

Galaxy G2 Measuring System User Manual

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Chapter I Preface

Read this chapter, you will have a brief knowledge of South Company and Galaxy G2 measurement system.

§1.1 Introduction

Welcome to South Surveying&Mapping Instruments Co., Ltd, which is China's leading manufacturer of surveying equipment including GNSS receivers and Total Stations. To know more about SOUTH, please visit our official website http://www.southinstrument.com/

This manual takes Galaxy G2 measuring system for example, to explain how to install, set up and uses the RTK system as well as the use of the accessories. We recommend that you read these instructions carefully before using the instrument.

§1.2 Applications

Control Survey: dual-band (dual-frequency) system static measurements can accurately complete the high-precision deformation observation, photo-control point measurement.

Highway Survey: quickly complete the encryption of the control points, road topographic mapping, cross-section measurement, profile measurement with EGStar.

CORS Application: provide more stable and convenient data link for field operations. It is seamlessly compatible with all types of domestic CORS applications.

Data acquisition measurement: perfect match South's various measurement software to do quick and easy data acquisition.

Stakeout shot: large-scale point, line, plane lofting.

Electric Power Measurement: power line measurement orientation, ranging, angle calculation.

Marine application: oceanographic research, dredging, piling, inserted row, making the marine operations more convenient and easy.

§1.3 Main Features

Intelligent Platform

New generation of embedded Linux operating system platform improves RTK performance and work efficiency. Its operating efficiency is higher; a unique core processing mechanism which can respond to more than one command at one time; it starts faster and more responsive in real time. While the stability of system is much higher, it can be adapted to the job of longer uninterrupted power.

Internal Web UI management

Embedded Web UI management platform supports WIFI and USB mode connection. Users can monitor the receiver status and configure it via the internal Web UI management platform.

Bluetooth

Galaxy G2 is equipped with dual-mode Bluetooth v4.0 standard which is able to connect the other smart devices and compatible with Bluetooth v2.1 standard. It not only enlarges the work range but also makes the data communication become more stable.

WiFi

As the new feature and technology adopted on Galaxy G2, it not only can be used as data link to access to internet, but also can be as a hotspot which can be accessed by any other smart devices to configure the receiver.

Advanced InBuilt UHF module

Galaxy G2 adopts new and excellent datalink system, which is compatible with current radio protocols in the market, and realizes the random switching of the radio range 410MHZ-470MHZ and the power level as well. And the new protocol—"Farlink" is able to achieve the working range as 8km.

Upgraded network module

Standard 4G module is integrated which supports TDD-LTE/FDD-LTE 4G network and downward compatible with 3G and 2G network. Also supports all kinds of network types to access CORS seamlessly.

Speed Dial

Smart PPP dialing technology can auto dial which makes the Galaxy G2 keeping online continuously during the survey.

Intelligent Interaction

Support to access the internal web UI manage page of receiver with WiFi and USB connection, monitor host state real-time, configure receiver freely.

Full Constellations Tracking

Equipped with most advanced GNSS boards, Galaxy G2 system can track most signal from all kinds of running satellite constellation, especially support B1, B2 and B3 signal from BeiDou, also get position result with only BeiDou signal.

Electronic Bubble & Tilt Compensation

Galaxy G2 is integrated with a new generation IMU module which makes tilt measurement more stable, accurate and fast that without strict leveling the receiver to measure the point at will, it helps surveyors boost productivity by 30 percent.

Worry-free surveying

The new generation of SoC platform gives RTK more stable performance and lower power consumption. The built-in 6800mAh high-performance battery can support 15 hours of continuous operation. G2 adopts Type-C charging interface which supports PD rapid charging, the battery can be full charged in 3 hours that lasts full-day work.

Intelligent Storage

The raw data including STH, Rinex2.01 and Rinex3.02 not only can be saved in the internal memory (8G SSD), but also can be stored into an external USB device (OTG). The configurable sample frequency is really up to 20Hz.

Amazing Housing

With highly integrated and layered design, Galaxy G2 is smaller than typical Galaxy series receivers. And coupled with the magnesium alloy body shell, the weight of G2 is only 850g including internal battery, extremely light and convenient to carry.

NFC Function

The internal NFC module can make the complicated Bluetooth communication easier and more simple.

Chapter II Hardware Component

Reading this chapter, you can grasp the components, installation and the function of Galaxy G2 measuring system

The overall appearance of Galaxy G2 is round and flat, with a height of 85mm and a diameter of 130mm. It looks elegant, strong and durable. And it adopts a combination design of voice and buttons, easier to operate. The bottom of the receiver has commonly used interfaces.



§2.1 Front Components



Ref	Component	Description
1	GNSS Antenna	Grasps satellites signals
0	Satellites Indicator	Flashes in red to indicate that the satellites are tracking by 0.2s interval, repeat in every 10s.
3	Data Indicator	 UHF mode: Flashes in red to indicate that the signal is receiving/transmitting with the interval. GPRS mode: 1) Rapidly flashes in red to indicate that the receiver is dialing; 2) Flashes in red with the signal receiving/transmitting interval when successful dial. WiFi mode: 1) Rapidly flashes in red to indicate that the receiver is establishing WiFi connection; 2) Flashes in red with the signal receiving/transmitting interval when successful connection. Static mode: Flashes by the data sampling interval to indicate the data file is recording.
4	Bluetooth Indicator	Glows in red to indicate that Bluetooth connection has established between controller and receiver
5	Power Indicator	Glows in red to indicate that there is enough power for working; Flashing in red means low power.
6	Charging Indicator	Glows in blue to indicate that the battery is charging, and turning into green means the battery is full charged.

§2.2 Bottom Components



Ref	Component	Description	
1	Power button	Power on/off receiver; Switch and confirm working mode; Perform self-check operation.	
0	SN label	Apply for a registration code, Bluetooth ID	
3	Speaker	Mode setting and working status prompt	
4	Screw hole	Fix the mainframe to the tribrach or the pole	
9	Type-C USB port & SIM card slot	USB for data transmission, OTG interface and Ethernet port for login web interface, battery charging port. Inserting a Micro SIM card when the receiver is set in GPRS mode	
6	UHF antenna interface	Install UHF antenna	
Ø	5-pin LEMO port	1, As a power port connected with an external power supply device; 2, as a differential transmission port connected with an external radio; 3, as a serial port to check data output and debug	

ChapterIII Hardware Operation

§3.1 Power on/off

Power on

Press the power button for once, all the indicators glow in red, after few seconds (around 10 seconds), the instrument completes initializing along with voice prompt about the working mode (for example, "Rover, internal radio mode"). After a while, instrument starts to track satellites.



Power off

Press the power button and hold for a while, after 3 beeps and the "Power off" voice prompt at the third beeping, release power button, the instrument will switch off.

§3.2 Check working mode

Press the power button for once in the state of power-on, the instrument will prompt with voice message about current working mode (for example, "Rover, internal radio mode").

§3.3 Mode selection

Rover

Press and hold the power button for about 5 seconds and pass over the state of power off (do not

release the button even the instrument says power off), then Galaxy G2 will say "start to set work mode", at this moment, release power button, the working mode will be repeated from Rover to Static on control panel. When the Bluetooth indicator glows in red accompany with "Rover" voice message, press the power button to confirm.



Base

Press and hold the power button for about 5 seconds and pass over the state of power off (do not release the button even the instrument says power off), then Galaxy G2 will say "start to set work mode", at this moment, release power button, the working mode will be repeated from Rover to Static on control panel. When the Bluetooth indicator glows in red accompany with "Base" voice message, press the power button to confirm.



Static

Press and hold the power button for about 5 seconds and pass over the state of power off (do not release the button even the instrument says power off), then Galaxy G2 will say "start to set work mode", at this moment, release power button, the working mode will be repeated from Rover to Static on control panel. When the Bluetooth indicator glows in red accompany with "Static" voice message, press the power button to confirm.



After that, press the power button for once to make sure if the working mode is correctly setup.

Note: Galaxy G2 only supports the working mode selected by control panel, without datalink configuration.

§3.4 Self-check

Self-check is an useful operation to simply check the main hardware components if the instrument is abnormal or not working properly.

Press and hold the power button for about 10 seconds and pass over the state of power off and mode selection (do not release the button even the instrument says power off and start to set work mode), then Galaxy G2 will say "start to self-check", at this moment, release power button, the instrument will perform self-check automatically for the modules one by one.

The sequence of modules checking is:

- OEM board checking
- Network module checking (GPRS module checking)
- ➢ UHF module checking
- Sensors checking
- WiFi module checking
- Bluetooth module checking

If all the modules are normal during self-check, the instrument will get into the state of power-on.



§3.5 USB mode setting

Press and hold the power button for about 15 seconds and pass over the foregoing states (power off, mode selection, self-check), Galaxy G2 will get into USB mode setting with voice message saying "start to set USB mode", at this moment, release power button, the instrument repeats "USB disk" and "USB network interface" for optional, choose the proper mode and press power button to confirm.



§3.6 Factory reset

Press and hold the power button for about 20 seconds and pass over the foregoing states (power off, mode selection, self-check, USB mode setting), Galaxy G2 will get into factory reset progress with voice message saying "start to restore factory default", at this moment, release power button, all the indicators glows and the instrument is performing the factory reset automatically. After this progress complete, the instrument will restart automatically with the factory default settings.



ChapterIV Web UI Management

§4.1 Overview

Because of using the smart embedded Linux operating system and SOUTH intelligent cloud technology, the web UI allows users to configure and monitor the status of Galaxy G2 in real-time. The accessing way is not only by WiFi connection, but also can be USB mode.

§4.2 Access by WiFi

The WIFI hotspot is default broadcasted by Galaxy G2, search the WIFI hotspot which named with SOUTH_xxxx using smartphone, tablet or laptop, then establish the WIFI connection, input the **default IP (10.1.1.1)** into broswer, on the login interface, apply "admin" for the username and password.

For example, search the WIFI hotspot broadcasted by a Galaxy G2 receiver using a laptop PC, choose the WIFI hotspot and click on connect button to establish the connection without password.



Run IE broswer on computer and input the default IP (10.1.1.1) into address bar, after a while, the system login interface is refreshed, then apply "admin" for username and password to login.

Clogin - Windows Internet Explorer		
() * () (mp//10111/pen in ph	3 • □ + × 戸 ==-下	P -
Ravorites E Login	🖄 + 🔯 - 🖂 🏐 + Page+	Safety • Tools • 👔 • "
IP Address: 10.1.1.1	###¤ Username: ad Password: ad	Inglant (新聞)

§4.3 Access by USB

On this mode, the Type-C USB port of Galaxy G2 must work as an Ethernet port, then internal web UI shall be accessed via USB cable connection with computer.

First of all, a corresponding driver is required to install to the computer, then this function could be activated.

Due to different operating system is installed on computer, the drivers should be applied to a suitable one. The file bugvista64.inf is applied to 64bit operating system, and linux.inf is for 32bit operating system.

Make sure that the USB port (Type-C) is switched into USB network interface (please refer to section 3.5, USB mode setting).

e Edit View Tools H	Help				
Organize 🔹 Include in li	brary Share with New folder			· ·	
Favorites	Name	Date modified	Туре	Size	
📃 Desktop	bugvista64.inf	2016/3/15 15:23	Setup Information	3 KB	
📕 Downloads	inux.inf	2015/10/19 15:24	Setup Information	7 KB	
🔛 Recent Places					
libraries					
Documents =					
Music					
Pictures					
Videos					
通 迅雷下载					
🖏 Homegroup					
Computer					
🐔 Local Disk (C:)					
📕 alipay					
DRIVERS					
🕨 📕 Intel					
PerfLogs *					

Choose the folder which contains the drivers

Browse for driver software on your c	omputer	
earch for driver software in this location:		
E:\RTK\Galaxy G6\G6网口驱动		Browse
Include subfolders		
Let me pick from a list of device This list will show installed driver software	drivers on my cor compatible with the de	mputer evice, and all driver



NOTE: The driver can be downloaded from official website automatically or please contact with us for more supports.

If the driver has been successfully installed, the USB port of Galaxy G2 will be recognized as Linux USB Ethernet/RNDIS Gadget, and a local area connection will generate in Network Connections on the computer. For example, Local Area Connection 138 generates after connecting Galaxy G2 receiver to computer via USB network interface.



However, sometimes the computer cannot detect the receiver by USB network interface because there is something wrong with acquiring IP automatically, therefore, we need to do something to avoid such problem, that is to set a fixed LAN IP for the connection:

Right click on the local area connection which newly generates, choose properties to call out the local area connection properties window.



