EFIX F8L GNSS

USER GUIDE

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Stronger signal, easy to fix

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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

The Global Navigation Satellite System (GNSS) comprises several distinct satellite constellations, each of which is under the jurisdiction of a specific government entity. These entities bear the sole responsibility for ensuring the accuracy of their respective systems and for maintaining the integrity of their satellite networks.

Do not rely solely on the device for critical navigation decisions. The GNSS signals may be affected by atmospheric conditions, satellite availability, signal blockage, etc.

Be aware of the limitations of GNSS accuracy. It provides positioning information with a certain level of accuracy, but errors (including manual error) and deviations can occur.

Avoid prolonged exposure to strong magnetic fields, as they may interfere with the operation of the device and affect its accuracy.

Do not dismantle or modify the device. Any unauthorized modification may result in malfunction or damage and void the warranty.

CAUTION - Class 3R LASER RADIATION WHEN OPEN AVOID DIRECT EYE EXPOSURE.

Follow all instructions provided in the user manual for proper handling, charging, and maintenance.

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 (2) 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.

CE Interference Starement

Declaration of Conformity: Hereby, EFIX Geomatics Co., LTD. declares that this F8L 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 nÃao tem direito à protecao contra interferência prejudicial e nao pode causar interferência em sistemas devidamente autorizados. Para maiores informacöes, consulte o site da ANATEL-www.anatel.gov.br.

1 Introduction

The F8L 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 F8L 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

1.1.1Warnings 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 F8L 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.

1.2.1Use 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 F8L

2.1 About the Receiver

The new F8L GNSS receiver offers integrated IMU-RTK technology to provide a robust and accurate GNSS positioning in any circumstances. Unlike the standard MEMS based GNSS receivers, the F8L GNSS IMU-RTK combines state-of-the-art GNSS RTK engine, calibration-free professional IMU sensor and advanced GNSS tracking capabilities. Survey projects are achieved with high productivity and reliability pushing the boundaries of conventional GNSS RTK survey.

The LED panel enables user to check satellite-tracking status, internal battery status, working mode, and data logging status. Bluetooth and Wi-Fi technology provides cable-free communication between the receiver and controller.

The receiver can be used as the part of an RTK GNSS system with EFIX 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

The operating controls are all located on the front panel. Type-C port ,SMA port and connectors 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 four indicator LEDs and two 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 ≥20 %, the indicator stays solid green. •If the internal battery is <20 % but >10 %, the indicator stays solid red. •If the internal battery is ≤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.

2.2.2 Lower Housing

The lower housing contains one TNC radio antenna connector(SMA port) and one USB type C communication port.

2.2.3 Receiver Ports

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 an 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 EFIX 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 EFIX 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 F8L 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
F8L GNSS Receiver	
SMA Whip Antenna(410-470MHz)	
Power Adapter	
USB Type-C	
H.I. Tape	
Extension pole(30cm)	
Tribrach with optical plummet	
Auxiliary H.I. Tool	
Tribrach Adaptor	
Transport Hard Case	

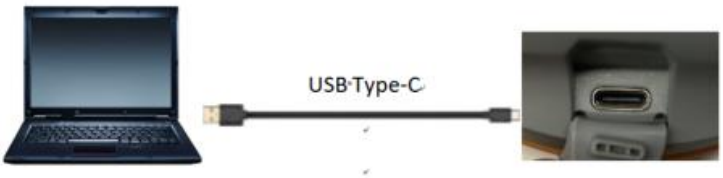
2.4.2 Rover Kit Basic Supply

Item	Picture
F8L GNSS Receiver	
SMA Whip Antenna(410-470MHz)	
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:

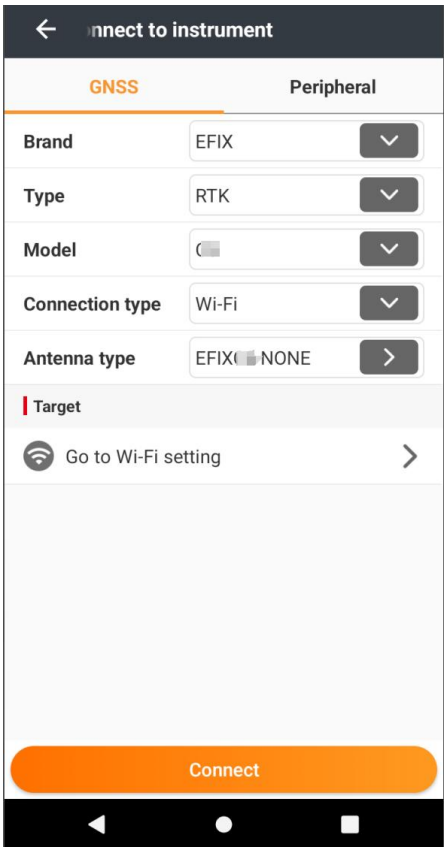


2.6 Connecting to a Controller

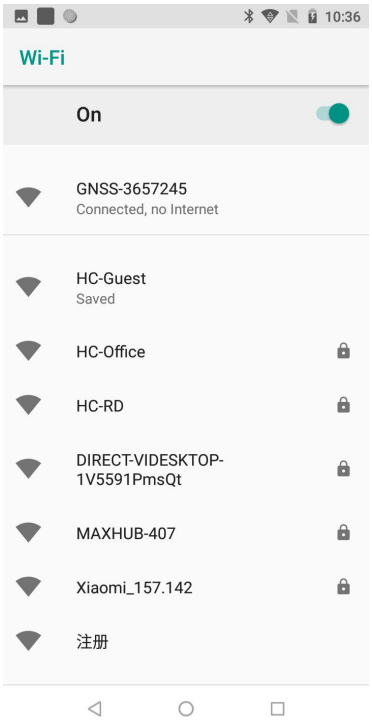
2.6.1 Connecting via Wi-Fi with eField Software

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

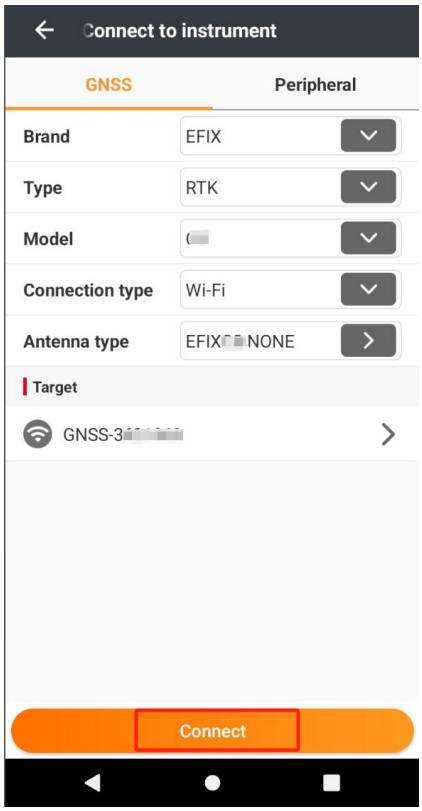
In the Connect screen, select **EFIX** for the Brand field, **F8L** for Device Type field, **WIFI** for Connection Type field.



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



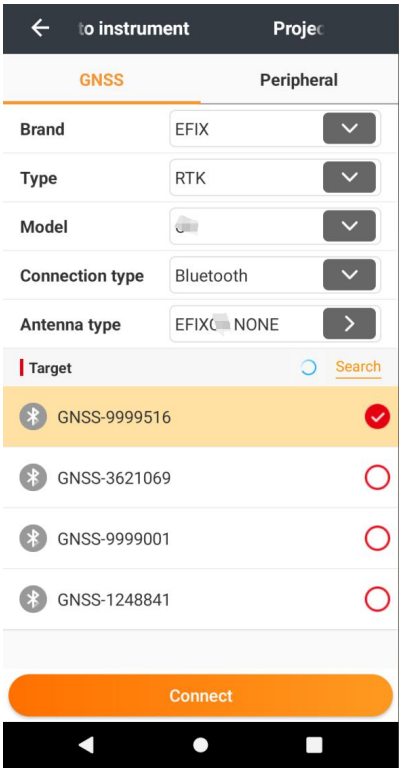
Tap the **Connect** button to build the connection.



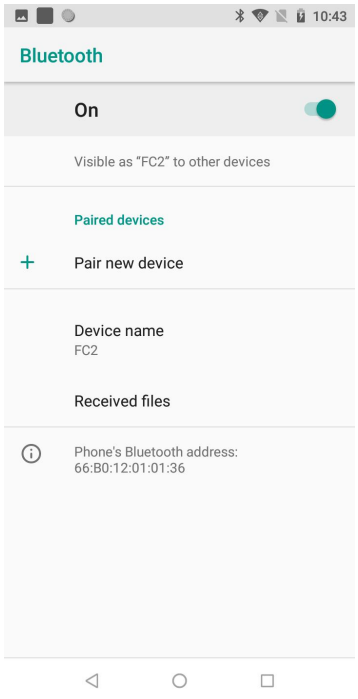
2.6.2 Connecting via Bluetooth with eField Software

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

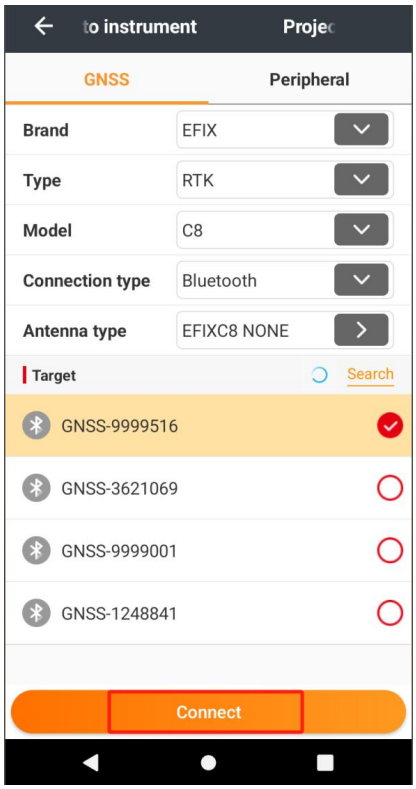
In the *Connect* screen, select EFIX for the ***Brand*** field, **F8L** for *Device Type* field, **Bluetooth** for *Connection Type* field.



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

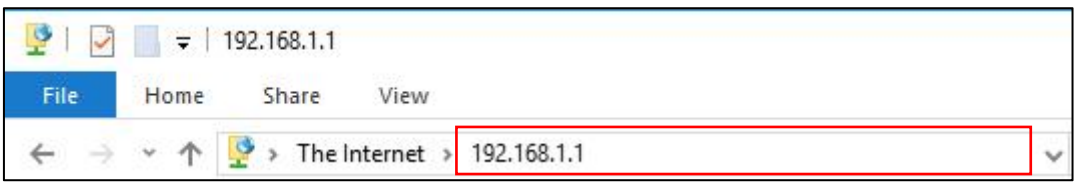
Data logging involves the collection of GNSS measurement data over a period at a static point or points, and subsequent post-processing of the information to accurately compute baseline information. Data logging using receivers requires access to suitable GNSS post-processing software such as the eOffice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

2.7.1 FTP Download

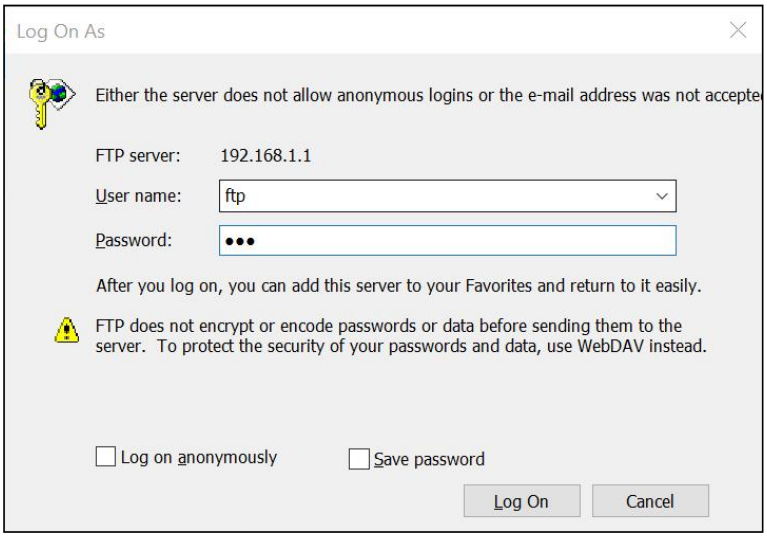
The procedures of downloading logged data through FTP are as follows:

(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 2 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 F8L system automatically and named by the date which is decide by GPS time when you start to log data.

