



# CHCNAV iBase GNSS USER GUIDE



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Make your work more efficient

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## Preface

## Copyright

### Copyright 2016

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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 iBase GNSS Receiver User Guide describes how to set up and use the CHCNAV iBase GNSS receiver. In this manual, “the receiver” refers to the iBase GNSS receiver unless otherwise stated. Even if you have used other Global Navigation Satellite Systems (GNSS) products before, CHCNAV recommends that you spend some time reading this manual to learn about the special features of this product. If you are not familiar with GNSS, go to [www.chcnav.com](http://www.chcnav.com) for an interactive look at CHCNAV and GNSS.

## 1.1 Safety Information

### 1.1.1 Warnings and Cautions

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

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



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



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

## 1.2 Regulations and Safety

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

Before operating the iBase 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 CHCNAV website ([www.chcnav.com](http://www.chcnav.com)), contact your local CHCNAV dealer from which you purchased the receiver(s).

If you need to contact CHCNAV technical support, please contact us by email ([support@chcnav.com](mailto:support@chcnav.com)) or Skype (chc\_support).

## 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. CHCNAV holds no responsibility for the wrong operation by users and for the losses incurred by the wrong understanding about this User Guide. However, CHCNAV reserves the rights to update and optimize the contents in this guide regularly. Please contact your local CHCNAV 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@chcnav.com](mailto:support@chcnav.com).

## 2 Getting Started with iBase

### 2.1 About the Receiver

#### RECEIVER

The iBase GNSS receiver is a fully integrated professional GNSS base station, specifically designed to meet 95% of surveyors' needs when working in UHF GNSS base and rover mode. The performance of the iBase UHF base station compared to a common external UHF radio modem is almost perfect. But its unique design eliminates the need for a heavy external battery, cumbersome cables, external radio and radio antenna. Its 5-watt radio module provides operational GNSS RTK coverage up to 8 km and features a real-time UHF interference self-checking technique, allowing the operator to select the most appropriate frequency channel to use.

The LCD display allows the user to check the satellite tracking status, internal battery status, Wi-Fi status, working mode, data logging status and basic receiver information. Bluetooth and Wi-Fi technologies enable cable-free communication between the receiver and the controller.

The receiver can be used as part of a GNSS RTK system with the any CHCNAV GNSS Smart Antenna and our LandStar 7 software.

To configure the receiver to execute a wide variety of functions, you can use the web interface by connecting the receiver to a PC or smartphone via Wi-Fi.



## 2.2 Parts of the Receiver

The operating controls are all located on the front panel. Battery compartment and SIM card slot are on the bottom. Serial port is located on the bottom of the unit. The radio antenna port is located on the top 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 (Orange)	<ul style="list-style-type: none"> <li>■ Indicates whether the receiver is transmitting differential data.</li> <li>■ The green LED flashes once per second when                             <ul style="list-style-type: none"> <li>- As a Base station: successfully transmitting differential data.</li> <li>- As a Rover station: successfully receiving differential data from Base station.</li> </ul> </li> </ul>
Satellite LED (Blue)	<ul style="list-style-type: none"> <li>■ Shows the number of satellites that the receiver has tracked.</li> <li>■ When the receiver is searching satellites, the blue LED flashes once every 5 seconds.</li> </ul>

Name	Description
	<ul style="list-style-type: none"> <li>When the receiver has tracked N satellites, the blue LED will flash N times every 5 seconds.</li> </ul>
Fn button	<ul style="list-style-type: none"> <li>Move to next line of the menus or options.</li> <li>Move to next character of the value that you want to make change.</li> <li>Cancel the change you make on a function.</li> </ul>
Power button	<ul style="list-style-type: none"> <li>Works as a Power button:</li> <li>Press and hold this button for 3 seconds to turn on or turn off the receiver.</li> <li>Works as a Confirm button</li> <li>Hold Fn button and press this button for 5 times continuously to reset the mainboard.</li> </ul>

### 2.2.2 Lower Housing

The lower housing contains one SIM card slot, two battery compartments, one TNC radio antenna connector, two communication and power ports, one 5/8-11 threaded insert, and two nameplates.



TNC radio antenna connector





IO serial communication and power in port



5/8-11 threaded

### 2.2.3 Receiver Ports

Port	Name	Description
	IO p	<ul style="list-style-type: none"> <li>This port is a 7-pin LEMO connector that supports RS-232 communications and external power input.</li> <li>Users can use a 7-pin cable to transmit differential data to an external radio.</li> </ul>
	Radio antenna connector	<ul style="list-style-type: none"> <li>Connect a radio antenna to internal radio of the receiver. And this connector is not used if you are using an external radio.</li> </ul>

## 2.3 Batteries and Power


### 2.3.1 Internal Batteries

The receiver has two rechargeable Lithium-ion batteries, which can be removed for charging.



### 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. To charge the battery, first remove the battery from the receiver, and then place it in the battery charger which is connected to AC power.

 **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 CHCNAV 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 CHCNAV 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 Safety



**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 use or charge the battery if it appears to be damaged. Signs of damage include, but are not limited to discoloration, warping, and leaking battery fluid.
- Do not expose the battery to fire, high temperature, or direct sunlight.
- Do not immerse the battery in water.
- Do not use or store the battery inside a vehicle under hot weather condition.
- Do not drop or puncture the battery.
- Do not open the battery or short-circuit its contacts.



**WARNING** – Avoid contact with the rechargeable Lithium-ion battery if it appears to be leaking. Battery fluid is corrosive and contact with it can result in personal injury and/or property damage.

To prevent injury or damage:

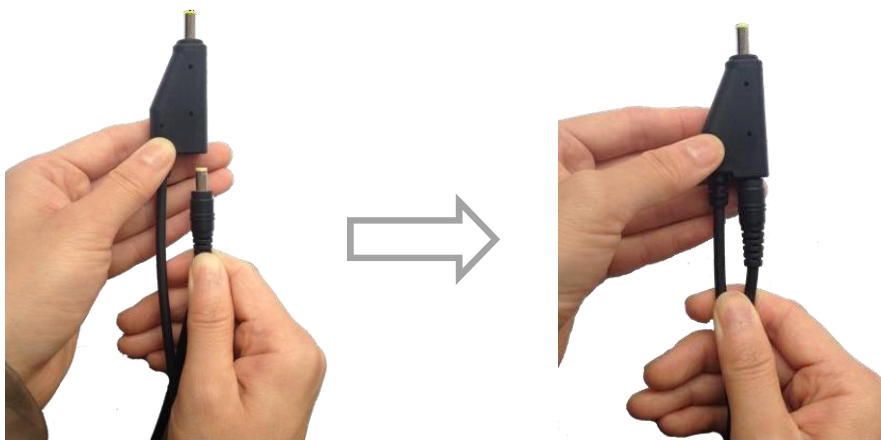
- If the battery leaks, avoid with the battery fluid.
- If battery fluid gets into your eyes, immediately rinses your eyes with clean water and seek medical attention. Please do not rub your eyes!
- If battery fluid gets onto your skin or clothing, immediately use clean water to wash off the battery fluid.

### 2.3.4 External Power Supply

Two methods are available for providing the external power to the receiver by the GPS to PC Data Cable+ Power Adapter, or GPS to PC Data Cable + external power cable (option purchase) + vehicle battery.

In the office:

The Power Adapter is connecting with AC power of 100-240V, the output port of the Power Adapter connects with the Power Port of the GPS to PC Data Cable.



In the field:

The external power cable is connecting with a vehicle battery, the output port of the external power cable connects with the Power Port of the GPS to PC Data Cable.

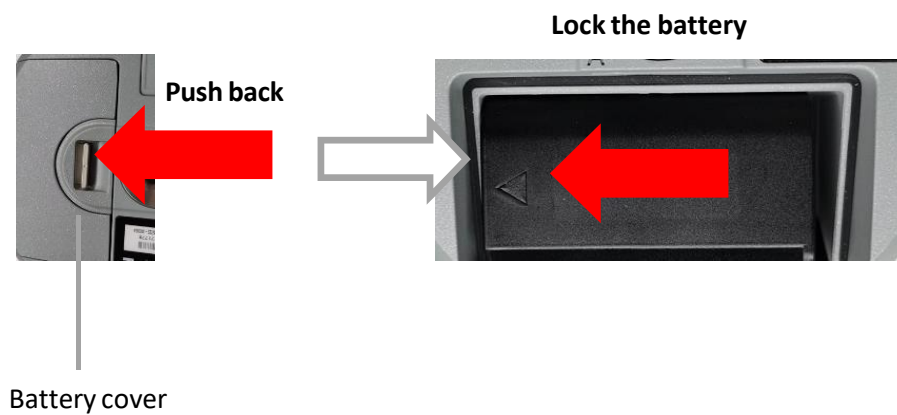


**WARNING** – Use caution when connecting external power cable's clip leads to a vehicle battery. Do not allow any metal object to connect (short) the battery's positive (+) terminal to either the negative (-) terminal or the metal part of the vehicle battery. This could result in high current, arcing, and high temperatures, exposing the user to possible injury.

## 2.4 Inserting Battery and SIM Card

### (1) Inserting battery:

- (a) Push down the spring-loaded button on the battery cover to open the cover.
- (b) Put the battery into the iBase slot, lock the battery as the picture shows like below.



- (c) Close the battery cover to prevent water immersion.
- (d) To remove the battery, unlock the battery from the slot first.

### (2) Inserting SIM card:

- (a) Push down the spring-loaded button on the battery cover to open the cover.
- (b) Insert the SIM card with the contacts facing downward, as indicated by the SIM card icon on the battery slot.



(c) Close the battery cover to prevent water immersion.

(d) To eject the SIM card, slightly push it in to trigger the spring-loaded release mechanism

Insert the SIM card with the contacts facing upward, as indicated by the SIM card icon next to the SIM card slot.

To eject the SIM card, slightly push it in to trigger the spring-loaded release mechanism.

Tip – The SIM card is provided by your cellular network service provider.

## 2.5 Product Basic Supply Accessories

Item	Picture
iBase GNSS Receiver	
UHF Bar Antenna (450-470 MHz)	
Lithium Battery	
H.I. Tape	
Extension pole	
C300 Pedestal charger	
C300 Power Adapter with Cord	
Tribrach adaptor	
Tribrach with optical plummet	
Auxiliary H.I. Tool	
Transport Hard Case	

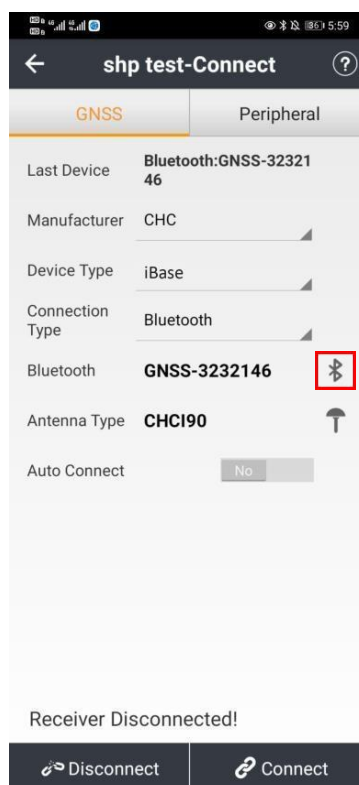


## 2.6 Connecting to a Controller

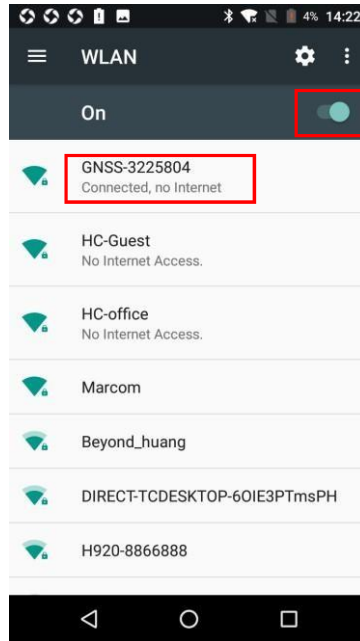
### 2.6.1 Connecting via Wi-Fi with LandStar 7 Software

Turn on the controller → run LandStar 7 → go to **Config** main menu → tap **Connect**.

