



FARNAV N50 GNSS USER GUIDE



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Far Range, Affordable

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Preface

Copyright

Copyright

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Trademarks

All product and brand names mentioned in this publication are trademarks of their respective holders.

Safety Warnings

GNSS (Global Navigation Satellite System) receivers are electronic devices that use signals from satellites to determine location, speed, and time. While GNSS receivers are generally safe to use, there are some safety considerations that users should keep in mind:

- (1) Do not rely solely on GNSS for navigation: GNSS signals can be disrupted by various factors such as tall buildings, trees, and bad weather. It is important to use other navigation aids such as maps, compasses, and visual landmarks.
- (2) Keep GNSS receivers away from other electronic devices: Electronic devices such as mobile phones, radios, and computers can emit electromagnetic interference (EMI) that can disrupt GNSS signals. Keep GNSS receivers away from such devices to avoid EMI.
- (3) Do not tamper with GNSS receivers: Tampering with GNSS receivers or modifying their software can cause them to malfunction or produce inaccurate readings. Only use GNSS receivers that are certified and authorized for use.
- (4) Follow manufacturer instructions: Follow the manufacturer's instructions regarding the safe use and handling of GNSS receivers. This includes instructions for charging, cleaning, and storing the device.
- (5) Caution - Class 3R laser radiation when open avoid direct eye

exposure.

(6) Dispose of GNSS receivers properly: When disposing of GNSS receivers, follow local regulations for electronic waste disposal to avoid harming the environment.

(7) It is important to use GNSS receivers safely to avoid accidents or injury. If you experience any issues or concerns with your GNSS receiver, contact the manufacturer or a qualified technician for assistance.

(8) Caution-Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

(9) The laser radiation level emitted by the laser aperture provided exceeds Class 1.

(10) The laser safety classification of this product is based on IEC 60825-1: 2014.

(11) During the operation of the product, the laser performance parameters emitted are as follows:

Wavelength:	520 nm $\pm$ 10 nm
Pulse width:	64.5 us
Repetitive frequency	5 kHz
Maximum single pulse energy	5.2×10^{-7} J
Laser safety level.	Class 3R

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The device has been evaluated to meet general RF exposure requirement. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

CE Interference Statement

Declaration of Conformity: Hereby, EFIX Geomatics Co., LTD. declares that this F6 is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. A copy of the Declaration of conformity can be found at EFIX Geomatics Co., LTD.



Brazil

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Para maiores informações, consulte o site da ANATEL-www.anatel.gov.br.

Conformity to Japanese regulations

Japanese Radio Law and Japanese Telecommunications Business Law Compliance.

- This device is granted pursuant to the Japanese Radio Law and the Japanese Telecommunications Business Law.
- This device should not be modified (otherwise the granted designation number will become invalid).

1 Introduction

The N50 GNSS receiver removes barriers to portability without sacrificing performance. Featuring full GNSS technology, it offers best-in-class GNSS signal tracking even in a harsh environment, enabling GNSS surveying beyond usual constraints. The N50 GNSS incorporates the latest innovations such as an inertial module (IMU) providing automatic pole-tilt compensation in a very compact design.

1.1 Safety Information

Warnings and Cautions

An absence of specific alerts does not mean that there are no safety risks involved.

A Warning or Caution information is intended to minimize the risk of personal injury and/or damage to the equipment.



WARNING - A Warning alerts you to a potential misused or wrong setting of the equipment.



CAUTION - A Caution alerts you to a possible risk of serious injury to your person and/or damage to the equipment.

1.2 Regulations and Safety

The receivers contain a built-in wireless modem for signal communication through Bluetooth wireless technology or through external communication datalink. Regulations regarding the use of the wireless modem vary greatly from country to country. In some countries, the unit can be used without obtaining an end-user license. However, in some countries, the administrative permissions are required. For license information, consult your local dealer. Bluetooth® operates in license-free bands.

Before operating a N50 GNSS receiver, determine if authorization or a license to operate the unit is required in your country. It is the responsibility of the end-user to obtain an operator's permit or license for the receiver for the location or country of use.

Use and Care

This receiver is designed to withstand the rough environment that typically occurs in the field. However, the receiver is high-precision electronic equipment and should be treated with reasonable care.



CAUTION - Operating or storing the receiver outside the specified temperature range will cause irreversible damage.

1.3 Technical Support

If you have a problem and cannot find the information you need in this manual or EFIX website (www.efix-geo.com), contact your local EFIX dealer from which you purchased the receiver(s).

If you need to contact EFIX technical support, please contact us by email (support@efix-geo.com).

1.4 Disclaimer

Before using the receiver, please make sure that you have read and understood this User Guide, as well as the safety information. EFIX holds no responsibility for the wrong operation by users and for the losses incurred by the wrong understanding about this User Guide. However, EFIX reserves the rights to update and optimize the contents in this guide regularly. Please contact your local EFIX dealer for new information.

1.5 Your Comments

Your feedback about this user guide will help us to improve it in future revision. Please email your comments to support@efix-geo.com.

2 Getting Started with N50

2.1 About the Receiver

The Farnav N50 is an ultra-compact, centimeter-grade surveying instrument engineered for harsh environments. By integrating GNSS, IMU, dual cameras and an industrial-grade green laser, it boosts stakeout productivity by 40 % through CAD- and AR-driven visual guidance.

Its daylight-visible green laser captures fast, precise 3-D points in obstructed or hard-to-reach areas—even under 50,000 lux midday sunlight. AUTO-IMU eliminates manual centering, delivering instant tilt-compensated measurements and, together with a high-speed SOC and next-generation IMU, accelerating laser workflows by 50 %.

The receiver can be used as the part of an RTK GNSS system with eField software. Moreover, user can download the GNSS data that recorded in the internal memory of receiver to a computer.

To configure the receiver for performing a wide variety of functions, you can use the web interface by connecting the receiver with PC or smartphone through Wi-Fi.

2.2 Parts of the Receiver

Power Button is located on the front panel. SMA port and USB Type-C port are located on the bottom of the unit.

2.2.1 Front Panel

The following figure shows a front view of the receiver.

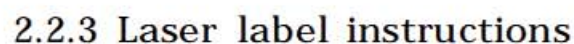


The front panel contains two indicator LEDs and 2 buttons.



Name	Description
Correction LED (Yellow/Green)	- Indicates whether the receiver is transmitting/ receiving differential data. - As a Base station: successfully transmitting differential data, flash yellow light. - As a Rover station: successfully receiving differential data from Base station will flash yellow light when it is float, flash green light when it is fixed.
Satellite LED (Blue)	- Shows the number of satellites that the receiver has tracked. - When the receiver is searching satellites, the blue LED flashes once every 5 seconds. - When the receiver has tracked N satellites, the blue LED will flash N times every 5 seconds.
Power LED (Red)	- If the internal battery is $\geq 20\%$, the indicator stays solid green. - If the internal battery is $< 20\%$ but $> 10\%$, the indicator stays solid red. - If the internal battery is $\leq 10\%$ but $> 0\%$, the indicator flashes red at 1 Hz (one flash per second).
Static LED (Yellow)	Flash means static is on.
Power button (White)	Press and hold this button for 3 seconds to turn on or turn off the receiver.
Fn button (White)	Press and hold this button for 3 seconds to turn on or turn off the static mode.

The side contains a camera, a Laser receiving window and a laser aperture.



The figure displays two views of the EFX GNSS Receiver. The left view shows the front of the device, which is black with two large circular cutouts. A yellow label with the text 'LASER APERTURE' is positioned above a small yellow circle. A yellow laser warning symbol is located to the right of the circle. The right view shows the back of the device, which is also black. It features a yellow label with the text 'Geodetic GNSS Receiver' at the top. Below this, the manufacturer's name 'Shanghai EFX Geomatics Co., Ltd.', the address 'Building 1, 158 Shuanglin Road, Qingpu District, Shanghai', and the website 'www.efx-gps.com' are printed. A large circular cutout is centered on the back. To the right of the cutout is a yellow laser warning symbol. Below the symbol are various regulatory markings: 'CE', 'FCC', and 'KC'. A barcode is located to the left of the cutout. At the bottom, text indicates compliance with FDA performance standards for laser products, specifically IEC #A2S-1 Ed. 3, as described in Laser Notice No. 54, dated May 8, 2019.

2.2.4 Receiver Ports

The lower housing contains one SMA port, one USB Type-C communication.

Port	Name	Description
	USB Type-C port	This port is a USB Type-C connector that supports USB communications. Users can use USB Type-C Cable supplied with the system to download the logged data to a computer.
	SMA port	Connect a radio antenna to internal radio of the receiver. And this connector is not used if you are using an external radio.

2.3 Batteries and Power

2.3.1 Built-in batteries

The receiver has a built-in non-removable Lithium-ion battery.

2.3.2 Charging the Battery

The rechargeable Lithium-ion battery is supplied partially charged. Charge the battery completely before using it for the first time. Charge via USB Type-C port.



WARNING – Charge and use the rechargeable Lithium-ion battery only in strict accordance with the instructions. Charging or using the battery in unauthorized equipment can cause an explosion or fire and can result in personal injury and/or equipment damage.

To prevent injury or damage:

Do not charge or use the battery if it appears to be damaged or leaking.

Charge the Lithium-ion battery only in a Farnav product that is specified to charge it. Be sure to follow all instructions that are provided with the battery charger.

Discontinue charging a battery that gives off extreme heat or a burning odor.

Use the battery only in Farnav equipment that is specified to use it.

Use the battery only for its intended use and according to the instructions in the product documentation.

2.3.3 Battery Safe



WARNING – Do not damage the rechargeable Lithium-ion battery. A damaged battery can cause an explosion or fire and can result in personal injury and/or property damage.

To prevent injury or damage:

Do not expose the battery to fire, high temperature, or direct sunlight.

Do not immerse the battery in water.

Do not drop or puncture the battery.

2.3.4 External Power Supply

Provide the external power to the receiver by the USB Type-C Cable + Power Adapter.

The Power Adapter is connecting with AC power of 100-240V, the output port of the Power Adapter connects with the USB Type-C Cable.



2.4 Product Basic Supply Accessories

2.4.1 Base Kit Basic Supply

Item	Picture
N50 GNSS Receiver	
SMA Whip Antenna (410-470 MHz)	
Power Adapter	
USB Type-C	
H.I. Tape	
Extension pole(30 cm)	
Tribrach with optical plummet	
Auxiliary H.I. Tool	
Transport Hard Case	
Tribrach Adaptor	

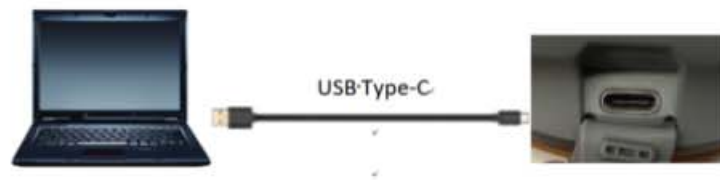
2.4.2 Rover Kit Basic Supply

Item	Picture
N50 GNSS Receiver	
SMA Whip Antenna (410-470 MHz)	
Power Adapter	
USB Type-C	
Range Pole (AR)	
Auxiliary H.I. Tool	
Transport Hard Case	

2.5 Connecting to an Office Computer

The receiver can be connected to an office computer via a USB Type-C. Before you connect to the office computer, ensure that the receiver is powered on.

The following figure shows how to connect to the computer for serial data transfer or settings:



2.6 Connecting to a Controller

2.6.1 Connecting via Wi-Fi with eField Software

Turn on the controller → run eField → tap **Connect**.

In the Connect screen, select **Farnav** for the Brand field, **N50** for Device Type field, **WIFI** for Connection Type field.



Tap the Click to select WI-FI to select the hot spot → Switch on the WiFi module by the top switch → select the target device in the WIFI target list.



