CHCNAV i50 GNSS

User Guide

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Make your work more efficient

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Preface

Copyright

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Trademarks

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Safety Warnings

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The Global Positioning System (GPS) is operated by the U.S. Government, which is solely responsible for the accuracy and maintenance of the GPS network. Accuracy can also be affected by poor satellite geometry and obstructions, like buildings and heavy canopy.

FCC Interference Statement

This equipment has been designed to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules in the Portable Mode. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

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.

CE Interference Statement

Declaration of Conformity: Hereby, Shanghai Huace Navigation Technology Ltd. declares that this i50 is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. A copy of the Declaration of conformity can be found at Shanghai Huace Navigation Technology Ltd.

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1 Introduction

The i50 GNSS Receiver User Guide describes how to set up and use the CHC® i50 GNSS receiver.

In this manual, “the receiver” refers to the i50 GNSS receiver unless otherwise stated.

Even if you have used other Global Navigation Satellite Systems (GNSS) products before, CHC 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 for an interactive look at CHC 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.

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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.

1.1.2 Regulations and Safety

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

Before operating a i50 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.

1.1.3 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.

1.2 Technical Support

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

If you need to contact CHC technical support, please contact us by email (support@chcnav.com) or Skype (chc_support).

1.3 Disclaimer

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

1.4 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.

2 Getting Started with i50

2.1 About the Receiver

The i50 GNSS receiver incorporates a GNSS engine, GNSS antenna, internal radio (410 MHz – 470 MHz), 4G cellular modem, Bluetooth, Wi-Fi, and dual-battery in a ruggedized and miniature unit that is easy for you to set up an all-in-one RTK rover or mobile base station. Bluetooth and Wi-Fi technology provide cable-free communication between the receiver and controller.

The receiver can be used as the part of a RTK GNSS system with CHC LandStar 7 software. And you 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

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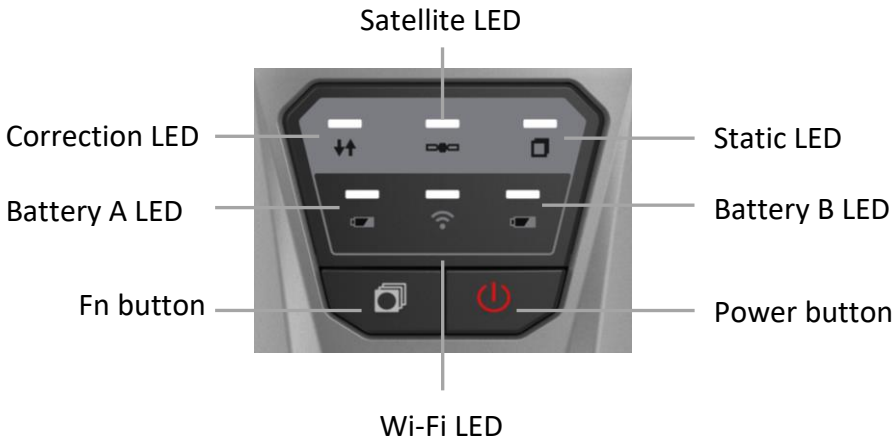
The operating controls are all located on the front panel. Battery compartment and SIM card slot are on the backside. Serial ports and connectors are located on the bottom of the unit.

2.2.1 Front Panel

The following figure shows a front view of the receiver.

The front panel contains six indicator LEDs and two buttons.



Name	Description
Correction LED (Green)	• Indicates whether the receiver is transmitting/receiving differential data. • The green LED flashes once per second when As a Base station: successfully transmitting differential data. As a Rover station: successfully receiving differential data from Base station.
Satellite LED (Blue)	• Shows the number of satellites that the receiver has tracked. • When the receiver is searching satellites, the blue LED flashes once every 5 seconds. • When the receiver has tracked N satellites, the blue LED will flash N times every 5 seconds.
Static LED (Yellow)	• Indicates whether the receiver is recording static data. • When the receiver is recording static data, the yellow LED flashes as setting frequency.
Battery A LED/ Battery B LED (Red)	• Indicates whether the receiver is out of power. • When the receiver is out of power, the red

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	LED flashes.
Wi-Fi LED (Red)	• Indicates whether the receiver Wi-Fi is opened. • When the receiver Wi-Fi is opened, the red LED turns on.
Fn button	• Move to next line of the menus or options. • Move to next character of the value that you want to make change. • Cancel the change you make on a function.
Power button	• Works as a Power button: • Press and hold this button for 3 seconds to turn on or turn off the receiver. • Works as a Reset button: • Hold Fn button, and press this button for 5 times continuously to reset the mainboard.

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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.

2.2.3 Receiver Ports

Port	Name	Description
	IO port	• This port is a 7-pin Lemo connector that supports RS-232 communications and external power input. • Users can use GPS to PC Data Cable supplied with the system to realize RS-232 communications between the receiver and computer or controller. Also, users can use a 7-pin cable to transmit differential data to an external radio.
	USB port	• This port is a mini-USB connector that supports USB communications. • Users can use USB Cable supplied with the system to download the logged data to a computer.
	Radio antenna connector	• Connect a radio antenna to internal radio of the receiver. And this connector is not used if you are using an external radio.

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2.3 Batteries and Power

2.3.1 Internal Batteries

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

2.3.1.1 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 CHC 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 CHC equipment that is specified to use it.

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

2.3.1.2 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 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.

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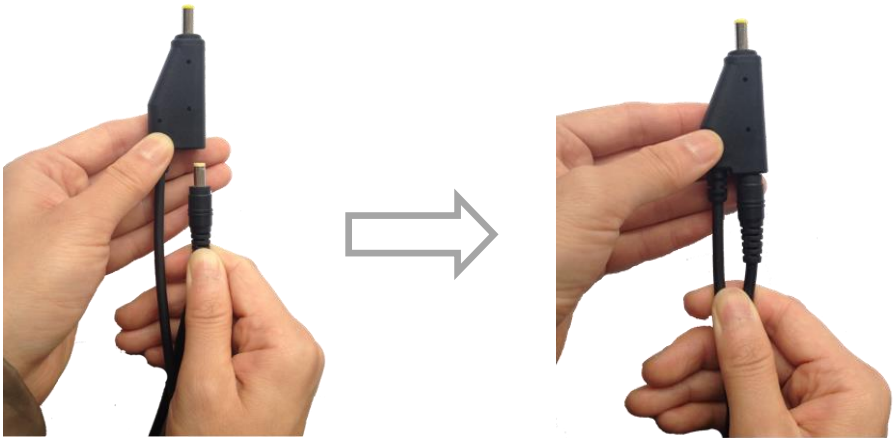
2.3.2 External Power Supply

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.

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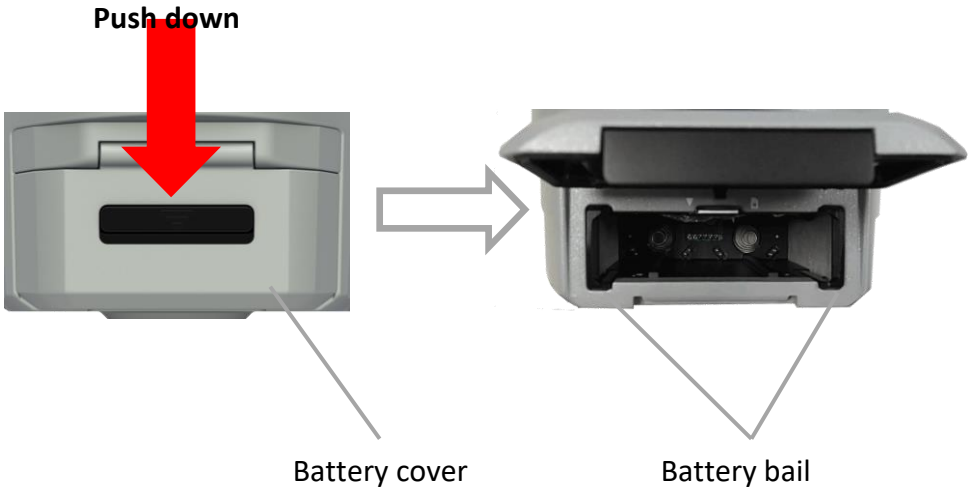
2.4 Inserting Battery and SIM Card

Push down the spring-loaded button on the battery cover to open the cover.

Make electrode sheets of battery turn toward the receiver, align the socket of the battery and the lug of the battery compartment, and then insert the battery into the battery compartment until it is locked by the battery bail.

To remove the battery, slide the battery bail to the left or right.



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.

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2.5 Product Basic Supply Accessories

2.5.1 Base Kit Basic Supply

Item	Picture
i50 GNSS Receiver	
UHF Bar Antenna (410-470 MHz)	

USB Cable	
GPS to PC Data Cable	
Lithium Battery	
H.I. Tape	
Extension pole	
Tribrach with optical plummet	
Auxiliary H.I. Tool	
Tribrach adaptor	
Transport Hard Case	

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2.5.2 Rover Kit Basic Supply

Item	Picture
i50 GNSS Receiver	
UHF Bar Antenna (410-470 MHz)	
USB Cable	
GPS to PC Data Cable	
Battery Charger	
Power Adapter with Cord	
Lithium Battery	
2M Range Pole w/bag	
Auxiliary H.I. Tool	

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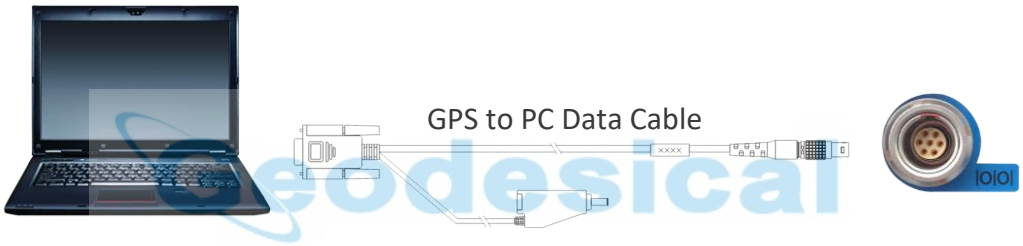
Transport Hard Case	

2.6 Connecting to an Office Computer

The receiver can be connected to an office computer for serial data transfer or settings via a GPS to PC Data Cable. Before you connect to the office computer, ensure that the receiver is powered on by internal battery or external power.

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

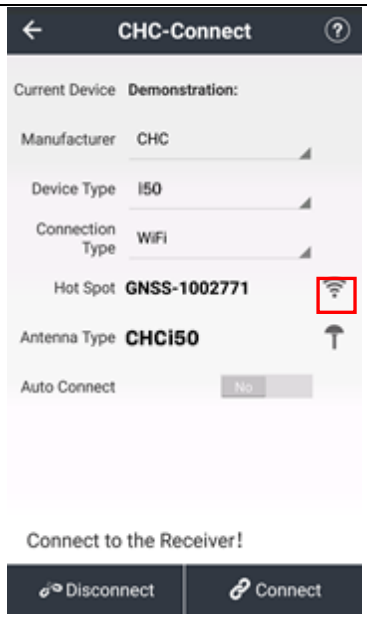


2.7 Connecting to a Controller

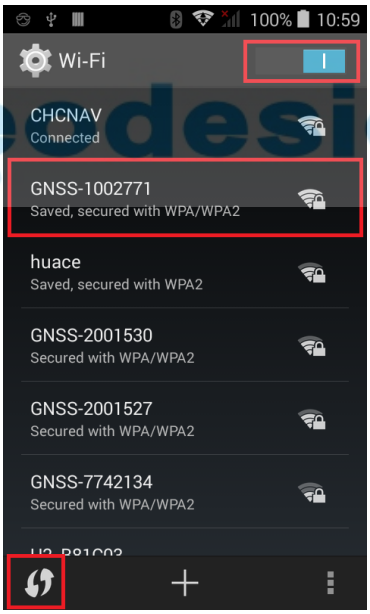
2.7.1 Connecting via Wi-Fi with LandStar 7 Software

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

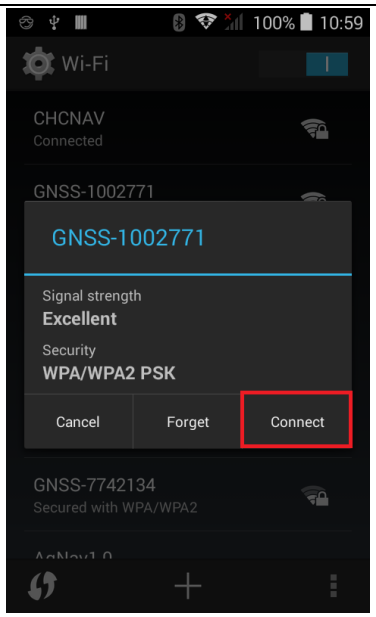
In the *Connect* screen, select **CHC** for the *Manufacture* field, **i50** for *Device Type* field, **WIFI** for *Connection Type* field.



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

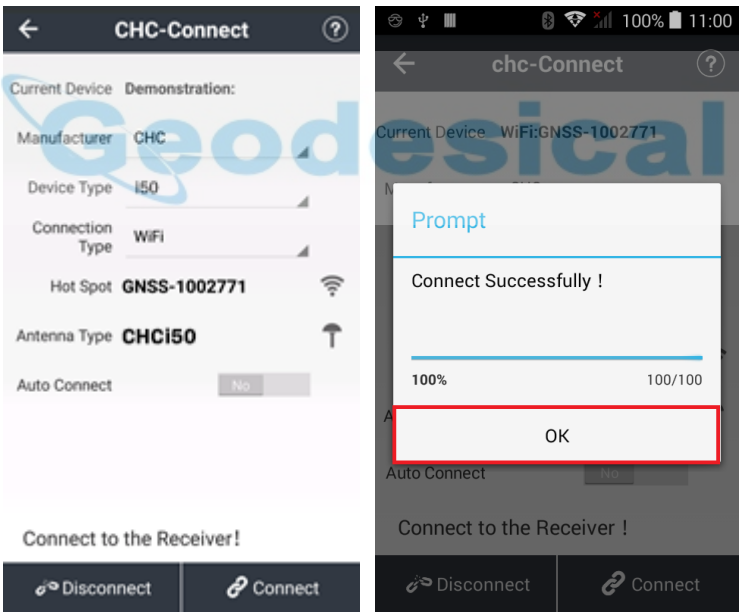


Tap **Connect** to link to the hot spot. If the first-time connection to this hot spot, user may type in the password.



