



EFIX F6 GNSS

USER GUIDE



Survey & Engineering | June 2024

Stronger signal, easy to fix

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Preface

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.

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

1 Introduction

The F6 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 F6 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 (Internal Rx Only) 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 F6 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.

1.2.1 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) or Skype ([support@efix-geo.com](https://www.skype.com/join/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 F6

2.1 About the Receiver

The new F6 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 F6 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.

Premium camera enable Visual Stakeout. 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

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.



Front panel

The front panel contains two indicator LEDs and one buttons.

Indicator light



Power Button

| Name | Description |
|--------------------------------|---|
| Indicator light | <ul style="list-style-type: none"> ✓ Indicates whether the receiver is transmitting/receiving differential data. <ul style="list-style-type: none"> •As a Base station: successfully transmitting differential data, flash yellow light. •As a Rover station: tracking satellites will flash red light, successfully receiving differential data from Base station will flash yellow light when it is single or float, flash green light when it is fixed. ✓ Shows the number of satellites that the receiver has tracked. <ul style="list-style-type: none"> •When the receiver is searching for satellites, the red LED flashes once every 5 seconds. •When the receiver tracks N satellites, the red LED blinks N times per second, pauses for 5 seconds, and then blinks N times again. ✓ Indicated charging status <ul style="list-style-type: none"> •The power light shows yellow when charging •The power light shows green when fully charged |
| Power Button (Yellow/Green) | <ul style="list-style-type: none"> •Press and hold 3s to turn on or off; •Hold down the power button for 10s, wait for the indicator to blink, and press three times to enter the recovery mode. |

2.2.2 Camera

The following two figures show the bottom view of the receiver:



Camera



2.2.3 Receiver Ports

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



SMA port

USB Type-C port

| Port | Name | Description |
|---|-----------------|---|
|  | USB Type-C port | <ul style="list-style-type: none"> •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 | <ul style="list-style-type: none"> •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 receiver by the USB Type-C Cable + Power Adapter.

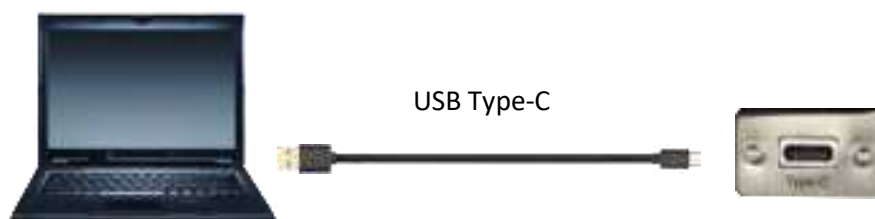
The Power Adapter is connecting with AC power of 100-240V, the output port of the Power Adapter connects with the USB Type-C Cable.



2.4 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:



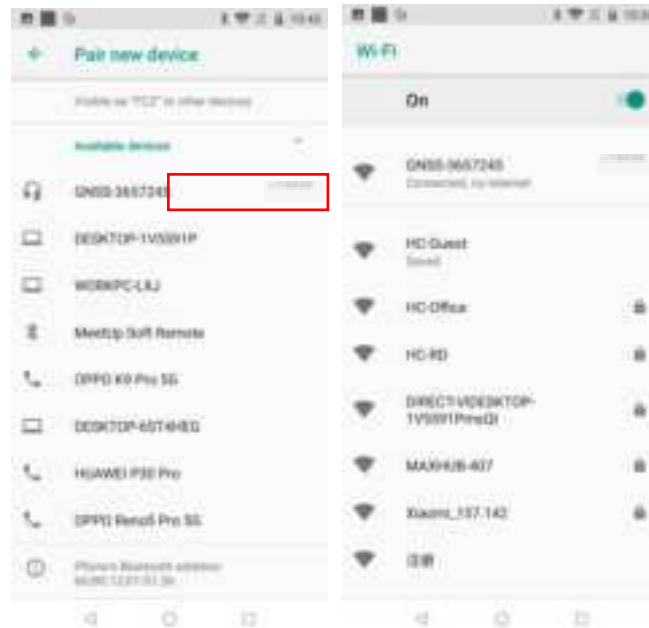
2.5 Connecting to a Controller

2.5.1 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, **F6** 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.

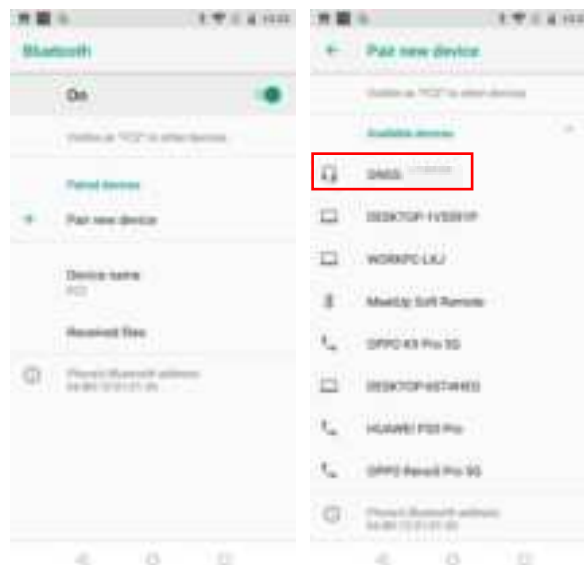


2.5.2 Connecting via Bluetooth with eField Software

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

In the *Connect* screen, select EFIX for the **Brand** field, **F6** 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.