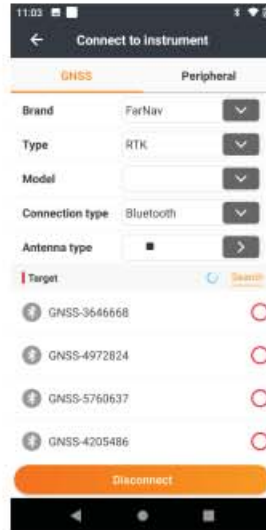
Tap the **Connect** button to build the connection.



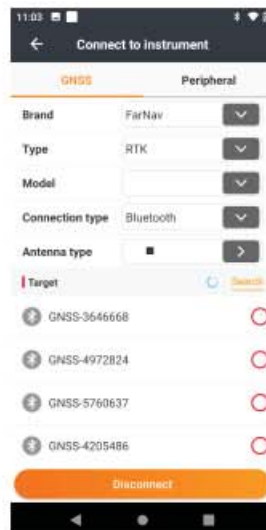
2.6.2 Connecting via Bluetooth with eField Software

Turn on the controller → run eField → go to **Config** main menu → tap **Connect**.

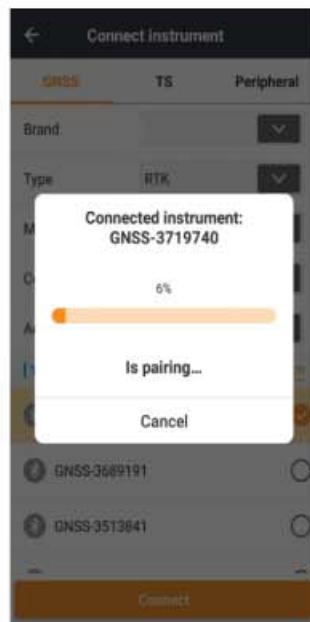
In the **Connect** screen, select Farnav for the **Brand** field, N50 for **Device Type** field, **Bluetooth** for **Connection Type** field.



Tap the **Search** to search Bluetooth device around → Switch on the Bluetooth module by the top switch → Tap **Pair new device** → select the target device in the list → Tap back button → select the target device in the Bluetooth target list.



Tap the **Connect** button to build the connection.



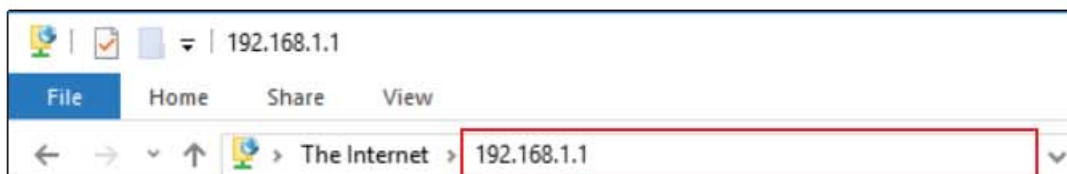
2.7 Downloading Logged Data

Data logging involves the collection of GNSS measurement data over a period at a static point or points, and subsequent post-processing of the information to accurately compute baseline information. Data logging using receivers requires access to suitable GNSS post-processing software such as the eOffice Software.

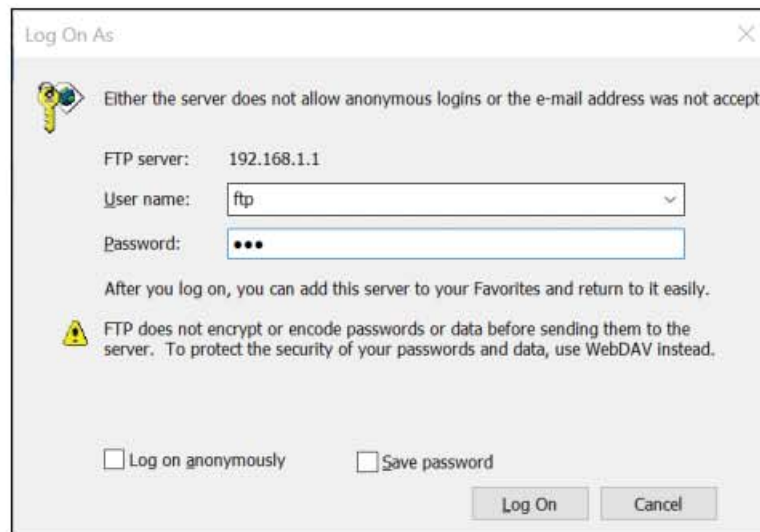
2.7.1 FTP Download

The procedures of downloading logged data through FTP are as follows:

- (1) Switch on the receiver, search its Wi-Fi in the computer and connect.
- (2) After the successful connection, open the file manager in the computer and input “ftp://192.168.1.1” in the address box.



(3) Input user name and password, the default user name and password are “ftp”.



(4) Double click the folder “repo_receiver SN” (take 3225804 as example), you will see folders. The “push_log” folder is used to save the log files, and the “record_1” folders are used for store static data.



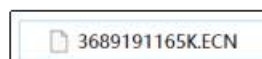
(5) Double click the folder that you have configured to store the static data, you will see the folder(s) created by the N50 system automatically and named by the date which is decided by GPS time when you start to log data.

 20200817

(6) Select the destination folder and double click it, two folders named as different data format (ecn and rinex) will be displayed.



(7) Select the data format that you configured to save the static data, you will find the static raw data.



Notes: For ecn files, the name of the file is represented as XXXXXXDDDDNN, where XXXXXX is the SN of the receiver, DDD is day of year, and NN is the recording session.

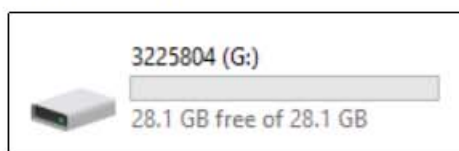


WARNING – The static data will be saved in the first logging session, the “record_1” folder, by default. Old files will be deleted if the storage space is full. If you configure not to auto delete old files when the memory is low, the receiver will stop data logging.

2.7.2 USB Download

The procedures of downloading logged data in the receiver are as follows:

(1) Switch on the receiver and connect it with a computer by Type-C. After the successful connection, a removable disk named as the Serial Number (SN) of the receiver will appear on the computer.

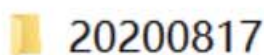


(2) Double click the removable disk and you will see the folder named as “repo”.



(3) Double click the folder “repo_receiver SN”, you will see folders. The “push_log” folder is used to save the log files, and the “record_1” folders are used for store static data.

(4) Double click the folder that you have configured to store the static data, you will see the folder(s) created by the N50 system automatically and named by the date which is decide by GPS time when you start to log data.



(5) Select the destination folder and double click it, and then two folders named as different data format (ecn and rinex) will be displayed.



(6) Select the data format that you have configured to save the static data, you will find the static raw data.



Tip – For ecn files, the name of the file is represented as XXXXXXDDDNN, where XXXXXX is the SN of the receiver, DDD is day of year, and NN is the recording session.



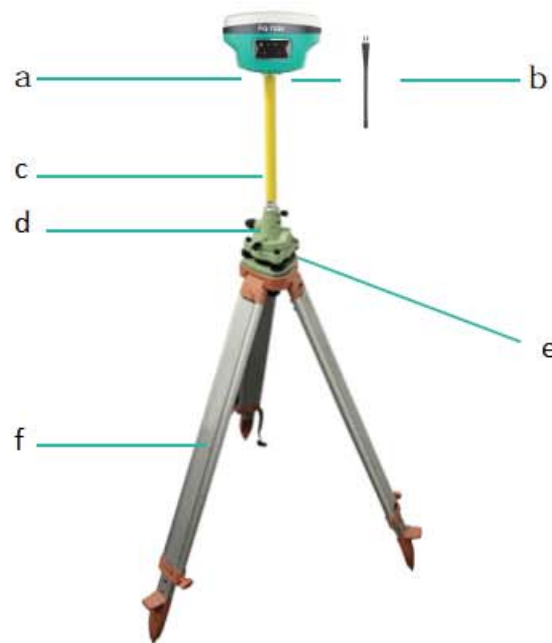
WARNING – The static data will be saved in the first logging session, the “record_1” folder, by default. Old files will be deleted if the storage space is full. If you configure not to auto delete old files when the memory is low, the receiver will stop data logging.

3 Equipment Setup and Operation

3.1 Base Station Setup

For good rover operation, the following base station setup guidelines are recommended:

Components:



No.	Name
a	N50 GNSS receiver
b	SMA Whip Antenna
c	Extension pole (30 cm)
d	Tribrach adaptor
e	Tribrach w/ Opti
f	Aluminum tripod

Steps:

- (1) Put tripod in the target position, center and level it roughly.
- (2) Place and lock the tribrach in the tripod.

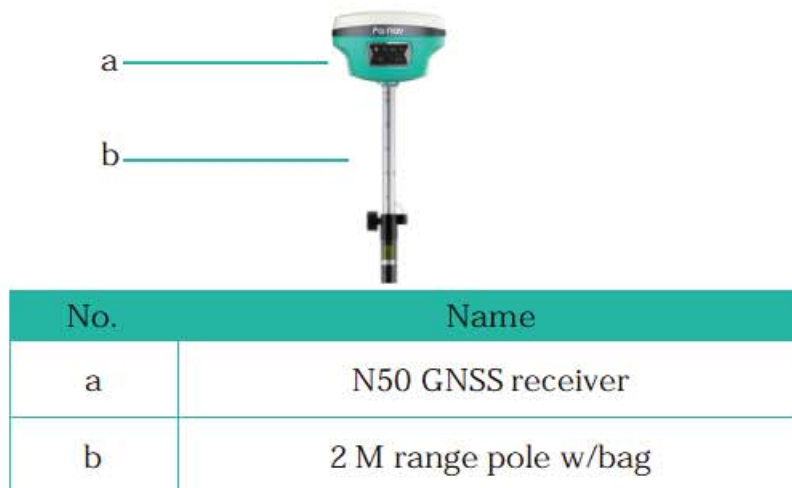
If work as a UHF base station, the SMA Whip Antenna need to be connected to the receiver.

- (3) Connect the receiver to external battery by using external power cable if necessary.
- (4) Connect the receiver to external storage disk by using USB cable if necessary.
- (5) Turn on the receiver by pressing the power button for 3 s.
- (6) Measure the antenna height by using H.I. tape and auxiliary H.I. tool.
- (7) Switch on the data controller and connect it to the receiver.
- (8) Use software to configure the receiver as UHF base mode.

3.2 Rover Station Setup

For good performance, the following rover station setup guidelines are recommended:

Components



Notice: Keep the receiver fully charged.

If work as a UHF rover station, the SMA Whip Antenna need to be connected to the receiver.

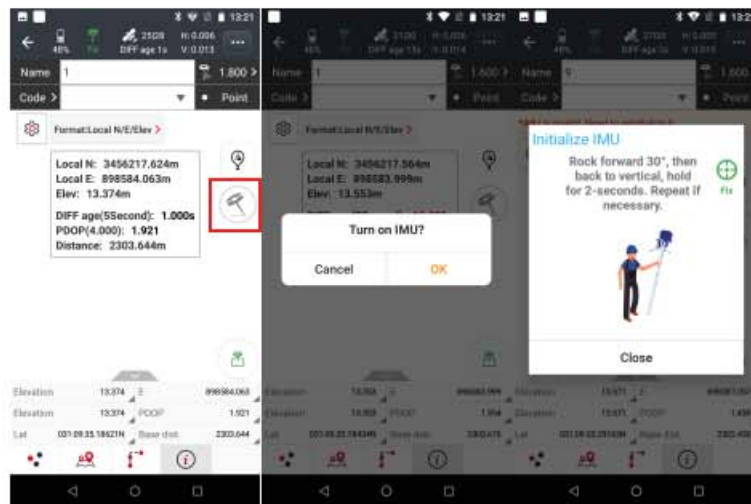
- (1) Turn on the receiver by pressing the power button for 3 s.

