New G1 Measuring System

User Manual

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Chapter Ⅰ Preface

Read this chapter, you will have a brief knowledge of South Company and New G1 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 New G1 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 adapt 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

New G1 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 New G1, 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

New G1 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.

Upgraded network module

Standard 4G module is integrated which supports WCDMA/CDMA2000/TDD-LTE/FDD-LTE

4G network and downward compatible with 3G GPRS/EDGE. Also supports all kinds of network types to access CORS seamlessly.

Speed Dial

Smart PPP dialing technology can auto dial which makes the New G1 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.

Smart Voice Guide

The customizable iVoice technology is allowed to customize your local language. Multi-lingual and clear-tone messages enable users to understand the critical information and status of receiver such as network connection, solution status, working mode and more, which definitely helps to improve work efficiency by being acknowledged.

Full Constellations Tracking

Equipped with most advanced GNSS boards, New G1 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

The internal tilt compensator and electronic bubble can correct the coordinate result automatically at the points with tilt angel and tilt direction.

Huge capacity power support

An useful external power package is supported which can load 4 standard batteries and provide up to 28 hours of power. It also can display the remaining power in real time.

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 50Hz.

Amazing Housing

New G1, with and innovative design, is built with magnesium alloy materials. And the top edge is design to decrease harm for receiver in case of falling down onto ground.

NFC Function

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

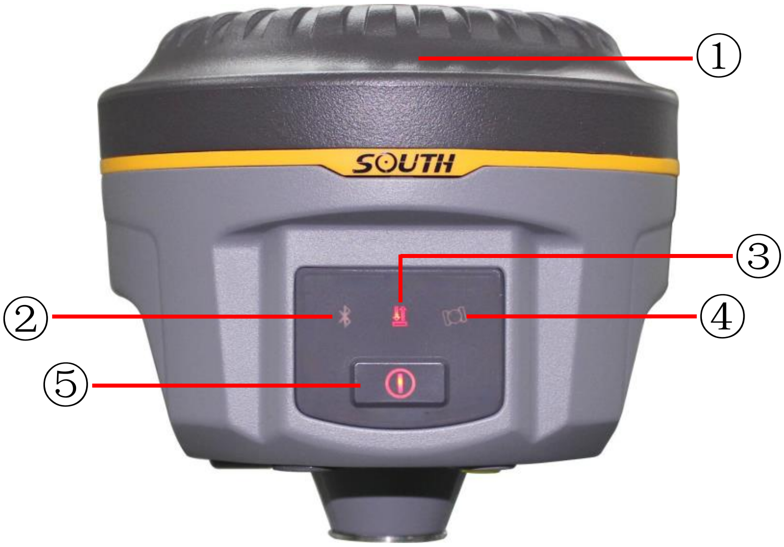
Cloud Service

The function enable realize online upgrade and register, remote diagnosis in real-time

Chapter Ⅱ Hardware Component

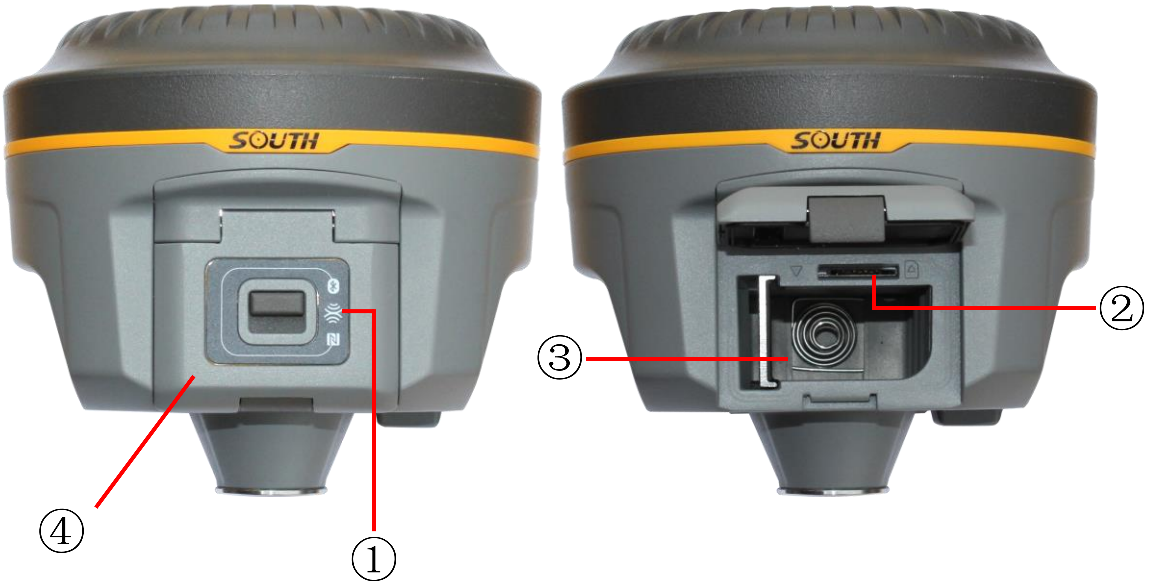
Reading this chapter, you can grasp the components, installation and the function of New G1 measuring system

§2.1 Front Components



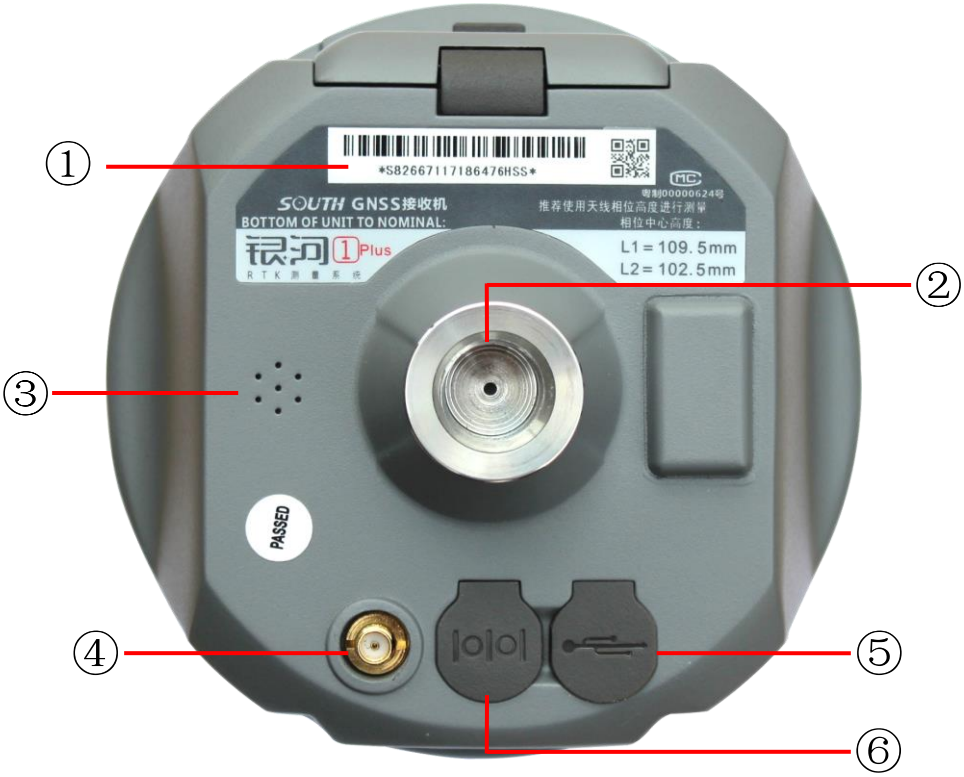
Ref	Component	Description
①	**GNSS Antenna**	Grasps satellites signals
②	**Bluetooth Indicator**	Glows in red to indicate that Bluetooth connection has established between controller and receiver
③	**Data Indicator**	**UHF mode:** Flashes in red to indicate that the signal is receiving/transmitting with 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
④	**Satellites Indicator**	Flashes in red to indicate that the satellites are tracking
⑤	**Power Button**	Power on/off receiver, mode switching button

§2.2 Rear Components



Ref	Component	Description
①	**NFC label**	The place of NFC paired where we can stick controller to
②	**SIM card slot**	Where we can insert a SIM card when the receiver is set in GPRS mode
③	**Battery housing**	Installing the battery
④	**Battery cover**	Restore the cover after installing the battery to avoid the battery slips off

§2.3 Bottom Components


①
②
③
④
⑤
⑥
SOUTH GNSS接收机
BOTTOM OF UNIT TO NOMINAL:
L1＝109.5mm
L2＝102.5mm
PASSED

Ref	Component	Description
①	Screw hole	Fix the mainframe to the tribrach or the pole
②	SN label	Apply for a registration code, Bluetooth ID
③	Speaker	Mode setting and working status prompt
④	GPRS/UHF antenna interface	Install GPRS/UHF antenna
⑤	7-pin port	USB port, OTG interface and Ethernet port
⑥	5-pin 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

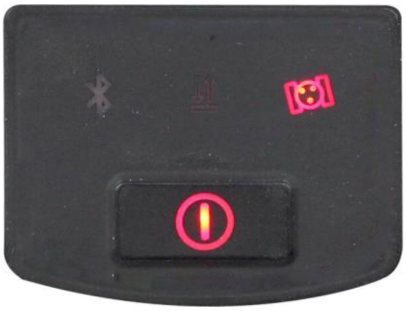
Press the power button for once, all the indicators glow in red, after few seconds (around 10 seconds), the instrument completes initializing along with voice prompt about the working mode (for example, “Rover, internal radio mode”). After a while, instrument starts to track satellites.

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

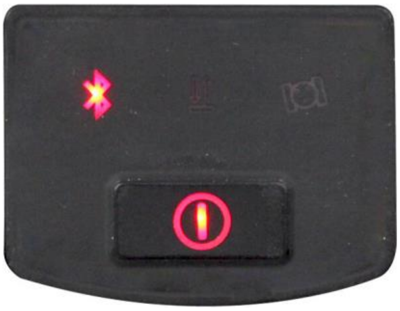
Press the power button for once in the state of power-on, the instrument will prompt with voice message about current working mode (for example, “Rover, internal radio mode”).



§3.3 Mode selection

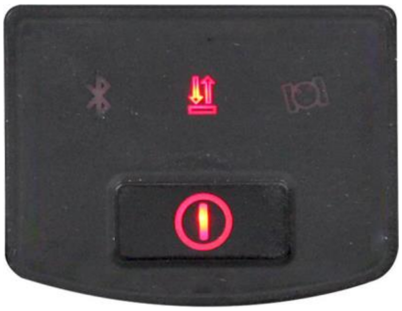
Rover

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 New G1 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 New G1 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 New G1 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: New G1 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 New G1 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), New G1 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), New G1 will get into factory reset progress with voice message saying “start to restore factory default”, at this moment, release power button, the instrument will perform factory reset automatically. After this progress complete, the instrument will restart automatically with the factory default settings.

ChapterⅣ Web UI Management

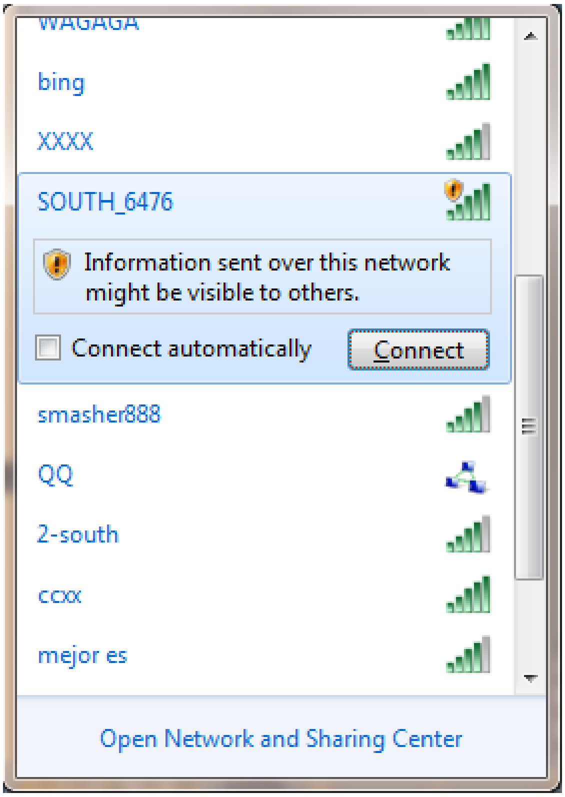
§4.1 Overview

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 New G1 in real-time. The accessing way is not only by WiFi connection, but also can be USB mode.

§4.2 Access by WiFi

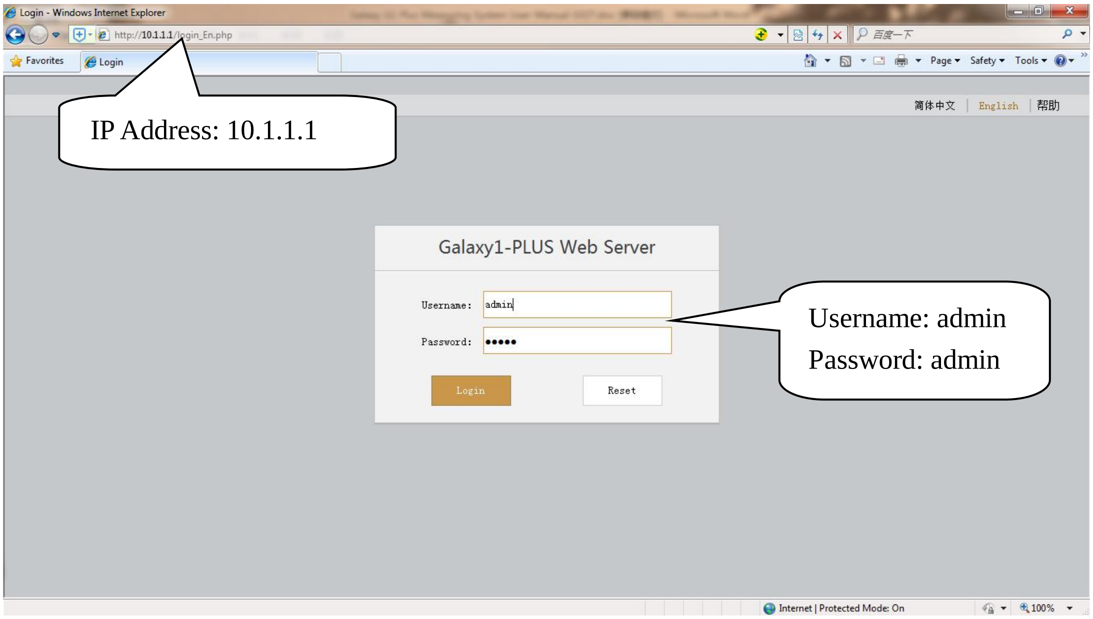
The WIFI hotspot is default broadcasted by New G1, search the WIFI hotspot which named with SOUTH_xxxx using smartphone, tablet or laptop, then establish the WIFI connection, input the **default IP (10.1.1.1)** into broswer, on the login interface, apply "admin" for the username and password.

For example, search the WIFI hotspot broadcasted by a New G1 receiver using a laptop PC, choose the WIFI hotspot and click on connect button to establish the connection without password.


Information sent over this network might be visible to others.

WAGAGA
bing
XXXX
SOUTH_6476
☐ Connect automatically
Connect
smasher888
QQ
2-south
ccxx
mejor es
Open Network and Sharing Center

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.



IP Address: 10.1.1.1

Username: admin
Password: admin

Galaxy1-PLUS Web Server

Username: admin
Password: •••••

Login - Windows Internet Explorer
http://10.1.1.1/login_En.php
Favorites
Login
Page
Safety
Tools
简体中文
English
帮助
Login
Reset
Internet | Protected Mode: On
100%

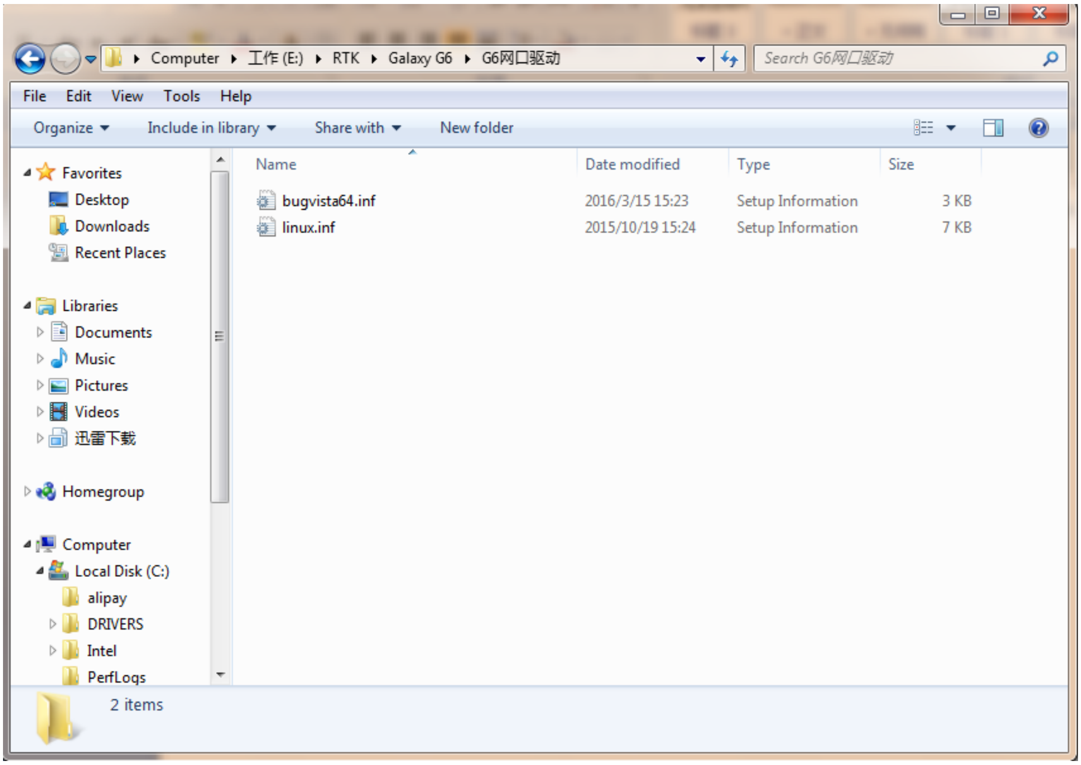
§4.3 Access by USB

On this mode, the USB port (7-pin) of New G1 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 (7-pin) is switched into USB network port (please refer to section 3.5, USB mode setting).



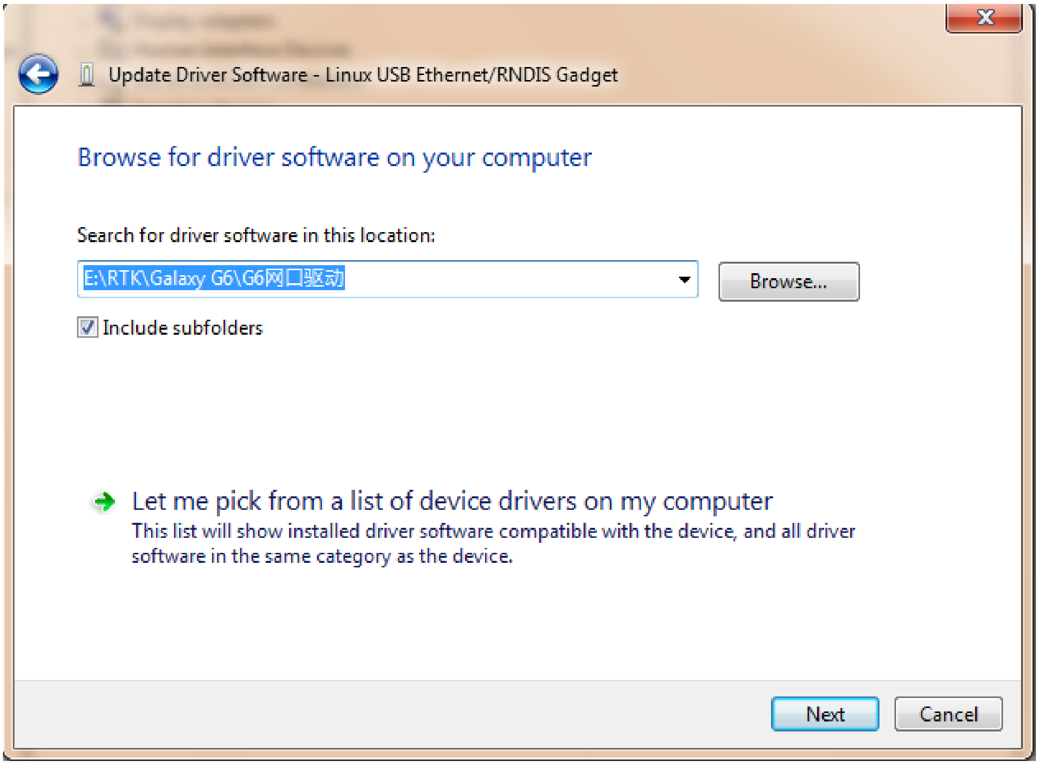
Computer ▸ 工作 (E:) ▸ RTK ▸ Galaxy G6 ▸ G6网口驱动

Name	Date modified	Type	Size
bugvista64.inf	2016/3/15 15:23	Setup Information	3 KB
linux.inf	2015/10/19 15:24	Setup Information	7 KB

2 items

Search G6网口驱动
File
Edit
View
Tools
Help
Organize
Include in library
Share with
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
迅雷下载
Homegroup
Computer
Local Disk (C:)
alipay
DRIVERS
Intel
PerfLogs

Choose the folder which contains the drivers



Update Driver Software - Linux USB Ethernet/RNDIS Gadget

Browse for driver software on your computer

Search for driver software in this location:

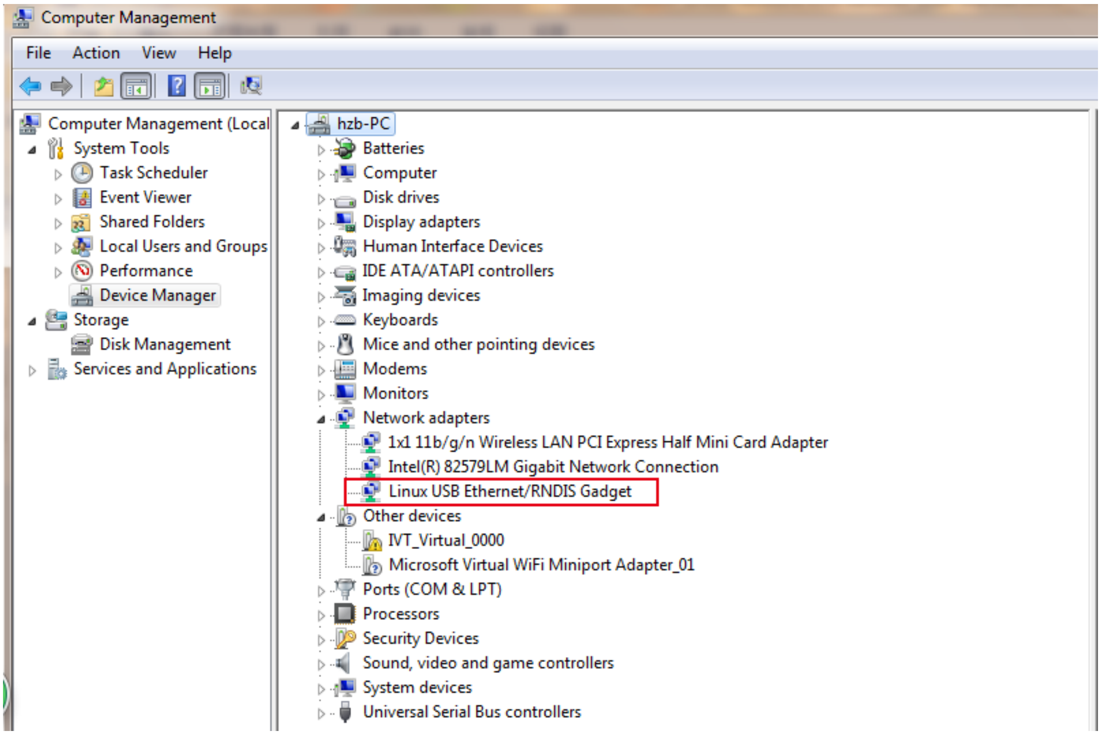
E:\RTK\Galaxy G6\G6网口驱动

☑ Include subfolders

Let me pick from a list of device drivers on my computer

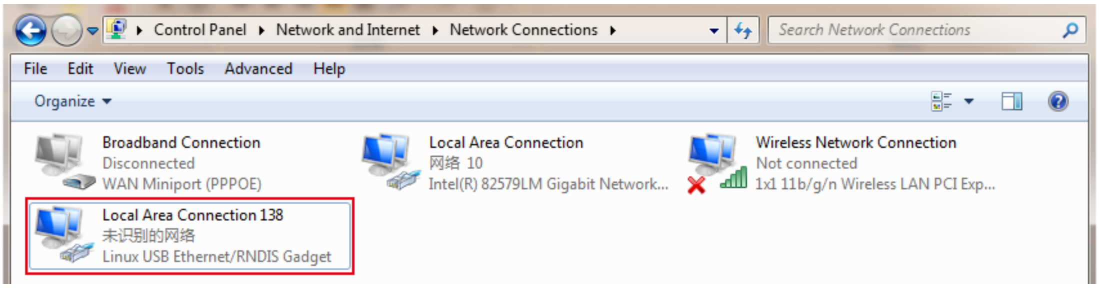
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.

Browse...
Next
Cancel


Computer Management
File Action View Help
Computer Management (Local
System Tools
Task Scheduler
Event Viewer
Shared Folders
Local Users and Groups
Performance
Device Manager
Storage
Disk Management
Services and Applications
hzb-PC
Batteries
Computer
Disk drives
Display adapters
Human Interface Devices
IDE ATA/ATAPI controllers
Imaging devices
Keyboards
Mice and other pointing devices
Modems
Monitors
Network adapters
1x1 11b/g/n Wireless LAN PCI Express Half Mini Card Adapter
Intel(R) 82579LM Gigabit Network Connection
Linux USB Ethernet/RNDIS Gadget
Other devices
IVT_Virtual_0000
Microsoft Virtual WiFi Miniport Adapter_01
Ports (COM & LPT)
Processors
Security Devices
Sound, video and game controllers
System devices
Universal Serial Bus controllers

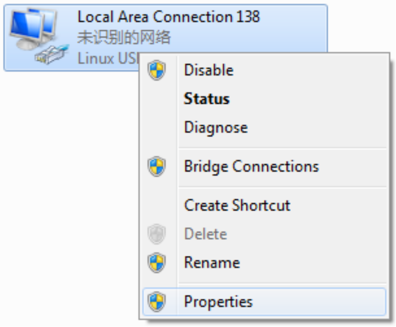
NOTE: *The driver can be downloaded from official website automatically or please contact with us for more supports.*

If the driver has been successfully installed, the USB port of New G1 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 New G1 receiver to computer via USB Ethernet port.

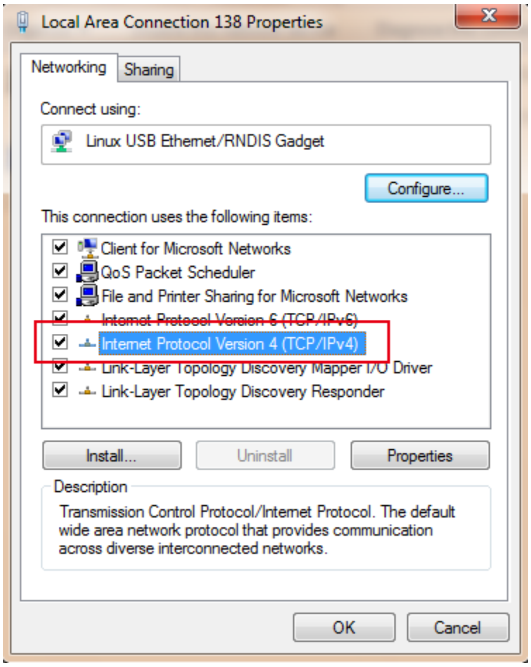

Control Panel ▸ Network and Internet ▸ Network Connections ▸
Search Network Connections
File Edit View Tools Advanced Help
Organize ▾
Broadband Connection
Disconnected
WAN Miniport (PPPOE)
Local Area Connection
网络 10
Intel(R) 82579LM Gigabit Network...
Wireless Network Connection
Not connected
1x1 11b/g/n Wireless LAN PCI Exp...
Local Area Connection 138
未识别的网络
Linux USB Ethernet/RNDIS Gadget

However, sometimes the computer cannot detect the receiver by USB Ethernet port 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.


Local Area Connection 138
未识别的网络
Linux USI
Disable
Status
Diagnose
Bridge Connections
Create Shortcut
Delete
Rename
Properties

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.

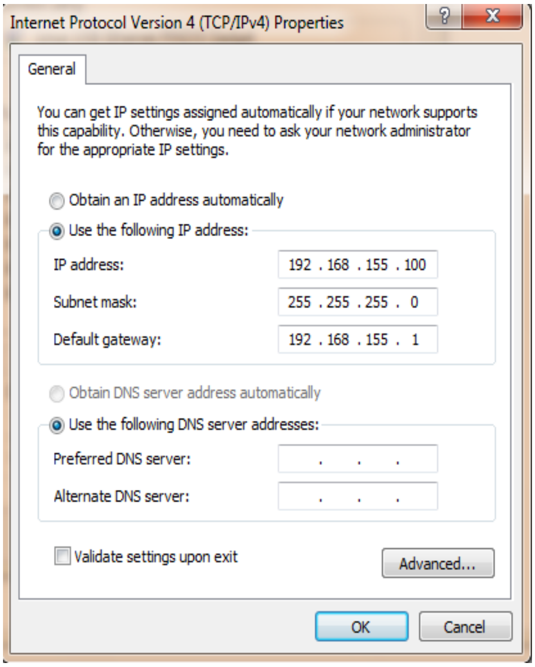

Local Area Connection 138 Properties
Networking
Sharing
Configure...
Install...
Uninstall
Properties
OK
Cancel

Connect using:
Linux USB Ethernet/RNDIS Gadget

This connection uses the following items:

- ☑ Client for Microsoft Networks
- ☑ QoS Packet Scheduler
- ☑ File and Printer Sharing for Microsoft Networks
- ☑ Internet Protocol Version 6 (TCP/IPv6)
- ☑ Internet Protocol Version 4 (TCP/IPv4)
- ☑ Link-Layer Topology Discovery Mapper I/O Driver
- ☑ Link-Layer Topology Discovery Responder

Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Advanced...
OK
Cancel

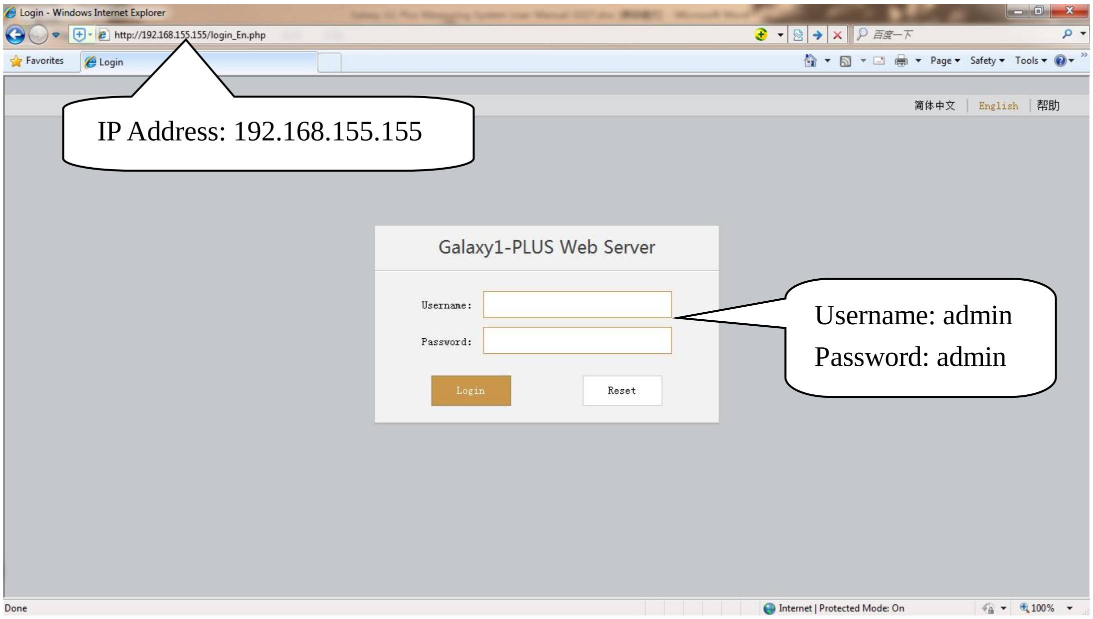
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically
● Use the following IP address:
IP address: 192 . 168 . 155 . 100
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 155 . 1

○ Obtain DNS server address automatically
● Use the following DNS server addresses:
Preferred DNS server: . . .
Alternate DNS server: . . .

☐ Validate settings upon exit

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.