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

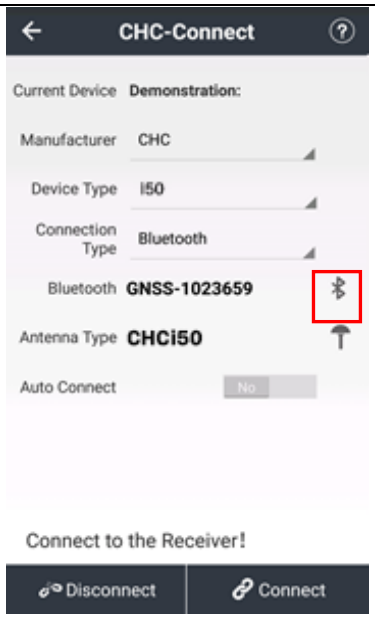
Tap the **Connect** button to build the connection.



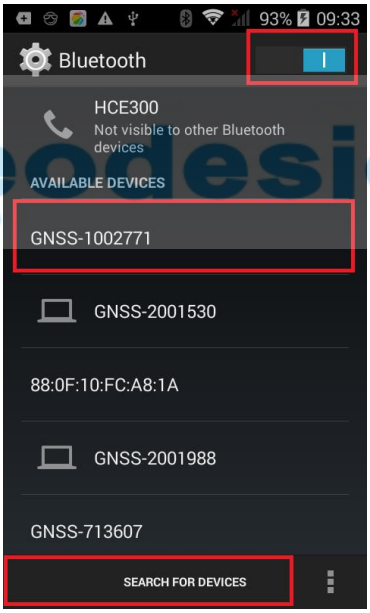
2.7.2 Connecting via Bluetooth with LandStar 7 Software

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

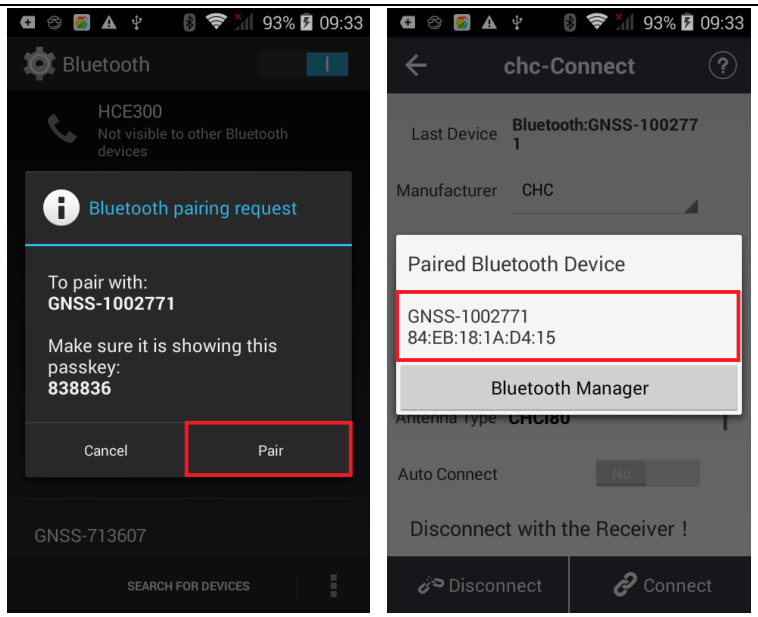
In the *Connect* screen, select **CHC** for the *Manufacture* field, **i50** for *Device Type* field, **Bluetooth** for *Connection Type* field.



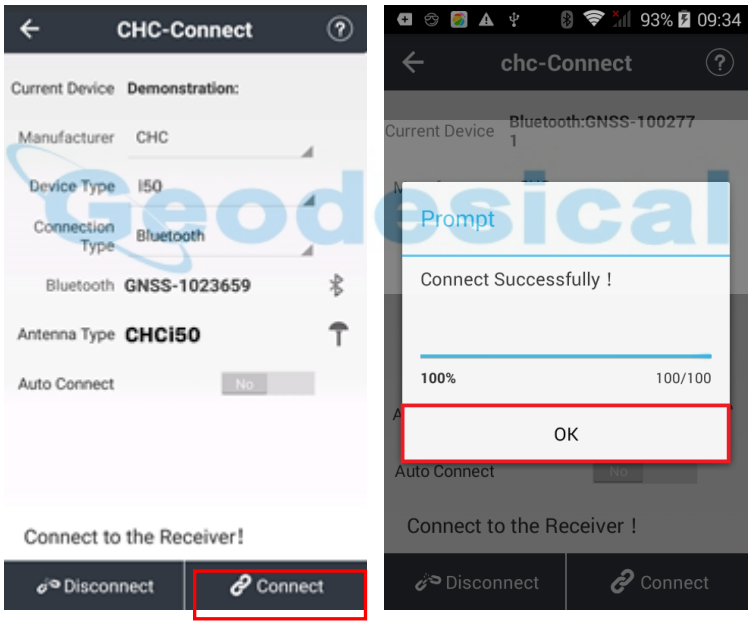
Tap the **Bluetooth Manager** and turn on the **Bluetooth** function to search bluetooth device around → select the target device in the list.



Tap **Pair** to connect the bluetooth device → selected the target device in the bluetooth manager list



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



2.8 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 CHC Geomatics Office (CGO) Software.

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

(1) Switch on the receiver and connect it with a computer by USB Cable. After the

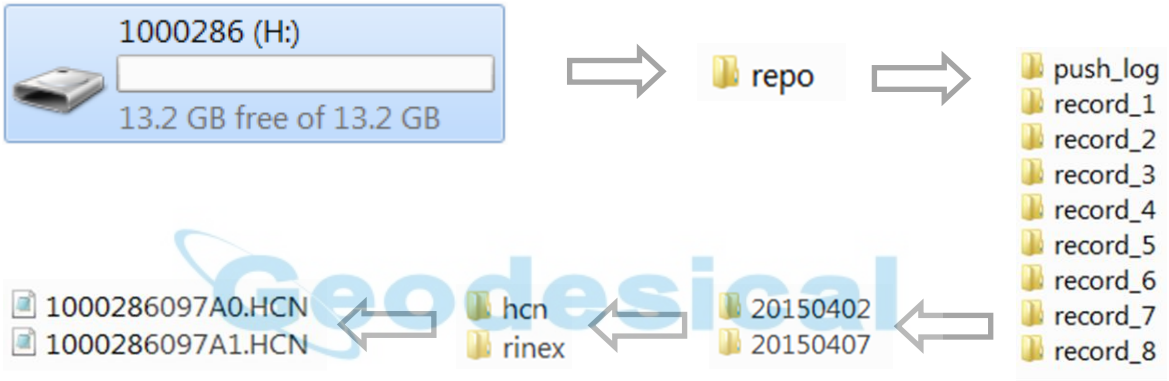
successful connection, a removable disk named as the Serial Number (SN) of the receiver will appear on the computer.

(2) Double click the removable disk and you will see the folder named as “repo”. Double click this folder, you will see 9 folders. The “push_log” folder is used to save the log files, and the other 8 folders represent different logging session and are used for store static data.

(3) Double click the folder that you have configured to store the static data, you will see the folder(s) created by the i50 system automatically and named by the date which is decide by GPS time when you start to log data.

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

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



Tip – For hcn 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 Base Station Setup and Operation

Real-Time Kinematic (RTK) operation provides centimeter-level precision by eliminating errors that are present in the GNSS system. For all RTK operations, you require both a rover receiver and a source of corrections from a base station or network of base stations.

A base station consists of a receiver that is placed at a known point. The receiver tracks the same satellites that are being tracked by the rover receiver simultaneously. Errors in the GNSS system are monitored at the base station, and a series of position corrections are computed. The messages are sent through a radio link to the rover receiver, where they are used to correct the real time positions of the rover.

This chapter provides the information to help you identify good setup locations, outlines basic precautions that you need to take to protect the equipment, and describes the conventional process to set up the base station and the configuring procedure that required for transmitting correction data.

3.1 Base Station Setup Guidelines

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

- Place the GNSS receiver in a location on the worksite where equal range in all directions provides full coverage of the site.
- Place the GNSS antenna in a location that has a clear line of sight to the sky in all directions. Do not place the antenna near vertical obstructions such as buildings, deep cuttings, site vehicles, towers, or tree canopy.
- The GNSS antenna must have a dear line of sight to the sky at all times during operation.
- Place the GNSS and radio antennas as high as practical. This minimizes multipath from the surrounding area, and enables the radio to broadcast to the maximum distance.
- Choose the most appropriate radio antenna for the size of the worksite. The higher the gain on the antenna, the longer the range.
- Make sure that the GNSS receiver does not lose power. To operate continuously for more than a few hours without loss of power at the base station, provide external power. When you use an external power supply, the integrated battery provides a backup power supply, enabling you to maintain continuous operation through a mains power failure.
- Do not locate a GNSS receiver, GNSS antenna, or radio antenna within 400

meters (about 1,300 feet) of transmitters, such as a power radar or cellular communications tower.

- Do not set up the base station close to the sources of electromagnetic interference, include alternators and generators, electric motors, equipment with DC-to-AC converters, etc.
- Do not operate the receiver outside the specified operating temperature range -40°C to +60°C (-40°F to +140°F).
- Take reasonable care to keep the GNSS receiver equipment dry, which could prolong their life and reduce the effects of corrosion on ports and connectors.

3.2 Outputting Corrections Using Internal Radio Modem

3.2.1 Base Station Setup

1. Connect the radio antenna onto i50 receiver. Screw the receiver onto extension pole.
2. Screw the extension pole with auxiliary H.I. tool onto tribrach adaptor.
3. Mount the tribrach onto the tripod.
4. Insert the tribrach adaptor into the tribrach.
5. Level and plumb the receiver over the known (control) point.
6. Measure the height of the base station GNSS antenna by measuring the slant height from the known (control) point to the end of auxiliary H.I. tool.

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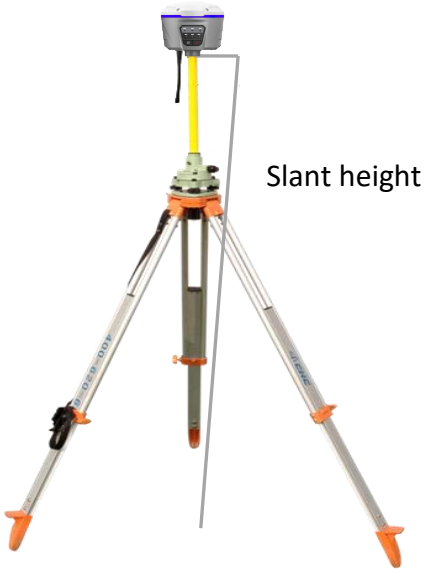
Note –After entered the vertical height from the known (control) point to the bottom of receiver that you calculated by adding the height of the extension pole to the height from the known (control) point to the auxiliary H.I. tool, LandStar 7 will calculate the height to the Antenna Phase Center (APC) automatically.

7. If required, connect the receiver to an external 12 V power supply.



3.3 Outputting Corrections Using External Radio

For base receiver part:

1. Screw the i50 receiver onto extension pole.
2. Screw the extension pole with auxiliary H.I. tool onto tribrach adaptor.
3. Mount the tribrach onto the tripod.
4. Insert the tribrach adaptor into the tribrach.
5. Level and plumb the receiver over the known (control) point.
6. Measure the height of the base station GNSS antenna by measuring the slant height from the known (control) point to the auxiliary H.I. tool.

Note – After entered the vertical height from the known (control) point to the bottom of receiver that you calculated by adding the height of the extension pole to the height from the known (control) point to the end of auxiliary H.I. tool, LandStar 7 will calculate the height to the Antenna Phase Center (APC) automatically.

7. If required, connect the receiver to an external 12 V power supply.

For external radio part (take the CHC DL6 Datalink for example):

8. Connect the Datalink Antenna to the 3 meter Cable for Datalink Antenna.
9. Connect 3 meter Cable for Datalink Antenna to Datalink Antenna Mounting Pole.
10. Screw the Datalink Antenna Mounting Pole onto the tribrach adapter.
11. Mount the tribrach onto the tripod.
12. Insert the tribrach adaptor into the tribrach.

13. Set up the Datalink Antenna nearby the base receiver.
14. Fix the DL6 Datalink onto the tripod.
15. Place the car battery at an appropriate location.

For connection between the receiver part and external radio part:

16. Connect Datalink Antenna to the Datalink Antenna Slot of DL6 Datalink via 3 meter Cable for Datalink Antenna.
17. Connect the base receiver with DL6 Datalink via GPS to Datalink Cable.
18. Connect the car battery with DL6 Datalink via Datalink External Power Cable.

CAUTION – The Datalink Antenna must be connected to the Datalink before the Datalink is powered on; otherwise, the Datalink can be damaged.

4 Rover Station Setup And Operation

Real-Time Kinematic (RTK) operation provides centimeter-level precision by eliminating errors that are present in the GNSS system. For all RTK operations, you require both a rover receiver and a source of corrections from a base station or network of base stations.

The second part of the RTK GNSS system is the rover receiver. The rover receiver is moved between the points that require measurement or stakeout. The rover receiver is connected to a base station or to a source of RTK corrections such as a CORS (Continuous Operational Reference System) or the CHC APIS service. The connection is provided by:

- an integrated radio
- an integrated cellular modem
- a cellular modem in the controller

This chapter provides the information to help you identify good setup locations, describes the conventional process to set up the rover station and the configuring procedure that required for receiving correction data.

Geodesical

4.1 Rover Station Setup Guidelines

For good rover operation, observe the following setup guidelines:

- Place the GNSS antenna in a location that has a clear line of sight to the sky in all directions. Do not place the antenna near vertical obstructions such as buildings, deep cuttings, site vehicles, towers, or tree canopy. GNSS rovers and the base station receive the same satellite signals from the same satellites. The system needs five common satellites to provide RTK positioning.