Then double click on Internet Protocol Version 4 (TCP/IPv4) option or click on properties button to call out Internet Protocol Version 4 (TCP/IPv4) properties window, set the fixed LAN IP address as shown in following, then click OK button and confirm the settings, return to the IE browser and use the IP address 192.168.155.155 to access the internal web UI.

Connect using:	You can get IP settings assigned	automatically if your network supports
Linux USB Ethemet/RNDIS Gadget	for the appropriate IP settings.	eed to ask your network administrator
Configure	Obtain an IP address autor	natically
his connection uses the following items:	Ose the following IP address	S:
Gent for Microsoft Networks Gos Packet Scheduler	IP address:	192 . 168 . 155 . 100
File and Printer Sharing for Microsoft Networks	Subnet mask:	255 .255 .255 . 0
✓ ▲ Internet Protocol Version 4 (TCP/IPv4)	Default gateway:	192 .168 .155 . 1
Link-Layer Topology Discovery Mapper I/O Driver Link-Layer Topology Discovery Responder	Obtain DNS server address	automatically
	() Use the following DNS serv	er addresses:
Install Uninstall Properties	Preferred DNS server:	¥ 4 4
Description Transmission Control Protocol/Internet Protocol. The default	Alternate DNS server:	4 4 A
wide area network protocol that provides communication across diverse interconnected networks.	Validate settings upon exit	Advanced

Run IE broswer on computer and input the default IP (192.168.155.155) into address bar, after a while, the system login interface is refreshed, then apply "admin" for username and password to login.

Cogin - Windows Internet Explorer	
🚱 🕞 🔹 🔁 http://192168155155/login_En.php	• · · · · · · · · · · · · · · · · · · ·
🙀 Favorites 🖉 Login	🙆 + 🔯 - 🖂 🖶 - Page - Sefety - Tools - 🖗 -
IP Address: 192.168.155.155 Galaxy1-PLUS W	w#+2 ugtust 務助 eb Server Username: admin Password: admin
Done	🖨 Internet Protected Mode: On 🖓 + 🖏 100% +

Remote Login

If users would like to remote login the web UI of Galaxy G2, then Galaxy G2 has to connect to the internet and forward its 80 port to the public network. For example, if the IP address 222.196.35.76 is the public network IP which Galaxy G2 has connected, and the 80 port of Galaxy G2 has been bounded with 8000 in public network, then users can input the public network IP address into IE explorer along with the forwarding port for login. (http:// 222.196.35.76:8000)



NOTE: The IE explorer is recommended to use for the Web UI login.

§4.4 Web UI main interface

After login the Web UI management of Galaxy G2 by WIFI or USB connection, the main interface appears with displaying configuration items and positioning. As shown at following figures.

admin \$82667117186476 <u>[logout]</u>	> Position Information			-
Status	Location:			
	Lat: 23° 7′ 33 999203″ N	Lon: 113° 22′ 5.157911″ E	Alt: 29,406006 m	Ellipsoid: WGS-84
Configuration	RTK Status:			
Satellite Information	Solution: Autonomous	Correction Delaw: 99	HRMS: 1.257	VRMS: 2.125
Data Record 🛛 🔂	Base X: 6378137.000000	Base Y: 0,000000	Base Z: 0.000000	Base ID: NONE
Data Transfer 🛛 🚹	Diff. format: NONE			
Network Config 🔒	RTX:			
Radio Config 🛛 🚹	sn : 无		TrackingTime: 0	
Firmware Update 🔒	Azimuth: 0.00		Elevation: 0.00	
Track Manage 🔡	SNR: 0.00		Solution: NONE	
Coordinate System 🔒	Tracked Satellite(26);			
Online Service 🔒	GPS(8): 5,13,15,18,20,21,2	24, 29	GLONASS (7): 2, 3, 4, 13, 14,	, 17, 18
User Management	BDS (11): 1, 2, 3, 4, 5, 6, 7, 8, 9	9, 10, 13	GALILEO (O): None	
Hein	SBAS (0): None		QZSS (0): None	
	admin Status Status Configuration Satelite Information Data Record Data Transfer Data Ocnfig Radio Config Firmware Update Track Manage Condinate System Online Service User Management	admin SS2657117186476 flozouti Status € Configuration € Satellite Information € Data Record € Data Record € Data Transfer € Network Config € Radio Config € Firmware Update € Track Manage € Condinate System € Confine Service € Help €	admin SS2667117196476 Docout1 > Position Information Status ■ Location: Configuration ● Lat: 23° 7/ 33. 999203" N Lon: 113° 22' 5. 157911" E Satellite Information ● ETK Status: ETK Status: Satellite Information ● Solution: Autoneeus Correction Delay: 99 Data Record ● Solution: Autoneeus Correction Delay: 99 Data Transfer ● Base X: 6576137.000000 Base Y: 0.000000 Data Transfer ● ETX: ETX: Radio Config ● ETX: Firmware Update ● Azianuth: 0.00 Track Manage ● SNR: 0.00 Condinate System ● GPS (8): 5. 13. 15. 19. 20. 21. 24. 29 Bis (11): 1. 2. 3. 4. 5. 6, 7. 8. 9. 10. 13 SBAS (0): None	admin SS2857171786476 Docut1 > Position Information Status ■ Configuration ■ Configuration ■ Satellite Information ■ Data Record ■ Bate Transfer ■ Bate Transfer ■ RTX: TrackingTine: 0 Firmware Update ■ Ariswith: 0.00 Satellite (26): Online Service ■ Help

In the Web UI home page, the configuration items are listed at left side. And the positioning information including coordinates information and satellites are diplayed at right side.

Ref	Component	Description
	Stature.	Positioning information, satellite tracking and the others will
	Status	be displayed in this page
2.0		It contains registration for receiver, base configuration,
\times	Configuration	antenna configuration, satellite configuration, receiver
		configuration and system configuration.
ж	Satellite Information	Display and control the satellites are used or not
<u></u>		Configure the parameters for static mode and raw data
	Data Kecord	download
	Data Tuansfau	Contains NTRIP configuration, TCP/IP configuration and data
h	Data Transfer	transferring with PC
A	Notwork Config	Contains network parameters configuration, WIFI
9	INCLWORK CONTIG	configuration and the other functions

1	Radio Config	Configure the parameters and frequency for radio modem
£	Firmware Update	It is used to upgrade the firmware for receiver and each modem
11	Track Manage	Record track file while doing measurement
\oplus	Coordinate System	Setup a local coordinate system for Galaxy G2
€	Online Service	Upload data onto a server in real-time
ð:	User Management	Add and manage the Web UI users
?	Help	Offers solutions

§4.4.1 Status

System Information, Work Status and Position Information are listed under Status menu.

System Information

In this page, all the information of Galaxy G2 is diplayed such as serial number, hardware ID, MAC address, firmware version and so on.

URICONE	admin \$82667117186476 [log	out]	> System Informa	ation	
	Status		Receiver Type:	Gal anyl-PLUS	
	System Information		Serial Number:	S82667117186476	
	Work Status	-	Hardware ID:	00I000000000040031112	
	Position Information	-	Software ID:	10000000000000	
4	Configuration	-	Ethernet MAC:	00:71:17:18:64:76	
~	Configuration	-	Ethernet IF:	192, 168, 1, 1	
×	Satellite Information	•	Wi-Fi IP:	10. 1. 1. 1	
Ω.	Data Record	6	Bluetooth MAC:	00:80:25:4A:80:78	
晃	Data Transfer		Hardware Version:	G1A500001	
-		-	Firnware Version:	1.06.161019.R8266L	
₩	Network Config	E	OEM Version:	00511	
Ī.	Radio Config	•	Web Version:	1. 06. 161014. RG60WEB	
±.	Firmware Update	8	Expired Data:	20161104	
1	Track Manage	•			
	Coordinate System	8			
ů	Online Service	8			
ð:	User Management	8			
2	Heln	-			

Work Status

The physical state of Galaxy G2 such as working mode, datalink, host temperature, remaining power and the free memory is obtained from this page

admin \$82667117186476 [logout]	> Work Status	10 0
🖵 Status 🗖	Work Mode: Rover	
System Information =	Datalink: Radio	
Work Stalus	Host Temperature: 39.60 °C	
Position Information =	OEM Temperature: 45.00 °C	
Configuration	Battery Type: Internal Battery	
	Power Voltage: 7.50 V	
🌾 Satellite Information 🔛	Storage Type: Internal Memory	
🗟 🛛 Data Record 🔡	Barris Barriston	
🗟 🛛 Data Transfer 🛛 🛃	Fower Kemaining TO% Fower	1528 Used II 7289.00M Free
🖶 Network Config 🗄		~
👔 Radio Config 🛨		
🐮 Firmware Update 🛨		
🛅 🛛 Track Manage 🛛 🛨		
🖶 Coordinate System 🔡		
🙃 Online Service 🔛		
lle Ilear Mananament 🗖		

Position Information

In this page, users can be clear at a glance on current position information and satellite information

Orde	admin \$82667117186476 [logou	t1 >	Position Information			
	Status		Location:		_	
	System Information		Lat: 23° 7′ 34.053902″ N	Lon: 113° 22′ 5.203813″ E	Alt: 33.171875 m	Ellipsoid: WGS-84
	Work Stalus	- 11	RTK Status:			
		- 11	Solution: Autonomous	Correction Delay: 99	HRMS: 0.803	VRMS: 1.274
*	Configuration	8	Base X: 6378137.000000	Base Y: 0.000000	Base Z: 0.000000	Base ID: NONE
埃	Satellite Information	8	Diff format: NONE			
<u></u>	Data Record		RTX:			
뮹	Data Transfer	8	sn : 无		TrackingTime: 0	
	Network Config	8	Azimuth: 0.00		Elevation: 0.00	
Ī	Radio Config		SNR: 0.00		Solution: NONE	
	Circulate Hadeta		Tracked Satellite (26):			
T	Firmware opdate	•	GPS (8): 5, 13, 15, 18, 20, 21, 2	24, 29	GLONASS (7): 3, 4, 13, 14, 17,	. 18, 19
(1)	Track Manage	8	BDS(11): 1,2,3,4,5,6,7,8,9	9, 10, 13	GALILEO (0): None	
@	Coordinate System	8	SBAS (O): None		QZSS (0): None	
ŝ	Online Service	a	Used Satellite(26):			
34	Licar Management	-				

§4.4.2 Configuration

General Config, Base Setup, Antenna Setup, Satellite Tracking, Receiver Operate and Default Language are contained under Configuration menu. Users are able to configure all kinds of parameters for Galaxy G2 under Configuration menu, and all the settings are immediate effect after saving.

General Config

The registration for receiver working mode setting can be completed in this general configuration page.

CONTRACT OF	admin \$82667117186476 [logo	t] > General Gonf	iguration
	Status	Registration	
*	Configuration	Serial Num	ber: \$82667117186476
	General Config	c c	ode: 81BECD3B23329A67BB6500E421BFB8484317 Register
	Base Setup	ExpiredD	ate: 20161104
	Antenna Setup	- OnlineRegistrat	ion: OnlineRegi
	Satellite Tracking	OperationT	ips: Use Online Reig Function, please Make Sure Network is Work Well!
	Receiver Operate System Setup	Mode setting	
16	Satellite Information	🛨 🛛	ode: Rover
(iii)	Data Record	Datal	ink Radio
	Data Transfer	RadioRo	ute: None
-009	Data manater	RadioTrans	fer:
	Network Config	RTK Rec	or d
1	Radio Config	±	PFS.
Ē	Firmware Update	EV	ENT:
	Track Manage	EVENT Polar	ity:

If the code of Galaxy G2 has expired or is going to be run out, please provide the serial number of your Galaxy G2 for us to apply for another available code, then input the code into the blank or register the receiver online.

Registration	
Serial Number:	S82667117186476
Code:	81BECD3B23329A67BB6500E421BFB8484317 Register
ExpiredDate:	20161104
OnlineRegistration:	OnlineRegi
OperationTips:	Use Online Reig Function, please Make Sure Network is Work Well!

Galaxy G2 allows users to setup the working mode and datalink from this Web UI that only need the mobile phone or tablet PC is able to connect the wifi hotspot of Galaxy G2.

Mode setting	
Work Mode:	Rover
Datalink:	Radio
Radi oRoute:	None
RadioTransfer:	
RTK Record:	
1PPS:	
EVENT :	
EVENT Polarity:	Negative
	Enter Cancel

Work Mode: There are Rover, Base and Static contained in this dropdown list

Datalink: Pull down the list, there will be all kinds of options for datalink, such as radio, Network, External, Bluetooth, WIFI and CSD.