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

(7)

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

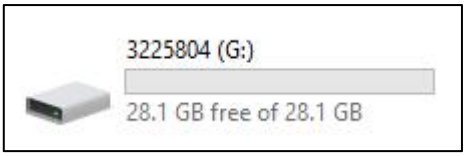
Notes: For ecn files, the name of the file is represented as XXXXXXDDDNN, where XXXXXX is the SN of the receiver, DDD is day of year, and NN is the recording session.

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.

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 2 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 F8L 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.

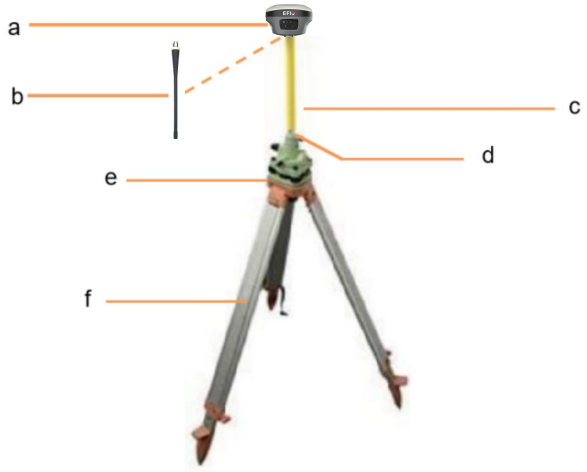
WARNING – The static data will be saved in the first logging session, the "record_1" folder, by default. Old files will be deleted if the storage space is full. If you configure not to auto delete old files when the memory is low, the receiver will stop data logging.

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	F8L 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

No.	Name
a	F8L GNSS receiver
b	2M range pole w/bag

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.

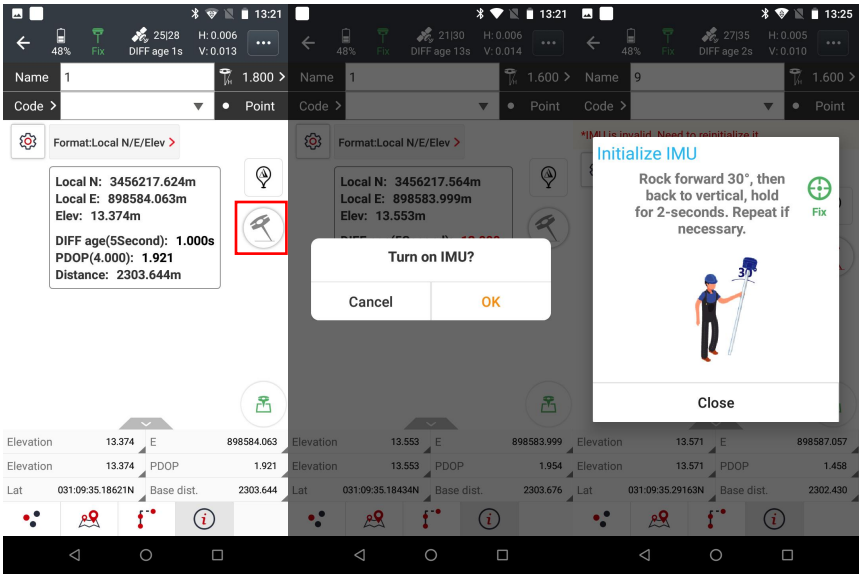
3.3 Working with the Tilt Compensation

After enable the tilt survey, the F8L with the Auto-IMU can be ready after a few steps walk or a bit movement automatically.

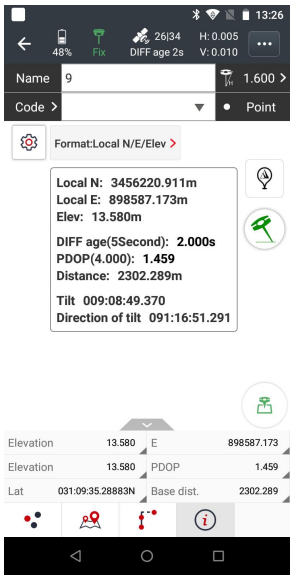
3.3.1 Operation Steps

(1) Open eField-> Tap PT Survey-> Tap to activate tilt measurement.

(2) Shake around according to the procedures in the interface to do initialization.

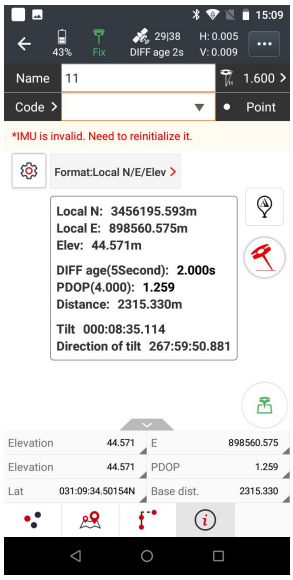


(3) This icon will appear when the initialization is successful.



(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.

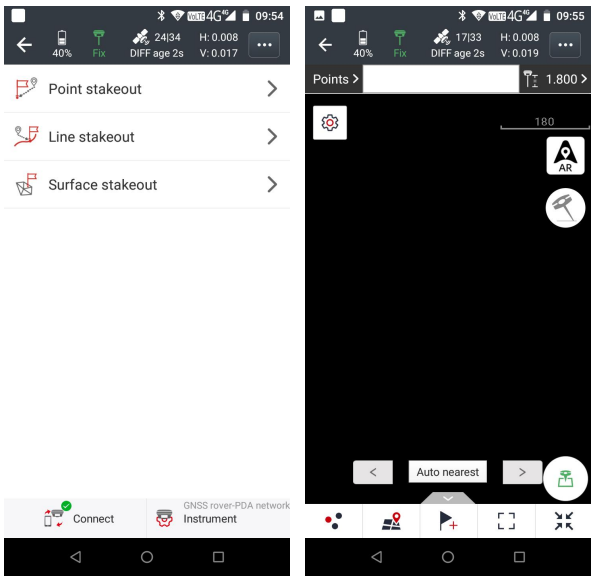
5. Initialization is required:

- 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.

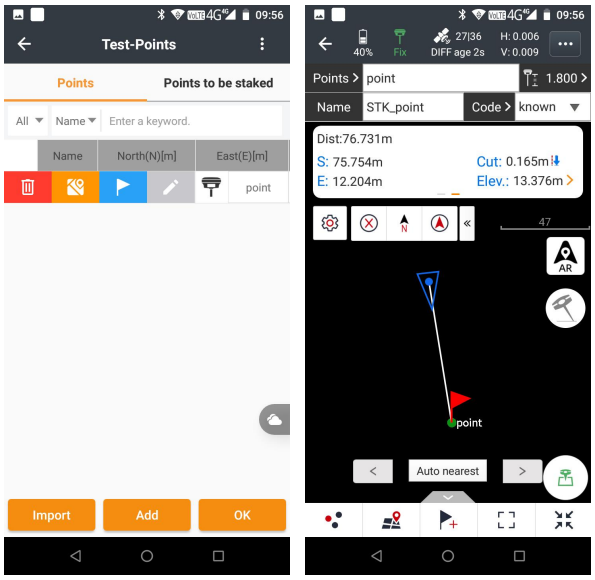
3.4 Working with the Vision Camera

3.4.1 Vision Stakeout Operation Steps

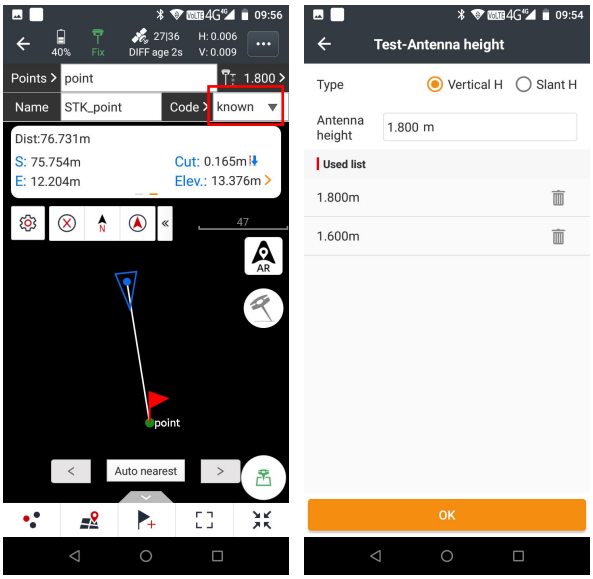
(1)Open eField-> Tap Stakeout-> Tap Point stakeout （Here take point stakeout as an example, currently also supports Line stakeout, CAD stakeout）



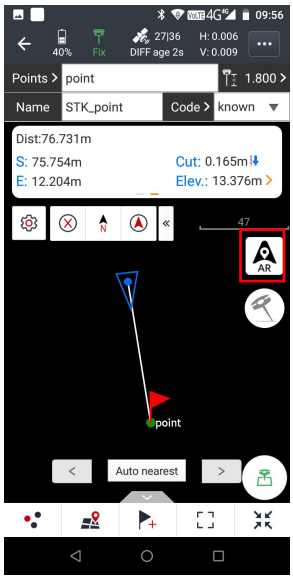
(2)Tap points, select a stakeout point, slide right and tap stakeout



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



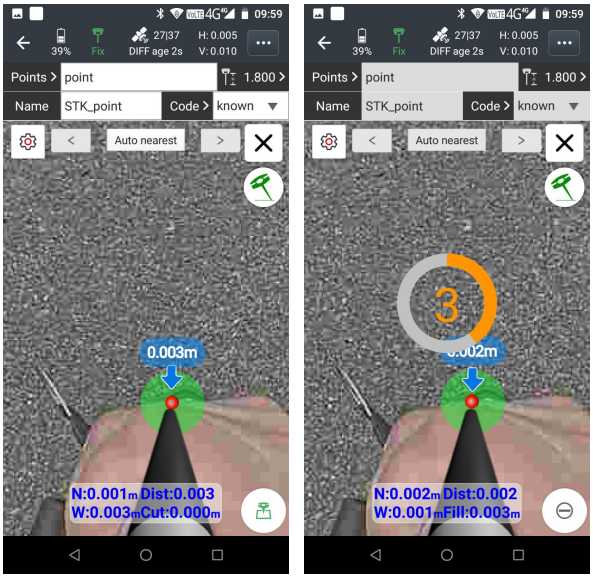
(4)Tap AR, the software will prompt you to activate tilt measurement



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

(6)If the distance to the target is less than 3.0m meters, it will automatically switch to Vision Stakeout. (The distance to use the camera can be modified in the Setting)

(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.

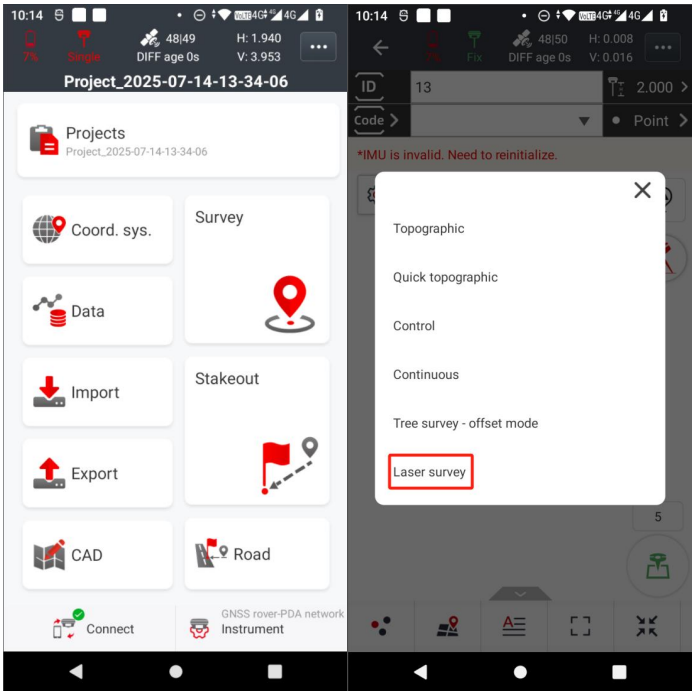
4. The pole cannot be shaken when point is collected.