WARNING – Take care not to touch overhead power lines with the CHC i50 GNSS receiver or the range pole when moving the equipment into position. Touching overhead power lines may cause electrocution, leading to serious injury.

- GNSS satellites are constantly moving. Because you cannot measure at a specific location now does not mean that you will not be able to measure there later, when satellite coverage at the location improves.
- To get a fixed position solution with centimeter precision, initialize the RTK rover receiver. For initialization to take place, the receiver must track at least five satellites that the base station is also tracking. In a dual-satellite

constellation operation, for example, GPS and GLONASS, the receiver must track at least six satellites.

- To continue to survey at centimeter precisions, the rover must continuously track at least four satellites that the base station is also tracking. The radio link between the base and rover receivers must also be maintained.
- Loss of the satellite signals will result in a loss of centimeter position precision.

4.2 Rover Station Setup

1. If required, connect the radio antenna onto i50 receiver.
2. Screw the receiver on top of the range pole.
3. Fix the controller bracket on the range pole.
4. Fit the controller in the controller bracket.
5. Level and plumb the receiver over the target measuring point.

Geodesical

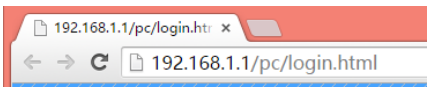
5 Configuring Through a Web Browser

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 of the receiver into the address bar of the web browser on your computer:



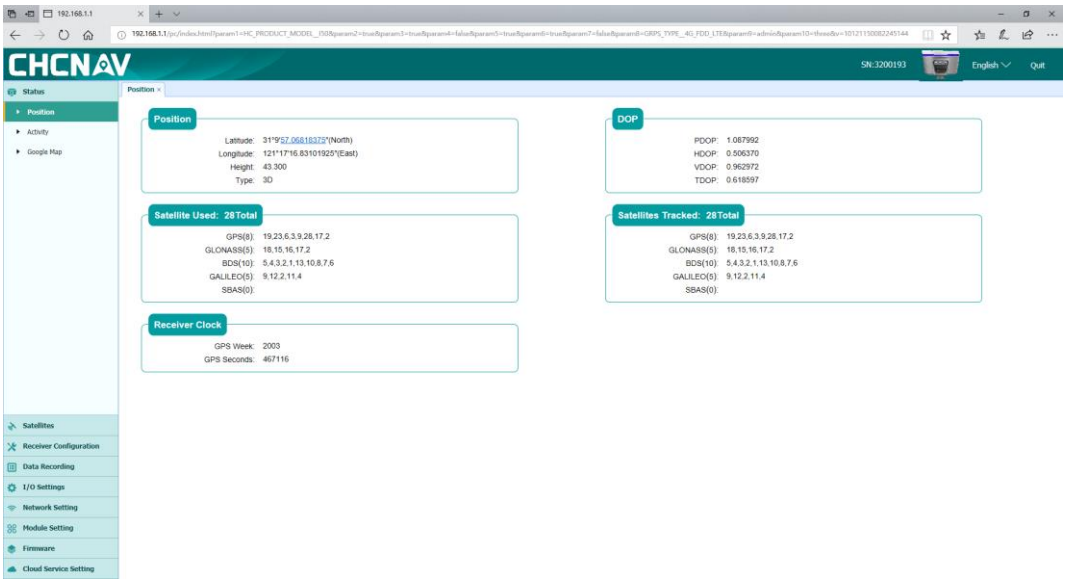
4. The web browser prompts you to enter a login account and password:

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 for the next time you enter this login screen.

5. Once you are logged in, the web page appears as follows:

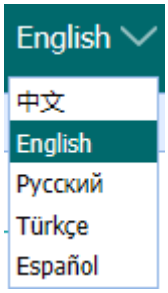


This web page shows the configuration menus on the left of the browser window, and the setting on the right. Each configuration menu contains the related submenus to configure the receiver and monitor receiver performance.

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, three 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, files being logged, and data streams being output. With this information, it is easy to tell exactly what functions the receiver is performing:

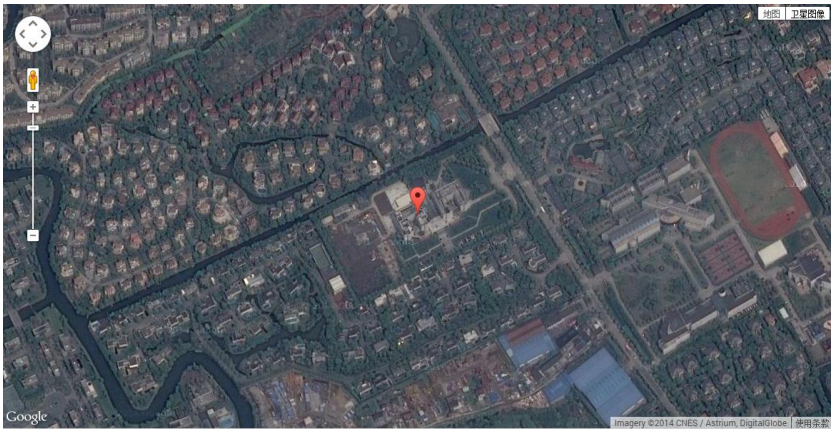
Recording Number	File Name	Activated	Log Status
1	record1	Yes	Recording
2	record2	No	Not Recording
3	record3	No	Not Recording
4	record4	No	Not Recording
5	record5	No	Not Recording
6	record6	No	Not Recording
7	record7	No	Not Recording
8	record8	No	Not Recording

	Type	Description	Output
1	RTK Client	211.144.118.5:2102	---
2	TCP/UDP_Client1/NTRIP Server1	192.168.3.18:9900	---
3	TCP/UDP_Client2/NTRIP Server2	192.168.3.18:9901	---
4	TCP/UDP_Client3/NTRIP Server3	192.168.3.18:9902	---
5	TCP/UDP_Client4/NTRIP Server4	192.168.3.18:9903	---
6	TCP/UDP_Client5/NTRIP Server5	192.168.3.18:9904	---
7	TCP/UDP_Client6/NTRIP Server6	192.168.3.18:9905	---
8	TCP Server/NTRIP Caster1	9901	---
9	TCP Server/NTRIP Caster2	9902	---
10	TCP Server/NTRIP Caster3	9903	---
11	TCP Server/NTRIP Caster4	9904	---
12	Serial Port	9600	---
13	Bluetooth	GNSS-3200193	---
14	Radio	460.0500MHz	---

Geodesical

5.1.3 Google Map Submenu

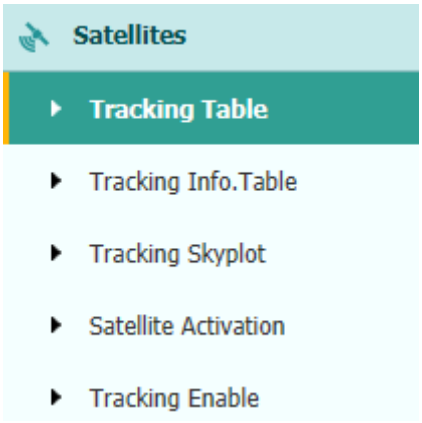
Tap this submenu to show the location of the receiver on Google map.



5.2 Satellites Menu

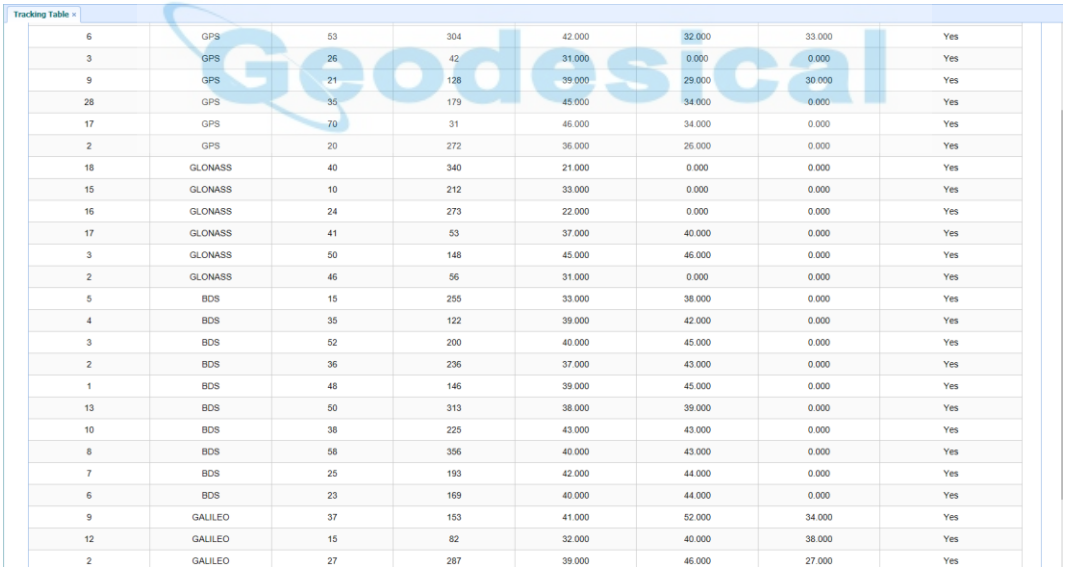
Use the Satellites menu to view satellite tracking details and enable/disable GPS,

SBAS, 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

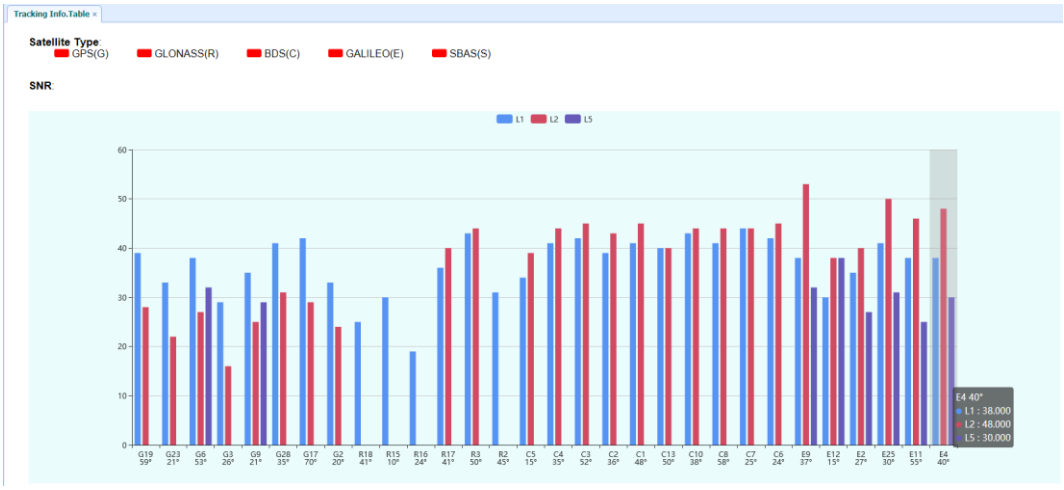
Provides the status of satellites tracked in general, such as the satellite ID, satellite type, attitude angle, azimuth angle, L1 SNR, L2 SNR, L5 SNR and enable/disable status of each one.



6	GPS	53	304	42.000	32.000	33.000	Yes
3	GPS	26	42	31.000	0.000	0.000	Yes
9	GPS	21	128	39.000	29.000	30.000	Yes
28	GPS	35	179	45.000	34.000	0.000	Yes
17	GPS	70	31	46.000	34.000	0.000	Yes
2	GPS	20	272	36.000	26.000	0.000	Yes
18	GLONASS	40	340	21.000	0.000	0.000	Yes
15	GLONASS	10	212	33.000	0.000	0.000	Yes
16	GLONASS	24	273	22.000	0.000	0.000	Yes
17	GLONASS	41	53	37.000	40.000	0.000	Yes
3	GLONASS	50	148	45.000	46.000	0.000	Yes
2	GLONASS	46	56	31.000	0.000	0.000	Yes
5	BDS	15	255	33.000	38.000	0.000	Yes
4	BDS	35	122	39.000	42.000	0.000	Yes
3	BDS	52	200	40.000	45.000	0.000	Yes
2	BDS	36	236	37.000	43.000	0.000	Yes
1	BDS	48	146	39.000	45.000	0.000	Yes
13	BDS	50	313	38.000	39.000	0.000	Yes
10	BDS	38	225	43.000	43.000	0.000	Yes
8	BDS	58	356	40.000	43.000	0.000	Yes
7	BDS	25	193	42.000	44.000	0.000	Yes
6	BDS	23	169	40.000	44.000	0.000	Yes
9	GALILEO	37	153	41.000	52.000	34.000	Yes
12	GALILEO	15	82	32.000	40.000	38.000	Yes
2	GALILEO	27	287	39.000	46.000	27.000	Yes

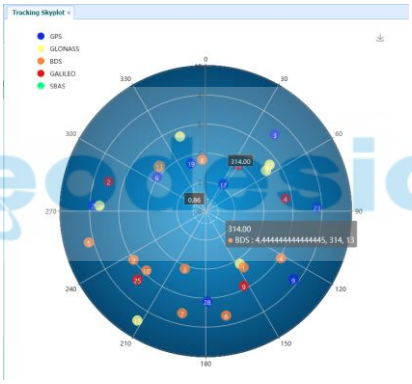
5.2.2 Tracking Info. Table Submenu

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.



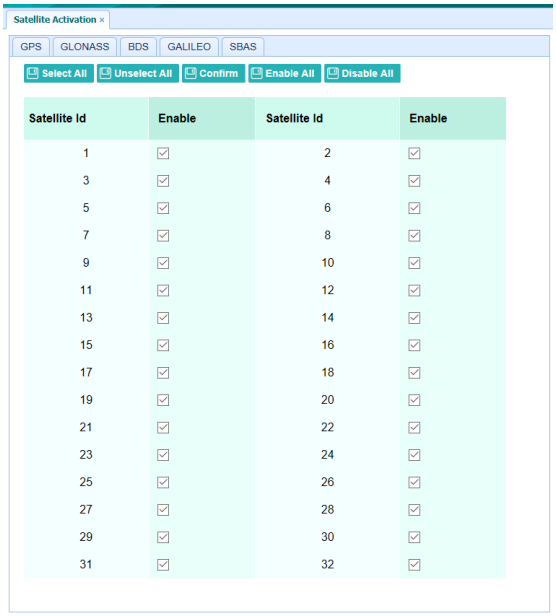
5.2.3 Tracking Skyplot Submenu

The following figure is an example of Skyplot page.