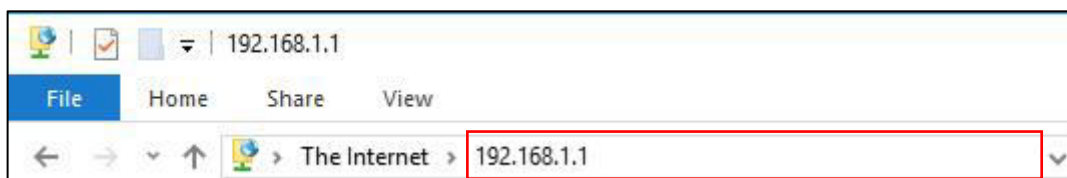
2.6 Downloading Logged Data

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.

2.6.1 FTP Download

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

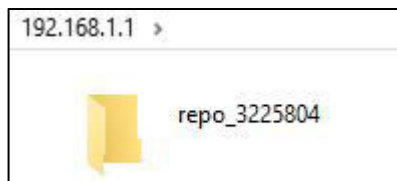
- (1) Switch on the receiver, search its Wi-Fi in the computer and connect.
- (2) After the successful connection, open the file manager in the computer and input “ftp:\\192.168.1.1” in the address box.



- (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 F6 system automatically and named by the date which is decided 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 (ecf 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 ecf files, the name of the file is represented as XXXXXDDNN, where XXXXX is the SN of the receiver, DD 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.

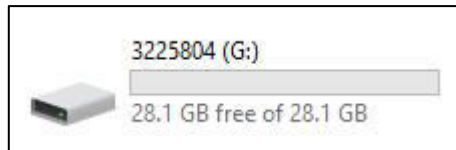
2.6.2 Web Server Download

The procedures of downloading logged data through web server refer to 4.4.4 Data Download Submenu.

2.6.3 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 F6 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 Real-Time Rover Station Setup

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

Components



| No. | Name |
|-----|---------------------|
| a | F6 GNSS receiver |
| b | 2M range pole w/bag |

Notice: Keep the receiver fully charged.

If work as a UHF rover station, the UHF 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.

3.2 Working with the Tilt Compensation

F6 use 200 Hz AUTO-IMU, automatic pole tilt compensation for automatic inertial navigation initialization, and the user do not need to calibrate it manually any more.

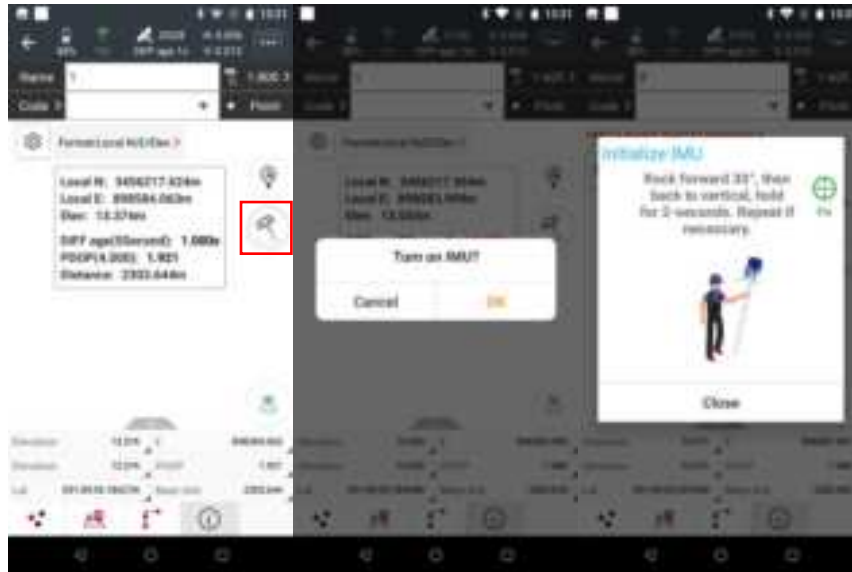
After enable the tilt survey, the F6 IMU can be ready after a few steps walk or a bit


movement automatically.

3.2.1 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.