Login - Windows Internet Explorer
http://192.168.155.155/login_En.php
Favorites
Login
Page
Safety
Tools
简体中文 | English | 帮助
Galaxy1-PLUS Web Server
Username:
Password:
Login
Reset
Done
Internet | Protected Mode: On
100%

IP Address: 192.168.155.155

Username: admin
Password: admin

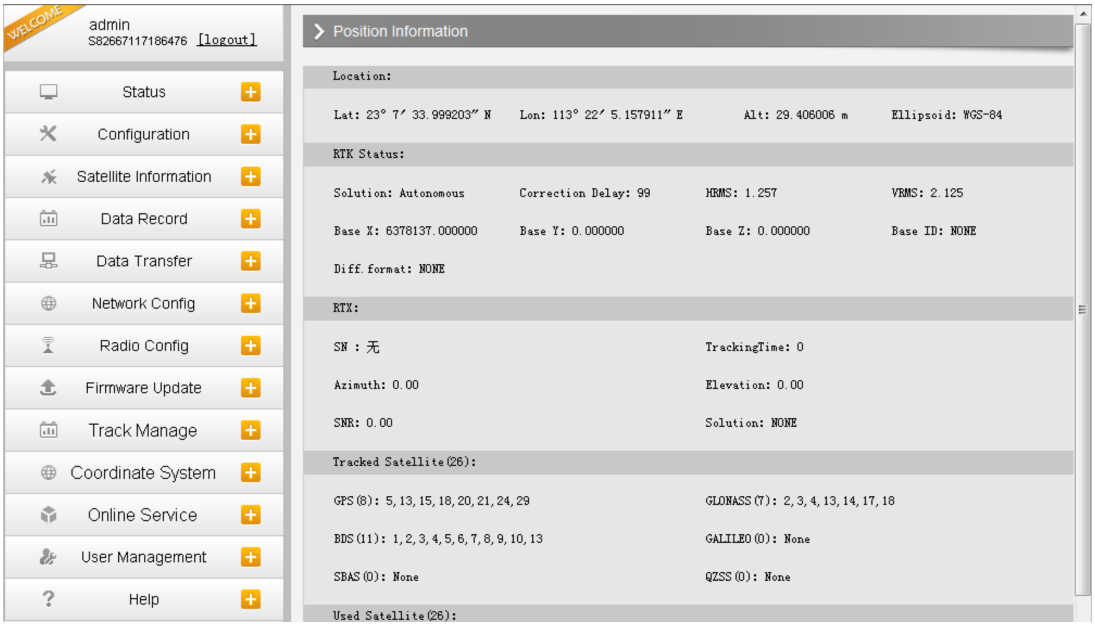
Remote Login

If users would like to remote login the web UI of New G1, then New G1 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 New G1 has connected, and the 80 port of New G1 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 New G1 by WIFI or USB connection, the main interface appears with displaying configuration items and positioning. As shown at following figures.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Online Service
User Management
Help
Position Information

Location:

Lat: 23° 7′ 33.999203″ N Lon: 113° 22′ 5.157911″ E Alt: 29.406006 m Ellipsoid: WGS-84

RTK Status:

Solution: Autonomous Correction Delay: 99 HRMS: 1.257 VRMS: 2.125

Base X: 6378137.000000 Base Y: 0.000000 Base Z: 0.000000 Base ID: NONE

Diff.format: NONE

RTX:

SN : 无 TrackingTime: 0

Azimuth: 0.00 Elevation: 0.00

SNR: 0.00 Solution: NONE

Tracked Satellite(26):

GPS(8): 5,13,15,18,20,21,24,29 GLONASS(7): 2,3,4,13,14,17,18

BDS(11): 1,2,3,4,5,6,7,8,9,10,13 GALILEO(0): None

SBAS(0): None QZSS(0): None

Used Satellite(26):

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

Ref	Component	Description
	Status	Positioning information, satellite tracking and the others will be displayed in this page
	Configuration	It contains registration for receiver, base configuration, antenna configuration, satellite configuration, receiver configuration and system configuration.
	Satellite Information	Display and control the satellites are used or not
	Data Record	Configure the parameters for static mode and raw data download
	Data Transfer	Contains NTRIP configuration, TCP/IP configuration and data transferring with PC
	Network Config	Contains network parameters configuration, WIFI configuration and the other functions
	Radio Config	Configure the parameters and frequency for radio modem

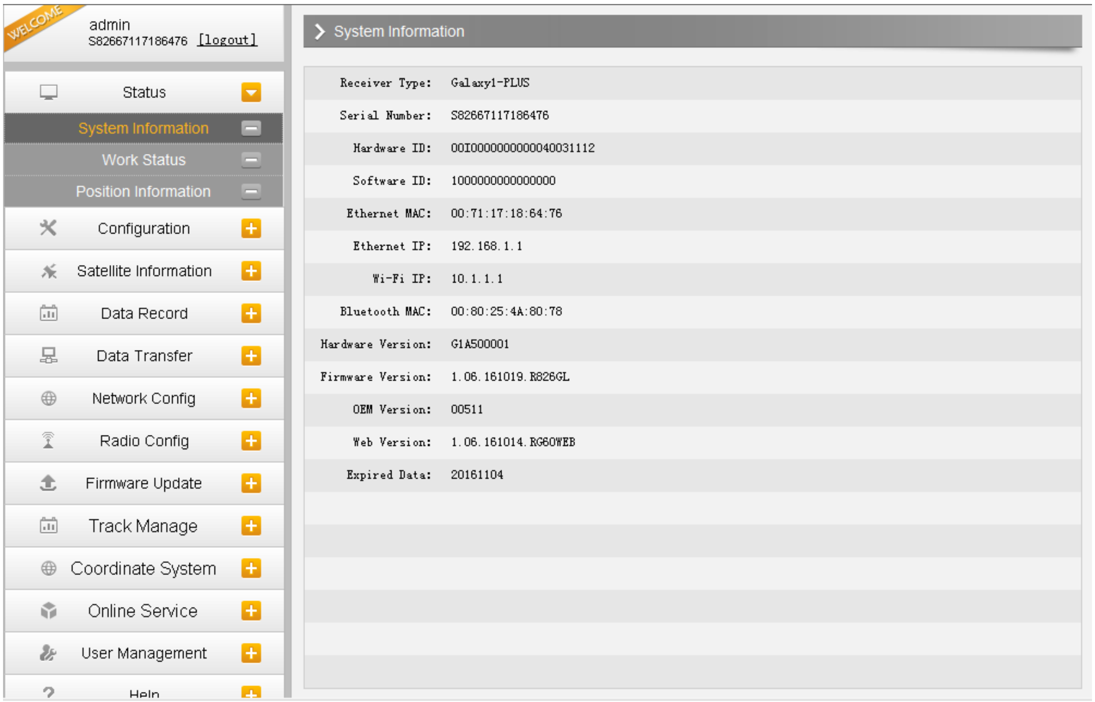
	Firmware Update	It is used to upgrade the firmware for receiver and each modem
	Track Manage	Record track file while doing measurement
	Coordinate System	Setup a local coordinate system for New G1
	Online Service	Upload data onto a server in real-time
	User Management	Add and manage the Web UI users
?	**Help**	Offers solutions

§4.4.1 Status

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

System Information

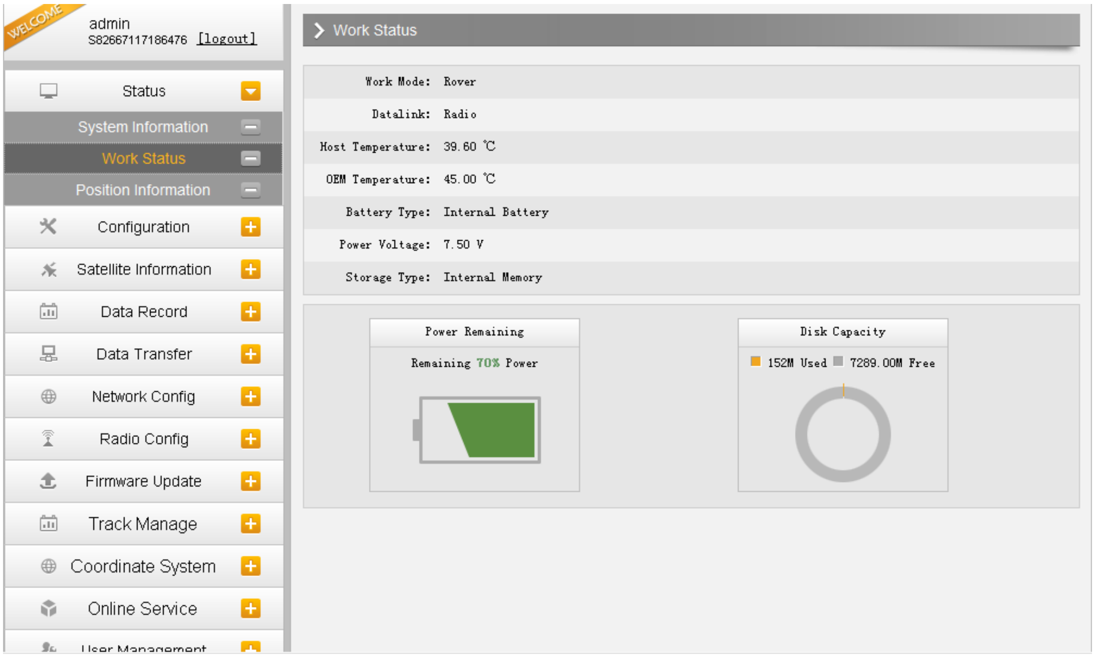
In this page, all the information of New G1 is diplayed such as serial number, hardware ID, MAC address, firmware version and so on.


WELCOME
admin
S82667117186476 [logout]
Status
System Information
Work Status
Position Information
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Online Service
User Management
Help
System Information

Receiver Type: Galaxy1-PLUS
Serial Number: S82667117186476
Hardware ID: 00I000000000000040031112
Software ID: 1000000000000000
Ethernet MAC: 00:71:17:18:64:76
Ethernet IP: 192.168.1.1
Wi-Fi IP: 10.1.1.1
Bluetooth MAC: 00:80:25:4A:80:78
Hardware Version: G1A500001
Firmware Version: 1.06.161019.R826GL
OEM Version: 00511
Web Version: 1.06.161014.RG60WEB
Expired Data: 20161104

Work Status

The physical state of New G1 such as working mode, datalink, host temperature, remaining power and the free memory is obtained from this page


WELCOME
admin
S82667117186476 [logout]
Status
System Information
Work Status
Position Information
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Online Service
User Management
Work Status
Power Remaining
Disk Capacity

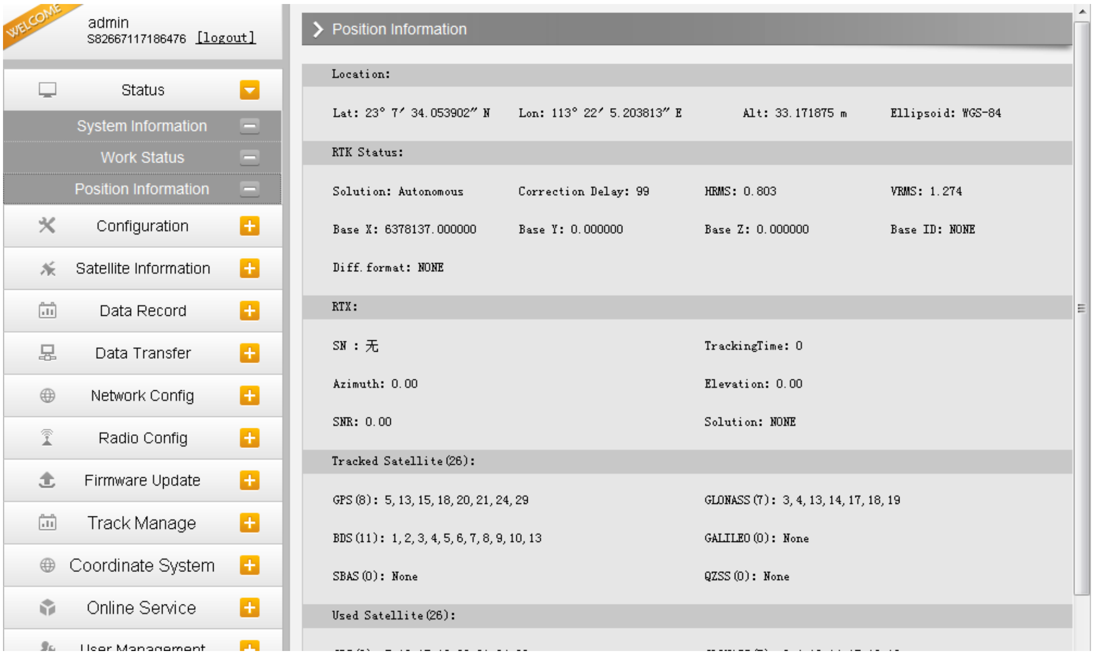
Work Mode: Rover
Datalink: Radio
Host Temperature: 39.60 ℃
OEM Temperature: 45.00 ℃
Battery Type: Internal Battery
Power Voltage: 7.50 V
Storage Type: Internal Memory

Remaining 70% Power

🟧 152M Used ▨ 7289.00M Free

Position Information

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


WELCOME
admin
S82667117186476 [logout]
Status
System Information
Work Status
Position Information
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Online Service
User Management
Position Information

Location:
Lat: 23° 7′ 34.053902″ N Lon: 113° 22′ 5.203813″ E Alt: 33.171875 m Ellipsoid: WGS-84

RTK Status:
Solution: Autonomous Correction Delay: 99 HRMS: 0.803 VRMS: 1.274
Base X: 6378137.000000 Base Y: 0.000000 Base Z: 0.000000 Base ID: NONE
Diff.format: NONE

RTX:
SN : 无 TrackingTime: 0
Azimuth: 0.00 Elevation: 0.00
SNR: 0.00 Solution: NONE

Tracked Satellite(26):
GPS(8): 5,13,15,18,20,21,24,29 GLONASS(7): 3,4,13,14,17,18,19
BDS(11): 1,2,3,4,5,6,7,8,9,10,13 GALILEO(0): None
SBAS(0): None QZSS(0): None

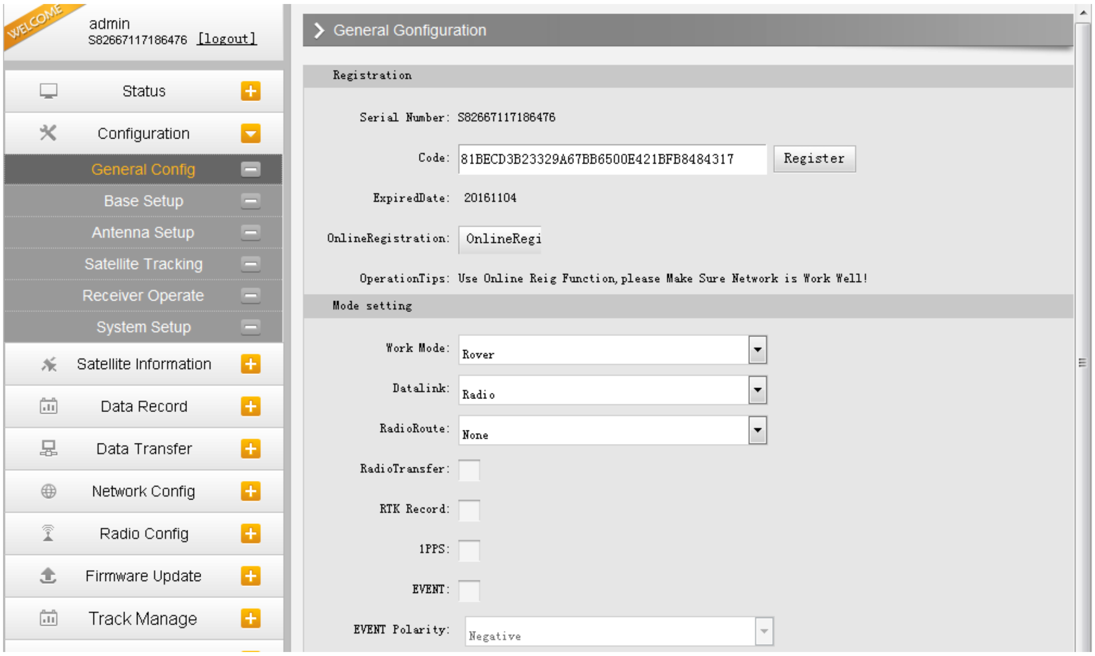
Used Satellite(26):

§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 New G1 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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
General Gonfiguration
Registration
Register
OnlineRegi
Mode setting

Serial Number: S82667117186476

Code: 81BECD3B23329A67BB6500E421BFB8484317

ExpiredDate: 20161104

OnlineRegistration: OnlineRegi

OperationTips: Use Online Reig Function,please Make Sure Network is Work Well!

Work Mode: Rover

Datalink: Radio

RadioRoute: None

RadioTransfer: ☐

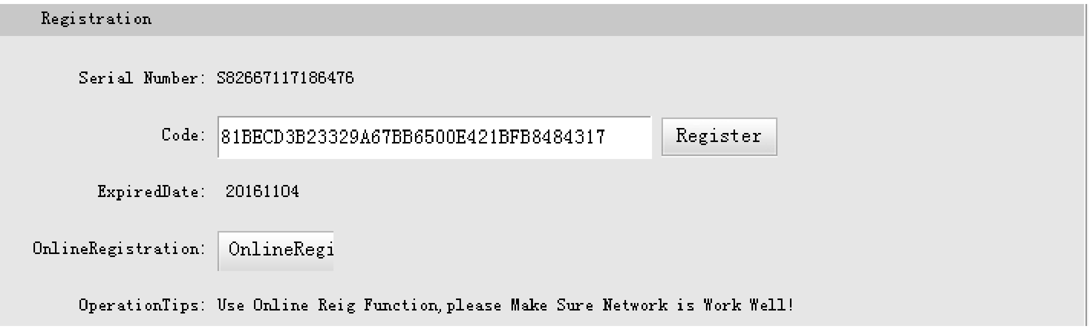
RTK Record: ☐

1PPS: ☐

EVENT: ☐

EVENT Polarity: Negative

If the code of New G1 has expired or is going to be run out, please provide the serial number of your New G1 for us to apply for another available code, then input the code into the blank or register the receiver online.


Registration
Register
OnlineRegi

Serial Number: S82667117186476

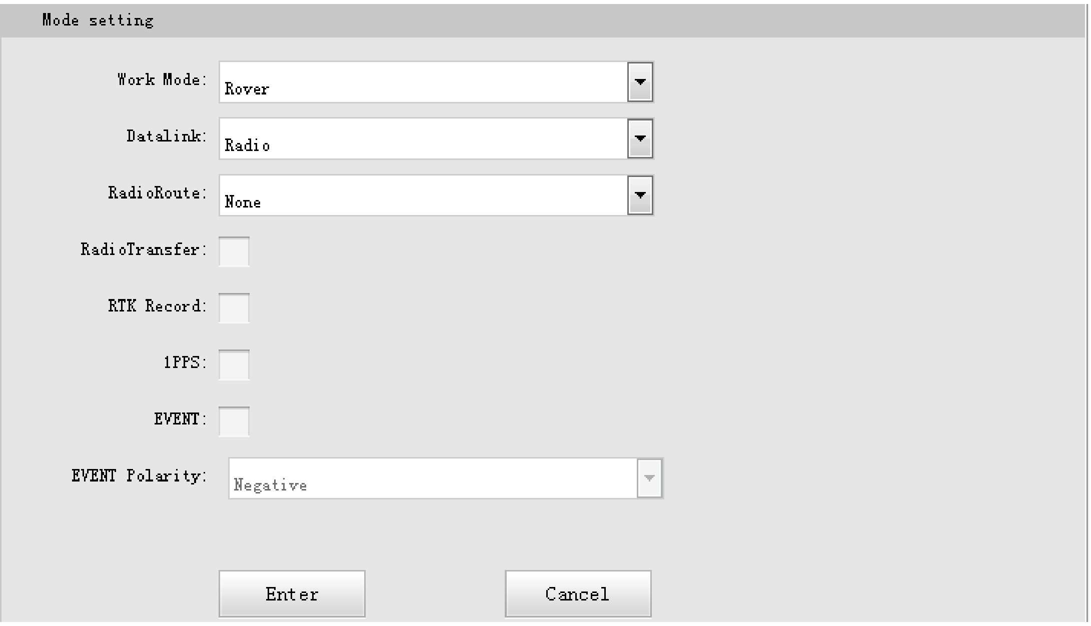
Code: 81BECD3B23329A67BB6500E421BFB8484317

ExpiredDate: 20161104

OnlineRegistration: OnlineRegi

OperationTips: Use Online Reig Function,please Make Sure Network is Work Well!

New G1 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 New G1.


Mode setting

Work Mode: Rover

Datalink: Radio

RadioRoute: None

RadioTransfer: ☐

RTK Record: ☐

1PPS: ☐

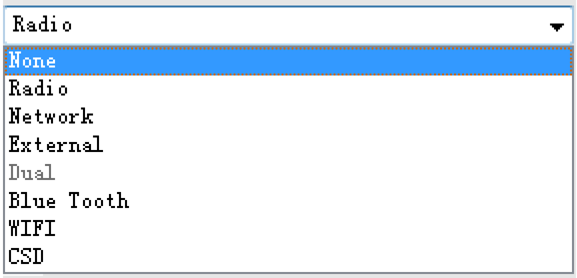
EVENT: ☐

EVENT Polarity: Negative

Enter
Cancel

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

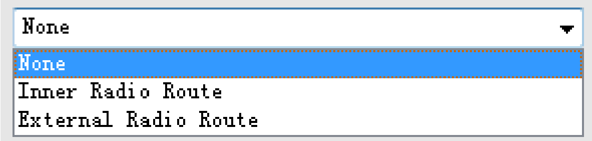
Datalink: Pull down the list, there will be all kinds of options for datalink, such as radio, Network, External, Bluetooth, WIFI and CSD.

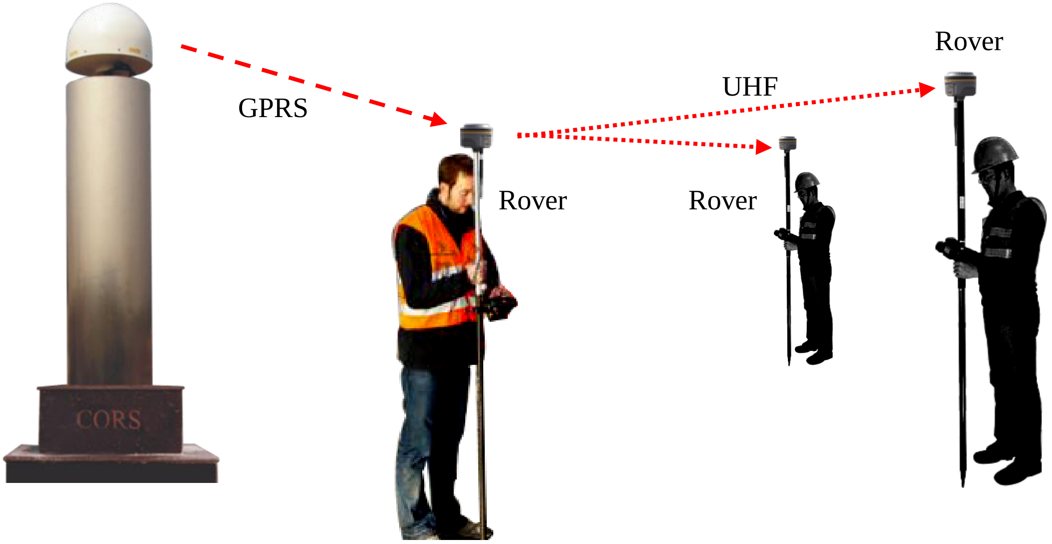

Radio
None
Radio
Network
External
Dual
Blue Tooth
WIFI
CSD

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.

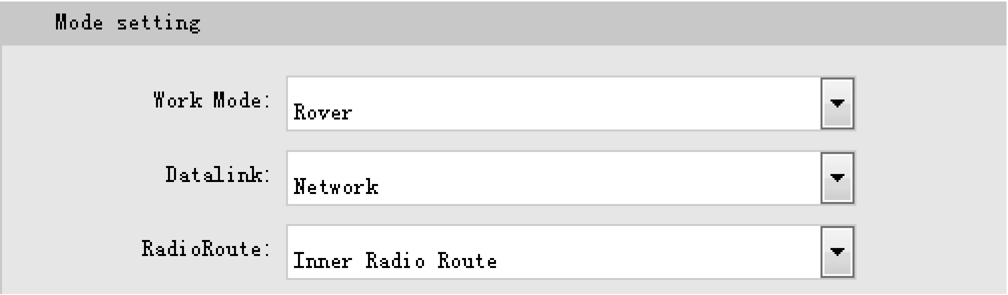
This feature is only available on Rover mode.


None
None
Inner Radio Route
External Radio Route



Operation:

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

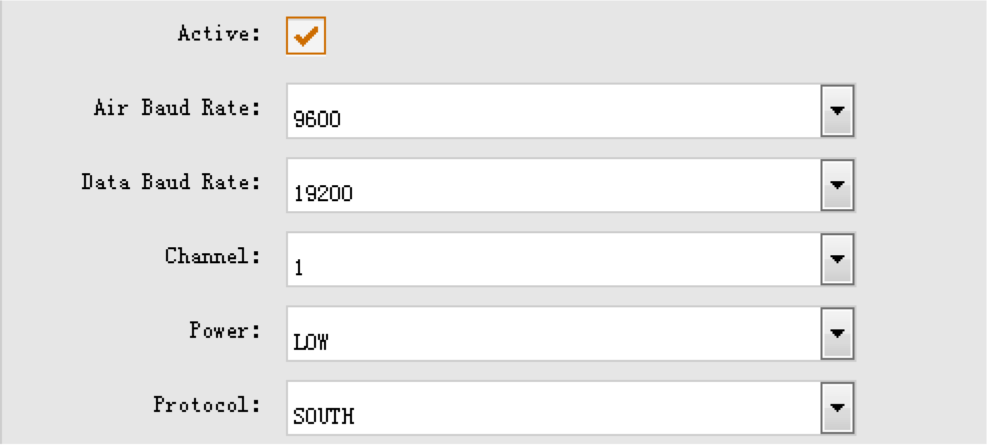

Mode setting

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

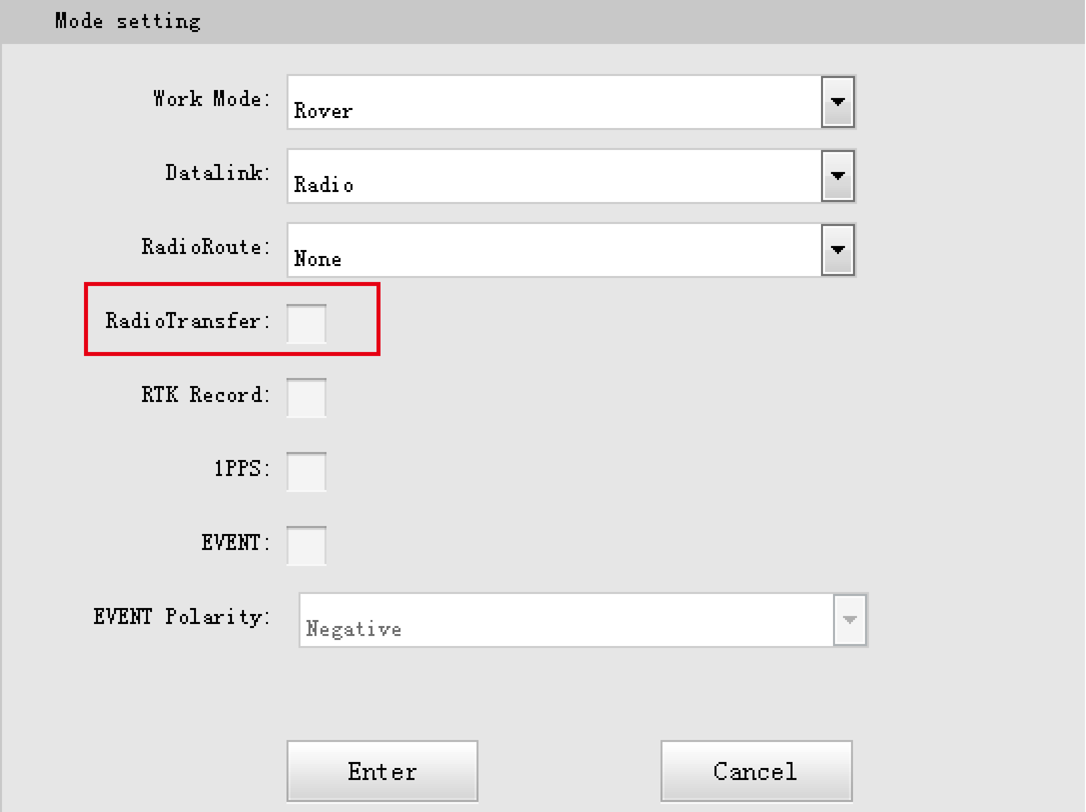
Channel: 1

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 New G1 is able to transfer the correction from Base station to the other rovers with the internal UHF, definitely, New G1 can work as a radio repeater.



Mode setting

Work Mode: Rover

Datalink: Radio

RadioRoute: None

RadioTransfer: ☐

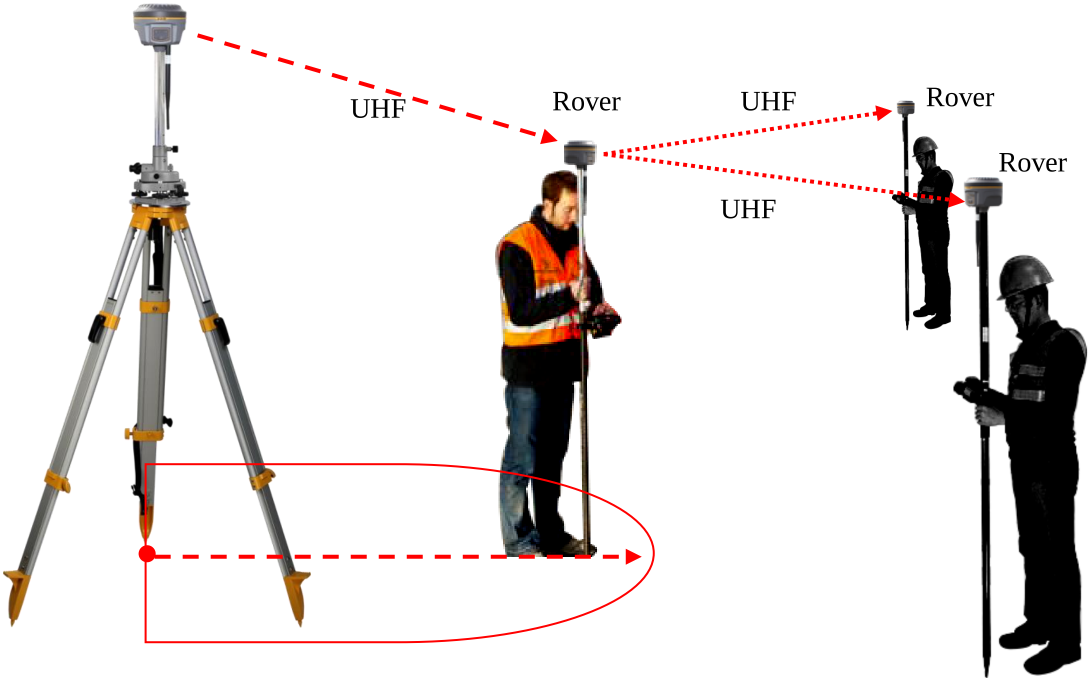
RTK Record: ☐

1PPS: ☐

EVENT: ☐

EVENT Polarity: Negative

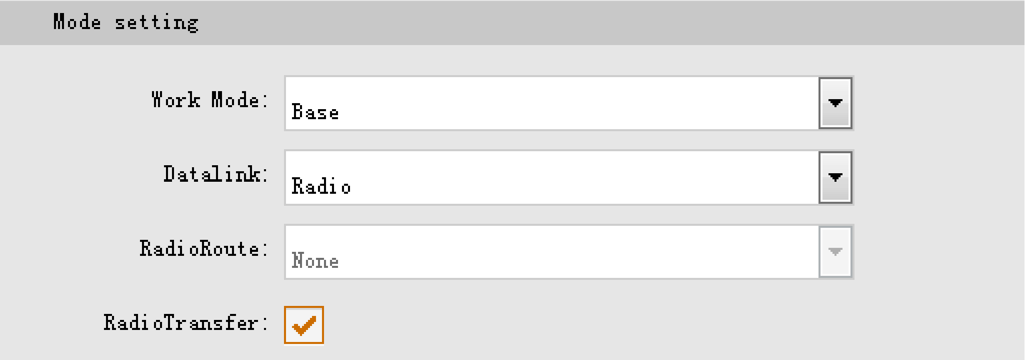
Enter
Cancel



UHF
Rover
UHF
Rover
Rover
UHF

Operation:

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



Mode setting

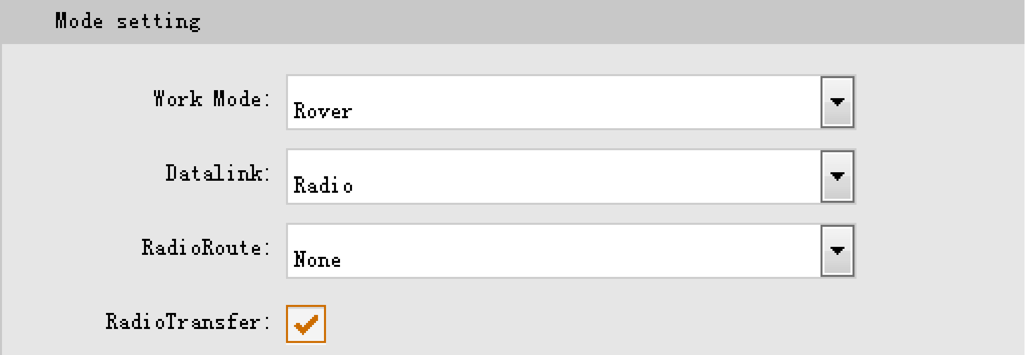
Work Mode: Base

Datalink: Radio

RadioRoute: None

RadioTransfer: ☑

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

RadioRoute: 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

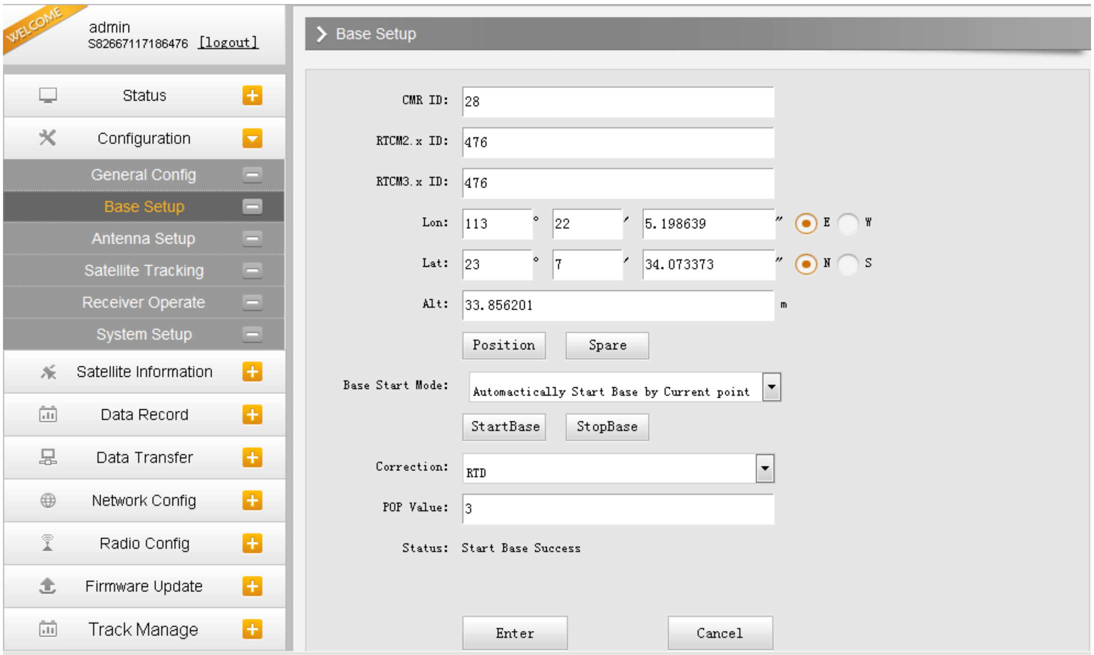
1 PPS: This option is for the 1 pulse per second output

EVENT: This option is for the EVENT marker input

EVENT Polarity: EVENT input method.