5.2.4 Satellite Activation Submenu

Use this menu to enable or disable satellites.



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

5.2.5 Tracking Enable Submenu

Use this menu to enable or disable tracking signals.

Geodesical

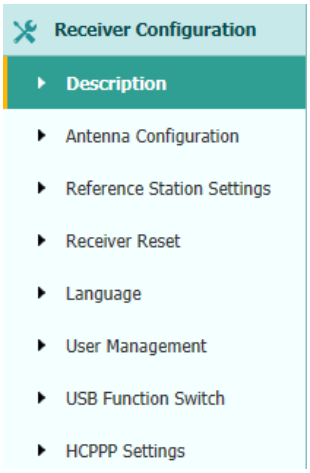
Tracking Enable ×

Type	Signal	Enable
GPS	L1-CA	☑
GPS	L2-Legacy	☑
GPS	L2-CS	☑
GPS	L5	☑
SBAS	L1-C/A	☐
SBAS	L5	☐
GLONASS	L1-C/A	☑
GLONASS	L2-C/A(M)	☑
GLONASS	L3	☑
GALILEO	E1	☑
GALILEO	E5-A	☐
GALILEO	E5-B	☐
GALILEO	E5-AltBOC	☑
BeiDou	B1	☑
BeiDou	B2	☑

✓ Confirm

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:

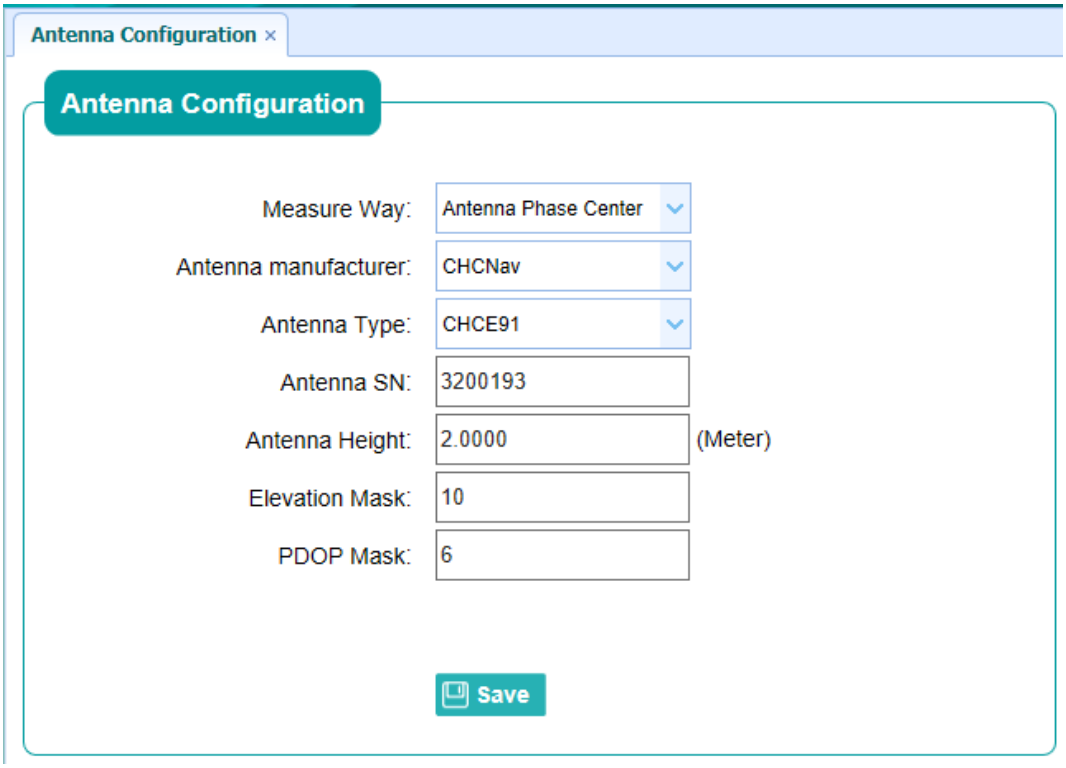


5.3.1 Description

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 of the items relating to the GNSS antenna. You must enter the correct values for all antenna-related fields, as the choices you make significantly affect the accuracy for logged data and broadcast correction data:



5.3.3 Reference Station Settings Submenu

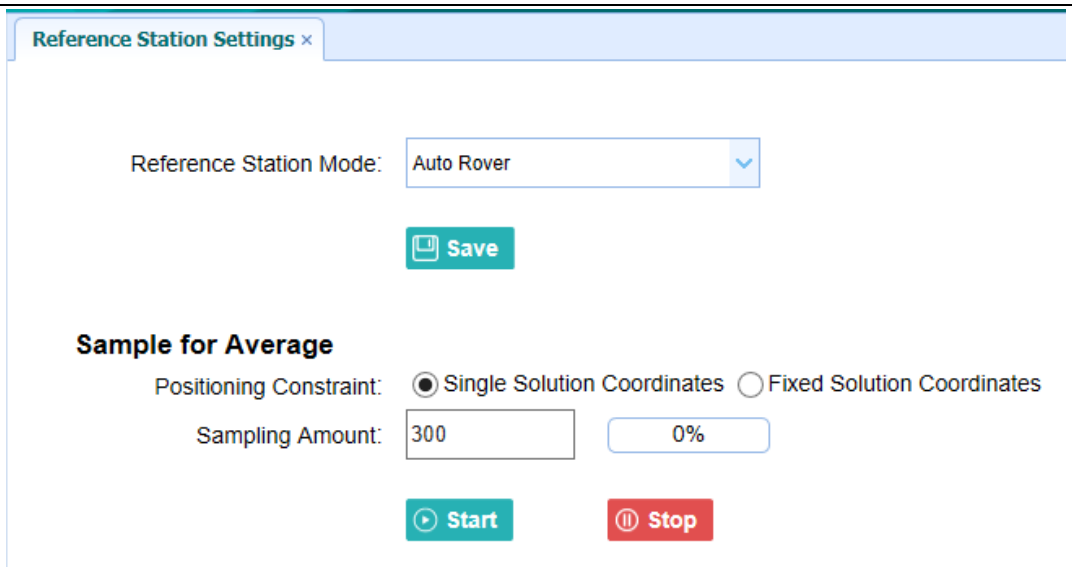
Geodesical

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 significantly affects the accuracy of logged data files and broadcast correction data:

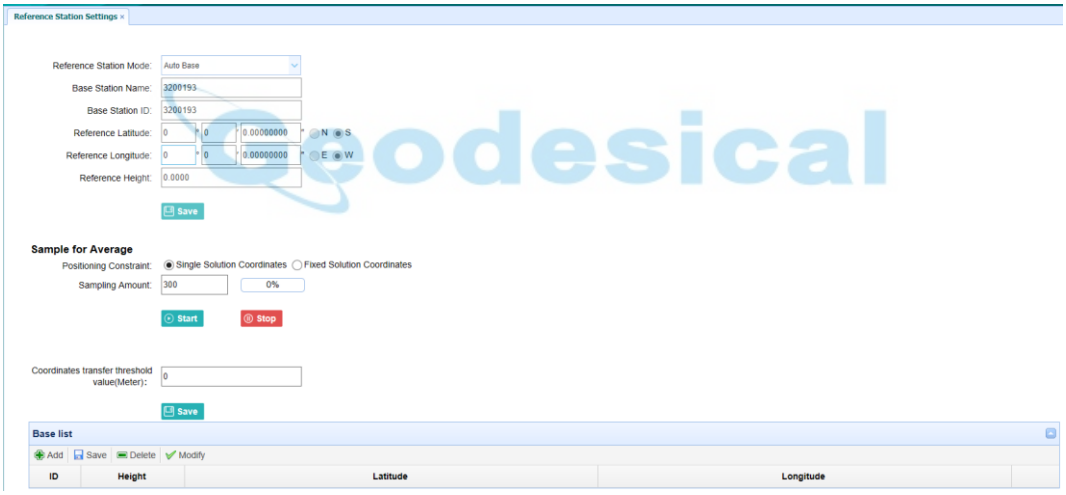
For **Reference Station Mode**:

There are three modes available:

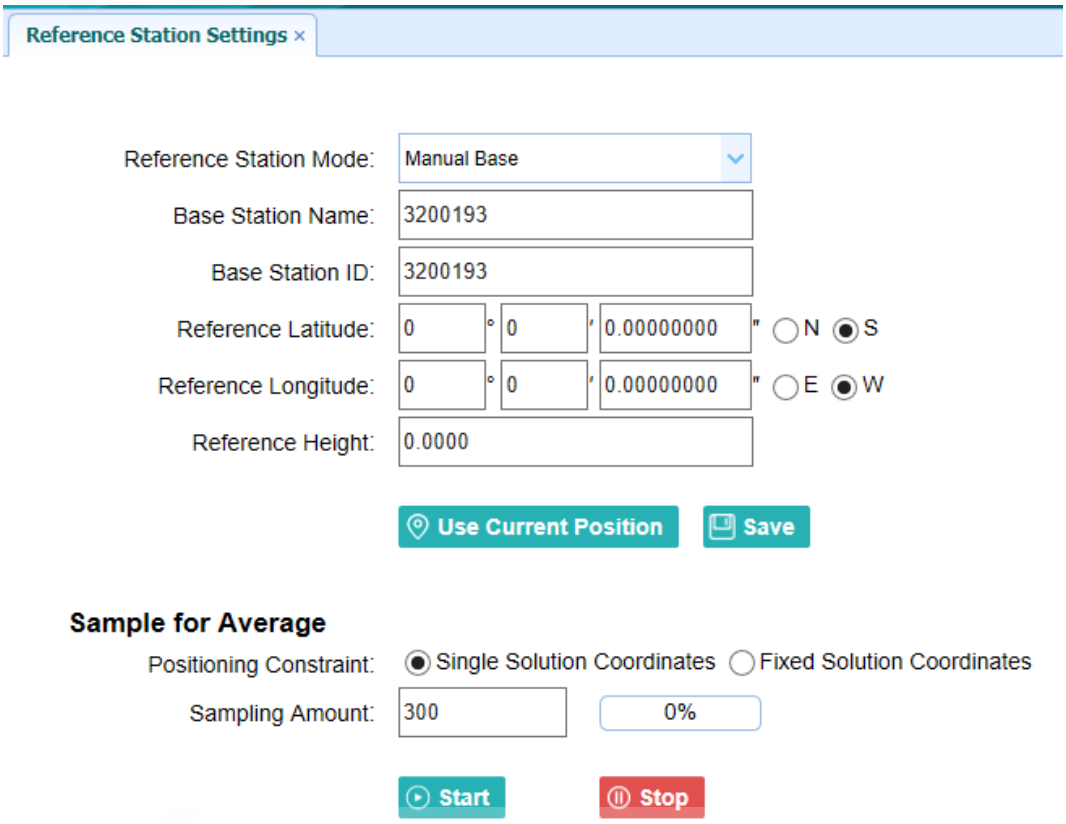
a) **Auto Rover:** The receiver will serve as a rover after this mode is enabled, and then receive correction data through the working mode set last time.



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.



c) **Manual Base:** The receiver will serve neither as a base or a rover after this mode is enabled. Users need to configure the receiver manually.



Geodesical

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.

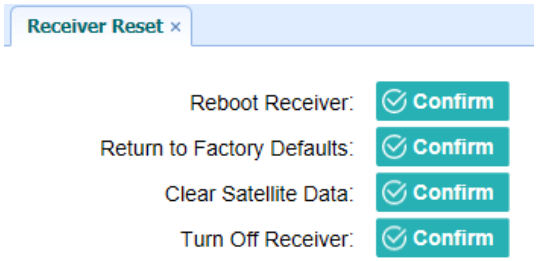
After the configuration of positioning limit and sampling amount, click Start to carry out sampling and averaging → the progress bar will show the progress → the result

will be served as the coordinate of current positon.

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

5.3.4 Receiver Reset Submenu

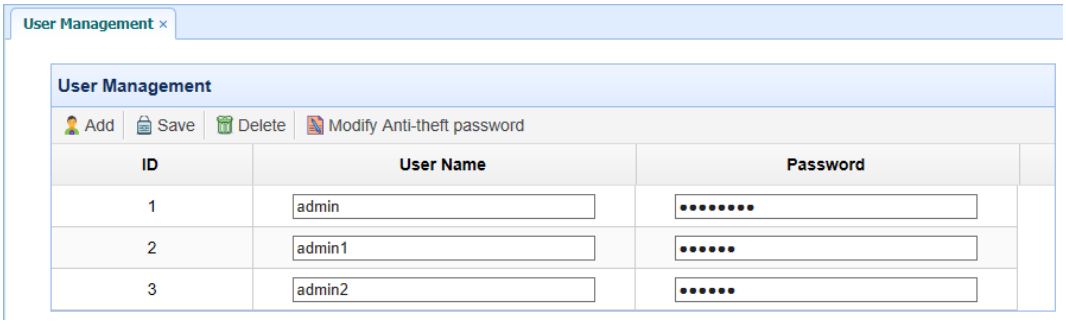
Use this screen to completely or partially reset the receiver:



5.3.5 Languages Submenu

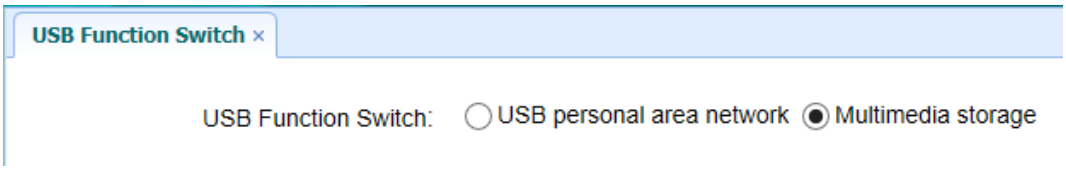
Use this screen to select the web interface language:

5.3.6 User Management Submenu



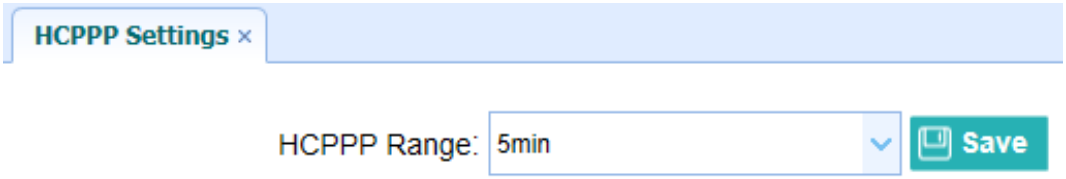
5.3.7 USB Function Switch Submenu

Use this menu to switch between USB personal area network and Multimedia storage.