5. Initialization is required:

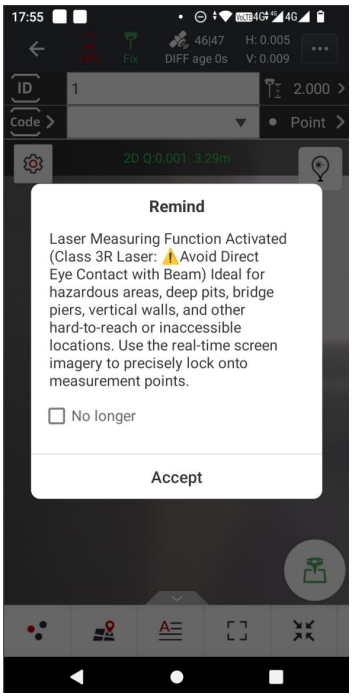
- when the RTK is turned on every time;
- when IMU module is turned on every time;
- when receiver drops at working;
- when the pole is tilted more than 65 degree;
- when the receiver is stationary more than 10 minutes;
- when the RTK rotates too fast on the matching pole (2 rounds per second);
- when 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.

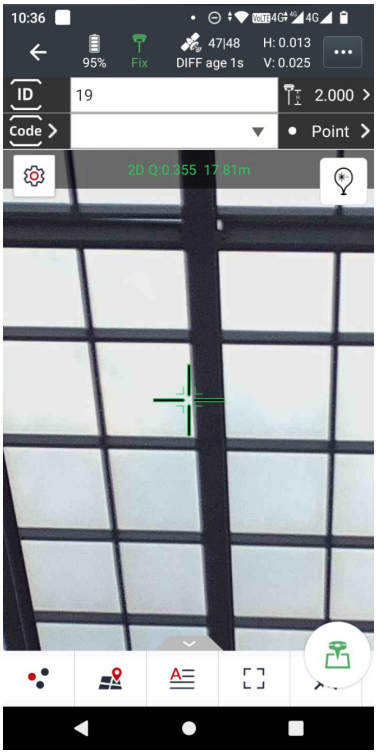


(2) After tapping Laser survey, you'll receive a safety-use notice and a laser initialization prompt. Follow the on-screen instructions to complete the laser initialization



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.



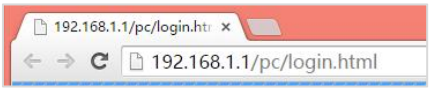
4 Configuring Through a Web Browser

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 dropdown list on the upper right corner of the web page.

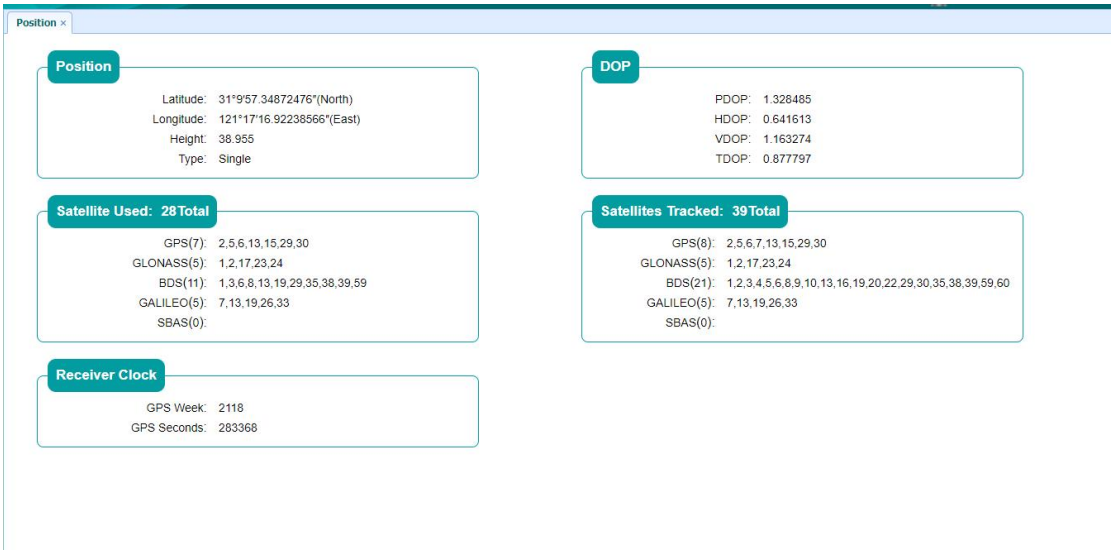
Currently, seven languages are available:

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.

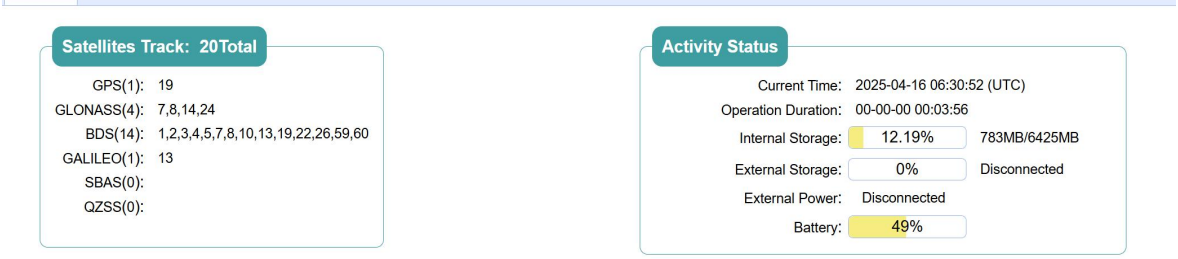
4.1.1 Position Submenu

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.



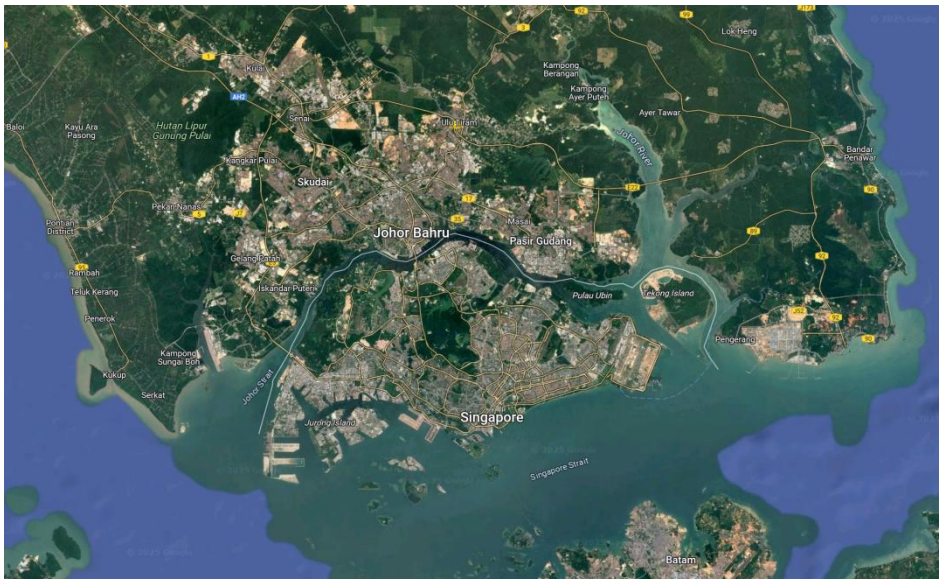
4.1.2 Activity Submenu

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:



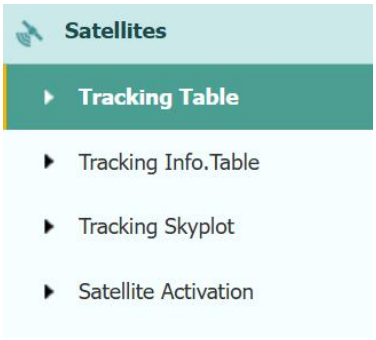
4.1.3 Google Map Submenu

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



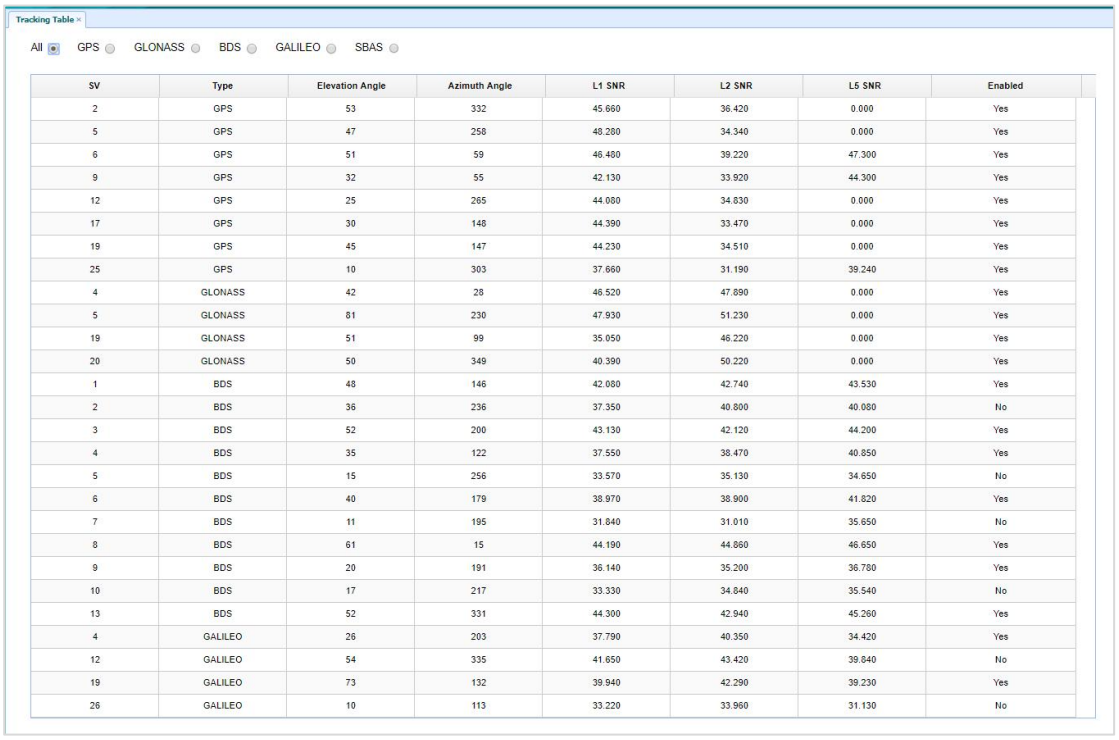
4.2 Satellites Menu

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 and enable/disable status of each one.



