



# STONEX SC2000 GNSS Receiver **User Manual**

(November 2017)-Ver.1-Rev.0 – Firmware Version: 0.22.170401



## Statement

### **Please read carefully:**

The final interpretation of this user manual belongs to STONEX.

This user manual is only for your reference. If your receiver does not match the case in user manual, the actual situation of the receiver shall prevail.

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Please carefully read the notes and instructions in User Manual. In order to avoid unexpected damage, you should only use original supplied parts. If you do not use the system with the correct procedure or connect incompatible accessories, cause the equipment damage and may even endanger other person and your safety. In this regard, the Company does not assume any responsibility.

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# 1. Technical Specification

## 1.1 Overview

SC2000 is a high-precision CORS reference station receiver. LINUX system as its development platform, and it supports for secondary development. It has powerful and stable function, and can be used in many fields.

## 1.2 Main features

- 555 channels with Multi-constellation GNSS support.
- Superior carrier phase observations of less than 1mm accuracy
- Internal battery for more than 20 hours operation.
- 4G LTE and Bluetooth / WLAN datalink support.
- Easy configuration from webUI and remote server.
- NTRIP server/caster support.

## 1.3 Technical Specifications

### 1.3.1 Physical

- Weight : 2KG
- Dimension : 222mm\*164mm\*79mm

### 1.3.2 Environmental

- Operating temperature : -40°C-65°C
- Storage temperature : -40°C-80°C
- Humidity : 0%-100% non-condensing

### 1.3.3 Electrical

- Input : 9-28V
- Power : 2.8W

### 1.3.4 GNSS

(1) Channels : 555

(2) Tracking signals:

- GPS : L1 C/A, L1C, L2C, L2P, L5
- GLONASS : L1 C/A, L2C, L2P, L3, L5
- BeiDou : B1, B2, B3
- Galileo : E1, E5 AltBOC, E5a, E5b, E6
- IRNSS : L5
- SBAS : L1, L5
- QZSS : L1 C/A, L1C, L2C, L5, L6
- L-Band up to 5 channels

(3) Positioning accuracy

Table 1-1 Positioning accuracy

Positioning mode	Accuracy	
	Horizontal	Vertical
static	3mm + 0.1ppm	3.5mm + 0.4ppm
RTK	8mm + 1ppm	15mm + 1ppm

(4) initialization time : <10s

(5) initialization reliability : >99.9%

### 1.3.5 Ports

- 3 RS232 serial ports(DB9 and 2 LEMO 5pin).
- 1 RJ45 Ethernet port.
- 1 power port.
- 1 USB port.
- 1 4G LTE antenna port.
- 1 UHF antenna port.(Optional)
- 1 EVENT port.
- 1 1PPS port.
- 1 SIM card slot.
- 1 GNSS antenna port.

### 1.3.6 Data and Storage

- Output data format: NMEA-0183, binary, RINEX, RTCM2.x, RTCM3.x
- Internal memory : 32G
- External storage : 32G

## 2. Hardware Structure

### 2.1 Receiver appearance



Figure 2-1

#### 2.1.1 Front panel

The front panel of SC2000 receiver includes seven buttons, four LED indicators, and one OLED display.





Figure 2-2



After switching on SC2000 receiver, current time information and GPS status are displayed in the main interface. The default language is English, and you can press the left and right arrow keys to obtain the current IP information.

Table 2-1 Function table

<b>Name</b>	<b>Function</b>
F1	Save the current setup and return to the previous menu
F2	Enter the main menu
	Move the cursor up and down, modify parameters when entering modify items
	Move the cursor left and right
Power key	Switch on/off the receiver and confirmation key
Bluetooth indicator	It will be light blue when SC2000 is connected via Bluetooth
Differential transmission indicator	When the differential data output, the differential indicator blinks evenly at 1-second interval
Static recording indicator	When start static recording, static recording indicator blinks evenly at 1-second interval
Power indicator	After switching on SC2000 receiver, the power light is on

## 2.1.2 Back panel

SC2000 receiver provides a variety of communication interfaces to facilitate users in different application scenarios.

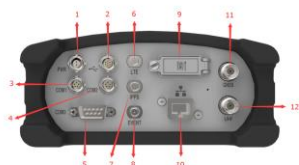


Figure 2-3 Back panel

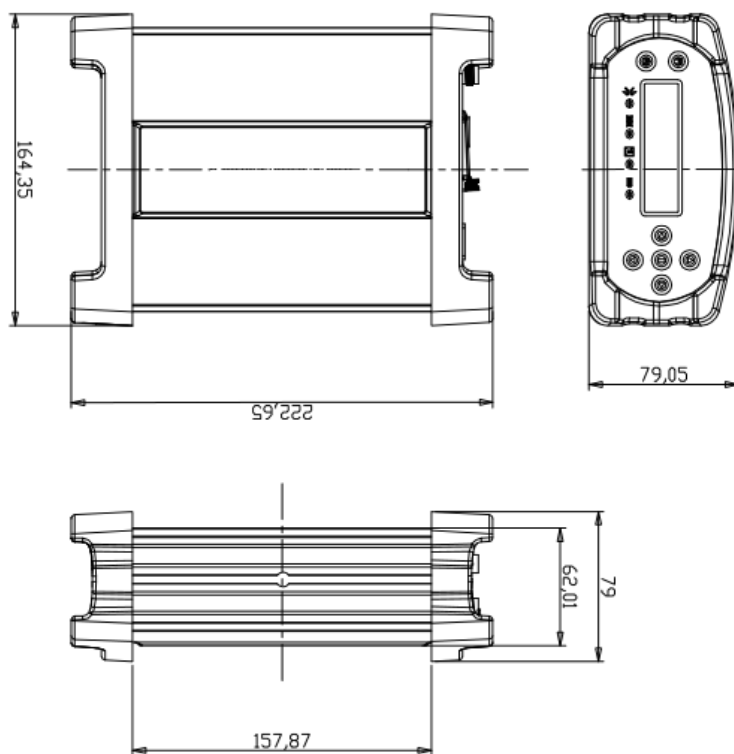
Table 2-2 Interface function table

No.	Name	Function
1	PWR	Receiver power supply interface, input voltage DC 9V-28V.
2	USB	USB interface
3	COM1	RS232 serial port
4	COM2	RS232 serial port (Optional RS485 serial port)
5	COM3	DB9 serial port
6	LTE	GPRS antenna interface
7	1PPS	1 Pulse Per Second output
8	EVENT	EVENT input
9	SIM	Standard size SIM card interface
10	RJ45	Wired Ethernet port
11	GNSS	GNSS External receiver antenna connector
12	UHF	UHF External receiver antenna connector

**Note:**

The UHF interface is replaced by the OSC interface in the SC2000N.

## 2.2 Structural drawings / mounting dimensions



(Dimensions in mm)

Figure 2-4

### 3. WEB UI

There are two ways to login into the WEB interface, which are Ethernet port login and WIFI login. The WEB interface content of the two login modes is same.

(1) Ethernet port login: Connect the RJ45 network port with the computer host and enter the IP address in the browser. Enter user name and password in the pop-up dialog box; the default username is *admin* and the default password is *password*.

