: B1, B3, B5, B8 LTE TDD: B34, B38, B39, B40, B41
	Bluetooth	BR+EDR
INDICATOR	Power Indicator	Show Power Status
	Satellite Indicator	Show Position Status
	Data link Indicator	Show Differential Signal Status
	Bluetooth Indicator	Show Bluetooth Status
ENVIRONMENTAL	Work Temperature	-20℃~+60℃
	Storage Temperature	-40℃~+85℃
	Protection	IP67
PHYSICAL	Material	PC+ABS
	Dimension	53.8mm*37mm*117.5mm (Height Including Helical Antenna)
	Weight	P8: 141g/ P8Pro:143g (Weight Including Helical Antenna)
BATTERY	Battery	7.4V 1800mAh
	Work Time	More than 8 hours
	Charge	5V 2A
A FULL SET	P8/P8Pro Device	1 SET
	Full-band Helical Antenna	1 PCS
	Plumb Rod Adapter	1 PCS
	5V/2A USB Power Adapter	1 PCS
	USB Type C Charging Cable	1 PCS

4.2 P8Global

ITEM		SPECIFICATION	
HARDWARE SYSTEM		Qualcomm Cortex-A7	
OS		Linux	
GNSS	GPS	L1C/A, L1C, L2C, L2P(Y), L5	PPP-B2b,PPP-E6, SBAS supported
	GLONASS	G1, G2, G3	
	BDS	B1I, B2I, B3I, B1C, B2a, B2b	
	GALILEO	E1, E5a, E5b, E6	
	QZSS	L1C/A, L1C, L2C, L5	
	SBAS	L1C/A	
	NavIC(IRNSS)	L5(Require specialized firmware)	
	Channel	1408	
	Data Format	NMEA-0183	
	Correction I / O Protocol	RTCM3.X	
	Data Update Frequency	5Hz	
POSITIONING ACCURACY	Single (RMS)	Horizontal: 1.5m Vertical: 2.5m	
	RTK(RMS)	Horizontal: 0.8cm+1ppm Vertical: 1.5cm+1ppm	
	Tilt compensation Accuracy(within 60°)	≤2cm	
SYSTEM	Network	LTE FDD:B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28 LTE TDD:B38/39/40/41 WCDMA:B1/2/4/5/6/8/19 GSM:B2/3/5/8	
	Bluetooth	BR+EDR+BLE	
INDICATOR	Power Indicator	Show Power Status	
	Satellite Indicator	Show Position Status	
	Data link Indicator	Show Differential Signal Status	
	Bluetooth Indicator	Show Bluetooth Status	
ENVIRONMENTAL	Work Temperature	-20℃~+60℃	
	Storage Temperature	-40℃~+85℃	
	Protection	IP67	
PHYSICAL	Material	PC+ABS	
	Dimension	60mm*41.3mm*126.3mm (Height Including Helical Antenna)	
	Weight	176g (Weight Including Helical Antenna)	
BATTERY	Battery	7.4V 2500mAh	
	Work Time	More than 12 hours	
	Charge	5V 2A	
A FULL SET	P8 Global Device	1 SET	
	Full-band Helical Antenna	1 PCS	
	Plumb Rod Adapter	1 PCS	
	5V/2A USB Power Adapter	1 PCS	
	USB Type C Charging Cable	1 PCS	