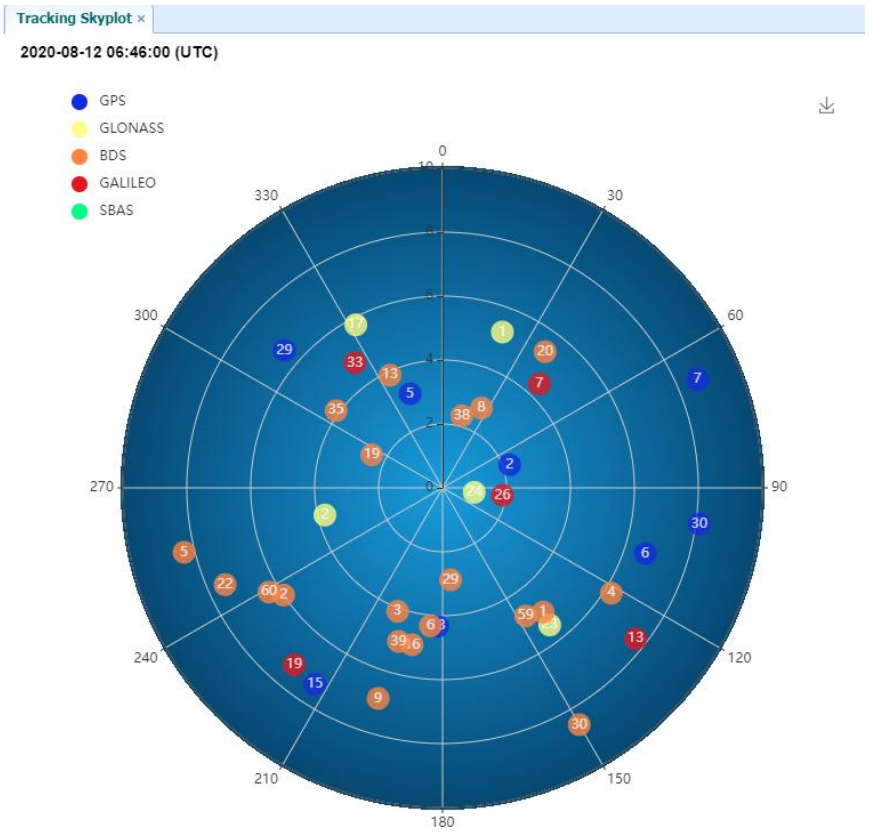
SV	Type	Elevation Angle	Azimuth Angle	L1 SNR	L2 SNR	L5 SNR	Enabled
2	GPS	53	332	45.660	36.420	0.000	Yes
5	GPS	47	258	48.280	34.340	0.000	Yes
6	GPS	51	59	46.480	39.220	47.300	Yes
9	GPS	32	55	42.130	33.920	44.300	Yes
12	GPS	25	265	44.080	34.830	0.000	Yes
17	GPS	30	148	44.390	33.470	0.000	Yes
19	GPS	45	147	44.230	34.510	0.000	Yes
25	GPS	10	303	37.660	31.190	39.240	Yes
4	GLONASS	42	28	46.520	47.890	0.000	Yes
5	GLONASS	81	230	47.930	51.230	0.000	Yes
19	GLONASS	51	99	35.050	46.220	0.000	Yes
20	GLONASS	50	349	40.390	50.220	0.000	Yes
1	BDS	48	146	42.080	42.740	43.530	Yes
2	BDS	36	236	37.350	40.800	40.080	No
3	BDS	52	200	43.130	42.120	44.200	Yes
4	BDS	35	122	37.550	38.470	40.850	Yes
5	BDS	15	256	33.570	35.130	34.650	No
6	BDS	40	179	38.970	38.900	41.820	Yes
7	BDS	11	195	31.840	31.010	35.650	No
8	BDS	61	15	44.190	44.860	46.650	Yes
9	BDS	20	191	36.140	35.200	36.780	Yes
10	BDS	17	217	33.330	34.840	35.540	No
13	BDS	52	331	44.300	42.940	45.260	Yes
4	GALILEO	26	203	37.790	40.350	34.420	Yes
12	GALILEO	54	335	41.650	43.420	39.840	No
19	GALILEO	73	132	39.940	42.290	39.230	Yes
26	GALILEO	10	113	33.220	33.960	31.130	No

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.

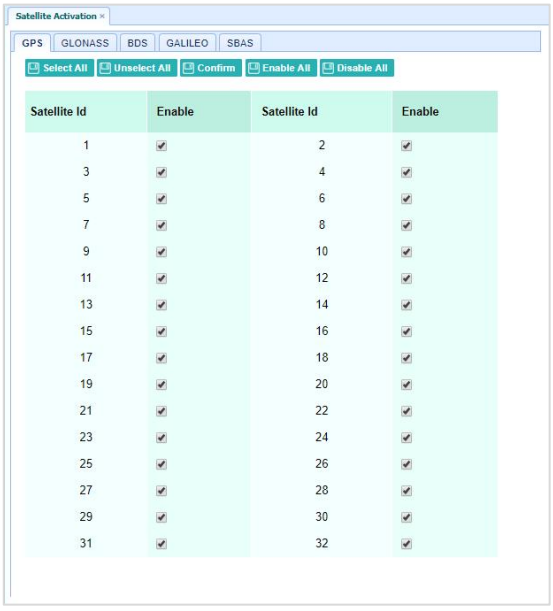
4.2.3 Tracking Skyplot Submenu

The following figure is an example of Skyplot page.



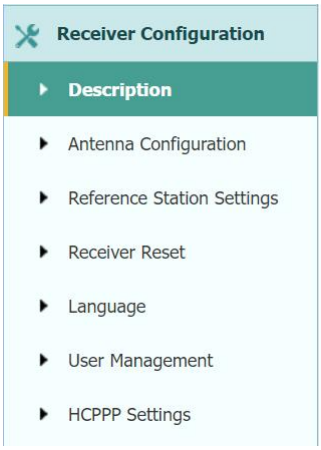
4.2.4 Satellite Activation Submenu

Use this menu to enable or disable satellites.



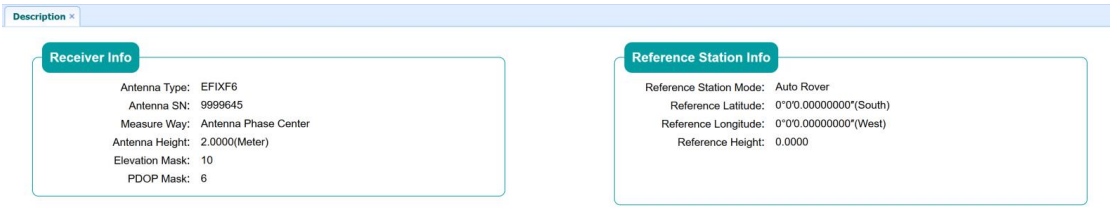
4.3 Receiver Configuration Menu

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:



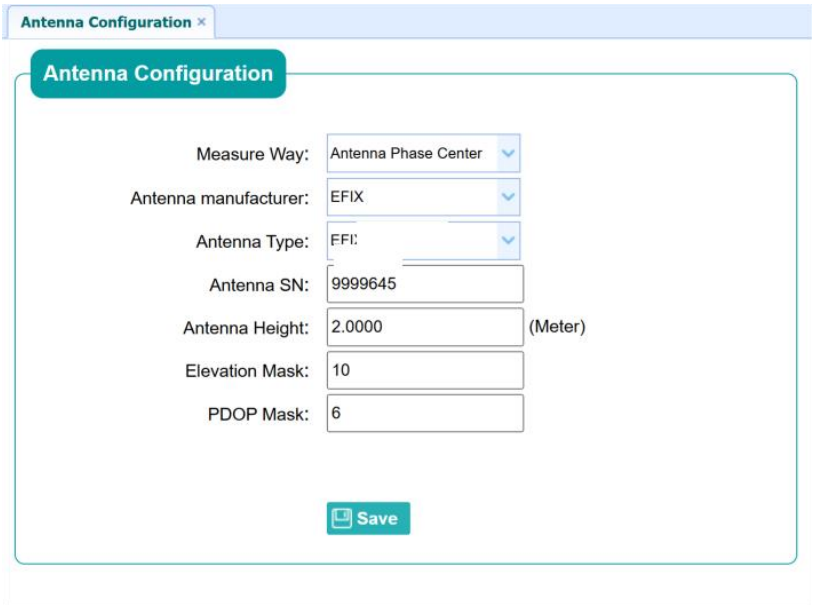
4.3.1 Description

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



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:



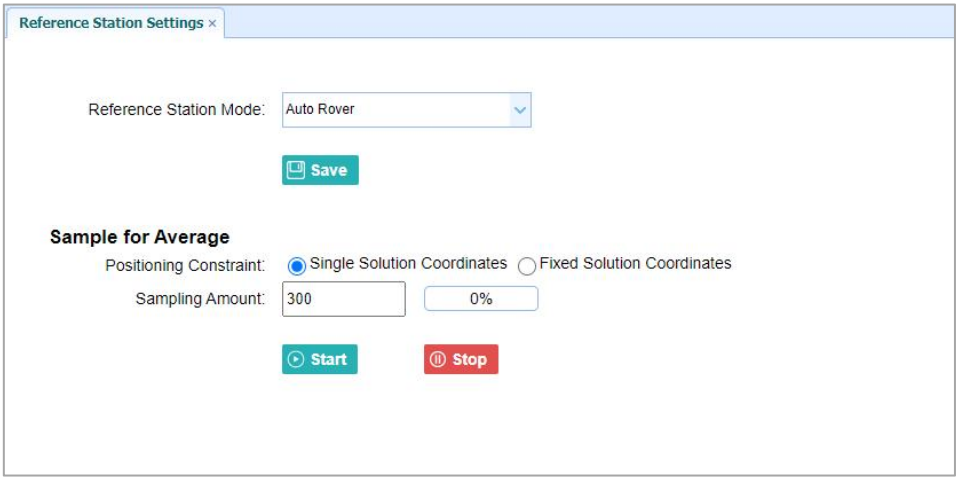
4.3.3 Reference Station Settings Submenu

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:

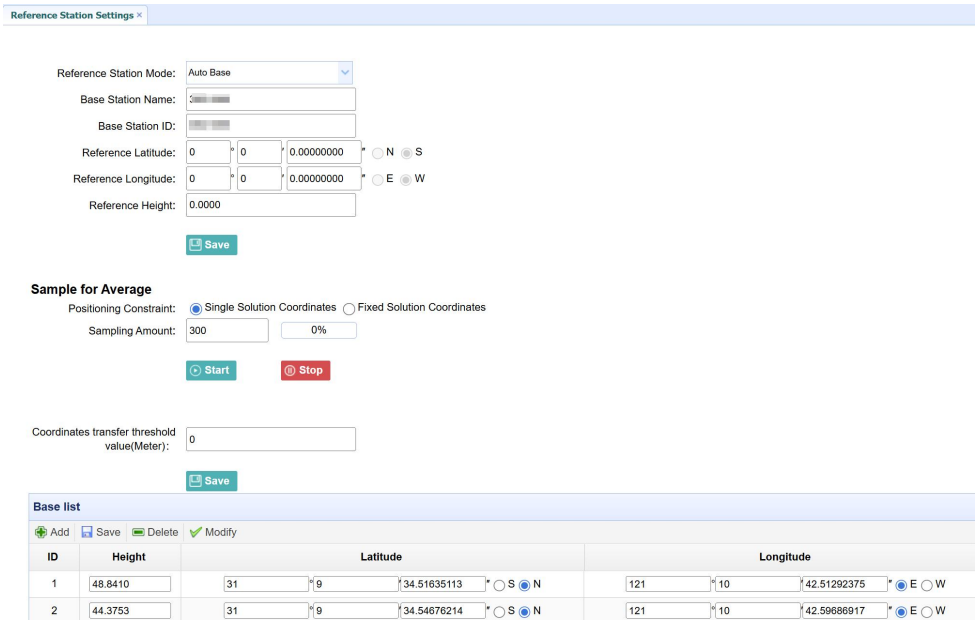
For **Reference Station Mode**:

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.