3.2.2 Notes of using tilt measurement

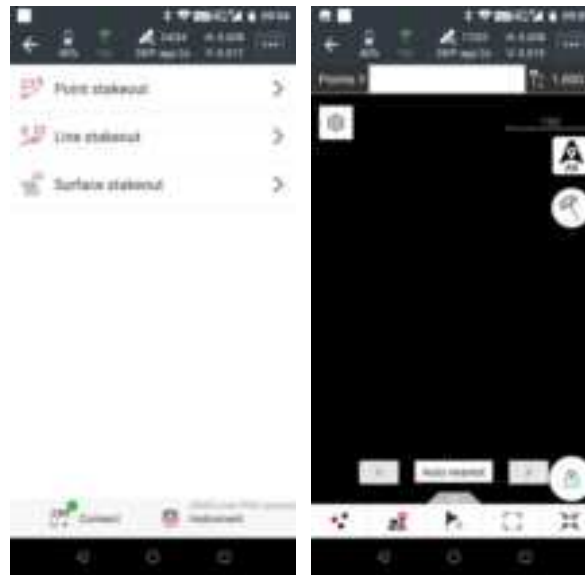
1. At the beginning of initialization, the pole height of the instrument should be the same as that antenna height in the software.
2. In the process of tilt measurement, if the controller shows that “Tilt is not available, please measure in alignment” (red), please shake RTK slightly from left to right 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.

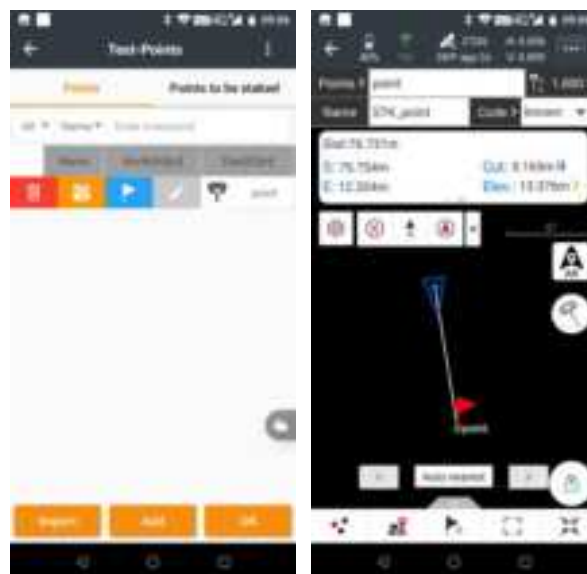
3.3 Working with the Vision Camera

3.3.1 Vision Stakeout Operation Steps

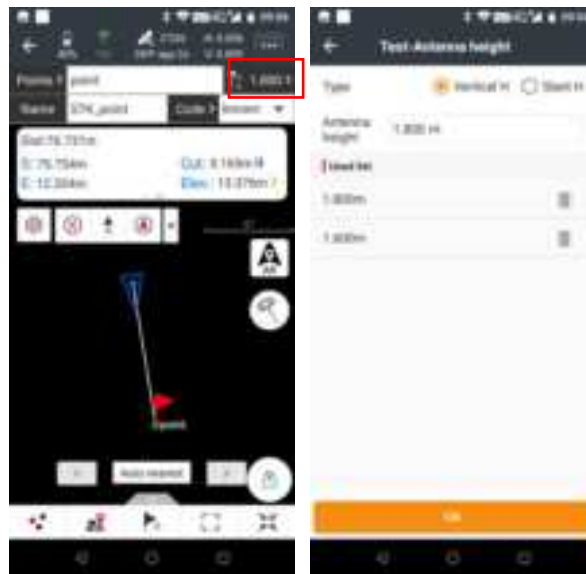
(1)Open eField-> Tap Stakeout-> Tap Point stakeout (Here take point stakeout as an example, currently also supports Line stakeout, CAD stakeout)



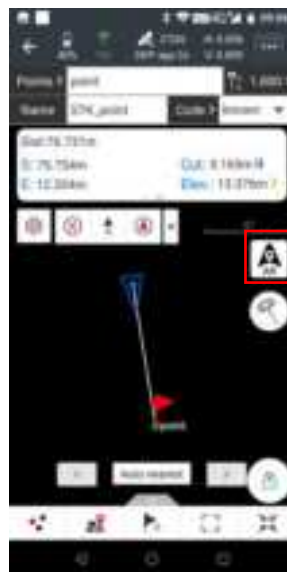
(2)Tap points, select a stakeout point, slide right and tap stakeout




(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 10.0m 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.

3.3.2 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.

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:

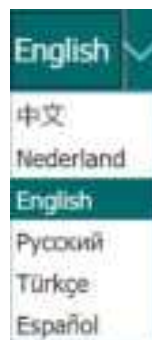


This web page shows the configuration menus on the left of the browser window, and the setting on the right. Each configuration menu contains the related Submenus to configure the receiver and monitor receiver performance.

