

SingularXYZ



P1 GNSS RECEIVER

User Manual

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1.1 About the P1

Embedded with high precision GNSS module, P1 GNSS receiver can automatically track constellations including GPS, GLONASS, BDS, Galileo, QZSS and SBAS, combined with its anti-jamming and anti-spoofing algorithm, it can deliver centimeter-level RTK accuracy and sub-meter standalone accuracy via ultra-small size— it weights even lighter than a smart phone.

1.2 P1 Features


Key features:






- Portable/Wearable
- pocket-size: 122.5*62*22mm (L*W*H)
- lighter than a smart phone: 146g
- Precise positioning: centimeter-level RTK accuracy and sub-meter standalone accuracy
- IP65 waterproof & dustproof
- integrated 4G/Bluetooth module, support Ntrip Client mode
- up to 15 hours operation

1.3 Packing List

Thanks for choosing SingularXYZ P1 GNSS receiver. Please check your package for items listed below.

Table 1: Packing list of P1 GNSS receiver

No.	Name	Quantity	Figure
1	P1 GNSS receiver	1	

2	Type-C Cable	1	
3	Storage Bag	1	
4	Ejection Pin	1	
5	Connector	1	
6	Centering Pole & Bag*	1	

1. Item with * is Optional.
2. You can connect P1 on an optional centering pole for more precise height accuracy by using a connector.



Figure 1.1 P1 Connected on Centering Pole

This chapter introduces setup of P1 and notice before using it.

2.1 Environmental requirements

P1 GNSS receiver is so rugged and designed compactly, but to keep the receiver with a reliable performance and have a lengthy life span, we strongly advise you to use P1 under circumstances below:

- Operating temperature: -40 °C to + 85 °C (-40 °F to 185 °F)
- Storage temperature: -40 °C to + 85 °C (-40 °F to 185 °F)
- Humidity: 100% non-condensing
- Avoid violent impact (Designed to survive a 1.5 m drop onto concrete).
- Avoid soaking in fluid.
- With a clear view of sky.

2.2 Front Panel

P1 GNSS Receiver front panel contains one power button and one OLED display.

- Power Button: Lone press to turn on/off the receiver, short press to check receiver status.
- OLED display: You can check receiver status like power, communication, coordinate, satellite, mode, RMS, etc.



Figure 2.1 P1 Front Panel

2.3 Lower Housing

Receiver lower housing contains one SIM card slot, one type C port for charging and data transmission, one pole connector.



Figure 2.2 P1 Lower Housing

This part is based on the field surveying software SingularPad, which is optional and with additional function, the workflow using SingularSuv is mostly the same.

3.1 Software Installation

We provide two field surveying software - SingularSurv and SingularPad. You can install them on an optional SingularXYZ controller SC100, or just on your phone. SingularSurv is free to use, while SingularPad is more professional. Please contact us for download.

3.2 RTK Survey

The most frequently used work mode of P1 is RTK based on CORS. First, you need to insert a SIM card to connect to the Internet, then follow the workflow below:

1. Connect with P1.
 - **Main interface -> Device -> Communication -> Set Device manufacturer, Device Type, Connection Type** as shown in the Figure 3.1.
 - Click the Bluetooth logo to connect to P1. The Bluetooth device name is its SN number on the back of P1, find it on **Bluetooth Device list**, select it and connect. For example, in Figure 3.1, we selected a P1 GNSS receiver named with its SN number 225008.