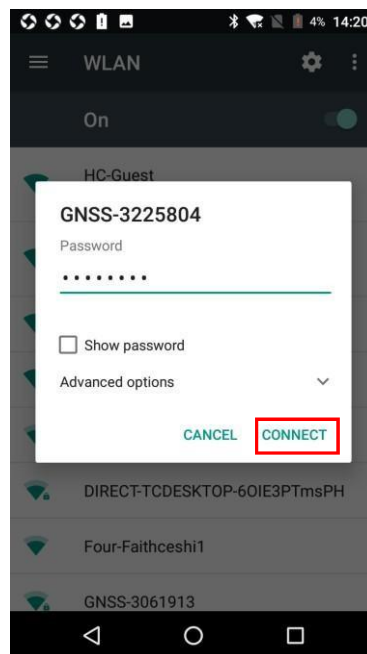
In the *Connect* screen, select **CHC** for the *Manufacturer* field, **iBase** for *Device Type* field, **WIFI** for *Connection Type* field.



Tap the Wireless Lan icon on the right side to select the hot spot → Switch on the WiFi module by the top switch → select the target device in the list.

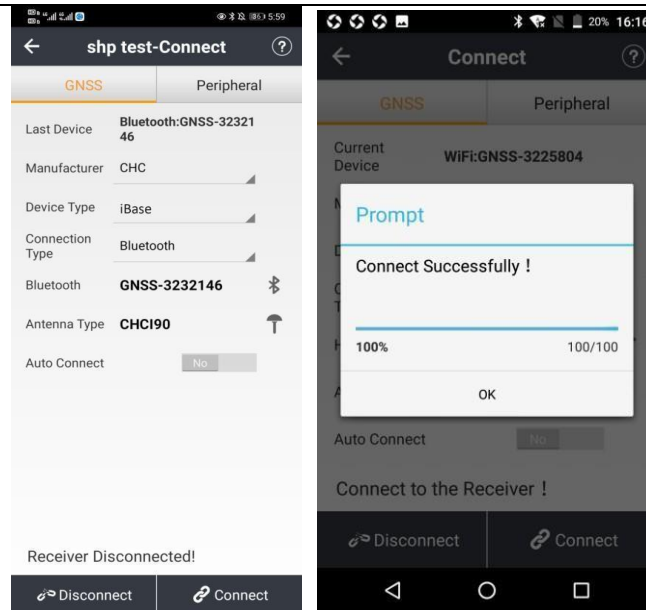


Tap **Connect** to link to the hot spot. If the first-time connection to this hot spot, user may type in the password.



Tip – The Wi-Fi key of the receiver is 12345678 by default.

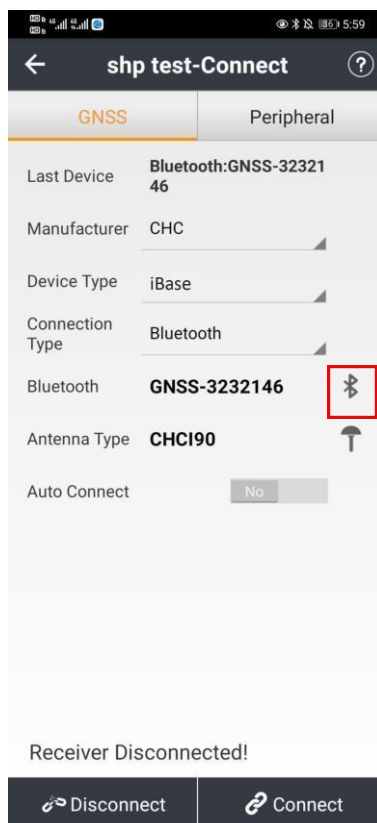
Tap the **Connect** button to build the connection.



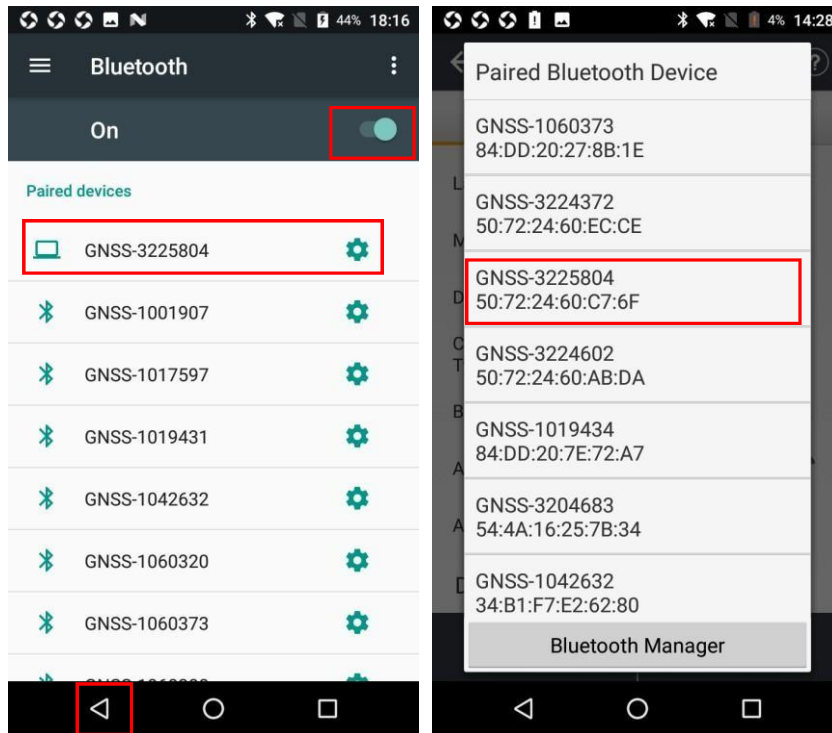
### 2.6.2 Connecting via Bluetooth with LandStar 7 Software

Turn on the controller → run LandStar 7 → go to **Config** main menu → tap **Connect**.

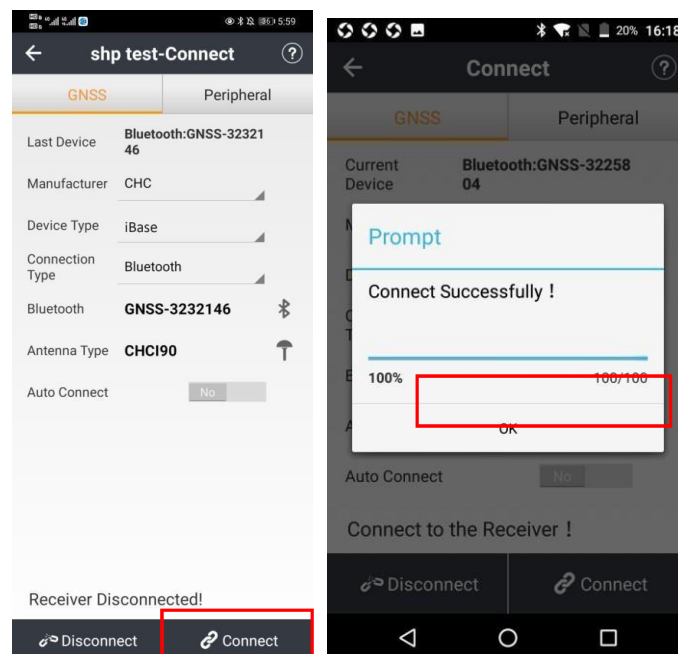
In the *Connect* screen, select **CHC** for the *Manufacture* field, **iBase** for *Device Type* field, **Bluetooth** for *Connection Type* field.



Tap the **Bluetooth Manager** and turn on the **Bluetooth** function to search Bluetooth device around → select the target device in the list → Tap back button → select the target device in the Bluetooth manager list.



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



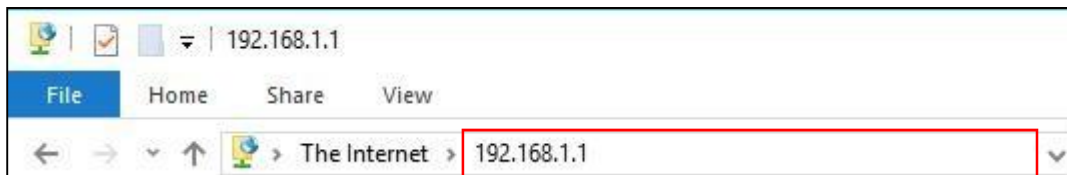
## 2.7 Downloading Logged Data

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 CHCNAV Geomatics Office (CGO) Software.

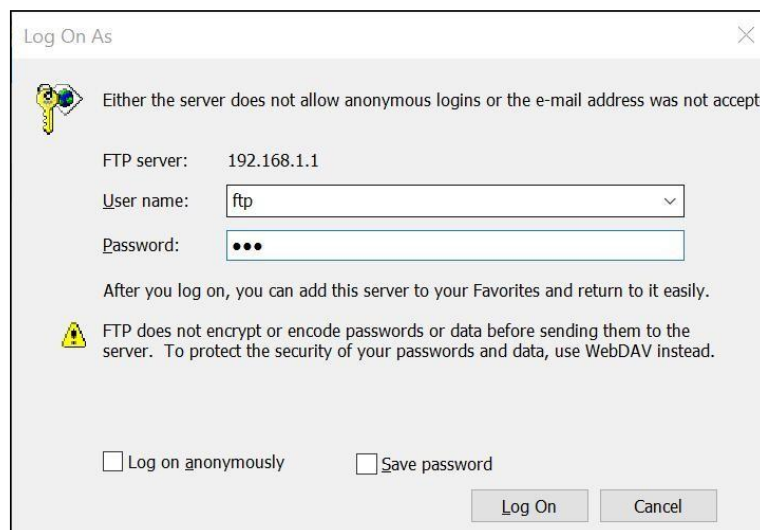
### 2.7.1 FTP Download

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

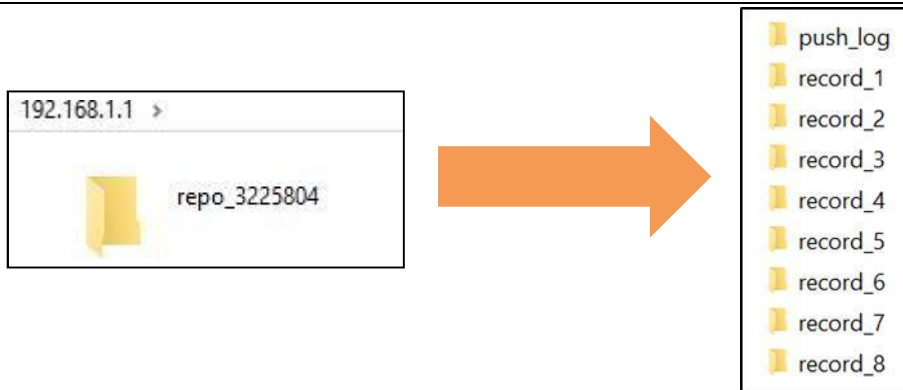
- (1) Switch on the receiver, search its Wi-Fi in the computer and connect.
- (2) After the successful connection, open the file manager in the computer and input “ftp:\\192.168.1.1” in the address box.