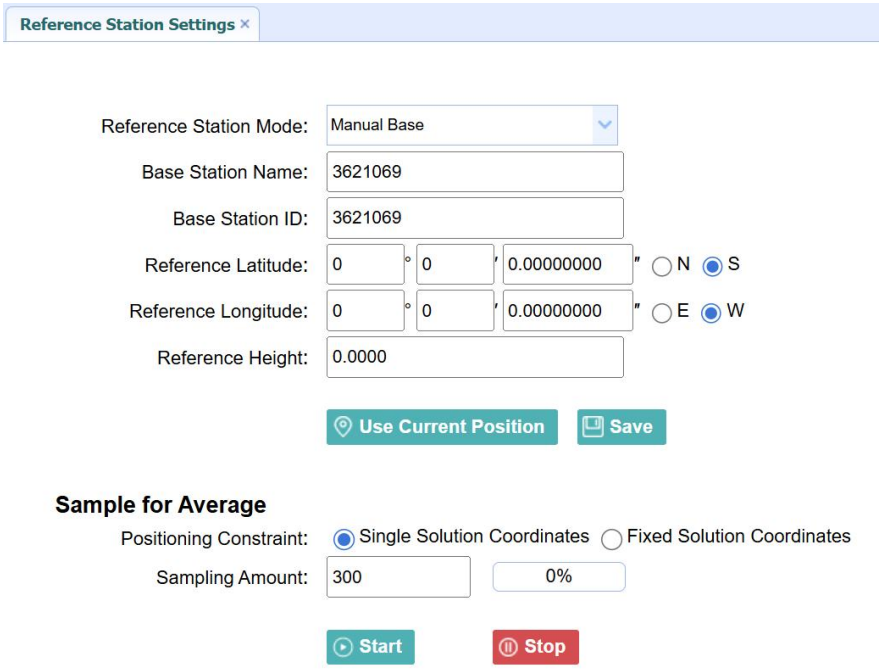


2.**Auto Base**: The receiver will serve as a base after this mode is enabled, and then broadcast correction data based on coordinate inputted by user or obtained through autonomous positioning automatically.



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:



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.

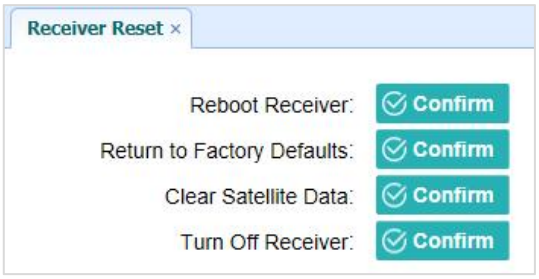
2.**Fixed Solution Coordinates**: Only collect coordinates of receiver with a fixed solution.

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

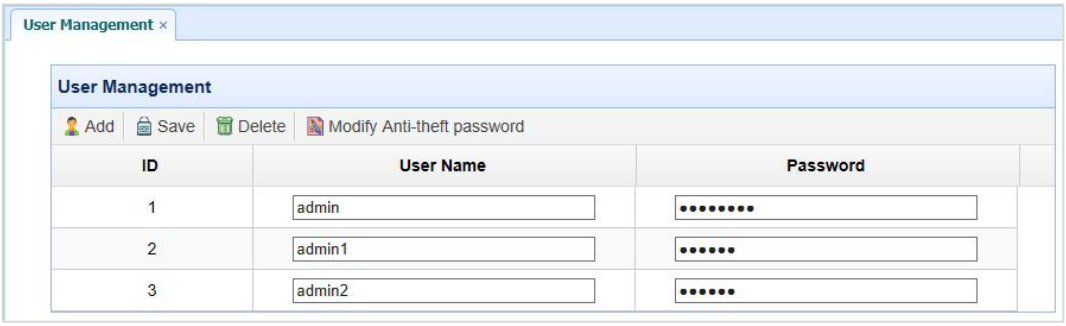
Use this screen to completely or partially reset the receiver:



4.3.5 Languages Submenu

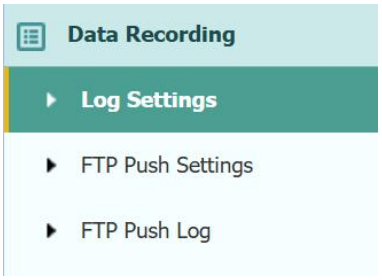
Use this screen to select the web interface language:

4.3.6 User Management Submenu



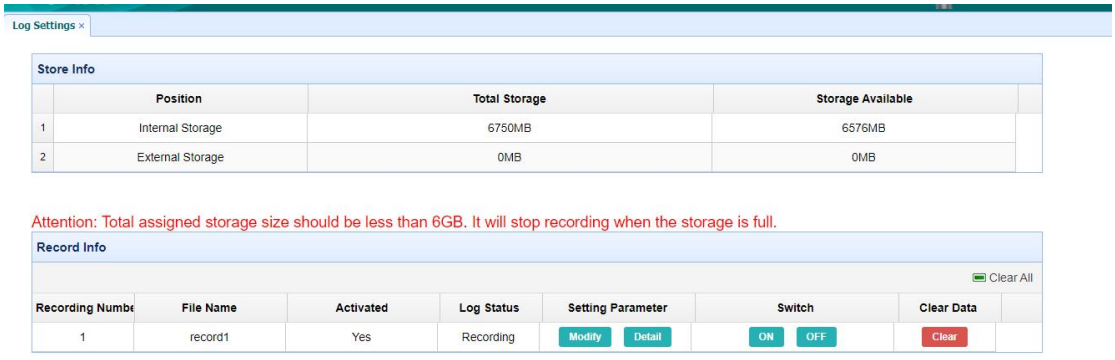
4.4 Data Recording Menu

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:

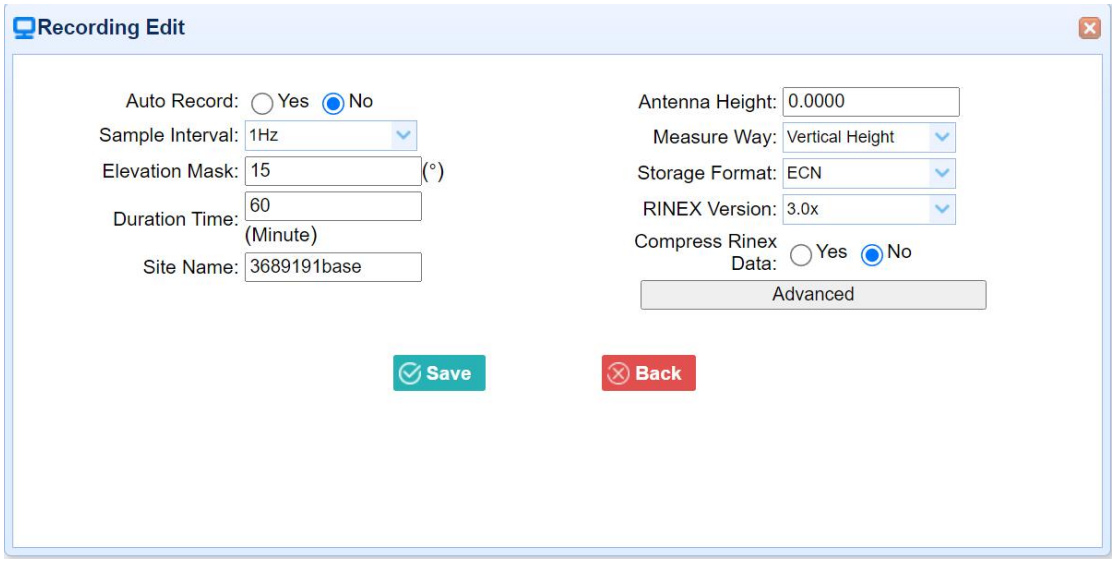


4.4.1 Log Settings Submenu

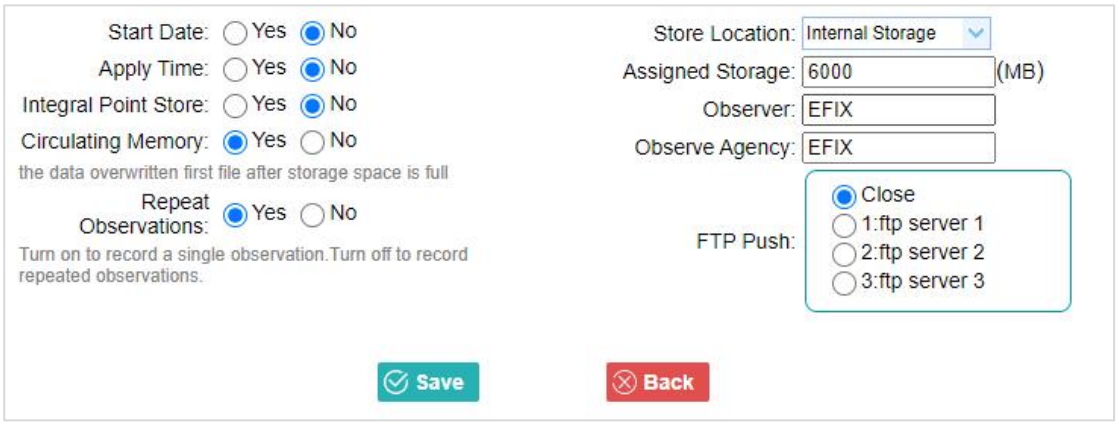
Here shows the data logging status, including internal and external storage usage and data logging status of each session. Also, users can configure the data logging settings for each session, including recording name, store location, storage limit, store formats, start time, etc.



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:



Click advanced to see more settings.



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.

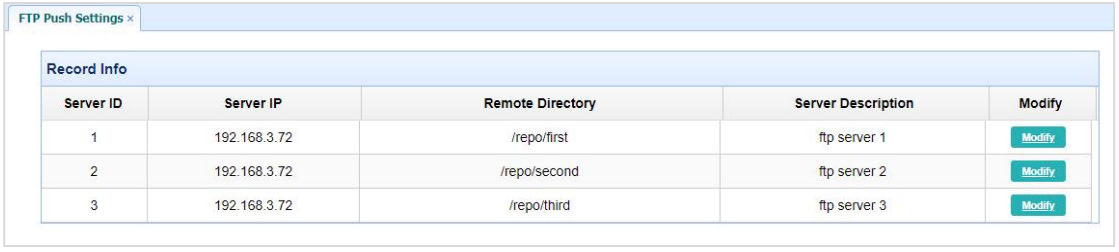
To switch on or off **ANY** data logging session, tap the **ON** or **OFF** button on the right of the required session.

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

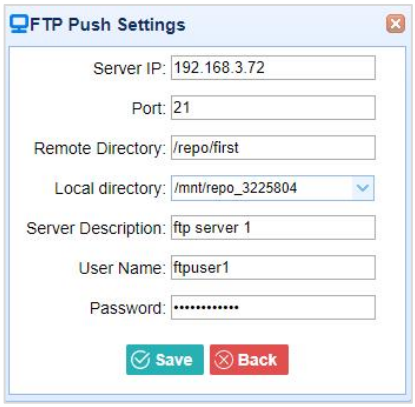
To delete the recorded files of **ALL** data logging sessions, tap the **Clear ALL Accounts** button.

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.

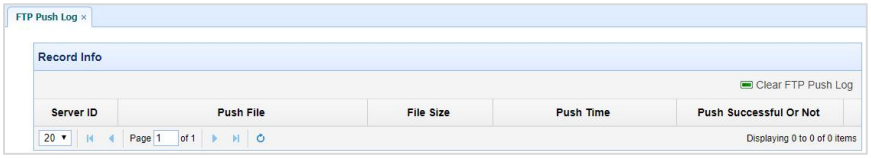


Tap **Modify** button on the right of the required FTP server and the FTP Push Settings screen appears:

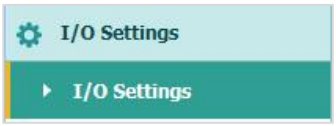


4.4.3 FTP Push Log Submenu

Shows the related information about the recorded filed 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.