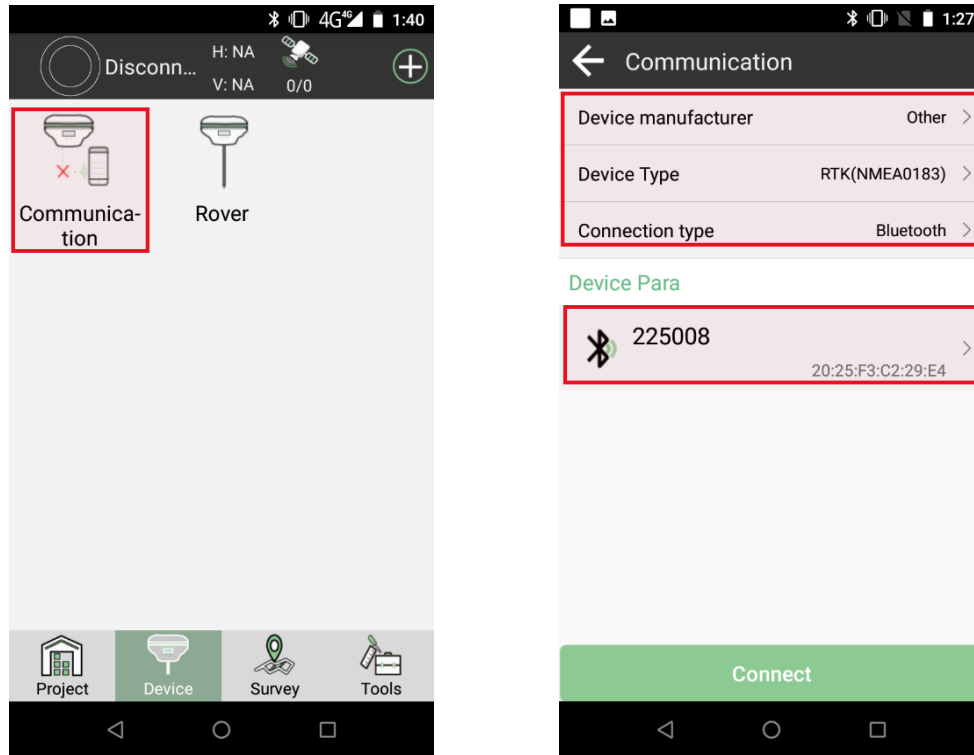


Figure 3.1 Connection

2. Rover mode setting

The P1 GNSS receiver can receive correction data transmitted from continuously operating reference station via phone Internet.

- Go to **main interface** -> **Device** -> **Rover**.
- Click the first box shown in Figure 3.2 to set **data link** as **phone Internet**.
- Go to next box for **parameter setting**. Enter CORS IP, port, user and password -> OK.
- Back to **Rover mode setting** -> click the button “**Get**” to get mountpoint -> choose one appropriate mountpoint.
- **Apply**. If succeeded, you’ll be receiving data as shown in the bottom of Figure 3.3.