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



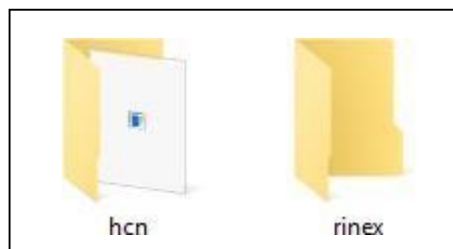
- (4) Double click the folder “repo\_receiver SN” (take 3225804 as example), you will see 9 folders. The “push\_log” folder is used to save the log files, and the other 8 folders represent different logging sessions and are used for store static data.



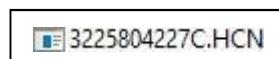
(5) Double click the folder that you have configured to store the static data, you will see the folder(s) created by the iBase system automatically and named by the date which is decide by GPS time when you start to log data.



(6) Select the destination folder and double click it, two folders named as different data format (hcn 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 hcn files, the name of the file is represented as XXXXXDDDNN, 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 Web Server Download

The procedures of downloading logged data through web server refer to [5.4.4 Data Download Submenu](#).

### 3 Front Panel Operation

The front panel contains one LCD screen, two indicator LEDs, and two buttons. The operating controls are all located on the front panel.

#### 3.1 Main Operation Menus

The top-level menu of the front panel includes 6 parts: Status, mode, static and info. Status shows satellites, receiver solution and the power percentage. Mode is the important part which illustrate the work mode and users can select the mode according to their needs. Static is used to set static mode. Info is the basic information of firmware such as SN, PN and etc.

The details of main operation are as follows and they are concluded two tables. The first table includes 5 parts: Info, SV, Power, Data and Set and the second table displays details of Data.

Top-level Menu	Second-level Menu	Description
Status	36=G07 R03....	Indicate the total number of satellites that have been tracked and the number of satellites tracked of each constellation, where G represents GPS, R represents GLONASS, C represents BeiDou, S represents SBAS and E represents Galileo.
	Power	Indicates the remaining power of the battery inserted in the left (B) and right (A) battery compartment.
	WIFI ON/OFF	Press Enter to turn on or turn off WIFI
	Network status	displays the if a sim card inserts the RTK
	Back	Press Enter to back to last page

Top-level Menu	Second-level Menu	Description	
Mode	Ultra Base Base External UHF Base Internal UHF Base APIS Base External UHF & APIS Rover APIS Rover UHF Rover NTRIP Back	<ul style="list-style-type: none"> <li>• Press Enter button to enter the configuration screen of the selected working mode.</li> <li>• More operation information, see <a href="#">3.2 Configure the Working Mode</a>.</li> </ul>	
Static	Set on/off	Press Enter button to switch static measurement on or off.	
	Recording 00:00	Display the time of recording	
	Advanced	Sample	Press Enter to change sample interval (1s, 2s, 5s, 10s, 15s, 30s, 1m)
		Elev Mask 10 degree	Press Enter button to change the mask degree from 0 degree to 90 degrees.
		Duration 1440min	<ul style="list-style-type: none"> <li>• Press <b>Enter</b> button to enter Duration Time Setting screen.</li> <li>• In the Duration Time Setting screen, press <b>Fn</b> button to move to the character of the duration time value user want to make change, and then press <b>Enter</b> button to change from 0 to 9. After the change has been done, user can press <b>Fn</b> button to move to OK field, and then Press <b>Enter</b> button to save the change and back to the second-level menu; or press <b>Fn</b> button to move to Cancel field and press <b>Enter</b> button to cancel the change and back to the second-level menu.</li> </ul>
		Measurement phase Center	Press <b>Enter</b> button and switch height between oblique, vertical, phase center.
		Antenna Height 0.0000m	Press <b>Enter</b> button and input the measured antenna height.
		Back	Press <b>Enter</b> button to back to the last menu.



Top-level Menu	Second-level Menu	Description
	OK	Press Enter to complete settings.
	Back	Press <b>Enter</b> button to back to the top-level menu.
Info	SN 322584 PN 118032 -015701 -020104 Register 2020-09-16 Sleep Time 1min Version 2.0.7 IMEI 861529049455435 Language English Back	Describe the main information of this machine. SN displays the Serial Number of the receiver. PN displays the Part Number of the receiver. Register displays the expiry date of registration code. Press Enter to select sleep time including 5s, 10s, 30s, 1min, 30min. Version displays the firmware version. IMEI is International Mobile Equipment Identity which is used to identify the RTK. Press Enter to change languages. Press back to go back to the previous menu.

### 3.2 Configure the Working Mode

7 working modes are provided for quickly setting up an RTK base station or rover station. Users can configure each working mode through the front panel as follows:

Top-level Menu	Second-level Menu	Description
Ultra Base		Reserved for the Ultra Base mode.
Base External UHF	Mode Base External UHF	The title of this configuration screen.
	Format CMR	Press <b>Enter</b> to select correction format (RTD, CMR, RTCMv2.3, RTCMv3 and RTCMv3.2).
	OK	Press <b>Enter</b> button to save the settings and back to the top-level menu, and then this working mode can take effect.
	Cancel	Press <b>Enter</b> button to cancel the settings and back to the second-level menu.
	Mode Base External UHF	The title of this configuration screen.

Top-level Menu	Second-level Menu	Description
Base Internal UHF	Protocol CHC	Press <b>Enter</b> to select current protocol (CHC, Transparent, TT450s)
	Channel 1 456.0500	Press <b>Enter</b> to change the channel from 0 to 9
	Baud 9600	Press <b>Enter</b> to select Baud (4800, 9600 and 19200)
	Power 1w	Press <b>Enter</b> button to change the transmitting power (0.5w,1w,2w).
	Format CMR	Press <b>Enter</b> to select correction format (RTD, CMR, RTCMv2.3, RTCMv3 and RTCMv3.2).
	OK	Press <b>Enter</b> button to save the settings and back to the top-level menu, and then this working mode can take effect.
	Cancel	Press <b>Enter</b> button to cancel the settings and back to the second-level menu.
Base APIS	Mode Base APIS	The title of this configuration screen.
	Format CMR	Press <b>Enter</b> to select correction format (RTD, CMR, RTCMv2.3, RTCMv3 and RTCMv3.2).
	IP 111.111.111.1	Press <b>Enter</b> to enter third-level menu to select IP (APIS1.huace.cn, APIS2.huace.cn, 211.144.120.97, 101.251.112.206) or press Customized IP to customize your own IP
	Port 9901	Press <b>Enter</b> button to change the port from 9901 to 9920.
	OK	Press <b>Enter</b> button to save the settings and back to the top-level menu, and then this working mode can take effect.
	Cancel	Press <b>Enter</b> button to cancel the settings and back to the second-level menu.

Top-level Menu	Second-level Menu	Description
Base External UHF & APIS	Mode Base External UHF & APIS	The title of this configuration screen.
	Way External UHF+APIS	Display the way of base station combination.
	Format CMR	Press <b>Enter</b> to select correction format (RTD, CMR, RTCMv2.3, RTCMv3 and RTCMv3.2).
	IP 111.111.111.1	Press <b>Enter</b> to enter third-level menu to select IP (APIS1.huace.cn, APIS2.huace.cn, 211.144.120.97, 101.251.112.206) or press Customized IP to customize your own IP
	Port 9901	Press <b>Enter</b> button to change the port from 9901 to 9920.
	OK	Press <b>Enter</b> button to save the settings and back to the top-level menu, and then this working mode can take effect.
	Cancel	Press <b>Enter</b> button to cancel the settings and back to the second-level menu.
Rover APIS	Mode Rover APIS	The title of this configuration screen.
	Base ID 1234567	Press <b>Enter</b> to enter third-level menu to change Base ID
	IP 210.14.66.58	Press <b>Enter</b> to enter third-level menu to select IP (APIS1.huace.cn, APIS2.huace.cn, 211.144.120.97, 101.251.112.206) or press <b>Customized IP</b> to customize your own IP
	Port 9902	Press <b>Enter</b> button to change the port from 9901 to 9920.
	OK	Press <b>Enter</b> button to save the settings and back to the top-level menu, and then this working mode can take effect.
	Cancel	Press <b>Enter</b> button to cancel the settings and back to the second-level menu.
Rover UHF	Mode Rover UHF	The title of this configuration screen.

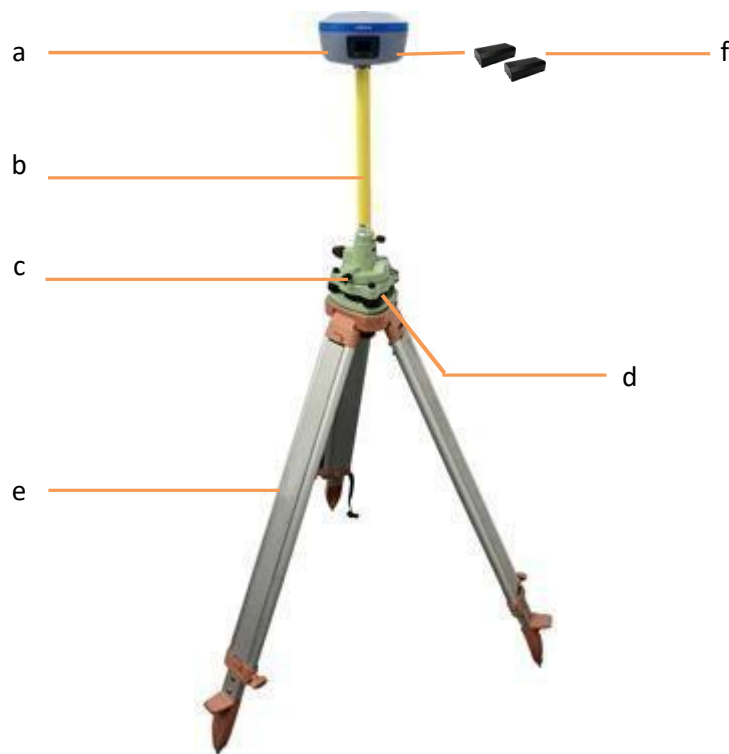
Top-level Menu	Second-level Menu	Description
	Protocol CHC	Press <b>Enter</b> to select current protocol (CHC, Transparent, TT450s)
	Channel 1 456.0500	Press <b>Enter</b> to change the channel from 0 to 9
	Baud 9600	Press <b>Enter</b> to select Baud (4800, 9600 and 19200)
	OK	Press <b>Enter</b> button to save the settings and back to the top-level menu, and then this working mode can take effect.
	Cancel	Press <b>Enter</b> button to cancel the settings and back to the second-level menu.
Rover NTRIP	Mode Rover NTRIP	The title of this configuration screen.
	Status Not Login in in	Indicates the login status.
	OK	Press <b>Enter</b> button to save the settings and back to the top-level menu, and then this working mode can take effect.
	Cancel	Press <b>Enter</b> button to cancel the settings and back to the second-level menu.
Back		Press <b>Enter</b> button to back to the top-level menu.