Radio 👻
None
Radio
Network
External
Dual
Blue Tooth
WIFI
CSD

Radio Route: This feature is used to transfer the correction which from the reference station to the other rover by radio, the rovers will have the same reference coordindates. This is in the case of working in some places where there is poor signals from reference station or there is only a SIM card for a few rovers.

It is able to use internal radio or connect an external radio to transfer the correction.

This feature is only available on Rover mode.



Operation:

1, choose "Inner Radio Route" and click "Enter" button to confirm the settings.

Mode setting		
Work Mode:	Rover	
Datalink:	Network	
RadioRoute:	Inner Radio Route	

2, go to "Radio Config" page, check the channel, communication protocol and the frequency point of each channel.

Active:		
Air Baud Rate:	9600	•
Data Baud Rate:	19200	•
Channel:	1	•
Power:	LOW	•
Protocol:	SOUTH	•

3, configure the datalink of the other rovers into internal UHF mode, then make sure the channel, protocol and frequency point are same as "Route" rover.

RadioTransfer: This is the function that Galaxy G2 is able to transfer the correction from Base station to the other rovers with the internal UHF, definitely, Galaxy G2 can work as a radio repeater.

Mode setting	
Work Mode:	Rover
Datalink:	Radio
RadioRoute:	None
RadioTransfer:	
RTK Record:	
1PPS:	
EVENT :	
EVENT Polarity:	Negative
	Enter Cancel



Operation:

1, check the box of "RadioTransfer" on "General Config" dialog for Base station.

Mode setting		
Work Mode:	Base	•
Datalink:	Radio	•
RadioRoute:	None	*
Radi oTransfer:	✓	

2, open the same function for Rover in critical status (when the Rover is close to working distance of Base internal UHF).

Mode setting		
Work Mode:	Rover	•
Datalink:	Radio	•
Radi oRoute:	None	•
RadioTransfer:	✓	

3, configure the datalink of the other rovers into internal UHF mode, then make sure the channel, protocol and frequency point are same as "Repeater" rover.

Note: please take in mind that the "Repeater" rover should keep away from Base station to avoid signal interference.

RTK Record: This is used to enable raw data recording in base mode or rover mode for post-processing

1 PPS: This option is for the 1 pulse per second output **EVENT:** This option is for the EVENT marker input **EVENT Polarity:** EVENT input method.

Base Setup

When Galaxy G2 works as a base, the basic configuration for base can be setup in this page. Users can input the correct coordinates or capture a current position for the base. Also users can define what kind of correction format is transmitted.

WELCOME	admin \$82667117186476 [log	<u>cout]</u>	> Base Setup					
Q	Status	•	CMR ID:	28			_	
×	Configuration		RTCM2. x ID:	476				
	General Config	Ξ	RTCM3.x ID:	476			-	
	Base Scrup	8	Lon:	113 *	22 1	5 108630		
	Antenna Setup	=		115		0.120032		
	Satellite Tracking	Ξ	Lat:	23 *	7 '	34.073373	" 💿 N 🛛 S	
	Receiver Operate	Ξ	Alt:	33.856201			m	
	System Selup	Ξ		Position	Spare			
械	Satellite Information	•	Base Start Mode:	Automactical	lv Start Base	by Current noi		
ā	Data Record	•		StartBase	StopBase			
-	Data Transfer	8	Correction:	RTD	1000000		•	
	Network Config	-	POP Value:	3				
Ĩ	Radio Config		Status:	Start Base Su	ccess			
±	Firmware Update	8						
<u>(11)</u>	Track Manage	8		Enter		Cance		

CMR ID/RTCM2.X ID/RTCM3.X ID: Users can specify the ID for transmitting correction.

Position: Click this button to capture the coordinates for current position

Spare: This is used to the repeat station

Base Start Mode: Here contains 3 methods to start the Base, manually start base, automatically start base by fixed point, automatically start base by current point.

Correction: Here contains the global general used correction formats including RTD,RTCM23, RTCM30, RTCM32, CMR and SCMRx

POP Value: This value is setup for the PDOP limitation.

Status: Here will display the status for base in real-time.

Antenna Setup

The antenna parameters are configured in this page including the antenna height, measuring method.

	admin SG11A6132348104 [logo	out]	Antenna NO#:	SG11A6132348104		
Ģ	Status	-	RINEX:	HX-CSX049A		
*	Configuration		Antenna Height:	1.800	m	
	General Config	-	MeasuringMethod:	Carrier Phase Center		
	Base Setup	Ξ				
	Antenna Setup	=				
	Satellite Tracking	-				
	Receiver Operation	-				
	System Setup	=				
	Receiver Security	-				
派	Satellite	-				
11	Data Record					
-	DataTransfer					

Antenna Height: This is the value for height of antenna while surveying.

Measuring Method: Here provides several methods for measuring the antenna height such as carrier phase center, slant height, antenna edge, height plate and to the bottom.

Measuring Method:	Carrier phase center 🗸 🗸
	Carrier phase center
	Slant height
	Antenna Edge
	Height tape
	To the bottom

Satellite Tracking

In this page, users can define the mask angle for satellite tracking, and check on the box of corresponding band from the constellation that to use this band or not

COME	admin \$82667117186476 [log	outl	> Satellite Tracking				
Ų	Status		Mask Angel:	10			dgree
*	Configuration						
	General Config	-	Туре		Signal		
	Base Setup	-	GPS		L1-C/A	v	
	Salelive Tracking	-	GPS		L1-P		
	Receiver Operate	=	GPS		L2-C/A		
	System Setup	-	GPS		L2-P		
s.	Satellite Information	-	GPS		L5	~	
2.6		-	GLONAS	S	L1-C/A	 Image: A start of the start of	
.11	Data Record	-	GLONAS	s	L1-P		
显	Data Transfer	E	GLONAS	S	12-C/A		
da.	Network Confid	-	GLONAS	S	L2-P		
dis.	Network Colling	-	GLONAS	s	13	 Image: A start of the start of	
Î	Radio Config	±1	BDS		B1		
£	Firmware Update	H	BDS		B2		
11	Track Manage		BDS		B3	2	

Receiver Operate

The page provides all kinds of operations to control the receiver such as self-check operation, clean epochs, factory reset, reboot and power off.

Oble	admin S82667117186476 <u>[logout</u>	1	> Receive	r Operate									
	Status		Module SelfCheck:										
*	Configuration		Item	Module	Operation	Status							
÷	General Config	-	1	OEM	Check	No Action							
	Base Setup	=	2	Radio	Check	No Action							
	Antenna Setup	5	3	NetModule	Check	We Action							
	Satellite Tracking												
	Receiver Operate	3	4	WiFi	Check	No Action							
	System Setup	-	5	Blustoath	Charle	We betien							
施	Satellite Information			braecova	CRECK	NO ACTION							
(<u>+11</u>)	Data Record	8	6	Sensor	Check	No Action							
显	Data Transfer				Check all								
8	Network Config	8											
Ī	Radio Config	8	Default S	ettings:	(Tip.This action wi	11 reset all parameters to the factory default setting							
±.	Firmware Update	-		Clear	EPH	Factory Default							

Self-check: Users can also do the self-check from this configuration page, click on the Check all button to check all the modems or click on the check button corresponding to the modem to check one by one.

Clean EPH: Click this button to clear the remaining epochs to let recever track the satellites better.

Factory Default: Click this button to bring the receiver back to factory default setting.

Reboot: Click this button to restart the receiver.

Power Off: Click this button to power off the receiver.

System Setup

This page is used to control Voice prompt, volume of voice, power saving, USB mode and the default language for receiver.

COME	admin \$82667117186476 [log	<u>cout]</u>	> SystemSet		
	Status		voice prompt ;	2	
×	Configuration		voice volume:	Medium	•
	General Config	-	Power:	normal mode	2
	Base Setup	Ξ	USB:	Watara David	Ī
	Antenna Setup	=		Network fort	
	Satellite Tracking	Ξ	Default Language:	English	•
	Receiver Operate	Ξ	TimeZone(h):	+8.0 (Beijing, China)	-
	System Setup	8			
*	Satellite Information	-		Potes	Current
1	Data Record	-		Enter	Cancer
显	Data Transfer	8			
	Network Config				

Voice Prompt: Check on this box to turn on the voice guide for Galaxy G2, uncheck it to turn off the voice guid.

Voice Volume: Define the voice volume for Galaxy G2's speaker.

Power: Configure the receiver to use the power saving mode or not.

USB: This is used to configure Galaxy G2 what kind of USB mode output from 7-pin port when connect the receiver with computer via USB cable. USB and network port for optional.

Default Language: Configure the default language for Galaxy G2 which associates with voice guid.

Note: This is not the language setup for web UI, the Web UI only supports Chinese and English.

TimeZone(h): Use this to setup the corresponding time zone for your country or area.

§4.4.3 Satellite Information

The "Satellite Information" provides all kinds of tables, graph and the skyplot to view the information of tracking satellites. And it is allowed to configure to use which satellite in constellation on/off page by checking on the corresponding box.

Tacking Table

Here is the table to list all current used satellites and the other information for these satellites.

ONE	admin S82667117186476 [log	out]	> Tracking Table											
	Status	-	NO.	Туре	Elevation	Azimuth	LISNR	Code	L2SNR	Code	LSSNR	Code	Statu	
×	Configuration	a	2	GPS	34.00	290.00	38. 30	CA	0.00	-	0.00	-	In us	
			5	GPS	20.00	216.00	33.80	CA	32.70	P	0,00	-	In us	
蔗	Satellite Information		6	GPS	51.00	336.00	41.40	CA	38, 20	P	27.40	I	In us	
	Tracking Table		9	GPS	25.00	102.00	34.40	CA	33.70	P	0,00	÷	In us	
	Tracking Charl	-	12	GPS	14.00	320.00	30.30	CA	30.50	P	0.00	-	In us	
	Skyplat	-	17	GPS	59.00	60.00	42.60	CA	36.80	P	0.00	- e -	In u	
		=	19	GPS	60.00	22.00	41.70	CA	23.80	P	0.00	-	In u	
	GLONASS on/off	<u> </u>	23	GPS	14,00	68.00	34.00	CA	0.00	-	0,00	-	In u	
	BDS on/off		28	GPS	31.00	170.00	37.30	CA	0.00	-	0.00	-	In u	
	Galileo on/off	Ξ	3	GLOWASS	62.00	78.00	41.80	CA	31.80	P	0.00	÷	Tn us	
	SBAS on/otf	Ξ		GLOWASS	40.00	176 00	39 90	CA	30.00	P	0.00	-	Tr. m	
	QZSS on/off	=	10	CLOWAGE	0.00	0.00	0.00	-	0.00	-	0.00		Ta un	
11	Data Record	8	10	CLOWICC	0.00	0.00	0.00		0.00		0.00		T	
뮹	Data Transfer		10	GLONASS	15.00	318.00	31.80	CA	22.80	P	0.00	-	In u	
(H)	Network Config	A	1	BDS	49.00	128.00	41.00	I	36.20	I	0.00	-	In u	
- 	Rodio Coofia	-	2	BDS	48.00	236.00	39.00	I	34.70	I	0.00		Īn u	
*	Raulo Coning			DDC	00.00	100.00	40.50	-	24 00	+	0.00		÷	

Tracking Chart

In this page, the histogram will indicate the signals from those used satellites, and allow to check each constellation separately.



Skyplot

In this page, all the tracking satellires are shown on the skypolt, this let users intuitively view and know where the current position of satellite is.



GPS on/off

For all the running GNSS constellations or the augmentation system, Galaxy G2 allows to configure to use which satellite or not.

In gnss on/off page, all the running satellites are listed, and unselect the box corresponding to the satellite to not use it.

il i	admin \$82667117186476 [logout] > GPS on/off			
1	Status			
×	Configuration	Ð		
×.	Satellite Information			
	Tracking Table	-		
	Tracking Chart	-		
	Skyplot			
	GIPS.on/off			
	GLONASS on/off	-		
	BDS on/off	1		
	SBAS on/off	-		
	QZSS on/off	-		
Ì	Data Record	£		
1	Data Transfer			
	Network Config	-		
~		-		
1	Radio Config	-		

§4.4.4 Data Record

The "Data Record" performance is mainly used to configure all the parameters for receiver in static mode. Much more operations can be done on Galaxy G2 such as storage path, interval, data format and data files download.

Recording Config

The page provides more practical operations for raw data storage.