5.3.8 HCPPP Settings Submenu

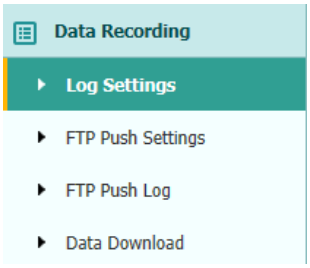
Use this menu to select HCPPP Range.



5.4 Data Recording Menu

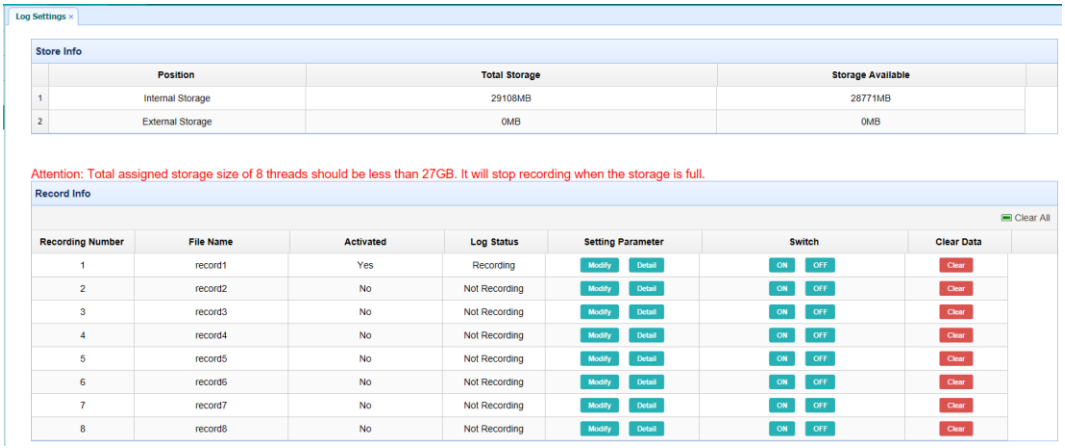
Geodesical

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 if memory is low. This menu also provides the controls for the FTP push feature:

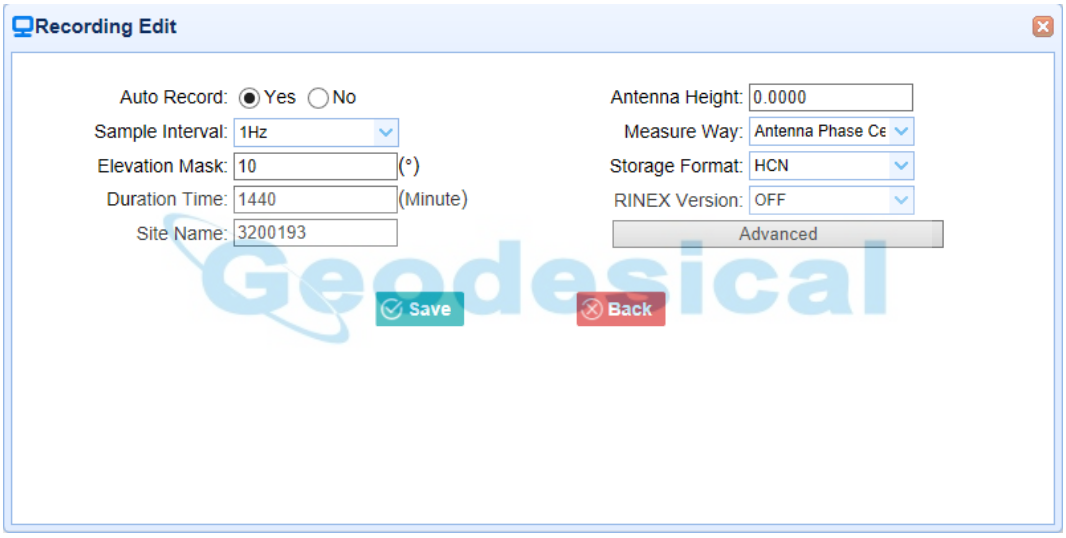


5.4.1 Log Settings Submenu

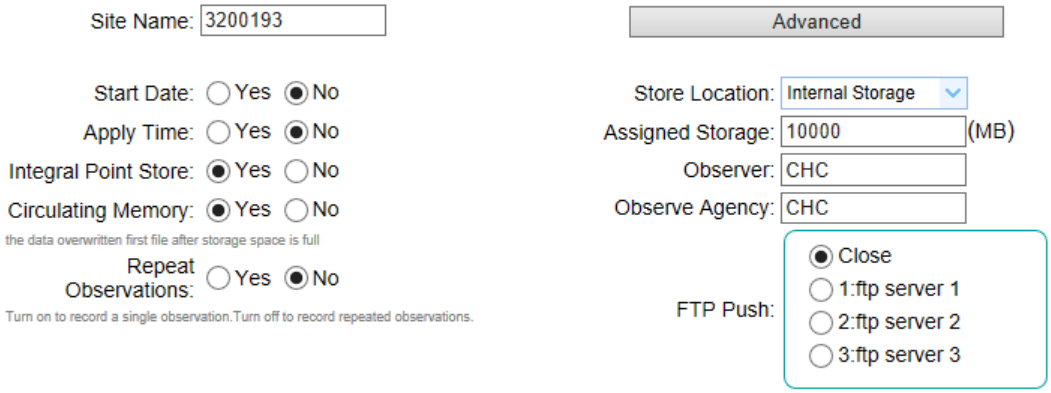
Here shows the data logging status, including internal and external storage usage and data logging status of each session. Also, users can configure the data logging settings for each session, including recording name, store location, storage limit, store formats, start time, etc.



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



Click advanced to see more settings.



In this screen, you can configure all the data logging parameters, and determine

whether the recording files will be affected by the FTP Push. The parameters are mainly as follows:

- **File Name**: The name of this logging session.
- **Sample Interval**: Select the observable rate from the dropdown list.
- **Store Location**: Determine whether to store at internal storage or external storage.
- **Enable Start Time**: Set the start time of data logging in UTC. Select **Or not** option below to determine whether to start data logging from the start time defined, or immediately after this session is switched on.
- **Duration Time**: Set the duration of data logging.
- **Assigned Storage**: Set the storage space of this session.
- **Circulating Memory**: Select **Yes** or **No** option to determine whether to auto delete old files if the storage space is full.
- **Data Format**: Set the data format of the logged data.
- **FTP Push**: Decide whether to push the stored files to the FTP server of your choice.

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

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

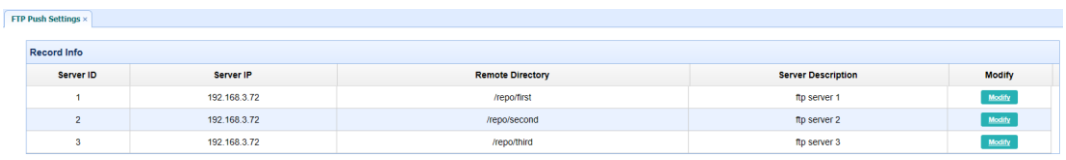
To switch on or off **ANY** data logging session, tap the **ON** or **OFF** button to the right of the required session.

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

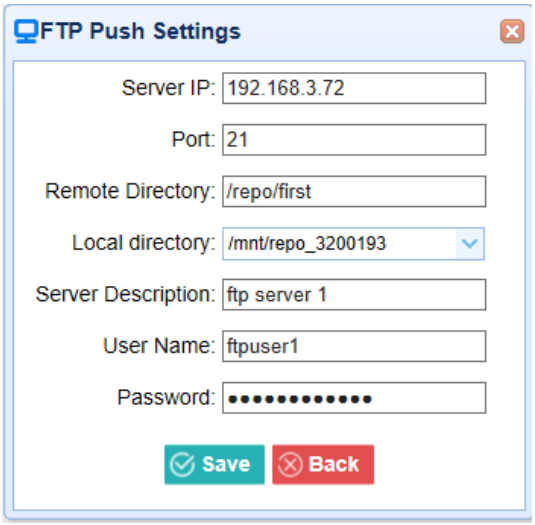
To delete the recorded files of **ALL** data logging sessions, tap the **Clear ALL Accounts** button.

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.

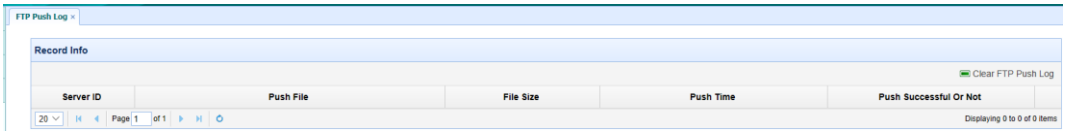


Tap **Modify** button to the right of the required FTP server and the *FTP Push Settings* screen appears:



5.4.3 FTP Push Log Submenu

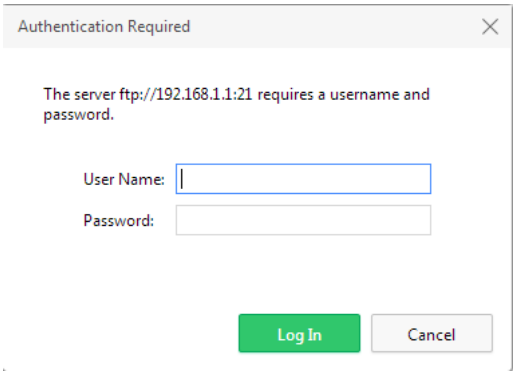
Shows the related information about the recorded filed that be pushed. And users can tap **Clear Ftp Send Log** button in the upper right corner to clear the log of FTP Push operations.



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:



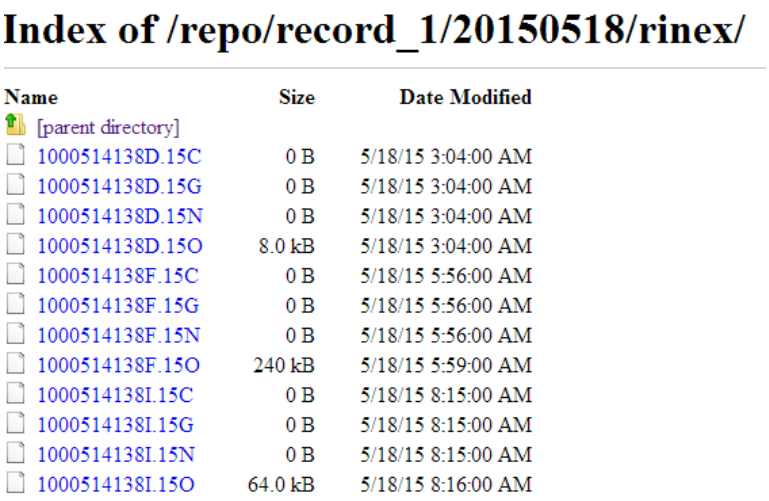
The default logon account for the internal FTP site is:

- User name: ftp
- Password: ftp

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

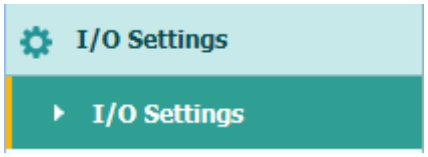
3. To find the file need to be downloaded, click the name of data logging session → the date of file that be recorded → the format of the file → the name of the target file.

Geodesical



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

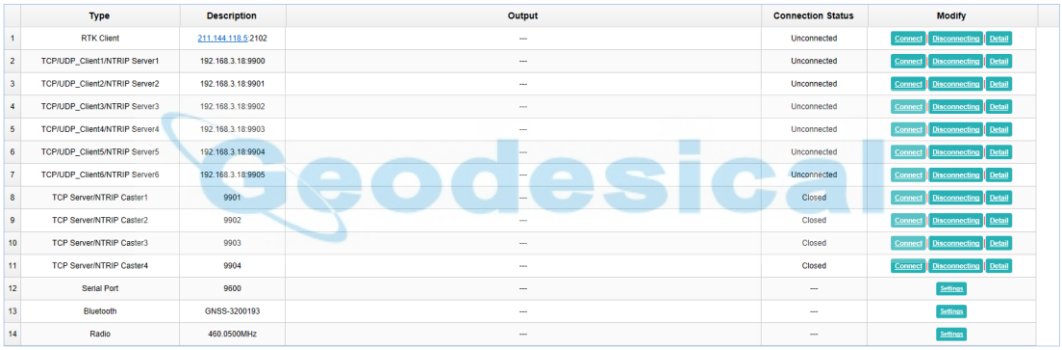
5.5 IO Settings Menu



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

5.5.1 IO Settings Submenu

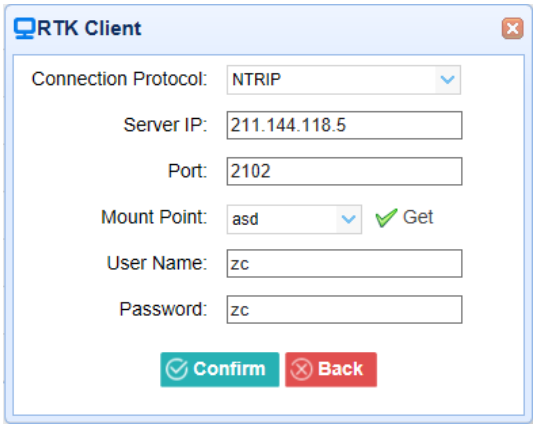
The following figure shows an example of the screen that appears when you select this submenu.