(2) WIFI login: when SC2000 WIFI hotspot is enable, the user can log in into the WEB interface by connecting to its WIFI network. The hotspot name is the serial number of the receiver. Enter the IP address: 192.168.10.1, a window will pop up, the default username is *admin* and the default password is *password*.

### 3.1 Summary

After a successful authentication to the WEB interface of SC2000, the main page contents: Reference information, device version, system version, network parameters, memory status and so on. It is shown as below:

SC2000 Reference Station		
Summary		
System Information	Station Name	TestStation
System Information	Uptime Since	2017-08-16
System Information	Run Time	0 day 2 hour 18 min
System Information		
System Information	Device Model	SC2000
System Information	Device Serial	SC20000000000000000000
System Information	UART Model	CP2102
System Information	UART Serial	00000000000000000000
System Information	Audio Model	16bit01
System Information	Audio Serial	00000000000000000000
System Information		
System Information	Longitude	113°15' 48.11212"
System Information	Latitude	23° 0' 0.00000"
System Information	Height	0.000 m
System Information	GNSS Status	Single
System Information	Lastest Time	2017-08-16 17:12:21
System Information		
System Information	Internal Memory	102354 MB/17200 MB (91.1%) Free
System Information	Data Memory	247398 MB / 287584 MB (86.1%) Free
System Information		
System Information	Barium Power	1.00%
System Information	Power Supply	5.17V/1000mA

Figure 3-1

Note: The effect of different browsers display may be slightly different, recommend using Google Chrome or IE.

## 3.2 System Information

### 3.2.1 System Information

The system information screen will display the station name, device model, device serial number, system version, application version information, built-in OEM board model and network parameter information.

System  
System Information  
**System Information**  
GPS Status  
Satellites  
Data Transmission  
Data Recording  
Configuration  
Reference Station  
GNSS Configuration  
Tracking Satellites  
Network  
Web Server  
Recording  
Real Configuration  
Alerts  
Registration  
Download  
System Management  
Web  
Language: English

Station Name		TestStation
Engine Date		2017-07-01
Time Zone		CST+08:00

Device Model		SC2000
Device Serial		2C2G2V71000497
IMEI		84517003100000
Hardware Version		2002000 V4.00-01-00
BSP Version		1.0.0
OS Version		2.3.6-1.01(199826)
APP Version		1.1.0.1.02.01
Web Version		1.0.0

GNSS Model		12010720
GNSS Serial		20020171001000
GNSS Hardware Version		1.0.0(17.1.1)
GNSS Firmware Version		2007001000000000

Radio Model		700101
Radio Serial		200700000010
Radio Firmware Version		1.001.02.02
Radio Channel		9 MHz-MMS-12
Radio Protocol		Trimble B

NTP		On
NTP address		192.168.16.142:17 AD
IP		192.168.20.121
Mask		255.255.255.0
Gateway		192.168.16.1

Internal Memory		80.391 MB / 201.936 MB (37%)
Data Memory		27.388 GB / 28.082 GB (95%)

Figure 3-2

### 3.2.2 GPS Status

The GPS Status page displays the current SC2000 positioning, the base station coordinates and antenna type.

SC2000 Reference Station	
Summary	
System Information	
GPS Status	
Satellites	
Data Transmission	
Data Recording	
Configuration	
Reference Station	
Antenna Configuration	
Tracking Statistics	
Network	
Help Server	
Recording	
Port Configuration	
Alerts	
Registration	
Download	
System Management	
Help	
Language: English	

Local Time	2017-08-05 17:52:03
Latitude	36°
Longitude	112°29' 48.11480"
Altitude	2 207.0 m (7256.9')
Height	427.51 m
Antenna	Beidou
RTCM	17.38.9
WGS84	3.488

Station Number	31111
Base Longitude	112°29' 48.11480"
Base Latitude	36° 0' 0.00000"
Base Height	366.833 m

Antenna Type	IMC-SC2000T01
Antenna Height	3.488
Measurement Mode	Antenna (Static or Single/Batch Station)

Figure 3-3

### 3.2.3 Satellites

This page shows the current satellite signal-to-noise ratio, elevation mask angle, azimuth and other information. The information of GPS, BEIDOU, GLONASS and GALILEO are displayed separately.

SC2000 Reference Station	
Summary	
System Information	
GPS Status	
Satellites	
Data Transmission	
Data Recording	
Configuration	
Reference Station	
Antenna Configuration	
Tracking Statistics	
Network	
Help Server	
Recording	
Port Configuration	
Alerts	
Registration	
Download	
System Management	
Help	
Language: English	

• Satellites Table    ◯ Satellites SkipList

Type	S/N	Flow (Hz)	Azim (Deg)	L SNR (dB)	L SNR (dB)	L SNR (dB)
GPS	2	57.96	81.51	51	49	-
GPS	5	49.80	7.78	51	-	-
GPS	6	12.88	172.82	48	49	44
GPS	13	75.89	188.06	53	49	-
GPS	15	48.31	176.26	51	50	-
GPS	20	78.62	289.61	48	44	-
GPS	26	42.56	361.88	51	48	-
GPS	30	12.80	75.31	44	48	45
BEIDOU	1	48.64	129.69	49	51	-
BEIDOU	2	48.57	127.35	48	50	48
BEIDOU	3	52.31	187.26	49	49	48
BEIDOU	4	71.31	178.36	48	48	48
BEIDOU	5	25.18	229.14	43	48	45
BEIDOU	6	75.35	322.75	49	48	-
BEIDOU	8	72.15	118.67	50	50	50
BEIDOU	9	18.84	328.97	48	48	48
BEIDOU	13	75.74	339.68	51	49	48
GLONASS	4	16.27	17.13	44	44	-
GLONASS	5	61.26	367.69	48	48	-
GLONASS	6	26.98	283.17	48	44	-
GLONASS	10	63.84	167.69	50	51	-
GLONASS	25	67.95	260.96	49	51	-
GLONASS	27	76.36	101.61	42	42	-
Galileo	1	68.93	277.14	51	-	-
Galileo	10	22.34	288.72	43	-	-
Galileo	20	65.78	25.50	51	-	-
Galileo	103	68.36	42.34	58	-	-
Galileo	190	6.00	9.00	47	48	-

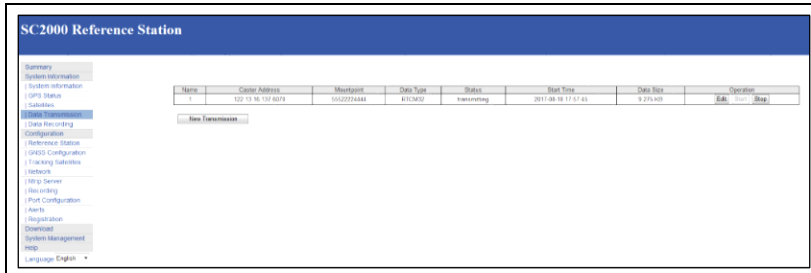
Satellites Used(27): GPS(5), BDS(9), GLONASS(6), Galileo(7), QZSS(1)

Satellites Tracked(28): GPS(5), BDS(9), GLONASS(6), Galileo(7), QZSS(1)

Figure 3-4

### 3.2.4 Data Transmission

After setting up the data transmission, the user can see the current data transfer status on the page as shown in figure 3-5. Click [Edit] to directly jump to [Ntrip Server].