WECONE	admin \$82667117186476 [log	out]	> Recording Config	g
Ę	Status		Storage Option:	Internal Memory
*	Configuration	B	Interval:	1.
派	Satellite Information	8	File Interval:	24 N
111	Data Record		Data Format:	STH RINEX2. 0 RINEX3. 0
	Recording Config	8	Point Name:	6476
	Dala Download	Ξ.	Auto Delete:	Tes No
	Data Transfer	•	Format:	Format Disk
۲	Network Config	8	Recording Mode:	Auto Recording
Ŧ	Radio Config	Đ		Start Stop
£	Firmware Update	8	Recording Status:	Recording
(in)	Track Manage	H		
۲	Coordinate System			Enter Cancel

Storage Option: Here are the options to be selected for where the raw data will be stored, internal memory or external memory.

Interval: This is the sampling interval for data storage, 50Hz(0.02s) sampling interval now is available for Galaxy G2.

File Interval: This is used to defined the data storage time for the static file.

Data Format: Here are 3 options to selected for Galaxy G2 to store what kind of format data, STH, Rinex2.0 and Rinex3.0.

Point Name: A point name is required, the last 4 digits of SN is default setting for the point name. **Auto Delete:** This is used to configured Galaxy G2 to delete the previous data files automatically if the memory is full.

Format: Click this button to format the internal memory for Galaxy G2.

Recording Mode: Here are 2 options to configure Galaxy G2 to record raw data automatically or not if it achieves the sampling conditions.

Start/Stop: Click these buttons to start recording or strop recording the raw data.

Recording Status: Here shows the status of static data storage.

Data Download

This page provides the data files to download

Choose the storage where the static data recorded, and file type, then click on the blank of "Select Date" to choose what date the data was recorded and click "Get Data" button, all the files recorded in the date you choose will show in the table, tap download button to download the data files.

admin S82667117186476 [logout]	> Data Download											
🖵 Status 🛨	Data Source:	💿 s:	D Car	d	0	USB		File	Type: • STH RINEX			
🛠 Configuration 🕂	Select Date:		Get Data									
🚿 Satellite Information 🔒	Download Tips:	il					1	×	ave as and complete			
🔟 Data Record 🗧	Item	Mon	Tue	Wed	Thu	Fri	Sal	Sun	Size	Data		
Recording Config 🗧	1		1	2	3	4	5	6		(Download]		
Data Download 🛛 📄	2	7	8	9	10	11	12	13		🛨 [Download]		
🗟 🛛 Data Transfer 🛛 🛨	3	14	15	16	17	18	19	20		(Download]		
Network Config	4	21	22	23	24	25	26	27		🚽 🛃 [Download]		
Radio Config	5	28	29	30			_	-		👲 [Download]		
A riduo comig	6									👱 [Download]		
Eirmware Update	7									🚽 [Download]		
🛅 Track Manage 🚹	8									🛃 [Download]		
Coordinate System	9									🛃 [Download]		
🚳 Online Service 🕂	10									🛨 [Download]		
🏂 User Management 🕂	11									🛨 [Download]		

§4.4.5 Data Transfer

This performance contains General, Serial Port Config, TCP/IP Config, NTRIP Config and Data Flow Config. The "Data Transfer" allows to configure the output mode for raw observation data and differential data, as well as to the NTRIP performance configuration.

General

This page shows the service condition and the output contents of the ports, if the port item display in green, that means the port is being used, and the port is not used while the item display in red.

ELCOME	admin \$82667117186476 [log	out]	> General			
	Status	-	Туре	Port	Input	Output
*	Configuration	-	Serial	LEMO (115200)	none	Navigation data
*	Satellite Information		Serial	BLUETOOTH (115200)	none	Navigation data
(1) (1)	Data Record	8				
8	Data Transfer					
	General	8				
	Serial port Config	=				
	TCP/IP Config	=				
Serial port Config

This page is allowed to configure the baud rate, odd-even check and the data flow for serial port (5-pin port) and Bluetooth.

ELCOME	admin \$82667117186476 [log	out]	> Seria	al Port Config							
Ų	Status	-	Item	Serial Port	Baud Rate		Odd/E	ven	Data Flow		Enable
*	Configuration	8	1	LEMO	115200	-	None	•	Navigation Data	•	
-Ak	Satellite Information	8	3	BLUETOOTH	115200	-	None		Navigation Data	•	
(iii)	Data Record	Đ									
Ę.	Data Transfer				Enter		C	ancel			
	General	2									
	Serial port Config										
	TCP/IP Coning	-									

CAUTION: do not change the default value in this page for each item, if you want to change the settings, please contact with SOUTH technician for further support.

In the dropdown list of data flow, there shows 4 items for selection.

Raw observation data: This is the raw observation data straight from OEM board.

Correction Data: This is the correction data straight from OEM board.

Navigation Data: This is the navigation data output from receiver such as NMEA-0183, GSV, AVR, RMC and so on. It is configured in Data Flow Config page.

SIC Observation Data: This is the user-defined format observation data from SOUTH.

OpenSIC Observation Data: This is the open version of SOUTH user-defined format observation data for secondary development.

Data Flow
Navigation Data 👻
Raw observeation data Correction Data
Navigation Data SIC Observeation Data
OpenSIC Observeation Data

TCP/IP Config

This is used to configured the raw data or navigation data to be uploaded or transferred to a server. And there are Caster and Server working mode for this performance.

Caster: If this working mode is selected, GALAXY G2 will be a client to upload the data to a specify server if it connects to the internet by WIFI or GPRS connection with SIM card inserted. Input the specified IP and port for server, and the data format what is uploaded. Then users are able to see the uploaded data on server.

Server: Galaxy G2 will upload the data onto internet by the static WIFI if server is selected, then users are able to obtain its dynamic data by accessing to GALAXY G2 through the IP from receiver.

URICONA	admin 582667117186476 [log	out]	> 10	CP/IP Config	-					
	Status		Item	Work mode	Local port	Server IP	Port	Data flow	Status	on/off
*	Configuration	E	1	Caster 💌	1111	58, 248, 35, 130	2010	SIC Observeation	Disconnect	F
派	Satellite Information		2	Caster 💌	2222	58.248.35.130	2010	Navigation Data 💌	Disconnect	
(di)	Data Record	-	3	Caster 💌	7933	58.248.35.130	2010	Navigation Data 💌	Disconnect	IT
显	Data Transfer		4	Caster 💌	4444	58.248.35.130	2010	Navigation Data 💌	Disconnect	-
	General Serial port Config		5	Caster 💌	6666	58. 248. 35. 130	2010	Navigation Data	Disconnect	
	TOP/IP Config	•								
	NTRIP Config Data Flow Config	-				Enter	Ca	ncel		
۲	Network Config	8								
1	Radio Config									
£	Firmware Update									

NTRIP Config

This is used to configure the NTRIP performance while receiver is going to connect to internet. Galaxy G2 supports complete NTRIP performance including NTRIP Client, NTRIP Server and NTRIP Caster.

MECONIE	admin \$82667117186476 [log	out]	> NTRIP Config				Í
	Status		NtripClient:				
×	Configuration	8	Status;	Disconnect			
Nr.	Satellite Information		Active:	•			
ŝ	Data Record		Authentication Mode:	Eagle Mode TCP/IP Mode	LARK Mode		
	Data Transfer		NtripClient Address:	58. 248. 35. 130			
and	Data Transfer	-	NtripClient Port:	2010			Đ
	Serial port Config	-	Vser:	wmbgps			
	TCP/IP Config	-	Password:	huli			
	NTRIP Config	Ē	Mountpoint:	RTCM30	Get Point	-	
	Data Flow Config	-	GetPoint Status;	No Action			
	Network Config	•	NtripServer:				
1	Radio Config	63	Status:	Disconnect			1
±	Firmware Update	8	Active'	~			
511	Track Manage	1	Ntrin Var-i				
	Coordinate System	8	Authentication Mode:	Eagle Mode LARK Mode	-		

NtripClient

This is the general used function for rover set in GPRS mode. At the field of NtripClient, the specify IP address, access port of reference station, as well as the assigned username and password shall be input for the NTRIP connection.

NtripClient:	
Status:	Disconnect
Active:	\odot
Authentication Mode:	Eagle Mode TCP/IP Mode LARK Mode
NtripClient Address:	58. 248. 35. 130
NtripClient Port:	2010
Vser:	Vmbgps
Password:	huli
Mountpoint:	RTCM30 Get Point 💌
GetPoint Status:	No Action

Status: This field will display the status of NTRIP connection, connect or disconnect. **Active:** Check on this circle to activate this function.

Authentication Mode: This includes Eagle Mode, TCP/IP Mode and LARK Mode.

- Eagle Mode is SOUTH standard mode, usually, this mode is used on the case of both Base and Rover are using GPRS mode.
- [©] TCP/IP Mode is for private network use.
- ③ LARK Mode, which is a new technology on GPRS use, it is similar to GSM dial. This mode no longer rely on a CORS server that the corrections are transmitted by GPRS network. Besides, it is different from the feature of Caster.



The other fields are the standard configuration for NTRIP connection, IP, port, username and password, after this information is input into the corresponding field, click on Get Point button to download the source table from server, then choose a proper mountpoint to access.

NtripServer

This configuration is used in Base+GPRS mode that Base station will transfer its correction onto the server as long as it connects to internet, then Rover can download the base's correction from server for use. Or use the LARK mode.

Ntrip Version: This field provides NTRIPv1.0 and NTRIPv2.0 for optional.

Access Point: This field is allowed to user-defined the correction format which base will transfer to the server, such as HHHH_RTCM30

NtripServer:	
Status:	Disconnect
Active:	\odot
Ntrip Version:	NTRIPv1.0
Eagle Mode:	
NtripCaster Address:	58. 248. 35. 130
NtripCaster Port:	2010
User:	0488
Password:	3839
Access Point:	HHHH_RTCM30

Operation on LARK

- a) Setup the Base station on a known position or an unknown position.
- b) Insert SIM cards into both Base and Rover receiver
- c) Input the correct APN and the assigned username and password on Network Config page, then make sure both of them have connected to internet.

WELCOME	admin \$82667117186476 [log	zout]	> GMS/GPRS Coni	tñg
	Ptotus	-	Status:	
-	Status		Signal:	Txil
×	Configuration	H		
*	Satellite Information	a	ModuleMode:	ME909±-821
		-	IMEI:	: 867223021570809
11	Data Record	+	SIM Card Status:	SIM is Wrong
显	Data Transfer			
-	Network Cardia	-	Registration Status:	: Searching
	Network Coning	-	Connection Type:	: None
	GSM/GPRS canlig	8	PPP Dial Status:	Disconnect
	SMS Config	-	in the blackst	
		-	IP Address:	. 0.0.0
	WIFI Config	Ξ	Parameter Config:	
	Blue Tooth Config	Ξ		
-			Active:	
	Router	-	APN:	CMNET
	Network Testing		APN Hear Name:	
Ŧ	Radio Config	8	APN Password:	

d) Check the box of LARK for both Base and Rover, then we can notice that after checking LARK for Base, all the fields turn into grey and unable to input anything, and there is only Mountpoint field available for Rover. e) The key step is that input the **Serial Number** of Base into Mountpoint field, then click "Enter" button to confirm all the settings.

NtripClient:			
Status:	Disconnect		
Active:			
Authentication Mode:	Eagle Mode TCP/IP Mode 🖌 LARK Mode		
NtripClient Address:	58. 248. 35. 130		
NtripClient Port:	2010		
Vser:	wmbgps		
Password:	huli		
Mountpoint:	S82667117186476 Get Point	•	
GetPoint Status:	No Action		
NtripServer:			
NtripServer: Status:	Disconnect		
NtripServer: Status: Active:	Disconnect		
NtripServer: Status: Active: Ntrip Version:	Disconnect TRIPv1.0		
NtripServer: Status: Active: Ntrip Version: Authentication Mode:	Disconnect TRRIPv1.0 Eagle Mode IARK Mode		
NtripServer: Status: Active: Ntrip Version: Authentication Mode: NtripCaster Address:	Disconnect		
NtripServer: Status: Active: Ntrip Version: Authentication Mode: NtripCaster Address: NtripCaster Port:	Disconnect NTRIPv1.0 Eagle Mode LARK Mode 58. 248. 35. 130 2010		
NtripServer: Status: Active: Ntrip Version: Authentication Mode: NtripCaster Address: NtripCaster Port: User:	Disconnect		
NtripServer: Status: Active: Ntrip Version: Authentication Mode: NtripCaster Address: NtripCaster Port: User: Password:	Disconnect		
NtripServer: Status: Active: Ntrip Version: Authentication Mode: NtripCaster Address: NtripCaster Port: User: Password: Access Point:	Disconnect		

NtripCaster

This feature is finally realized on Galaxy G2, the receiver is equivalent to a CORS system that it generates and broadcasts the user-defined correction for rover if GALAXY G2 connects a static IP address.

Port: This is the specify port for the access.

Access Point: This is mountpoint which can be user-defined.