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, six 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:



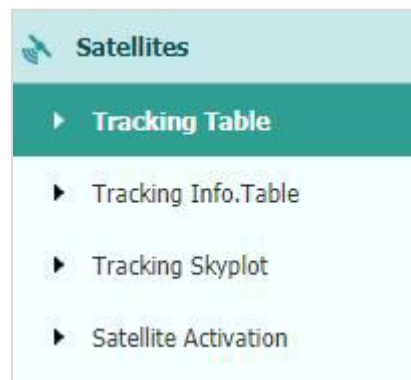
4.1.3 Google Map Submenu

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.



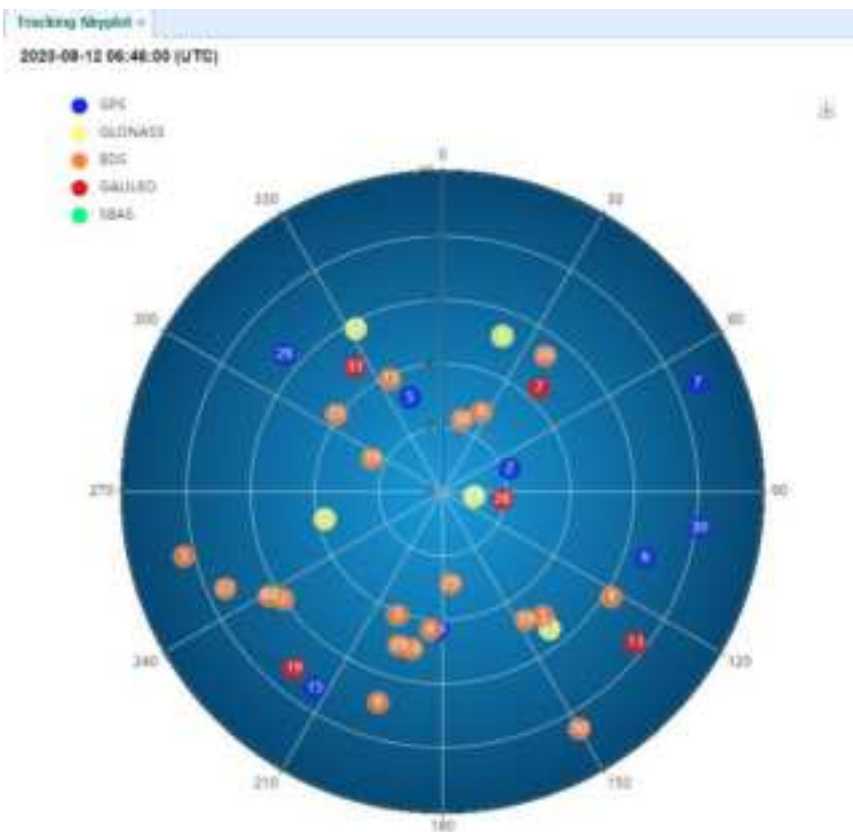
4.2.1 Tracking Table Submenu

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.

4.2.2 Tracking Info. Table Submenu

4.2.3 Tracking Skyplot Submenu

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4.2.4 Satellite Activation Submenu

Use this menu to enable or disable satellites.

Satellite Activation

GPS GLONASS BDS GALILEO SBAS

| Satellite ID | Enable | Satellite ID | Enable |
|--------------|--------|--------------|--------|
| 1 | on | 21 | on |
| 2 | on | 22 | on |
| 3 | on | 23 | on |
| 4 | on | 24 | on |
| 5 | on | 25 | on |
| 6 | on | 26 | on |
| 7 | on | 27 | on |
| 8 | on | 28 | on |
| 9 | on | 29 | on |
| 10 | on | 30 | on |
| 11 | on | 31 | on |
| 12 | on | 32 | on |
| 13 | on | | |
| 14 | on | | |
| 15 | on | | |
| 16 | on | | |
| 17 | on | | |
| 18 | on | | |
| 19 | on | | |
| 20 | on | | |

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:



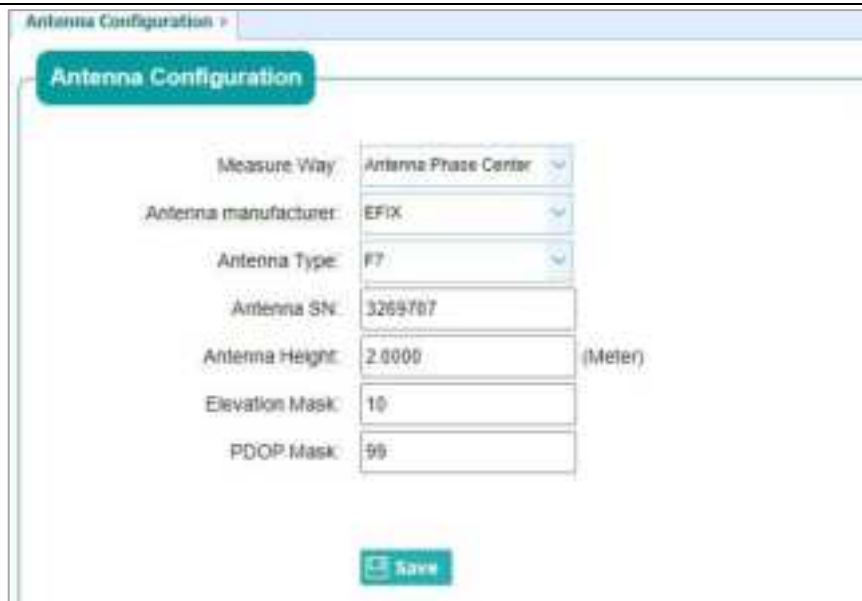
4.3.1 Description

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:

1. **Acquire Current Position:** Click this button to acquire current position obtained through autonomous positioning automatically.
2. **Manual Input:** Manually input the coordinate of a control point.
3. **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  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  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.

| Store Info | | | |
|--------------------|---------------|-------------------|--|
| Position | Total Storage | Storage Available | |
| 1 Internal Storage | 6754MB | 6754MB | |
| 2 External Storage | 0MB | 0MB | |

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

| Recording Number | File Name | Activated | Log Status | Setting Parameter | Switch | Clear Data |
|------------------|-----------|-----------|------------|---|--|-----------------------|
| 1 | record1 | Yes | Recording | Modify Delete | 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:

Auto Record: ☐ Yes ☒ No

Sample Interval:

Elevation Mask: (*)

Duration Time: (Minute)

Site Name:

Antenna Height:

Measure Way:

Storage Format:

RINEX Version:

Compress Rinx Data: ☐ Yes ☒ No

Advanced

Save

Back

Click advanced to see more settings.

Start Date: ☐ Yes ☒ No

Apply Time: ☐ Yes ☒ No

Integral Point Store: ☐ Yes ☒ No

Circulating Memory: ☒ Yes ☐ No

Repeat Observations: ☒ Yes ☐ No

Store Location:

Assigned Storage: (MB)

Observer:

Observe Agency:

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  button to save the settings and back to the *Log Settings* screen. Also, users can click  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.

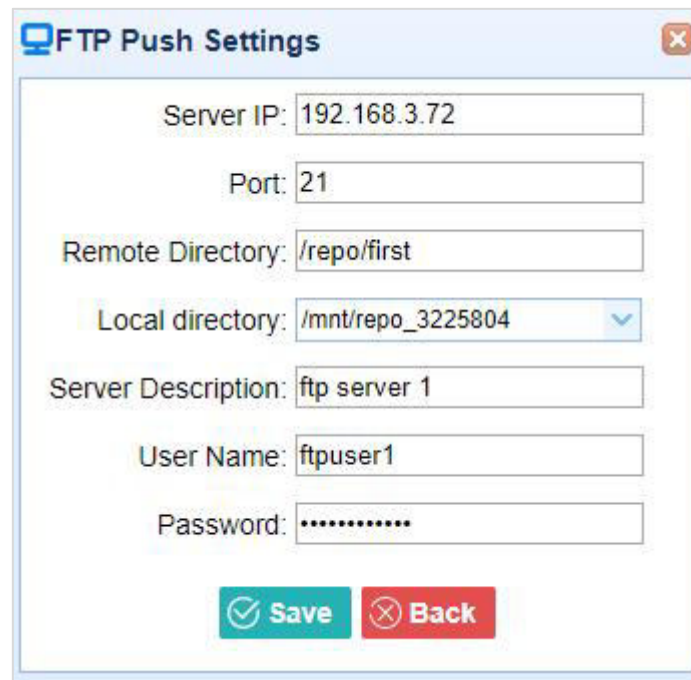
4.4.2 FTP Push Settings Submenu

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.



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

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

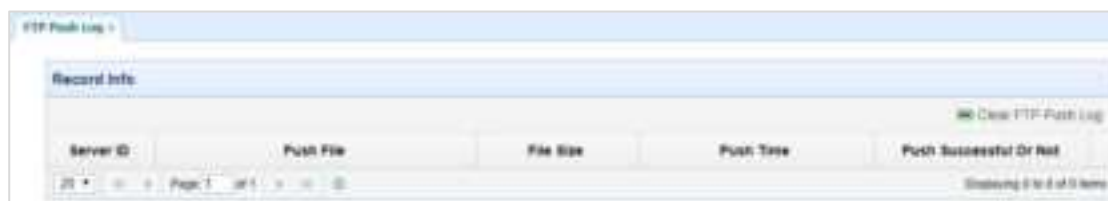
Password:

Save

Back

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.



4.4.4 Data Download Submenu

In this submenu, users can download the data files that recorded in the internal storage through the internal FTP site.