- (2) Switch on the data controller and connect it to the receiver.
- (3) Use software to configure the receiver as cellular rover or UHF rover mode.
- (4) Use software to start survey.

3.3 Working with the Tilt Compensation

3.3.1 Operation Steps

- (1) Open eField-> Tap PT Survey-> Tap  to activate tilt measurement.
- (2) Shake around according to the procedures in the interface to do initialization.



- (3) This icon  will appear when the initialization is successful.



(4) Enter the Name and Antenna, then tap  point will be collected and store to Points automatically.

(5) When this icon  appears, the text will show “*IMU is invalid. Need to reinitialize it.” at the top of interface.



(6) Tap  to close tilt compensation.

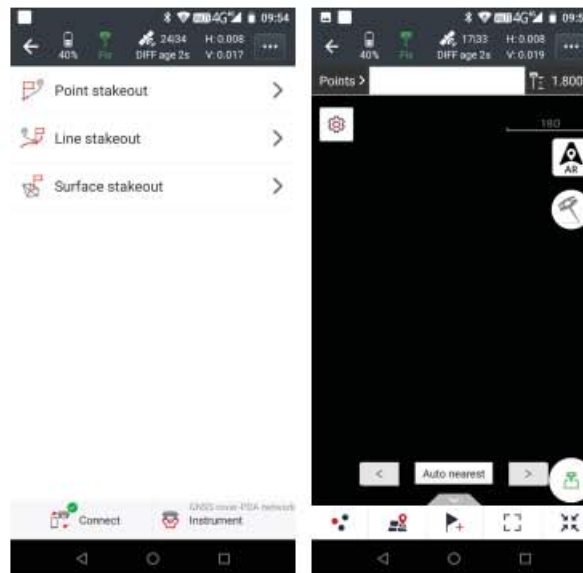
3.3.2 Notes of using tilt measurement

1. At the beginning of initialization, the pole height of the instrument should be the same as that antenna height in the software.
2. In the process of tilt measurement, if the controller shows that “Tilt is not available, please measure in alignment” (red), please shake RTK slightly from left to right or back to front until the reminder disappears.
3. The controller will prompt “Tilt is not available, please measure in alignment” when the receiver is stationary over 30 seconds or the pole hit the ground toughly.
4. The pole cannot be shaken when point is collected.
5. Initialization is required:
 - when the RTK is turned on every time;
 - when IMU module is turned on every time;
 - when receiver drops at working;
 - when the pole is tilted more than 65 degree;
 - when the receiver is stationary more than 10 minutes;
 - when the RTK rotates too fast on the matching pole (2 rounds per second);
 - when the pole hit the ground toughly.

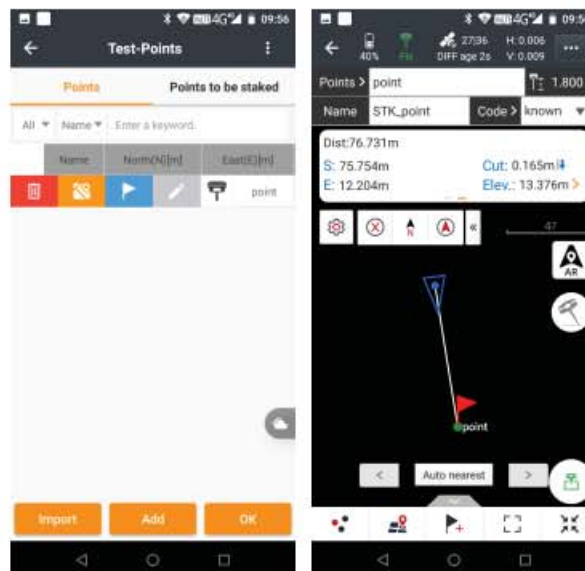
3.4 Working with the Vision Camera

3.4.1 Vision Stakeout Operation Steps

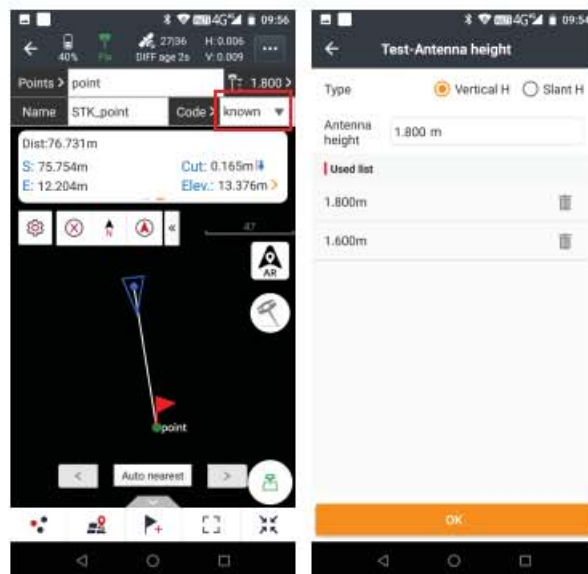
(1) Open eField-> Tap Stakeout-> Tap Point stakeout (Here take point stakeout as an example, currently also supports Line stakeout, CAD stakeout)



(2) Tap points, select a stakeout point, slide right and tap stakeout



(3) Check whether the height of the antenna is consistent with the height of the 2M Range Pole w/ Bag



(4) Tap AR, the software will prompt you to activate tilt measurement

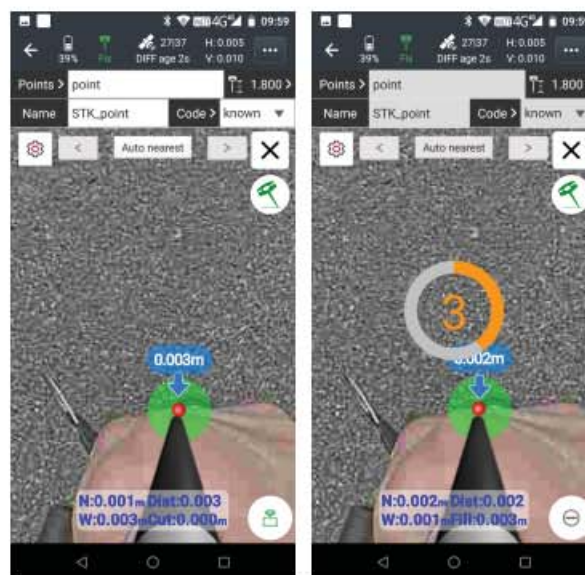


(5) This icon  will appear when the initialization is successful.

(6) In Vision Settings, we can adjust the switch distance: the front camera is used from 50 m to 3 m, and the bottom camera takes over within 3 m.



(7) After we are within 1cm from the target point, we can click the measurement icon to collect



Note:

When the stakeout target point has a height, it is necessary to input the height of the target point as 0 or the actual height.

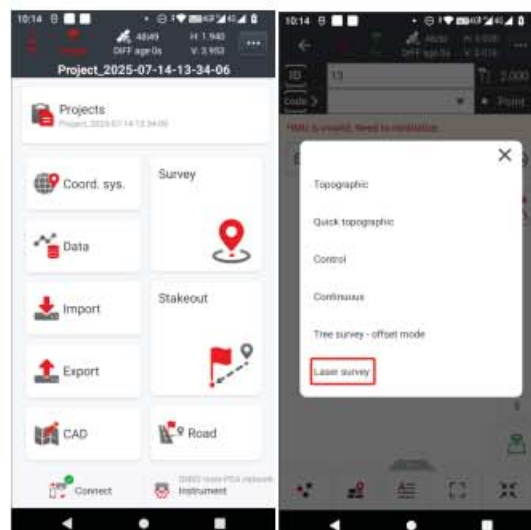
PDA and receiver camera should face the same direction.

3.4.2 Notes of using Vision Camera

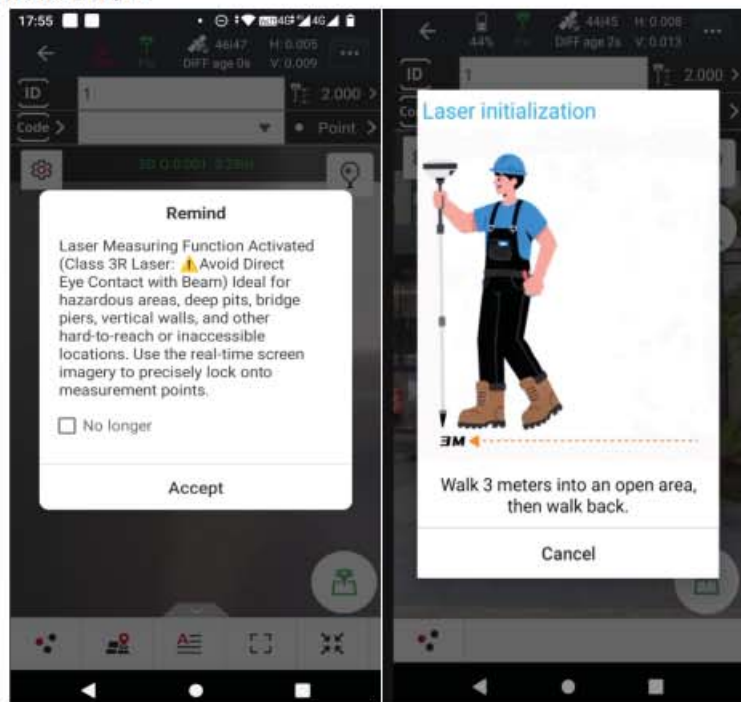
1. At the beginning of initialization, the pole height of the instrument should be the same as that antenna height in the software.
2. In the process of tilt measurement, if the controller shows that “Tilt is not available, please measure in alignment” (red), please shake RTK slightly from left to right or back to front until the reminder disappears.
3. The controller will prompt “Tilt is not available, please measure in alignment” when the receiver is stationary over 30 seconds or the pole hit the ground toughly.
4. The pole cannot be shaken when point is collected.
5. Initialization is required:
 - when the RTK is turned on every time;
 - when IMU module is turned on every time;
 - when receiver drops at working;
 - when the pole is tilted more than 65 degree;
 - when the receiver is stationary more than 10 minutes;
 - when the RTK rotates too fast on the matching pole (2 rounds per second);
 - when the pole hit the ground toughly.

3.5 Laser Survey function

- (1) To use this function, tap [Point survey] in the Survey interface and select Laser survey.



(2) After tapping Laser survey, you'll receive a safety-use notice and a laser initialization prompt. Follow the on-screen instructions to complete the laser initialization



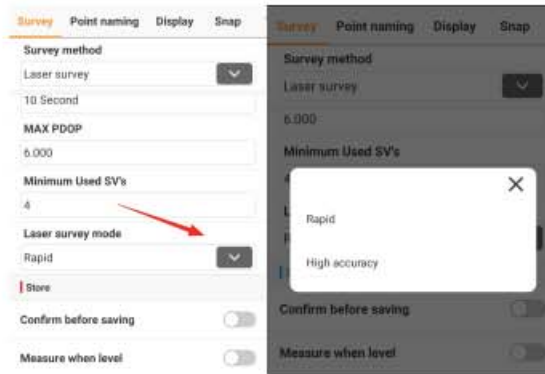
Caution - Class 3R laser radiation when open avoid direct eye exposure.

(3) Once initialization is complete, a laser-aiming crosshair appears. Center it on the point to be measured and tap Measure to finish a laser measurement.

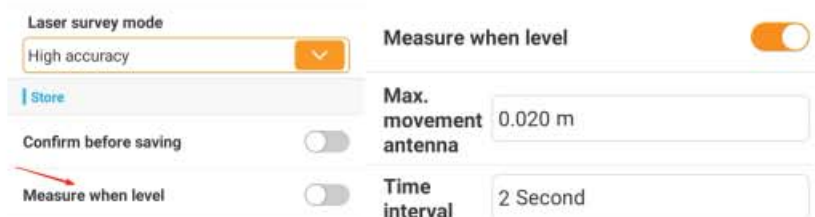


(4) Our camera supports two modes: automatic zoom and manual zooming in and out. When aiming at a distance, the camera will automatically zoom in, it can also be continued manually.