## 4 Equipment Setup and Operation

### 4.1 Post-processing Base Station Setup

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

**Components:**



No.	Name
a	iBase GNSS receiver
b	Extension pole (30 cm)
c	Tribrach adaptor
d	Tribrach w/ Opti
e	Aluminum tripod
f	Lithium battery

**Steps:**

- (1) Put tripod in the target position, center and level it roughly.
- (2) Place and lock the tribrach in the tripod.
- (3) Insert the batteries into the receiver.
- (4) Screw the receiver onto the tribrach.
- (5) Center and level the receiver more precisely.
- (6) Connect the receiver to external battery by using external power cable if necessary.
- (7) Connect the receiver to external storage disk by using USB cable if necessary.
- (8) Turn on the receiver by pressing the power button for 3 s.
- (9) Measure the antenna height by using H.I. tape and auxiliary H.I. tool.
- (10) Press the function button to select Data to start recording static raw.

**If work with a data controller:**

- (11) Switch on the data controller and connect it to the receiver.
- (12) Use software to configure the receiver as static mode.

## 4.2 Real-Time Base Station Setup

### 4.2.1 Internal Cellular or UHF

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

**Components:**



No.	Name
a	UHF whip antenna
b	iBase GNSS receiver
c	Extension pole (30 cm)
d	Tribrach adaptor
e	Tribrach w/ Opti
f	Aluminum tripod
g	Nino SIM card (12 mm x 9 mm)
h	Lithium battery

**Steps:**

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

**If work as a cellular base station**, the SIM card need to be inserted before the batteries.

- (4) Screw the receiver onto the tribrach.
- (5) Center and level the receiver more precisely.

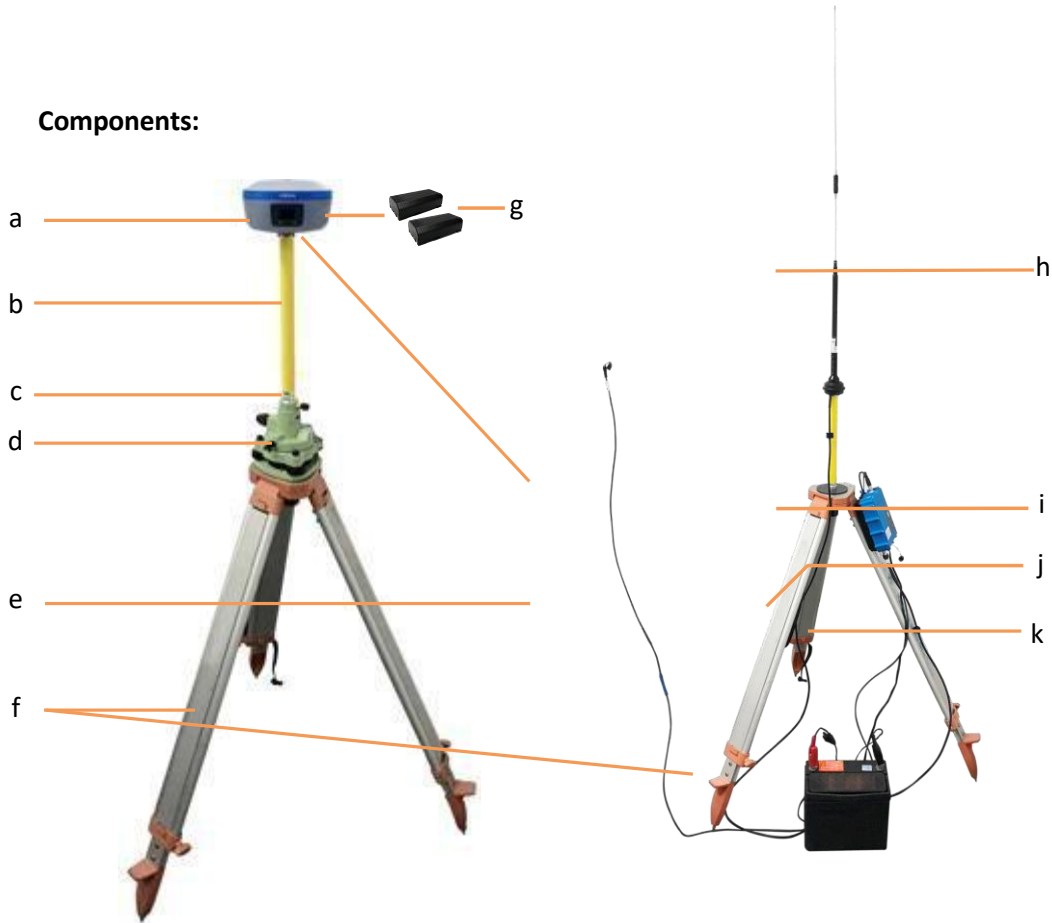
**If work as a UHF base station**, the UHF whip antenna need to be connected to the receiver.

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

### 4.2.2 External UHF

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

**Components:**



No.	Name
a	iBase GNSS receiver
b	Extension pole (30 cm)
c	Tribrach adaptor
d	Tribrach w/ Opti
e	GPS to datalink cable (power cable)
f	Aluminum tripod
g	Lithium battery
h	Whip antenna
i	3 m cable for datalink antenna 3m
j	Pole mounting
k	External 410-470 datalink



**Steps:**

- (1) Put tripod in the target position, center and level it roughly.
- (2) Place and lock the tribrach in the tripod.
- (3) Insert the batteries into the receiver.
- (4) Screw the receiver onto the tribrach.
- (5) Center and level the receiver more precisely.
- (6) Connect the receiver to external datalink by using GPS to datalink cable.
- (7) Hang the external datalink on the tripod leg.
- (8) Connect the receiver to external battery by using external power cable if necessary.
- (9) Connect the receiver to external storage disk by using USB cable if necessary.
- (10) Turn on the receiver by pressing the power button for 3 s.
- (11) Measure the antenna height by using H.I. tape and auxiliary H.I. tool.
- (12) Turn on the external datalink and configure it as need.

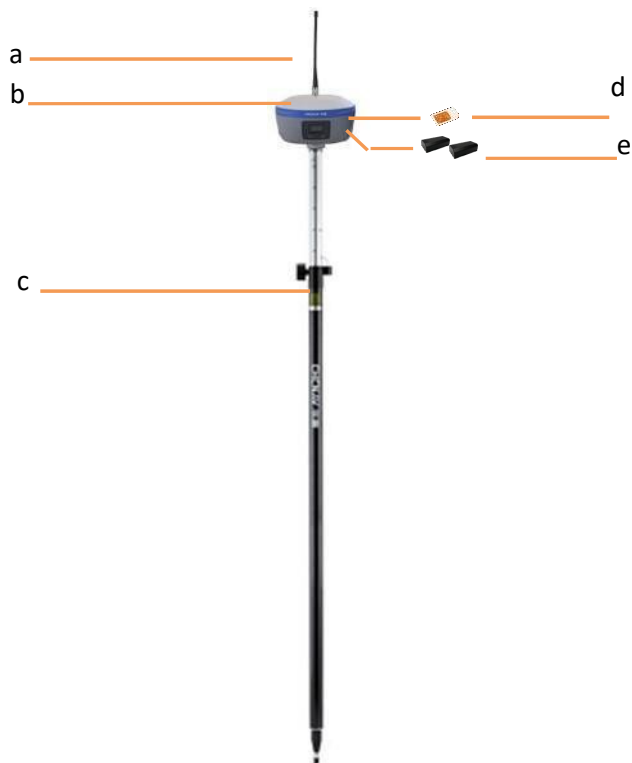
**If work with a data controller:**

- (13) Switch on the data controller and connect it to the receiver.
- (14) Use software to configure the receiver as cellular base or UHF base mode.

### 4.3 Real-Time Rover Station Setup

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

**Components:**



No.	Name
a	whip antenna
b	iBase GNSS receiver
c	2M range pole w/bag
d	Micro SIM card (12 mm x 15 mm)
e	Lithium battery

**Steps:**

(1) Insert the batteries into the receiver.

**If work as a cellular rover station**, the SIM card need to be inserted before the batteries.

(2) Screw the receiver onto the pole.

**If work as a UHF rover station**, the UHF whip antenna need to be connected to the receiver.

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

(4) Switch on the data controller and connect it to the receiver.

(5) Use software to configure the receiver as cellular rover or UHF rover mode.

(6) Center and level the receiver more precisely.

(7) Use software to start survey.

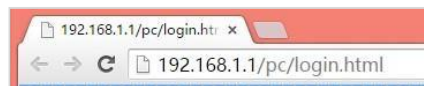
## 5 Configuring Through a Web Browser

Supported browsers:

- Google Chrome
- Microsoft Internet Explorer<sup>O,R</sup> 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:

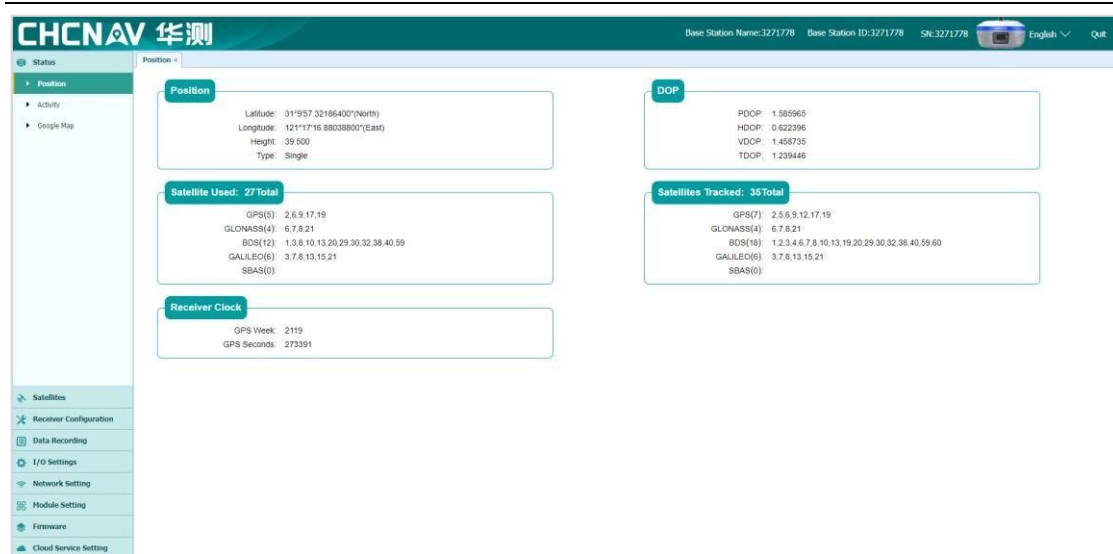


The default login account for the receiver is:

- 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, two languages are available:

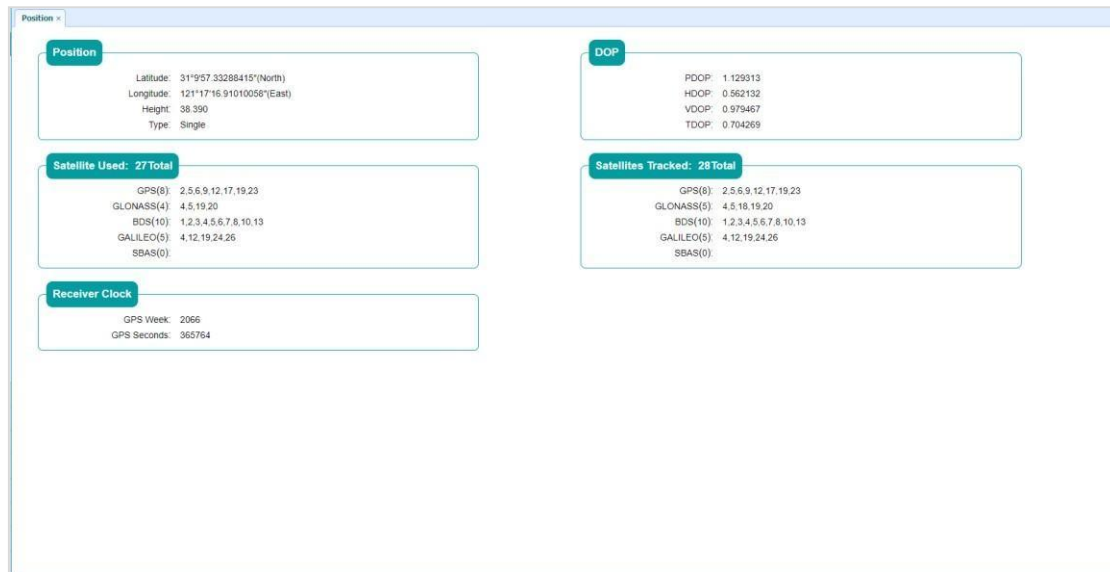


## 5.1 Status Menu

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.

### 5.1.1 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.



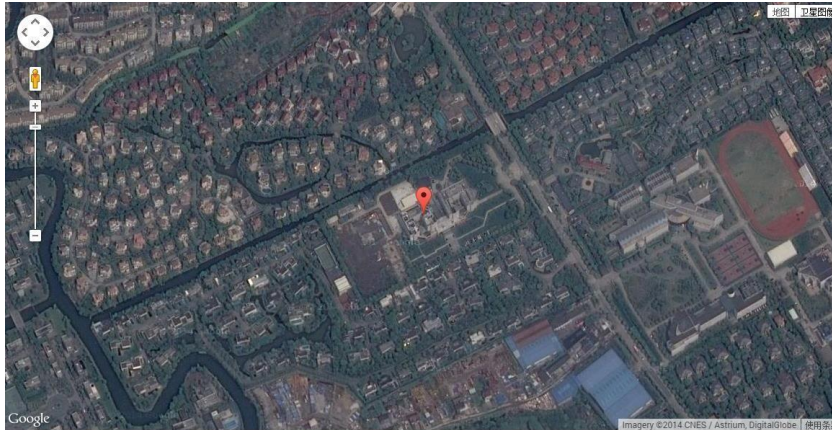
### 5.1.2 Activity Submenu

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:



### 5.1.3 Google Map Submenu

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



## 5.2 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.



### 5.2.1 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	36.720	0.000	Yes
5	GPS	47	253	48.280	34.340	0.000	Yes
6	GPS	51	58	46.400	39.220	47.000	Yes
9	GPS	32	55	42.120	33.920	44.000	Yes
12	GPS	25	235	44.050	34.030	0.000	Yes
17	GPS	30	145	44.950	33.470	0.000	Yes
18	GPS	45	147	44.730	34.510	0.000	Yes
25	GPS	10	303	31.660	31.190	39.240	Yes
4	GLONASS	72	128	48.520	47.890	0.000	Yes
5	GLONASS	81	230	47.830	51.230	0.000	Yes
10	GLONASS	51	55	35.650	48.220	0.000	Yes
20	GLONASS	50	340	48.950	58.220	0.000	Yes
1	BDS	46	145	42.000	42.740	43.530	Yes
2	BDS	36	235	37.350	40.800	43.680	No
3	BDS	50	200	43.150	47.150	44.200	Yes
4	BDS	35	122	37.850	35.470	43.650	Yes
5	BDS	15	255	33.570	35.130	34.650	No
6	BDS	10	179	38.570	38.900	41.820	Yes
7	BDS	11	195	31.810	31.010	35.650	No
8	BDS	61	15	44.120	44.880	45.650	Yes
9	BDS	20	101	36.140	35.200	35.780	Yes
10	BDS	17	217	33.020	34.040	32.540	No
13	BDS	52	331	44.000	42.940	42.260	Yes
4	GALILEO	26	200	37.750	48.550	34.470	Yes
12	GALILEO	54	335	41.850	43.470	39.840	No
19	GALILEO	73	132	39.540	42.290	39.230	Yes
28	GALILEO	10	113	33.220	33.980	31.130	No

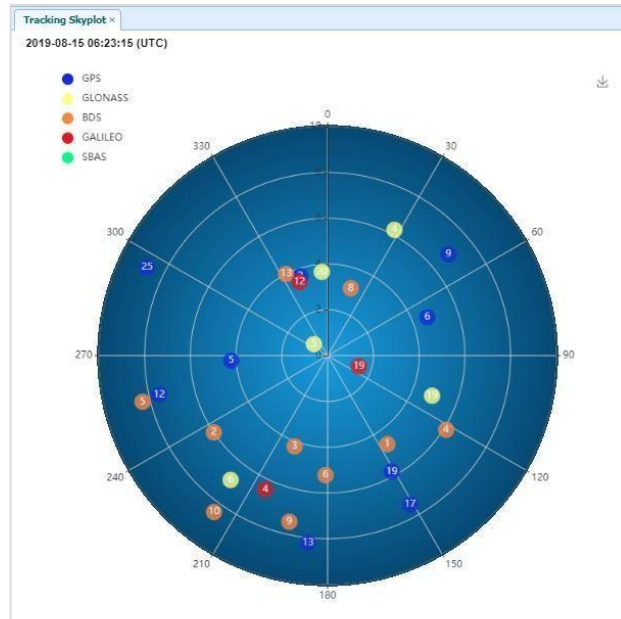
### 5.2.2 Tracking Info. Table Submenu

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.



### 5.2.3 Tracking Skyplot Submenu

The following figure is an example of Skyplot page.



### 5.2.4 Satellite Activation Submenu

Use this menu to enable or disable satellites.

Satellite Activation

GPS | GLONASS | BDS | GALILEO | SBAS

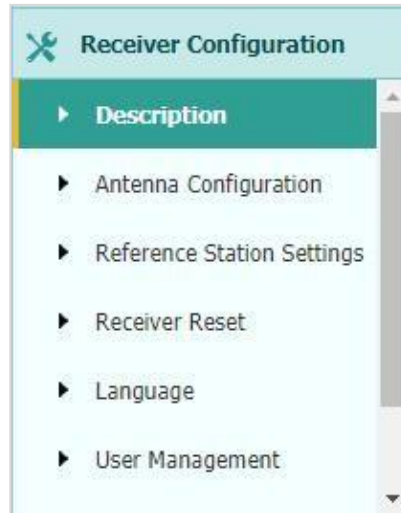
Select All | Unselect All | Confirm | Enable All | Disable All

Satellite Id	Enable	Satellite Id	Enable
1	<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>	4	<input checked="" type="checkbox"/>
5	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>
7	<input checked="" type="checkbox"/>	8	<input checked="" type="checkbox"/>
9	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>
11	<input checked="" type="checkbox"/>	12	<input checked="" type="checkbox"/>
13	<input checked="" type="checkbox"/>	14	<input checked="" type="checkbox"/>
15	<input checked="" type="checkbox"/>	16	<input checked="" type="checkbox"/>
17	<input checked="" type="checkbox"/>	18	<input checked="" type="checkbox"/>
19	<input checked="" type="checkbox"/>	20	<input checked="" type="checkbox"/>
21	<input checked="" type="checkbox"/>	22	<input checked="" type="checkbox"/>
23	<input checked="" type="checkbox"/>	24	<input checked="" type="checkbox"/>
25	<input checked="" type="checkbox"/>	26	<input checked="" type="checkbox"/>
27	<input checked="" type="checkbox"/>	28	<input checked="" type="checkbox"/>
29	<input checked="" type="checkbox"/>	30	<input checked="" type="checkbox"/>
31	<input checked="" type="checkbox"/>	32	<input checked="" type="checkbox"/>

### 5.3 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:





### 5.3.1 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.



### 5.3.2 Antenna Configuration Submenu

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

**Antenna Configuration**

Measure Way:

Antenna manufacturer:

Antenna Type:

Antenna SN:

Antenna Height:  (Meter)

Elevation Mask:

PDOP Mask:

### 5.3.3 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:

- a) **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.

**Reference Station Settings**

Reference Station Mode:

Base Station Name:

Base Station ID:

Reference Latitude:     N  S

Reference Longitude:     E  W

Reference Height:

**Sample for Average**

Positioning Constraint:  Single Solution Coordinates  Fixed Solution Coordinates

Sampling Amount:

Coordinates transfer threshold value(Meter):

Base list									
ID	Height	Latitude				Longitude			
1	40.6106	31	9	57.38583720	121	17	16.90488357		
2	25.1586	31	9	57.43236600	121	17	16.82067376		
3	13.9890	31	9	57.54871030	121	17	16.69633217		
4	38.4617	31	9	57.37965150	121	17	16.92208821		
5	41.8536	31	9	57.32407211	121	17	16.96160774		
6	11.6111	31	10	0.38914944	121	17	17.63768438		
7	19.9190	31	10	0.10243000	121	17	17.87998292		

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

The screenshot shows the 'Reference Station Settings' window with the 'Reference Station Mode' set to 'Auto Base'. The 'Base Station Name' and 'Base Station ID' are both '3225804'. The 'Reference Latitude' and 'Reference Longitude' are both '0' with a scale of '0.00000000'. The 'Reference Height' is '0.0000'. There are 'Save' buttons at the bottom of the coordinate fields and at the bottom of the window. Below the coordinate fields, there is a 'Sample for Average' section with 'Positioning Constraint' set to 'Single Solution Coordinates', 'Sampling Amount' set to '300' and '0%', and 'Start' and 'Stop' buttons. At the very bottom, there is a 'Coordinates transfer threshold value(meter):' set to '0' with a 'Save' button.

- c) **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.

The screenshot shows the 'Reference Station Settings' window with the 'Reference Station Mode' set to 'Manual Base'. The 'Base Station Name' and 'Base Station ID' are both '3225804'. The 'Reference Latitude' and 'Reference Longitude' are both '0' with a scale of '0.00000000'. The 'Reference Height' is '0.0000'. There are 'Use Current Position' and 'Save' buttons below the coordinate fields. Below the coordinate fields, there is a 'Sample for Average' section with 'Positioning Constraint' set to 'Single Solution Coordinates', 'Sampling Amount' set to '300' and '0%', and 'Start' and 'Stop' buttons.