The screenshot shows the 'SC2000 Reference Station' web interface. On the left is a navigation menu with options: Summary, System Information, GPS Status, Calibration, Data Transmission (selected), Data Recording, Configuration, Reference Station, Control Configuration, Tracking Schedule, Network, Ntrip Server, Recording, Print Configuration, Alerts, Registration, Download, System Management, Help, and Language: English. The main content area displays the 'Data Transmission' status in a table format.

Name	Center Address	Mountpoint	Data Type	Status	Start Time	Data Size	Operation
1	122.15.16.100:8071	0000200000	RINEX	transmitting	2017-08-16 17:57:45	9.271 KB	[Edit] [Stop]

Below the table is a button labeled 'New Transmission'.

Figure 3-5



### 3.2.5 Data Recording

In this page, the user can see the specific data recording information as shown in figure 3-6. Click [Edit], the user could modify the parameters like path type, file name, interval, duration time, etc. as shown in figure 3-7.

SC2000 Reference Station									
Summary									
System Information									
GPS Status									
Position									
Data Transmission									
Data Recording									
Configuration									
Reference Station									
Clock Configuration									
Tracking Settings									
Network									
Web Server									
Recording									
Port Configuration									
Ports									
Registration									
Download									
System Management									
Help									
Language: English									

Schedule Name	Interval	Path	Status	Start Time	Duration Time	File Size	Operation
1	1hr	1/201708/01/Nov2700.dat	recording	2017-08-18 11:31:12	60 min	5.583 MB	<a href="#">Edit</a> <a href="#">Clear</a> <a href="#">Stop</a>
2	1hr	2/201708/10/Nov2800.dat	recording	2017-08-18 11:31:15	60 min	5.638 MB	<a href="#">Edit</a> <a href="#">Clear</a> <a href="#">Stop</a>
3	1hr	3/201708/10/Nov2900.dat	recording	2017-08-18 11:31:15	60 min	5.724 MB	<a href="#">Edit</a> <a href="#">Clear</a> <a href="#">Stop</a>
4	1hr	4/201708/10/Nov3000.dat	recording	2017-08-18 11:31:20	60 min	5.766 MB	<a href="#">Edit</a> <a href="#">Clear</a> <a href="#">Stop</a>
5	1hr	5/201708/10/Nov2000.dat	recording	2017-08-18 11:31:30	60 min	6.486 MB	<a href="#">Edit</a> <a href="#">Clear</a> <a href="#">Stop</a>
6	1hr	6/2016/Nov08/215_0_2617301316_610v_052.dat	recording	2017-08-18 11:31:36	60 min	5.357 MB	<a href="#">Edit</a> <a href="#">Clear</a> <a href="#">Stop</a>
7	1hr	Nov2700.dat	recording	2017-08-18 11:31:40	60 min	5.297 MB	<a href="#">Edit</a> <a href="#">Clear</a> <a href="#">Stop</a>
8	1hr	201708/18/201708181030.dat	recording	2017-08-18 11:31:44	60 min	5.192 MB	<a href="#">Edit</a> <a href="#">Clear</a> <a href="#">Stop</a>

Figure 3-6

Raw Data Recording Configuration

Recording - 1

Schedule Name	1
Path Type	Session/YYYYMM
File Name	ssssdfff.yyl
Interval	540
Duration Time	1 hour
Pause	Defer When Full 200 MB
Auto	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable
Interval Point Record	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable
FTP Path	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable
FTP Server Address	192.168.25.2
FTP Server Port	21
FTP User	pas123
FTP Password	*****
Remote Directory	/GeoTest/

[Submit](#)
[Delete](#)
[Refresh](#)
[Cancel](#)

Figure 3-7

## 3.3 Configuration

### 3.3.1 Reference Station

On this page the user mainly can set the reference station, antenna, coordinate system and station coordinates, as shown in figure 3-8.

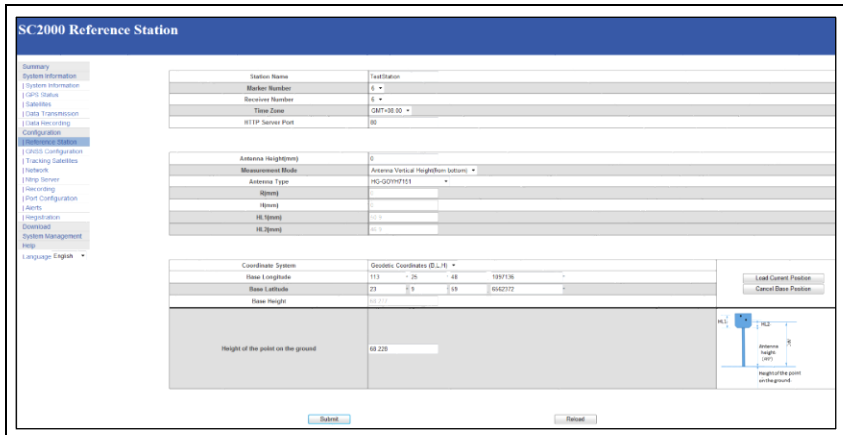


Figure 3-8

**Reference station coordinates:** If you do not need known coordinates to start the reference station, then click on "Load Current Position" to get the reference station coordinates approximately. However, if you need known coordinates, please input them according to the appropriate format.

The web access port is 80. After setting mapping in the router device, then you can access the SC2000 by Internet, enter the ip address and the port, e.g. 113.109.179.180:80

### 3.3.2 GNSS configuration

This menu is mainly for the satellite systems and the cutoff angle settings, as shown in figure 3-10.

**SC2000 Reference Station**

Summary  
System Information  
GPS Status  
Satellites  
Data Transmission  
Data Recording  
Configuration  
Reference Station  
**Satellite Configuration**  
Tracking Satellites  
Network  
Ntrip Server  
Recording  
Port Configuration  
Alerts  
Registration  
Download  
System Management  
Help  
Language English

GNSS Configuration

Cutoff Angle	10	
GPS	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable	
BDT	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable	
GPS	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable	
GLONASS	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable	
Galileo	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable	
QZSS	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable	

Submit

Reload

Figure 3-10

### 3.3.3 Tracking satellites

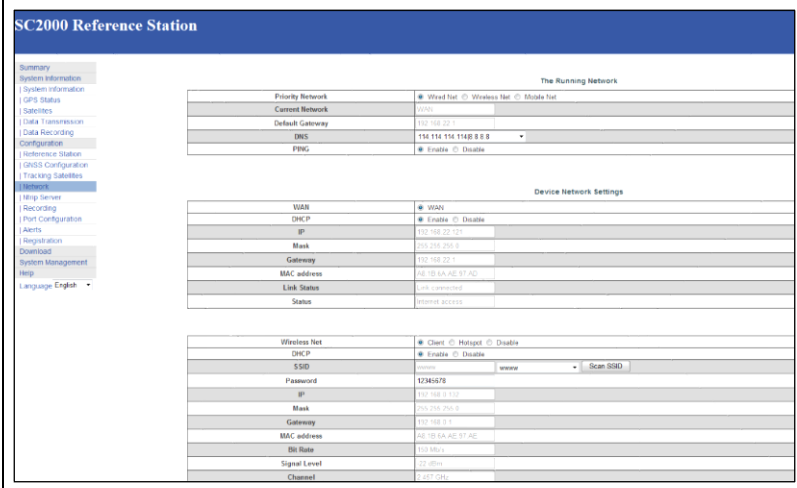
In this page, the user can select the satellites they want to track, as shown in figure 3-11.