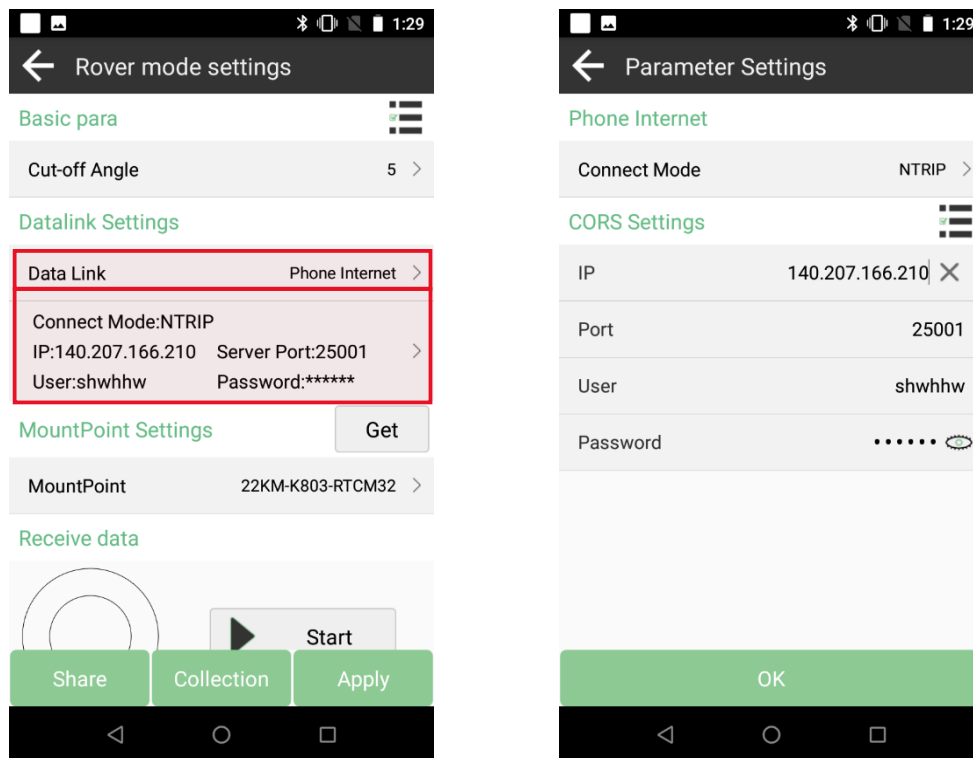


Figure 3.2 Rover Mode Setting

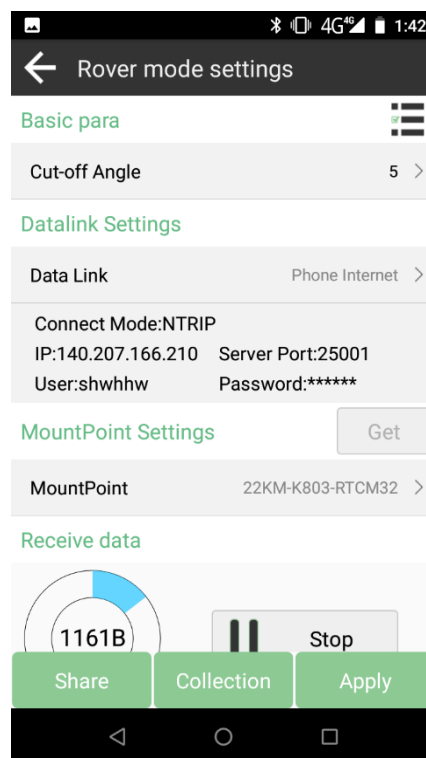


Figure 3.3 Set Rover Mode Succeeded

3. Create or select a project. **Main interface -> Project -> Project Manager.**

4. Start surveying. **Main Interface->Survey->**choose your survey mode and start.

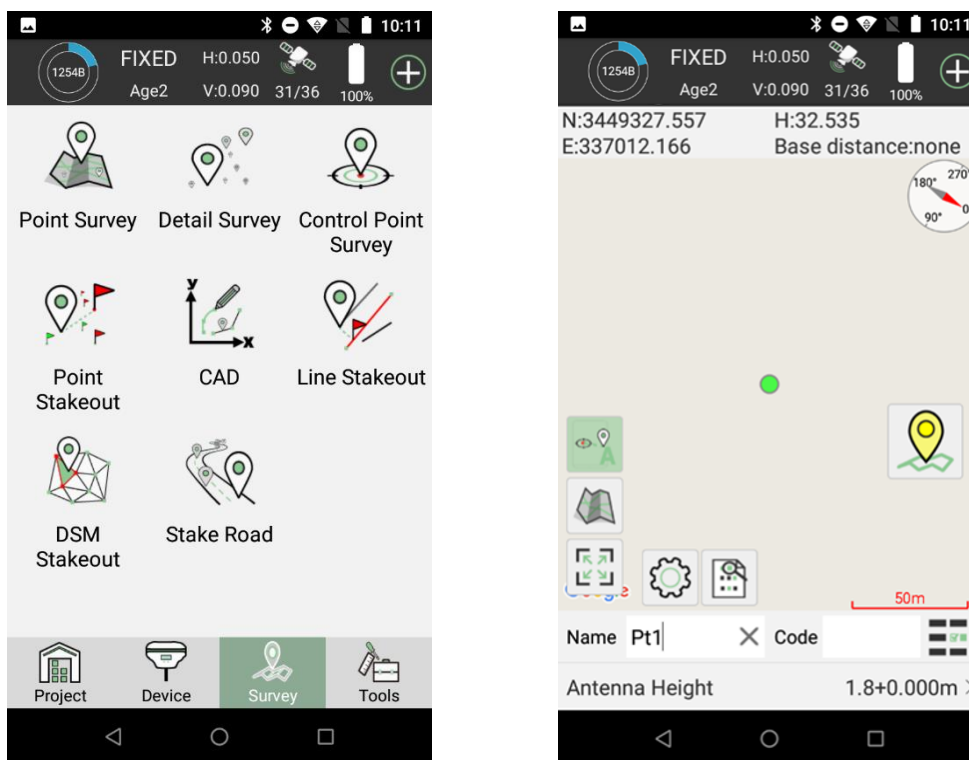


Figure 3.4 Surveying

4.1 Import

You can import multiple data like point, line, etc. Do as shown below:

1. Data Setting. **Main interface** -> **Project** -> **Import data** -> **Data Type** -> **Choose Import file Format** -> **Distance Unit** -> next.
2. Locate your data profile -> select and **OK**.

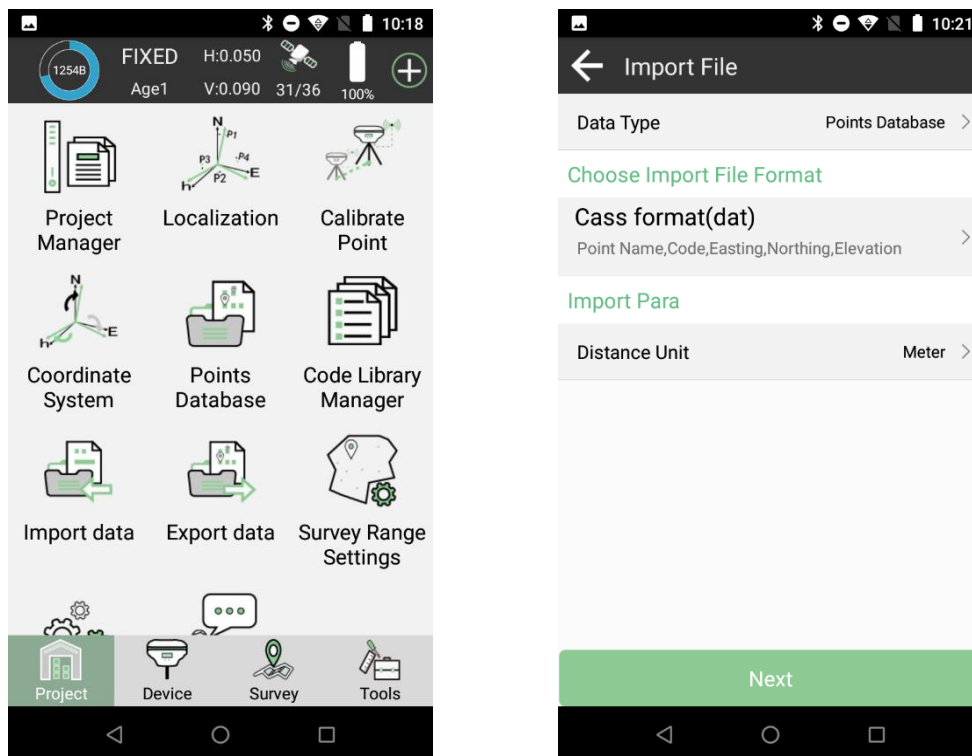


Figure 3.5 Import Data

If you can't find data format you need, please define it:

Main interface -> **Project** -> **Import data** -> **Data Type** -> **Choose Import file Format** -> **New** -> define.