Base Setup

When New G1 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
S82667117186476 [logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Base Setup
Position
Spare
StartBase
StopBase
Enter
Cancel

CMR ID: 28

RTCM2.x ID: 476

RTCM3.x ID: 476

Lon: 113 ° 22 ′ 5.198639 ″ ● E ○ W

Lat: 23 ° 7 ′ 34.073373 ″ ● N ○ S

Alt: 33.856201 m

Base Start Mode: Automactically Start Base by Current point

Correction: RTD

POP Value: 3

Status: Start Base Success

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.

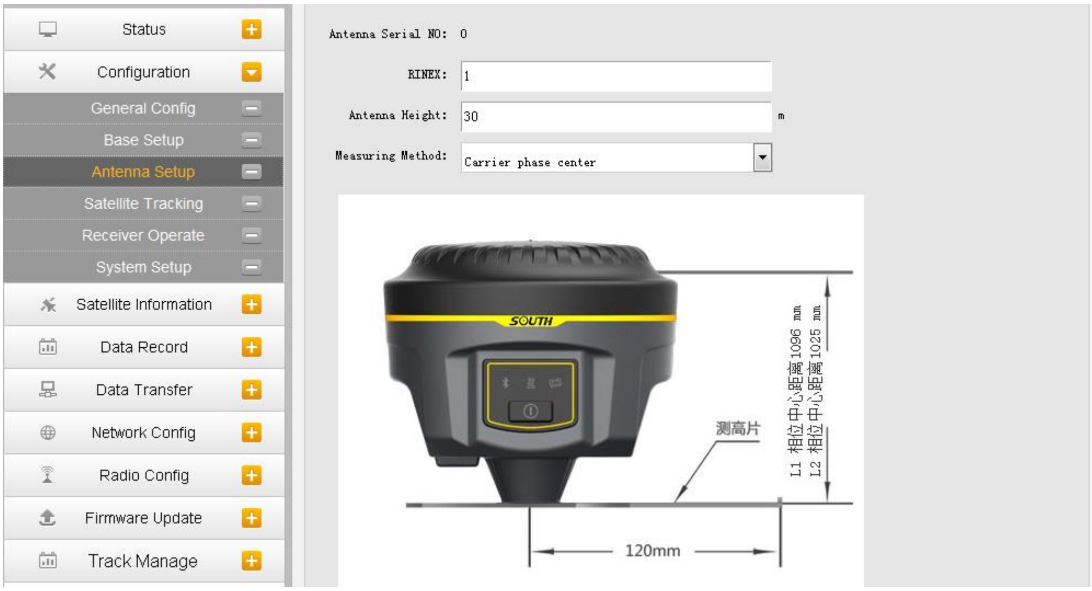
Correction: Here contains the global general used correction formats including RTD,RTCM23, RTCM30, RTCM32, CMR and SCMRx

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.



Antenna Serial NO: 0

RINEX: 1

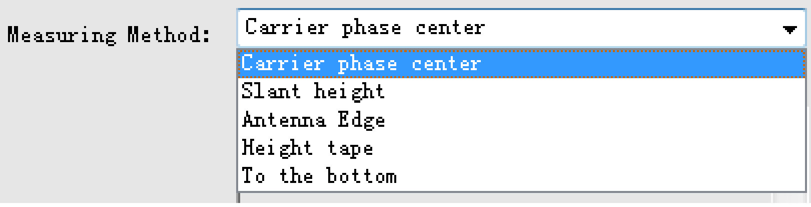
Antenna Height: 30 m

Measuring Method: Carrier phase center

Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
SOUTH
测高片
L1 相位中心距离 1096 mm
L2 相位中心距离 1025 mm
120mm

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.

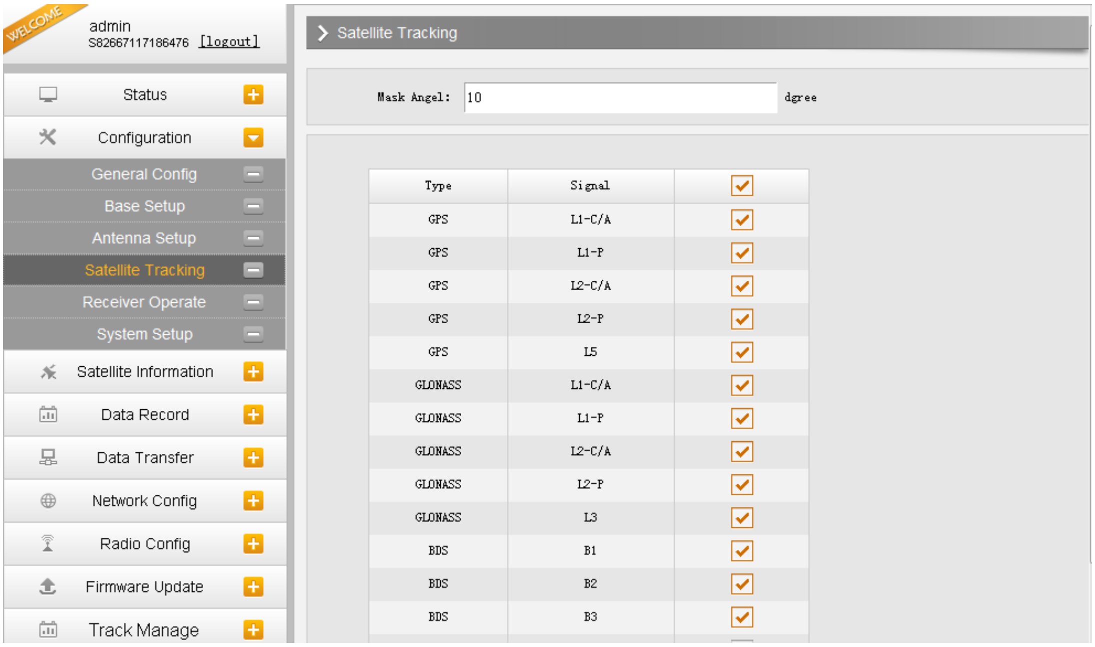


Measuring Method: Carrier phase center

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

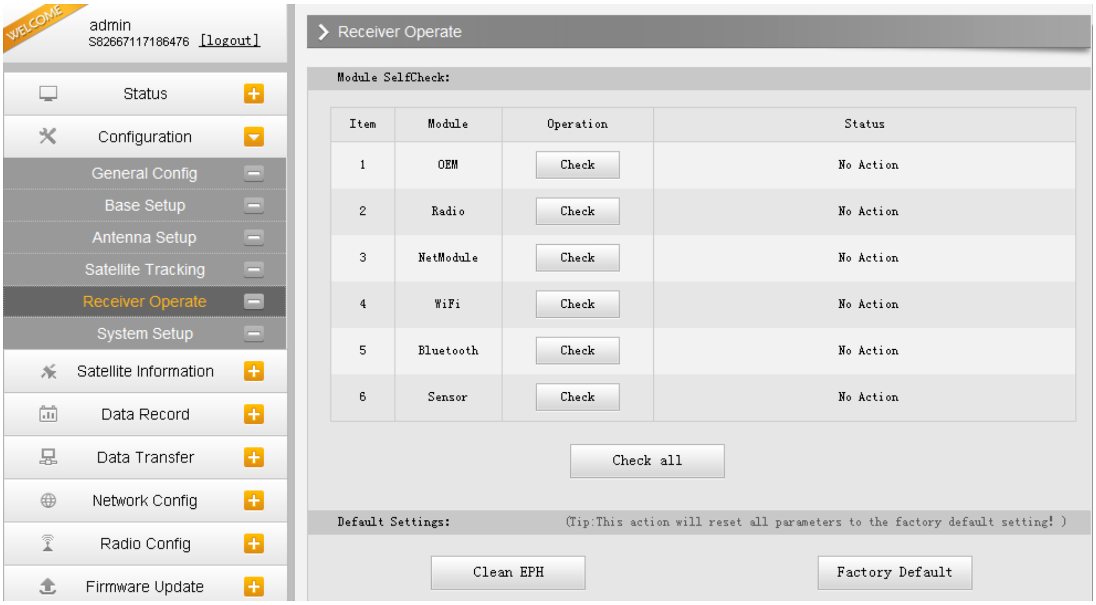

WELCOME
admin
S82667117186476 [logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Satellite Tracking

Mask Angel: 10 dgree

Type	Signal	☑
GPS	L1-C/A	☑
GPS	L1-P	☑
GPS	L2-C/A	☑
GPS	L2-P	☑
GPS	L5	☑
GLONASS	L1-C/A	☑
GLONASS	L1-P	☑
GLONASS	L2-C/A	☑
GLONASS	L2-P	☑
GLONASS	L3	☑
BDS	B1	☑
BDS	B2	☑
BDS	B3	☑

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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Receiver Operate
Check all
Clean EPH
Factory Default

Module SelfCheck:

Item	Module	Operation	Status
1	OEM	Check	No Action
2	Radio	Check	No Action
3	NetModule	Check	No Action
4	WiFi	Check	No Action
5	Bluetooth	Check	No Action
6	Sensor	Check	No Action

Default Settings: (Tip:This action will reset all parameters to the factory default setting!)

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.

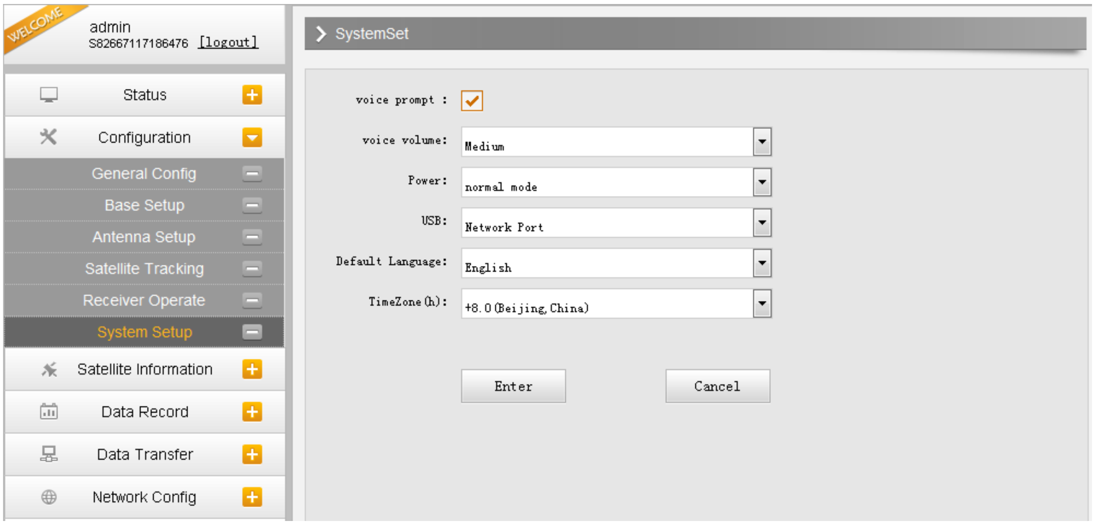
Factory Default: Click this button to bring the receiver back to factory default setting.

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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config
SystemSet
Enter
Cancel

voice prompt : ☑
voice volume: Medium
Power: normal mode
USB: Network Port
Default Language: English
TimeZone(h): +8.0(Beijing,China)

Voice Prompt: Check on this box to turn on the voice guide for New G1, uncheck it to turn off the voice guid.

Voice Volume: Define the voice volume for New G1's speaker.

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

USB: This is used to configure New G1 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 New G1 which associates with voice guid.

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

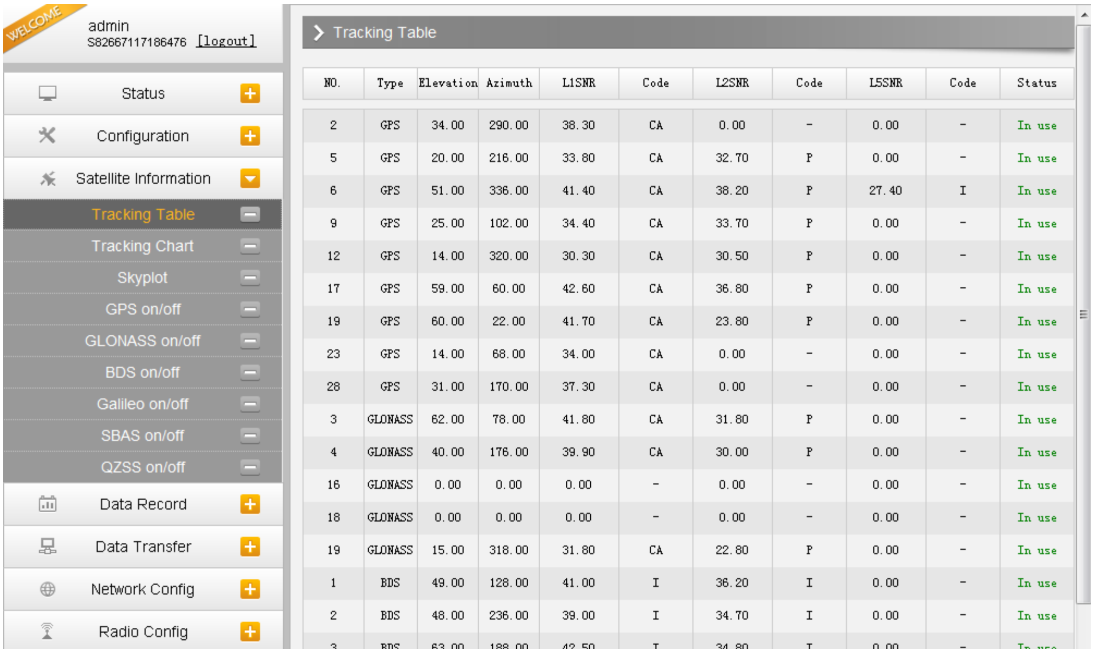
TimeZone(h): Use this to setup the corresponding time zone for your country or area.

§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

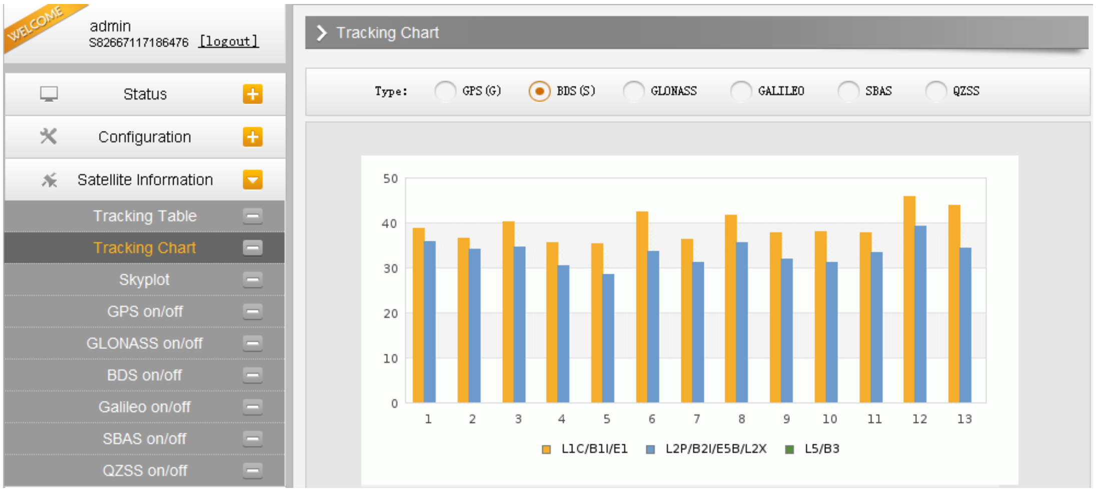
Here is the table to list all current used satellites and the other information for these satellites.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Tracking Table
Tracking Chart
Skyplot
GPS on/off
GLONASS on/off
BDS on/off
Galileo on/off
SBAS on/off
QZSS on/off
Data Record
Data Transfer
Network Config
Radio Config
Tracking Table

NO.	Type	Elevation	Azimuth	L1SNR	Code	L2SNR	Code	L5SNR	Code	Status
2	GPS	34.00	290.00	38.30	CA	0.00	-	0.00	-	In use
5	GPS	20.00	216.00	33.80	CA	32.70	P	0.00	-	In use
6	GPS	51.00	336.00	41.40	CA	38.20	P	27.40	I	In use
9	GPS	25.00	102.00	34.40	CA	33.70	P	0.00	-	In use
12	GPS	14.00	320.00	30.30	CA	30.50	P	0.00	-	In use
17	GPS	59.00	60.00	42.60	CA	36.80	P	0.00	-	In use
19	GPS	60.00	22.00	41.70	CA	23.80	P	0.00	-	In use
23	GPS	14.00	68.00	34.00	CA	0.00	-	0.00	-	In use
28	GPS	31.00	170.00	37.30	CA	0.00	-	0.00	-	In use
3	GLONASS	62.00	78.00	41.80	CA	31.80	P	0.00	-	In use
4	GLONASS	40.00	176.00	39.90	CA	30.00	P	0.00	-	In use
16	GLONASS	0.00	0.00	0.00	-	0.00	-	0.00	-	In use
18	GLONASS	0.00	0.00	0.00	-	0.00	-	0.00	-	In use
19	GLONASS	15.00	318.00	31.80	CA	22.80	P	0.00	-	In use
1	BDS	49.00	128.00	41.00	I	36.20	I	0.00	-	In use
2	BDS	48.00	236.00	39.00	I	34.70	I	0.00	-	In use
3	BDS	63.00	188.00	42.50	I	34.80	I	0.00	-	In use

Tracking Chart

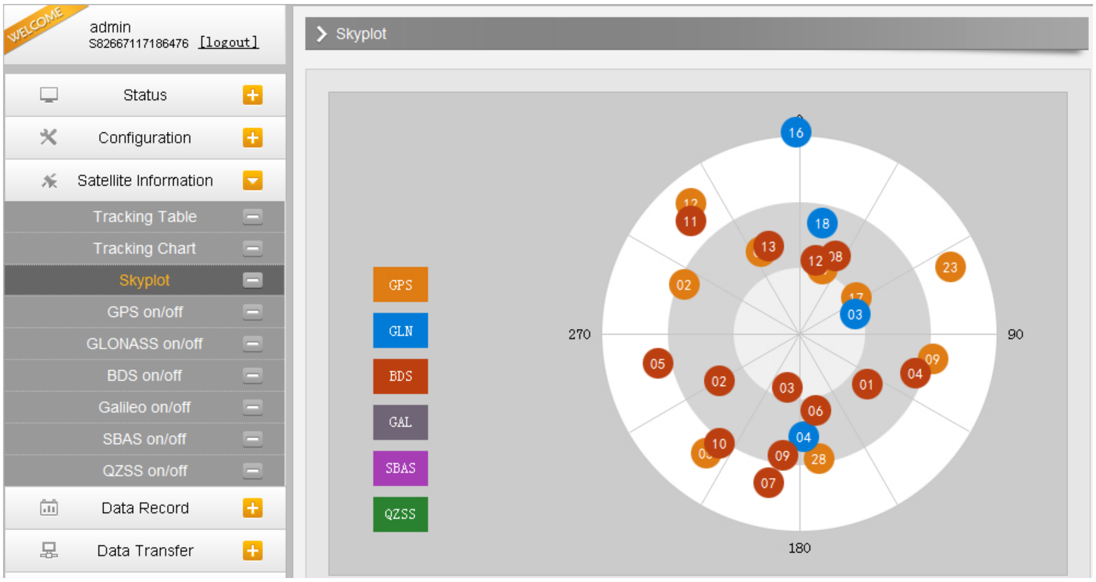
In this page, the histogram will indicate the signals from those used satellites, and allow to check each constellation separately.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Tracking Table
Tracking Chart
Skyplot
GPS on/off
GLONASS on/off
BDS on/off
Galileo on/off
SBAS on/off
QZSS on/off
Tracking Chart
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
L1C/B1I/E1
L2P/B2I/E5B/L2X
L5/B3

Type: ○ GPS (G) ● BDS (S) ○ GLONASS ○ GALILEO ○ SBAS ○ QZSS

Skyplot

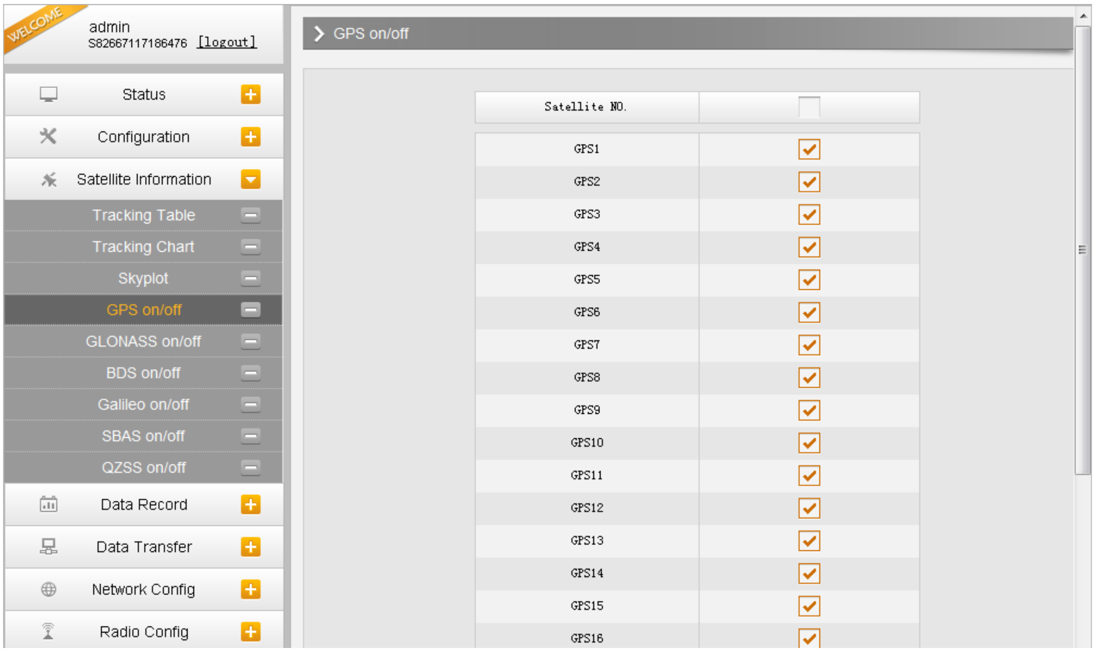
In this page, all the tracking satellires are shown on the skypolt, this let users intuitively view and know where the current position of satellite is.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Tracking Table
Tracking Chart
Skyplot
GPS on/off
GLONASS on/off
BDS on/off
Galileo on/off
SBAS on/off
QZSS on/off
Data Record
Data Transfer
Skyplot
GPS
GLN
BDS
GAL
SBAS
QZSS
270
90
180
16
12
11
18
13
12
08
23
02
17
03
05
02
03
01
09
04
06
04
10
09
28
07

GPS on/off

For all the running GNSS constellations or the augmentation system, New G1 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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Tracking Table
Tracking Chart
Skyplot
GPS on/off
GLONASS on/off
BDS on/off
Galileo on/off
SBAS on/off
QZSS on/off
Data Record
Data Transfer
Network Config
Radio Config
GPS on/off

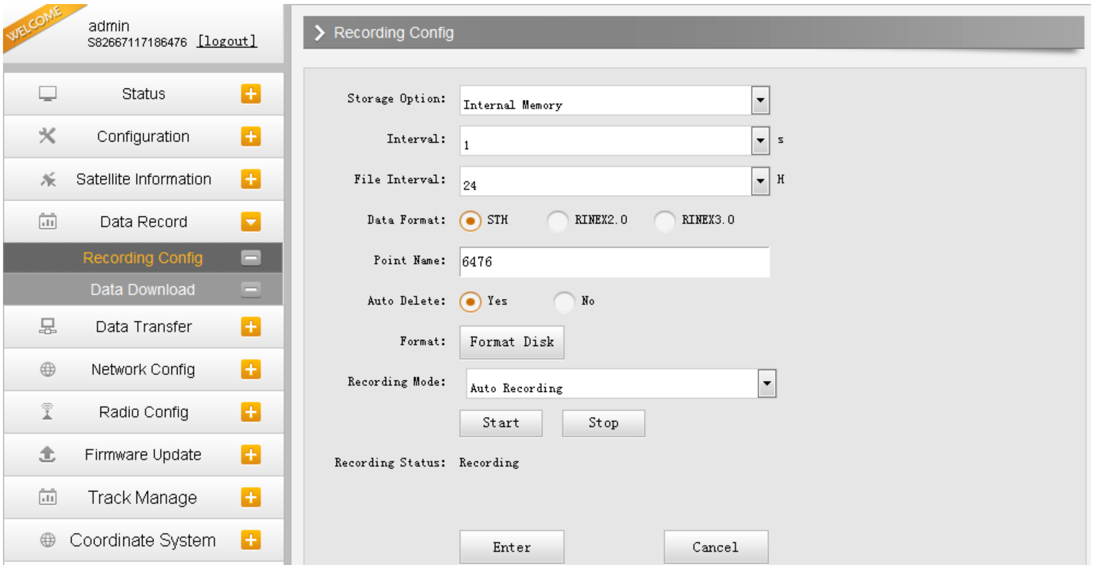
Satellite NO.	☐
GPS1	☑
GPS2	☑
GPS3	☑
GPS4	☑
GPS5	☑
GPS6	☑
GPS7	☑
GPS8	☑
GPS9	☑
GPS10	☑
GPS11	☑
GPS12	☑
GPS13	☑
GPS14	☑
GPS15	☑
GPS16	☑

§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 New G1 such as storage path, interval, data format and data files download.

Recording Config

The page provides more practical operations for raw data storage.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Recording Config
Data Download
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Recording Config
Format Disk
Start
Stop
Enter
Cancel

Storage Option: Internal Memory
Interval: 1 s
File Interval: 24 H
Data Format: ● STH ○ RINEX2.0 ○ RINEX3.0
Point Name: 6476
Auto Delete: ● Yes ○ No
Recording Mode: Auto Recording
Recording Status: Recording

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 New G1.

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

Data Format: Here are 3 options to selected for New G1 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 New G1 to delete the previous data files automatically if the memory is full.

Format: Click this button to format the internal memory for New G1.

Recording Mode: Here are 2 options to configure New G1 to record raw data automatically or not if it achieves the sampling conditions.

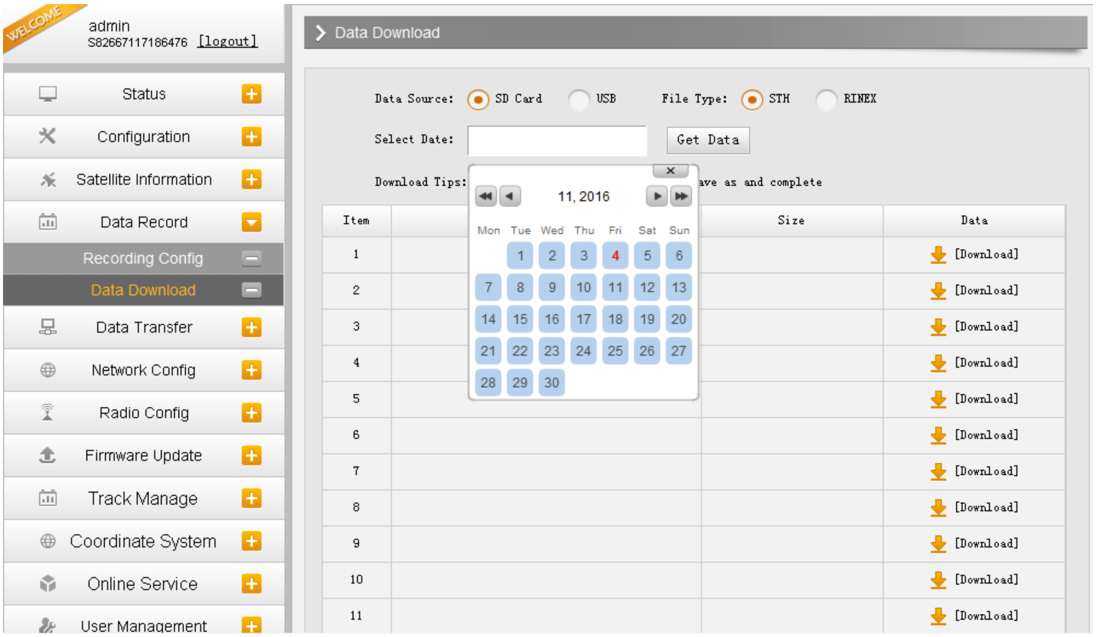
Start/Stop: Click these buttons to start recording or strop recording the raw data.

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.



Data Source: ● SD Card ○ USB File Type: ● STH ○ RINEX

Select Date:

Download Tips: ave as and complete

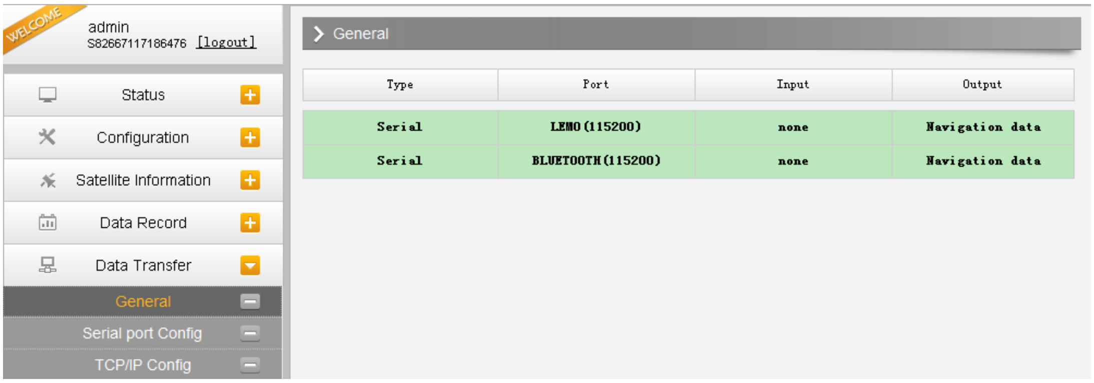
WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Recording Config
Data Download
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Online Service
User Management
Data Download
Get Data
11, 2016
Mon Tue Wed Thu Fri Sat Sun
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30
Item
Size
Data
1 2 3 4 5 6 7 8 9 10 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

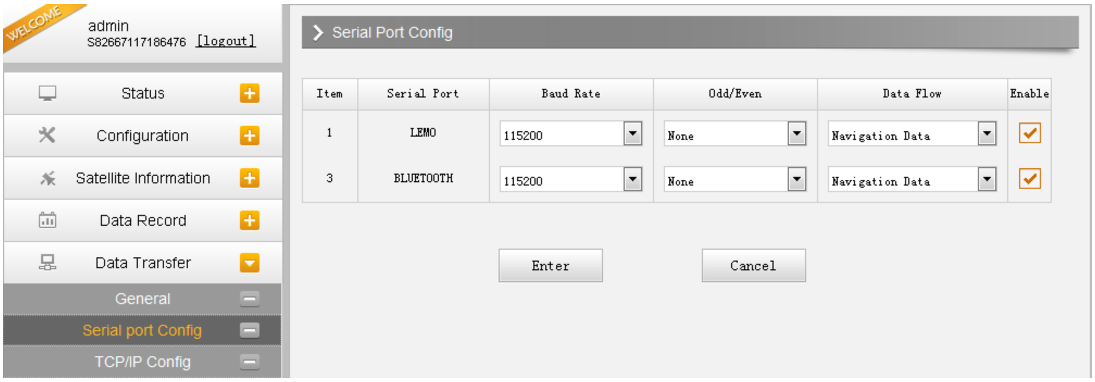
This page shows the service condition and the output contents of the ports, if the port item display in green, that means the port is being used, and the port is not used while the item display in red.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
General
Serial port Config
TCP/IP Config
General

Type	Port	Input	Output
Serial	LEMO(115200)	none	Navigation data
Serial	BLUETOOTH(115200)	none	Navigation data

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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
General
Serial port Config
TCP/IP Config
Serial Port Config
Enter
Cancel

Item	Serial Port	Baud Rate	Odd/Even	Data Flow	Enable
1	LEMO	115200	None	Navigation Data	☑
3	BLUETOOTH	115200	None	Navigation Data	☑

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.