(5) The software supports two laser survey mode---Rapid and High accuracy. Different modes have different requirements for laser initialization.



(6) Our software also supports automatic store. When the laser remains stationary for a certain period of time, the collection can be automatically completed. Users can customize the Max movement distance and time interval.



3.5.1 Notes of using laser survey

1. When using laser survey, the instrument connection type must be selected as WIFI.
2. When conducting laser survey, it is recommended that the measurement distance be less than 20 meters, with 10 meters being the best and 50 meters the farthest.
3. It is recommended that the altitude of the measurement scene be less than 1500 meters and the light intensity be less than 50 klux.
4. It is recommended that the temperature of the measurement scene sea be between -10 °C and 60 ° C. If it exceeds or falls below the critical value, the laser will enter a dormant mode
5. After aiming at the target point, the pole should be avoided from shaking.
6. During the measurement process, it is recommended that the tilt Angle of the pole should not be too large.

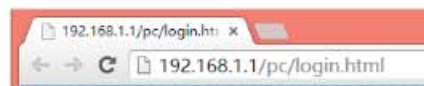
4 Configuring Through a Web Browser

Supported browsers:

- Google Chrome
- Microsoft Internet Explorer version 10, or higher

To connect to the receiver through a web browser:

- (1). Turn on the Wi-Fi of the receiver.
- (2). Search the wireless network named as GNSS-XXXXXXX (the SN of your receiver) on your computer, and then establish the connection.
- (3). After the successful connection between your computer and the receiver, enter the IP address (192.168.1.1) of the receiver into the address bar of the web browser on your computer:



- (4). The web browser prompts you to enter a login account and password:



The default login account for the receiver is:

- Login Account: admin
- Password: password

Note – Tick remember me option, and then the browser will remember the Login Account and Password you entered.

(5). Once you log in, the web page appears as follows:



This web page shows the configuration menus on the left of the browser window, and the setting on the right. Each configuration menu contains the related Submenus to configure the receiver and monitor receiver performance.

This chapter describes each configuration menu.

To view the web page in another language, select the corresponding language name from the drop down list on the upper right corner of the web page.

Currently, seven languages are available:



4.1 Status Menu

This menu provides a quick link to review the receiver's position information, satellites tracked, runtime, current data log status, current outputs, available memory, and more.

4.1.1 Position Submenu

This page shows the relevant position information about the receiver's position solution which including the position, DOP values, satellites used and tracked, and the receiver clock information.

The Position submenu displays the following information:

- Position:**
 - Latitude: 31°5'57.34872476"(North)
 - Longitude: 121°17'16.92238066"(East)
 - Height: 38.955
 - Type: Single
- DOP:**
 - PDOP: 1.328485
 - HDOP: 0.641613
 - VDOP: 1.163274
 - TDOP: 0.877797
- Satellite Used: 28 Total**
 - GPS(7): 2,5,6,13,15,29,30
 - GLONASS(5): 1,2,17,23,24
 - BDS(11): 1,3,6,8,13,19,29,35,38,39,59
 - GALILEO(5): 7,13,19,26,33
 - SBAS(0):
- Satellites Tracked: 39 Total**
 - GPS(8): 2,5,6,7,13,15,29,30
 - GLONASS(5): 1,2,17,23,24
 - BDS(21): 1,2,3,4,5,6,8,9,10,13,15,19,20,22,29,30,35,38,39,59,60
 - GALILEO(5): 7,13,19,26,33
 - SBAS(0):
- Receiver Clock:**
 - GPS Week: 2118
 - GPS Seconds: 283368

4.1.2 Activity Submenu

Lists several important items to help you understand how the receiver is being used and its current operating condition. Items include the identities of currently tracked satellites, internal and external storage usage rate, how long the receiver has been operational, state of the internal battery, power source state. With this information, it is easy to tell exactly what functions the receiver is performing:

The Activity submenu displays the following information:

- Satellites Track: 39 Total**
 - GPS(8): 2,5,6,7,13,15,29,30
 - GLONASS(5): 1,2,17,23,24
 - BDS(21): 1,2,3,4,5,6,8,9,10,13,15,19,20,22,29,30,35,38,39,59,60
 - GALILEO(5): 7,13,19,26,33
 - SBAS(0):
- Activity Status:**
 - Current Time: 2020-08-12 06:43:06 (UTC)
 - Operation Duration: 00-00-00 00:32:45
 - Internal Storage: 2.59% (175MB/6750MB)
 - External Storage: 0% (Disconnected)
 - External Power: Connected
 - Battery: 82%

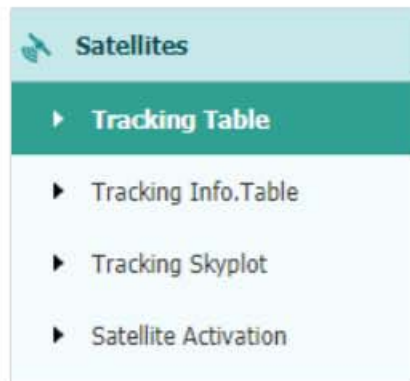
4.1.3 Google Map Submenu

Tap this submenu to show the location of the receiver on Google map.



4.2 Satellites Menu

Use the Satellites menu to view satellite tracking details and enable/disable GPS, GLONASS, BDS and Galileo constellations. These menus include tabular and graphical displays to provide all required information on satellite tracking status.



4.2.1 Tracking Table Submenu

Provides the status of satellites tracked in general, such as the satellite ID, satellite type, attitude angle, azimuth angle, L1 SNR, L2 SNR, L5 SNR, B1C SNR, B2A SNR, B2B SNR and enable/disable status of each one.

Tracking Table										
All ☒ GPS ☐ GLONASS ☐ BDS ☐ GALILEO ☐ SBAS ☐ QZSS ☐										
SV	Type	Elevation An	Azimuth Ang	L1 SNR	L2 SNR	L5 SNR	B1C SNR	B2A SNR	B2B SNR	Enabled
1	GPS	18	50	36.160	39.930	28.580	0.000	0.000	0.000	Yes
3	GPS	43	54	44.180	43.300	35.890	0.000	0.000	0.000	Yes
6	GPS	46	272	44.140	45.240	37.340	0.000	0.000	0.000	Yes
14	GPS	59	189	46.220	48.630	40.500	0.000	0.000	0.000	Yes
17	GPS	63	6	46.710	46.270	0.000	0.000	0.000	0.000	Yes
19	GPS	48	325	45.020	40.950	0.000	0.000	0.000	0.000	Yes
22	GPS	73	229	47.090	43.450	0.000	0.000	0.000	0.000	Yes
1	GLONASS	29	80	37.980	0.000	0.000	0.000	0.000	0.000	Yes
2	GLONASS	19	133	40.980	42.460	0.000	0.000	0.000	0.000	Yes
14	GLONASS	41	208	49.570	49.670	0.000	0.000	0.000	0.000	Yes
15	GLONASS	48	290	45.140	50.590	0.000	0.000	0.000	0.000	Yes
17	GLONASS	42	315	42.520	48.190	0.000	0.000	0.000	0.000	Yes
18	GLONASS	12	273	36.910	42.310	0.000	0.000	0.000	0.000	Yes

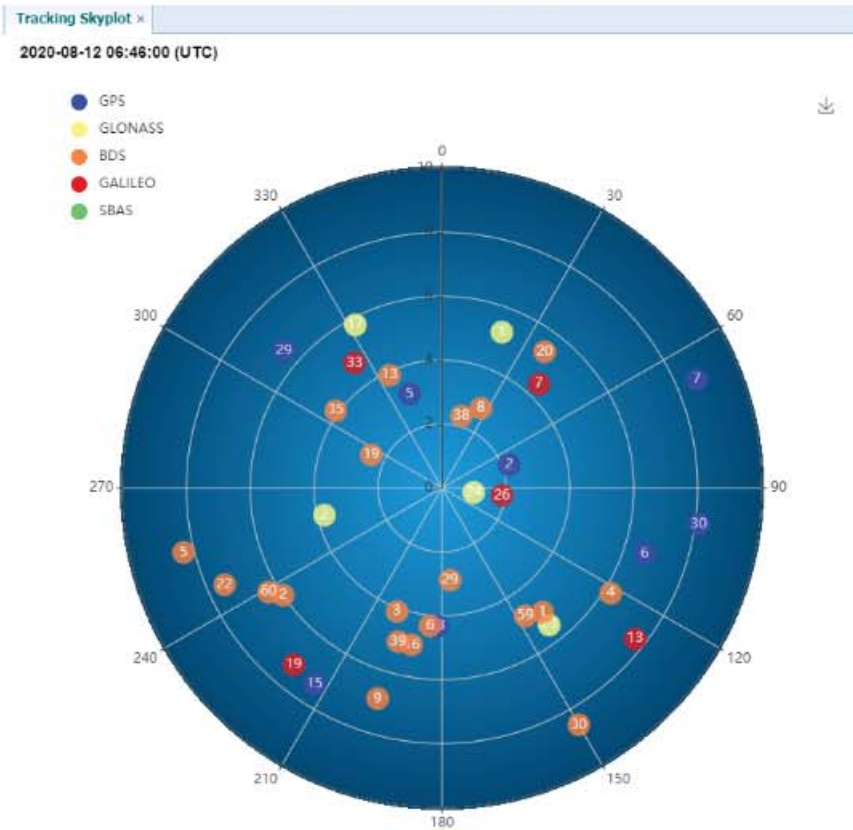
4.2.2 Tracking Info. Table Submenu

The following figure is an example of satellite track diagram page. Users can determine the satellite types and the corresponding SNR of L-band carriers to be displayed in any combination.



4.2.3 Tracking Skyplot Submenu

The following figure is an example of Skyplot page.



4.2.4 Satellite Activation Submenu

Use this menu to enable or disable satellites.

Satellite Activation			
GPS GLONASS BDS GALILEO SBAS			
Select All Unselect All Confirm Enable All Disable All			
Satellite Id	Enable	Satellite Id	Enable
1	☒	2	☒
3	☒	4	☒
5	☒	6	☒
7	☒	8	☒
9	☒	10	☒
11	☒	12	☒
13	☒	14	☒
15	☒	16	☒
17	☒	18	☒
19	☒	20	☒
21	☒	22	☒
23	☒	24	☒
25	☒	26	☒
27	☒	28	☒
29	☒	30	☒
31	☒	32	☒

4.2.5 Tracking Enable Submenu

Use this menu to enable or disable satellite tracks.

Tracking Enable 

Type	Signal	Enable
GPS	L1-CA	☒
GPS	L2	☒
GPS	L2-CS	☒
GPS	L2-P	☒
GPS	L5	☒
SBAS	L1-C/A	☐
GLONASS	R1	☒
GLONASS	R2	☒
GALILEO	E1	☒
GALILEO	E5-A	☒
GALILEO	E5-B	☒
BDS	B1	☒
BDS	B2	☒
BDS	B3	☒
BDS	B1-B1C	☐
BDS	B2-B2A	☐
BDS	B2-B2B	☐
Qzss	Q1	☒
Qzss	Q2	☒
Qzss	Q5	☒

Save 

4.3 Receiver Configuration Menu

Use this menu to configure settings such as the antenna type and height, elevation mask and PDOP setting, the reference station coordinates, receiver resetting and web interface language:


Receiver Configuration


Description

- ▶ Antenna Configuration
- ▶ Reference Station Settings
- ▶ Receiver Reset
- ▶ Language
- ▶ User Management
- ▶ HCPPP Settings

4.3.1 Description

This submenu shows the receiver information and reference station information, including antenna related information, elevation mask angle, reference station work mode and position, etc.