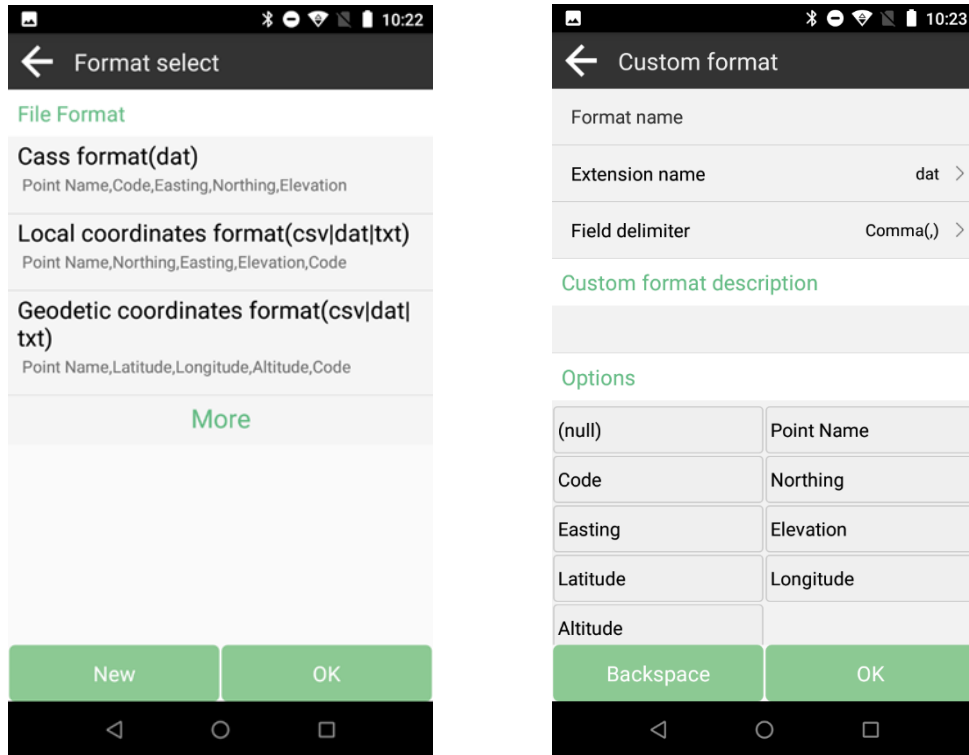


Figure 3.4 Define Data Format

4.2 Export

You can export data into multiple formats, like .dat, .txt, etc. Do as shown below:

Main interface -> Project -> Export data -> choose Export Path -> File Name -> Choose Export File Format -> Distance Unit -> Export.

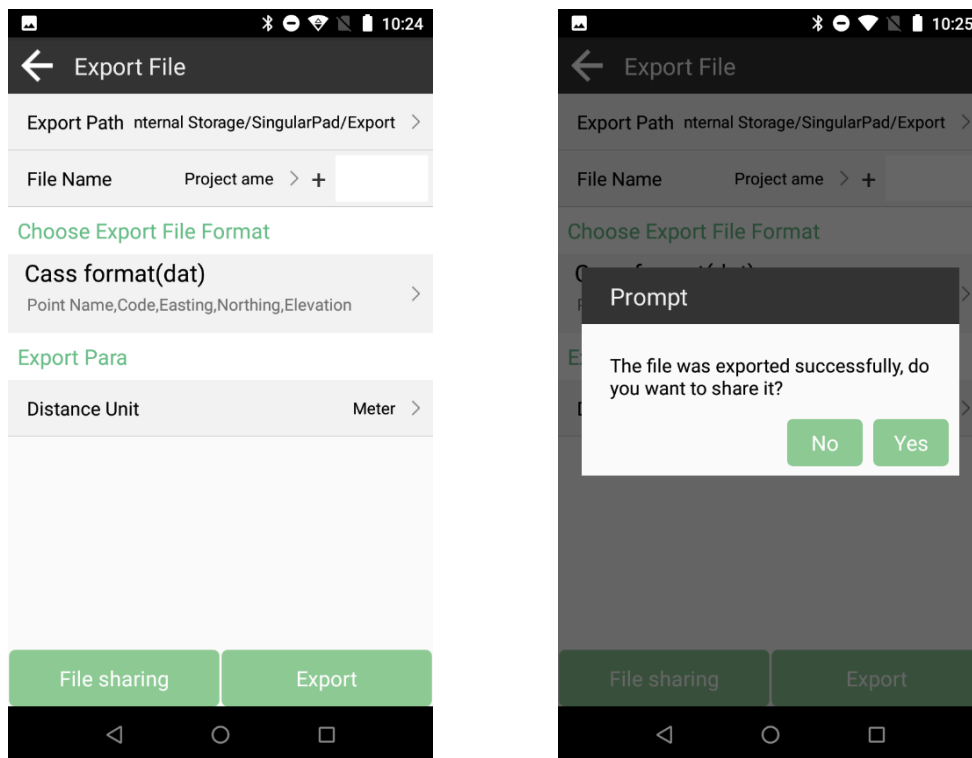


Figure 3.5 Export

Also, you can define export data format:

Main interface -> Project -> Export data -> choose Export Path -> File Name -> Choose Export File Format -> New -> define your format.