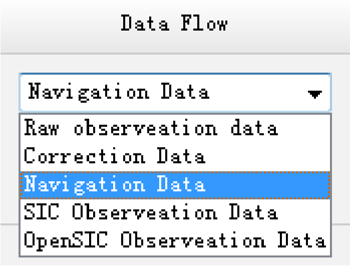
Raw observation data: This is the raw observation data straight from OEM board.

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.

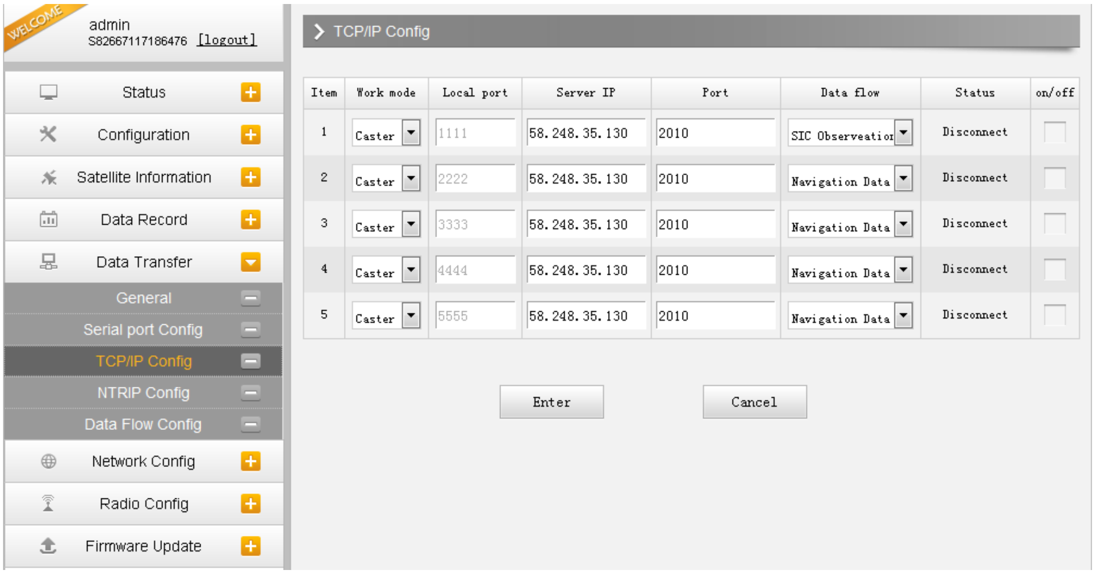

Data Flow
Navigation Data
Raw observeation data
Correction Data
Navigation Data
SIC Observeation Data
OpenSIC Observeation Data

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, NEW G1 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.

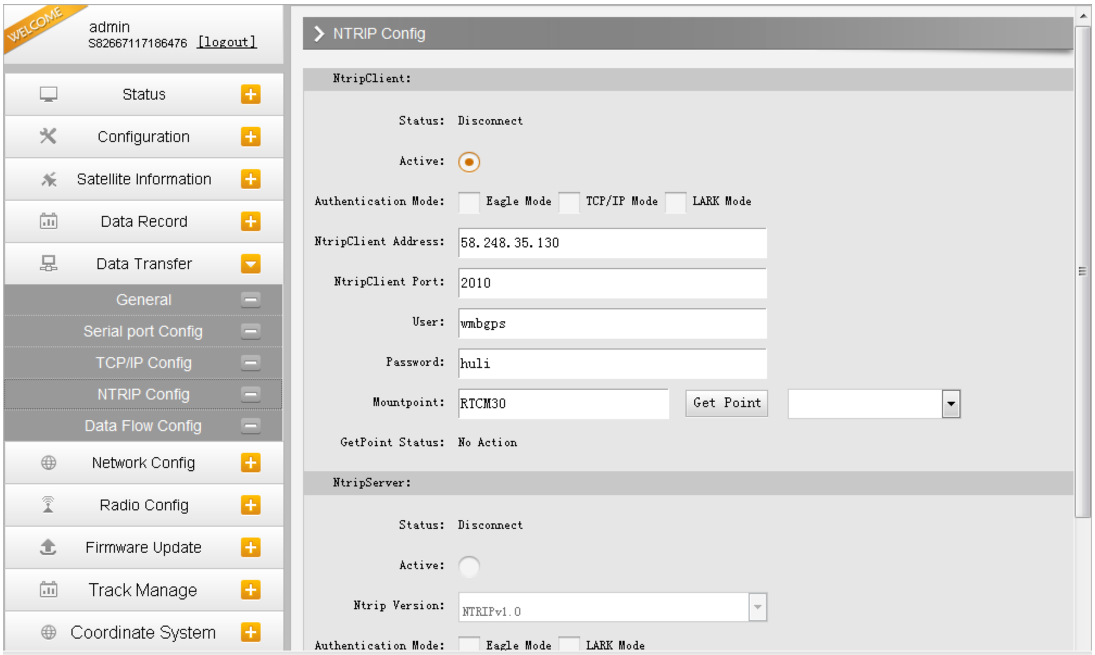
Server: New G1 will upload the data onto internet by the static WIFI if server is selected, then users are able to obtain its dynamic data by accessing to NEW G1 through the IP from receiver.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
General
Serial port Config
TCP/IP Config
NTRIP Config
Data Flow Config
Network Config
Radio Config
Firmware Update
TCP/IP Config
Enter
Cancel

Item	Work mode	Local port	Server IP	Port	Data flow	Status	on/off
1	Caster	1111	58.248.35.130	2010	SIC Observeatior	Disconnect	☐
2	Caster	2222	58.248.35.130	2010	Navigation Data	Disconnect	☐
3	Caster	3333	58.248.35.130	2010	Navigation Data	Disconnect	☐
4	Caster	4444	58.248.35.130	2010	Navigation Data	Disconnect	☐
5	Caster	5555	58.248.35.130	2010	Navigation Data	Disconnect	☐

NTRIP Config

This is used to configure the NTRIP performance while receiver is going to connect to internet. New G1 supports complete NTRIP performance including NTRIP Client, NTRIP Server and NTRIP Caster.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
General
Serial port Config
TCP/IP Config
NTRIP Config
Data Flow Config
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
NTRIP Config
Get Point

NtripClient:

Status: Disconnect

Active: ●

Authentication Mode: ☐ Eagle Mode ☐ TCP/IP Mode ☐ LARK Mode

NtripClient Address: 58.248.35.130

NtripClient Port: 2010

User: wmbgps

Password: huli

Mountpoint: RTCM30

GetPoint Status: No Action

NtripServer:

Status: Disconnect

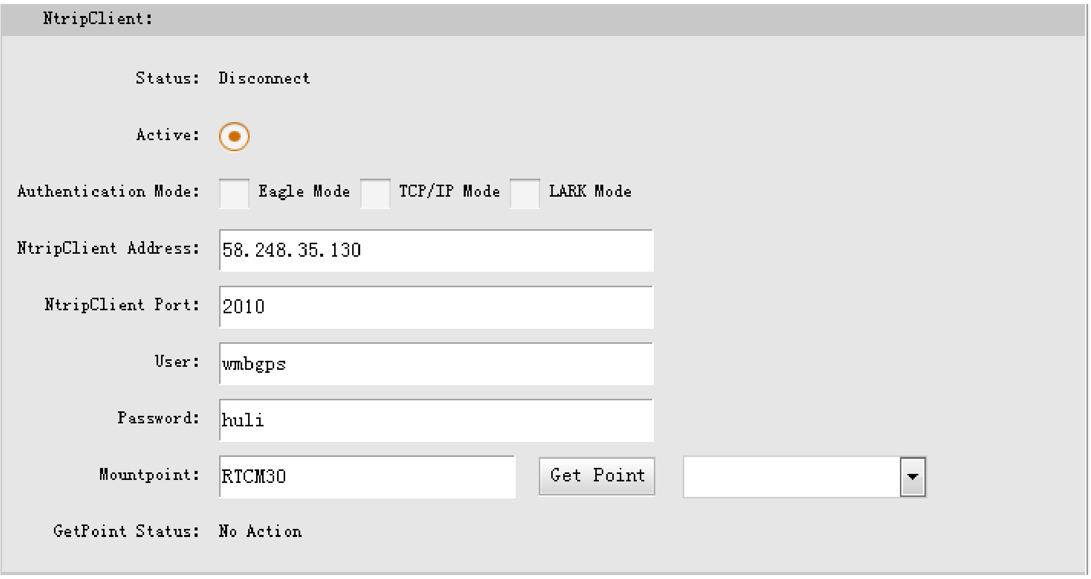
Active: ○

Ntrip Version: NTRIPv1.0

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: ●

Authentication Mode: ☐ Eagle Mode ☐ TCP/IP Mode ☐ LARK Mode

NtripClient Address: 58.248.35.130

NtripClient Port: 2010

User: wmbgps

Password: huli

Mountpoint: RTCM30

GetPoint Status: No Action

Status: This field will display the status of NTRIP connection, connect or disconnect.

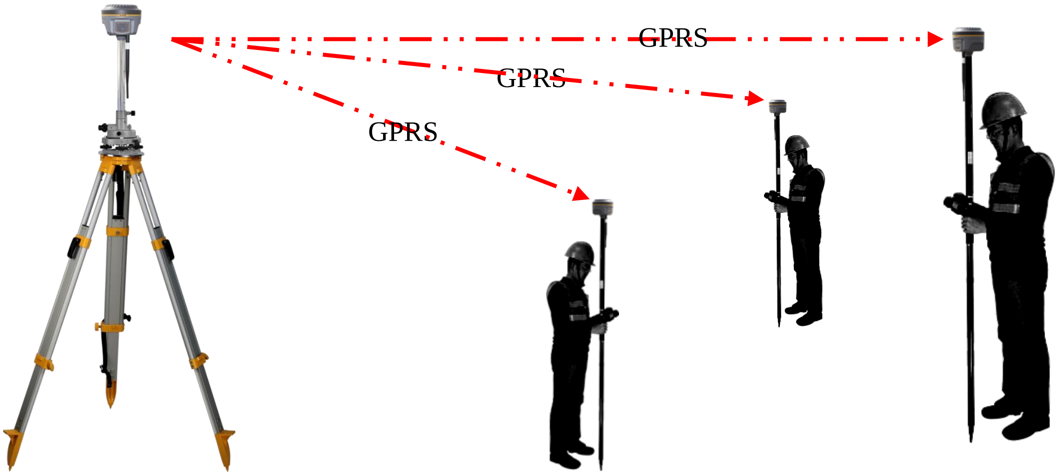
Active: Check on this circle to activate this function.

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

① Eagle Mode is SOUTH standard mode, usually, this mode is used on the case of both Base and Rover are using GPRS mode.

② 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.



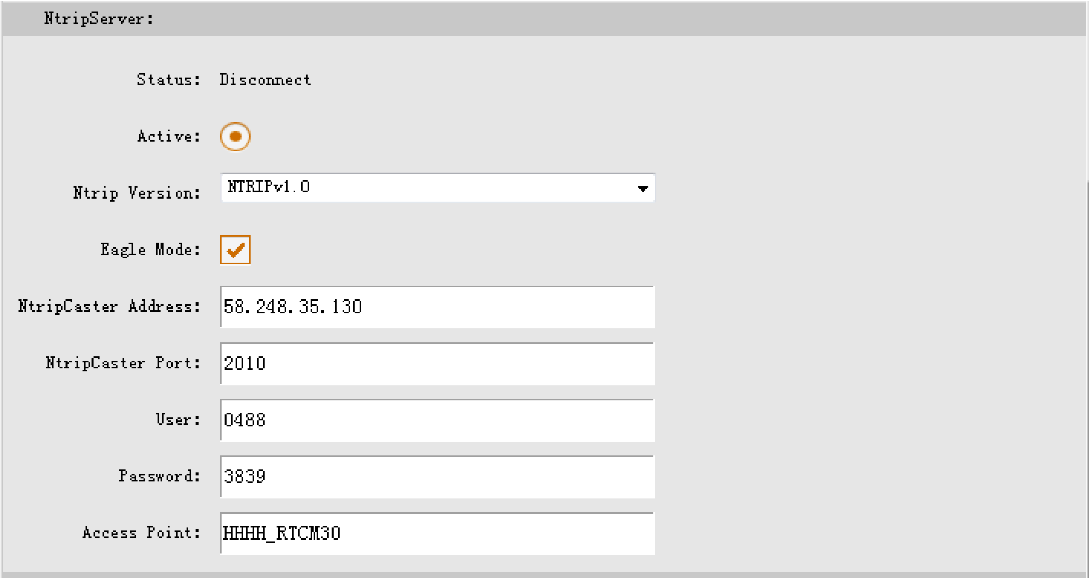
The other fields are the standard configuration for NTRIP connection, IP, port, username and password, after this information is input into the corresponding field, click on Get Point button to download the source table from server, then choose a proper mountpoint to access.

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: ●

Ntrip Version: NTRIPv1.0

Eagle Mode: ☑

NtripCaster Address: 58.248.35.130

NtripCaster Port: 2010

User: 0488

Password: 3839

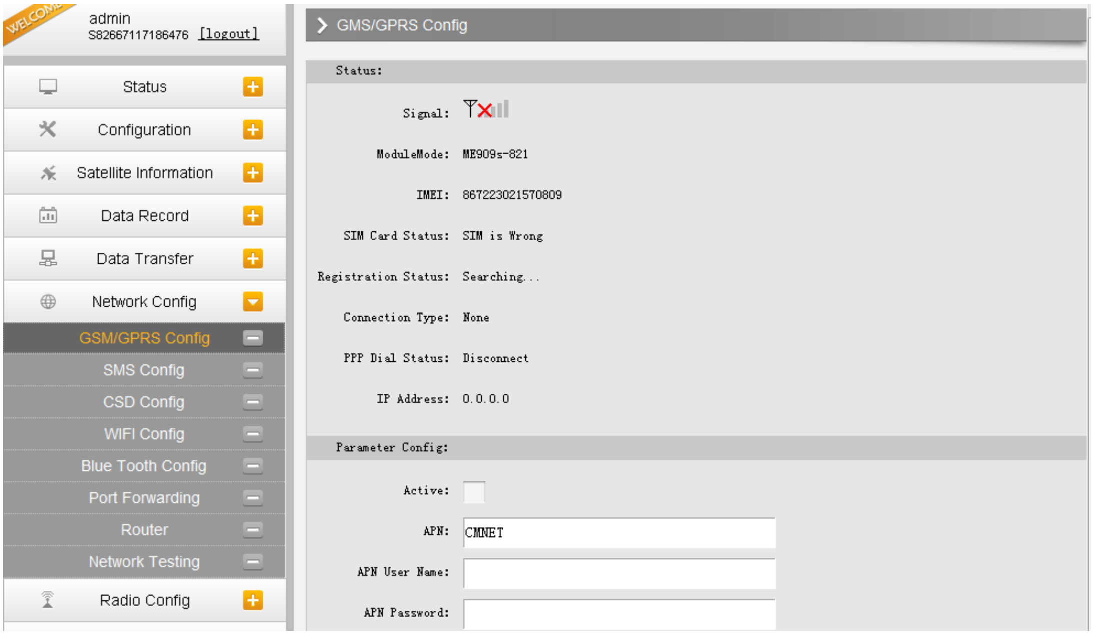
Access Point: HHHH_RTCM30

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
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Radio Config
GMS/GPRS Config

Status:

Signal:

ModuleMode: ME909s-821

IMEI: 867223021570809

SIM Card Status: SIM is Wrong

Registration Status: Searching...

Connection Type: None

PPP Dial Status: Disconnect

IP Address: 0.0.0.0

Parameter Config:

Active: ☐

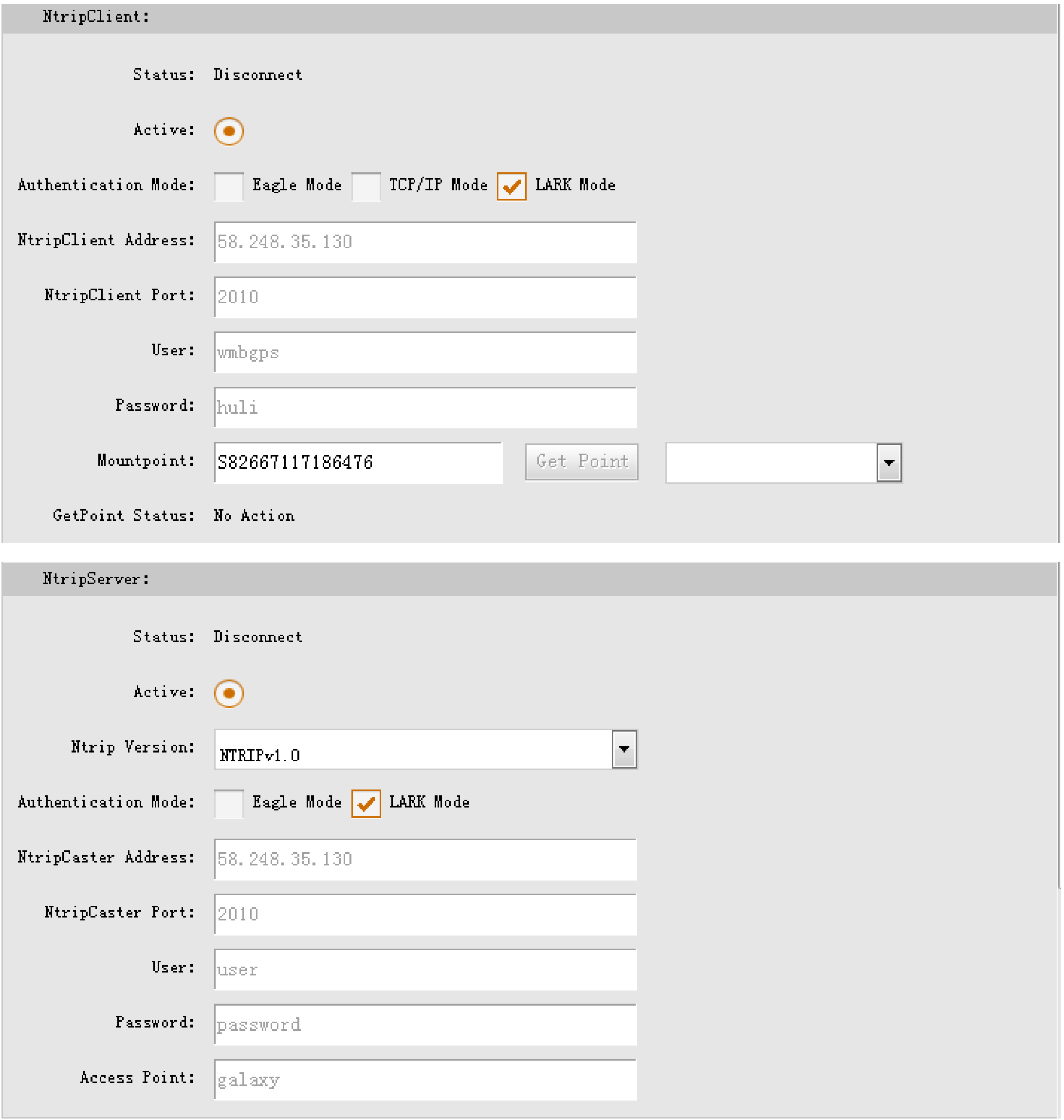
APN: CMNET

APN User Name:

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

User: wmbgps

Password: huli

Mountpoint: S82667117186476

GetPoint Status: No Action

NtripServer:

Status: Disconnect

Active: ●

Ntrip Version: NTRIPv1.0

Authentication Mode: ☐ Eagle Mode ☑ LARK Mode

NtripCaster Address: 58.248.35.130

NtripCaster Port: 2010

User: user

Password: password

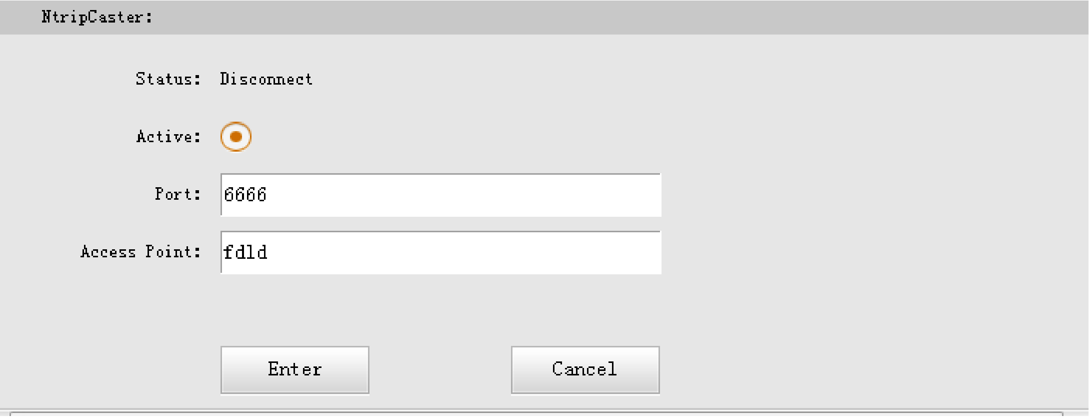
Access Point: galaxy

NtripCaster

This feature is finally realized on New G1, the receiver is equivalent to a CORS system that it generates and broadcasts the user-defined correction for rover if NEW G1 connects a static IP address.

Port: This is the specify port for the access.

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



NtripCaster:

Status: Disconnect

Active: ●

Port: 6666

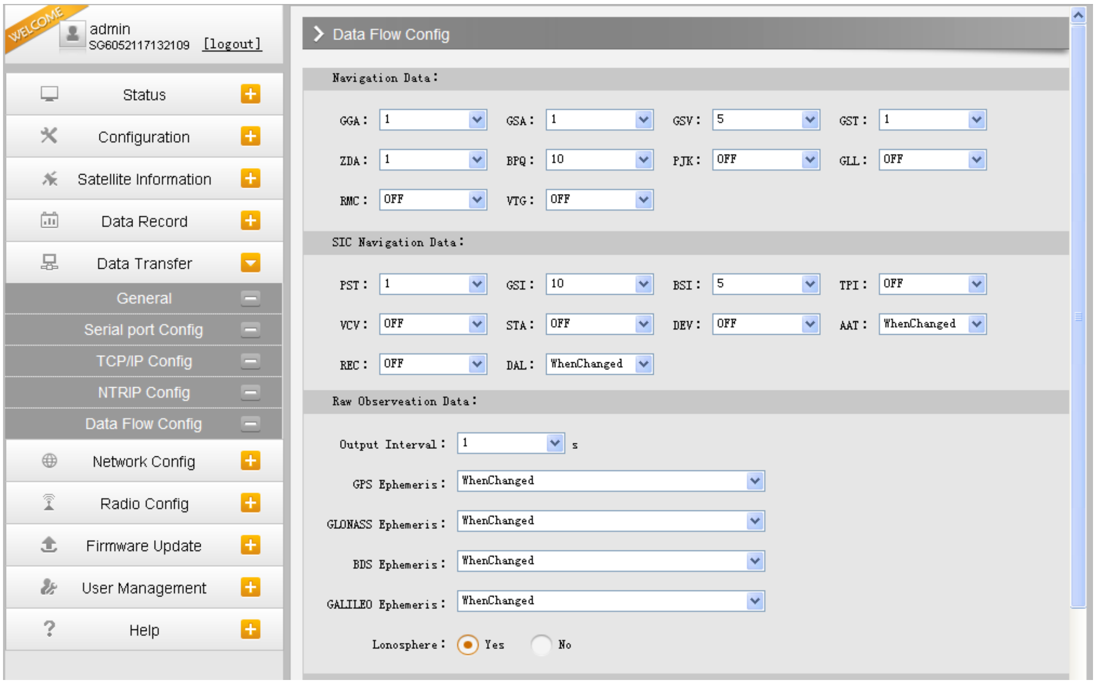
Access Point: fdld

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 dropdown list for each data format to define the update rate



WELCOME
admin
SG6052117132109 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
General
Serial port Config
TCP/IP Config
NTRIP Config
Data Flow Config
Network Config
Radio Config
Firmware Update
User Management
Help
Data Flow Config

Navigation Data:

GGA: 1 GSA: 1 GSV: 5 GST: 1

ZDA: 1 BPQ: 10 PJK: OFF GLL: OFF

RMC: OFF VTG: OFF

SIC Navigation Data:

PST: 1 GSI: 10 BSI: 5 TPI: OFF

VCV: OFF STA: OFF DEV: OFF AAT: WhenChanged

REC: OFF DAL: WhenChanged

Raw Observeation Data:

Output Interval: 1 s

GPS Ephemeris: WhenChanged

GLONASS Ephemeris: WhenChanged

BDS Ephemeris: WhenChanged

GALILEO Ephemeris: WhenChanged

Lonosphere: ● Yes ○ No

§4.4.6 Network Config

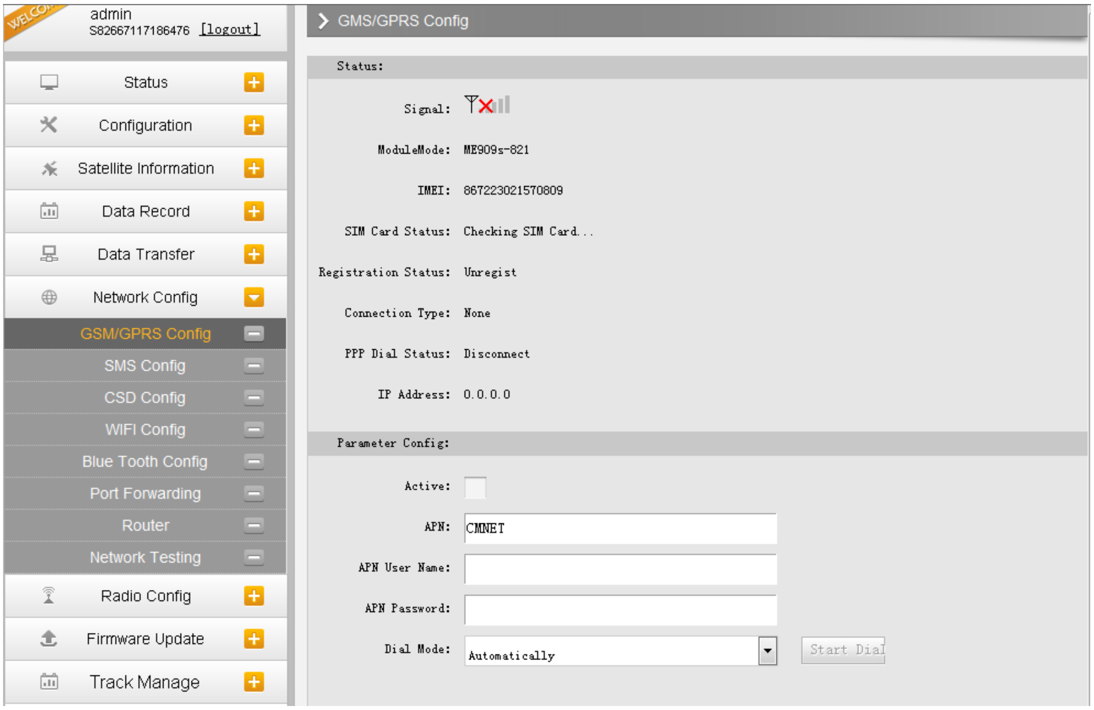
The "Network Config" is able to configure the ways and the contents for internet access of New G1. GSM/GPRS Config, CSD Config, WIFI Config, Bluetooth Config, Port Forwarding, Router and Network Testing are under the list of Network Config.

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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Radio Config
Firmware Update
Track Manage
GMS/GPRS Config
Start Dial

Status:

Signal:

ModuleMode: ME909s-821

IMEI: 867223021570809

SIM Card Status: Checking SIM Card...

Registration Status: Unregist

Connection Type: None

PPP Dial Status: Disconnect

IP Address: 0.0.0.0

Parameter Config:

Active: ☐

APN: CMNET

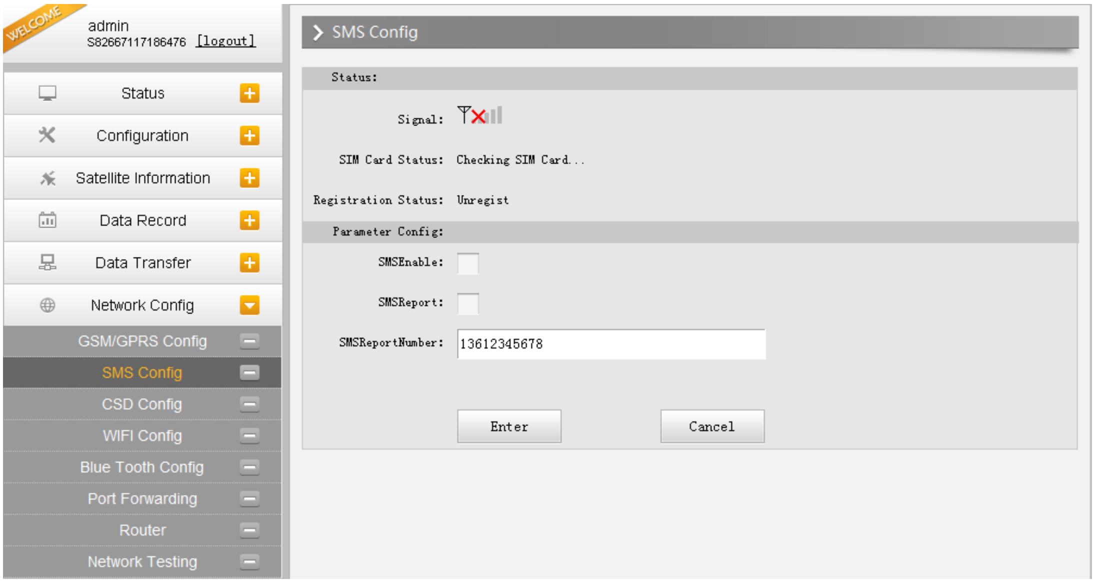
APN User Name:

APN Password:

Dial Mode: Automatically

MSM Config

On this configuration dialog, input a phone number into the blank, New G1 will send text message onto the phone which number is written.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
SMS Config
Enter
Cancel

Status:

Signal:

SIM Card Status: Checking SIM Card...

Registration Status: Unregist

Parameter Config:

SMSEnable: ☐

SMSReport: ☐

SMSReportNumber: 13612345678

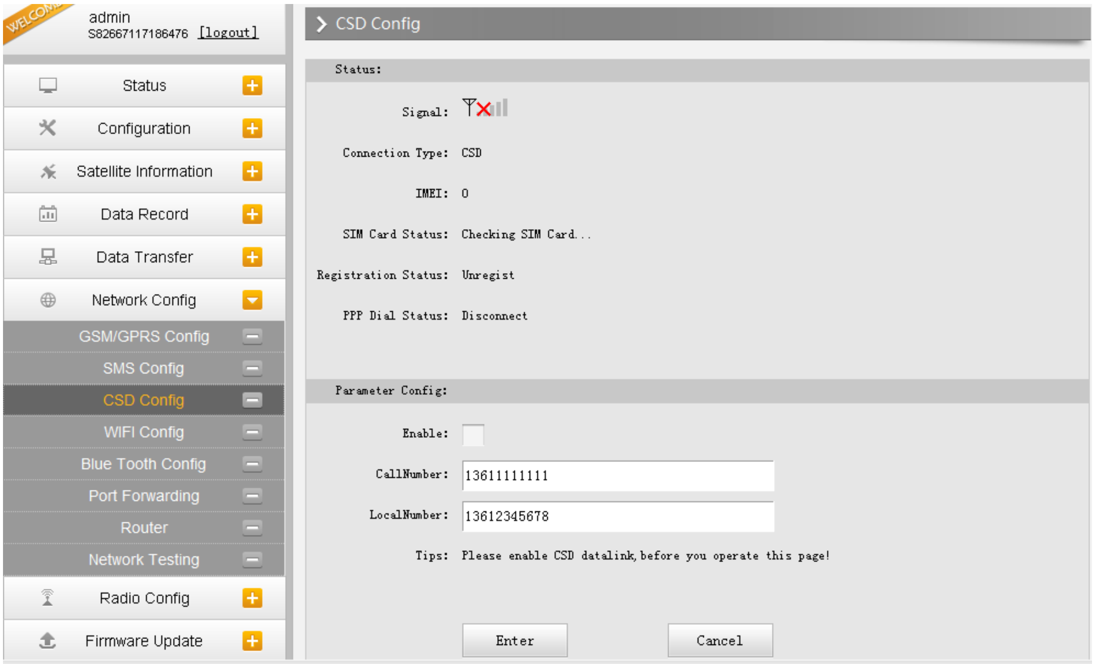
CSD Config

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 New G1.

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.

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


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Radio Config
Firmware Update
CSD Config
Enter
Cancel

Status:

Signal:

Connection Type: CSD

IMEI: 0

SIM Card Status: Checking SIM Card...