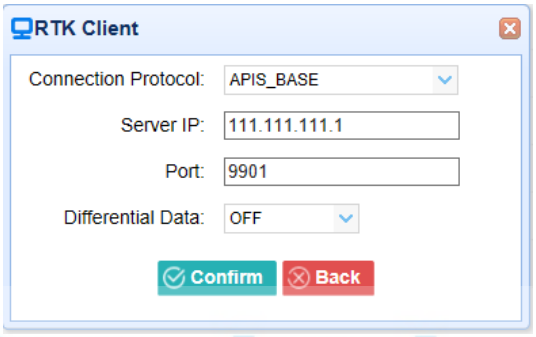
	Type	Description	Output	Connection Status	Modify
1	RTK Client	211.144.118.5:2102	---	Unconnected	Connect Disconnecting Detail
2	TCP/UDP_Client1/NTRIP Server1	192.168.3.18:9900	---	Unconnected	Connect Disconnecting Detail
3	TCP/UDP_Client2/NTRIP Server2	192.168.3.18:9901	---	Unconnected	Connect Disconnecting Detail
4	TCP/UDP_Client3/NTRIP Server3	192.168.3.18:9902	---	Unconnected	Connect Disconnecting Detail
5	TCP/UDP_Client4/NTRIP Server4	192.168.3.18:9903	---	Unconnected	Connect Disconnecting Detail
6	TCP/UDP_Client5/NTRIP Server5	192.168.3.18:9904	---	Unconnected	Connect Disconnecting Detail
7	TCP/UDP_Client6/NTRIP Server6	192.168.3.18:9905	---	Unconnected	Connect Disconnecting Detail
8	TCP Server/NTRIP Caster1	9901	---	Closed	Connect Disconnecting Detail
9	TCP Server/NTRIP Caster2	9902	---	Closed	Connect Disconnecting Detail
10	TCP Server/NTRIP Caster3	9903	---	Closed	Connect Disconnecting Detail
11	TCP Server/NTRIP Caster4	9904	---	Closed	Connect Disconnecting Detail
12	Serial Port	9600	---	---	Settings
13	Bluetooth	GNSS-3200193	---	---	Settings
14	Radio	460.0500MHz	---	---	Settings

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

1. RTK Client
   After configuring the settings of RTK client, users can log on CORS or APIS. Tap the **Connect** button to the right → the *IO Settings* screen will appear → choose one of the connection protocols among the NTRIP, APIS_BASE and APIS_ROVER → configure the related parameters → click Confirm to log on CORS or APIS.
   - Connection Protocol: NTRIP

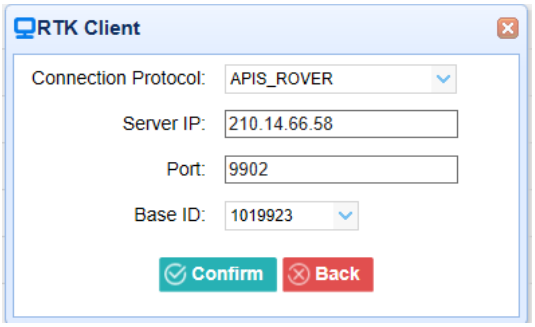


- Connection Protocol: APIS_BASE

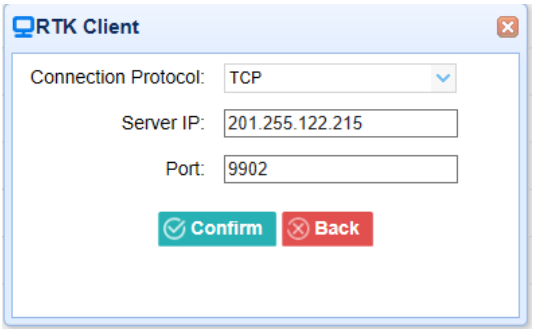


Geodesical

- Connection Protocol: APIS_ROVER



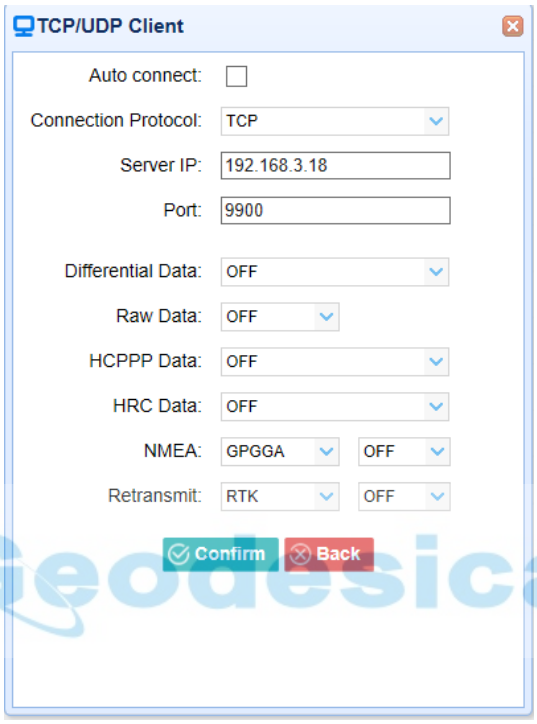
- Connection Protocol: TCP



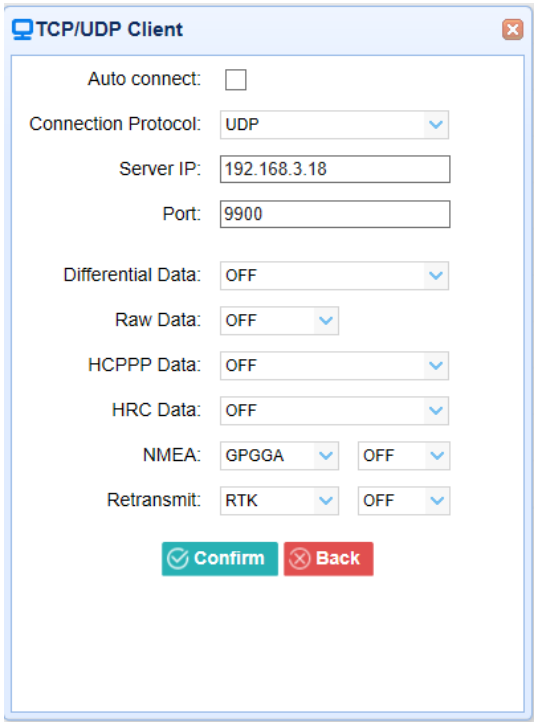
2. TCP/UDP/NTRIP

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

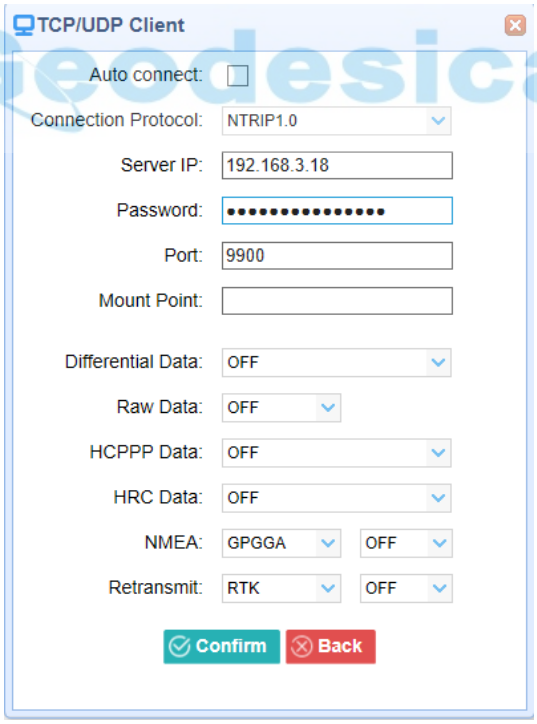
   - Connection Protocol: TCP



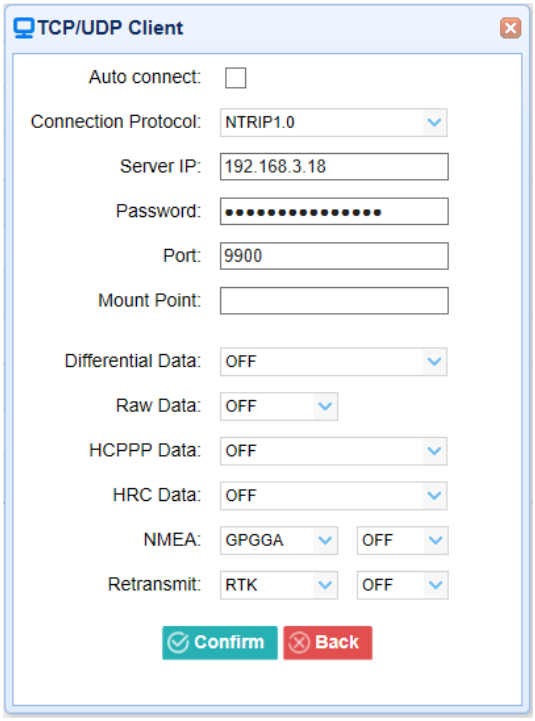
   - Connection Protocol: UDP



- Connection Protocol: NTRIP1.0



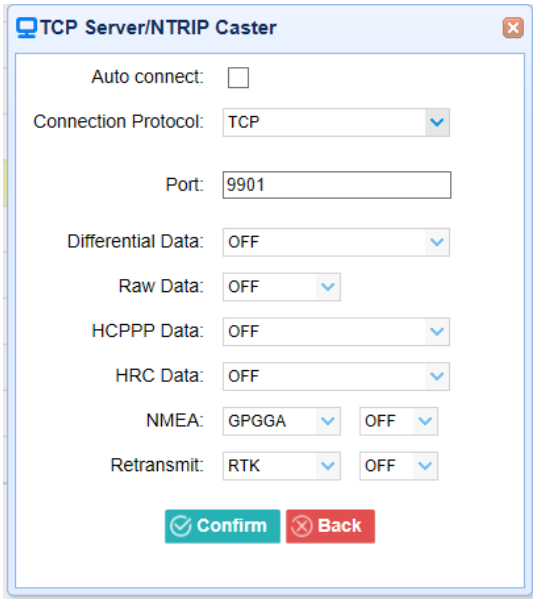
- Connection Protocol: NTRIP2.0



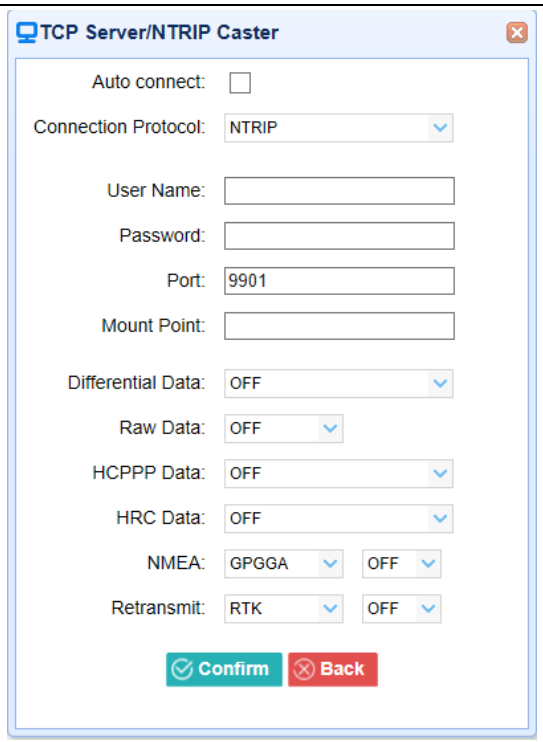
3. TCP Server/NTRIP Caster

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

   ➢ Connection Protocol: TCP

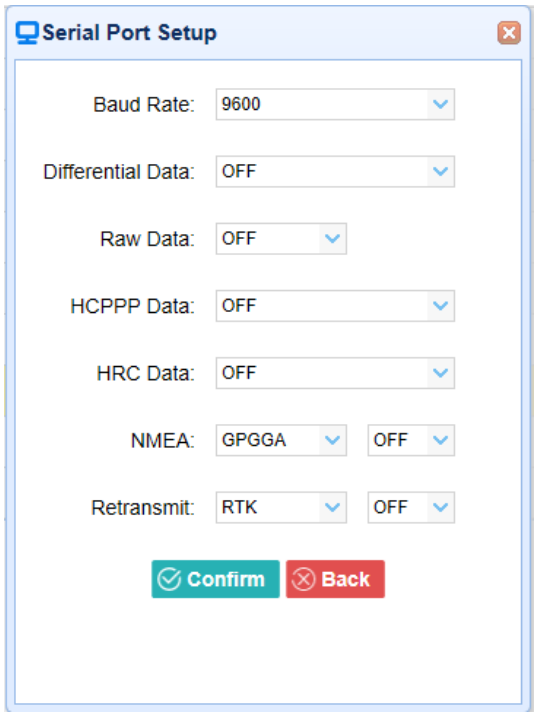


   ➢ Connection Protocol: NTRIP



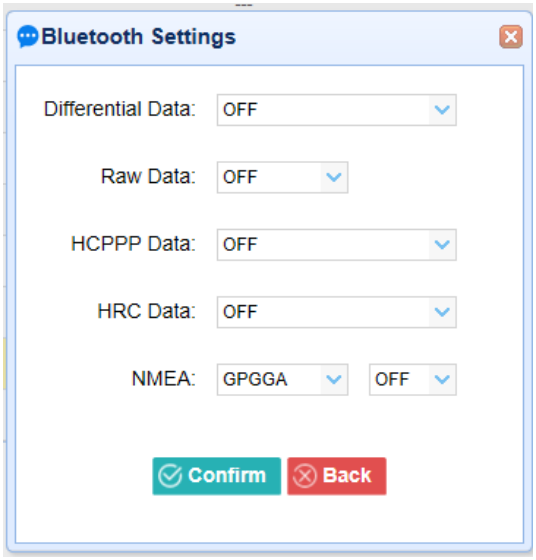
4. Serial Port

   Tap the **Settings** button to 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 Confirm to save the settings and start to transmit.