SC2000 Reference Station						
<div>Summary</div> <div>System Information</div> <div>GPS Status</div> <div>Satellites</div> <div>Data Transmission</div> <div>Data Recording</div> <div>Configuration</div> <div>Reference Station</div> <div>GPS Configuration</div> <div>Tracking Satellites</div> <div>Network</div> <div>Web Server</div> <div>Recording</div> <div>Port Configuration</div> <div>Alerts</div> <div>Registration</div> <div>Download</div> <div>System Management</div> <div>Help</div> <div>Language: English</div>						
GPS	Don't track	Glonass	Don't track	Galileo	Don't track	
G1	<input type="checkbox"/>	G1	<input type="checkbox"/>	G1	<input type="checkbox"/>	
G2	<input type="checkbox"/>	G2	<input type="checkbox"/>	G2	<input type="checkbox"/>	
G3	<input type="checkbox"/>	G3	<input type="checkbox"/>	G3	<input type="checkbox"/>	
G4	<input type="checkbox"/>	G4	<input type="checkbox"/>	G4	<input type="checkbox"/>	
G5	<input type="checkbox"/>	G5	<input type="checkbox"/>	G5	<input type="checkbox"/>	
G6	<input type="checkbox"/>	G6	<input type="checkbox"/>	G6	<input type="checkbox"/>	
G7	<input type="checkbox"/>	G7	<input type="checkbox"/>	G7	<input type="checkbox"/>	
G8	<input type="checkbox"/>	G8	<input type="checkbox"/>	G8	<input type="checkbox"/>	
G9	<input type="checkbox"/>	G9	<input type="checkbox"/>	G9	<input type="checkbox"/>	
G10	<input type="checkbox"/>	G10	<input type="checkbox"/>	G10	<input type="checkbox"/>	
G11	<input type="checkbox"/>	G11	<input type="checkbox"/>	G11	<input type="checkbox"/>	
G12	<input type="checkbox"/>	G12	<input type="checkbox"/>	G12	<input type="checkbox"/>	
G13	<input type="checkbox"/>	G13	<input type="checkbox"/>	G13	<input type="checkbox"/>	
G14	<input type="checkbox"/>	G14	<input type="checkbox"/>	G14	<input type="checkbox"/>	
G15	<input type="checkbox"/>	G15	<input type="checkbox"/>	G15	<input type="checkbox"/>	
G16	<input type="checkbox"/>	G16	<input type="checkbox"/>	G16	<input type="checkbox"/>	
G17	<input type="checkbox"/>	G17	<input type="checkbox"/>	G17	<input type="checkbox"/>	
G18	<input type="checkbox"/>	G18	<input type="checkbox"/>	G18	<input type="checkbox"/>	
G19	<input type="checkbox"/>	G19	<input type="checkbox"/>	G19	<input type="checkbox"/>	
G20	<input type="checkbox"/>	G20	<input type="checkbox"/>	G20	<input type="checkbox"/>	
G21	<input type="checkbox"/>	G21	<input type="checkbox"/>	G21	<input type="checkbox"/>	
G22	<input type="checkbox"/>	G22	<input type="checkbox"/>	G22	<input type="checkbox"/>	
G23	<input type="checkbox"/>	G23	<input type="checkbox"/>	G23	<input type="checkbox"/>	
G24	<input type="checkbox"/>	G24	<input type="checkbox"/>	G24	<input type="checkbox"/>	

Figure 3-11

### 3.3.4 Network

From Network option, the user can set the device network and FTP server settings as shown in figure 3-12.



**SC2000 Reference Station**

Summary  
System Information  
GPS Status  
Satellites  
Data Transmission  
Data Recording  
Configuration  
Reference Station  
Device Configuration  
Tracking Satellites  
Help  
Language English

**The Running Network**

Priority Network	Wireless Net	Wireless Net	Mobile Net
Current Network	192.168.10.1		
Default Gateway	192.168.10.1		
DNS	192.168.10.1		
PING	Enable	Disable	

**Device Network Settings**

WAN	WAN
DHCP	Enable
IP	192.168.10.1
Mask	255.255.255.0
Gateway	192.168.10.1
MAC address	92:10:8A:AE:57:AD
Link Status	Link connected
Status	Internet access

**Wireless Net**

Client	Hotspot	Disable
DHCP	Enable	Disable
SSID	12345678	www
Password	12345678	Scan SSID
IP	192.168.10.1	
Mask	255.255.255.0	
Gateway	192.168.10.1	
MAC address	92:10:8A:AE:57:AD	
BSS Rate	11b/g/n	
Signal Level	-77 dBm	
Channel	11 (2.412 GHz)	

Figure 3-12

**DHCP** : If the mode DHCP is enable, the SC2000 receiver will auto get an IP address, otherwise it uses the static IP.

**WIFI hotspot**: If WIFI hotspot option is enable, then you can use other devices equipped with WIFI to search and connect to the SC2000 receiver. The hotspot is named by the serial number of the receiver. You don't need to input a password. Access SC2000 by IP address 192.168.10.1. The hotspot only play the role of control and can't access to internet.

**WIFI Client**: When selecting WIFI client, in SSID box input a name of WIFI hotspot can be used for the search, and in the Password box input the password for connecting to WIFI hotspot, then submit. After connecting to the connection WIFI, the password can be seen in system terminal or panel interface (the displayed place will be different in different versions).

**Mobile network:** enable Mobile Net to use the SIM card into the SC2000, it supports 4G network. Users can set the user name and password if required.

**FTP download:** You can set the parameters of the FTP server. If anonymous access is turned on, it does not require a user name and password to connect to the SC2000. If anonymous access is turned off, enter the user name and password.

After using the FTP tool to connect to the SC2000, the data appears as follows:

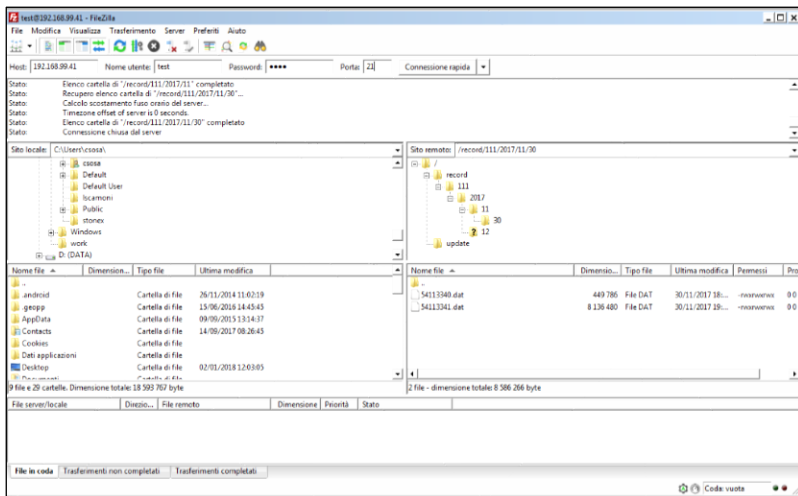
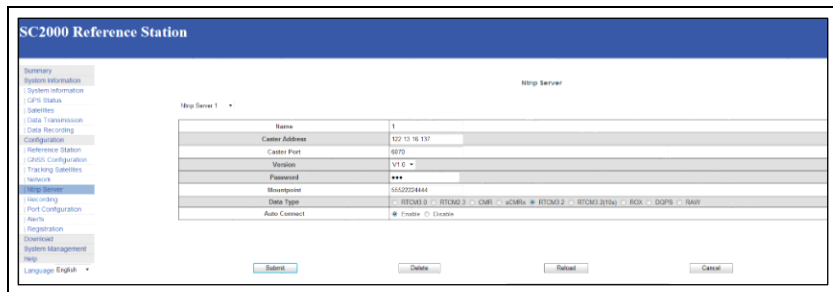