Description

Receiver Info

Antenna Type: 
Antenna SN:
Measure Way: Antenna Phase Center
Antenna Height: 2.0000(Meter)
Elevation Mask: 10
PDOP Mask: 6

Reference Station Info

Reference Station Mode: Auto Rover
Reference Latitude: 0°00.00000000°(South)
Reference Longitude: 0°00.00000000°(West)
Reference Height: 0.0000

4.3.2 Antenna Configuration Submenu

Use this screen to configure all the items related to the GNSS antenna. You must enter the correct values for all antenna-related fields, because the choices you make affect the accuracy for logged data and broadcast correction data significantly:

Antenna Configuration

Antenna Configuration

Measure Way:

Antenna Phase Center

Antenna manufacturer:

I

Antenna Type:

L

Antenna SN:

9999645

Antenna Height:

2.0000

 (Meter)
Elevation Mask:

10

PDOP Mask:

6

Save

4.3.3 Reference Station Settings Submenu

Use this screen to configure settings such as the station coordinates and the broadcast station identifiers. You must enter accurate information in these fields, as this data affects the accuracy of logged data files and broadcast correction data significantly:

For Reference Station Mode:

There are three modes available:

1. **Auto Rover:** The receiver will serve as a rover after this mode is enabled, and then receive correction data through the working mode set last time.

The screenshot shows the 'Reference Station Settings' window. The 'Reference Station Mode' is set to 'Auto Rover'. Below this is a 'Save' button. Under the 'Sample for Average' section, 'Positioning Constraint' is set to 'Single Solution Coordinates' (selected) and 'Fixed Solution Coordinates' (unselected). The 'Sampling Amount' is set to '300' and '0%'. At the bottom are 'Start' and 'Stop' buttons.

2. **Auto Base:** The receiver will serve as a base after this mode is enabled, and then broadcast correction data based on coordinate inputted by user or obtained through autonomous positioning automatically.

The screenshot shows the 'Reference Station Settings' window for 'Auto Base' mode. The 'Reference Station Mode' is set to 'Auto Base'. Below this are fields for 'Base Station Name' (9999999), 'Base Station ID' (9999999), 'Reference Latitude' (31 8 54.9093644 N), 'Reference Longitude' (121 10 42.4933248 E), and 'Reference Height' (50.4228). There is a 'Save' button. Under the 'Sample for Average' section, 'Positioning Constraint' is set to 'Single Solution Coordinates' (selected) and 'Fixed Solution Coordinates' (unselected). The 'Sampling Amount' is set to '300' and '0%'. There are 'Start' and 'Stop' buttons. Below this is a 'Coordinates transfer threshold (meters)' field with a 'Save' button. At the bottom is a 'Base list' table.

ID	Height	Latitude	Longitude
1	15.8100	31 8 54.9093644 N	121 10 42.4933248 E

3. **Manual Base:** The receiver will serve neither as a base nor a rover after this mode is enabled. Users need to configure the receiver manually.

For Reference Latitude and Reference Longitude:

Reference Station Mode: Manual Base

Base Station Name: 999999

Base Station ID: 999999

Reference Latitude: 31 0 34.50636444 N

Reference Longitude: 121 10 42.4952448 E

Reference Height: 50.4336

Use Current Position Save

Sample for Average

Positioning Constraint: ☒ Single Solution Coordinates ☐ Fixed Solution Coordinates

Sampling Amount: 300 0%

Start Stop

There are mainly three methods to enter the reference coordinates and shown as follows:

4. **Acquire Current Position:** Click this button to acquire current position obtained through autonomous positioning automatically.
5. **Manual Input:** Manually input the coordinate of a control point.
6. **From CORS:** After the receiver logging in CORS, the software can record the coordinate of current position based on fix solution.

For Sample for Average:

Users can determine the positioning limit and sampling amount. The positioning limit falls into two types:

1. **Single Solution Coordinates:** Collect the coordinates of receiver obtained through autonomous positioning.
2. **Fixed Solution Coordinates:** Only collect coordinates of receiver with a fixed solution.

After the configuration of positioning limit and sampling amount, click **Start** to carry out sampling and averaging → the progress bar will show the progress → the result will be served as the coordinate of current position.

If users need to save the changes, please tap **Save** button.

4.3.4 Receiver Reset Submenu

Use this screen to completely or partially reset the receiver:

Receiver Reset x

Reboot Receiver:

Return to Factory Defaults:

Clear Satellite Data:

Turn Off Receiver:

Confirm

Confirm

Confirm

Confirm

4.3.5 Languages Submenu

Use this screen to select the web interface language:

Language x



English

中文

English

Русский

Español

Português

Français

日本語

Confirm

4.3.6 User Management Submenu

User Management x

User Management

Add

Save

Delete

Modify Anti-theft password

ID	User Name	Password
1	admin	*****
2	admin1	*****
3	admin2	*****

4.3.7 HCPPP Settings

Reserved menu.

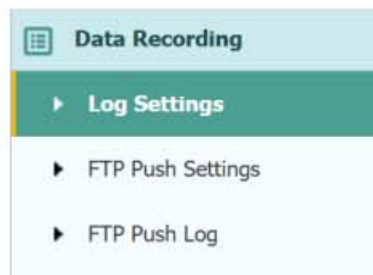
HCPPP Settings x

HCPPP Range: 5min

Save

4.4 Data Recording Menu

Use the Data Logging menu to set up the receiver to log static GNSS data and to view the logging settings. You can configure settings such as observable rate, recording rate, continuous logging limit, and whether to auto delete old files when memory is low. This menu also provides the controls for the FTP push feature:



4.4.1 Log Settings Submenu

Here shows the data logging status, including internal and external storage usage and data logging status of each session. Also, users can configure the data logging settings for each session, including recording name, store location, storage limit, store formats, start time, etc.

Log Settings >

Store Info			
	Position	Total Storage	Storage Available
1	Internal Storage	6750MB	6575MB
2	External Storage	0MB	0MB

Attention: Total assigned storage size should be less than 6GB. It will stop recording when the storage is full.

Record Info							Clear All
Recording Number	File Name	Activated	Log Status	Setting Parameter	Switch	Clear Data	
1	record1	Yes	Recording	Modify Details	ON OFF	Clear	

To edit the settings of each session, click the **Modify** button to the right of the required session, and then the Recording Edit screen appears:

Recording Edit

Auto Record: ☐ Yes ☒ No
Sample Interval: 1Hz
Elevation Mask: 15 (*)
Duration Time: 60 (Minute)
Site Name: 3689191base

Antenna Height: 0.0000
Measure Way: Vertical Height
Storage Format: ECN
RINEX Version: 3.0x
Compress Rinex Data: ☐ Yes ☒ No
Advanced

Save
Back

Click advanced to see more settings.

The screenshot shows a settings interface with two columns of options. The left column contains radio button settings for 'Start Date', 'Apply Time', 'Integral Point Store', 'Circulating Memory', and 'Repeat Observations'. The right column contains dropdown menus for 'Store Location' and 'Assigned Storage', and text input fields for 'Observation Interval' and 'Observe Agent'. Below these is a 'FTP Push' section with a 'Close' button and three radio button options for '1.ftp server 1', '2.ftp server 2', and '3.ftp server 3'. At the bottom are 'Save' and 'Back' buttons.

Start Date: ☐ Yes ☒ No
 Apply Time: ☐ Yes ☒ No
 Integral Point Store: ☐ Yes ☒ No
 Circulating Memory: ☒ Yes ☐ No
 the data overwritten first file after storage space is full
 Repeat Observations: ☒ Yes ☐ No
 Turn on to record a single observation. Turn off to record repeated observations.

Store Location: Internal Storage
 Assigned Storage: 6000 (MB)
 Observation Interval:
 Observe Agent:
 FTP Push: ☒ Close
☐ 1.ftp server 1
☐ 2.ftp server 2
☐ 3.ftp server 3

Save Back

In this screen, you can configure all the data logging parameters, and determine whether the recording files will be affected by the FTP Push. The parameters are mainly as follows:

Auto Record: on or off.

Sample Interval: Select the observable rate from the dropdown list.

Elevation Mask: Enter the elevation mask.

Duration Time: Set the duration of data logging.

Site Name: Enter the name of the site.

Antenna Height: the measured height value.

Measure way: Antenna Phase Center, Vertical Height, Slant Height

Storage Format: Select the format of the data store.

RINEX Version: OFF, 3.02, 2.11

Start Date: Select Yes or No option to determine whether to auto record start date.

Apply Time: Select Yes or No option to determine whether to auto record apply time.

Integral Point Store: Select Yes or No option to determine whether to allow receiver to save data every hour.

Circulating Memory: Select Yes or No option to determine whether to auto delete old files if the storage space is full.

Repeat Observations: Select Yes or No option to determine whether to turn on to record a single observation.

Store Location: Internal Storage, External Storage.

Assigned Storage: The assigned memory size of current thread(for example, Record 1) is 10000MB

Observer: Enter the name of observer.

Observer Agency: Enter the name of observer agency.

FTP Push: Decide whether to push the stored files to the FTP server of your choice.

Tap  **Save** button to save the settings and back to the Log Settings screen. Also, users can click  **Back** to abandon the changed settings and back to Log Settings screen.

Note – To modify data logging parameters, make sure the data logging session is switched off.

To switch on or off **ANY** data logging session, tap the **ON** or **OFF** button on the right of the required session.

To delete the recorded files of **ANY** data logging session, tap the **Clear** button on the right of the required session.

To delete the recorded files of **ALL** data logging sessions, tap the **Clear ALL Accounts** button.

4.4.2 FTP Push Settings Submenu

Use this screen to configure the receiver to push stored files to the FTP server of your choice. Only files that are configured to use FTP push are transmitted.

Record Info				
Server ID	Server IP	Remote Directory	Server Description	Modify
1	192.168.3.72	/repo/first	ftp server 1	
2	192.168.3.72	/repo/second	ftp server 2	
3	192.168.3.72	/repo/third	ftp server 3	

Tap **Modify** button on the right of the required FTP server and the FTP Push Settings screen appears:

FTP Push Settings

Server IP: 192.168.3.72

Port: 21

Remote Directory: /repo/first

Local directory: /mnt/repo_3225804

Server Description: ftp server 1

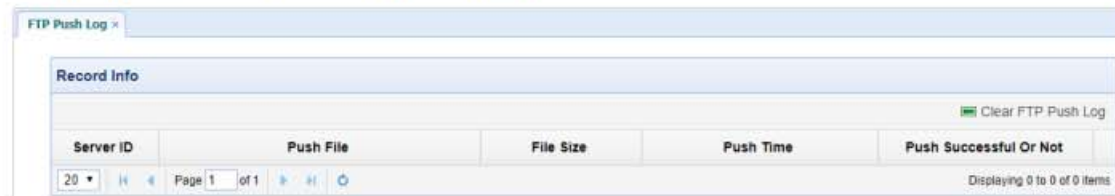
User Name: ftpuser1

Password:




4.4.3 FTP Push Log Submenu

Shows the related information about the recorded files that be pushed. And users can tap **Clear Ftp Send Log** button in the upper right corner to clear the log of FTP Push operations.



4.5 IO Settings Menu



Use the IO Settings menu to set up all receiver outputs and inputs. The receiver can output CMR, RTCM, Raw data, Ephemeris data, GPGLA, GPGLV, on TCP/IP, UDP, serial port, or Bluetooth ports.