1. Click this submenu, and then the log on dialogue box will prompt you to enter a user name and password:



The default logon account for the internal FTP site is:

- User name: ftp
- Password: ftp

2. Click the directory named as “repo” to view and download the files currently stored on the receiver:

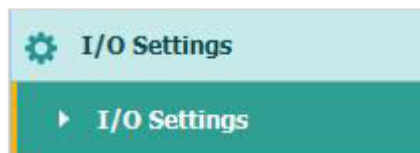


| Name | Size | Date Modified |
|----------------------------|------|---------------------|
| System Volume Information/ | | 8/9/19, 10:28:00 PM |
| repo_3225804/ | | 7/16/19, 1:17:00 PM |

3. To find the file need to be downloaded, click the name of data logging session → the date of file that be recorded → the format of the file → the name of the target file.
4. To download a file, left-click the name of the target file → download the file according

to the prompts.

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, 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)



| Type | Description | Output | Connection Status | Modify |
|---------------------------|-------------------|---------|-------------------|--------------------|
| RTK Client | 201 144 110.0.210 | --- | Disconnected | Connect Disconnect |
| NTRIP_ClientNTRIP Server1 | 192 168.1.10.8888 | --- | Disconnected | Connect Disconnect |
| NTRIP_ClientNTRIP Server2 | 192 168.1.10.8889 | --- | Disconnected | Connect Disconnect |
| NTRIP_ClientNTRIP Server3 | 192 168.1.10.8890 | --- | Disconnected | Connect Disconnect |
| NTRIP_ClientNTRIP Server4 | 192 168.2.10.8891 | --- | Disconnected | Connect Disconnect |
| NTRIP_ClientNTRIP Server5 | 192 168.3.10.8892 | --- | Disconnected | Connect Disconnect |
| NTRIP_ClientNTRIP Server6 | 192 168.4.10.8893 | --- | Disconnected | Connect Disconnect |
| TCP ServerNTRIP Client1 | 8801 | --- | Disconnected | Connect Disconnect |
| TCP ServerNTRIP Client2 | 8802 | --- | Disconnected | Connect Disconnect |
| TCP ServerNTRIP Client3 | 8803 | --- | Disconnected | Connect Disconnect |
| TCP ServerNTRIP Client4 | 8804 | --- | Disconnected | Connect Disconnect |
| Serial Port | 115200 | --- | --- | Connect |
| Bluetooth | 10000 12345678 | GPGLA-R | --- | Connect |
| Radio | 400 2000000 | --- | --- | Connect |

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



RTK Client

Connection Protocol: NTRIP

Server IP: 211.144.118.5

Port: 2102

Mount Point: test ✓ Get

User Name: test

Password: test

Confirm Back

➤ Connection Protocol: APIS_BASE



RTK Client

Connection Protocol: APIS_BASE

Server IP: 111.111.111.1

Port: 9901

Differential Data: OFF

Confirm Back

➤ Connection Protocol: APIS_ROVER



RTK Client

Connection Protocol: APIS_ROVER

Server IP: 210.14.66.58

Port: 9902

Base ID: 1019023

Confirm Back

➤ Connection Protocol: TCP



RTK Client

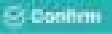
Connection Protocol: TCP

Server IP: 201.255.122.215

Port: 9902

Confirm Back

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  to save and complete the connection.

➤ Connection Protocol: TCP



➤ Connection Protocol: UDP



Auto connect: ☒

Connection Protocol: NTRIP

Server IP: 192.168.3.10

Port: 8080

Differential Data: OFF

Raw Data: OFF

HRC Data: OFF

GPQGA: OFF

GPRMC: OFF

GPQST: OFF

GPQSA: OFF

Retransmit: RTN OFF

HCHPP Data: OFF

GPQSV: OFF

GPQDA: OFF

GPVTG: OFF

Connect Back

➤Connection Protocol: NTRIP1.0



Auto connect: ☒

Connection Protocol: NTRIP1.0

Server IP: 192.168.3.10

Port: 8080

Passcode:

Mount Port:

Differential Data: OFF

Raw Data: OFF

HRC Data: OFF

GPQGA: OFF

GPRMC: OFF

GPQST: OFF

GPQSA: OFF

Retransmit: RTN OFF

HCHPP Data: OFF

GPQSV: OFF


GPQDA: OFF

GPVTG: OFF

Connect Back

➤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  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  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 and password of internal FTP site:



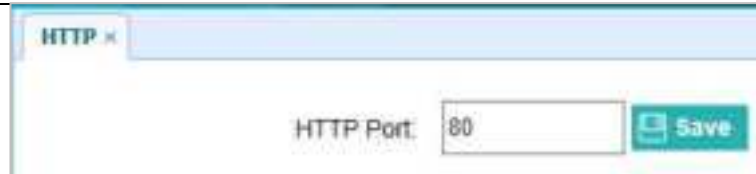
4.6.1 Email Alarm Submenu

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.



The screenshot shows a web browser window with a tab labeled 'HTTP'. The main content area has a light blue header. Below the header, there is a label 'HTTP Port:' followed by a text input field containing the number '80'. To the right of the input field is a green 'Save' button with a floppy disk icon.

4.6.3 HTTPS Submenu

Use this submenu to configure HTTPS port.