Figure 3-13

### 3.3.5 Ntrip Server

In this page, the user can set the NTRIP connection parameters of the reference station:



Ntrip Server 1	
Name	1
Center Address	127.0.0.1
Center Port	8079
Version	V1.0
Password	***
Message	GAUSSMARK
Data Type	RTCM 3 - RTCM 3 - CMR - uCMR - RTCM 2 - RTCM 2100 - BOX - DGPS - RAW
Auto Connect	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable

Figure 3-14

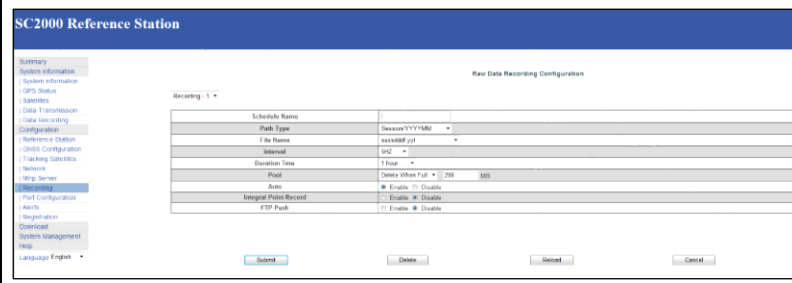
#### Remarks:

- The password in this page must match the password of the server NTRIP if it is required. If the password is not required by the server you can enter any value.
- When the [Auto Connect] option is chosen, after the network is disconnected, the data transmission will be automatically connected. If the option is disabled will be necessary to start the connection manually from the Data Transmission menu by clicking on start.
- Before setting the parameters, check in the page Reference Station if the coordinates are correct. Wrong coordinates cannot allow to transmit data to the server.

Click "Submit" to start the data transmission. In the Data Transmission page you can see the data transfer status displayed as "transmitting". The differential transmission indicator in the front panel of the receiver starts to blink.

### 3.3.6 Recording

In this page, the user can set the data recording parameters:



**SC2000 Reference Station**

Summary  
System Information  
GPS Status  
Satellites  
Data Transmission  
Data Recording  
Configuration  
Reference Station  
GNSS Configuration  
Tracking Satellites  
Network  
Ntrip Server  
Recording  
Port Configuration  
Alerts  
Registration  
Download  
System Management  
Help  
Language English

**Raw Data Recording Configuration**

Recording: 1

Schedule Name	Path Type	File Name	Interval	Duration Time	Post	Auto	Integral Point Record	FTP Push
	Sequence YYYYMM	sequence.yml	1 sec	1 hour	Delete When Full	250	500	<input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable
							<input type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable	<input type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable

Submit Delete Reset Cancel

Figure 3-15

**File name:** The static date can be recorded in 4 ways.



Table 3-1 The rules of Static record file name

File name	Annotation
YYYYMMDDhhmmss.dat	Date and when, minute and second
YYYYMMDDhhmm.dat	Date and when, minute
DOYhhmm.dat	Day of year, hour and minute
YYYYDOY?.dat	Year, day of year, period of time
ssssdddf.yyt	Station name, day of year, period of time
Rinex302.dat	Named by rinex3.02 standard
Custom	Manually input the file name by the way of name + .dat

**Duration time:** After setting the record length, the file will be recorded depending on the setting time, and it will be stopped at the end of the record length. If you enable the auto record option, the SC2000 will start a new file automatically.

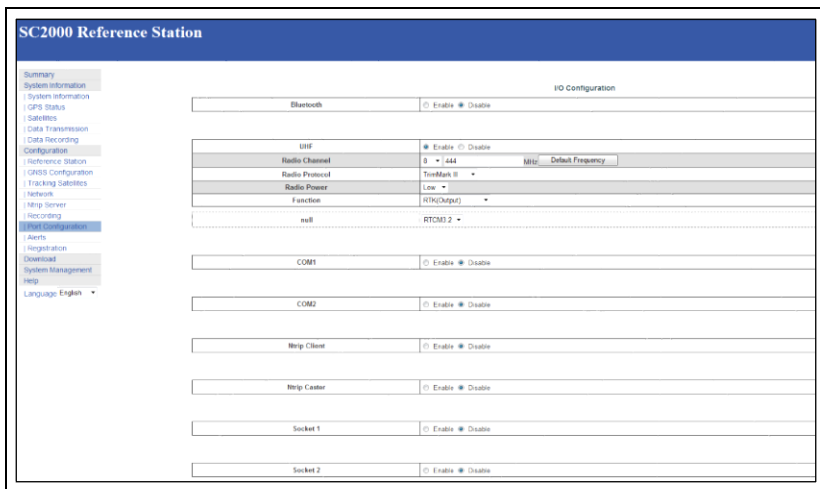
**FTP push :** First you should set the FTP server parameters. When it records the data in the internal memory, SC2000 will also send the data to FTP server automatically.

### 3.3.7 Port Configuration

Port setting includes Bluetooth port, COM1 port and Socket settings. They can support the function as follow:

- CMD(INPUT/OUTPUT) : SC2000 commands
- NMEA(OUTPUT) : Output Specified NMEA sentences
- RTK(INPUT): Differential Input
- RTK(OUTPUT): Differential Output
- RAW(OUTPUT) : Raw data output
- BINEX(OUTPUT) Output Specified BINEX sentences

COM1 can be used also to establish the communication with OEM.



The screenshot displays the 'SC2000 Reference Station' web interface. On the left is a navigation menu with options: Summary, System Information, GPS Status, Satellites, Data Transmission, Data Recording, Configuration, Reference Station, GNSS Configuration, Tracking Statistics, Network, Ntrip Server, Recording, and a sub-menu for 'Smart Configuration' containing Alerts, Registration, Download, System Management, and NIP. The 'Configuration' section is active, showing 'IO Configuration' on the right. The main area contains several settings: Bluetooth (Enable/Disable), UHF (Enable/Disable), Radio Channel (3, 444 MHz, Default Frequency), Radio Protocol (TrimMark II), Radio Power (Low), Function (RTK(Output)), null (RTCM 2), COM1 (Enable/Disable), COM2 (Enable/Disable), Ntrip Client (Enable/Disable), Ntrip Center (Enable/Disable), Socket 1 (Enable/Disable), and Socket 2 (Enable/Disable).