Registration Status: Unregist

PPP Dial Status: Disconnect

Parameter Config:

Enable: ☐

CallNumber: 13611111111

LocalNumber: 13612345678

Tips: Please enable CSD datalink, before you operate this page!

WIFI Config

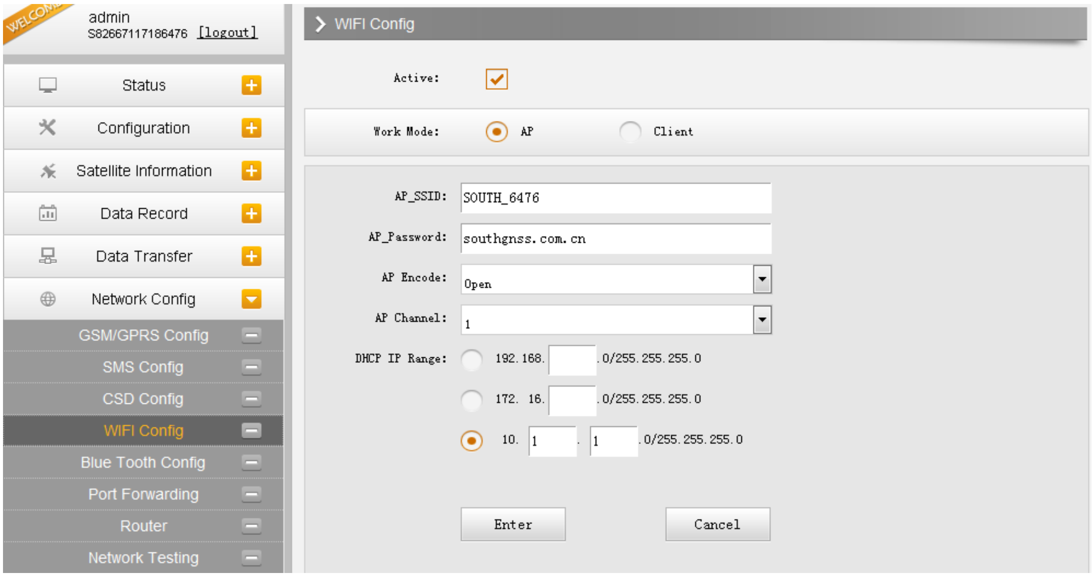
This is mainly used on the WIFI configuration for New G1, there are AP mode and Client mode for optional.

AP:

This is used to enable the WIFI hotspot for New G1 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 New G1, 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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
WIFI Config
Enter
Cancel

Active: ☑

Work Mode: ● AP ○ Client

AP_SSID: SOUTH_6476

AP_Password: southgnss.com.cn

AP Encode: Open

AP Channel: 1

DHCP IP Range: ○ 192.168.__.0/255.255.255.0

○ 172.16.__.0/255.255.255.0

● 10.1.1.0/255.255.255.0

Client:

This option enables New G1 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.

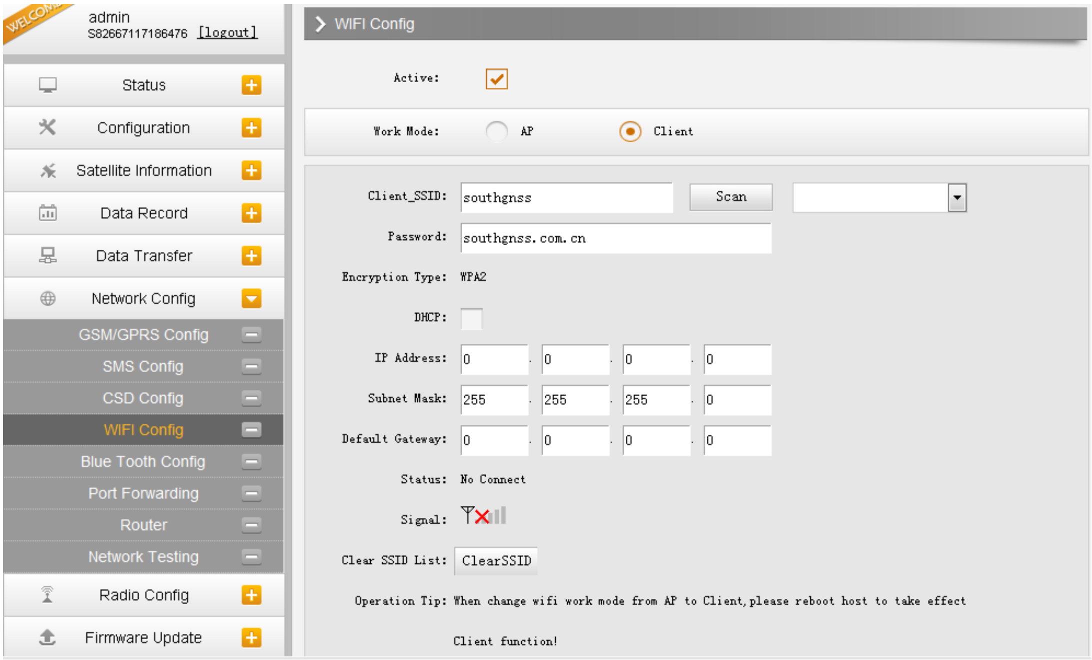
Client_SSID: This is the WIFI hotspot which New G1 is going to connect

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

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

IP fields: If New G1 successfully connects to the WIFI, there will be an LAN IP address generated by New G1.

ClearSSID: Click this button to clear the SSID list.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Radio Config
Firmware Update
WIFI Config
Scan
ClearSSID

Active: ☑

Work Mode: ○ AP ● Client

Client_SSID: southgnss

Password: southgnss.com.cn

Encryption Type: WPA2

DHCP: ☐

IP Address: 0.0.0.0

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

Status: No Connect

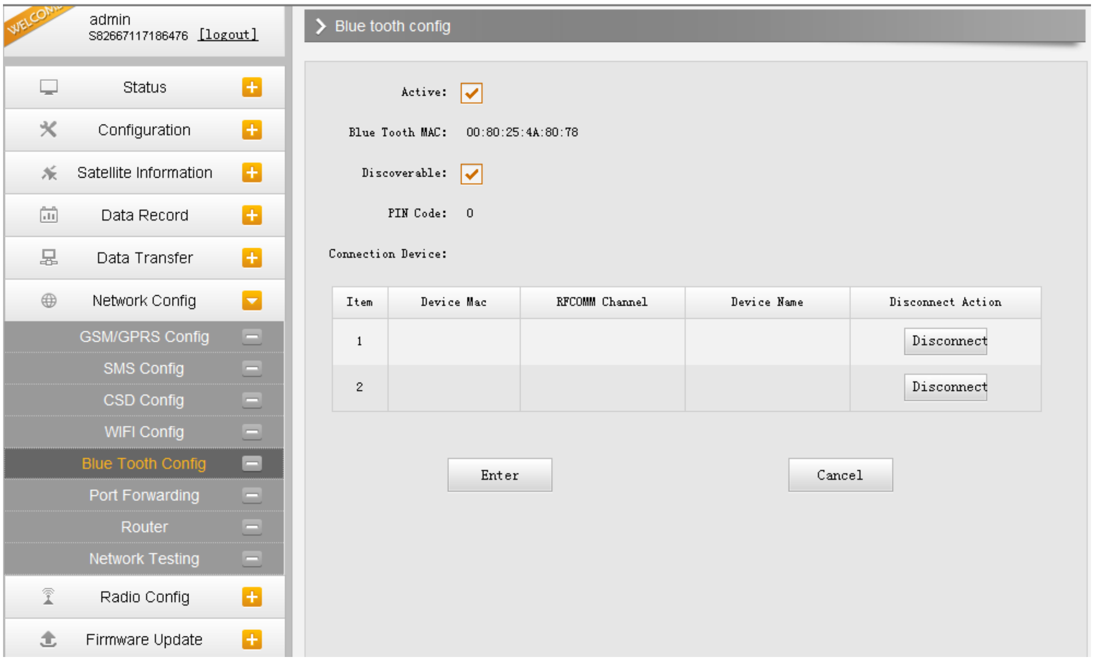
Signal:

Clear SSID List: ClearSSID

Operation Tip: When change wifi work mode from AP to Client,please reboot host to take effect Client function!

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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Radio Config
Firmware Update
Blue tooth config
Enter
Cancel

Active: ☑

Blue Tooth MAC: 00:80:25:4A:80:78

Discoverable: ☑

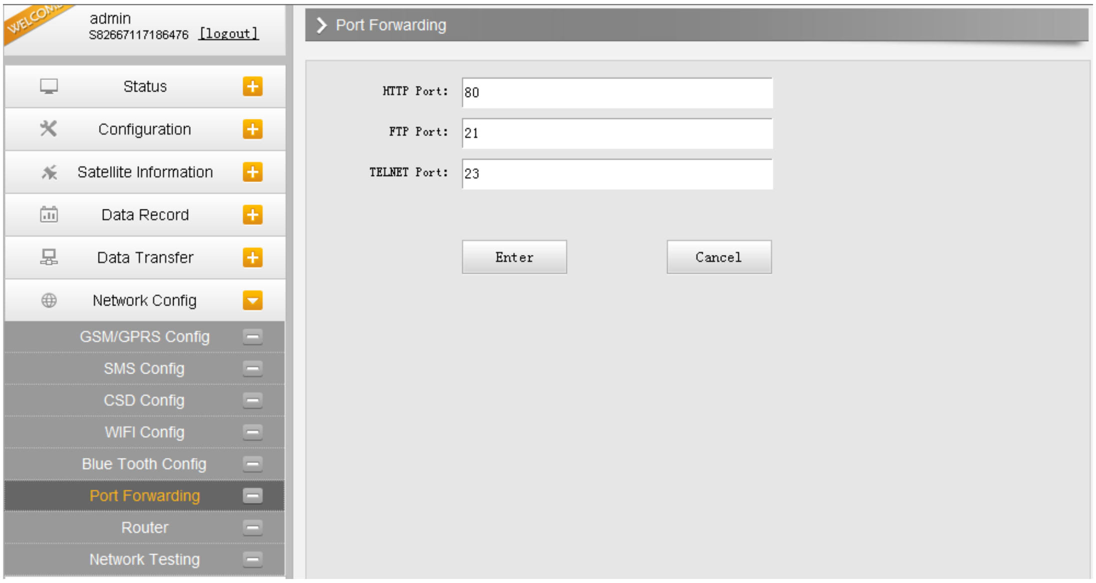
PIN Code: 0

Connection Device:

Item	Device Mac	RFCOMM Channel	Device Name	Disconnect Action
1				Disconnect
2				Disconnect

Port Forwarding

This page is mainly used to view and configure the internet transmission port for New G1, customize and debug receiver.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Port Forwarding
Enter
Cancel

HTTP Port: 80

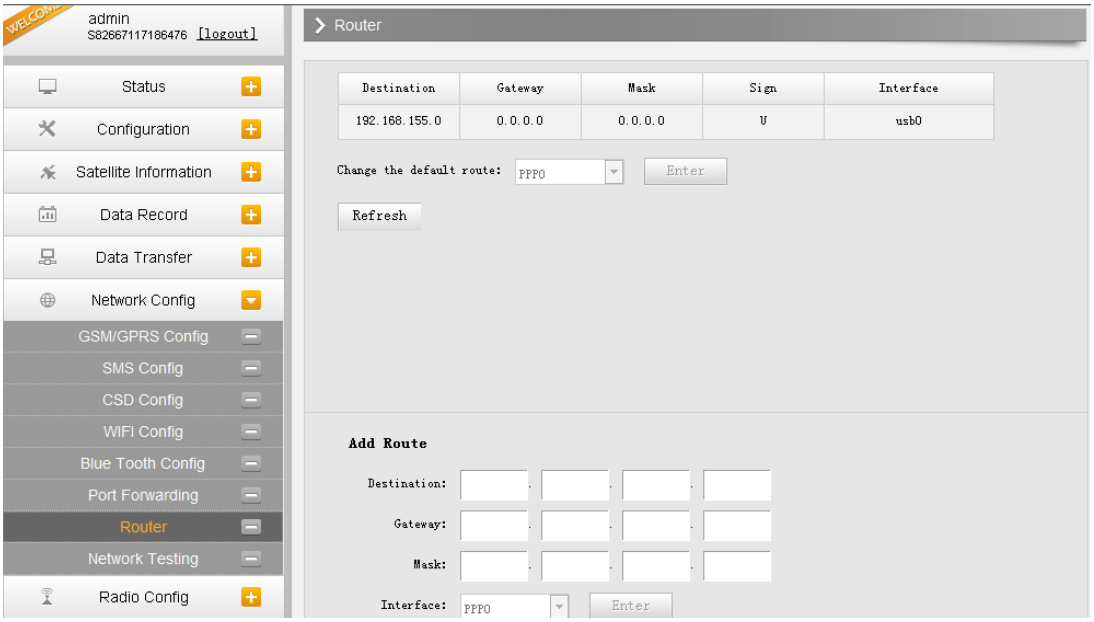
FTP Port: 21

TELNET Port: 23

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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Radio Config
Router
Enter
Refresh
Add Route
Enter

Destination	Gateway	Mask	Sign	Interface
192.168.155.0	0.0.0.0	0.0.0.0	U	usb0

Change the default route: PPP0

Destination:

Gateway:

Mask:

Interface: PPP0

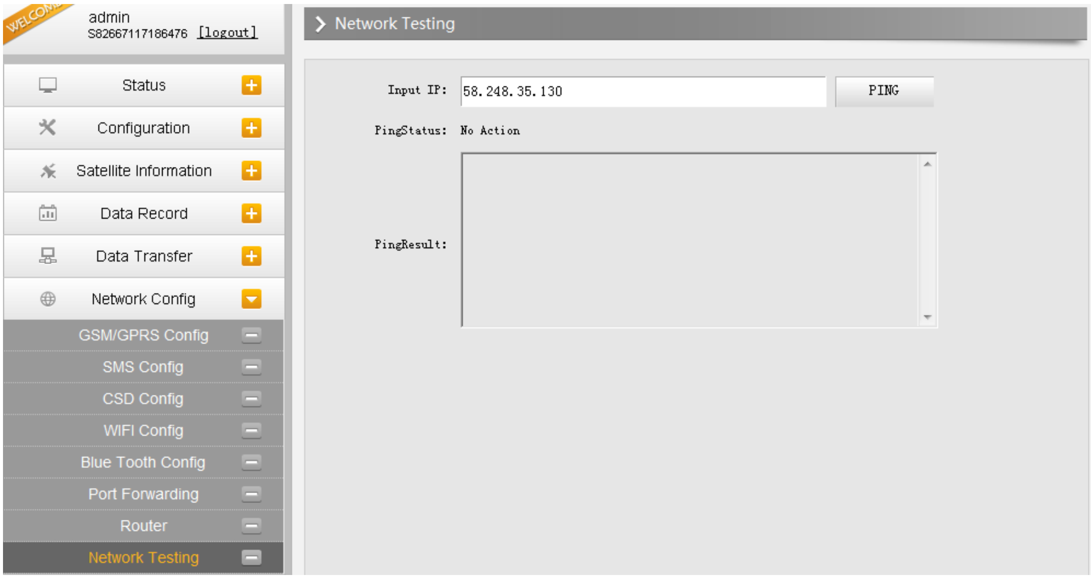
NOTE: Usually we will keep the default setting in this page, if you would like to modify it, please contact with SOUTH technician for more supports.

Network Testing

This function is mainly used to test network status for New G1 after logging on the internet.

How to do:

Input the IP address which New G1 already connected, then click PING button, the testing information will be displayed in the following window.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
SMS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Network Testing
PING

Input IP: 58.248.35.130

PingStatus: No Action

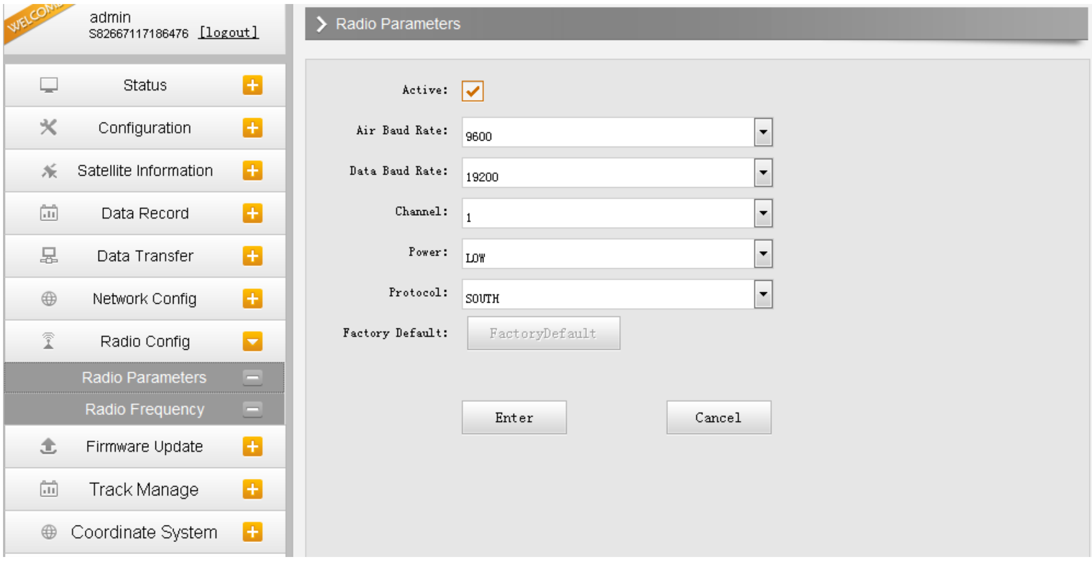
PingResult:

§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 New G1.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Radio Parameters
Radio Frequency
Firmware Update
Track Manage
Coordinate System
Radio Parameters
FactoryDefault
Enter
Cancel

Active: ☑
Air Baud Rate: 9600
Data Baud Rate: 19200
Channel: 1
Power: LOW
Protocol: SOUTH
Factory Default:

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.

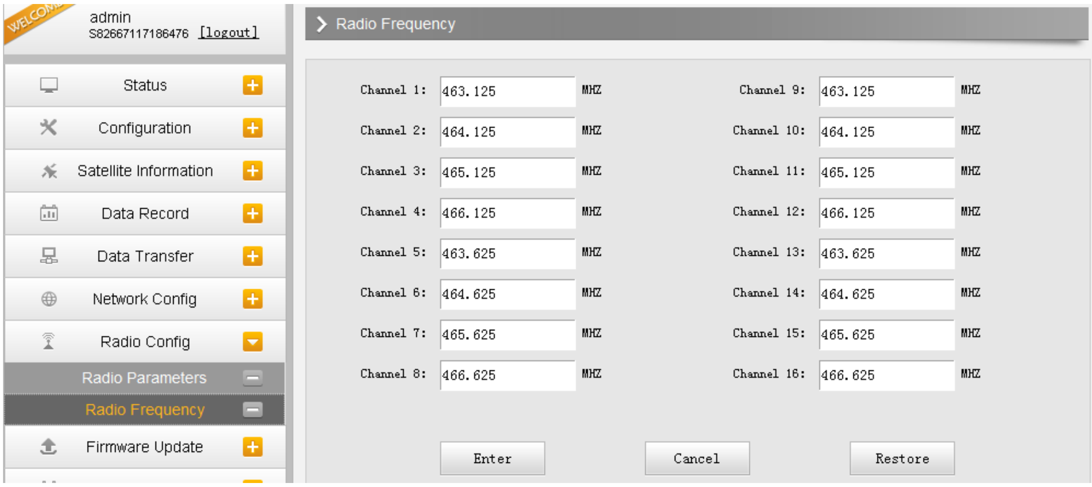
Protocol: This is radio communication protocol for data transmission, SOUTH and TRIMTALK are optional in this page and SOUTH is the default setting, if it is changed, Base and Rover must use the same protocol for communication.

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

Radio Frequency

For New G1, 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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Radio Parameters
Radio Frequency
Firmware Update
Radio Frequency
Enter
Cancel
Restore

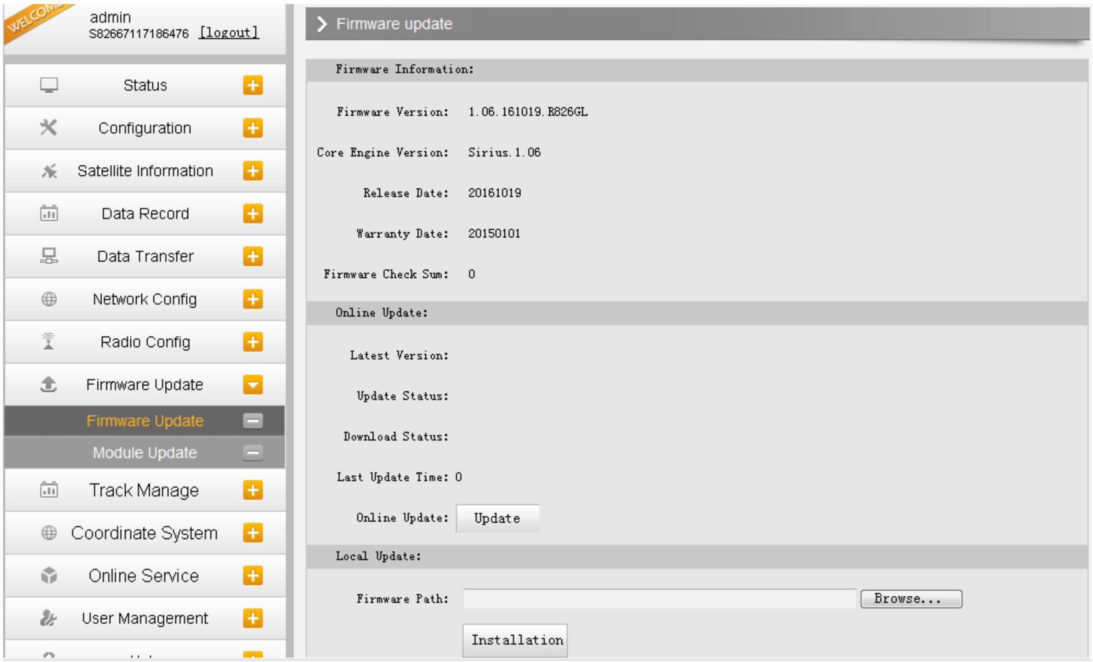
Channel 1: 463.125 MHZ
Channel 2: 464.125 MHZ
Channel 3: 465.125 MHZ
Channel 4: 466.125 MHZ
Channel 5: 463.625 MHZ
Channel 6: 464.625 MHZ
Channel 7: 465.625 MHZ
Channel 8: 466.625 MHZ
Channel 9: 463.125 MHZ
Channel 10: 464.125 MHZ
Channel 11: 465.125 MHZ
Channel 12: 466.125 MHZ
Channel 13: 463.625 MHZ
Channel 14: 464.625 MHZ
Channel 15: 465.625 MHZ
Channel 16: 466.625 MHZ

§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 New G1, and allows to update the latest version firmware for receiver. To get latest version firmware please contact with SOUTH technician.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Firmware Update
Module Update
Track Manage
Coordinate System
Online Service
User Management
Firmware update
Firmware Information:
Online Update:
Local Update:
Update
Browse...
Installation

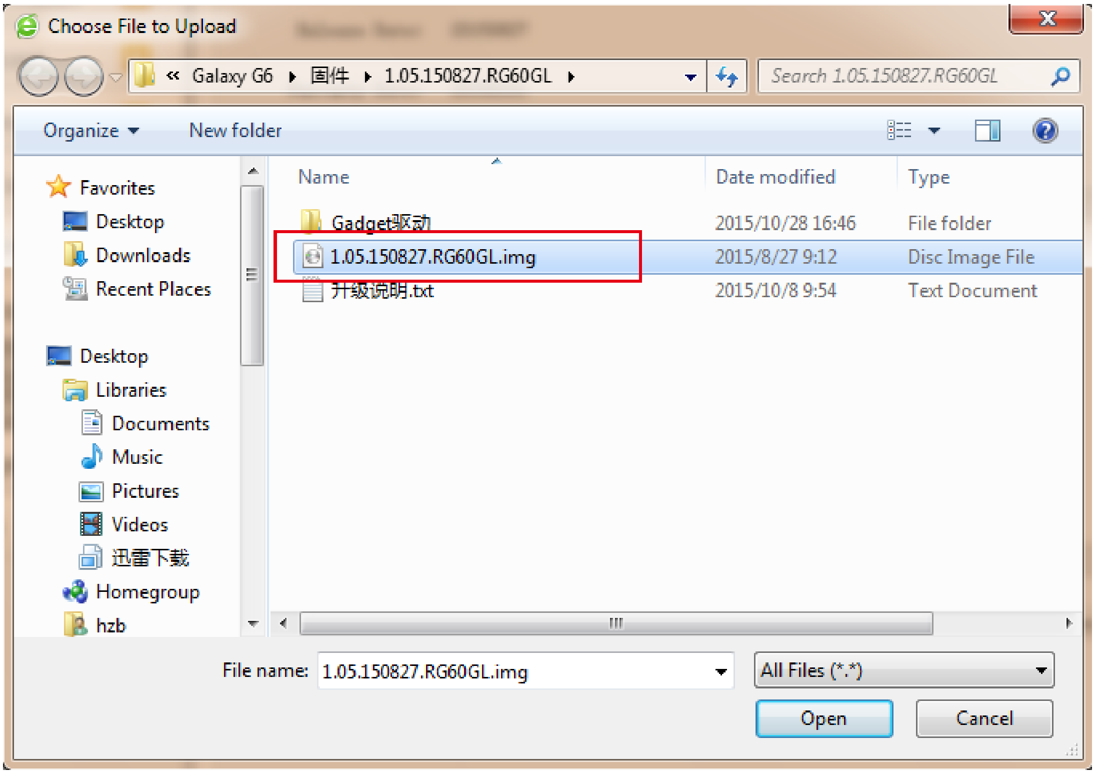
Firmware Version: 1.06.161019.R826GL
Core Engine Version: Sirius.1.06
Release Date: 20161019
Warranty Date: 20150101
Firmware Check Sum: 0
Latest Version:
Update Status:
Download Status:
Last Update Time: 0
Online Update:
Firmware Path:

Online Update: New G1 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

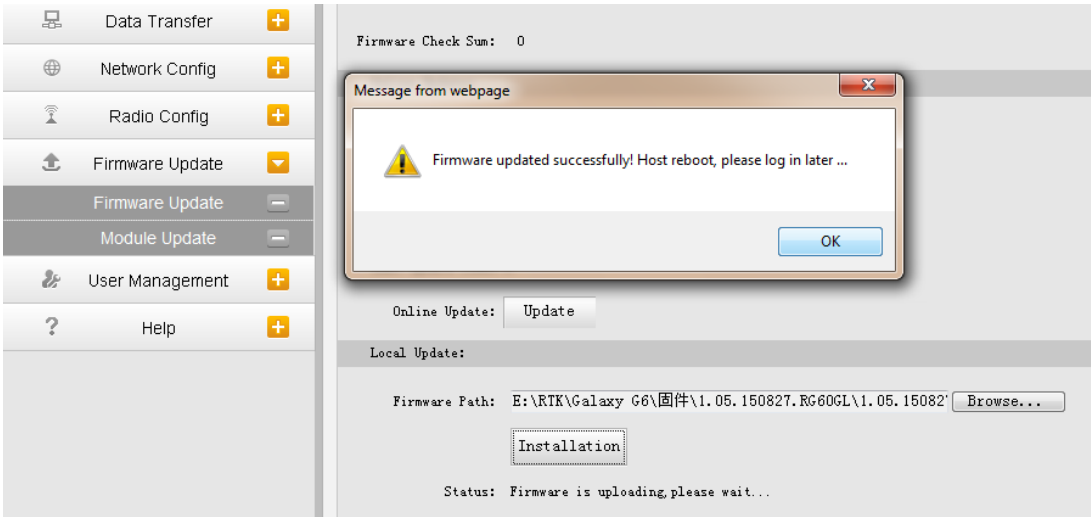
a) Click on “Browse” button to load firmware file (Please take in mind that the firmware is ended with .img as the extension name).


Choose File to Upload
« Galaxy G6 ▸ 固件 ▸ 1.05.150827.RG60GL ▸
Search 1.05.150827.RG60GL
Organize ▾
New folder
Favorites
Desktop
Downloads
Recent Places
Desktop
Libraries
Documents
Music
Pictures
Videos
迅雷下载
Homegroup
hzb
All Files (*.*)
Open
Cancel

Name	Date modified	Type
Gadget驱动	2015/10/28 16:46	File folder
1.05.150827.RG60GL.img	2015/8/27 9:12	Disc Image File
升级说明.txt	2015/10/8 9:54	Text Document

File name: 1.05.150827.RG60GL.img

b) And then click “Installation” button to start upgrading.


Data Transfer
Network Config
Radio Config
Firmware Update
Firmware Update
Module Update
User Management
Help
Message from webpage
OK
Update
Browse...
Installation

Firmware Check Sum: 0

Firmware updated successfully! Host reboot, please log in later ...

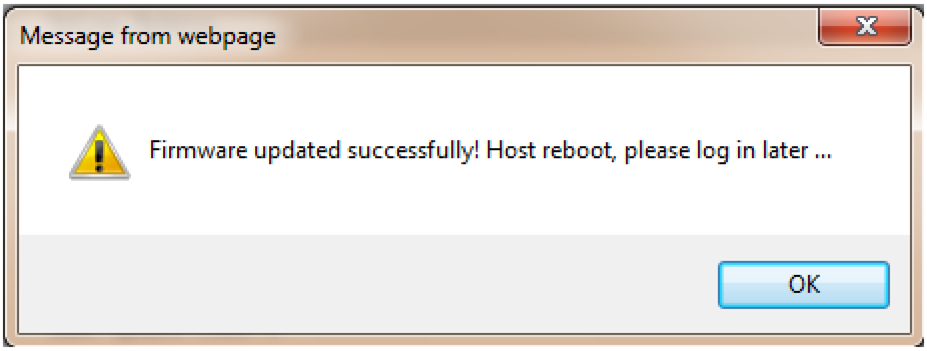
Online Update:

Local Update:

Firmware Path: E:\RTK\Galaxy G6\固件\1.05.150827.RG60GL\1.05.15082'

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.

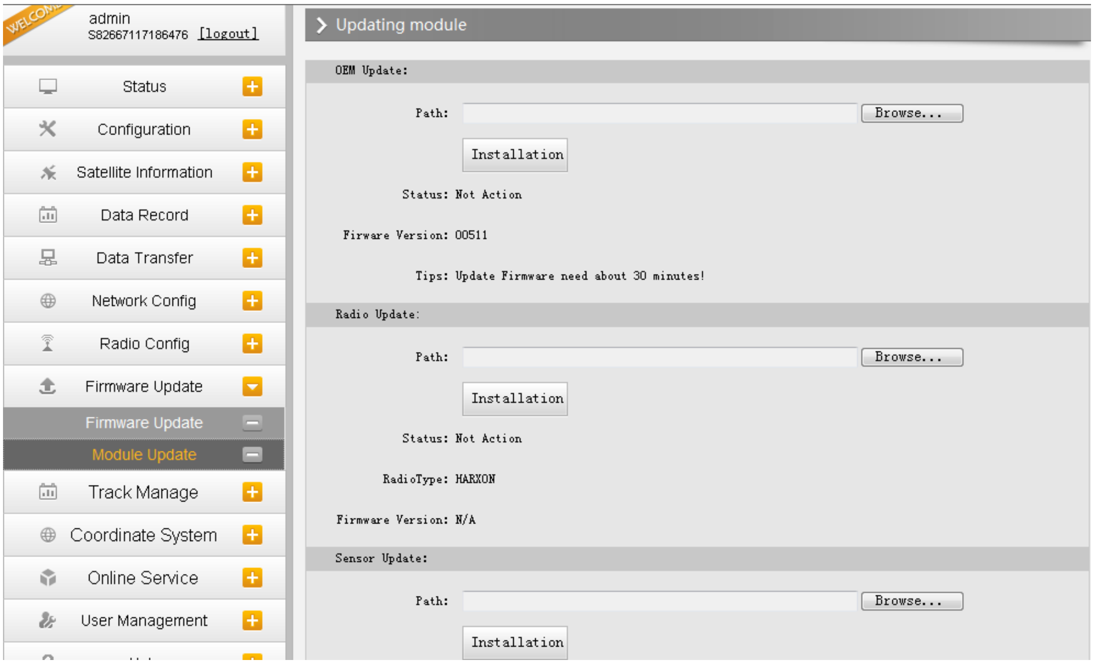

Message from webpage
OK

Firmware updated successfully! Host reboot, please log in later ...

SPECIAL REMIND: New G1 doesn't support to update the firmware with the help of INstar program any more, in the future, update the firmware for New G1 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.


WELCOME
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Firmware Update
Module Update
Track Manage
Coordinate System
Online Service
User Management
Updating module
Browse...
Installation

admin
S82667117186476 [logout]

OEM Update:

Path:

Status: Not Action

Firware Version: 00511

Tips: Update Firmware need about 30 minutes!