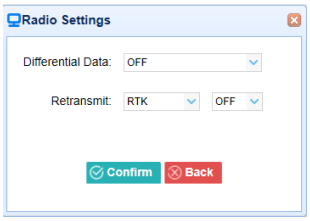
5. Bluetooth

   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 Confirm to save the settings and start to transmit.



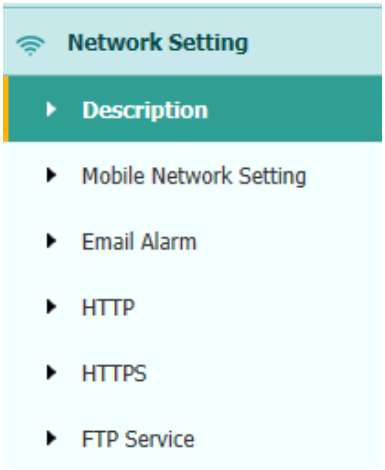
6. Radio

   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 Confirm to save the settings and start to transmit.



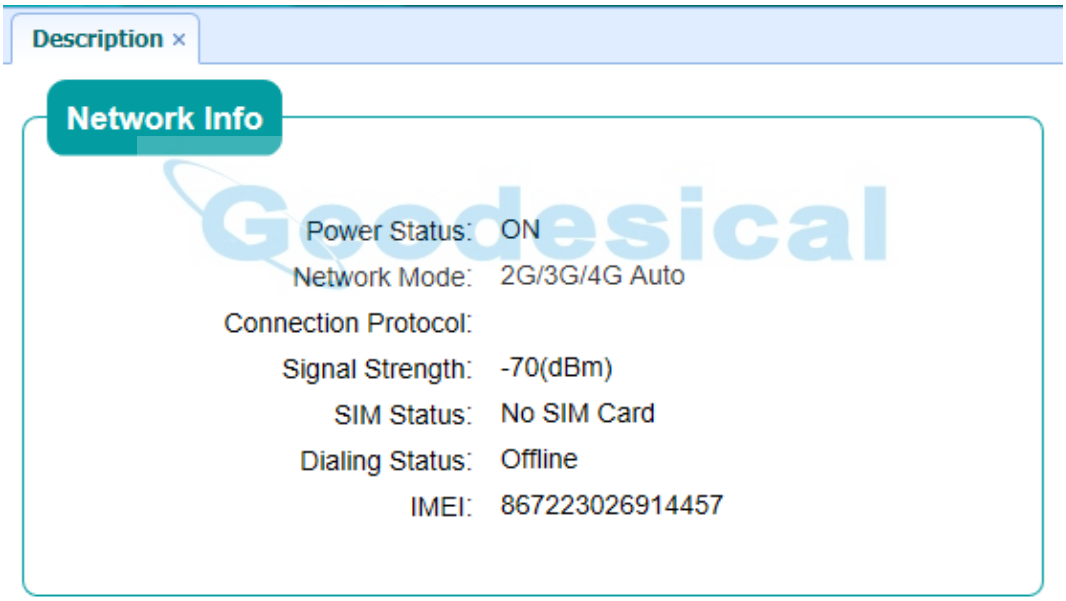
5.6 Network Setting Menu

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.

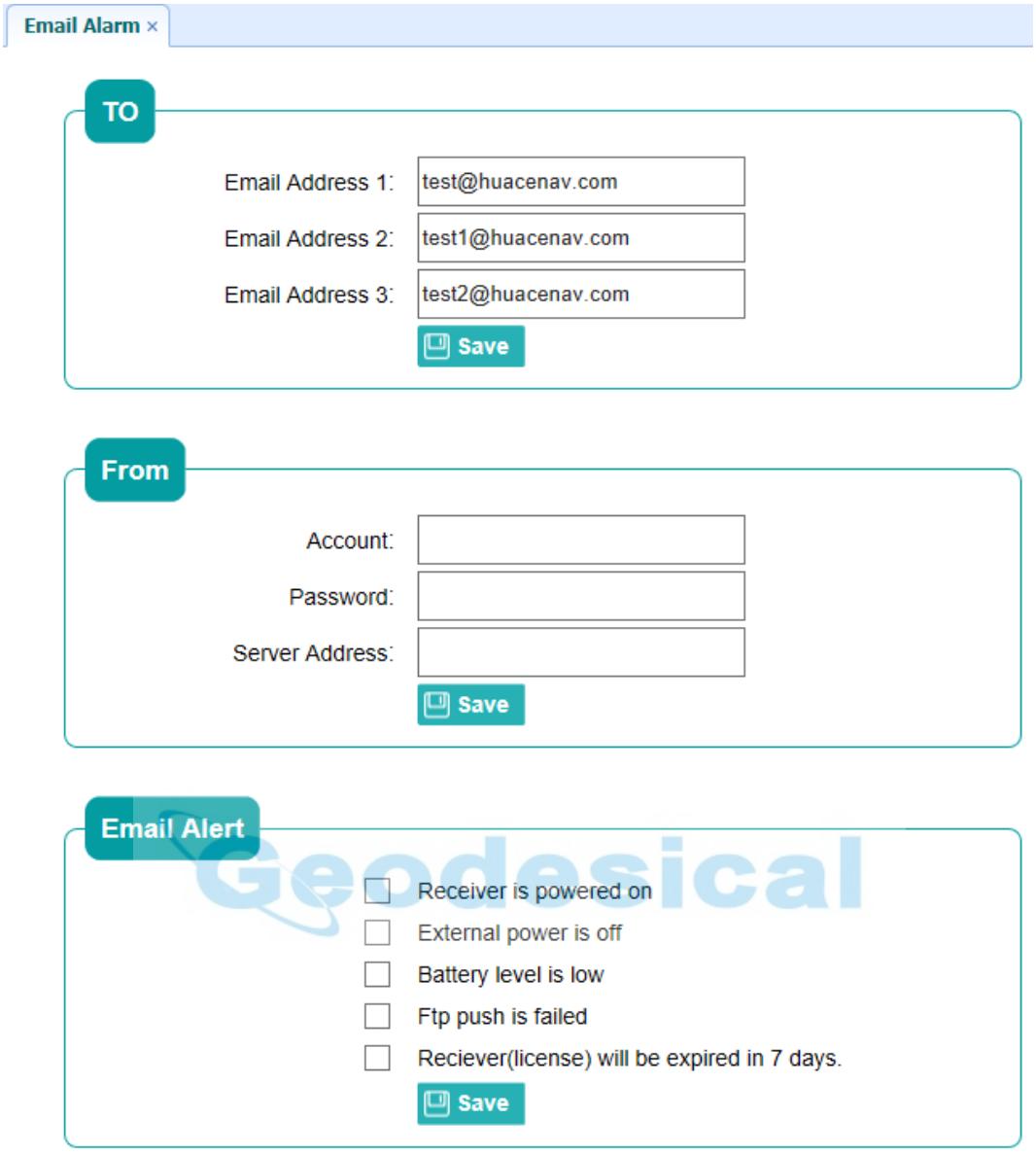


5.6.2 Mobile Network Setting Submenu

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

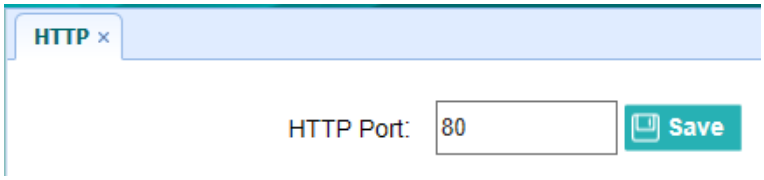
5.6.3 Email Alarm Submenu

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



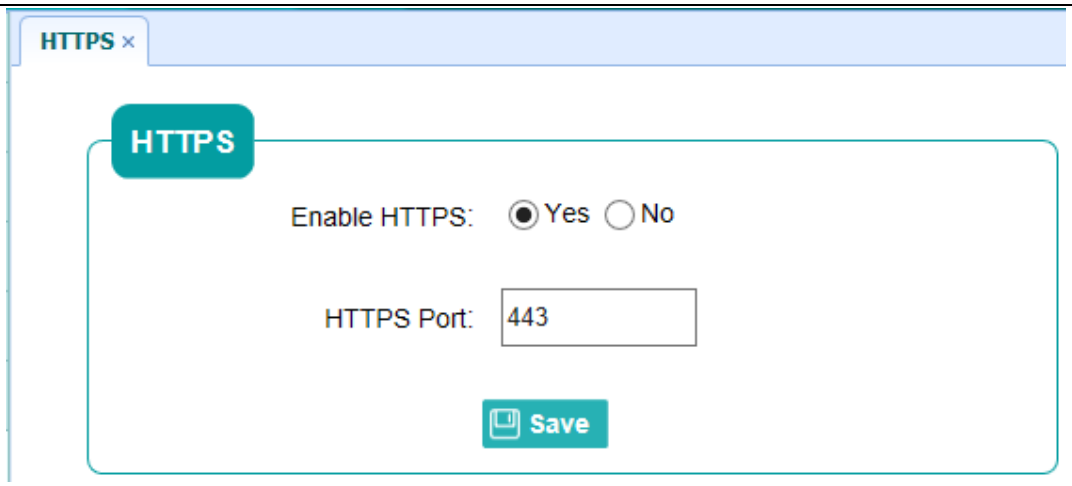
5.6.4 HTTP Submenu

Use this submenu to configure HTTP port.



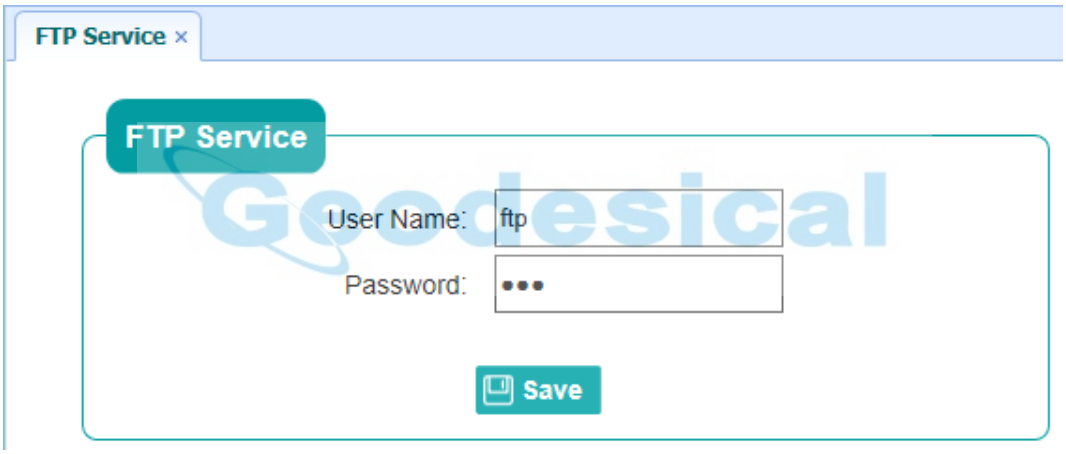
5.6.5 HTTPS Submenu

Use this submenu to configure HTTPS port.



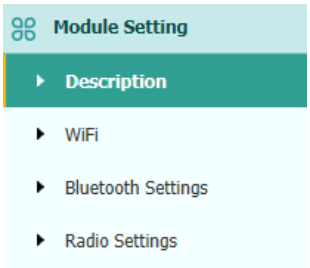
5.6.6 FTP Service Submenu

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



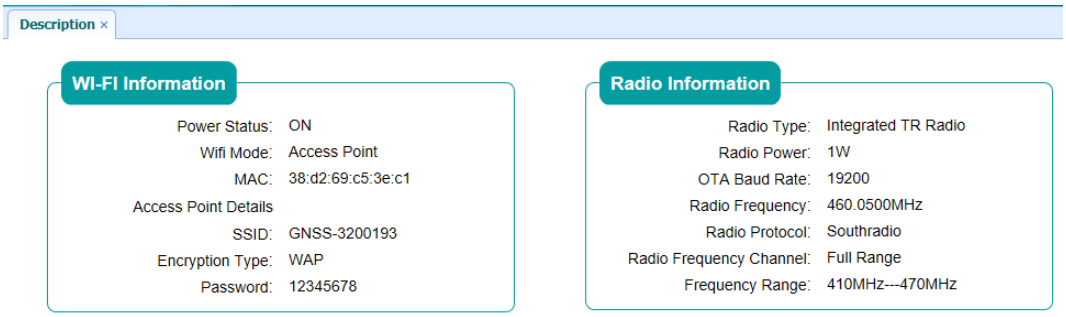
5.7 Module Setting Menu

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.