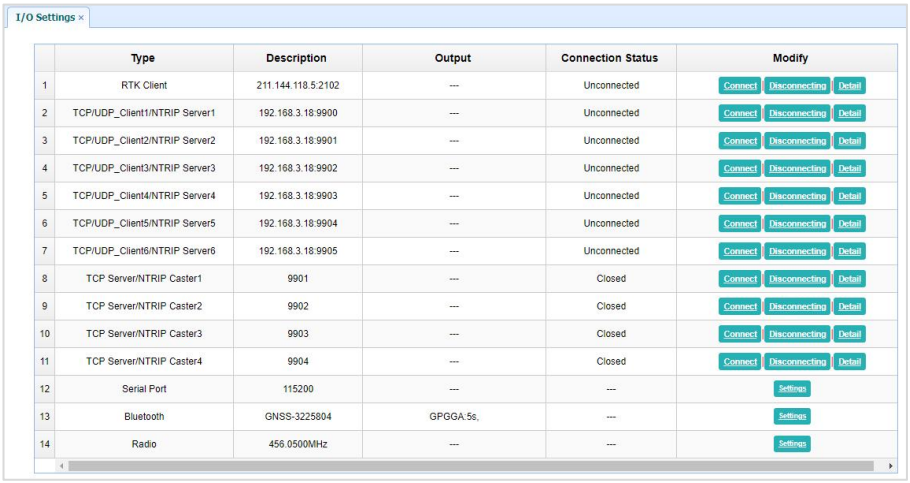


4.5 IO Settings Menu



Use the IO Settings menu to set up all receiver outputs and inputs. The receiver can output CMR, RTCM, Raw data, Ephemeris data, GPGGA, GPGSV, 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)

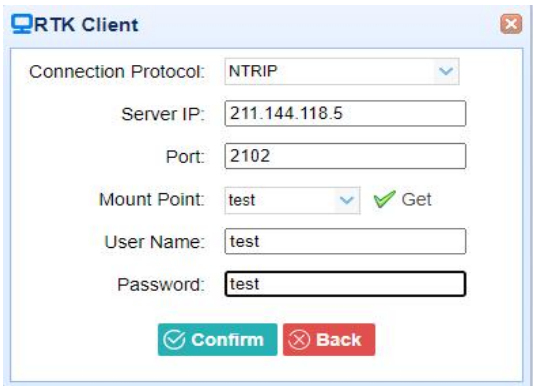


In this submenu, users can configure 6 types of input and output settings.

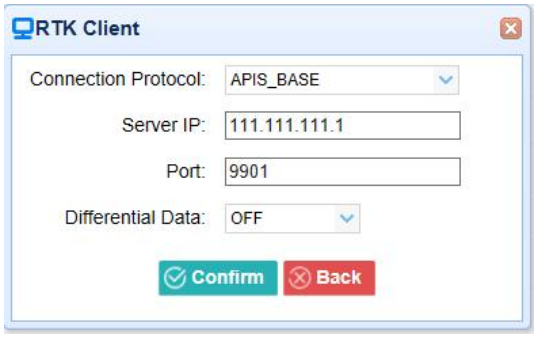
1. RTK Client

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 Confirm to log on CORS or APIS.

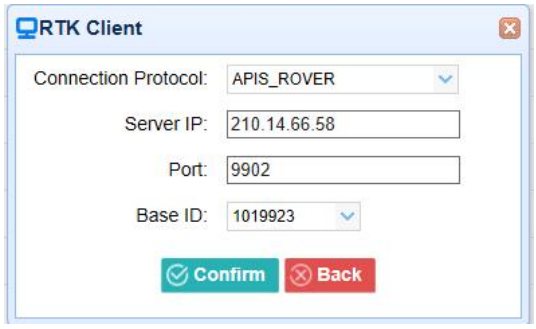
➢Connection Protocol: NTRIP



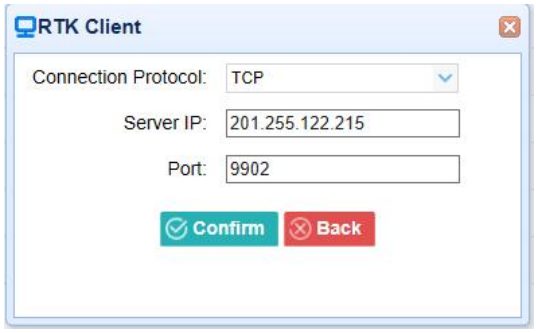
➢Connection Protocol: APIS_BASE



➢Connection Protocol: APIS_ROVER



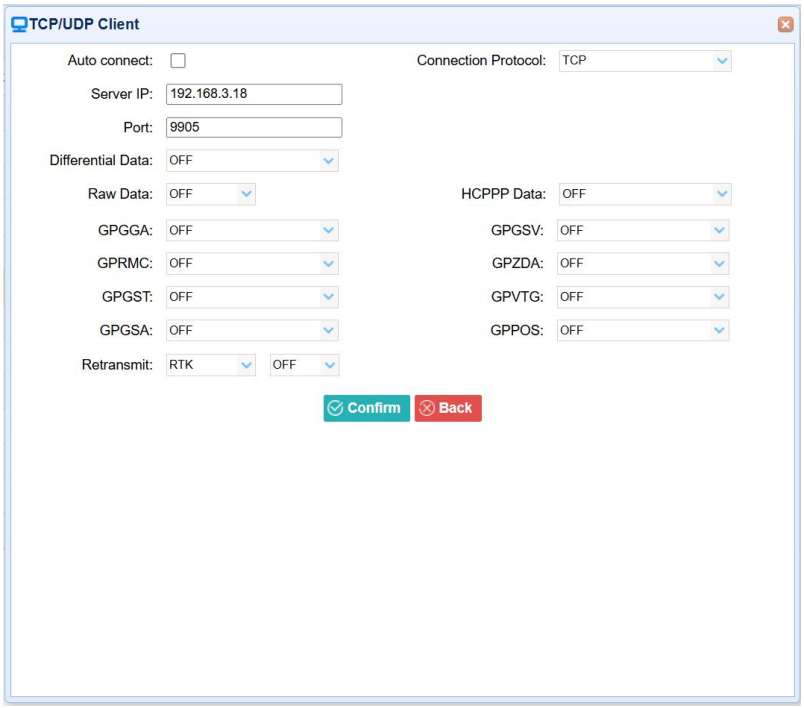
➢Connection Protocol: TCP



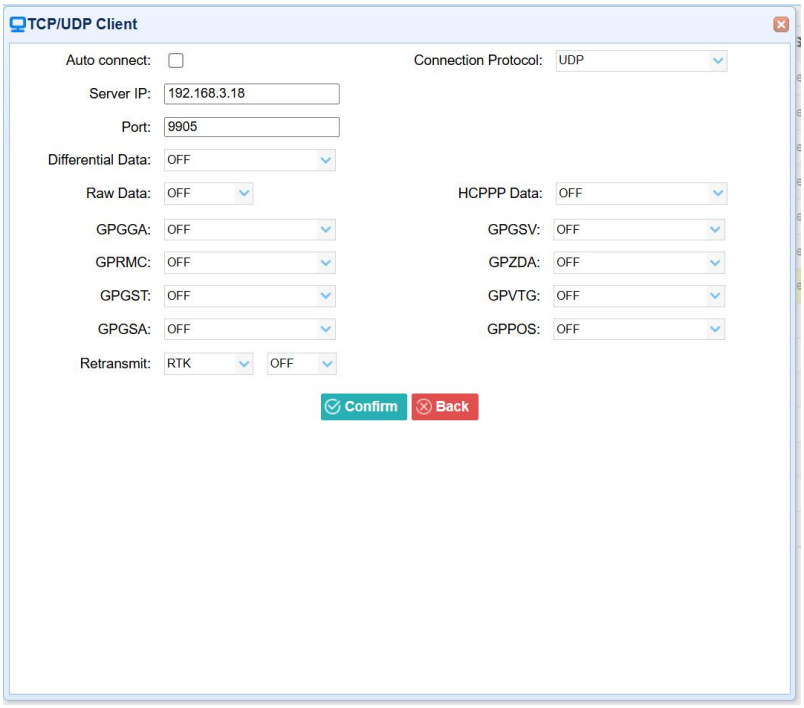
2. TCP/UDP_Client/NTRIP Server

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.