Figure 3-16

### 3.3.7.1 Bluetooth

After opening the Bluetooth and choosing the output/input type, then click “submit”, you can use Bluetooth driver to scan the SC2000. The Bluetooth of SC2000 is named by driver serial. Now we use the PDA to access the SC2000 by Bluetooth. The page of PDA will be shown as follow:

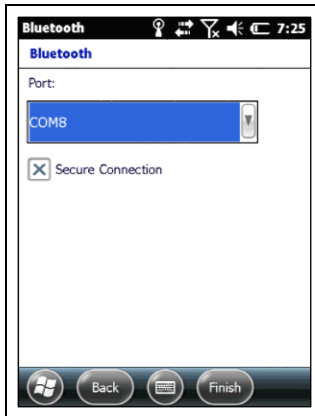


Figure 3-17

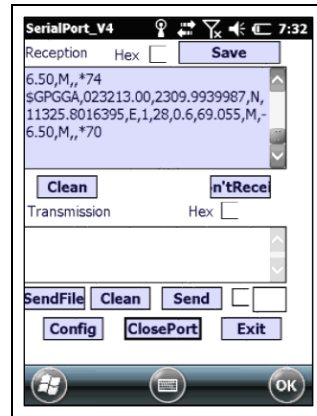


Figure 3-18

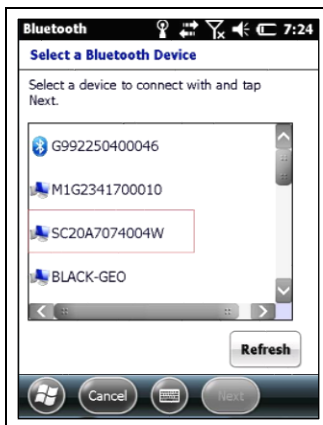


Figure 3-19

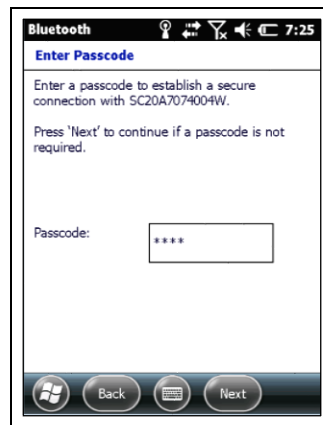


Figure 3-20

### 3.3.7.2 COM1

#### Note:

a: When data transmission on com1 is enabled, use the standard seven-pin cable to connect seven-pin interface in the back panel.

b: The baud rate of com1 must be consistent with the baud of receiving device.

Figure 3-21 and Figure 3-22 are the process of the COM1 port output RTCM3.2.

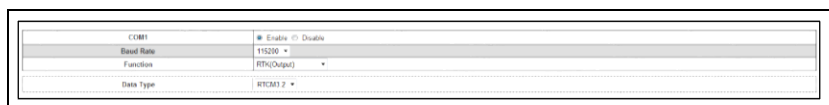


Figure 3-21

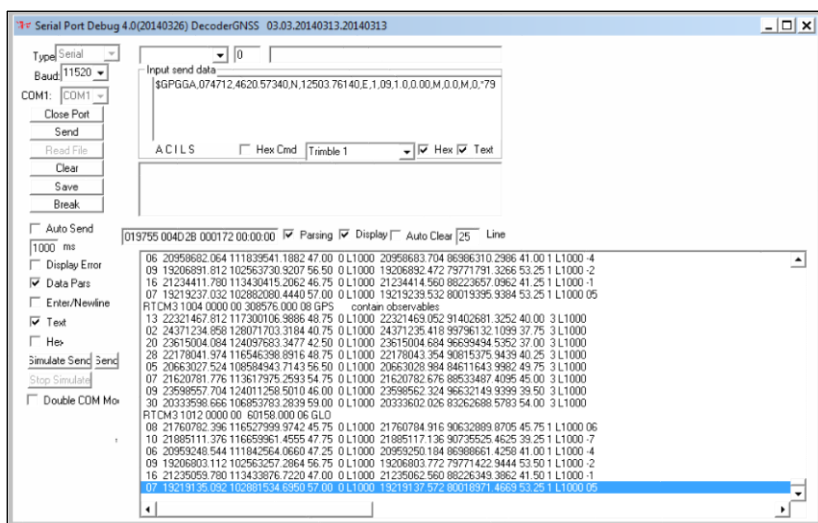


Figure 3-22

### 3.3.7.3 SOCKET

Figure 3-25 and Figure 3-26 are the process of output RAW data via socket.

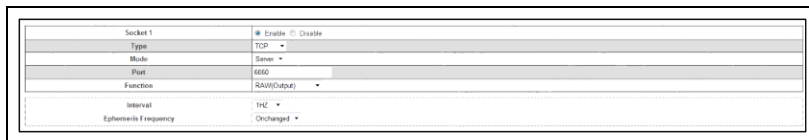


Figure 3-25

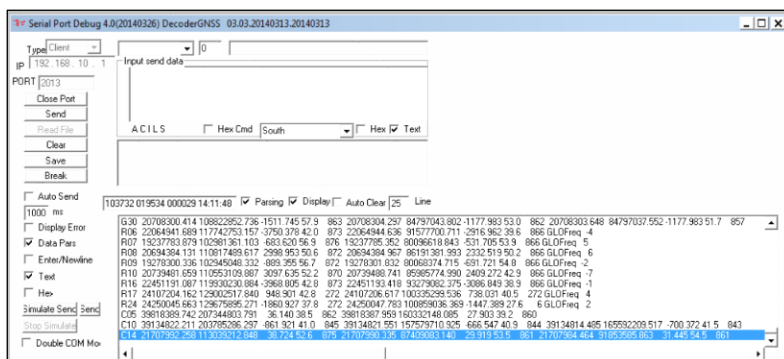
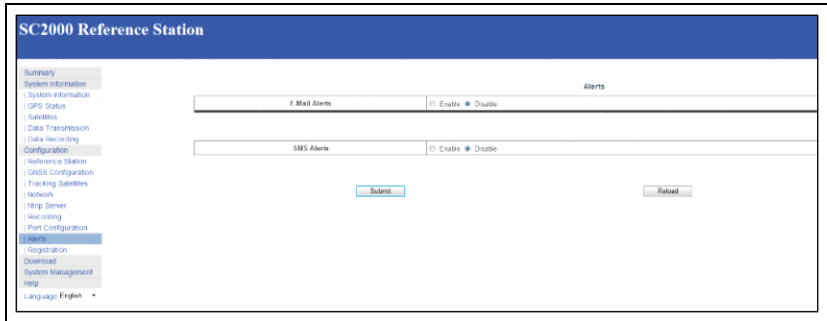


Figure 3-26

### 3.3.8 Alerts

When SC2000 system or program exception occurs, SC2000 will use e-mail or cell phone text messages to notify manager in time for maintenance.