**For Reference Latitude and Reference Longitude:**

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

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

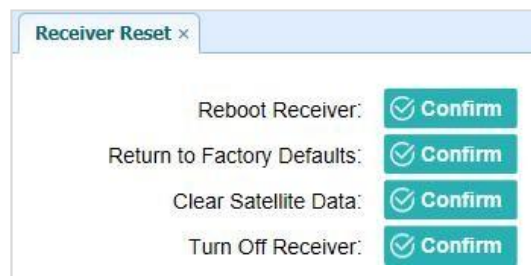
- a) **Single Solution Coordinates:** Collect the coordinates of receiver obtained through autonomous positioning.
- b) **Fixed Solution Coordinates:** Only collect coordinates of receiver with a fixed solution.

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.

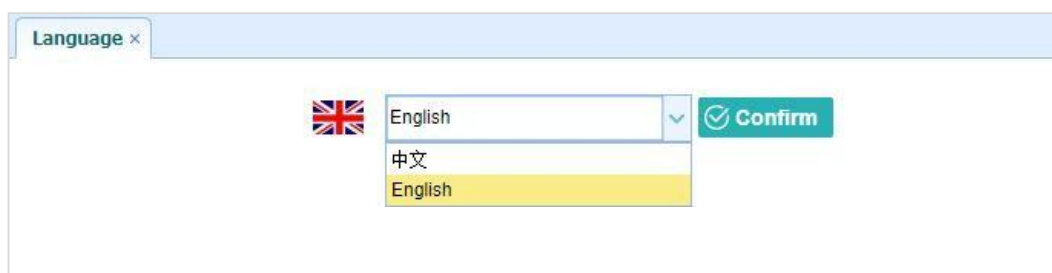
### 5.3.4 Receiver Reset Submenu

Use this screen to completely or partially reset the receiver:



### 5.3.5 Languages Submenu

Use this screen to select the web interface language:



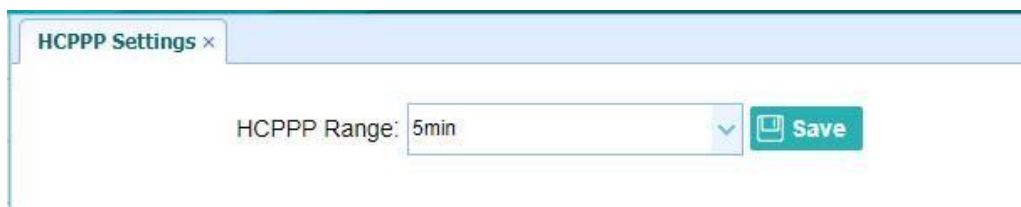
### 5.3.6 User Management Submenu

Use this menu to add, delete and modify the login user name and password.



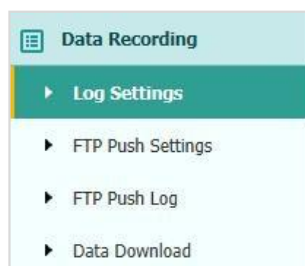
### 5.3.7 HCPPP Settings Submenu

Reserved menu.



## 5.4 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:



### 5.4.1 Log Settings Submenu

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

Log Settings >

Store Info			
Position	Total Storage	Storage Available	
1 Internal Storage	6750MB	6583MB	

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

Record Info							
Recording Number	File Name	Activated	Log Status	Setting Parameter	Switch	Clear Data	Clear All
1	record1	No	Not Recording	<a href="#">Modify</a> <a href="#">Detail</a>	<a href="#">ON</a> <a href="#">OFF</a>	<a href="#">Clear</a>	<a href="#">Clear All</a>

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

**Recording Edit**

Auto Record:  Yes  No

Sample Interval: 5s

Elevation Mask: 10 (°)

Duration Time: 1440 (Minute)

Site Name: 3225804

Antenna Height: 0.0000

Measure Way: Antenna Phase Ce

Storage Format: HCN

RINEX Version: OFF

[Advanced](#)

[Save](#) [Back](#)

Click advanced to see more settings.

Site Name: 3225804

[Advanced](#)

Start Date:  Yes  No

Apply Time:  Yes  No

Integral Point Store:  Yes  No

Circulating Memory:  Yes  No

the data overwritten first file after storage space is full

Repeat Observations:  Yes  No

Turn on to record a single observation. Turn off to record repeated observations.

Store Location: Internal Storage

Assigned Storage: 10000 (MB)

Observer: CHC

Observe Agency: CHC

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 data logging, 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.

## 5.4.2 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.

FTP Push Settings ×

Record Info				
Server ID	Server IP	Remote Directory	Server Description	Modify
1	192.168.3.72	/repo/first	ftp server 1	<a href="#">Modify</a>
2	192.168.3.72	/repo/second	ftp server 2	<a href="#">Modify</a>
3	192.168.3.72	/repo/hird	ftp server 3	<a href="#">Modify</a>

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](#)

### 5.4.3 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.

FTP Push Log ×

Record Info				
Server ID	Push File	File Size	Push Time	Push Successful Or Not
<a href="#">Clear FTP Push Log</a>				
20				

Page 1 of 1

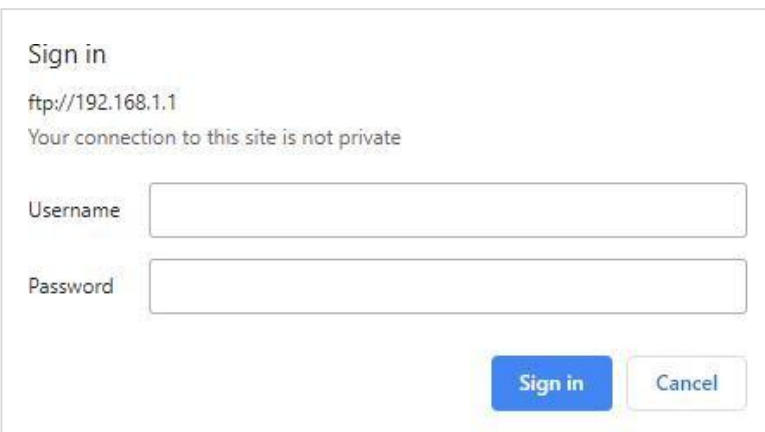
Displaying 0 to 0 of 0 items



### 5.4.4 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:



Sign in

ftp://192.168.1.1

Your connection to this site is not private

Username

Password

Sign in Cancel

The default logon account for the internal FTP site is:

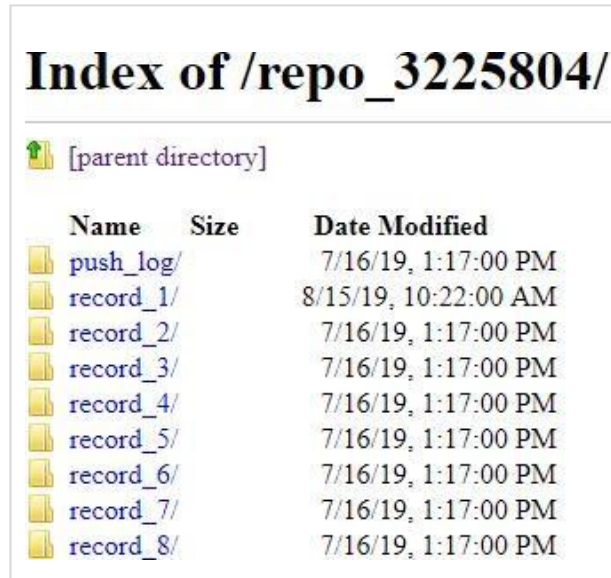
- User name: ftp
  - Password: ftp
2. Click the directory named as “repo” to view and download the files currently stored on the receiver:



**Index of /**

	Name	Size	Date Modified
	<a href="#">System Volume Information/</a>		8/9/19, 10:28:00 PM
	<a href="#">repo_3225804/</a>		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.



- To download a file, left-click the name of the target file → download the file according to the prompts.

## 5.5 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.

### 5.5.1 IO Settings Submenu

The following figure shows an example of the screen that appears when you select this submenu.

I/O Settings					
	Type	Description	Output	Connection Status	Modify
1	RTK Client	211.144.118.5:2102	---	Unconnected	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
2	TCP/UDP_Client1/NTRIP Server1	192.168.3.18:9900	---	Unconnected	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
3	TCP/UDP_Client2/NTRIP Server2	192.168.3.18:9901	---	Unconnected	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
4	TCP/UDP_Client3/NTRIP Server3	192.168.3.18:9902	---	Unconnected	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
5	TCP/UDP_Client4/NTRIP Server4	192.168.3.18:9903	---	Unconnected	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
6	TCP/UDP_Client5/NTRIP Server5	192.168.3.18:9904	---	Unconnected	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
7	TCP/UDP_Client6/NTRIP Server6	192.168.3.18:9905	---	Unconnected	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
8	TCP Server/NTRIP Caster1	9901	---	Closed	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
9	TCP Server/NTRIP Caster2	9902	---	Closed	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
10	TCP Server/NTRIP Caster3	9903	---	Closed	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
11	TCP Server/NTRIP Caster4	9904	---	Closed	<a href="#">Connect</a> <a href="#">Disconnecting</a> <a href="#">Detail</a>
12	Serial Port	115200	---	---	<a href="#">Settings</a>
13	Bluetooth	GNSS-3225804	GPGGA:5s,	---	<a href="#">Settings</a>
14	Radio	456.0500MHz	---	---	<a href="#">Settings</a>

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 and APIS\_ROVER → configure the related parameters → click [Confirm](#) to log on CORS or APIS.

- Connection Protocol: NTRIP

**RTK Client**

Connection Protocol:

Server IP:

Port:

Mount Point:  [Get](#)

User Name:

Password:

[Confirm](#) [Back](#)

- 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  to save and complete the connection.

- Connection Protocol: TCP

The screenshot shows the 'TCP/UDP Client' configuration window. The 'Connection Protocol' dropdown is set to 'TCP'. Other settings include: Auto connect (unchecked), Server IP (192.168.3.18), Port (9900), Differential Data (OFF), Raw Data (OFF), HRC Data (OFF), GPGGA (OFF), GPRMC (OFF), GPGST (OFF), GPGSA (OFF), Retransmit (RTK, OFF), HCPPP Data (OFF), GPGSV (OFF), GPZDA (OFF), and GPVTG (OFF). 'Confirm' and 'Back' buttons are at the bottom.

➤ Connection Protocol: UDP

The screenshot shows the 'TCP/UDP Client' configuration window. The 'Connection Protocol' dropdown is set to 'UDP'. All other settings are identical to the previous screenshot: Auto connect (unchecked), Server IP (192.168.3.18), Port (9900), Differential Data (OFF), Raw Data (OFF), HRC Data (OFF), GPGGA (OFF), GPRMC (OFF), GPGST (OFF), GPGSA (OFF), Retransmit (RTK, OFF), HCPPP Data (OFF), GPGSV (OFF), GPZDA (OFF), and GPVTG (OFF). 'Confirm' and 'Back' buttons are at the bottom.

➤ Connection Protocol: NTRIP1.0

The screenshot shows the 'TCP/UDP Client' configuration window. The 'Connection Protocol' is set to 'NTRIP1.0'. Other visible fields include: Auto connect (checkbox), Server IP (192.168.3.18), Password (masked), Mount Point (empty), Raw Data (OFF), HRC Data (OFF), GPGGA (OFF), GPRMC (OFF), GPGST (OFF), GPGSA (OFF), Retransmit (RTK, OFF), and Port (9900). Differential Data, HCPPP Data, GPXSV, GPZDA, and GPVTG are also set to OFF.