NtripCostor:		
Actipositer.		
Status:	Disconnect	
Active:		
Port:	6666	_
Access Point:	fdld	_
	Enter Cancel	

Data Flow Config

In this page, users can optionally to configure the content and the update rate of data flow that to output or not to output what kind of data format.

Click on the dro	pdown list fo	r each data	format to	define the	update rate
Chiefe on the dio	pao mi 1100 10.		10111140 00		apaare rare

	and the	-	Navigat	tion Data:										
4	Status	H		11	152		(a	321		/r	127		(a.	
6	Configuration	-	GGA :	1	<u>M</u>	GSA ;	1	×	GSV ;	10	m	GST ;	1	~
	Satellite Information	-	ZDA :	1	*	BPQ :	10	*	PJK:	OFF	*	GLL:	OFF	*
s.	Satellite information	-	RMC :	OFF	~	VTG :	OFF	¥						
1	Data Record	H												
1	Data Transfer		STC Nat	vigation hat	a.									
i	General		PST :	1	~	GSI:	10	1	BSI:	5	~	TPI:	OFF	~
	Serial port Config	-	VCV :	OFF	~	STA :	OFF	¥	DEV:	OFF	~	AAT :	WhenChanged	×
	TCP/IP Config	=	REC :	OFF	~	DAL :	WhenChanged	~						
	NTRIP Config	=	Raw Obs	serveation D	ata:									
	Data Flow Config	=					-							
e.	Network Config	8	Outpu:	t Interval:	1		Y s							
		-	GPS	Ephemeris:	When	Changed				2				
	Radio Config	•	GLONASS	Ephemeris:	When	Changed				Y				
5	Firmware Update		BDC	Fabracia *	Whent	hanged				~				
P	User Management	-	bbs	spneser12 .	[
			GALILEO	Ephemeris:	Whenl	hanged				~				

§4.4.6 Network Config

The "Network Config" is able to configure the ways and the contents for internet access of Galaxy G2. GSM/GPRS Config, CSD Config, WIFI Config, Bluetooth Config, Port Forwarding, Router and Network Testing are under the list of Network Config.

GSM/GPRS Config

In this page, all the information of receiver under GPRS mode will be displayed including the hardware information and dialing status.

Status: The dialing status and hardware information are displayed in this field that users can intuitively to view the signal of network, module model and the IMEI number of the module.

Parameter Config: The parameters of SIM card are input in this field including APN, assigned username and password, dial mode.

WELCON	admin S82667117186476 [log	cout]	> GMS/GPRS Cont	nfig
171	Status	-	Status:	
2	Orafieventing	-	Signal:	. Txil
~	Comguration	-	Modul eMode:	ME909x-821
Ak.	Satellite Information	-	IMEI:	867223021570809
	Data Record	H	SIM Card Status:	Checking SIM Card
显	Data Transfer	8	Registration Status:	: Unregist
•	Network Config		Connection Type:	: None
	GSM/GPRS Contig			
1		-	PPP Dial Status:	Disconnect
	CSD Config	=	IP Address:	: 0.0.0.0
	WIFI Config	=	Parameter Config:	
1000	Blue Tooth Config	=		
1.000	Port Forwarding		Active:	
	Router	=	APN:	CANNET
	Network Testing	8	APN User Name;	
Î	Radio Config	-	AFN Fassword:	
±	Firmware Update		Dial Mode:	Automatically Start Dial
(<u>11</u>)	Track Manage	-		

MSM Config

On this configuration dialog, input a phone number into the blank, Galaxy G2 will send text message onto the phone which number is written.

ELCOME	admin \$82667117186476	<u>coutl</u>	> SMS Config			
	Status	a	Status:			
4	Configuration	-	Signal:	Txil		
-	Configuration	-	SIM Card Status:	Checking SIM Card		
AR.	Satellite Information		Registration Status:	Unregist		
11	Data Record	÷	Parameter Config:			
品	Data Transfer	÷	SMSEnable:	-		
	Network Config		SMSReport:			
	GSM/GPRS Config	-	SMSReportNumber:	13612345678		
	SMS Config					
					The second se	
	WIFI Config	=		Enter	Cancel	
	Blue Tooth Config	-				
	Port Forwarding	=				
	Router	Ξ				
	Network Testing	=				

CSD Config

CSD is the meaning of direct dial between Base and Rover with SIM card inserted (the CSD function should be activated on local SIM card), this function is mainly used in the area where there is very poor internet signal coverage.

Status: This field displays the dialing status when CSD is used on Galaxy G2.

Parameter Config: To enable the CSD function with checking the box of Enable option in this field, then input the phone number for Rover and Base in CallNumber and LocalNumber.

WELCON	admin S82667117186476 [log	<u>zout]</u>	> CSD Config				
-	Statue	-	Status:				
4	Configuration		Signal:	Txil			
~			Connection Type:	CSD			
7K.	Satellite information		IMEI:	0			
11	Data Record		SIM Card Status:	Checking SIM Card			
븅	Data Transfer	-	Registration Status:	Unregist			
	Network Config	•	PPP Dial Status:	Disconnect			
_	GSM/GPRS Config	-					
	SMS Config	=					
	CSD Centig	8	Parameter Config:				
	WIFI Config	2	Enable:	-			
1000	Blue Tooth Config	-	CallNumber:	1361111111			
100	Port Forwarding	Ξ					
		=	LocalNumber:	13612345678			
	Network Testing	-	Tips:	Please enable CSD datali	ink, before you operate thi	s page!	
-	Radio Config	8					
±	Firmware Update	61		Enter	Cancel		

Tips: please choose CSD as datalink for receiver in General Config.

WIFI Config

This is mainly used on the WIFI configuration for Galaxy G2, there are AP mode and Client mode for optional.

AP:

This is used to enable the WIFI hotspot for Galaxy G2 to broadcast for mobile terminals such as smartphone or tablet to connect and access the Web UI.

Check the box of AP in Work Mode to enable the WIFI hotspot for Galaxy G2, and define the SSID, password, encryption method and broadcasting channel for WIFI connection.

DHCP IP Range: This is allowed to user-defined the IP for Web UI login.

WELCOM	admin \$82667117186476 [log	<u>cout]</u>	> WIFI Config		
ų.	Status	•	Active:		
*	Configuration	Ð	Work Mode:	💽 AP 🔷 Client	
*	Satellite Information	H			
11	Data Record		AP_SSID:	SOUTH_6476	
묘	Data Transfer		AP_Password:	southgnss.com.cn	
	Network Config		AP Encode:	Open	
	GSM/GPRS Config		AP Channel:	1	
		2	DHCP IF Range:	192. 168 0/255. 255. 255. 0	
		Ξ		172. 16 0/255. 255. 255. 0	
	WIFI Config	۲		10. 1 . 1 . 0/255.255.255.0	
	Blue Tooth Config	Ξ			
	Port Forwarding	Ξ			
-		=		Enter Cancel	
	Network Testing	-			

Client:

This option enables Galaxy G2 to search and connect the other WIFI hotspot which connects to the internet, the receiver is able to download and use the mountpoint from reference station.

Client_SSID: This is the WIFI hotspot which Galaxy G2 is going to connect

Scan: Click this button to search the surrounding available WIFI hotspot.

Password: This is the password which the WIFI hotspot requires.

IP fields: If Galaxy G2 successfully connects to the WIFI, there will be an LAN IP address generated by Galaxy G2.

ClearSSID: Click this button to clear the SSID list.

WELCOM	admin S82667117186476 [log	cout]	> WIFI Config	-				<u> </u>		
Ţ	Status		Active:	2						
*	Configuration	(H	Work Mode:	AP		💽 C1	ient			
派	Satellite Information	-		-						
(il)	Data Record	-	Client_SSID:	southgnss			Scan		*	
显	Data Transfer		Password:	southgnss.	. com. cn					
-Th	Network Config	-	Encryption Type:	WPA2						
(H)	Network Corning	-	DHCP :							
	SMS Config	-	IP Address:	0	0	. 0	. 0			
			Subnet Mask:	255	255	255	. 0			
	WIFI Centig		Default Gateway:	0	0	0				
	Blue Tooth Config		Statust	No Connect	1.	10	1			
	Port Forwarding	-		TY						
	Rouler	-	Signal;	1.4.1						
	Network Testing	-	Clear SSID List:	ClearSSID						
1	Radio Config	±.	Operation Tip:	When change	wifi work	mode from Å	P to Client, plea	se reboot host t	o take effect	
±	Firmware Update	-		Client funct	i on!					

Bluetooth Config

In this page, users can view the information and connection status of Bluetooth, such the MAC of Bluetooth, discoverable or not, the PIN code, and the connection devices in following table.

WALCOM	admin \$82667117186476 [log	<u>gout]</u>	> Blue tool	th config			-
Q	Status	8		Active: 🔽			
*	Configuration	±	Blue To	oth MAC: 00:80:25	:4A:80:78		
禾	Satellite Information	<u>+</u>	Disco	verable: 🔽			
(11)	Data Record	Ð	P	IN Code: O			
Ŗ	Data Transfer	Ð	Connection	Device:			
۲	Network Config		Item	Device Mac	RFCOMM Channel	Device Name	Disconnect Action
	GSM/GPRS Config	-	1				Disconnect
	SMS Config	-					
	CSD Contig	-	2				Disconnect
	WIFI Config	Ξ					
	Blue Tooth Config	8		Enter		Cane	cel
	Port Forwarding	=					
	Router	-					
	Network Testing	=					
ĵ.	Radio Config	÷					
£	Firmware Update	-					

Port Forwarding

This page is mainly used to view and configure the internet transmission port for Galaxy G2, customize and debug receiver.

WELCOM	admin \$82667117186476 [10;	gout]	> Port Forwarding	
	Status	H	HTTP Port:	80
*	Configuration	.	FTP Port:	21
族	Satellite Information		TELNET Port:	23
	Data Record			
뮮	Data Transfer			Enter Cancel
۲	Network Config			
-	GSM/GPRS Config	=		
	SMS Config			
	CSD Config	Ξ		
	WIFI Config	=		
	Blue Tooth Config	-		
	Port Forwarding	8		
	Router	2		
		=		



NOTE: Usually we will keep the default setting in this page, if you would like to modify *it, please contact with SOUTH technician for more supports.*

Router

This is mainly used to view and configure the parameters for router, only under the condition of customize and debug receiver.

WELCOM	admin \$82667117186476 [log	out]	> Router		_		
	Status	•	Destination	Gateway	Mask	Sign	Interface
*	Configuration	=	192. 168. 155. 0	0, 0, 0, 0	0.0.0.0	U	usbO
*	Satellite Information	æ	Change the default :	route: PPPO	- Ent	er	
(<u>11)</u>	Data Record	8	Refresh				
	Data Transfer						
	Network Config						
	GSM/GPRS Config	Ξ					
	SMS Config	=					
	CSD Config	<u>=</u>					
	WIFI Config	=	Add Route				
	Blue Tooth Config	Ξ	Aut Koute				
			Destination:	2	6 (2	
	Röuter	8	Gateway:	4	e		
	Network Testing	-	Mask:				
Ī	Radio Config	e	Interface:	PPPO +	Enter		

NOTE: Usually we will keep the default setting in this page, if you would like to modify *it, please contact with SOUTH technician for more supports.*

Network Testing

This function is mainly used to test network status for Galaxy G2 after logging on the internet. How to do:

Input the IP address which Galaxy G2 already connected, then click PING button, the testing information will be displayed in the following window.

admin \$82667117186476 [10	gout]	> Network Testing		
🖵 Status		Input IF:	58, 248, 35, 130	PING
Configuration	1	PingStatus:	No Action	
🚿 Satellite Information	•			
Data Record				
🖳 🛛 Data Transfer	-	PingResult:		
Network Config				
GSM/GPRS Config	-		1	
SMS Config	-			
	=			
WIFI Config	=			
Blue Tooth Config				
Port Forwarding	-			
	=			
Network Testing				

§4.4.7 Radio Config

As the name implies, the parameters of radio can be done in "Radio Config", it is divided into Radio Parameter and Radio Frequency.

Radio Parameter

This page is mainly used to configure the parameters for internal radio module of Galaxy G2.

-	admin S82667117186476 [logo	t] > Radio Paramete	25 -
Ų	Status	± Active	
*	Configuration	Air Baud Rate	9600
×.	Satellite Information	🛨 🛛 Data Baud Rate	19200
11	Data Record	🛨 Channel	• 1
8	Data Transfer	Power	· LOW
	Network Config	Protocol	• золти
ĩ	Radio Config	Factory Default	BastoryBef all:
	Radio Parameters		
	Radio Frequency	=	Enter Cancel
ŧ	Firmware Update	H	
ii)	Track Manage		
•	Coordinate System	a	

Air Baud Rate: This represents the data transmission rate in the air of internal radio, the higher value, the bigger of data size transmitted per second, usually keep the default setting.