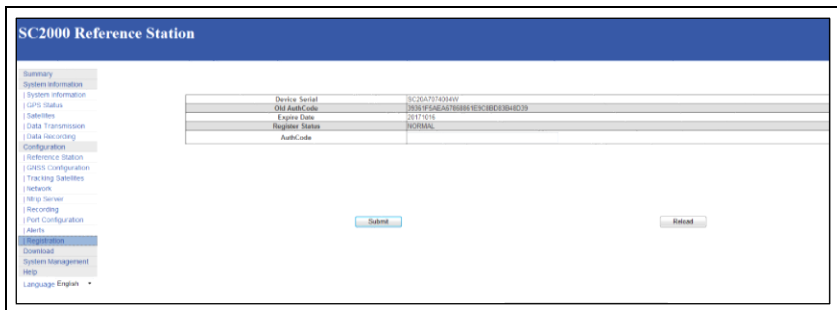
SC2000 Reference Station	
Summary	
System information	
GPS Status	
Satellites	
Data Transmission	
Data Recording	
Configuration	
Reference Station	
Device Configuration	
Tracking Satellites	
Network	
Web Server	
Recording	
Port Configuration	
Alerts	
Registration	
Download	
System Management	
Help	
Language: English	

Alerts	
E-Mail Alerts	<input type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable
SMS Alerts	<input type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable
<input type="button" value="Submit"/> <input type="button" value="Refresh"/>	

Figure 3-27

### 3.3.9 Registration

When SC2000 receiver expires, you need to register it. Enter the registration code and click Submit, then instrument registration will be completed.



SC2000 Reference Station	
Summary	
System information	
GPS Status	
Satellites	
Data Transmission	
Data Recording	
Configuration	
Reference Station	
Device Configuration	
Tracking Satellites	
Network	
Web Server	
Recording	
Port Configuration	
Alerts	
Registration	
Download	
System Management	
Help	
Language: English	

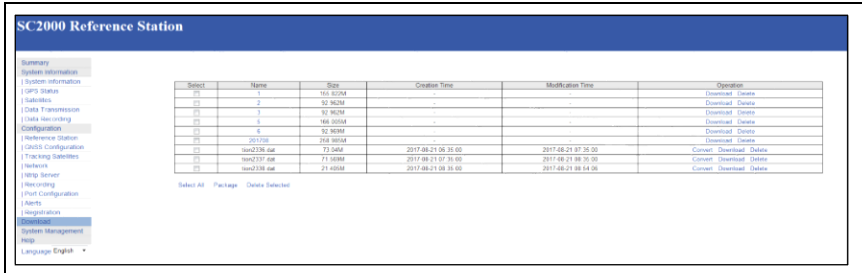
Field	Value
Device Serial	SC-2000-123456789
Old Serial	2017-01-01
Expire Date	2017-01-01
Register Status	NOT REG
Auth Code	123456

Figure 3-28

### 3.4 Download

Download data stored in the SC2000 receiver through the network connection;

Alternatively, you can connect to SC2000 receiver for copying data via USB cable;



**SC2000 Reference Station**

System  
System Information  
Data Status  
Data Statistics  
Data Transmission  
Data Downloading  
Configuration  
Reference Station  
Antenna Configuration  
Tracking Station  
Network  
Web Server  
Recording  
Port Configuration  
Alerts  
Integration  
Maintenance  
System Management  
Help  
Language: English

Select	Name	Size	Creation Time	Modification Time	Operation
1	101.012M	101.012M	-	-	Download Delete
2	52.912M	52.912M	-	-	Download Delete
3	52.912M	52.912M	-	-	Download Delete
4	101.012M	101.012M	-	-	Download Delete
5	52.912M	52.912M	-	-	Download Delete
6	52.912M	52.912M	-	-	Download Delete
7	201.012M	201.012M	-	-	Download Delete
8	201.012M	201.012M	-	-	Download Delete
9	201.012M	201.012M	-	-	Download Delete
10	201.012M	201.012M	-	-	Download Delete
11	201.012M	201.012M	-	-	Download Delete
12	201.012M	201.012M	-	-	Download Delete
13	201.012M	201.012M	-	-	Download Delete
14	201.012M	201.012M	-	-	Download Delete
15	201.012M	201.012M	-	-	Download Delete
16	201.012M	201.012M	-	-	Download Delete
17	201.012M	201.012M	-	-	Download Delete
18	201.012M	201.012M	-	-	Download Delete
19	201.012M	201.012M	-	-	Download Delete
20	201.012M	201.012M	-	-	Download Delete
21	201.012M	201.012M	-	-	Download Delete
22	201.012M	201.012M	-	-	Download Delete
23	201.012M	201.012M	-	-	Download Delete
24	201.012M	201.012M	-	-	Download Delete
25	201.012M	201.012M	-	-	Download Delete
26	201.012M	201.012M	-	-	Download Delete
27	201.012M	201.012M	-	-	Download Delete
28	201.012M	201.012M	-	-	Download Delete
29	201.012M	201.012M	-	-	Download Delete
30	201.012M	201.012M	-	-	Download Delete
31	201.012M	201.012M	-	-	Download Delete
32	201.012M	201.012M	-	-	Download Delete
33	201.012M	201.012M	-	-	Download Delete
34	201.012M	201.012M	-	-	Download Delete
35	201.012M	201.012M	-	-	Download Delete
36	201.012M	201.012M	-	-	Download Delete
37	201.012M	201.012M	-	-	Download Delete
38	201.012M	201.012M	-	-	Download Delete
39	201.012M	201.012M	-	-	Download Delete
40	201.012M	201.012M	-	-	Download Delete
41	201.012M	201.012M	-	-	Download Delete
42	201.012M	201.012M	-	-	Download Delete
43	201.012M	201.012M	-	-	Download Delete
44	201.012M	201.012M	-	-	Download Delete
45	201.012M	201.012M	-	-	Download Delete
46	201.012M	201.012M	-	-	Download Delete
47	201.012M	201.012M	-	-	Download Delete
48	201.012M	201.012M	-	-	Download Delete
49	201.012M	201.012M	-	-	Download Delete
50	201.012M	201.012M	-	-	Download Delete
51	201.012M	201.012M	-	-	Download Delete
52	201.012M	201.012M	-	-	Download Delete
53	201.012M	201.012M	-	-	Download Delete
54	201.012M	201.012M	-	-	Download Delete
55	201.012M	201.012M	-	-	Download Delete
56	201.012M	201.012M	-	-	Download Delete
57	201.012M	201.012M	-	-	Download Delete
58	201.012M	201.012M	-	-	Download Delete
59	201.012M	201.012M	-	-	Download Delete
60	201.012M	201.012M	-	-	Download Delete
61	201.012M	201.012M	-	-	Download Delete
62	201.012M	201.012M	-	-	Download Delete
63	201.012M	201.012M	-	-	Download Delete
64	201.012M	201.012M	-	-	Download Delete
65	201.012M	201.012M	-	-	Download Delete
66	201.012M	201.012M	-	-	Download Delete
67	201.012M	201.012M	-	-	Download Delete
68	201.012M	201.012M	-	-	Download Delete
69	201.012M	201.012M	-	-	Download Delete
70	201.012M	201.012M	-	-	Download Delete
71	201.012M	201.012M	-	-	Download Delete
72	201.012M	201.012M	-	-	Download Delete
73	201.012M	201.012M	-	-	Download Delete
74	201.012M	201.012M	-	-	Download Delete
75	201.012M	201.012M	-	-	Download Delete
76	201.012M	201.012M	-	-	Download Delete
77	201.012M	201.012M	-	-	Download Delete
78	201.012M	201.012M	-	-	Download Delete
79	201.012M	201.012M	-	-	Download Delete
80	201.012M	201.012M	-	-	Download Delete
81	201.012M	201.012M	-	-	Download Delete
82	201.012M	201.012M	-	-	Download Delete
83	201.012M	201.012M	-	-	Download Delete
84	201.012M	201.012M	-	-	Download Delete
85	201.012M	201.012M	-	-	Download Delete
86	201.012M	201.012M	-	-	Download Delete
87	201.012M	201.012M	-	-	Download Delete
88	201.012M	201.012M	-	-	Download Delete
89	201.012M	201.012M	-	-	Download Delete
90	201.012M	201.012M	-	-	Download Delete
91	201.012M	201.012M	-	-	Download Delete
92	201.012M	201.012M	-	-	Download Delete
93	201.012M	201.012M	-	-	Download Delete
94	201.012M	201.012M	-	-	Download Delete
95	201.012M	201.012M	-	-	Download Delete
96	201.012M	201.012M	-	-	Download Delete
97	201.012M	201.012M	-	-	Download Delete
98	201.012M	201.012M	-	-	Download Delete
99	201.012M	201.012M	-	-	Download Delete
100	201.012M	201.012M	-	-	Download Delete