Radio Update:

Path:

Status: Not Action

RadioType: HARXON

Firmware Version: N/A

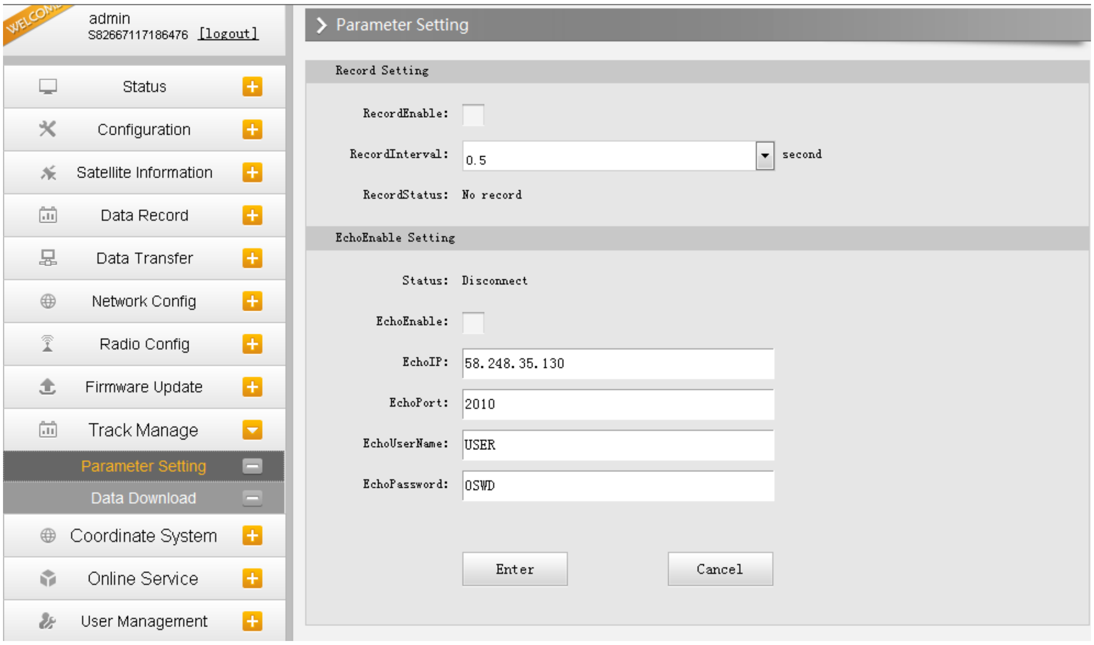
Sensor Update:

Path:

§4.4.9 Track Manage

New G1 now supports to record the track while doing measurement, and upload the data onto the server.

Parameter Setting


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Parameter Setting
Data Download
Coordinate System
Online Service
User Management
Parameter Setting
Enter
Cancel

Record Setting

RecordEnable: ☐

RecordInterval: 0.5 second

RecordStatus: No record

EchoEnable Setting

Status: Disconnect

EchoEnable: ☐

EchoIP: 58.248.35.130

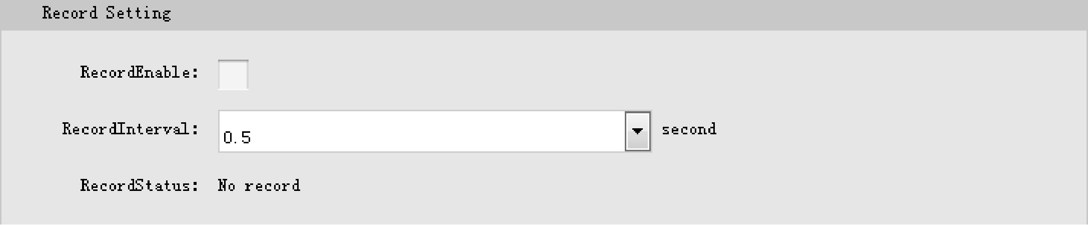
EchoPort: 2010

EchoUserName: USER

EchoPassword: OSWD

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

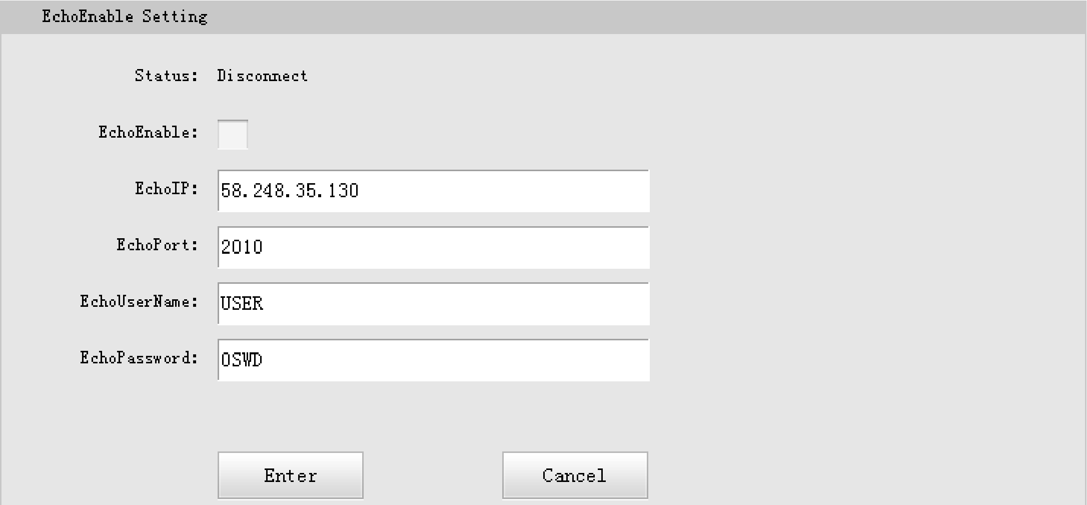
RecordEnable: ☐

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.


Enter
Cancel

EchoEnable Setting

Status: Disconnect

EchoEnable: ☐

EchoIP: 58.248.35.130

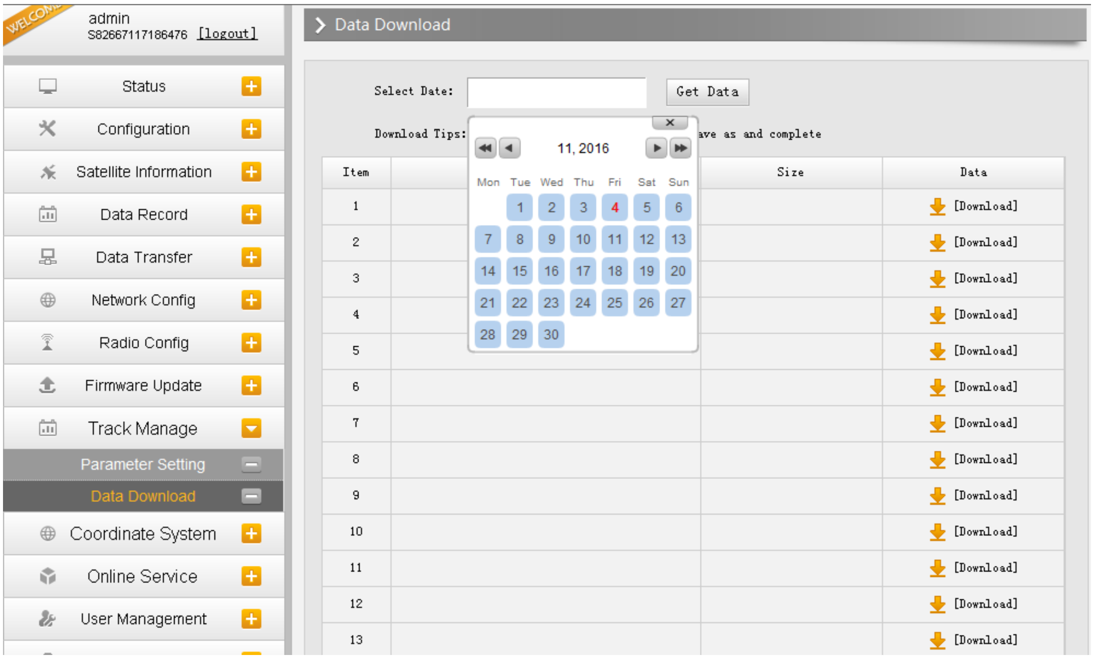
EchoPort: 2010

EchoUserName: USER

EchoPassword: OSWD

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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Parameter Setting
Data Download
Coordinate System
Online Service
User Management
Data Download
Get Data
11, 2016
Mon Tue Wed Thu Fri Sat Sun
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30

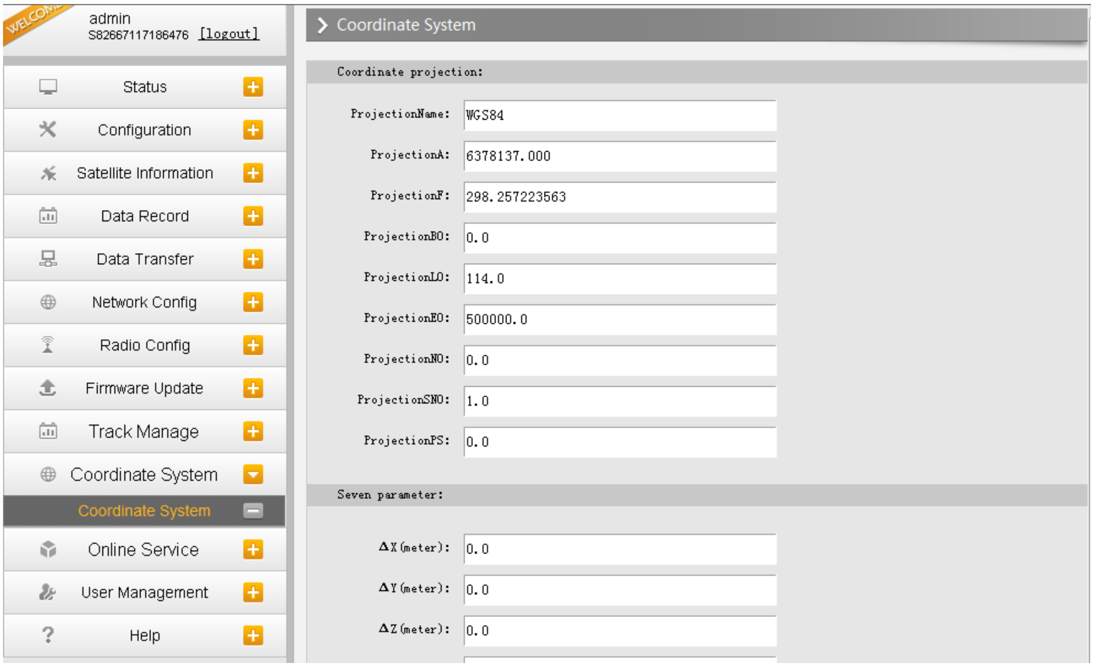
Select Date:

Download Tips: ave as and complete

Item			Size	Data
1				[Download]
2				[Download]
3				[Download]
4				[Download]
5				[Download]
6				[Download]
7				[Download]
8				[Download]
9				[Download]
10				[Download]
11				[Download]
12				[Download]
13				[Download]

§4.4.10 Coordinate System(reserve)

New G1 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.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Coordinate System
Online Service
User Management
Help
Coordinate System

Coordinate projection:

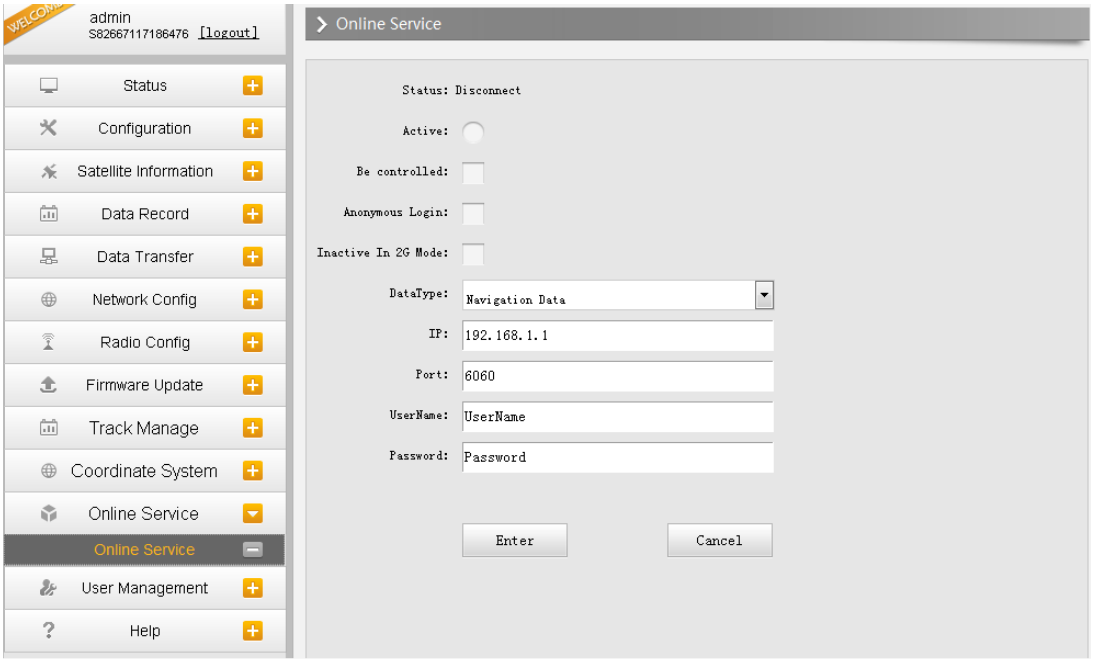
ProjectionName: WGS84
ProjectionA: 6378137.000
ProjectionF: 298.257223563
ProjectionB0: 0.0
ProjectionL0: 114.0
ProjectionE0: 500000.0
ProjectionN0: 0.0
ProjectionSN0: 1.0
ProjectionPS: 0.0

Seven parameter:

ΔX(meter): 0.0
ΔY(meter): 0.0
ΔZ(meter): 0.0

§4.4.11 Online Service(reserve)

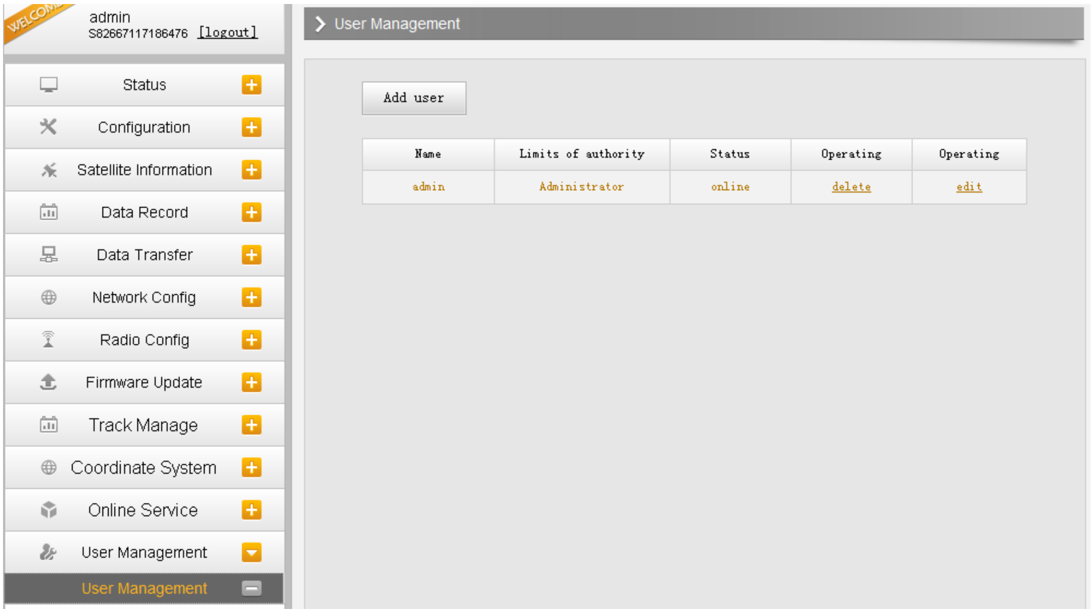
This function is to upload the data onto a server real-time, including Navigation data, raw observation data, correction data, SIC observation data and open SIC observation data.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Online Service
Online Service
User Management
Help
Online Service
Enter
Cancel

Status: Disconnect
Active: ○
Be controlled: ☐
Anonymous Login: ☐
Inactive In 2G Mode: ☐
DataType: Navigation Data
IP: 192.168.1.1
Port: 6060
UserName: UserName
Password: Password

§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.

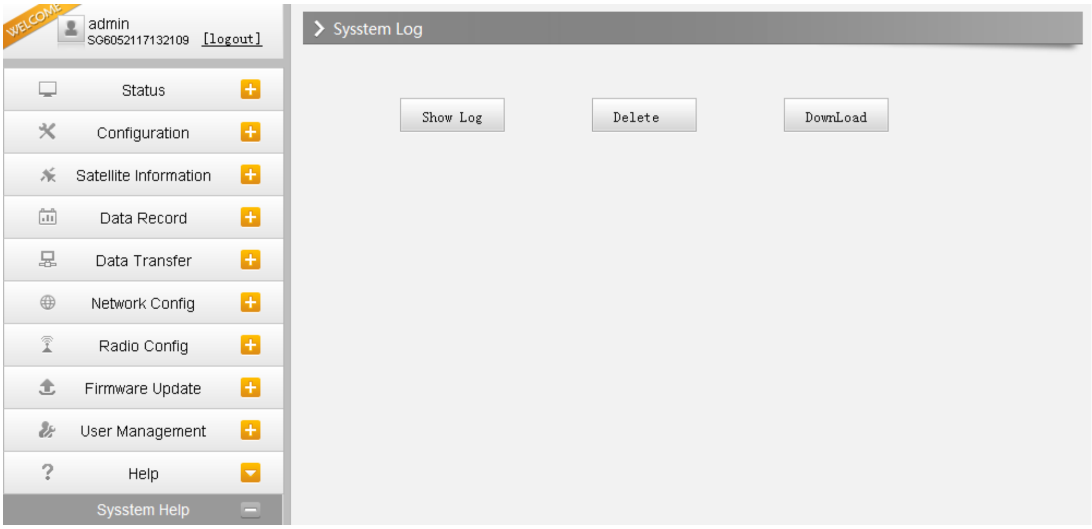

WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
Coordinate System
Online Service
User Management
User Management
User Management
Add user

Name	Limits of authority	Status	Operating	Operating
admin	Administrator	online	delete	edit

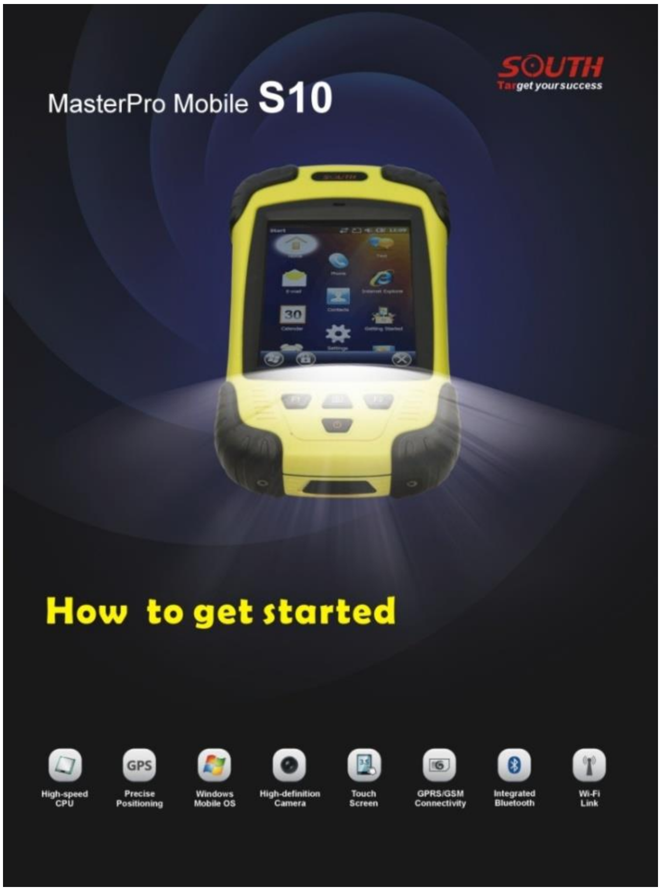
§4.4.13 Help

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.

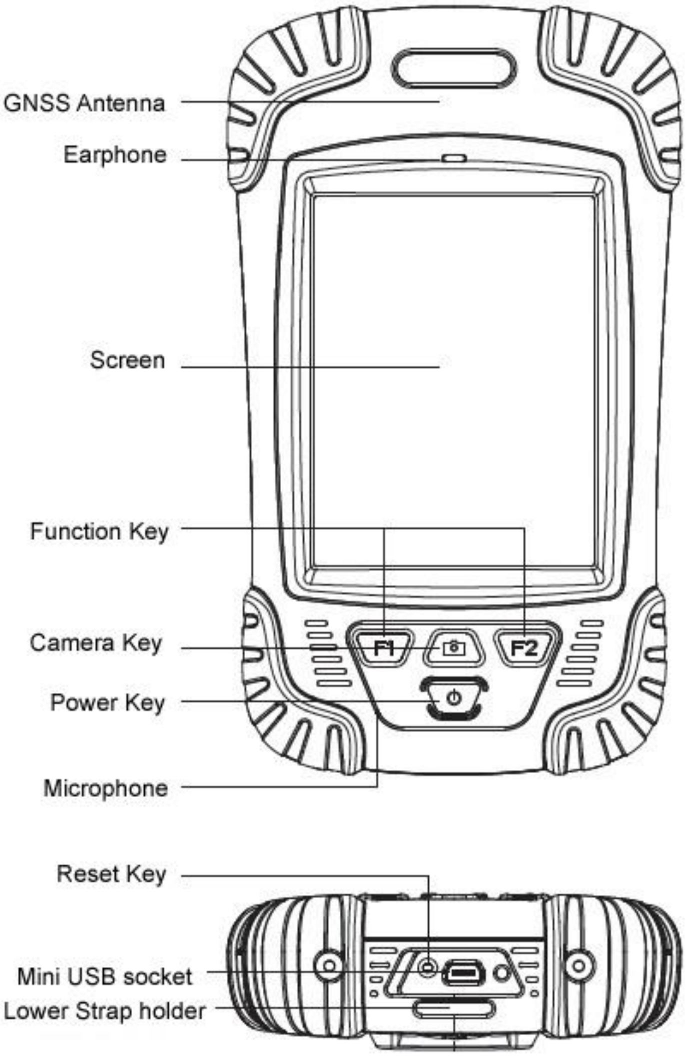

WELCOME
admin
SG6052117132109 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
User Management
Help
Sysstem Help
Sysstem Log
Show Log
Delete
DownLoad

ChapterⅤ Data Collector S10


SOUTH
Target your success
MasterPro Mobile S10
How to get started
High-speed CPU
GPS
Precise Positioning
Windows Mobile OS
High-definition Camera
Touch Screen
GPRS/GSM Connectivity
Integrated Bluetooth
Wi-Fi Link

§5.1 Basic introduction to the handheld

Here takes S10 for example (If you want to know more about Psion controller, please refer to the manual for Psion controller), appearance of S10:


GNSS Antenna
Earphone
Screen
Function Key
F1
F2
Camera Key
Power Key
Microphone
Reset Key
Mini USB socket
Lower Strap holder

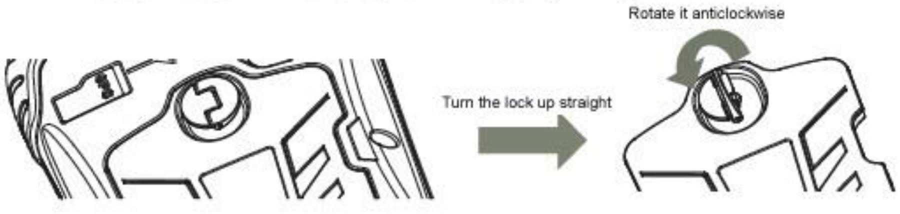
Standard Configuration	Description
Li-ion Battery	3.7V/ 3000 mA/h
Strap	Black, 180*12mm
Touch Pen	Black, 12.7mm
USB data cable	1.5m
USB Charger	5V/1A
Disc	

1. Charging

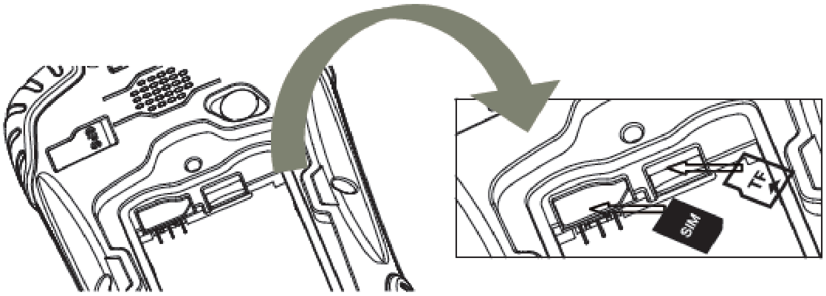
Connect the charger with collector by the USB Link cable to recharge.
Main Screen (Upper right corner) will show the Charging Icon in power off (on) status.(Once you connect Collector with PC to recharge; the charging time will be longer).

2. Installing Battery, SIM Card and Storage Card

Turn the lock up straight and rotate it anticlockwise, you can take off the battery cover.



There are two sockets upon the battery position, left is for SIM Card and right is for Storage Card.



Installing the battery, turn the lock clockwise to the end.
(SIM Card: The Missing Angle Corner of SIM Card will be at the lower right corner)

3. Power on/off

Make sure that the battery is fully charged or you can connect the Collector to PC via the USB Cable. (Collector should be with battery).
Press Power Key for 3-5 seconds to power on/off.
(If there is no any response from Collector or other unusual situations happened, press the Reset Key besides the USB socket in the bottom of Collector with the Touch Screen Pen).

4. Connect to PC

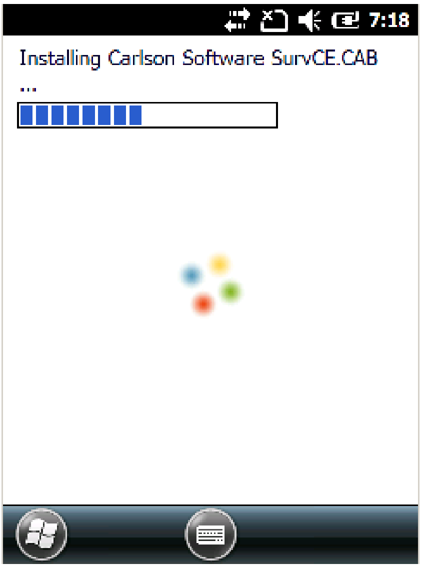
Make sure that you've installed **Microsoft ActiveSync 4.5** or higher version, if your computer equipped with win7 or win8 system, please make sure that you have installed **Windows Mobile Device Center** program.
Connect the Collector to PC via the Mini USB Data Cable.

Connection will be preceded automatically by Microsoft ActiveSync. Icon will turn green and an interface of Setting will come out, you can just click "Cancel". After this, you can manage and edit the data in Collector.

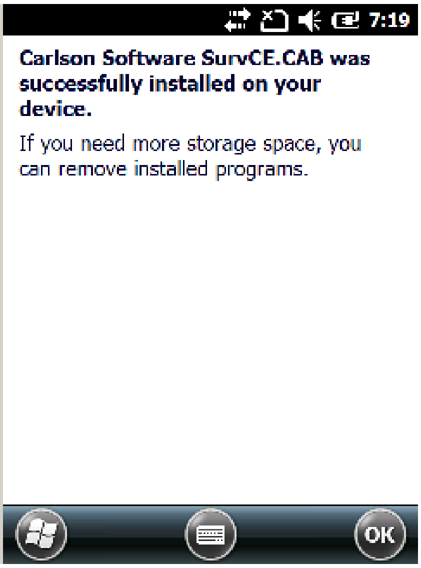
5. Installing Program

Make sure that collector is synchronized with PC. Run the Installation file at PC side.

If the installation program is also suitable for collector, you can copy the installation program into collector to install. You can just copy the folder into collector when you need.



Installing Carlson Software SurvCE.CAB
...



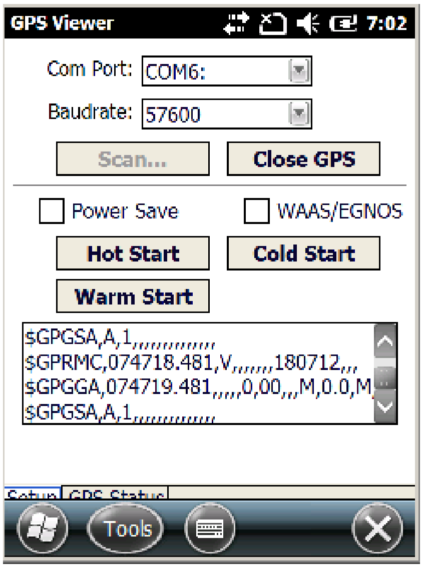
Carlson Software SurvCE.CAB was successfully installed on your device.

If you need more storage space, you can remove installed programs.

We suggest you installing programs into Flash Memory and save data into Storage Card.

6. How to use GPS

If you want to check the working status of GPS via checking or collecting software, please set the COM port to COM6 and the baud rate to 57600.



Com Port: COM6:

Baudrate: 57600

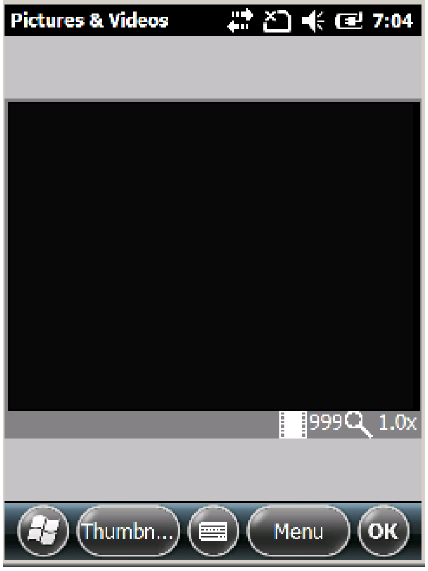
☐ Power Save ☐ WAAS/EGNOS

```
$GPGSA,A,1,,,,,,,,,,,,,,,
$GPRMC,074718.481,V,,,,,,,180712,,,
$GPGGA,074719.481,,,,,0,00,,,M,0.0,M,
$GPGSA,A,1,,,,,,,,,,,,,,,
```

7. Camera

Get into the Camera Mode by pressing the Camera Key for 3 or more seconds.

Press Camera Key to take a photo and click “OK” on the screen to save.

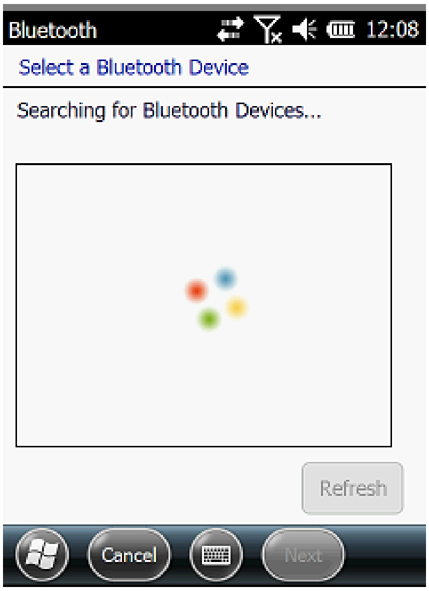

Pictures & Videos
7:04
999
1.0x
Thumbn...
Menu
OK

Note: If you want to know more information about S10, Please refer to S10 manual.

§5.2 Bluetooth Connection

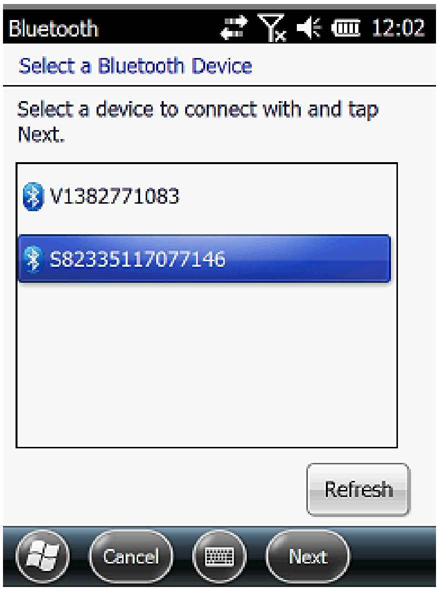
The short-range wireless Bluetooth communication facilities are for the wireless exchange of information among a variety of Bluetooth-enabled devices.

Tap on the Start menu (Settings) → (control panel) to open (Bluetooth Device Manager). tap on the(scanning device) after setting the Bluetooth device, and the surrounding Bluetooth devices will be listed in the search list. And then input the passcode 1234 to have pair between controller and receiver. As shown below:


Bluetooth
12:08
Refresh
Cancel
Next

Select a Bluetooth Device

Searching for Bluetooth Devices...

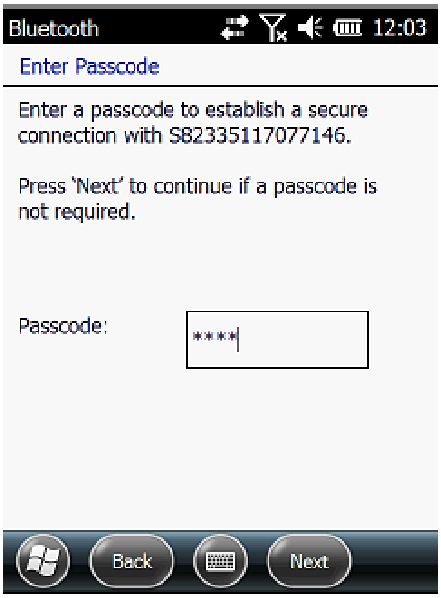

Bluetooth
12:02
Refresh
Cancel
Next

Select a Bluetooth Device

Select a device to connect with and tap Next.