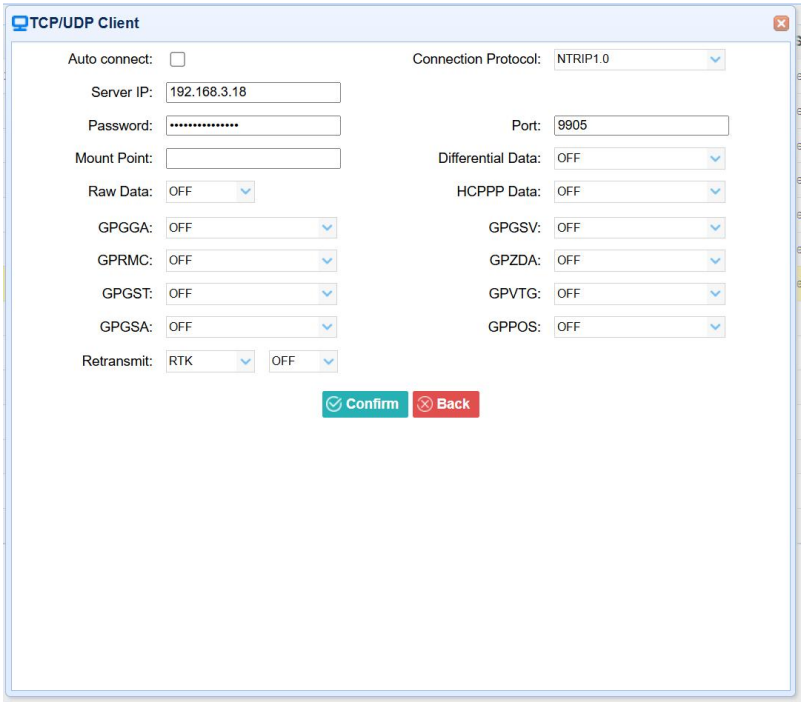
➢Connection Protocol: TCP



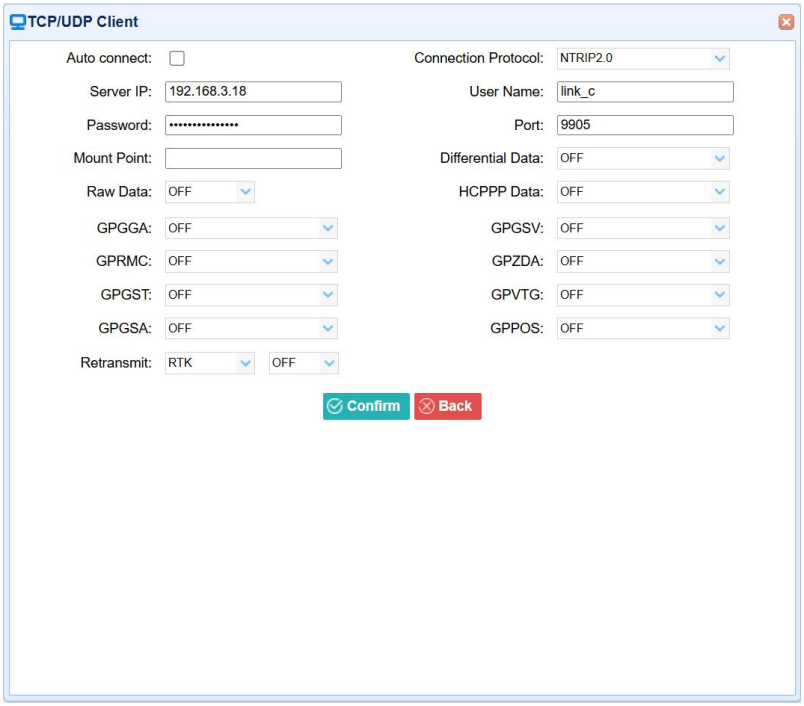
➢Connection Protocol: UDP



➢Connection Protocol: NTRIP1.0



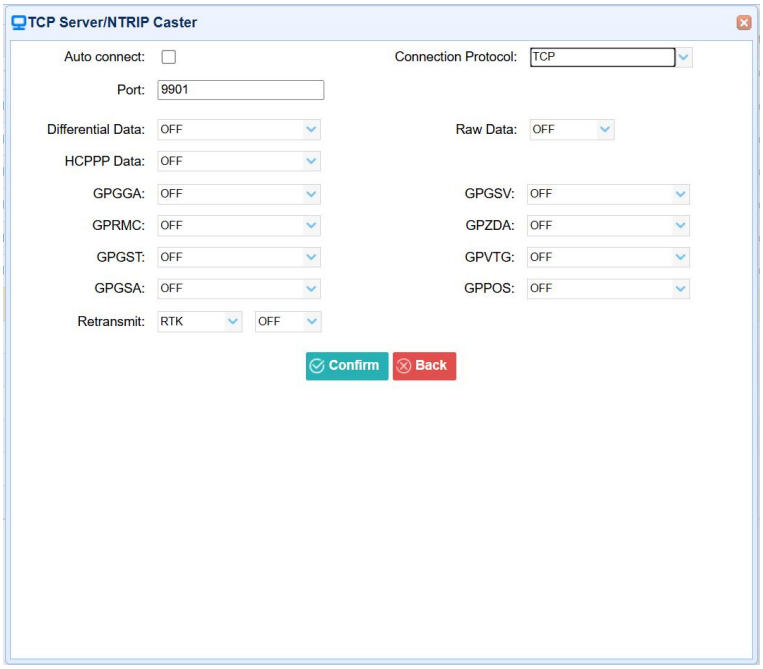
➢Connection Protocol: NTRIP2.0



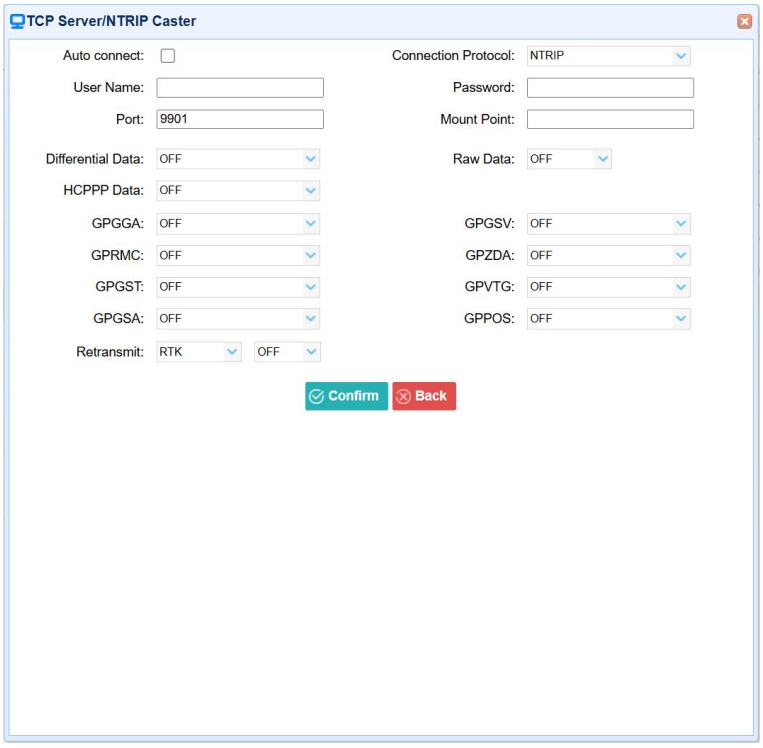
3. **TCP Server/NTRIP Caster**

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

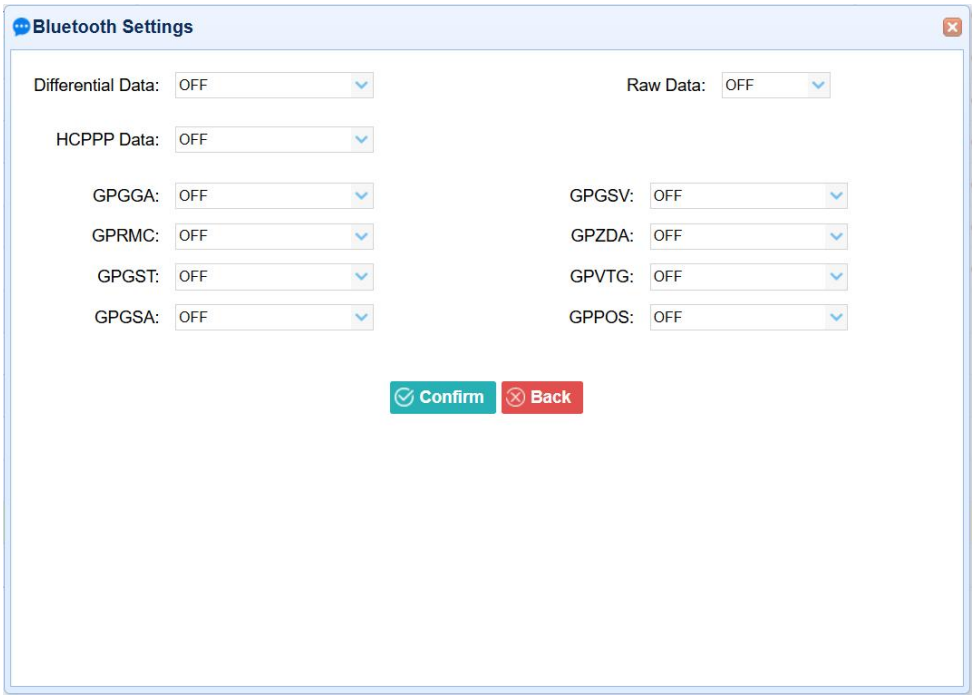


➢Connection Protocol: NTRIP



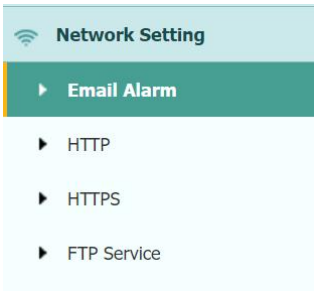
4. Bluetooth

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 Confirm to save the settings and start to transmit.



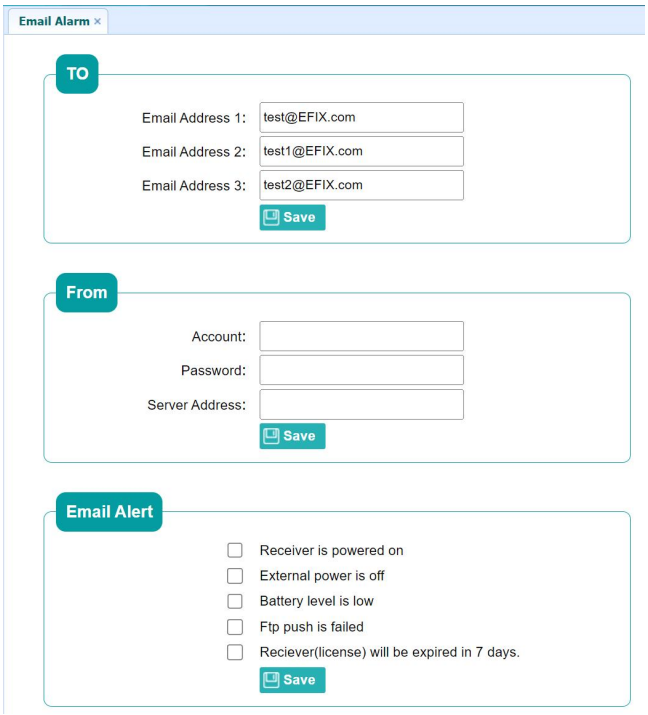
4.6 Network Setting Menu

Use this menu to set email alert for specific situation, configure HTTP or HTTPS port, and the username :



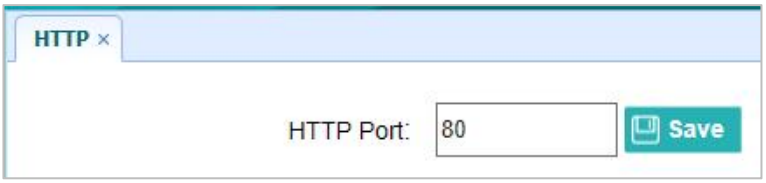
4.6.1 Email Alarm Submenu

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



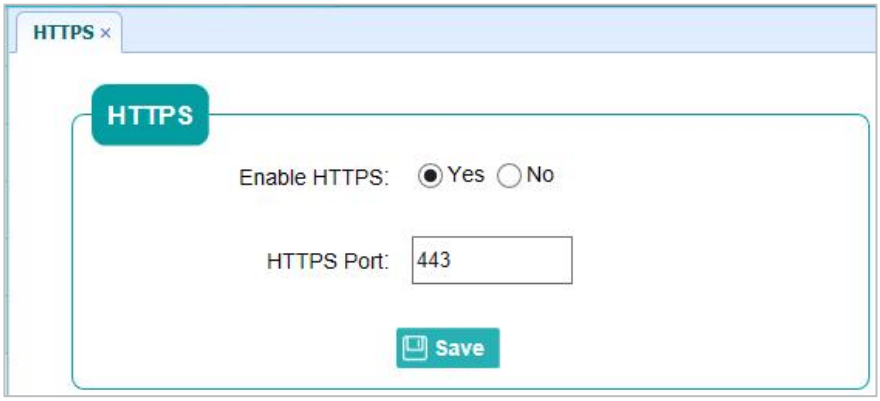
4.6.2 HTTP Submenu

Use this submenu to configure HTTP port.



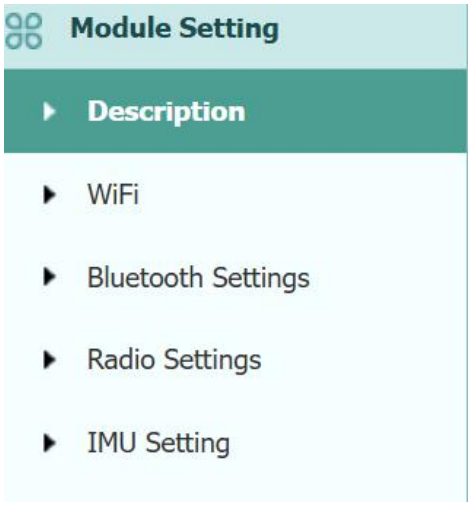
4.6.3 HTTPS Submenu

Use this submenu to configure HTTPS port.



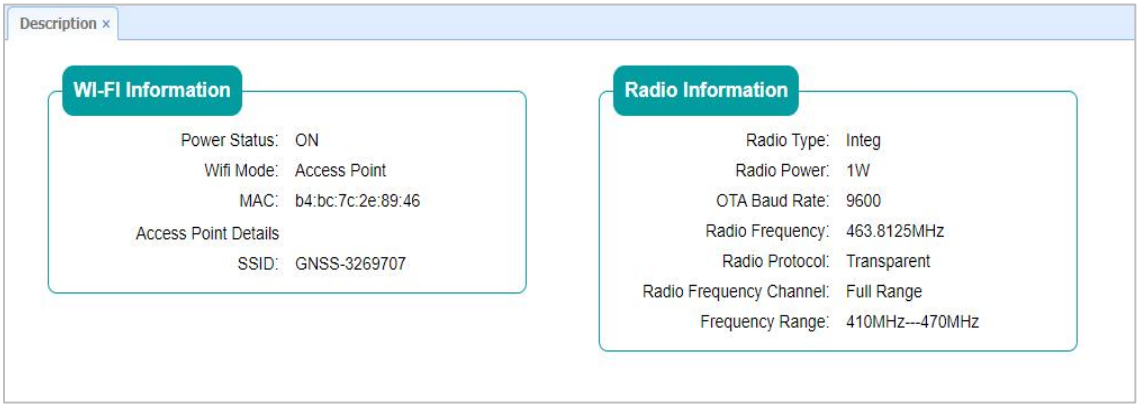
4.7 Module Setting Menu

Use this menu to check module information, configure WiFi, bluetooth, radio related settings and IMU Setting