The screenshot shows a web browser window with a tab labeled 'HTTPS'. The main content area has a light blue header. Below the header, there is a green button labeled 'HTTPS'. Underneath, there is a label 'Enable HTTPS:' followed by two radio buttons: 'Yes' (which is selected) and 'No'. Below this, there is a label 'HTTPS Port:' followed by a text input field containing the number '443'. At the bottom right is a green 'Save' button with a floppy disk icon.

4.6.4 FTP Service Submenu

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



The screenshot shows a web browser window with a tab labeled 'FTP Service'. The main content area has a light blue header. Below the header, there is a green button labeled 'FTP Service'. Underneath, there are two labels: 'User Name:' followed by a text input field containing 'ftp', and 'Password:' followed by a text input field containing three asterisks '***'. At the bottom right is a green 'Save' button with a floppy disk icon.

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.



4.7.2 WiFi Submenu

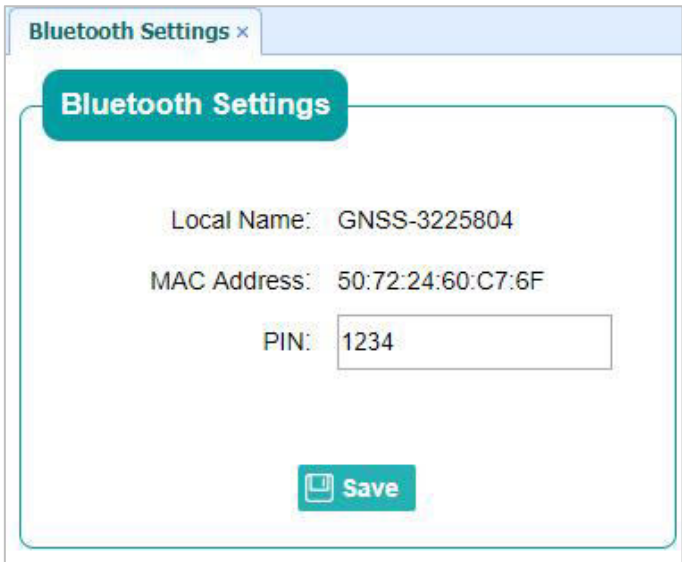
Use this submenu to turn on/off WiFi function and modify password.



The screenshot shows a web browser window with a tab labeled "WiFi". The main content area has a teal header with the word "WiFi". Below this, the "Power Status" is set to "ON", with a red "OFF" button next to it. There are two rows of radio buttons: "Auto Start" with "Yes" selected and "No" unselected, and "Internet" with "Yes" selected and "No" unselected. The "Wifi Mode" is set to "Access Point" in a dropdown menu. The "SSID" is "GNSS-3225804", the "Encryption Type" is "WAP" in a dropdown menu, and the "Password" field is masked with dots. A teal "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 a web browser window with a tab labeled "Bluetooth Settings". The main content area has a teal header with the words "Bluetooth Settings". Below this, the "Local Name" is "GNSS-3225804", the "MAC Address" is "50:72:24:60:C7:6F", and the "PIN" is "1234" in a text input field. A teal "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.

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:



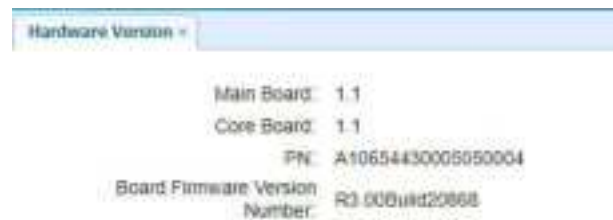
4.8.1 Firmware Info Submenu

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

Firmware Version: 2.1.2
Firmware Release Time: 20201127_15084_5439

4.8.2 Hardware Version Submenu

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

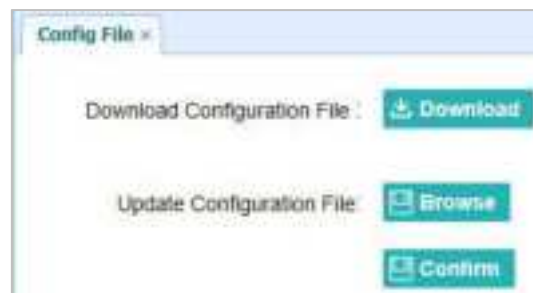


Hardware Version ×

| | |
|--------------------------------|--------------------|
| Main Board: | 1.1 |
| Core Board: | 1.1 |
| PN: | A10654430005050004 |
| Board Firmware Version Number: | R3.00Build20868 |

4.8.3 Config File Submenu

Use this submenu to update Configuration File.