The following figure shows an example of the screen that appears when you select this submenu. (serial port setting is reserved menu)

I/O Settings					
	Type	Description	Output	Connection Status	Modify
1	RTK Client	211.144.118.5.2102	---	Unconnected	Connect Disconnecting Detail
2	TCP/UDP_Client1/NTRIP Server1	192.168.3.18.9900	---	Unconnected	Connect Disconnecting Detail
3	TCP/UDP_Client2/NTRIP Server2	192.168.3.18.9901	---	Unconnected	Connect Disconnecting Detail
4	TCP/UDP_Client3/NTRIP Server3	192.168.3.18.9902	---	Unconnected	Connect Disconnecting Detail
5	TCP/UDP_Client4/NTRIP Server4	192.168.3.18.9903	---	Unconnected	Connect Disconnecting Detail
6	TCP/UDP_Client5/NTRIP Server5	192.168.3.18.9904	---	Unconnected	Connect Disconnecting Detail
7	TCP/UDP_Client6/NTRIP Server6	192.168.3.18.9905	---	Unconnected	Connect Disconnecting Detail
8	TCP Server/NTRIP Caster1	9901	---	Closed	Connect Disconnecting Detail
9	TCP Server/NTRIP Caster2	9902	---	Closed	Connect Disconnecting Detail
10	TCP Server/NTRIP Caster3	9903	---	Closed	Connect Disconnecting Detail
11	TCP Server/NTRIP Caster4	9904	---	Closed	Connect Disconnecting Detail
12	Serial Port	115200	---	---	Settings
13	Bluetooth	GNSS-3225804	GPGLA, Se,	---	Settings
14	Radio	456.0500MHz	---	---	Settings

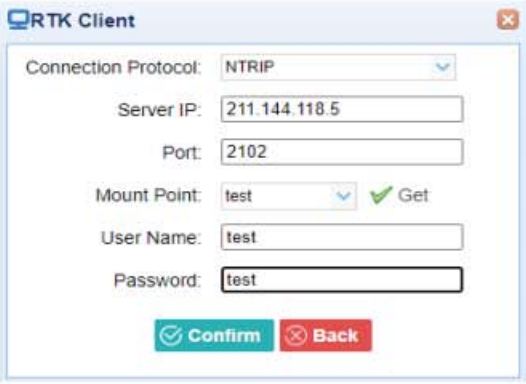
In this submenu, users can configure 6 types of input and output settings.

1. RTK Client

After configuring the settings of RTK client, users can log on CORS or APIS. Tap the **Connect** button to the right → the **IO Settings** screen will appear → choose one of the connection protocols among the NTRIP, APIS_BASE,

APIS_ROVER and TCP → configure the related parameters → click  to log on CORS or APIS.

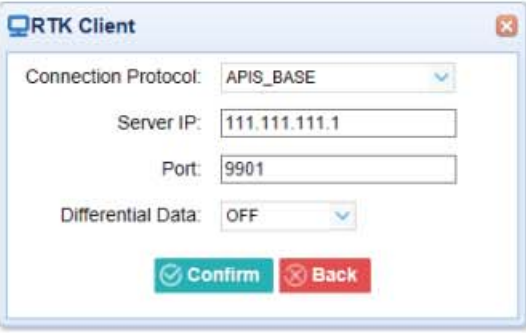
Connection Protocol: NTRIP



The RTK Client dialog box for NTRIP connection protocol contains the following fields and controls:

- Connection Protocol: NTRIP (dropdown menu)
- Server IP: 211.144.118.5 (text input)
- Port: 2102 (text input)
- Mount Point: test (dropdown menu) with a green checkmark and "Get" button
- User Name: test (text input)
- Password: test (text input)
- Buttons: Confirm (green) and Back (red)

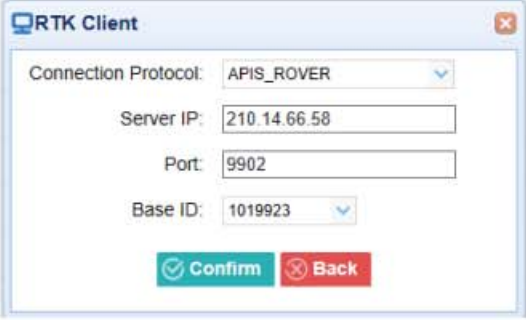
Connection Protocol: APIS_BASE



The RTK Client dialog box for APIS_BASE connection protocol contains the following fields and controls:

- Connection Protocol: APIS_BASE (dropdown menu)
- Server IP: 111.111.111.1 (text input)
- Port: 9901 (text input)
- Differential Data: OFF (dropdown menu)
- Buttons: Confirm (green) and Back (red)

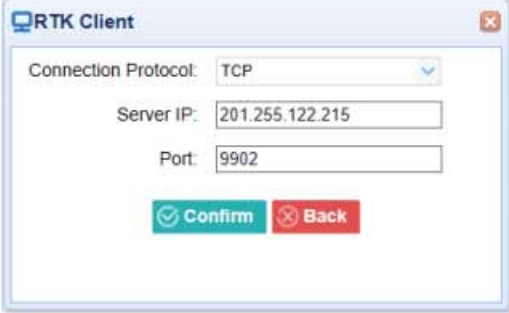
Connection Protocol: APIS_ROVER



The RTK Client dialog box for APIS_ROVER connection protocol contains the following fields and controls:

- Connection Protocol: APIS_ROVER (dropdown menu)
- Server IP: 210.14.66.58 (text input)
- Port: 9902 (text input)
- Base ID: 1019923 (dropdown menu)
- Buttons: Confirm (green) and Back (red)

Connection Protocol: TCP



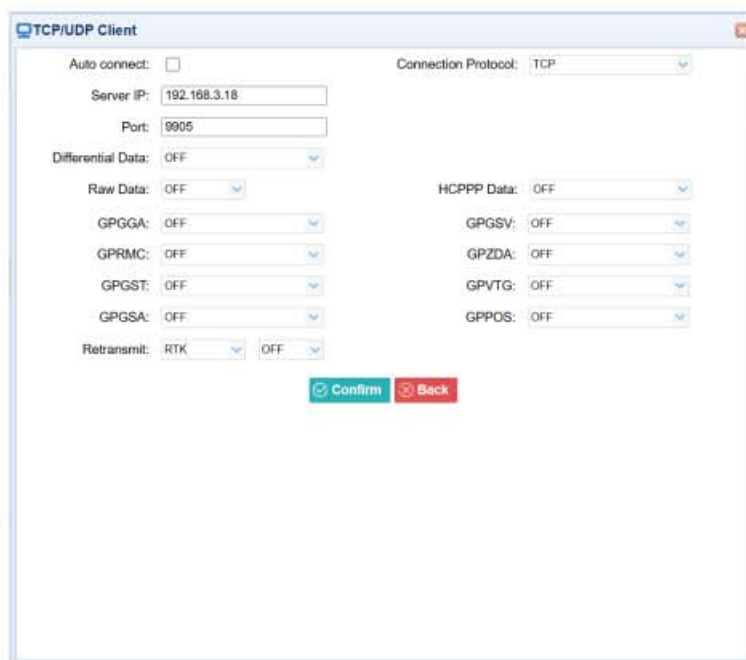
The RTK Client dialog box for TCP connection protocol contains the following fields and controls:

- Connection Protocol: TCP (dropdown menu)
- Server IP: 201.255.122.215 (text input)
- Port: 9902 (text input)
- Buttons: Confirm (green) and Back (red)

2. TCP/UDP_Client/NTRIP Server

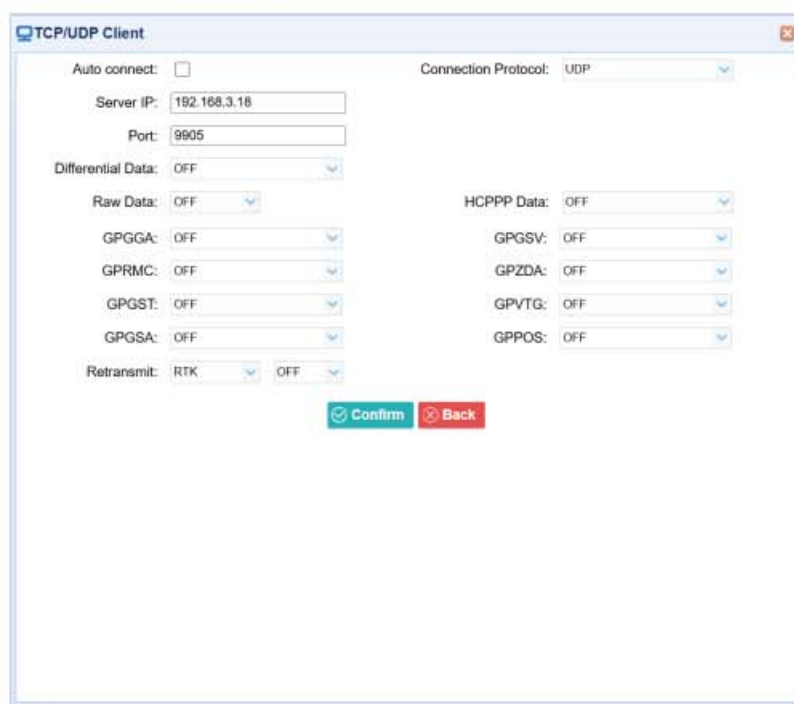
Tap the **Connect** button on the right of required TCP/UDP Client → the *IO Settings* screen will appear → select the connection protocol from TCP, UDP, NTRIP1.0 and NTRIP2.0 → enter the IP and Port of the target server → configure messages that you want to output to the target server → click **Confirm** to save and complete the connection.

Connection Protocol: TCP



The screenshot shows the 'TCP/UDP Client' settings window. The 'Connection Protocol' is set to 'TCP'. The 'Auto connect' checkbox is unchecked. The 'Server IP' is '192.168.3.18' and the 'Port' is '9905'. The 'Differential Data' is set to 'OFF'. The 'Raw Data' is set to 'OFF'. The 'HCPPP Data' is set to 'OFF'. The 'GPGGA' is set to 'OFF'. The 'GPRMC' is set to 'OFF'. The 'GPGST' is set to 'OFF'. The 'GPGSA' is set to 'OFF'. The 'Retransmit' is set to 'RTK' and 'OFF'. The 'GPGSV' is set to 'OFF'. The 'GPZDA' is set to 'OFF'. The 'GPVTG' is set to 'OFF'. The 'GPPOS' is set to 'OFF'. At the bottom, there are 'Confirm' and 'Back' buttons.

Connection Protocol: UDP



The screenshot shows the 'TCP/UDP Client' settings window. The 'Connection Protocol' is set to 'UDP'. The 'Auto connect' checkbox is unchecked. The 'Server IP' is '192.168.3.18' and the 'Port' is '9905'. The 'Differential Data' is set to 'OFF'. The 'Raw Data' is set to 'OFF'. The 'HCPPP Data' is set to 'OFF'. The 'GPGGA' is set to 'OFF'. The 'GPRMC' is set to 'OFF'. The 'GPGST' is set to 'OFF'. The 'GPGSA' is set to 'OFF'. The 'Retransmit' is set to 'RTK' and 'OFF'. The 'GPGSV' is set to 'OFF'. The 'GPZDA' is set to 'OFF'. The 'GPVTG' is set to 'OFF'. The 'GPPOS' is set to 'OFF'. At the bottom, there are 'Confirm' and 'Back' buttons.

Connection Protocol: NTRIP1.0

The screenshot shows the 'TCP/UDP Client' configuration window. The 'Connection Protocol' is set to 'NTRIP1.0'. The 'Auto connect' checkbox is unchecked. The 'Server IP' is '192.168.3.18', 'Password' is masked with dots, and 'Mount Point' is empty. The 'Port' is '9905'. On the left, 'Raw Data' is OFF, and 'GPGGA', 'GPRMC', 'GPST', 'GPGSA', and 'Retransmit' (set to RTK) are all OFF. On the right, 'Differential Data', 'HCPPP Data', 'GPGSV', 'GPZDA', 'GPVTG', and 'GPPOS' are all OFF. 'Confirm' and 'Back' buttons are at the bottom.