Data Baud Rate: This represents the rate of data transmission port of internal radio, this rate should be the same in both Base and Rover. In general, the data baud rate of SOUTH radio module has been unified to be 19200, keep it as default.

Channel: This is the communication channels for internal UHF, the value of the channel must be the same both in Base and Rover.

Power: This appears only in Base mode, the radio transmitting power is allowed to define in High, Middle or Low power.

Protocol: This is radio communication protocol for data transmission, SOUTH and TRIMTALK are optional in this page and SOUTH is the default setting, if it is changed, Base and Rover must use the same protocol for communication.

Factory Default: Click this button to restore the factory default for internal UHF module.

Radio Frequency

For Galaxy G2, the powerful internal radio module supports much more radio channels apply to the legal frequency in different countries or areas.

There are 16 radio channels listed in this page after clicking on radio frequency. Users are able to change the frequency freely in the channel spacing, click Restore button to bring the frequency of each channel back to default setting.

2	admin S82667117186476 [log	out]	> Radio Frequer	ıcy		-		
Ų	Status		Channel 1:	463, 125	мна	Channel 9:	463.125	MHZ
50	Configuration	Ð	Channel 2:	464.125	MHZ	Channel 10:	464.125	MHZ
施	Satellite Information	8	Channel 3:	465.125	MHZ	Channel 11:	465.125	MHZ
1	Data Record		Channel 4:	466. 125	MHZ	Channel 12:	466.125	MHZ
显	Data Transfer	8	Channel 5:	463.625	MHZ	Channel 13:	463.625	MHZ
	Network Config		Channel 6:	464.625	MHZ	Channel 14:	464.625	MHZ
1	Radio Config		Channel 7:	465.625	MHZ	Channel 15:	465.625	MHZ
i.	Radio Parameters	=	Channel 8:	466.625	MHZ	Channel 16;	466.625	MHZ
=	Fadic Frequency	-						
±.	Firmware Update	0		Enter		Cancel	Restore	
		-				a second second		

§4.4.8 Firmware Update

Update the latest firmware for receiver or for corresponding modems can be done in "Firmware Update".

Firmware Update

This page displays all the information of the firmware which current installed on Galaxy G2, and allows to update the latest version firmware for receiver. To get latest version firmware please contact with SOUTH technician.

MICOL	admin \$82667117186476 [logo	> Firmware update	0	
	Status	Firmware Informati	ion:	
*	Configuration	Firmware Version:	1.06.161019.R826GL	
*	Satellite Information	Core Engine Version:	Sirius. 1.06	
(i1)	Data Record	Release Date:	20161019	
泉	Data Transfer	Warranty Date:	20150101	
	Network Config	Firmware Check Sum:	0	
î	Radio Config	Online Update:		
£	Firmware Update	Latest Version:		
	Firmware Update	Download Status;		
	Module Updale	Last Indata Tima:	ά.	
(11)	Track Manage	Duline Undete:	Indate	
	Coordinate System	Local Modate:	opuare	
ů	Online Service	Birmous Path.		Brows
k	User Management	E Firmware ratit.	Tustallation	DLOWDC
	44.4	-	THOUGH TOUL	

Online Update: Galaxy G2 supports to update the firmware online anytime if there is something update or optimized.

Local Update: Update the latest firmware by using a firmware file.

How to upgrade the firmware with Local Update

a) Click on "Browse" button to load firmware file (Please take in mind that the firmware is ended with .img as the extension name).

Organize 🔻 New f	older		# · 🖬 🕯
😽 Favorites	Name	Date modified	Туре
E Desktop	Gadget3区动	2015/10/28 16:46	File folder
🧕 Downloads	1.05.150827.RG60GL.img	2015/8/27 9:12	Disc Image File
🔚 Recent Places	■ 升级 说明.txt	2015/10/8 9:54	Text Document
Libraries			
Libraries Libraries Documents Music Pictures Videos 武雷下载 秘 Homegroup			

b) And then click "Installation" button to start upgrading.

1	Data Transfer		Firmware Check Sum: 0
B	Network Config		Marrian from unbrance
Ĩ	Radio Config	8	
£	Firmware Update		Firmware updated successfully! Host reboot, please log in later
	Firmware Update	-	
	Module Update	=	ОК
ð:	User Management	8	
?	Help		Online Update: Update
			Local Update:
			Firmware Fath: E:\RTK\Galaxy G6\固件\1.05.150827.RG60GL\1.05.15082' Browse
			Status: Firmware is uploading, please wait

c) After the firmware is completed upgrading, a dialog will appear saying "Firmware updated successfully! Host reboot, please log in later...", then the receiver will restart automatically.





SPECIAL REMIND: Galaxy G2 doesn't support to update the firmware with the help of INstar program any more, in the future, update the firmware for Galaxy G2 shall be done through the Web UI.

Module Update

This page is used to update the firmware for corresponding modem such as OEM board, radio module and sensor.

MELECIN	admin \$82667117186476 [log	out]	> Updating module	
	Status		OEM Update:	
*	Configuration		Path:	Browse
*	Satellite Information	8	Installation	
531	Data Record		Status, Act Action	
8	Data Transfer	-	Firware version: UUSII Tine: Undata Firmware need about 30 minutes!	
	Network Config		Radio Update:	
Ī	Radio Config	8	Path:	Browse
Ē	Firmware Update		Installation	
	Firmware Update	2	Status: Not Action	
	Module Update			
11	Track Manage		RadioType: HARXON	
6	Coordinate System		Firmware Version; N/A	
ŵ	Online Service		Sensor Update:	
e.	User Management		Fath:	Browse
<u>n</u>		-	installation	

§4.4.9 Track Manage

Galaxy G2 now supports to record the track while doing measurement, and upload the data onto the server.

Parameter Setting

NELSON	admin \$82667117186476 <u>[logout</u>	> Parameter Setti	ng
	Status	Record Setting	
*	Configuration	RecordEnable:	-
	Satellite Information	RecordInterval:	0.5
1	Data Record	RecordStatus;	No record
	Data Transfer	EchoEnable Setting	6
-02-	Network Coofig	Status:	Disconnect
	Reduc Config	EchoEnable:	
+		EchoIP:	58, 248, 35, 130
	Firmware opdate	EchoPort:	2010
<u>[m]</u>	Irack Manage	EchoUserName:	USER
	Data Download	EchoPassword:	OSWD
	Coordinate System		
-	Online Service		Enter Cancel
35	User Management		

Record Setting

Check on the box of "RecordEnable" to activate track recording function, and choose a proper recording interval in dropdown list of "RecordInterval".

Record Setting		
RecordEnable:		
RecordInterval:	0.5	· second
RecordStatus:	No record	

EchoEnable Setting

This configuration dialog is used to upload the recording data to a server in real-time.

EchoEnable Setting	
Status:	Disconnect
EchoEnable:	
EchoIP:	58. 248. 35. 130
EchoPort:	2010
EchoUserName:	USER
EchoPassword:	OSWD
	Enter Cancel

SOL

JTH

Data Download

On this page, users can download the track data file from receiver. Choose the recording date and click "Get Data" to load all the data files recorded at that day, then choose the files and click download button.

admin \$82667117186476 [logout]	> Data Download								-	
🖵 Status 🕂	Select Date:							Ge	ot Data	
K Configuration 🛨	Download Tips:		•	1	1, 20	16	1	×	ave as and complete	
🚿 Satellite Information 🔒	Item	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Size	Data
🔟 Data Record 🔒	1		1	2	3	4	5	6		👱 [Download]
Data Transfer	2	7	8	9	10	11	12	13		(Download]
	3	14	15	16	17	18	19	20		👱 [Download]
Network Config	4	21	22	23	24	25	26	27		🚽 [Download]
📱 Radio Config 🚼	5	28	29	30	_		_	_		(Download)
🔹 Firmware Update 🛨	6									🛨 [Download]
🛅 Track Manage 🔽	7									(Download]
Parameter Setting 🚍	8									👱 [Download]
Data Download 🛛 🖃	9									👱 [Download]
Coordinate System 1	10									👱 [Download]
🐐 Online Service 🛨	-11									👲 [Download]
🐉 User Management 🔒	12									👱 [Download]
	13									[Download]

§4.4.10 Coordinate System(reserve)

Galaxy G2 allows users to setup the local coordinate system on internal web UI management. The instrument would output the local coordinates according to this coordinate system.

AFLECH	admin \$82667117186476 [logout]	> Coordinate Syste	em
	Status	Coordinate project	ion:
*	Configuration	ProjectionName:	WGS84
*	Satellite Information	ProjectionA:	6378137.000
۰۰ ش	Data Record	ProjectionF:	298. 257223563
	Data Record	ProjectionBO:	0.0
		ProjectionLD:	114.0
	Network Config	ProjectionEO:	500000.0
I	Radio Config 🔒	ProjectionNO:	0.0
÷.	Firmware Update	ProjectionSNO:	1.0
(in)	Track Manage 🔒 🔠	ProjectionPS:	0.0
۲	Coordinate System 🧧	Seven parameter:	
	coordinate system 📃		
9	Online Service	$\Delta X (meter)$:	0. 0
₿ŧ:	User Management 🛛 🔒	ΔY (meter);	0.0
?	Help 🚼	ΔZ (meter):	0.0

§4.4.11 Online Service(reserve)

This function is to upload the data onto a server real-time, including Navigation data, raw observation data, correction data, SIC observation data and open SIC observation data.

Matcollo	admin S82667117186476 [logout	> Online Service	
Q	Status	Status:	Disconnect
*	Configuration	Active:	C
施	Satellite Information	Be controlled:	
(<u>11</u>)	Data Record	Anonymous Login;	
显	Data Transfer	Inactive In 2G Mode:	÷
#	Network Config	DataType:	Navigation Data
ĩ	Radio Config	IP:	192. 168. 1. 1
£	Firmware Update	Port:	6060
$\overline{(di)}$	Track Manage	UserName:	UserName
e	Coordinate System	Password:	Password
ů	Online Service	1.0	
	Cinline Service		Enter Cancel
<i>l</i> t	User Management	3	
?	Help		

§4.4.12 User Management

This page is used to manage the authority of login Web UI for users, including the username, password and add users.

admin S82667117186476 [log	zout]	lser Management				-
🖵 Status		Add user				
* Configuration	•					
✗ Satellite Information	1	Name	Limits of authority	Status	Operating	Operating
🗇 Data Record		@dman	Administrator	online	delete	edit
💂 🛛 Data Transfer	-					
Network Config	-					
📱 Radio Config	E					
1 Firmware Update	1					
🛅 Track Manage						
Coordinate System	1					
Online Service	B -					
🎉 User Management						
All a state of the state of the state						

§4.4.13 Help

In this page, users can get help and check the log book of receiver (the log book can help to backtrack the working status of receiver).

NOTE: Only the administrator can modify any parameters for receiver and manage users, and the ordinary users only have the right to view the relative parameters.

WELCOM	admin SG6052117132109 [1c	gout]
Ģ	Status	8
*	Configuration	Ð
Nr.	Satellite Information	H
[<u>+11</u>]	Data Record	6
8	Data Transfer	
	Network Config	(B)
1	Radio Config	
ŝ	Firmware Update	
de:	User Management	-
?	Help	
	Sysstem Help	E

Chapter V Data Collector -- H5



H5 is a new generation professional controller running on Android which offers state of the art smartphone capabilities combined with rugged professional quality. And the alphanumeric keypad which gives flexibility for surveyors' field work.

It adopts the 3400 mAh Li-ion battery that fulfills the long working time as customers' need. H5 controller is integrated with various sensors, like barometers, NFC, gyroscope, E-compass, G-sensor, etc. The powerful network module can provide multiple options and perfect experience of high-speed net connection. The H5 can be configured with internal Bluetooth, WiFi, Camera, GPS and cellular functionality.

§5.1 Get to start

This section will take you to understand well the functions of each hardware component of the H5 controller.



Kevboard

Ref	Component	Description
0	Home key	Return to home screen directly. Long pressing to view recent application
	Menu key	Pressing it to show the available menu in current screen
9	Return key	Return to the previous screen
APP	APP key	Shortcut key of the configured application
•	Capture key	Pressing it to rapidly collect coordinate
Fn	Fn key	Switch input languages

Enter	Enter key	Enter key for operation confirming		
Ŧ	Backspace	Backspace and delete mistyped		
Space	Space	Input the space as requirement		
Shift	Shift	Switch the upper and lower case letters		
0	Power key	Power on/off device, turn off and wake up the screen		
\times	Arrow keys	Move the cursor		
1 2.45 Stor 4tod 5.45 Gino 7198 Bhur 9445 4 - 0 - #	Numeric keys	Input the numbers		





§5.2 Accessories of H5

Battery & Charger

The battery of H5 adopts the same type of batteries with RTK receiver, so that it can use the same charger with RTK for controller battery charging, that means we don't need the additional charger for controller batteries.