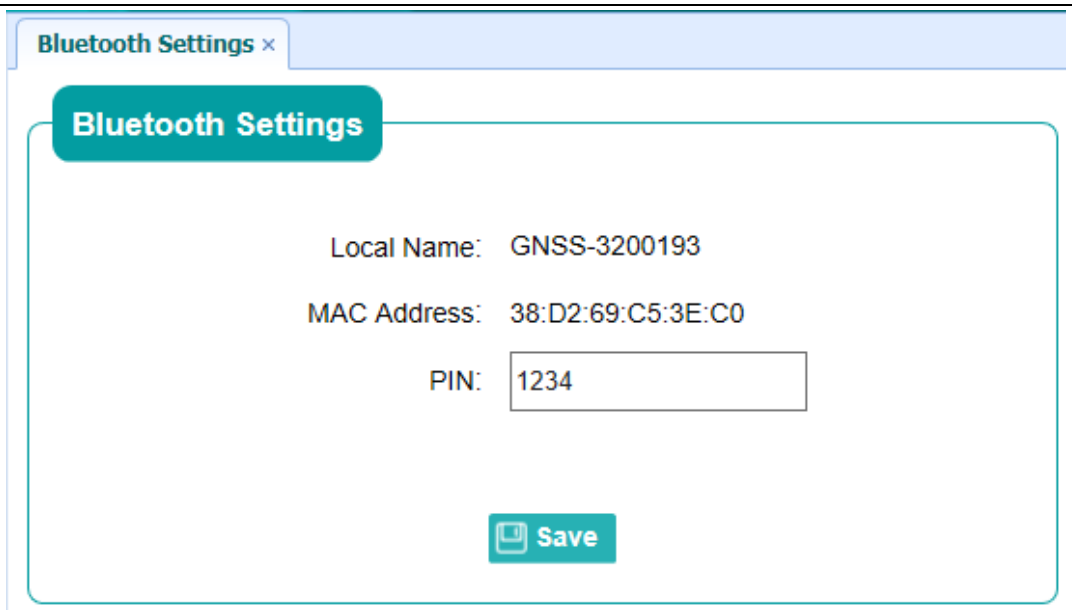


5.7.2 WiFi Submenu

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

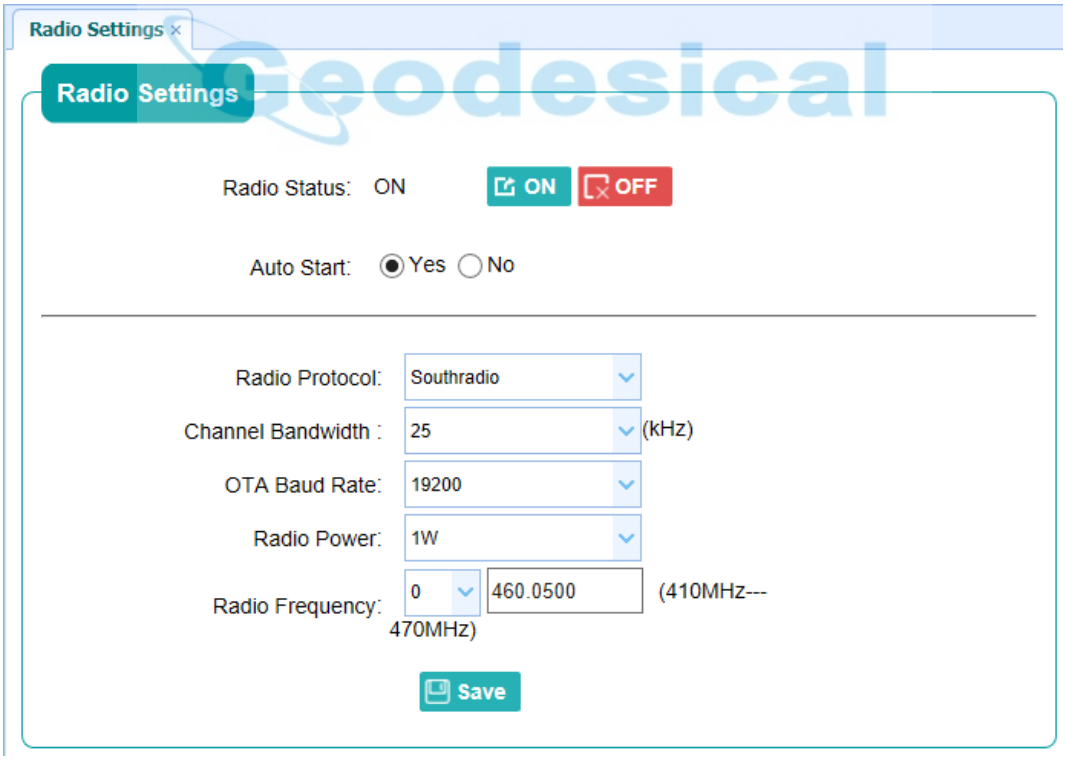
5.7.3 Bluetooth Settings Submenu

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



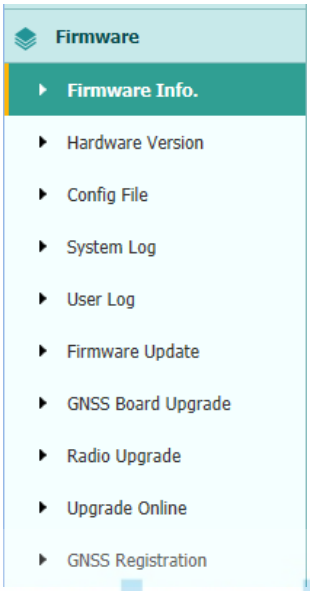
5.7.4 Radio Settings Submenu

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



5.8 Firmware Menu

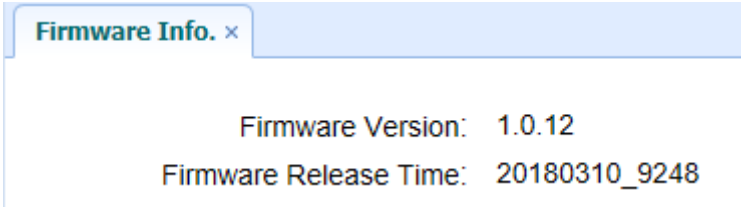
Use this menu to check the current firmware information, download the system log, update the receiver firmware, download or update the configuration file and register the receiver, and more:



Geodesical

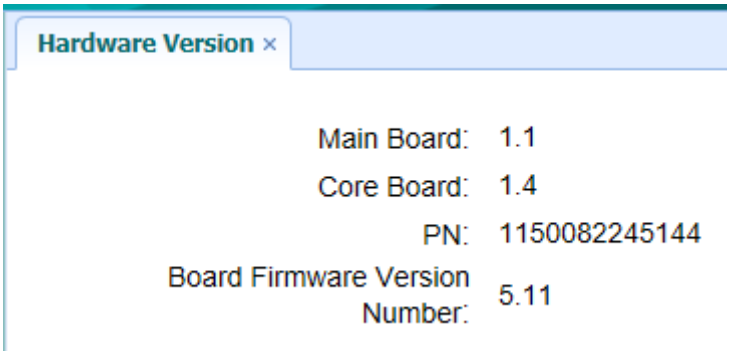
5.8.1 Firmware Info Submenu

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



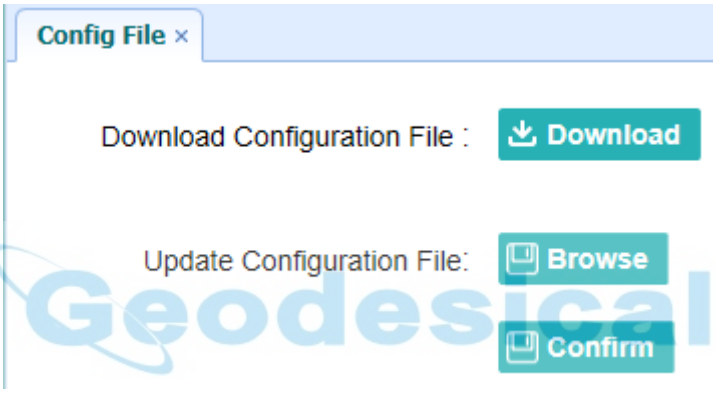
5.8.2 Hardware Version Submenu

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



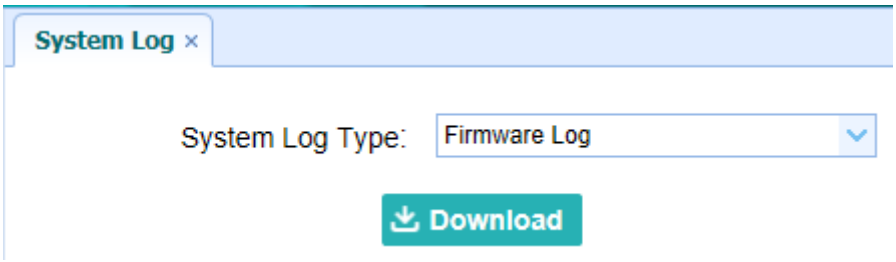
5.8.3 Config File Submenu

Use this submenu to update Configuration File.

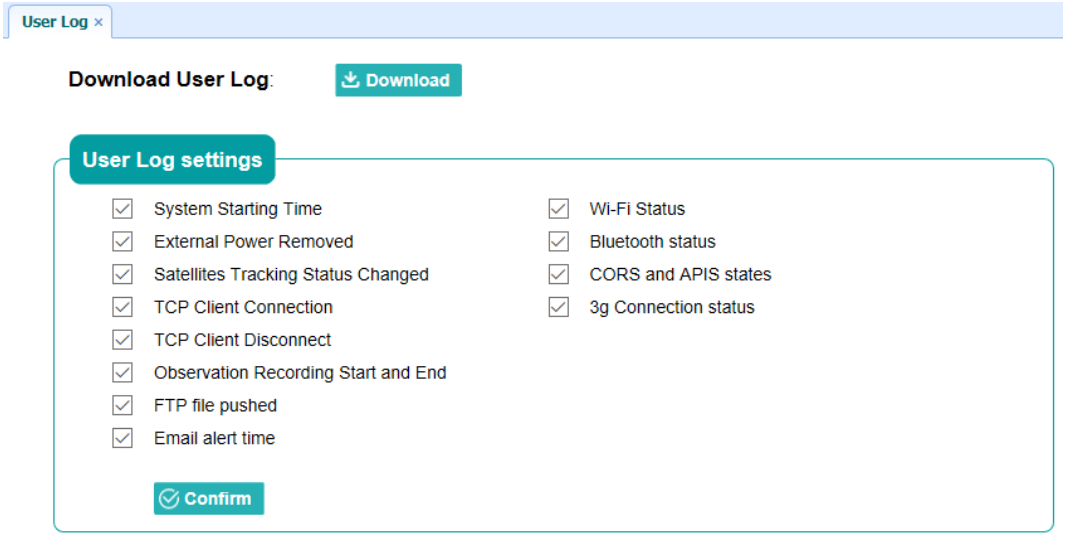


5.8.4 System Log Download Submenu

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

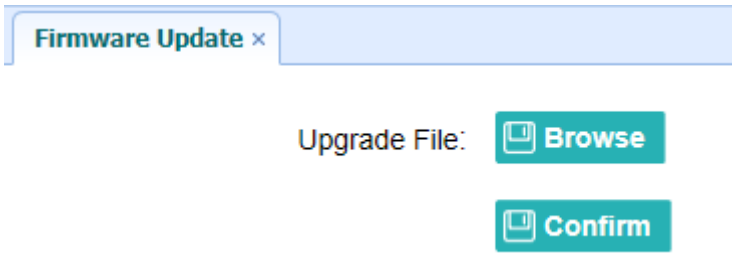


5.8.5 User Log Submenu



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.

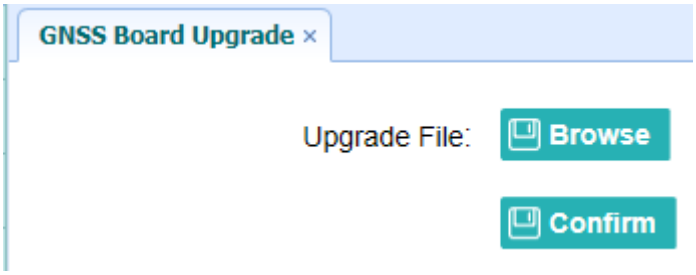


Notes

- 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 is finished, 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.

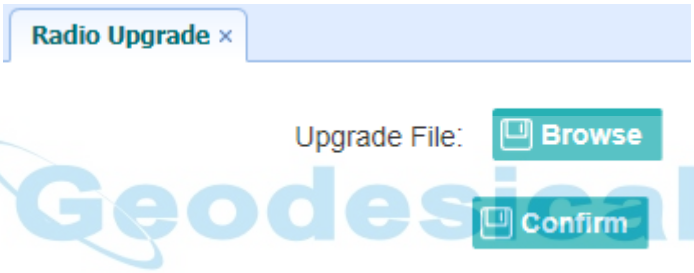
5.8.7 GNSS Board Upgrade Submenu

Use this submenu to upgrade GNSS Board.



5.8.8 Radio Upgrade Submenu

Use this submenu to browse upgrade file and upgrade radio.

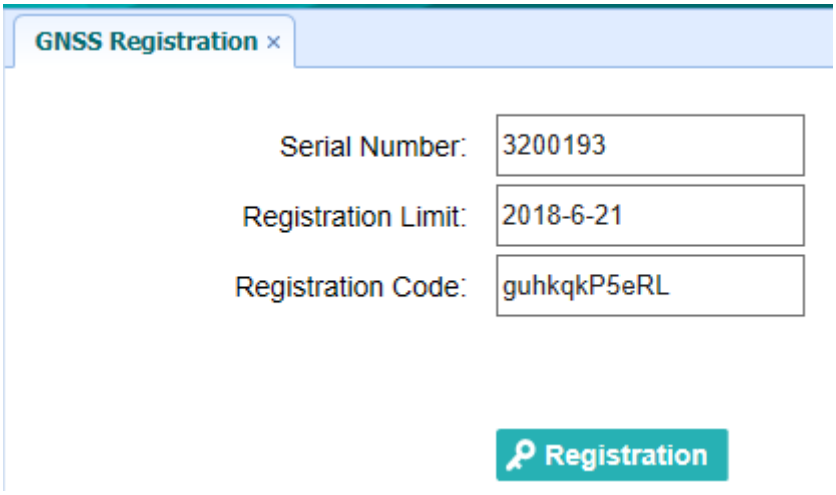


5.8.9 Upgrade Online Submenu

Use this submenu to input Server Address and upgrade online.

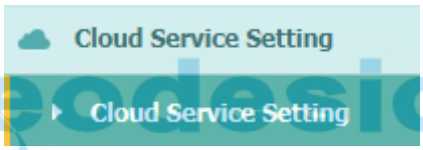
5.8.10 GNSS Registration Submenu

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

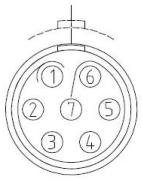


Use this submenu to turn on or turn off Cloud Service, Auto Start, Remote Control and configure other settings .

Cloud Service Setting ×
Cloud Service States
Connecting
ON
OFF
Auto Start
Remote Control
On
Off
Anti-theft
It cannot modify server IP in anti-theft mode and the function will auto on and upload location info!
Next
Upload position
On
Off
Time Interval
30s
Position Interval
50Meter
Address
cloud.huacenav.com
Port
10000
Change Password
Save

A Communication Ports Definition

AI CHC i50 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)

Geodesical

Geodesical

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Skype: chcnav_support
Website: www.chcnav.com

Make your work more efficient