Connection Protocol: NTRIP2.0

The screenshot shows the 'TCP/UDP Client' configuration window for 'NTRIP2.0'. The 'Auto connect' checkbox is unchecked. The 'Server IP' is '192.168.3.18', 'Password' is masked with dots, and 'Mount Point' is empty. The 'Port' is '9905'. The 'User Name' field is now present and contains 'link_c'. The settings for 'Raw Data', 'GPGGA', 'GPRMC', 'GPST', 'GPGSA', 'Retransmit' (RTK), 'Differential Data', 'HCPPP Data', 'GPGSV', 'GPZDA', 'GPVTG', and 'GPPOS' are all OFF. 'Confirm' and 'Back' buttons are at the bottom.

3. TCP Server/NTRIP Caster

Tap the **Connect** button to the right of required TCP Server/NTRIP Caster→ the **IO Settings** screen will appear → select one of the connection protocols between NTRIP and TCP → configure the other related parameters → click **Confirm** to save the settings and open the server.

Connection Protocol: TCP

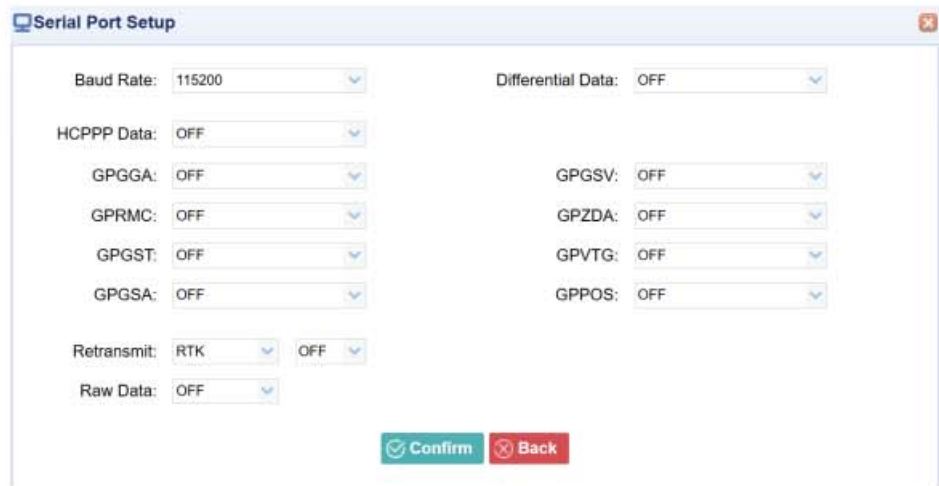
The screenshot shows the 'TCP Server/NTRIP Caster' configuration window. The 'Connection Protocol' dropdown is set to 'TCP'. The 'Auto connect' checkbox is unchecked. The 'Port' field is set to '9901'. The 'Differential Data' dropdown is set to 'OFF'. The 'HCPPP Data' dropdown is set to 'OFF'. The 'GPGGA' dropdown is set to 'OFF'. The 'GPRMC' dropdown is set to 'OFF'. The 'GPGST' dropdown is set to 'OFF'. The 'GPGSA' dropdown is set to 'OFF'. The 'Retransmit' dropdown is set to 'RTK'. The 'Raw Data' dropdown is set to 'OFF'. The 'GPGSV' dropdown is set to 'OFF'. The 'GPZDA' dropdown is set to 'OFF'. The 'GPVTG' dropdown is set to 'OFF'. The 'GPPOS' dropdown is set to 'OFF'. The 'Confirm' button is highlighted in green, and the 'Back' button is highlighted in red.

Connection Protocol: NTRIP

The screenshot shows the 'TCP Server/NTRIP Caster' configuration window. The 'Connection Protocol' dropdown is set to 'NTRIP'. The 'Auto connect' checkbox is unchecked. The 'User Name' field is empty. The 'Password' field is empty. The 'Mount Point' field is empty. The 'Port' field is set to '9901'. The 'Differential Data' dropdown is set to 'OFF'. The 'HCPPP Data' dropdown is set to 'OFF'. The 'GPGGA' dropdown is set to 'OFF'. The 'GPRMC' dropdown is set to 'OFF'. The 'GPGST' dropdown is set to 'OFF'. The 'GPGSA' dropdown is set to 'OFF'. The 'Retransmit' dropdown is set to 'RTK'. The 'Raw Data' dropdown is set to 'OFF'. The 'GPGSV' dropdown is set to 'OFF'. The 'GPZDA' dropdown is set to 'OFF'. The 'GPVTG' dropdown is set to 'OFF'. The 'GPPOS' dropdown is set to 'OFF'. The 'Confirm' button is highlighted in green, and the 'Back' button is highlighted in red.

4. Serial Port

Tap the **Settings** button on the right of Serial Port → the *Serial Port Setup* screen will appear → select Baud Rate used to transmit data → configure the messages that you want to output through the serial port → click  to save the settings and start to transmit.



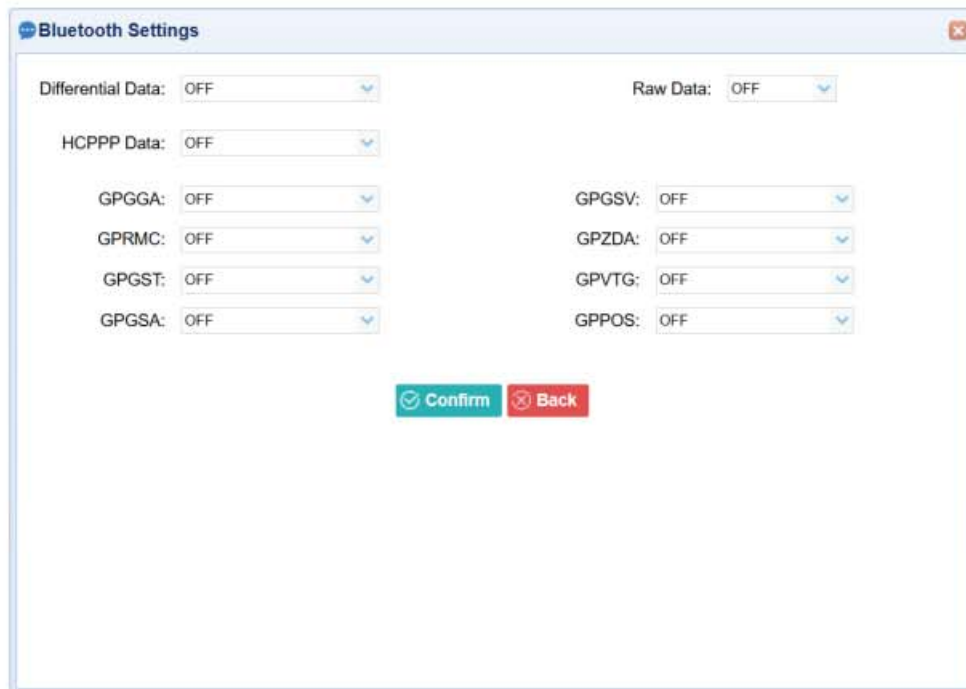
The **Serial Port Setup** screen displays various configuration options for serial communication. The settings are as follows:

Setting	Value
Baud Rate	115200
Differential Data	OFF
HCPPP Data	OFF
GPGGA	OFF
GPRMC	OFF
GPGST	OFF
GPGSA	OFF
Retransmit	RTK
Raw Data	OFF
GPGSV	OFF
GPZDA	OFF
GPVTG	OFF
GPPOS	OFF

At the bottom, there are two buttons:  and .

5. Bluetooth

Tap the **Settings** button to the right of Bluetooth → the *Bluetooth Set* screen will appear → configure the messages that you want to transmit through Bluetooth → click  to save the settings and start to transmit.



The **Bluetooth Settings** screen displays various configuration options for Bluetooth communication. The settings are as follows:

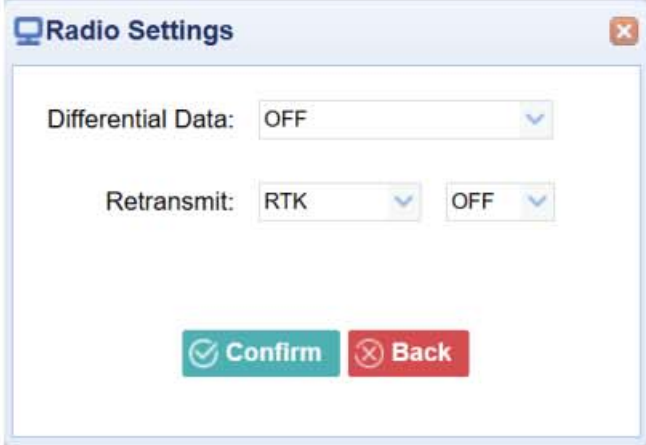
Setting	Value
Differential Data	OFF
Raw Data	OFF
HCPPP Data	OFF
GPGGA	OFF
GPRMC	OFF
GPGST	OFF
GPGSA	OFF
GPGSV	OFF
GPZDA	OFF
GPVTG	OFF
GPPOS	OFF

At the bottom, there are two buttons:  and .

6. Radio

Tap the **Settings** button to the right of Radio → the *Radio Settings* screen will appear → select the format of differential data that you want to transmit through radio from the dropdown list

➤ click  to save the settings and start to transmit.

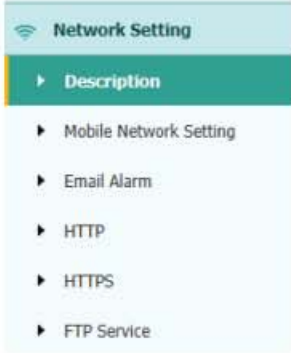


The **Radio Settings** dialog box contains the following controls:

- Differential Data:** A dropdown menu currently set to **OFF**.
- Retransmit:** Two dropdown menus, the first set to **RTK** and the second set to **OFF**.
- At the bottom, there are two buttons: a green **Confirm** button with a checkmark icon and a red **Back** button with a close icon.

4.6 Network Setting Menu

Use this menu to view network information, configure the receiver's mobile network, set email alert for specific situation, configure HTTP or HTTPS port, and the username and password of internal FTP site:



The **Network Setting** menu is displayed with a list of options:

- Description** (highlighted with a green bar)
- Mobile Network Setting
- Email Alarm
- HTTP
- HTTPS
- FTP Service

4.6.1 Description Submenu

Use this submenu to check the information of network setting.

Description ×

Network Info

Power Status: ON
Network Mode: 2G/3G/4G Auto
Connection Protocol: CHINA MOBILE
Signal Strength: -71(dBm)
SIM Status: SIM Card Ok
Dialing Status: Offline
IMEI: 861529049455435
PhoneNumber: 1440033974571

4.6.2 Mobile Network Setting Submenu

Use this submenu to configure GPRS model, network module and modify dialing status.

Mobile Network Setting ×

Network Settings

GPRS Model Status: ON

ON

OFF

Auto Start:

Yes

No

2G Only
3G Only
2G/3G Auto
4G Only
2G/3G/4G Auto

SIM Type: E-SIM

Switch

Dialing Status: Offline

Dial

Break

Auto Connect:

Yes

No

APN: 3gnet
Dialing String: *99#
User Name: card
Password: ****

Save

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4.6.3 Email Alarm Submenu

Use this submenu to choose which situation of receiver will be alerted and input the email address.

Email Alarm ×

TO

Email Address 1:

Email Address 2:

Email Address 3:

Save

From

Account:

Password:

Server Address:

Save

Email Alert

☐ Receiver is powered on

☐ External power is off

☐ Battery level is low

☐ Ftp push is failed

☐ Reciever(license) will be expired in 7 days.

Save

4.6.4 HTTP Submenu

Use this submenu to configure HTTP port.