- ☆ The Li-ion battery must be charged before use and the charging time would take about 4 hours, and the charger has the function of overcharge protection.
- ☆ The battery is charging while the indicator on the charger is red, when the indicator turns into green, it means the battery is full charged.

USB cable

The USB cable is mainly used for the data transmission between controller and PC.



Connect to PC

Connect H5 controller with PC by USB cable, and choose the USB connection type on the controller, after that the controller would be recognized as one of the computer devices and come with the name as H5T.

USB connection requires the USB debugging enable first in Developer options



§5.3 Software installation

Connect H5 controller with PC by USB cable and copy the software installation file (*.apk) into a folder in the internal storage of controller where you can easy to seek.

A			TT. Nave them +	The Refer	Scient all		
S Copy watty		X	Easy access *	- Cont	Select none		
to Quick Copy Paste Paste shortcut access	Move Copy Di to 11	elete Rename	New	Properties	Invert selection		
Clipboard	Organiz	28	New	Open	Select		
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	工程之星 1.03.21012	28.beta.apk					
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 OneDrive This PC 3D Objects 							
OneDrive This PC JB Objects Desktop							
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Declinive This PC Declinion Declini							
Doebrive This PC JB Objects Cosktop Documents Documents Downloads HIST Music Pictures							
OneDrive This PC Documents Documents Documents HST Music Videos Videos							
Diebrive This PC Desktop Desktop Downloads Downloads HST Music Pictures Videos Windows (C)							
DineBrive This PC 3 3D Objects Decistop Documents Documents Masic HST Masic Pictures Vindows (C) Windows (C) Vingmas (D)							

Go to find the "File Manager" on the desk of controller and click it to enter "Internal shared storage" and find the folder where the software installation file you copied to.

		*	2 12:10	🖬 🖉 🕌 🔭 🛔 🖬 12:0
	Q Sea	rch apps		Internal shared storac Download
0	+		0	工程之星 1.03.210128.beta.apk Size 42.07 MB
Browser	Calculator	Calendar	Camera	
۲	0	0	4	
Clock	Contacts	Email	File Mana.	
7	G		2	
Gallery	Google	LSM	Messaging	
۲	5		<u></u>	
Music	Phone	Play Store	Register	
ø			TY	E 0 ·

Click on the *.apk file to start installing the software. On some controllers, the permission to install apps from unknown sources is required, give some permissions and install the app.



§5.4 Bluetooth Connection

Method 1: NFC pairing connection

Both of Galaxy G2 and H5 support NFC that makes the Bluetooth connection more simpler. Run EGStar software on H5 controller and go to "Settings—Device Connect", place the back of H5 controller (The NFC reading module is on the back of the controller) close to Galaxy G2, then the Bluetooth pairing will be complete automatically.



Sometimes, a PIN code would be required for the Bluetooth pairing, usually enter 0000 or 1234 then complete the connection. After that, perform the related operations on EGStar.



Method 2: Regular connection

Run EGStar software on H5 controller and go to "Settings—Device Connect", choose "Bluetooth" for connection type and then click "Search" button to search the surrounding Bluetooth devices (you can cancel searching progress as long as your Bluetooth device appears in the list), choose your Bluetooth device and click "Connect" button to complete the connection.

	* 📄 🔒 13:26
👌 default	1× 1
Device Connect Rov	er Base
Static Setting Device	Advanced Settings
S86/S82 Setting Setti	Radio
Project 2000	Survey Tools
	\$ 13:26
< Device connect	CONFIGURE
Connection mode	Bluetooth >
Device Type:	South >
Available devices	BT MAC Address
\$ SG13AC126370173	00:25:CA:53:80:1E
*SG13AC126370170	00:25:CA:53:6D:AC

Current	connect	ed device	¢ 🥌	
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B () B	考 🚊 🔒 13:26
< Device connect	CONFIGURE
Connection mode	Bluetooth >
Device Type:	South >
Available devices	BT MAC Address
\$ SG13AC126370173	00:25:CA:53:80:1E
* SG13AC126370170	00:25:CA:53:6D:AC





SOUTH

§6.1 Overview

SOUTH S1 external UHF radio is an all new design of product for the field works. It supports SOUTH / Trimtalk protocols, 410 MHz to 470 MHz. Even in the field without a computer, the 1.54-inch LCD interface makes the configuration and troubleshooting possible and visualized. This radio features with rugged housing, better cooling fins, power control, flexible and convenient settings.









Ref	Component	Description
	Power button	Press the Power button for 3 seconds to power on the radio, press the power button for 1 second to turn off the radio
\odot	Up	Pressing it to move the cursor to left or up
(\mathfrak{d})	Down	Pressing it to move the cursor to right or down
Title	Enter button	Pressing it to start the settings and save the settings

Power indicator: The indicator will on after turning on the radio. TX indicator: The indicator will blink by the transmitting interval.

Low power alert: The screen will show "POWER LOW" if the power voltage is less than 10V.



Sleep mode: If there is no any operation on the radio buttons for 10 minutes, the display will shut down to save power, the power indicator is still on, and TX indicator is still continue blinking. *Note: If the radio is in the sleep state, it is prohibited to press the power button to view the status of the radio, otherwise it will directly shut down.*

§6.3 Hardware operation

This section will focus on how to make the configuration on the radio through the buttons on the control panel.

6.3.1 Channel (CH)

Press \bigcirc \bigcirc to move the cursor to CH, then press \bigcirc to enter this parameter setting mode, press \bigcirc \bigcirc again to select the channel, and press \bigcirc to confirm the settings and exit.

CH:04 466.125 M L W Air: 9.6K

466.125

Air: 9.

CH:04

I. U

6.3.2 Frequency

Press \bigcirc to move the cursor to the frequency, then press \bigcirc to enter this parameter setting mode, press \bigcirc to move the cursor, and press \bigcirc to change the frequency, and press \bigcirc to confirm the settings and exit.

Note: There are 2 frequency ranges of this radio, 410MHz~450MHz and 450MHz~470MHz. And the frequency of each channel should be set in the same frequency range, changing the frequency beyond the range is not allowed. For example, if channel 1 is with the frequency 411.125, and it belongs to the range of 410MHz~450MHz, then the other channels frequency should be in the same range too.

6.3.3 Power mode (LW)

Press \bigcirc \bigcirc to move the cursor to power setting, then press \bigcirc to enter this parameter setting mode, press \bigcirc \bigcirc again to select the power level (L=low, H=high), and press \bigcirc to confirm the settings and exit.

CH:04 466.125 M L W Air: 9.6K

6.3.4 Air (Air baudrate)

Press \bigcirc \bigcirc to move the cursor to air baudrate setting, then press \bigcirc to enter this parameter setting mode, press \bigcirc \bigcirc again to select the baudrate(9.6K=9600...), and press \bigcirc to confirm the settings and exit.



6.3.5 Protocol

Continue pressing S to move the cursor to protocol setting, then press to enter this parameter setting mode, press S again to select the protocol (SOUTH/Trimble), and press to confirm the settings and exit.

6.3.6 Serial port baudrate (Ser:)

Press \bigcirc \bigcirc to move the cursor to serial port baudrate setting, then press \bigcirc to enter this parameter setting mode, press \bigcirc \bigcirc again to select the baudrate(9.6K=9600, 19.2K=19200...), and press \bigcirc to confirm the settings and exit.

6.3.7 Power voltage

This part is only to display the current power voltage

6.3.8 Bluetooth

Press 🔊 🔊 to move the cursor to Bluetooth(Blue) setting, then press 🗐 to enter this parameter setting mode, press 🔄 🔄 again to turn on/off the Bluetooth, and press 🗐 to confirm the settings and exit

6.3.9 reset

Keep pressing 🕥 🖾 to go to the next configuration page, and there is only reset setting on this page, press 🖾 to confirm perform the reset operation.



SOUTH Ser:19.2

14.00V BLUE:ON







§6.4 Accessories

The UHF transmitting antenna is particularly suitable for field use.



Power supply and data transmitting cable.



§6.5 Specifications

UHF	protocol	SOUTH/TRIMBLE	
	Power	10W, 25W	
	Frequency	410MHz~470MHz	
	Interval	12.5KHz/25KHz	
	Rx sensitivity	$\leq 0.25 \mu V (12 dB SINAD)$	
	Air baud rate	9600/19200/38400	
	Port baud rate	9600/19200/38400	
	Channels	16	
Interface	Display	1.54 inch LCD	
	Buttons	4 buttons	
	Indicator	2 indicator light	
Communication	Bluetooth 4.0		
	5-pin LEMO external power port +RS232		
	TNC connector		
Physical	Operation Temp	-40°C~80°C	
	Storage Temp	-40°C~85°C	

Waterproof/Dustproof	IP67
Shockproof	1m
Size	178*135*68mm
Weight	2.3KG

§6.6 Application Notice

The battery power is too low: When "POWER LOW" display on the screen, that means the power voltage is less than 10V, which means the lack of battery power, replace the battery in time, otherwise there would be data link unstable or unable to launch.

Radio transmits power: radio transmits power based on the voltage of the power supply, check the voltage before use.

High and low power use: use low-power transmitter when low power can satisfy the operation as high-power transmitter will exponentially consume battery power, excessive use will reduce battery life. Install the radio station as high as possible.

Power corrugated coefficient: power ripple coefficient must be less than 40mV, the smaller the ripple factor is, the smaller will the beam spectrum be and the higher communication quality will be.

Power Connection: Power of positive and negative connected correctly.

Electromagnetic environment: Before using the radio, it is better to perform electromagnetic environment measurement, to avoid the communications blackout.

Radio match antenna: the basic parameters of the antenna selection are the band width, frequency, gain, directivity, impedance, VSWR and other indexes. Usually the effective bandwidth of the antenna is 3-5MHz,antenna selecting should be based on the frequency bands used by the to be selected channel. For the long-distance transmission, it is better to use a directional antenna and high-gain antenna, and pay attention to the impedance of the antenna and feeder to match with the Radio antenna interface (50 ohms).

We recommend:

Recommend that you use plug-in battery which is more than 12/36Ah, the use of maintain a regulated current of 10A during the operation.

Recommend that you charge it in time, do not overuse the battery, otherwise it will reduce battery life.

Recommend that you replace the batteries after six months to a year, to ensure the radio working distance.

Chapter WI Accessories

§7.1 Instrument Case



The instrument case for Galaxy G2 contains two layers of packing: the inner layer is filled with anti-collision foam, the host and other accessories can be dispersed and embedded; the outer layer is a hard instrument case, sealing-strong, wear-resistant anti-wrestling. Compact, durable, can effectively prevent the impact, easy to clean

§7.2 Charger&Adapter

Galaxy G2 is equipped with a rechargeable internal battery, it uses a type-c cable and a PD adapter for the charging.



§7.3 Differential Antennas



The differential antennas are as shown above;

The UHF differential antenna is required to install to the interface at the bottom of receiver if Galaxy G2 is set up into internal UHF mode.

§7.4 Cables

Type-C cable

This cable is used to connect the receiver with computer for static data transmission, Web UI accessing and firmware update.


ChapterVII Hardware Registration

Users can get the point how to register the instrument in this chapter. Registering on Galaxy G2 is easier than operating on G1.

Login the web UI management of Galaxy G2 with WiFi or USB network connection.





Go to "Config—General Config" configuration page, the registration section is located at the top of this interface.

000	admin \$82667117186476 [log	out]	> General Gonfigur	ation	
	Status		Registration		
*	Configuration		Serial Number:	S82667117186476	
	General Config		Code:	81BECD3B23329A67BB6500E421BFB8484317	Register
	Base Setup	2	ExpiredDate:	20161104	
	Antenna Setup	Ξ	OnlineRegistration:	OnlineRegi	
	Satellite Tracking	=	OperationTips:	Use Online Reig Function, please Make Sure Netw	vork is Work Well!
	Receiver Operate		Mode setting		
5	Satellite Information		Work Mode:	Rover	•
in.	Data Record	-	Datalink:	Radio	•
	Data Recolu	-	Radi oRoute :	None	•
8	Data Transfer		Radi oTransfer:	-	
	Network Config	H	RTK Record:	-	
ī	Radio Config	•	1PPS:	-	
Ē	Firmware Update	-	EVENT:		
	Track Manage	-	EVENT Polarity:		
		-	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Megative	

Enter the registration code and click on "Register" button, a prompt message will appear. And the ExpiredDate would be changed.