V1382771083

S82335117077146

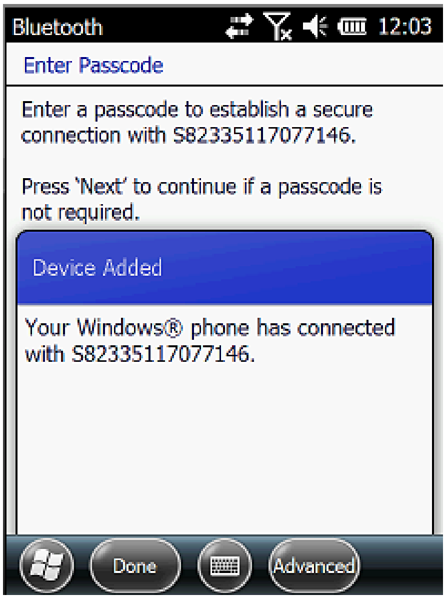

Bluetooth
12:03
Back
Next

Enter Passcode

Enter a passcode to establish a secure connection with S82335117077146.

Press 'Next' to continue if a passcode is not required.

Passcode: ****


Bluetooth
12:03
Done
Advanced

Enter Passcode

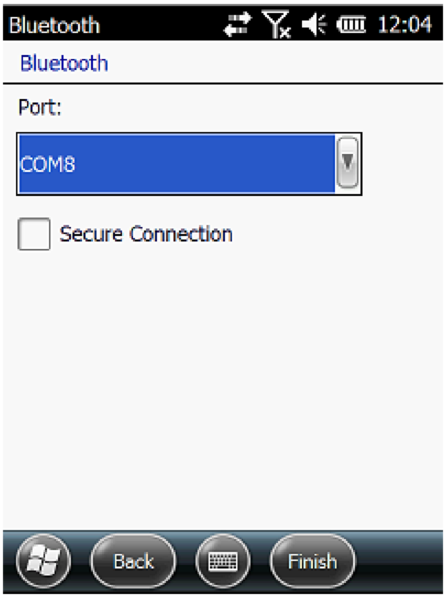
Enter a passcode to establish a secure connection with S82335117077146.

Press 'Next' to continue if a passcode is not required.

Device Added

Your Windows® phone has connected with S82335117077146.

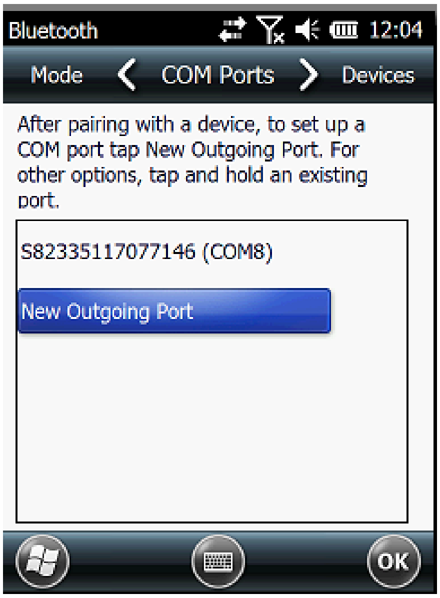
After the pair, select an available com port for the receiver (usually COM 8 and COM 5 are OK). As shown below:


Bluetooth
12:04
Back
Finish

Bluetooth

Port: COM8

☐ Secure Connection


Bluetooth
12:04
Mode
COM Ports
Devices
OK

After pairing with a device, to set up a COM port tap New Outgoing Port. For other options, tap and hold an existing port.

S82335117077146 (COM8)

New Outgoing Port

After the establishment of the virtual serial port, other applications can use the serial port for data communication with a Bluetooth device.

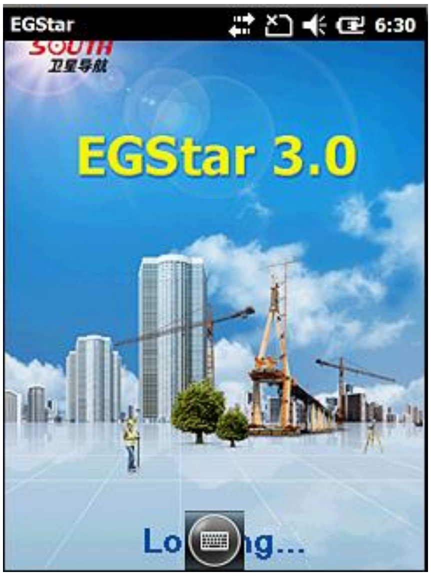
§5.3 Software installation and connecting

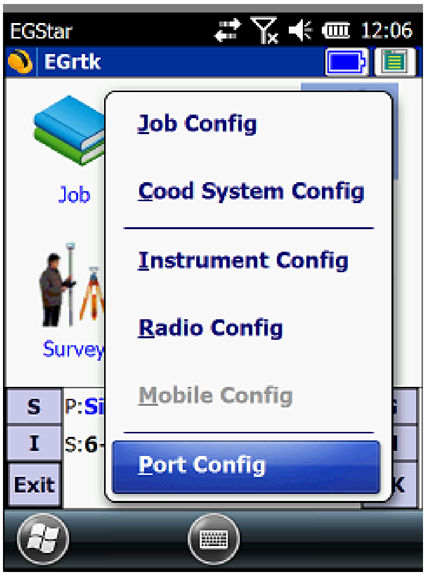
Professional surveying and mapping software are made for measurement applications for different industry:"EGStar", "Power Star", "Mapping Star", "Navigation Star” and so on. Here takes EGStar for example:

EGStar is the specific software for NEW G1 measuring system, mainly for the collection and calculation of the measuring points.

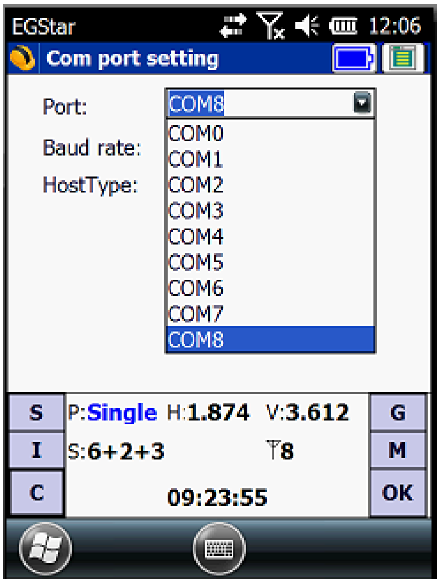
Before installing of EGStar, you need to install Microsoft Active Sync. After installing it on your computer, connect handheld to computer with a cable, and install EGStar into the handheld, at the same time, keep the mainframe power on, then set as follows:

Open EGStar software and enter the main interface. Click “OK” on the "prompt" window.


EGStar 6:30
SOUTH 卫星导航
EGStar 3.0
Loading...

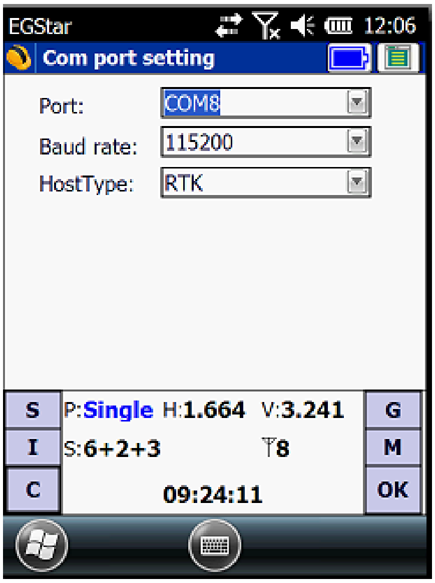

EGStar 12:06
EGrtk
Job
Survey
Job Config
Cood System Config
Instrument Config
Radio Config
Mobile Config
Port Config
S
I
Exit

1. "Configure" → "Port Config", in the "Port Configuration “dialog box, select the port “COM8 ", with the same serial number which you use to connect the Bluetooth serial port service. Click "OK." If the connection is successful, the status bar will display related data. If there is barrier, exit EGStar to reconnect (If the above settings are correct, then link directly). Handheld connecting with the host PC can do the follow-up measurement.


EGStar 12:06
Com port setting
Baud rate:
HostType:
COM0
COM1
COM2
COM3
COM4
COM5
COM6
COM7
COM8
S
I
C
G
M
OK

Port: COM8

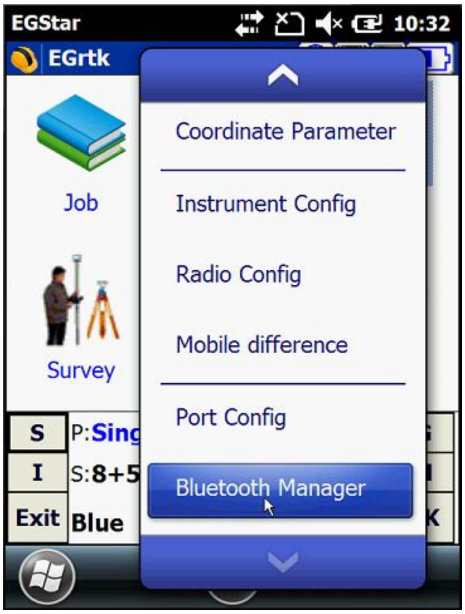
P:Single H:1.874 V:3.612
S:6+2+3 8
09:23:55

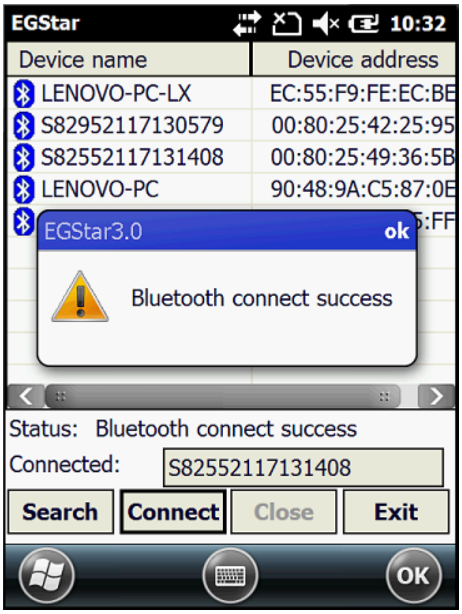

EGStar 12:06
Com port setting
S
I
C
G
M
OK

Port: COM8
Baud rate: 115200
HostType: RTK

P:Single H:1.664 V:3.241
S:6+2+3 8
09:24:11

2. Or go to “Bluetooth Manager”, in this interface tap on “Search” button and the controller will search the surrounding Bluetooth devices, select the correct serial number from the list and click on “Connect” button, controller will connect to receiver without setting any COM port. If the prompt message “Bluetooth connect success” appears, that means that controller has successfully connected with receiver, then please check the Bluetooth indicator on receiver.


EGStar
10:32
EGrtk
Job
Survey
Coordinate Parameter
Instrument Config
Radio Config
Mobile difference
Port Config
Bluetooth Manager
S
I
Exit
P:Sing
S:8+5
Blue


EGStar
10:32
EGStar3.0
ok
Search
Connect
Close
Exit
OK

Device name	Device address
LENOVO-PC-LX	EC:55:F9:FE:EC:BE
S82952117130579	00:80:25:42:25:95
S82552117131408	00:80:25:49:36:5B
LENOVO-PC	90:48:9A:C5:87:0E

Bluetooth connect success

Status: Bluetooth connect success

Connected: S82552117131408

ChapterⅥ External Radio

§6.1 Overview

The radio GDL20 is a high-speed semi-manual wireless data transmission radio, whose air transfer rate can be up to 19200 bps and the RF transmitter power is larger, used in Southern RTK measurement system.

Radio GDL20 adopts GMSK modulation, 19200bps transfer rate, low bit error rate. RF frequency can cover 450-470MHz band. Data transmission mode of GDL20 is transparent mode, that is, the received data is sent to the RTK GPS system unchanged.

Radio GDL20 data interface is a standard RS-232 interface, which can be connected to any RS-232 terminal equipment for data exchange.

GDL20 digital radio research employs advanced radio frequency technology, digital signal processing technology and baseband processing technology, carefully selected high quality components to organize production, to ensure the long-term stable and reliable operation;

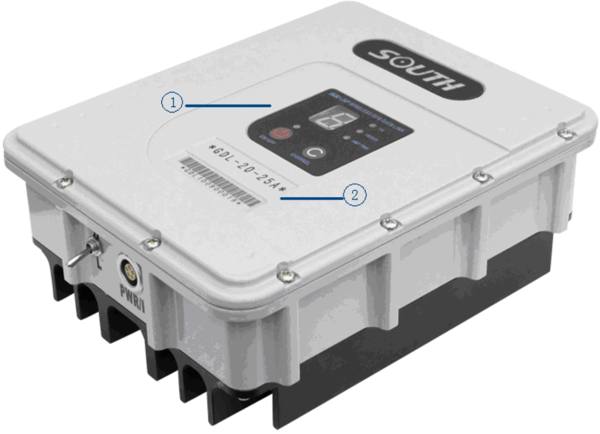
Have a forward error correction control, digital error correction function.

It has eight transmitting and receiving channels. Can be changed according to the actual use of the channel frequency, transmit power adjustable interval is 0.5MHz.

§6.2 Frequency Table

Channel number	Frequency（450-470MHz）
Channel 1	463.125
Channel 2	464.125
Channel 3	465.125
Channel 4	466.125
Channel 5	463.625
Channel 6	464.625
Channel 7	465.625
Channel 8	466.625

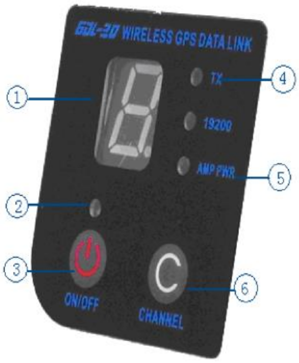
§6.3 Radio Appearance


①
②
SOUTH
GDL-20-25A
PWR/I

① Control panel ②SN number

Control Panel

Control panel lights display the status of the radio, the key operation is simple and convenient, one-to-one interface can effectively prevent connection errors.


GDL-20 WIRELESS GPS DATA LINK
①
④
TX
19200
AMP PWR
⑤
②
③
ON/OFF
CHANNEL
⑥

① Channel indicator light.

② Power indicator light,

③ ON / OFF power key: This key controls the unit's power switch. The red light on the left indicates the power status of the machine.

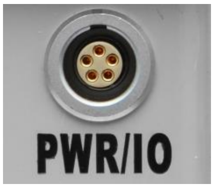
④ TX red light indicator: This indicator flashes once per second means that the radio is transmitting data with the transmitting interval in 1 second;

⑤ AMP PWR indicator: Indicates the level of radio power, light on indicates low-power, light off indicates high-power

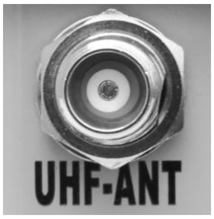
⑥ CHANNEL button: By pressing this switch, you can switch channels 1-8.

§6.4 Radio Interfaces

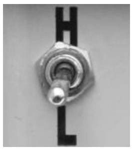
Mainframe Interface: 5-pin jack for connecting a GPS receiver and power supply



Antenna interface：For connecting the transmitter antenna



Power switch (Shown in picture below): switch to adjust the radio power, AMP PWR lights on the panel indicate the radio power level, light on indicates low power, lights off high power.



§6.5 Transmitting Antenna

The UHF transmitting antenna is particularly suitable for field use, the receiving antenna is 450MHz Omni-directional antenna, light and durable.

§6.6 Application Notice

The battery power is too low: When the flashing channel indicator appears on the control panel, which means the lack of battery power, replace the battery in time, otherwise there would be data link unstable or unable to launch.

GDL20 radio power supply: voltage 12-15V (typical 13.8V) RF transmitter power 25W, current 7.0A.

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 GDL20 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 distance.

ChapterⅧ Accessories

§7.1 Instrument Case

The instrument case for New G1 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 Batteries

2 pcs of large capacity Li-ion batteries are the standard configuration for New G1 that to make sure New G1 has enough power for whole day work.

Specifications of battery
Model: BTNF-L7408W
Capacity: 7.4V×3400mAh

§7.3 Charger&Adapter

§7.3.1 Charger

Model: CH-SA3002
INPUT: 12VDC═1.25A
OUTPUT: 2*8.4VDC═550mA
Please use the standard battery.

TEMP
CHARGE
FULL
CHARGE
FULL
POWER
BATTERY CHARGER
MODEL: CH-SA3002
INPUT: 12VDC⎓1.25A
OUTPUT: 2*8.4VDC⎓550mA
CAUTION
*Only use the standard battery
*Don't short-circuit "+" "-" contacts
CE
S/N:16051556

§7.3.2 Adapter

Model: DSA-20CA-12
INPUT: 100-240V~50/60Hz 0.8A
OUTPUT: +12V═1.5A

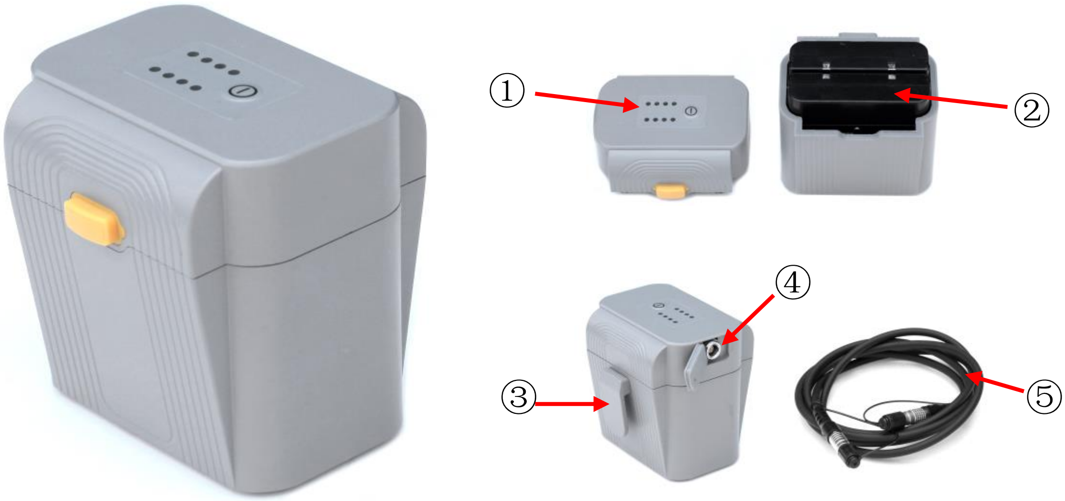
DVE
电源适配器
型号: DSA-20CA-12 120150
输入: 100-240V ~ 50/60Hz 0.8A
输出: +12V ⎓ 1.5A
EFFICIENCY LEVEL: V
10
中国制造

NOTE: If CHARGE indicator glows in red, it indicates the battery is being charged, If

FULL indicator glows in green, it indicates the battery is full charged.

§7.4 External power tool

New G1 is equipped with a professional battery package that ensures a long time continuous work.



①——Indicators, the indicators indicates how much power remain by pressing the power button.
②——The combination batteries of G6 installed into the portable power source
③—— Hang buckle, hang the battery package onto tripod
④—— 7-pin port, connect the cable with receiver for power supply.
⑤—— Power supply cable, this cable is used to connect the power source to receiver.

§7.5 Differential Antennas

GPRS Antenna

UHF Antenna

The differential antennas are as shown above;

If the receiver is set up to use GPRS mode, the GPRS antenna is required to install to the interface at the bottom of the receiver.

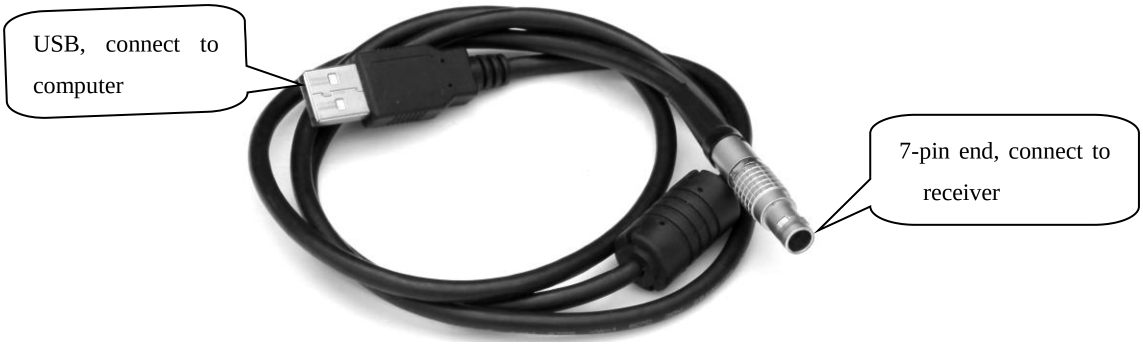
The UHF differential antenna is required to install to the interface at the bottom of receiver if

New G1 is set up into internal UHF mode.

§7.6 Cables

7-pin to USB cable

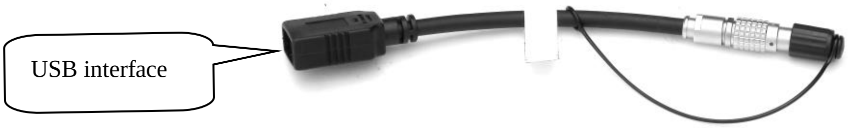
This cable is used to connect the receiver with computer for static data transmission, Web UI accessing and firmware update.


USB, connect to computer
7-pin end, connect to receiver

L7U50

7-pin to OTG cable

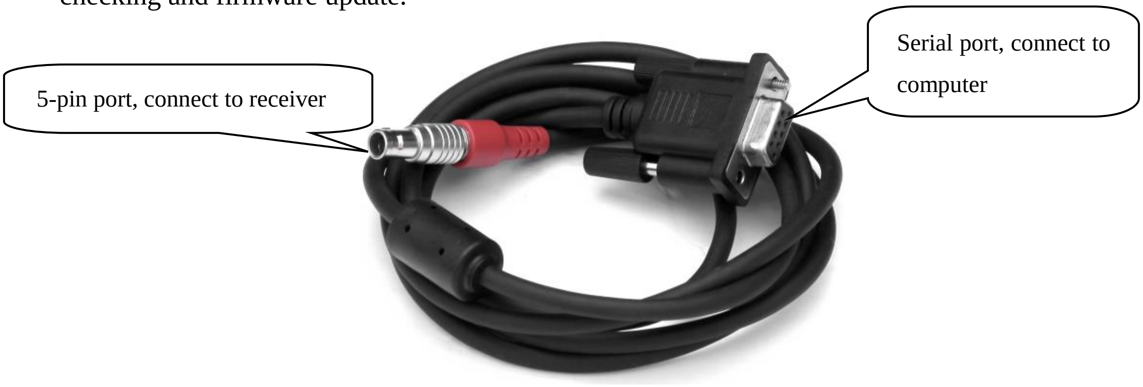
This cable is used to connect an external storage directly to New G1 for static data storage and copy.


USB interface

L7U40

Communication cable

This cable is used to connect the receiver to computer for receiver debugging, differential data checking and firmware update.


5-pin port, connect to receiver
Serial port, connect to computer

L5930B

§7.7 Other Accessories

Other accessories include rover station centering rod, handheld bracket, base point, connectors, measuring plate and measuring tape.

Measuring plate

Measuring tape

Support pole

Bracket for controllers

Carbon fiber pole

NOTE: The models and types of instrument accessories will vary with the instrument upgrade.

ChapterⅧ Measuring Operation

Reading this chapter, you can grasp in detail how to use the New G1 measurement to do system static, RTK operations.

GPS measurement operation scheme refers to the operating scheme used to determine the relative position between the stations with the help of GPS technology. Point coordinate precision obtained is not the same; its operating methods and observation time are also different, thus having different range of applications. GNSS receiver operating program is divided into two types: static measurement and RTK dynamic measurement (including the base station and rover station).

Test environment requirements:

(1) Observation stations (ie, the receiving antenna settlements) should stay away from high-power radio transmitters and high voltage transmission lines in order to avoid the magnetic field around the GPS satellite signal interference. Receiver antenna and its distance shall not be less than 200 m;

(2) Observation stations should not be near to the large area waters or objects which can strongly reflect (or absorb) electromagnetic wave to weaken the effects of multi-path;

(3) Observation stations should be located in places where the receiving device can be installed easily, and good vision available. Elevation angle of obstacles in view should generally be greater than 10° to 15°, in order to weaken the effects of troposphere refraction;

(4)Observation stations should be selected in a convenient place, and easy to use other means of measuring, joint measurement and expansion;

(5) For the long baseline GPS network, should also consider the vicinity good communication facilities (telephone and telegraph, post and telecommunications) and power supply, for power between the stations and equipments.

§8.1 Static Operation

§8.1.1 Static Measurements Profile

Static measurements

GPS positioning measurement by installed three (or more) GNSS receivers to perform simultaneous observation and determine the relative position between the stations.

Scope

The establishment of a national geodetic control network (second or less);

The establishment of precision engineering control network, such as bridge measurement, tunnel measurements, etc;

The establishment of a variety of encryption control network, such as city measurements, Drawing Point measurement, road surveying, demarcation measurements.

For the GPS measurements of small and medium-sized cities, towns, as well as mapping, cadastral, land information, real estate, geophysical exploration, surveying, construction and other control measurement, should meet the accuracy requirements of the D, E grade GPS measurements.

§8.1.2 Operating Procedures

Pre-measurement

Project approval
Program design
Construction design
Surveying and mapping data collection and arrangement
Instrument test, test
Reconnaissance, choice of site, buried stone

Measurement

Operating team stationed in
Satellite status Forecast
Observation planning
Dispatch of operation and field work observation

After the measurement

Data transmission, dump, backup,
Baseline Solution and quality control
Network adjustment (data processing, analysis) and quality control
Finishing results, technical summary
Project acceptance

§8.1.3 Field Operation Notes

1)Static mode of New G1 receiver is able to be set on receiver, and also can be set on software (Such as EGStar3.0), please refer to the EGStar manual for more information.

2)Set up a tripod on the control point, leveling and centering strictly on the measuring point.

3)Measure the instrument height three times, the difference of the results shall not be more than 3 mm, and average the results. The instrument height should be measured from the center of the control point to the mark line on the instrument.

4)Record instrument number, point name, instrument height, and start time.

5)Power on, confirm the static mode, the mainframe begins to search satellites and satellite lights begin to flash. Recording condition reached, the status light flashes in accordance with the set sampling interval, flashing once indicates the acquisition of an epoch.

6)After the test, the mainframe shut down, and then begins data transmission and data processing.

§8.1.4 GPS Net Design

The net design mainly subject to the users' requirement, but outlay, time interval of observation, type of receiver and the receiver amount, etc also relate to the net design.

In order to satisfy the users' requirement, we should keep the principle as follows:

1. GPS net normally forms closed graph by independent observation borders, such as triangle, polygon or connecting traverse, etc, to add checking conditions and to improve the net consistency.
2. When designing the net, the net point should be superposition with the original ground net points. The superposition points are generally no less than three and distribute evenly on the net in order to ensure the changing parameters between GPS net and local net.
3. GPS net point should be superposition with the level points, and the other points are normally united—surveyed with level surveying way or the equivalent way. You can also set some level united—surveying points in order to offer geoid's information.
4. In order to observe and level united survey, we often set GPS net points at a clear and easy arriving field.
5. We often distribute some well eyeshot azimuth points around GPS net to ensure united survey direction. The distance from azimuth to observation station should be more than 300 meters.

According to different purpose of GPS surveying, independent observation borders of GPS net should compose definite geometry graph. The basic graphs are as follows:

Triangle net

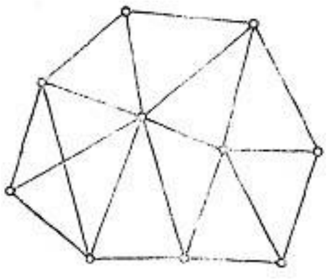
The triangle in GPS net is composed of independent observation borders, it has strong geometry structure and well self-checking ability, it can also find out the coarse difference of result and to share the difference to each baseline with adjustment.

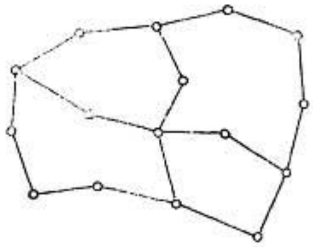
But this net need a lot of observation, especially when receivers are lacking it will greatly prolong the observation time. So only when accuracy and security are required very high, and receivers are more than three, we can use this graph.

Circle net

Circle net is composed of many loops which are formed of many independent observation borders. This net is similar with one of the classical surveying-- lead net. Its structure is a little worse than triangle net. The amount of baselines in closed loop decides the self--checking ability and consistency. General speaking, the amount of baselines has such limit as follows:

The advantage of circle net is the small workload, good self-checking and consistency. But the main disadvantage is that the accuracy of indirect-observed border is lower than that of direct-observed border, and the baseline accuracy of neighbor points distributes unevenly. In field surveying, we usually use annexed traverse as special example according to practical situation and the net usage. This requirement for this traverse is the high accuracy for the known vectors between two point ends. Furthermore, the amount of annexed traverses cannot exceed the limits.

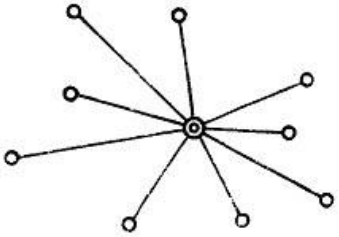




Star shape net

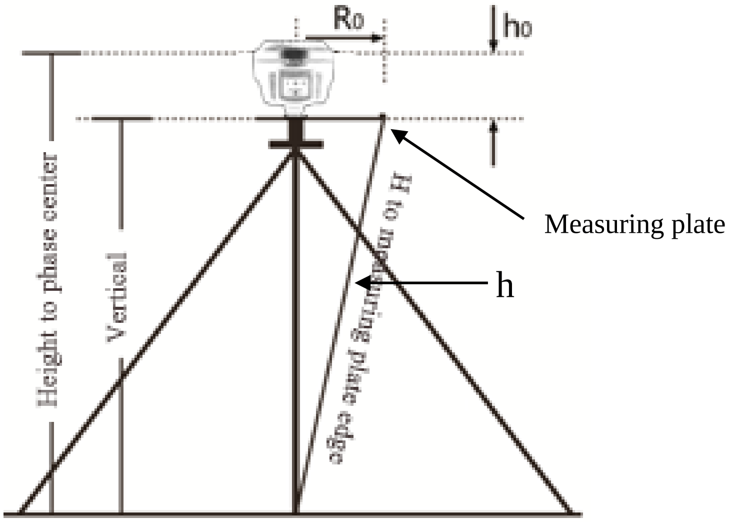
Star net has simple geometry graph, but the baselines of it mostly don't compose a closed graph, so it has a bad checking ability and consistency.

The advantage of this net is that it only needs two receivers, the work is very simple, so it is mostly used in the quick surveying as quick static orientation and kinematical orientation. This working mode is widely used in project layout, border surveying and GIS surveying, etc.



§8.1.5 Antenna Height Measurement

After fixed the instrument, user should measure antenna height at the beginning and the end of every period of time to ensure the accuracy "mm" level. We usually measure from the center point on the ground to the center waterproof loop of antenna. That is an inclined height. Please refer to the following figure.


R0
h0
Height to phase center
Vertical
H to measuring plate edge
Measuring plate
h

We use a formula to calculate antenna height.

$$H = \sqrt{h^2 - R_0^2} + h_0$$

"h" is the inclined height that measure from point on the ground to the measuring plate edge.

R_0 is the distance from middle of antenna to the edge of measuring plate.

h_0 is the distance from antenna phase center to the bottom of receiver (measuring plate).

H is the calculation result. We usually measure antenna height twice and adopt the average.

Attention: *We input the inclined height as the antenna height, which is the inclined distance from point on the ground to the waterproof loop of antenna.*

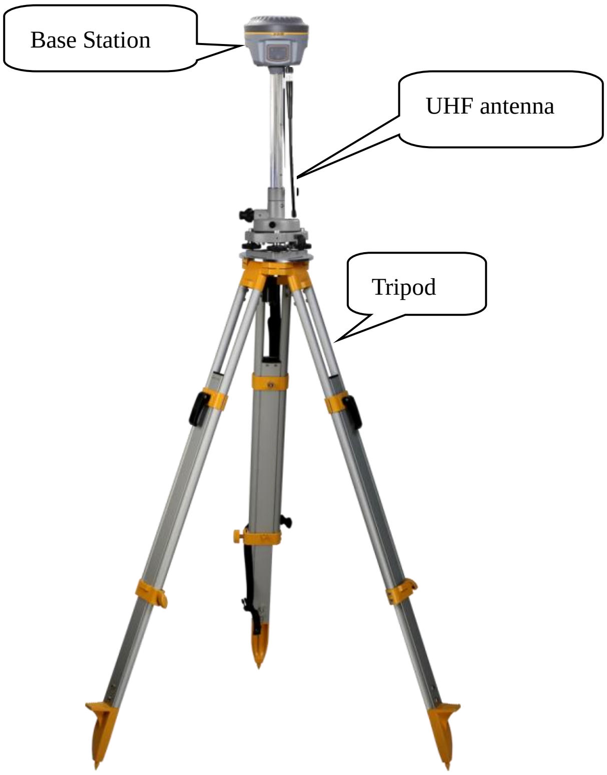
§8.2 RTK measurement

RTK is the abbreviation of Real-Time Kinematic measurements.

RTK technology is the real-time dynamic differential carrier phase positioning technology, combining global satellite navigation and positioning technology with data communication technology which includes base station and rover station. Base station transmits the data by radio or network to the rover station, which will perform differential analysis, thus providing real-time coordinates of the measurement point in the specified coordinate system.

Depending on the different ways of differential signals transmission, there are two methods for RTK operation by using the radio and internet (GPRS).