HTTP ×

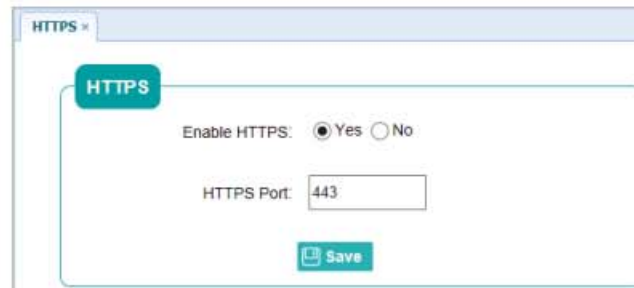
HTTP Port:

80

Save

4.6.5 HTTPS Submenu

Use this submenu to configure HTTPS port.



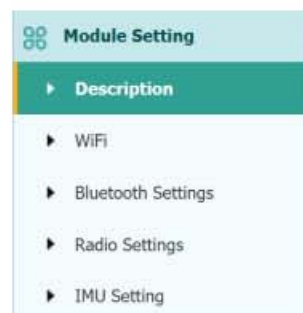
4.6.6 FTP Service Submenu

Use this submenu to configure the user name and password of internal FTP site.



4.7 Module Setting Menu

Use this menu to check module information, configure WiFi, bluetooth, radio related settings.



4.7.1 Description Submenu

Use this submenu to check the information of WiFi module, bluetooth module and radio module.

The screenshot shows the 'Description' submenu with two panels. The 'WiFi Information' panel displays: Power Status: ON, Wifi Mode: Access Point, MAC: 82:00:10:06:a1:1d, Access Point Details, and SSID: GNSS-9999979. The 'Radio Information' panel displays: Radio Type: Integrated TR Radio, Radio Power: 5W, OTA Baud Rate: 9600, Radio Frequency: 419.050000MHz, Radio Protocol: TT450S, Radio Frequency Channel: Full Range, and Frequency Range: 410MHz-470MHz.

4.7.2 WiFi Submenu

Use this submenu to turn on/off WiFi function and modify password.

The screenshot shows the 'WiFi' submenu. It includes a 'Power Status' section with 'ON' and an 'OFF' button. Below are 'Auto Start' and 'Internet' settings, both with 'Yes' selected. The 'Wifi Mode' is set to 'Access Point' in a dropdown menu. The 'SSID' field contains 'GNSS-9999979'. A 'Start' button is at the bottom.

4.7.3 Bluetooth Settings Submenu

Use this submenu to turn on/off bluetooth function and modify PIN number.

The screenshot shows the 'Bluetooth Settings' submenu. It displays 'Local Name: GNSS-9999979' and 'MAC Address: 81:00:10:06:A1:1D'. The 'PIN' field is set to '1234'. A 'Save' button is at the bottom.

4.7.4 Radio Settings Submenu

Use this submenu to turn on/off radio function and configure radio parameters.

Note:

PN: 1101020087 supports EFIX\ Transparent\ TT450\ Satel\ **EcoLink**.

Radio Settings ×

Radio Settings

Radio Status: ON ON OFF

Auto Start: ☒ Yes ☐ No

Radio Protocol: EcoLink

Radio Frequency: 1 460.200000 (410MHz—470MHz)

FEC: ☐

Save

4.7.5 IMU Settings Submenu

Use this submenu to turn on/off IMU function.

IMU Setting ×

IMU Setting

IMU Status: ☒ ON ☐ OFF

Antenna Height: 1.800

Save

IMU Init Status: IMU init fail, please shake the center bar

Lat: 31°9'34.53735557"(North)

Lon: 121°10'42.54153519"(East)

Alt: 44.921

Vertical dip: 0°25'40.75447652"

direction of dip: 325°34'2.36099476"

4.8 Firmware Menu

Use this menu to check the current firmware information, download the system log, update the receiver firmware, download, or update the configuration file and register the receiver, and more:



4.8.1 Firmware Info Submenu

Use this submenu to check the current firmware information. The following figure shows an example of the firmware information.



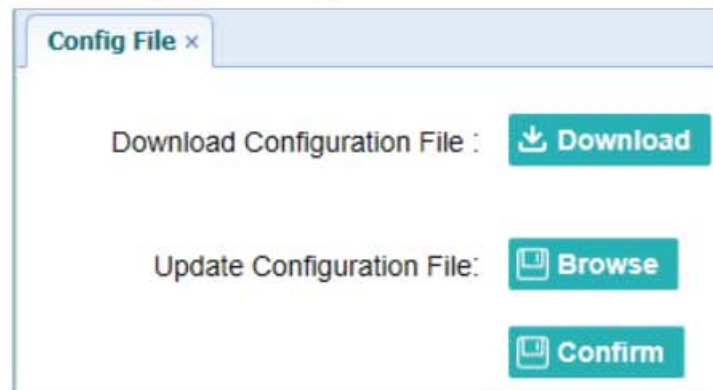
4.8.2 Hardware Version Submenu

Use this submenu to check the hardware information, including main board version and core board version:



4.8.3 Config File Submenu

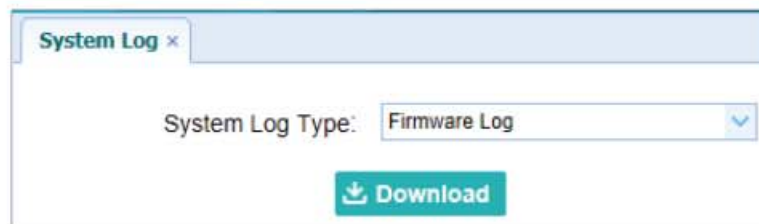
Use this submenu to update Configuration File.



The screenshot shows a web interface for the 'Config File' submenu. It has a title bar 'Config File x'. Below the title bar, there are two main sections. The first section is 'Download Configuration File :', followed by a green button with a download icon and the text 'Download'. The second section is 'Update Configuration File:', followed by a green button with a folder icon and the text 'Browse', and then another green button with a folder icon and the text 'Confirm'.

4.8.4 System Log Download Submenu

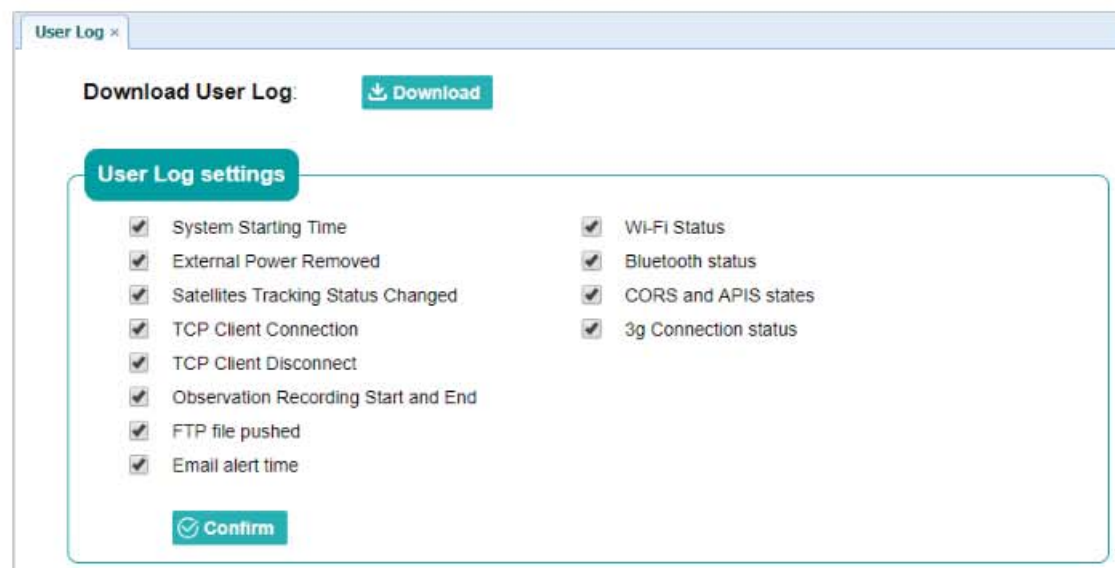
Use this submenu to download the system log of the receiver.



The screenshot shows a web interface for the 'System Log' submenu. It has a title bar 'System Log x'. Below the title bar, there is a label 'System Log Type:' followed by a dropdown menu showing 'Firmware Log'. Below the dropdown menu is a green button with a download icon and the text 'Download'.

4.8.5 User Log Submenu

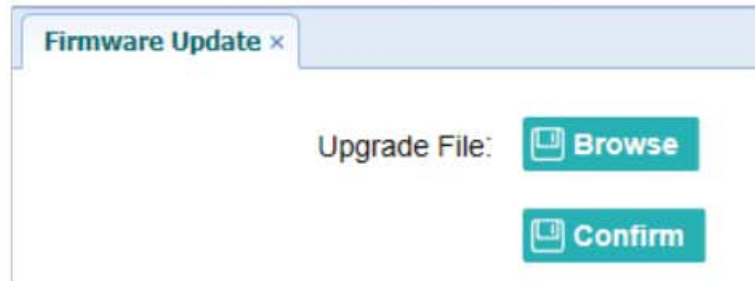
Use this submenu to download the user log. Tap **Download** to download current user log; Tick items that you want to see on the user log and tap confirm button to confirm selected user log.



The screenshot shows a web interface for the 'User Log' submenu. It has a title bar 'User Log x'. Below the title bar, there is a section 'Download User Log:' followed by a green button with a download icon and the text 'Download'. Below this is a section titled 'User Log settings' in a rounded rectangle. Inside this section, there are two columns of checkboxes, all of which are checked. The first column includes: 'System Starting Time', 'External Power Removed', 'Satellites Tracking Status Changed', 'TCP Client Connection', 'TCP Client Disconnect', 'Observation Recording Start and End', 'FTP file pushed', and 'Email alert time'. The second column includes: 'Wi-Fi Status', 'Bluetooth status', 'CORS and APIS states', and '3g Connection status'. At the bottom of the 'User Log settings' section is a green button with a checkmark icon and the text 'Confirm'.

4.8.6 Firmware Update Submenu

Use this submenu to load new firmware to the receiver across the network. Tap the **Browse** button to locate the upgrade file → tap **Confirm** button to confirm the selected upgrading file and start upgrading.

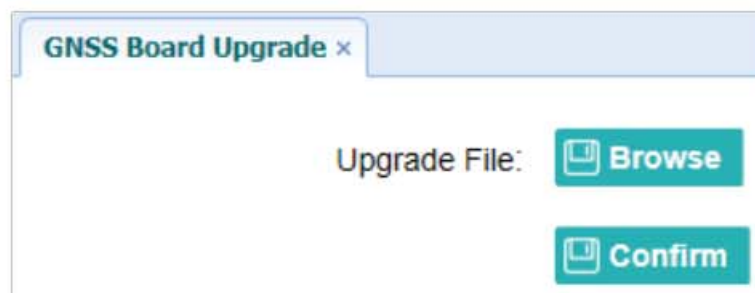


Notes

- It may take about 3 or 4 minutes to complete the firmware upgrading. Do not touch the power button or unplug the power until the upgrading process finishes, or damage will be caused to the receiver.
- The receiver will restart after the firmware upgrading is done, so users need to reconnect the receiver with your computer via Wi-Fi, and then log-in the receiver through a web browser to continue the configuration.

4.8.7 GNSS Board Upgrade Submenu

Use this submenu to upgrade GNSS Board. Use this submenu to load new board to the receiver across the network. Tap the **Browse** button to locate the upgrade file → tap **Confirm** button to confirm the selected upgrading file and start upgrading.



4.8.8 GNSS Registration Submenu

Use this submenu to register the receiver. Paste or enter the registration code to the *Registration Code* field → tap **Registration** button to complete the registration.

GNSS Registration ×

Serial Number:	9999979
Registration Limit:	2023-4-30
Registration Code:	a8vBWATwjM6

 **Registration**

Farnav

Room 301, 3rd Floor, Building 2,577 Songying, Road Qingpu District,
Shanghai, China

Email: sales@efix-geo.com | support@efix-geo.com

Website: www.efix-geo.com