ChapterIX Firmware Update

This chapter will explain how to update the firmware for Galaxy G2, detail steps are written below.

Login the web UI management of Galaxy G2 with WiFi or USB network connection.

Go to "Firmware Update—Firmware Update" configuration page, all the information of the firmware which current installed on Galaxy G2 would be displayed here.

Marcolin	admin S82667117186476 <u>[logou</u>	1 > Firmware update		
	Status	Firmware Informatio	on:	
*	Configuration	Firmware Version:	1.06.161019.R826GL	
*	Satellite Information	Core Engine Version:	Sirius. 1.06	
er.	Data Deserd	Release Date:	20161019	
	Data Record	Warranty Date:	20150101	
16	Data Transfer	Firnware Check Sum:	0	
	Network Config	Online Update:		
4	Radio Config	Latest Version:		
±.	Firmware Update	Update Status:		
	Firmware Update	Download Status:		
ित्ती	Track Manage	Last Update Time: C	0	
	Coordinate System	Online Update:	Update	
~	overainate of stern	Local Update:		
ũ	Online Service	Firmware Path:		Browse
k	User Management	•	Installation	

Click on "Browse" button to load firmware file (Please take in mind that the firmware is ended with .img as the extension name).

Favorites E Desktop Downloads	î,	Name		Date	modified	Туре	
🔜 Desktop 强 Downloads		L C I JEET					
💺 Downloads		Gadgetaxall	_	2015	/10/28 16:46	File folder	
	_	1.05.150827.RG60GL.img		2015	/8/27 9:12	Disc Image File	e
Recent Places		升级说明.txt	_	2015	/10/8:9:54	Text Documen	it
■ Pictures ■ Videos ● 迅雷下载 ● Homegroup	* 4		111				
(2 hzh							
Videos							

And then click "Installation" button to start upgrading.

묘	Data Transfer	6	Firmware Check Sum: D
#	Network Config	e l	
Î	Radio Config	8	Wessage nom webpage
£	Firmware Update		Firmware updated successfully! Host reboot, please log in later
	Firmware Update	2	
	Module Update	Ξ	ОК
k	User Management	-	
?	Help	-	Online Update: Update
		-	Local Update:
			Firmware Path: E:\RIK\Galaxy G6\固件\1.05.150827.RG60GL\1.05.15082' Browse
			Status: Firmware is uploading please wait

After the firmware is completed upgrading, a dialog will appear saying "Firmware updated successfully! Host reboot, please log in later...", then the receiver will restart automatically.

Message f	rom webpage
4	Firmware updated successfully! Host reboot, please log in later
	ОК



SPECIAL REMIND: Galaxy G2 doesn't support to update the firmware with the help of **INstar** program any more, in the future, update the firmware for Galaxy G2 shall be done through the Web UI.

Appendix A Galaxy G2 technical specifications

GNSS Features			
Channels	965		
GPS	L1, L1C, L2C, L2P, L5		
GLONASS	G1, G2, G3		
BDS	BDS-2: B1I, B2I, B3I BDS-3: B1I, B3I, B1C, B2a, B2b*		
GALILEO	E1, E5A, E5B, E6C, AltBOC*		
SBAS	L1*		
IRNSS	L5*		
QZSS	L1, L2C, L5*		
MSS L-Band*	Reserve		
Positioning output rate	1Hz~20Hz		
Initialization time	< 10s		
Initialization reliability	>99.99%		
Positioning Precision			
Code Differential GNSS	Horizontal: 0.25 m + 1 ppm RMS Vertical: 0.50 m + 1 ppm RMS		
Positioning			
GNSS Static	Horizontal: 2.5 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS		
Real-Time Kinematic	Horizontal: 8 mm + 1 ppm RMS Vertical: 15 mm + 1 ppm RMS		
(Baseline<30km)			
SBAS positioning	Typically<5m 3DRMS		
RTK initialization time	2~8s		
IMI tilt compensation	Additional horizontal pole tip uncertainty typically less than 10mm + 0.7		
	mm/° tilt down to 30°		
IMU tilt angle	0°~60°		
Hardware performance			
Dimension	130.5mm(φ)×84mm(H)		
Weight	850g (battery included)		
Material	Magnesium aluminum alloy shell		
Operating temperature	-25°C~+65°C		
Storage temperature	-35°C~+80°C		
Humidity	100% Non-condensing		
Waterproof/Dustproof	IP68 standard, protected from long time immersion to depth of 1m		
	IP68 standard, fully protected against blowing dust		
Shock/Vibration	Withstand 2 meters pole drop onto the cement ground naturally		

Power supply	6-28V DC, overvoltage protection			
Battery	Inbuilt 6800mAh rechargeable Lithium-ion battery			
	Single battery: 16h (static mode)			
Battery life	10h (internal UHF base mode)			
	12h (rover mode)			
Communications				
	5-PIN LEMO interface (external power port + RS232)			
	Type-C interface (charge+OTG+Ethernet)			
I/O Port	1 UHF antenna interface			
	SIM card slot (Micro SIM)			
Internal UHF	Radio receiver and transmitter, 1W/2W/3W switchable			
Frequency range	410-470MHz			
	Farlink, Trimtalk450s, SOUTH, SOUTH+, SOUTHx, HUACE, Hi-target,			
Communication protocol	Satel			
Communication range	Typically 8km with Farlink protocol			
	Advanced 5G network communication module, downward compatible with			
Cellular mobile network	4G/3G			
Bluetooth	Bluetooth 3.0/4.1 standard, Bluetooth 2.1 + EDR			
NEC Communication	Realizing close range (shorter than 10cm) automatic pair between receiver and			
NFC Communication	controller (controller requires NFC wireless communication module else)			
WIFI	controller (controller requires NFC wireless communication module else)			
WIFI Modem	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard			
WIFI WIFI	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile			
WIFI Modem WIFI hotspot	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals			
WIFI Modem WIFI hotspot WIFI datalink	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink 8GB SSD internal storage			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink 8GB SSD internal storage Automatic cycle storage (The earliest data files will be removed automatically			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink 8GB SSD internal storage Automatic cycle storage (The earliest data files will be removed automatically while the memory is not enough)			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission Storage	controller (controller requires NFC wireless communication module else)802.11 b/g/n standardReceiver broadcasts its hotspot form web UI accessing with any mobile terminalsReceiver can transmit and receive correction data stream via WiFi datalink8GB SSD internal storageAutomatic cycle storage (The earliest data files will be removed automatically while the memory is not enough)Support external USB storage			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission Storage	controller (controller requires NFC wireless communication module else)802.11 b/g/n standardReceiver broadcasts its hotspot form web UI accessing with any mobile terminalsReceiver can transmit and receive correction data stream via WiFi datalink8GB SSD internal storageAutomatic cycle storage (The earliest data files will be removed automatically while the memory is not enough)Support external USB storageThe customizable sample interval is up to 20Hz			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission Storage	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink 8GB SSD internal storage Automatic cycle storage (The earliest data files will be removed automatically while the memory is not enough) Support external USB storage The customizable sample interval is up to 20Hz Plug and play mode of USB data transmission			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission Storage Data Transmission	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink 8GB SSD internal storage Automatic cycle storage (The earliest data files will be removed automatically while the memory is not enough) Support external USB storage The customizable sample interval is up to 20Hz Plug and play mode of USB data transmission Supports FTP/HTTP data download			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission Storage Data Transmission	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink 8GB SSD internal storage Automatic cycle storage (The earliest data files will be removed automatically while the memory is not enough) Support external USB storage The customizable sample interval is up to 20Hz Plug and play mode of USB data transmission Supports FTP/HTTP data download Static data format: STH, Rinex2.01, Rinex3.02 and etc.			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission Storage Data Transmission	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink 8GB SSD internal storage Automatic cycle storage (The earliest data files will be removed automatically while the memory is not enough) Support external USB storage The customizable sample interval is up to 20Hz Plug and play mode of USB data transmission Supports FTP/HTTP data download Static data format: STH, Rinex2.01, Rinex3.02 and etc. Differential data format: CMR, SCMRx, RTCM 2.1, RTCM 2.3, RTCM 3.0,			
WIFI Modem WIFI hotspot WIFI datalink Data Storage/Transmission Storage Data Transmission Data Format	controller (controller requires NFC wireless communication module else) 802.11 b/g/n standard Receiver broadcasts its hotspot form web UI accessing with any mobile terminals Receiver can transmit and receive correction data stream via WiFi datalink 8GB SSD internal storage Automatic cycle storage (The earliest data files will be removed automatically while the memory is not enough) Support external USB storage The customizable sample interval is up to 20Hz Plug and play mode of USB data transmission Supports FTP/HTTP data download Static data format: STH, Rinex2.01, Rinex3.02 and etc. Differential data format: CMR, SCMRx, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2			

	Trimble GSOF		
	Network model support: VRS, FKP, MAC, fully support NTRIP protocol		
Sensors			
Electronic Dykhle	Controller software can display electronic bubble, checking leveling status of		
Electronic Bubble	the carbon pole in real-time		
IMU	Built-in IMU module, calibration-free and immue to magnetic interference		
Thormomotor	Built-in thermometer sensor, adopting intelligent temperature control		
Inermometer	technology, monitoring and adjusting the receiver temperature		
User Interaction			
Operating system	Linux		
Buttons	Single button		
Indicators	5 LED indicators		
	With the access of the internal web interface management via WiFi or USB		
Web interaction	connection, users are able to monitor the receiver status and change the		
	configurations freely		
Voice guidence	The intelligent voice technology provides status and operation voice guidance,		
voice guidance	supports Chinese/English/Korean/Spanish/Portuguese/Russian/Turkish		
Sagandary davalanment	Provides secondary development package, and opens the OpenSIC		
Secondary development	observation data format and interaction interface definition		
Claud service	The powerful cloud platform provides online services like remote manage,		
Ciouu service	firmware update, online register and etc.		

Appendix C Technical Terms

Ambiguity: unknown quantity is the integer number of cycles of the carrier phase measured from the satellite to the receiver.

Baseline: The connection line of the two measurement points, on which to receive GPS signals and collect observation data simultaneously.

Broadcast ephemeris: message released by the satellite demodulator satellite orbit parameters.

SNR (Signal-to-noise ratio): an endpoint signal power to noise power ratio.

Cycle skipping: interfere loop skips a few cycles from a balanced point, and stabilize in the new equilibrium point, this make the phase integer number of cycles to generate an error.

Carrier: As the carrier, Frequency, amplitude or phase modulation of the modulated wave by a known reference value.

C / A code: GPS coarse / acquisition code, modulate the pseudo-random binary code for the 1023 bit duplex, the bit rate of which is 023MHz, and code repetition period of 1ms.

Difference measurement: GPS measurements employ cross-satellite cross-receiver and cross-epoch.

Difference Positioning: the method of determining the relative coordinates between two or more receiver by tracking the same GPS signal.

Geometric dilution of precision: Describe the contribution of satellite geometry errors factor in dynamic positioning

$$e = \sqrt{\frac{a^2 - b^2}{b^2}}$$

Eccentricity: $\bigvee b^2$ where a, b of the semi-major axis and semi-minor axis.

Ellipsoid: mathematical graphics formed when an ellipse moves around the minor axis of rotation in Geodetic Survey.

Ephemeris: the position of celestial bodies over time parameters.

$$f = \frac{1}{a}(a-b) = 1 - \sqrt{(1-c^2)}$$

Flattening:

a is the semi-major axis, b is the semi-minor axis, e is the eccentricity.

Geoid: similar to the mean sea level and extends to the mainland special planes. Geoid everywhere perpendicular to the direction of gravity.

Ionosphere delay: delay of radio waves through the ionosphere (non-uniform dispersion medium)

L-band: The radio frequency range of 390-1550MHz.

Multipath error: the positioning error caused by the interference between two or more radio signal propagation path.

Observing session: the use of two or more receivers at the same time to collect GPS data period.

Pseudo Range: GPS receiver in the time required to copy the code aligned with the received GPS code offset and multiplied by the speed of light to calculate the distance. This time offset is the difference between the signal reception time (time series of the receiver) and the signal emission time (satellite time series).

Receiver channel: GPS receiver RF mixer and IF channel, can receive and track satellites two carrier signals.

Satellite configuration: the configuration status of the satellite with respect to a specific user or a group of users within a specific time.

Static position: do not consider the point of measurement of the movement of the receiver.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.