➤ Connection Protocol: NTRIP2.0

The screenshot shows the 'TCP/UDP Client' configuration window with the 'Connection Protocol' changed to 'NTRIP2.0'. A new 'User Name' field is now present and set to 'link\_a'. All other fields, including Server IP (192.168.3.18), Password, Port (9900), and various data options (Raw, HRC, GPGGA, GPRMC, GPGST, GPGSA, Retransmit, Differential, HCPPP, GPXSV, GPZDA, GPVTG), remain the same as in the previous screenshot.

### 3. TCP Server/NTRIP Caster

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


➤ Connection Protocol: TCP

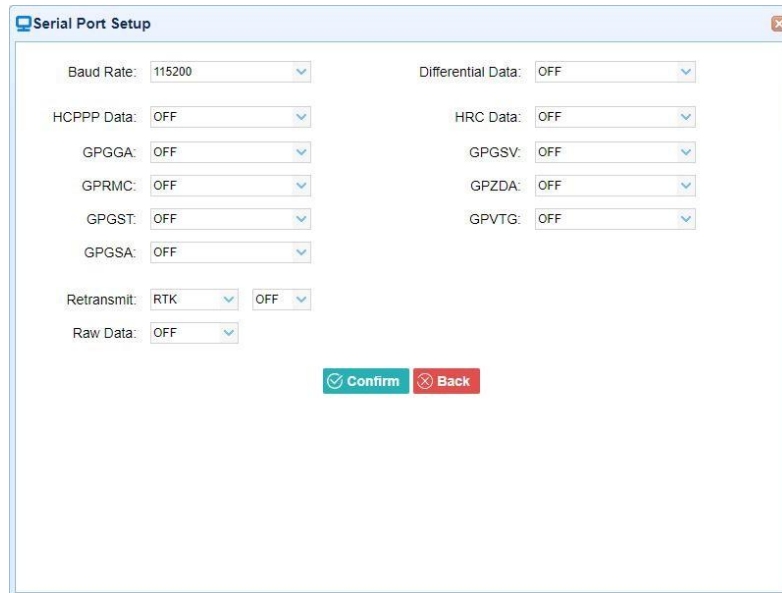
The screenshot shows the 'TCP Server/NTRIP Caster' configuration window. The 'Connection Protocol' dropdown is set to 'TCP'. The 'Auto connect' checkbox is unchecked. The 'Port' field contains '9901'. The following data format options are all set to 'OFF': Differential Data, HCPPP Data, GPGGA, GPRMC, GPGST, GPGSA, Retransmit (with 'RTK' selected), Raw Data, HRC Data, GPGSV, GPZDA, and GPVTG. At the bottom, there are 'Confirm' and 'Back' buttons.

➤ Connection Protocol: NTRIP


The screenshot shows the 'TCP Server/NTRIP Caster' configuration window. The 'Connection Protocol' dropdown is set to 'NTRIP'. The 'Auto connect' checkbox is unchecked. The 'User Name' and 'Password' fields are empty. The 'Port' field contains '9901' and the 'Mount Point' field is empty. The following data format options are all set to 'OFF': Differential Data, HCPPP Data, GPGGA, GPRMC, GPGST, GPGSA, Retransmit (with 'RTK' selected), Raw Data, HRC Data, GPGSV, GPZDA, and GPVTG. At the bottom, there are 'Confirm' and 'Back' buttons.

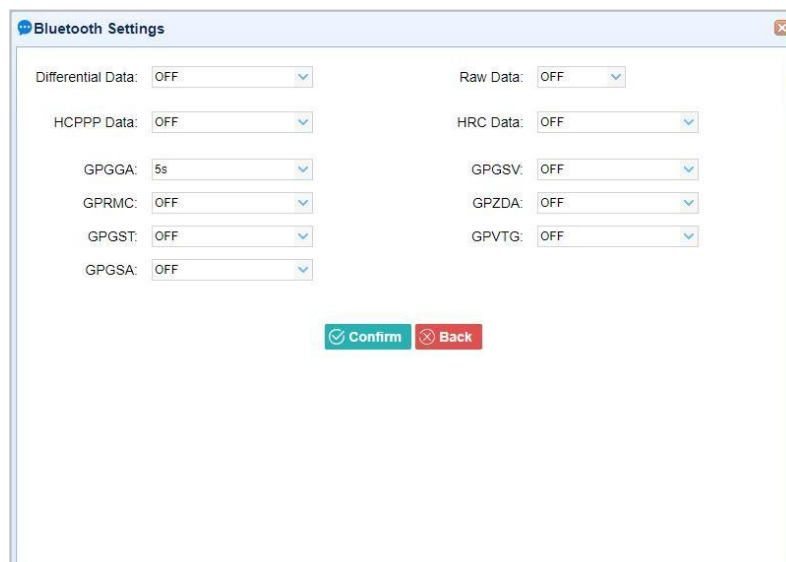
4. Serial Port

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



5. Bluetooth


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

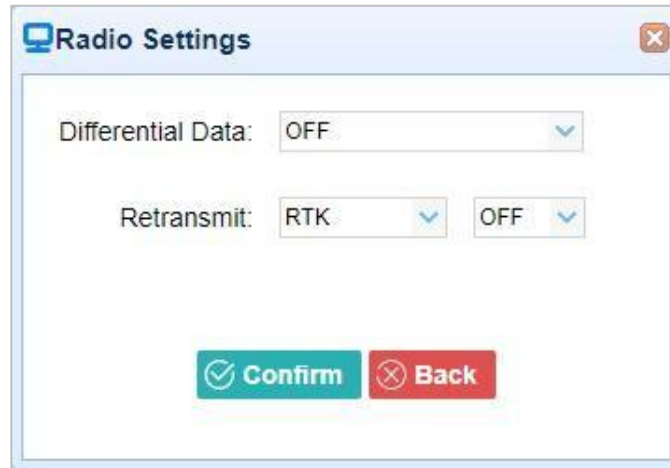




6. Radio

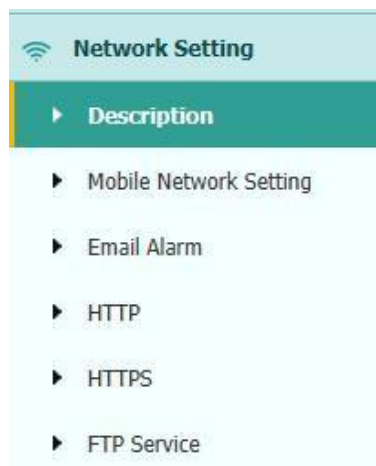
Tap the **Settings** button to the right of Radio → the *Radio Settings* screen will appear → select the format of differential data that you want to transmit through radio from the dropdown list

→ click  to save the settings and start to transmit.



## 5.6 Network Setting Menu

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



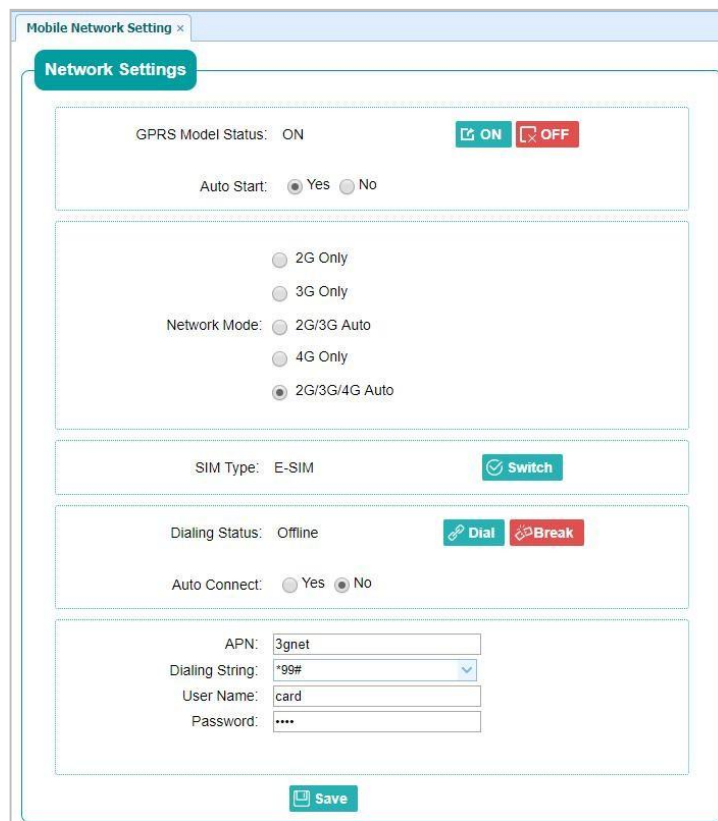
### 5.6.1 Description Submenu

Use this submenu to check the information of network setting.



### 5.6.2 Mobile Network Setting Submenu

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



### 5.6.3 Email Alarm Submenu

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

Email Alarm ×

TO

Email Address 1:

Email Address 2:

Email Address 3:

Save

From

Account:

Password:

Server Address:

Save

Email Alert

- Receiver is powered on
- External power is off
- Battery level is low
- Ftp push is failed
- Reciever(license) will be expired in 7 days.

Save

### 5.6.4 HTTP Submenu

Use this submenu to configure HTTP port.

The screenshot shows a web browser window with a tab titled "HTTP x". Inside the window, there is a configuration area for the HTTP port. It includes 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.

### 5.6.5 HTTPS Submenu

Use this submenu to configure HTTPS port.

The screenshot shows a web browser window with a tab titled "HTTPS x". The main content area has a teal header "HTTPS". Below it, there is a section for "Enable HTTPS:" with two radio buttons: "Yes" (which is selected) and "No". Underneath, there is a label "HTTPS Port:" followed by a text input field containing "443". At the bottom of the configuration area is a green "Save" button with a floppy disk icon.

### 5.6.6 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 titled "FTP Service x". The main content area has a teal header "FTP Service". Below it, there are two input fields: "User Name:" with the text "ftp" and "Password:" with masked characters represented by three dots. At the bottom of the configuration area is a green "Save" button with a floppy disk icon.