Select All Package Data Selected

Figure 3-29

## 3.5 System Management

The users can upgrade the firmware, view logs, enable or disable the login, and format internal disk.



Figure 3-30

### Note:

1. Log view part are abnormal operation of storage systems and procedures of a record;
2. When setting the security login, the admin account is the administrator account and the guest account can only view the information.

## 3.6 Help

Here provide operating guidelines for SC2000 introductory guiding.



## 4. Operation

### 4.1 Power on

Press the red power button on the panel, and until the initialization is completed, you can see the main menu display on OLED screen as shown in figure 4-1.

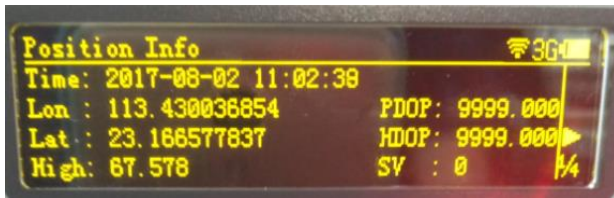


Figure 4-1

Press left or right soft key to view the current IP information of Ethernet, WIFI, and GPRS.



Figure 4-2



Figure 4-3

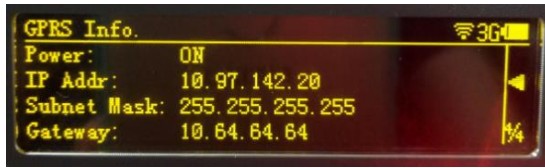


Figure 4-4

## 4.2 Quick setting

You can quickly set the receiver by the panel key. It includes six parts: device info, start record, transmit data, network settings, antenna settings and other settings.

**Start Record:** In the main interface, lightly press F2 key you can see the options shown in figure 4-5.

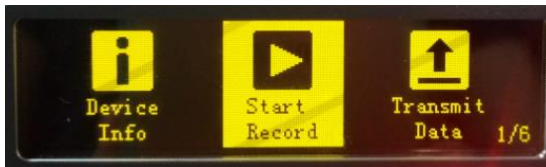


Figure 4-5

Lightly press power key to confirm, then enter into "Start Record", you can see the page shown in figure 4-6.

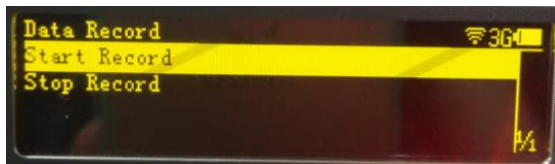


Figure 4-6

When the static is stopped, the cursor stops at the row of "Start Record";

### Transmit Data:

When you transmit data by the panel, first you need to set the transmission parameters in the WEB UI page, then you can operate the panel. There are not transmission parameters settings on the setup panel.



Figure 4-7



Figure 4-8

You can quickly set differential type, start and stop transmit data.

### Network Settings:

SC2000 network settings can be set to automatically obtain the IP or choose a static IP mode;

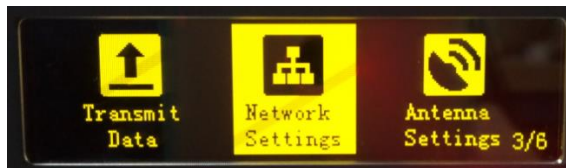


Figure 4-9

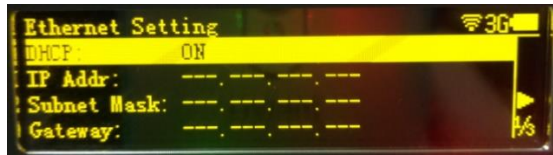


Figure 4-10



Figure 4-11



Figure 4-12

### Antenna settings:

Not supported at the moment.



Figure 4-13



Figure 4-14

### Other settings:

Other settings could set the OLED language display, OLED brightness, OLED turned off interval.

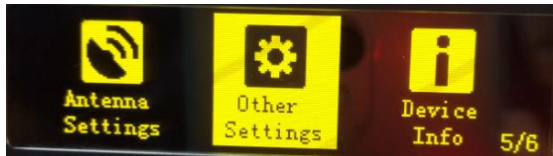


Figure 4-15



Figure 4-16

### Device information:

In this page, you can get the information of device model, device serial, hardware version and BOOT version.



Figure 4-17



Figure 4-18

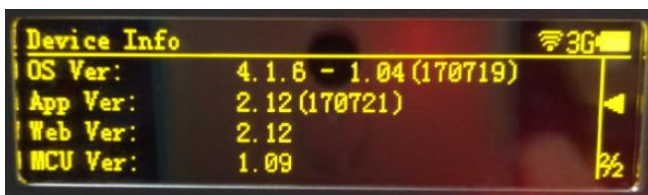


Figure 4-19

## 5. Accessories

Table 5-1 Accessories of SC2000

Categories	Model	Description	Quantity
<b>Standard accessories</b>			
Adaptor	PSAA30R-150-2P	Power Adaptor with 4 plugs (US, UK, AU and EU), 15V/2A, 2PIN	1
Cable	TC.GK428.ABL	Lemo 7 to USB	1
Cable	LM.GK183.ABL	lemo 5 to DB-9 serial	1
Cable	CV-0088-3.0	DB9 female-DB9 female, to debug and transfer data	1
Cable	NETC3	Network cable 3M	1
Antenna	GA.110.101111	4G LTE antenna, male SMA connector	1
<b>Optional accessories</b>			
Antenna	HX-CG7601A	Chock ring GNSS antenna	1
Cable	Geo10-35-01	Cable for choke ring antenna (35m)	1
Cable	TC.GK427.ABL	lemo 5 to DB-9 serial(RS485)	1
Antenna	QC410A	UHF antenna for external radio, TNC connector, 410-430MHz	1

Antenna	QC430A	UHF antenna for external radio, TNC connector, 430-450 MHz	1
Antenna	QC450A	UHF antenna for external radio, TNC connector, 450-470 MHz	1





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