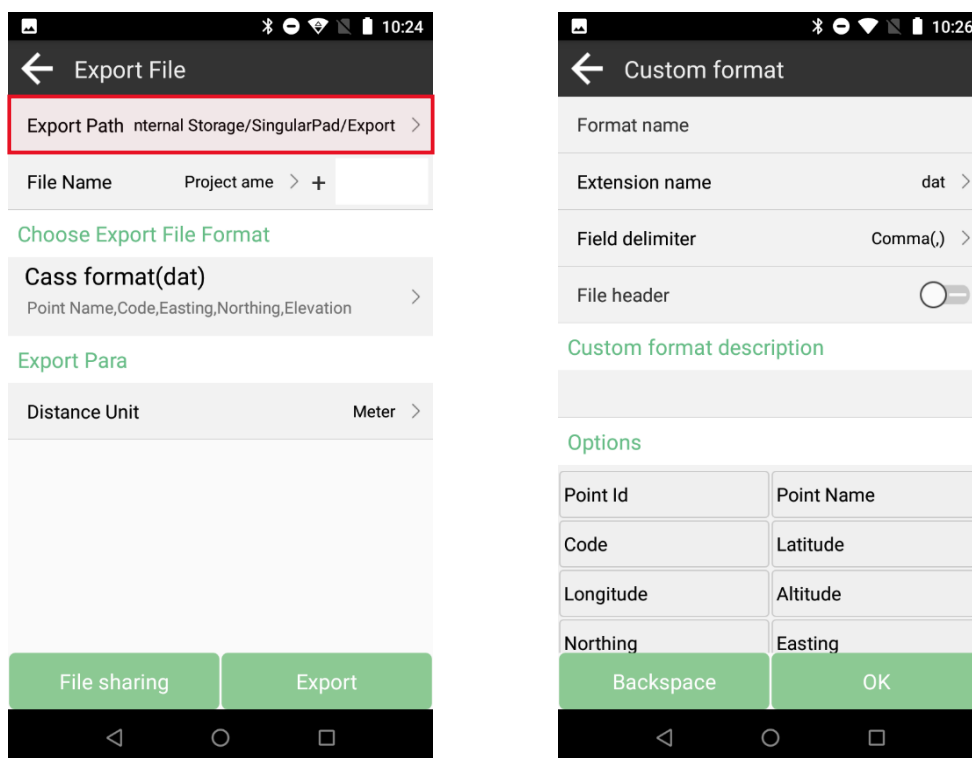


Figure 3.5 Define Data Format

5.1 P1 Datasheet

SIGNAL TRACKING	
GPS	L1C/A, L2C
GLONASS	L1OF, L2OF
BDS	B1I, B2I
Galileo	E1B/C, E5b
QZSS	L1C/A, L1S, L2C
SBAS	L1C/A
ACCURACY	
RTK Accuracy	H: 10mm+1ppm
	V: 20mm+1ppm
Standalone	0.5m
COMMUNICATION	
Bluetooth	BT4.0
4G	LTE-FDD: B1/B3/B5/B7/B8/B20/B28 LTE-TDD: B38/B40/B41 GSM: Band 850 / 900 / 1800 / 1900 MHz
Electrical & Physical	
Battery	3050mAh, up to 14h working time
Input Voltage	5V, 2A
Size	122.5*62*22mm (L*W*H)
Weight	146g
Environmental	
Waterproof & dustproof	IP65
Shock	Designed to survive a 1.5 m drop onto concrete
Operating temperature	-40 °C to + 85 °C (-40 °F to 185 °F)
Storage temperature	-40 °C to + 85 °C (-40 °F to 185 °F)
Humidity	100% non-condensing

APPLICATION
Geographical information collection
Personnel positioning
Vehicle trajectory tracking
Inspection and investigation
Other high precision applications