Config File ×

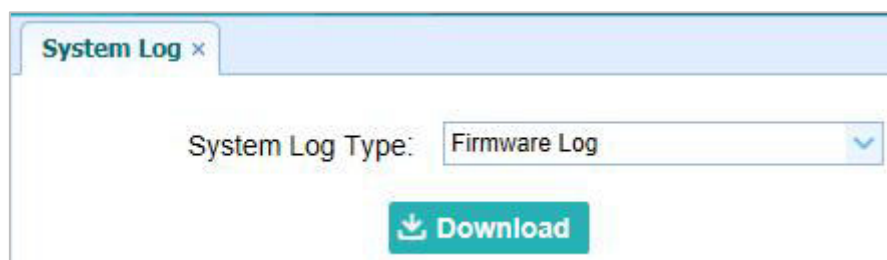
Download Configuration File: [Download](#)

Update Configuration File: [Browse](#)

[Confirm](#)

4.8.4 System Log Download Submenu

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



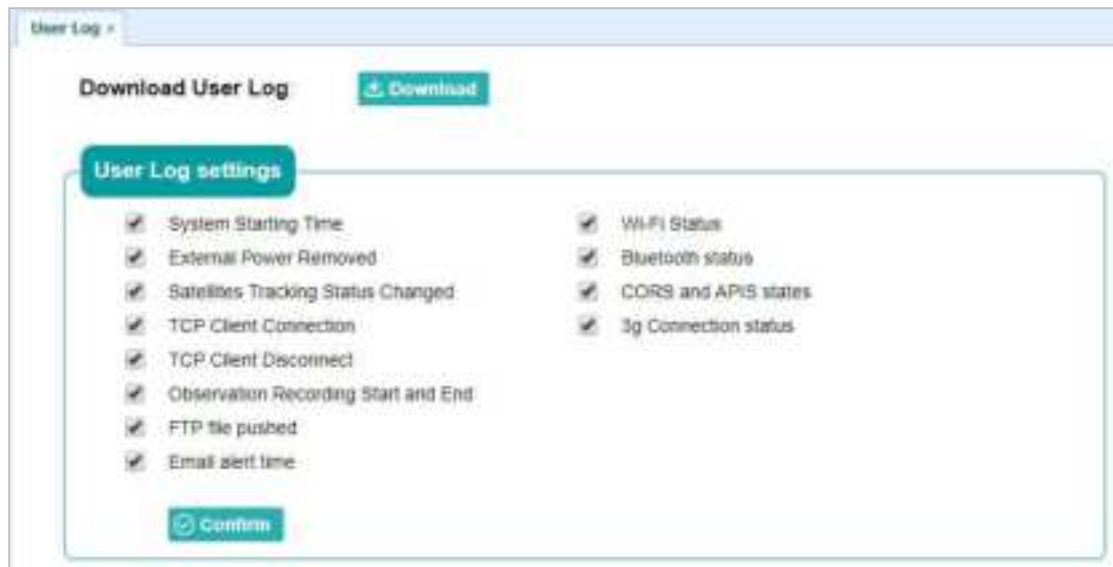
System Log ×

System Log Type: [Firmware Log](#)

[Download](#)

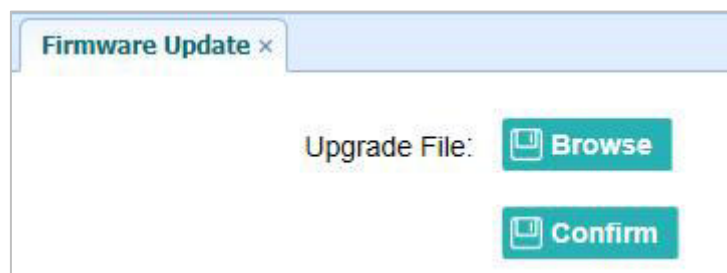
4.8.5 User Log Submenu

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.



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.



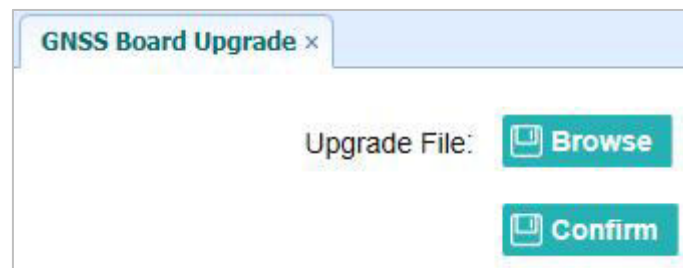
Notes

- 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.



The screenshot shows the 'GNSS Board Upgrade' submenu. It features a title bar with the text 'GNSS Board Upgrade' and a close button (X). Below the title bar, there is a label 'Upgrade File:' followed by two buttons: 'Browse' and 'Confirm'. Both buttons have a folder icon to their left.

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.



The screenshot shows the 'GNSS Registration' submenu. It features a title bar with the text 'GNSS Registration' and a close button (X). Below the title bar, there are three input fields: 'Serial Number' with the value '3269767', 'Registration Limit' with the value '2020-10-31', and 'Registration Code' with the value 'cHvbNndWUMR'. Below these fields is a button labeled 'Registration' with a right-pointing arrow icon.

FCC Warning:

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 20cm between the radiator & your body.

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