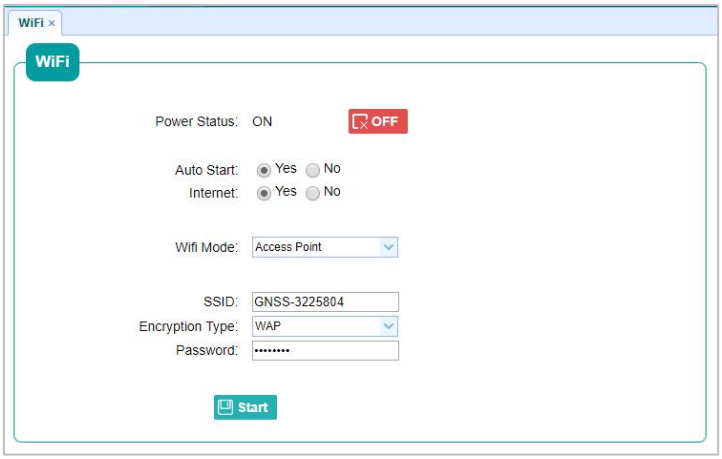
4.7.1 Description Submenu

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



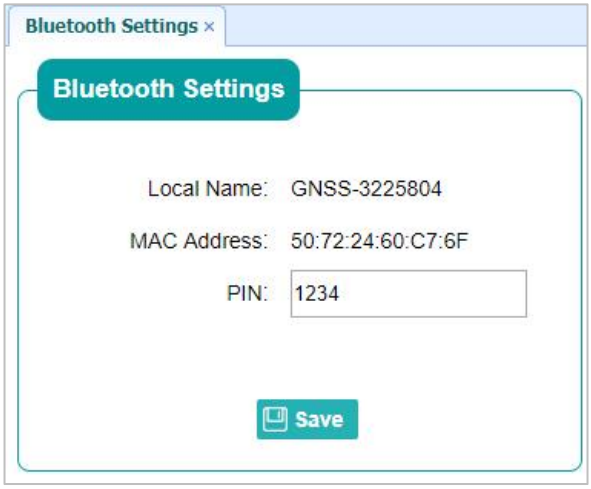
4.7.2 WiFi Submenu

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



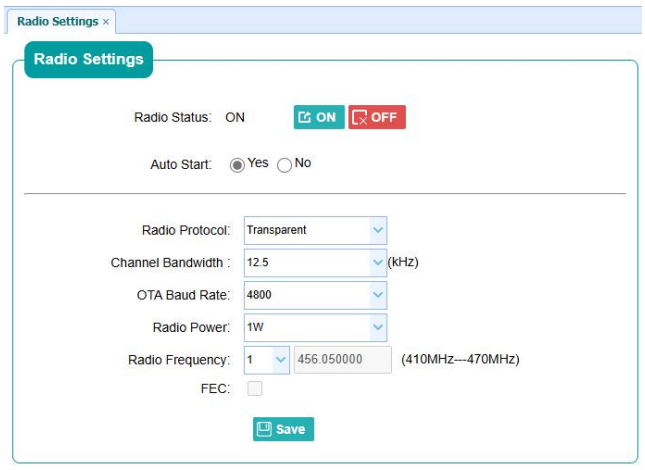
4.7.3 Bluetooth Settings Submenu

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



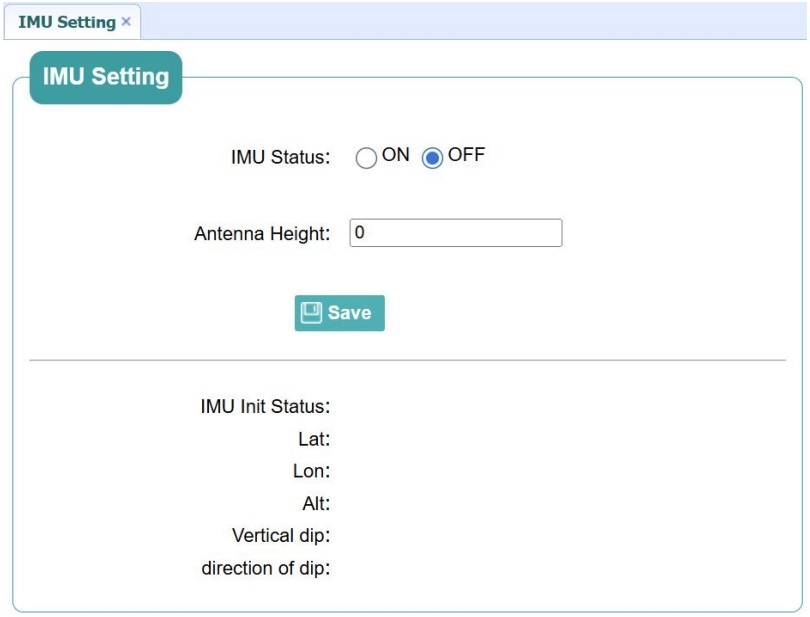
4.7.4 Radio Settings Submenu

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



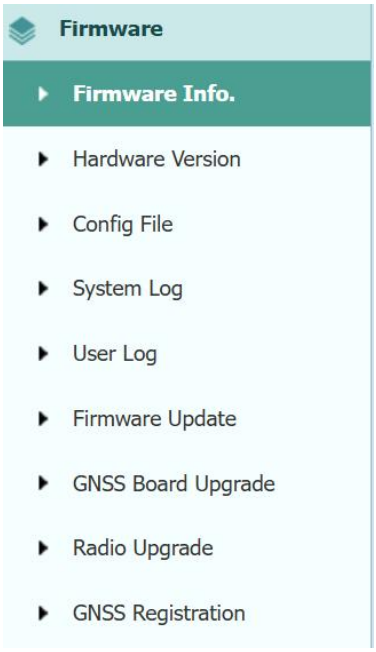
4.7.5 IMU Settings Submenu

Use this submenu to turn on/off IMU function.



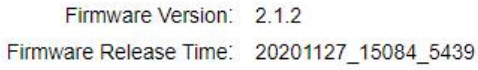
4.8 Firmware Menu

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.

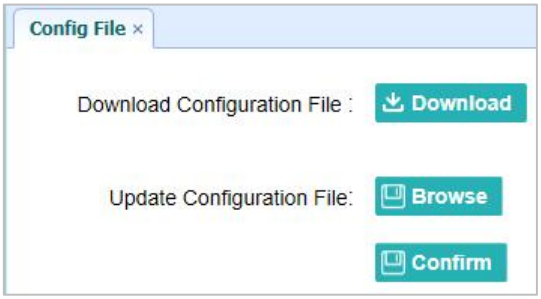


4.8.2 Hardware Version Submenu

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

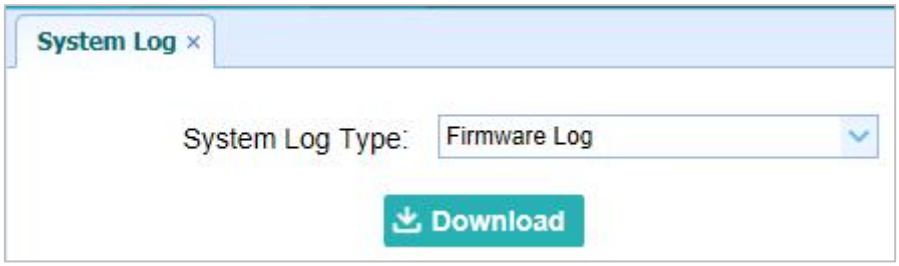
4.8.3 Config File Submenu

Use this submenu to update Configuration File.



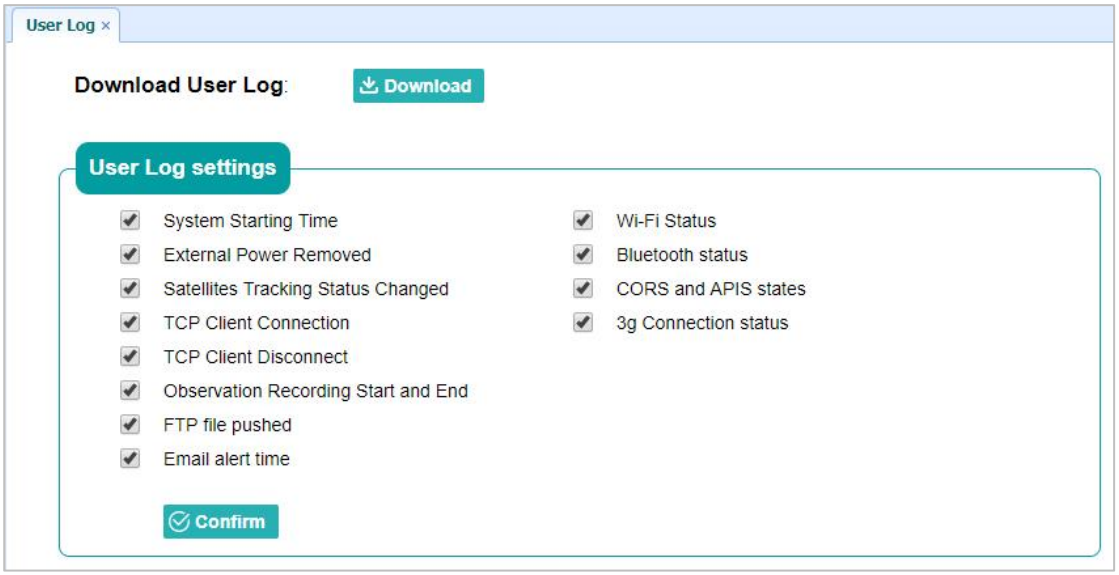
4.8.4 System Log Download Submenu

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



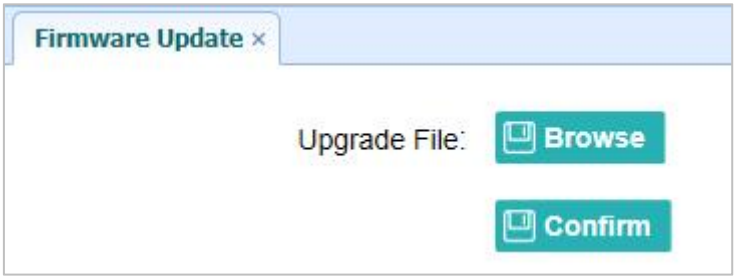
4.8.5 User Log Submenu

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.



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.



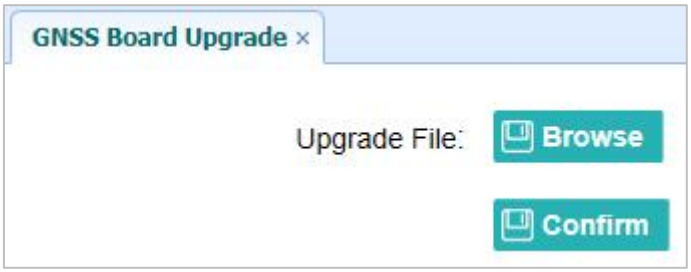
Notes

- 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.

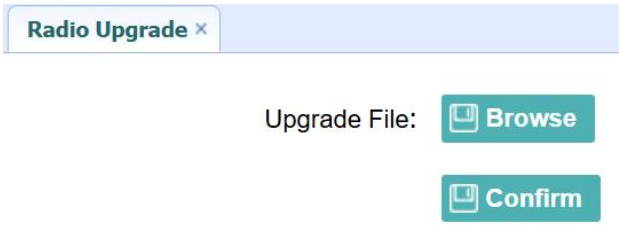
4.8.7 GNSS Board Upgrade Submenu

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.



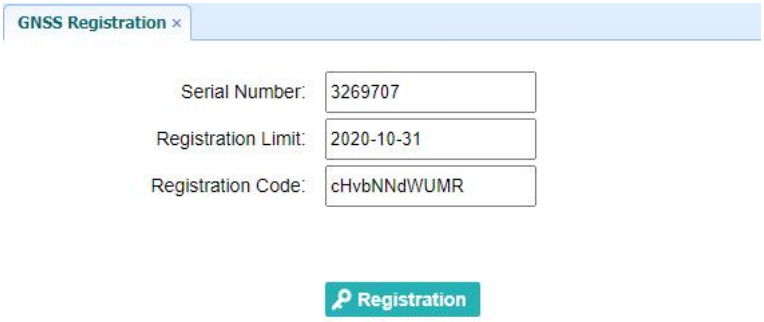
4.8.8 Radio Upgrade Submenu

Use this submenu to browse upgrade file and upgrade radio. Use this submenu to load new radio 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.



4.8.9 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.



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Website: www.efix-geo.com

FCC warning statements:

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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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.

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 50cm between the radiator & your body.