## 5.7 Module Setting Menu

Use this menu to check module information, configure WiFi, bluetooth, radio related settings, and turn on/off static voice of buzzer:



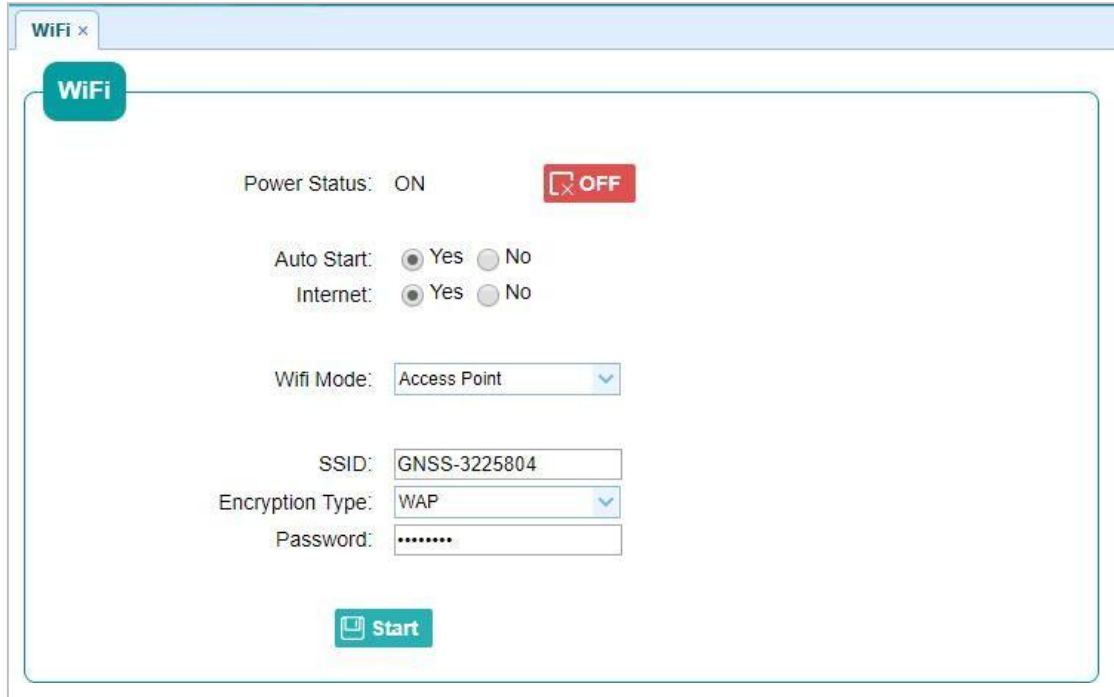
### 5.7.1 Description Submenu

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



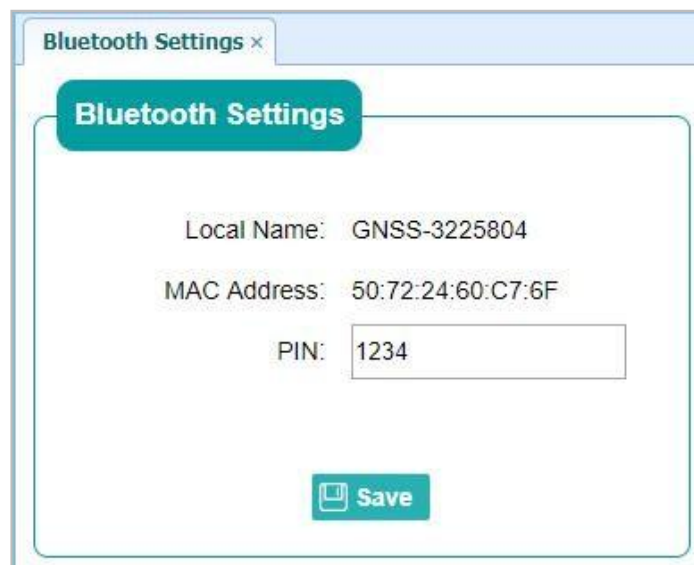
### 5.7.2 WiFi Submenu

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



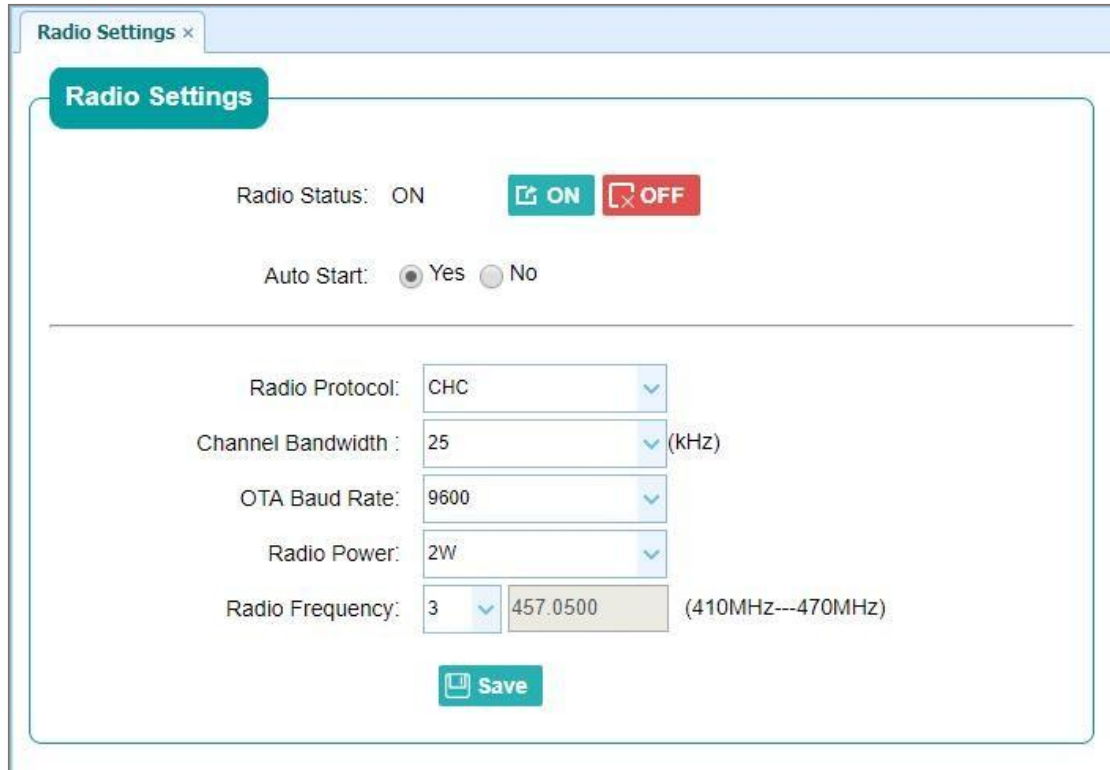
### 5.7.3 Bluetooth Settings Submenu

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



### 5.7.4 Radio Settings Submenu

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



### 5.8 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:



### 5.8.1 Firmware Info Submenu

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



### 5.8.2 Hardware Version Submenu

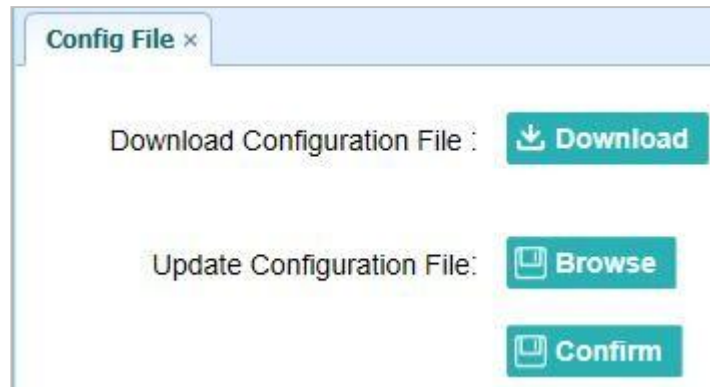
Use this submenu to check the hardware information, including main board version and core board version:





### 5.8.3 Config File Submenu

Use this submenu to update Configuration File.



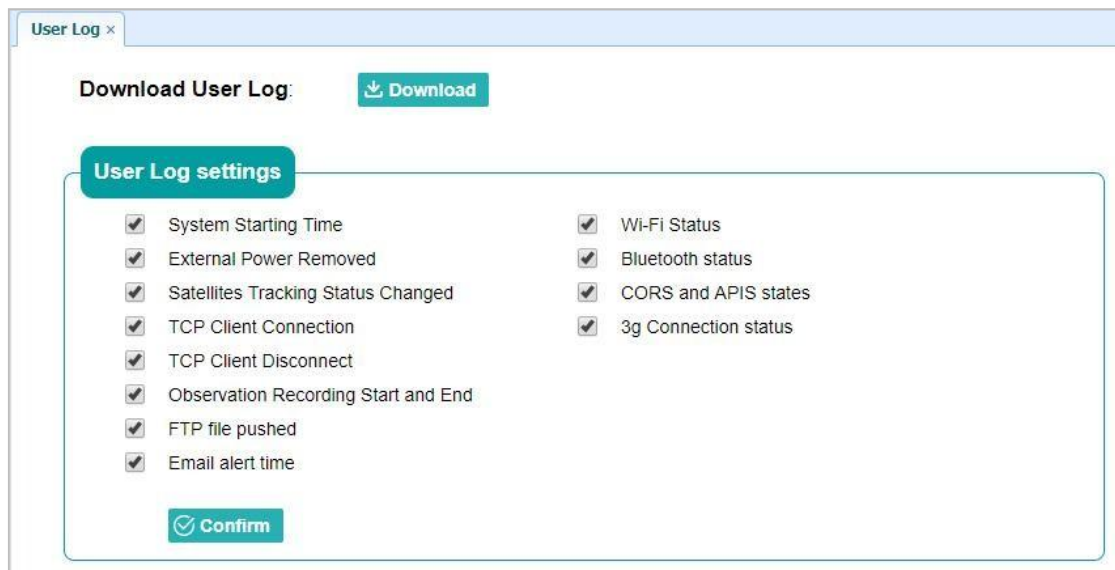
### 5.8.4 System Log Download Submenu

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



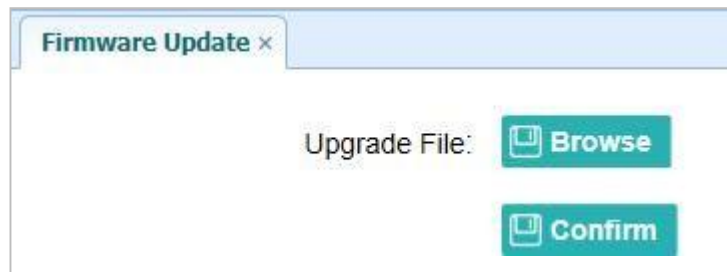
### 5.8.5 User Log Submenu

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.



### 5.8.6 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.



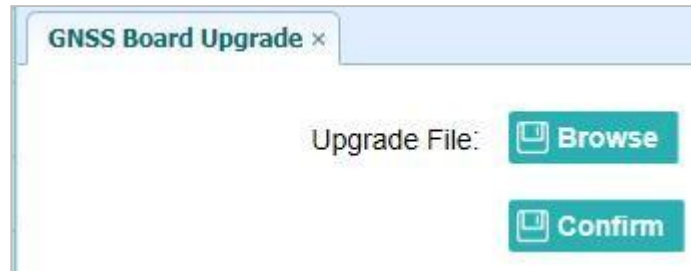
#### Notes

- 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.

### 5.8.7 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.



### 5.8.8 Upgrade Online Submenu

Use this submenu to input Server Address and upgrade online.



### 5.8.9 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.



## 5.9 Cloud Service Setting Menu

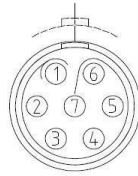
### 5.9.1 Cloud Service Setting Submenu



Use this submenu to turn on or turn off Cloud Service, Auto Start, Remote Control and configure other settings.

## A Communication Ports Definition

### AI CHCNAV iBase Receiver IO Port (7-pin Lemo Port) Definition



PIN	FUNCTION
1	Ground ( - )
2	Ground ( - )
3	RS232-TX (Output)
4	PPS
5	Not Used
6	VIN
7	RS232-RX (Input)



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