§8.2.1 By using radio (Internal radio)



§8.2.1.1 Base Station Set up

Base station shall be set up in the broad view, unobscured and higher places; avoid the vicinity of the high-voltage power transmission equipment and the transmitting and receiving antennas of radio communication equipment, the shade of trees, and the sides of waters, all of which will produce different degrees of impact on the GPS signal reception and emission of radio signals

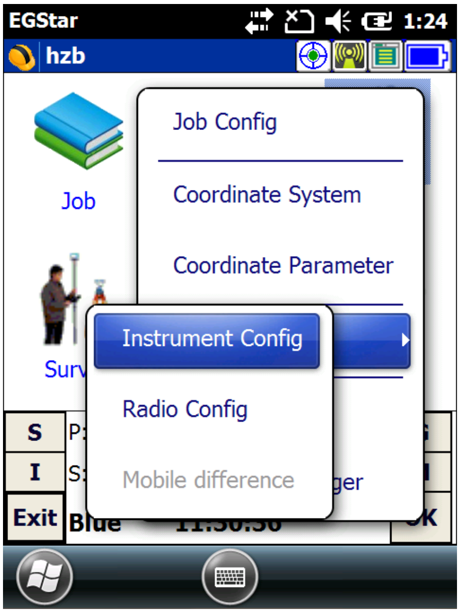
1) Set a tripod to the location with known coordinates (or unknown), attach base receiver to the tribrach adapter set (the measuring plate is recommended to install under base receiver).
2) Install the transmitting antenna onto the receiver.
3) Make sure all connections are alright, then power on receiver.
4) The receiver is set as base with internal radio mode. (set on the control panel, or on internal Web UI or on the software installed on data collector).

§8.2.1.2 Start the Base station

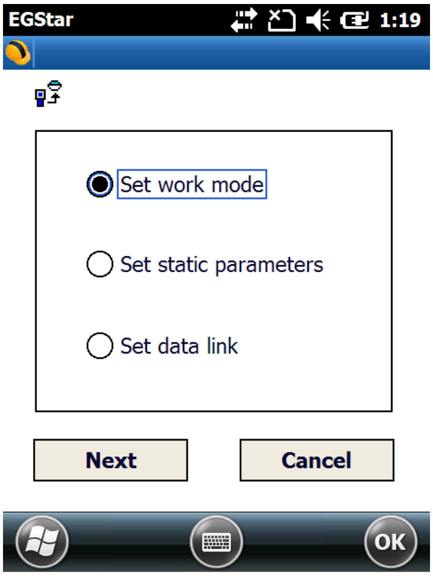
First time to start the base station, all the relative parameters are completely configured before starting.

Using EGStar3.0

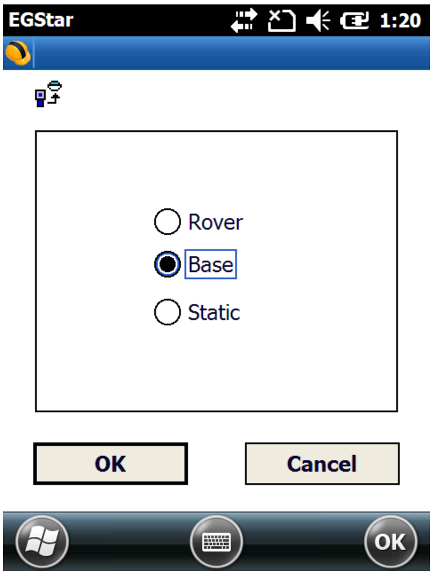
1) Run EGStar3.0 program on data collector;
2) Go to “Config—Device Config—Instrument Config” page to configure the working mode and datalink for base receiver.


EGStar
1:24
hzb
Job
Surv
Job Config
Coordinate System
Coordinate Parameter
Instrument Config
Radio Config
Mobile difference
S
I
Exit
Blue
OK

3) Tap on “Work mode setting” and then check the box of “Set work mode”, then click on “Next” to continue;
4) Check the box of “Base” option and click “OK” and return to Instrument setting page. At this moment, New G1 prompts the correct working mode with voice guide.


EGStar 1:19
Next
Cancel
OK

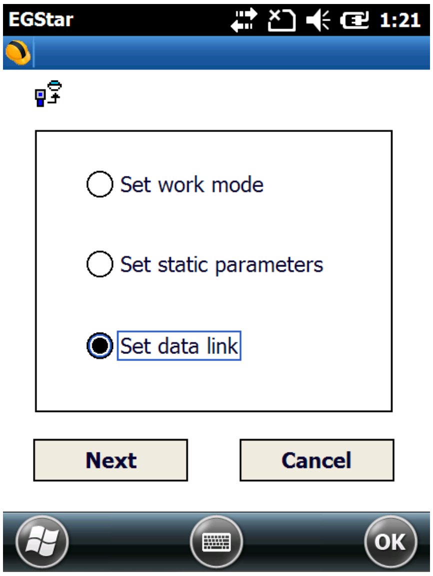
● Set work mode
○ Set static parameters
○ Set data link


EGStar 1:20
OK
Cancel
OK

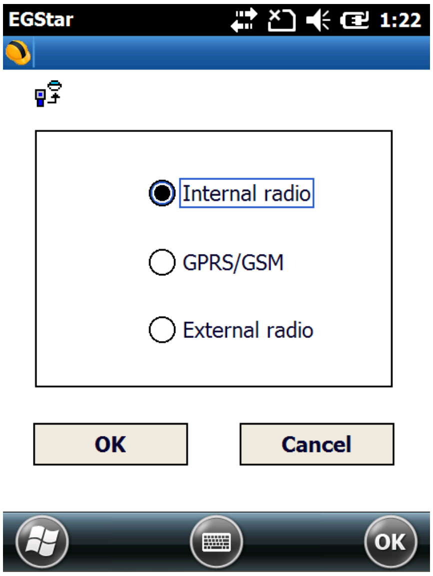
○ Rover
● Base
○ Static

5) Then tap on "Work mode setting" and then check the box of "Set data link", then click on "Next" to continue;

6) Check the box of "Internal radio" option and click "OK" to complete the settings.


EGStar 1:21
Next
Cancel
OK

○ Set work mode
○ Set static parameters
● Set data link


EGStar 1:22
OK
Cancel
OK

● Internal radio
○ GPRS/GSM
○ External radio

7) Return to the main interface and again get into instrument config page, tap on "Base setting" to get into Base configuration page.

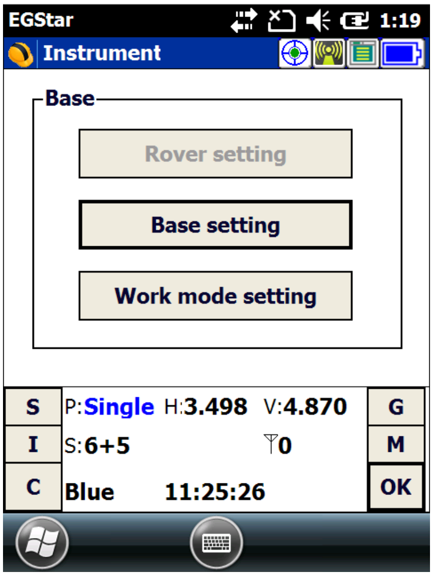
8) Choose the correction format in Msg,Type, choose the antenna measuring method and input correct antenna height in Ant,H, input the proper value for Interval time, Mask angle and PDOP limit.

9) Then tap on the symbol to save and complete the parameters.

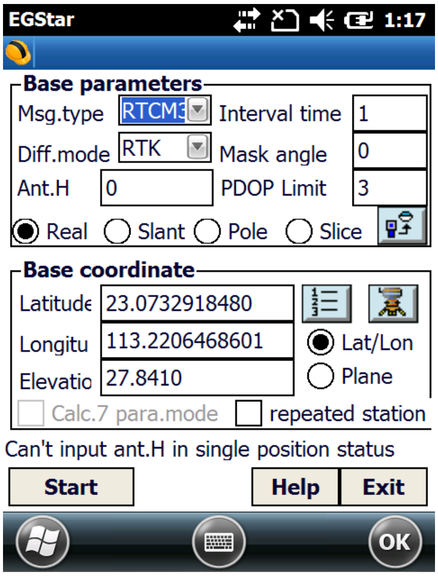
10) Input the coordinates for base location or tap on the symbol to obtain a single

position for base.

11) After all the parameters are completely set, click on “Start” button to start the base station.


EGStar 1:19
Instrument
Base
Rover setting
Base setting
Work mode setting
S
I
C
G
M
OK

P:Single H:3.498 V:4.870
S:6+5 0
Blue 11:25:26


EGStar 1:17
Base parameters
Base coordinate
Start
Help
Exit
OK

Msg.type RTCM3 Interval time 1
Diff.mode RTK Mask angle 0
Ant.H 0 PDOP Limit 3
● Real ○ Slant ○ Pole ○ Slice
Latitude 23.0732918480
Longitu 113.2206468601
Elevatio 27.8410
● Lat/Lon ○ Plane
☐ Calc.7 para.mode ☐ repeated station
Can't input ant.H in single position status

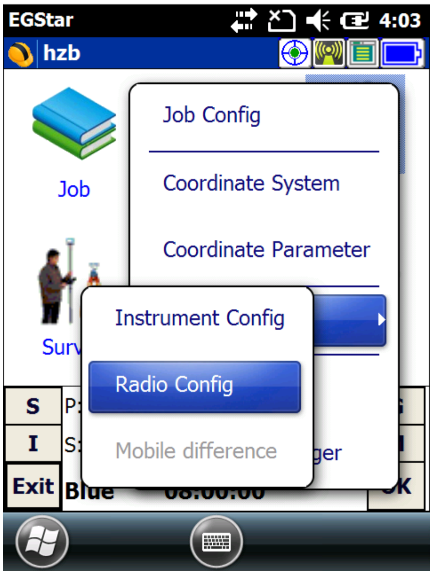
REMIND: If the base station is still set up on the same position next time, check the box of “repeated station” option and the base station will start automatically with known coordinates.

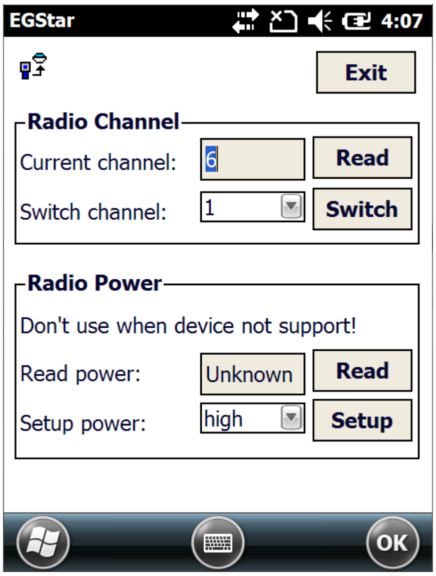
Radio channels setting

1) Go to “Config—Device Config—Radio Config” page.

2) In radio channel field, click on “Read” button to read the current channel value, or select a radio channel from the list and click on “Switch” button to change the radio channel.

3) In radio power field, click on “Read” button to read the current radio power, or select high/low from the list and click on “Setup” button to apply power for radio.

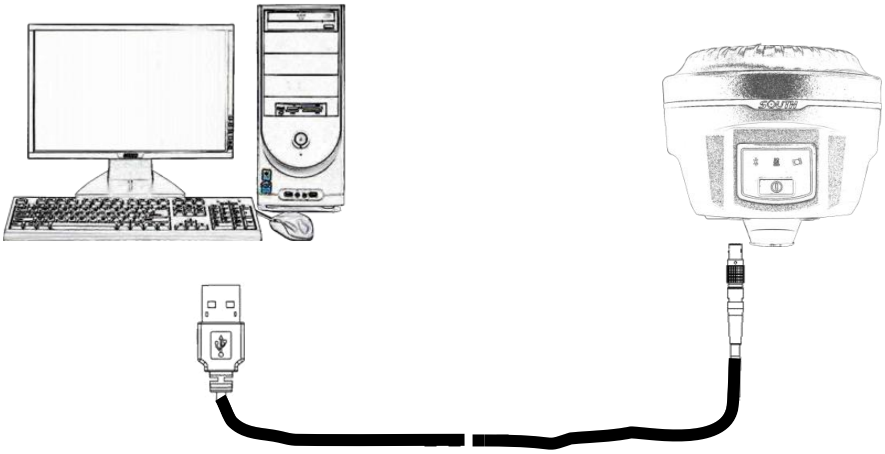

EGStar 4:03
hzb
Job
Surv
Job Config
Coordinate System
Coordinate Parameter
Instrument Config
Radio Config
Mobile difference
ger
S
I
Exit
Blue
OK


EGStar 4:07
Exit
Radio Channel
Read
Switch
Radio Power
Read
Setup
OK

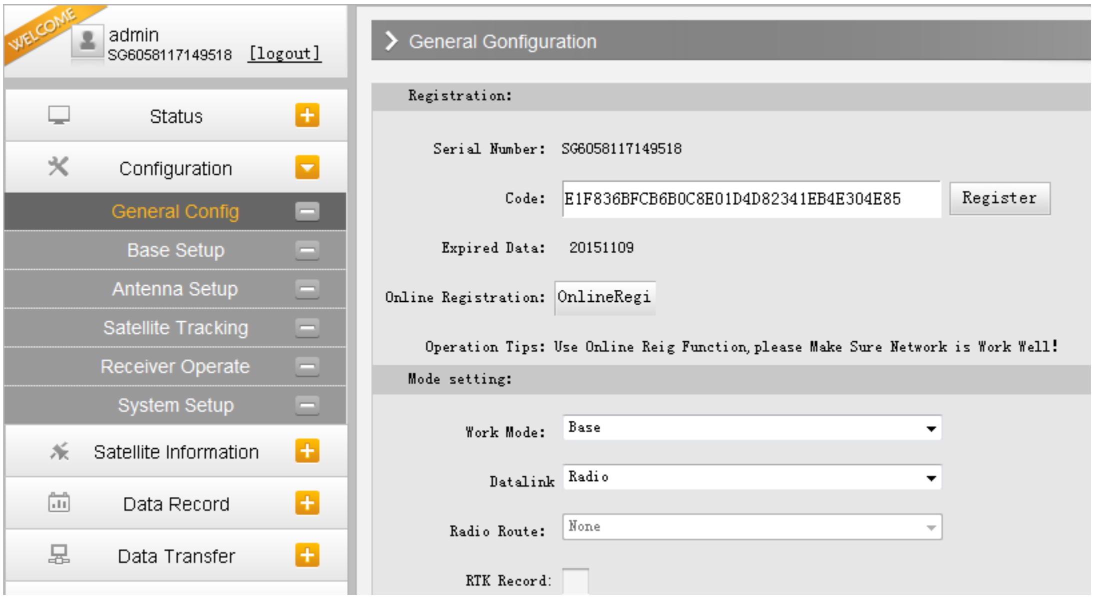
Current channel: 6
Switch channel: 1
Don't use when device not support!
Read power: Unknown
Setup power: high

Using internal Web UI

1) Connect New G1 with computer via 7-pin to USB cable and set the USB port to output as Ethernet on New G1. (a driver is required to installed on computer to enable this function).



2) Login the internal Web UI of New G1 with the default username and password (admin/admin).
3) Get into "General Config" interface under "Configuration";
4) Choose "Base" in "Work Mode" and "Radio" for "Datalink", then click "Enter" button to save configurations;
5) Get into "Base Setup" interface, and input known coordinates or click "Position" button to obtain a single coordinates for base station;
6) Choose the correction format in "Corrections", then click "StartBase" button to start the base station.


WELCOME
admin
SG6058117149518 [logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
General Gonfiguration
Register
OnlineRegi

Registration:

Serial Number: SG6058117149518

Code: E1F836BFCB6B0C8E01D4D82341EB4E304E85

Expired Data: 20151109

Online Registration:

Operation Tips: Use Online Reig Function, please Make Sure Network is Work Well!

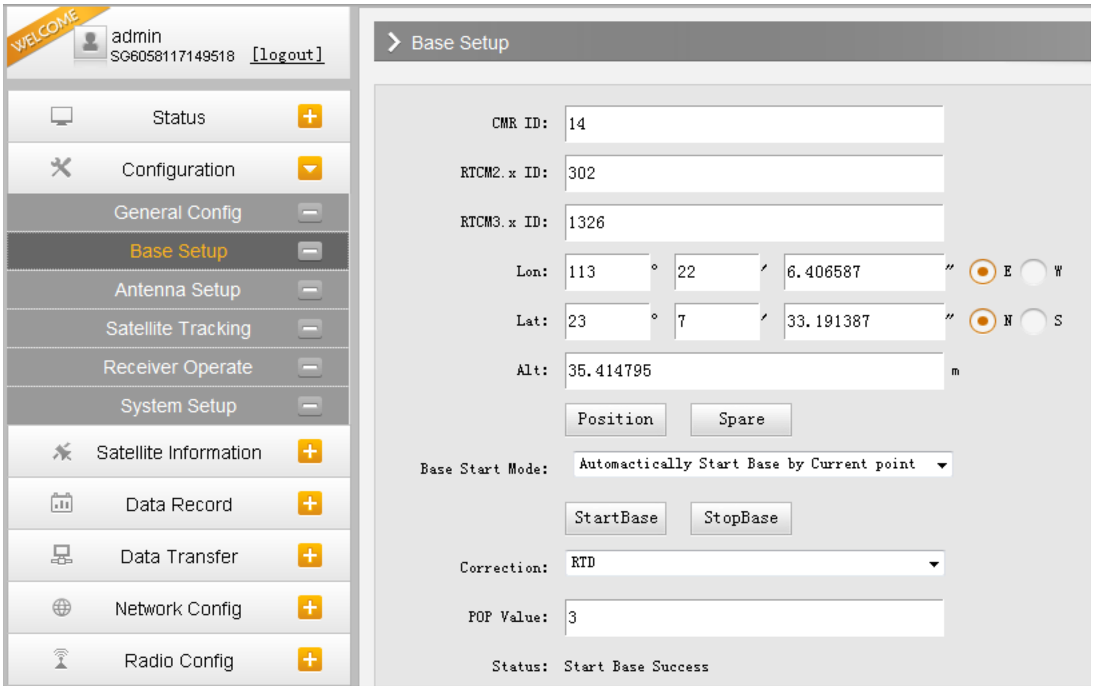
Mode setting:

Work Mode: Base

Datalink Radio

Radio Route: None

RTK Record: ☐


WELCOME
admin
SG6058117149518 [logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Base Setup
Position
Spare
StartBase
StopBase

CMR ID: 14

RTCM2.x ID: 302

RTCM3.x ID: 1326

Lon: 113 ° 22 ′ 6.406587 ″ ● E ○ W

Lat: 23 ° 7 ′ 33.191387 ″ ● N ○ S

Alt: 35.414795 m

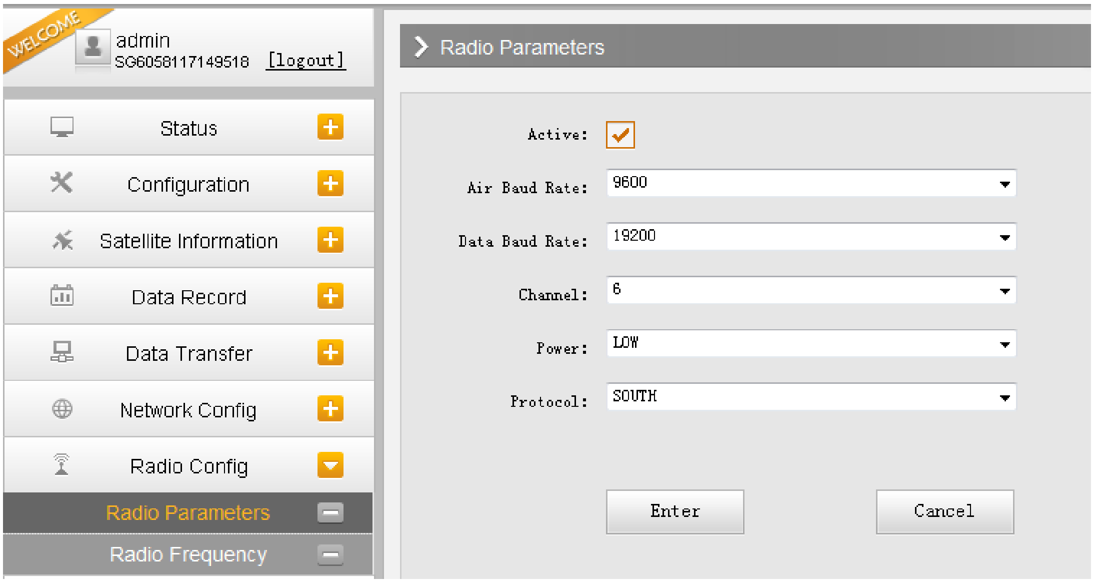
Base Start Mode: Automactically Start Base by Current point

Correction: RTD

PDP Value: 3

Status: Start Base Success

7) Get into "Radio Parameters" interface under "Radio Config", configure the radio parameters for base station such air baud rate, channel value, power and protocol.


WELCOME
admin
SG6058117149518 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Radio Parameters
Radio Frequency
Radio Parameters
Enter
Cancel

Active: ☑

Air Baud Rate: 9600

Data Baud Rate: 19200

Channel: 6

Power: LOW

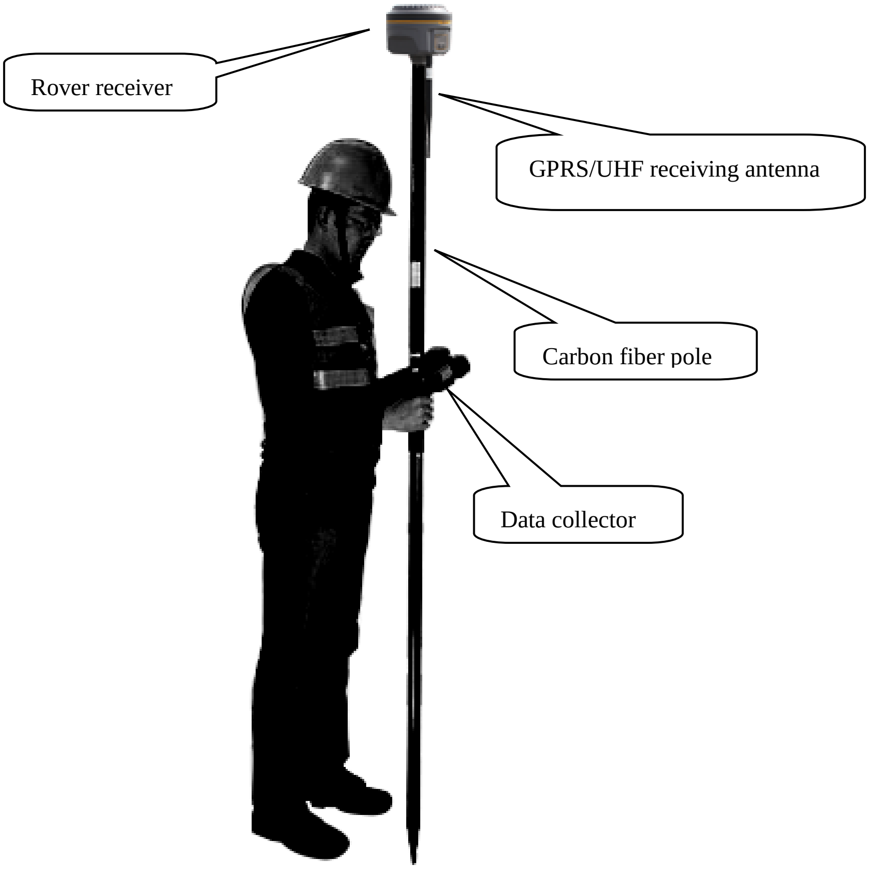
Protocol: SOUTH

§8.2.1.3 Rover station set up

After verifying the successful transmitting of the Base station, the rover station shall be set up at this moment.

1) Install the bracket holder onto the carbon fiber pole, and fix the controller into the bracket, then power on the controller.

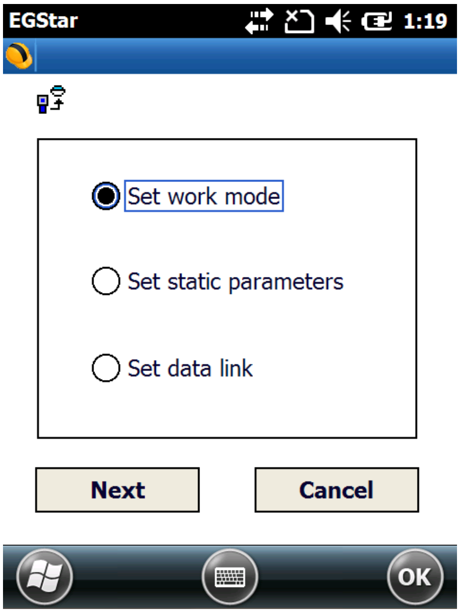
2) Install the receiving antenna onto the rover receiver, and screw the receiver into the carbon fiber pole, then power on the receiver.
3) Set the receiver as rover with internal radio mode. (set on the control panel, or on internal Web UI or on the software installed on data collector).



§8.2.1.4 Rover settings

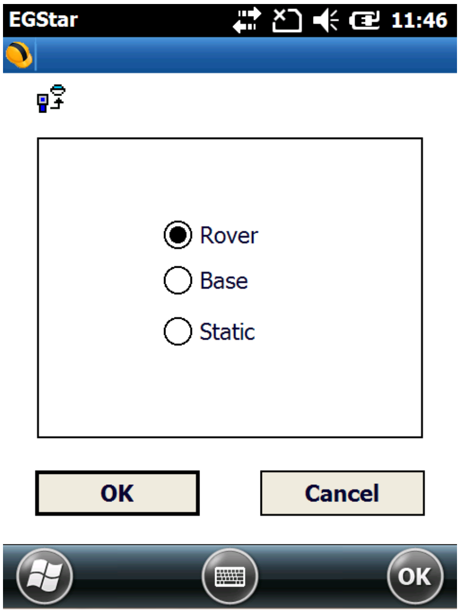
Using EGStar3.0

1) Run EGStar3.0 program on data collector;
2) Go to “Config—Device Config—Instrument Config” page to configure the working mode and datalink for rover receiver.
3) Tap on “Work mode setting” and then check the box of “Set work mode”, then click on “Next” to continue;
4) Check the box of “Rover” option and click “OK” and return to Instrument setting page. At this moment, New G1 prompts the correct working mode with voice guide.



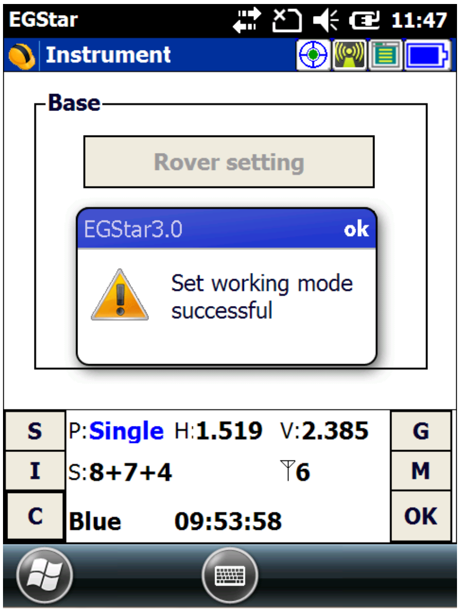
EGStar 1:19
Next
Cancel
OK

● Set work mode
○ Set static parameters
○ Set data link



EGStar 11:46
OK
Cancel
OK

● Rover
○ Base
○ Static



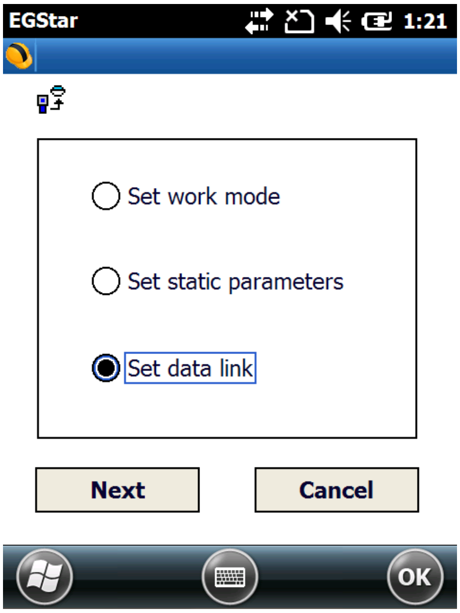
EGStar 11:47
Instrument
Base
Rover setting
EGStar3.0
ok
S
I
C
G
M
OK

Set working mode successful

P:Single H:1.519 V:2.385
S:8+7+4 6
Blue 09:53:58

5) Then tap on “Work mode setting” and then check the box of “Set data link”, then click on “Next” to continue;

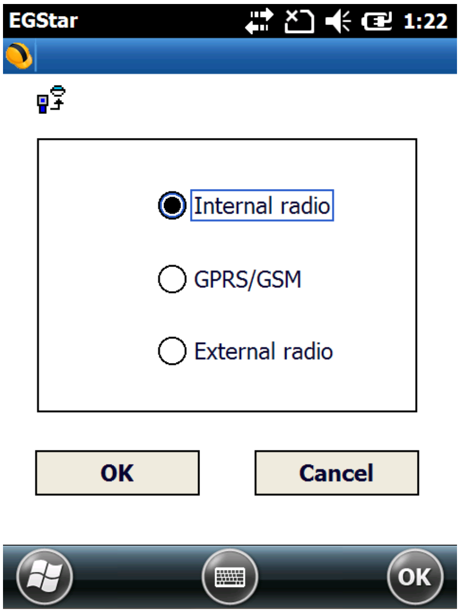
6) Check the box of “Internal radio” option and click “OK” to complete the settings.


EGStar 1:21
Next
Cancel
OK

○ Set work mode

○ Set static parameters

● Set data link


EGStar 1:22
OK
Cancel
OK

● Internal radio

○ GPRS/GSM

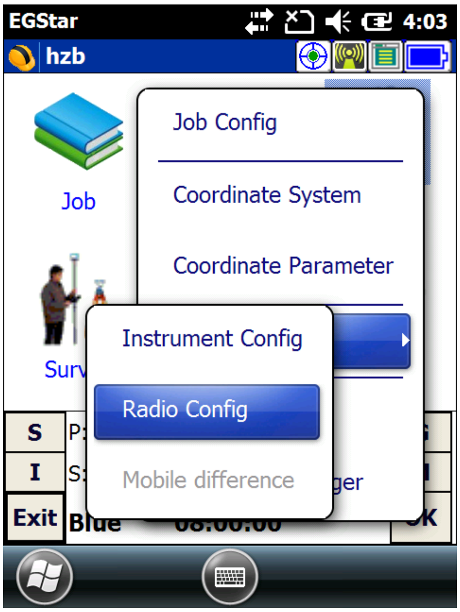
○ External radio

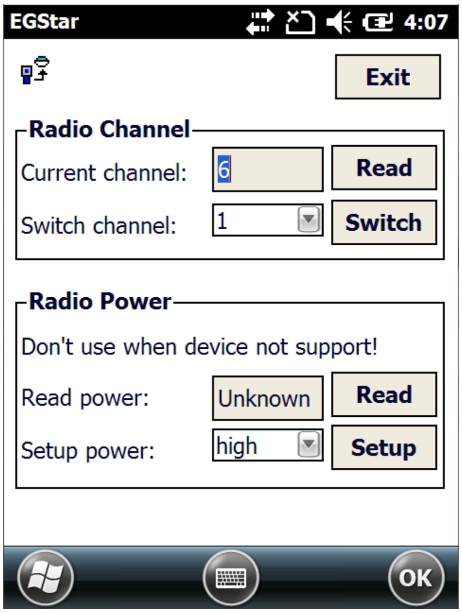
7) Radio channels setting

8) Go to “Config—Device Config—Radio Config” page.

9) In radio channel field, click on “Read” button to read the current channel value;

10) Select the same radio channel value as set on base station from the list and click on “Switch” button to apply this channel value.


EGStar 4:03
hzb
Job
Surv
Job Config
Coordinate System
Coordinate Parameter
Instrument Config
Radio Config
Mobile difference
S
I
Exit
P:
S:
Blue
ger
OK


EGStar 4:07
Exit
Read
Switch
Read
Setup
OK

Radio Channel

Current channel: 6

Switch channel: 1

Radio Power

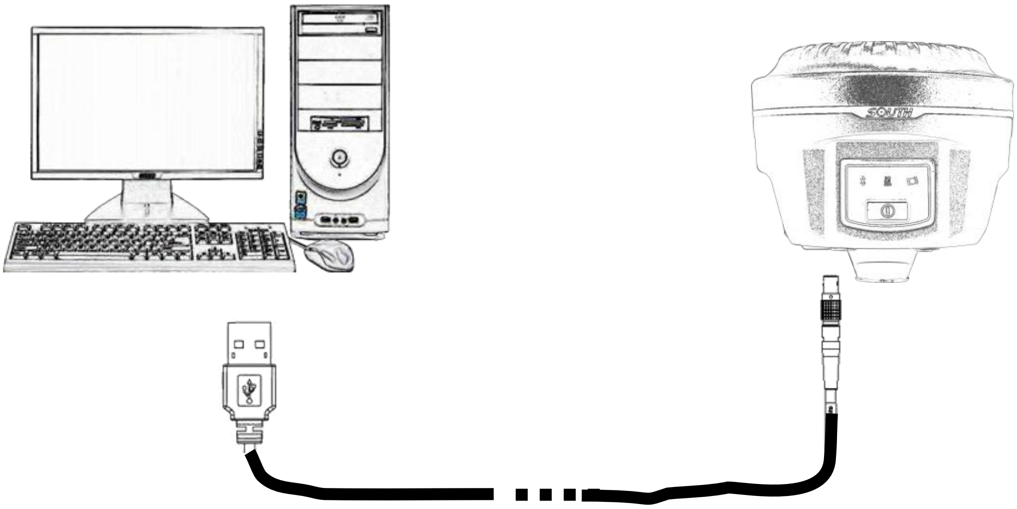
Don't use when device not support!

Read power: Unknown

Setup power: high

Using Web UI

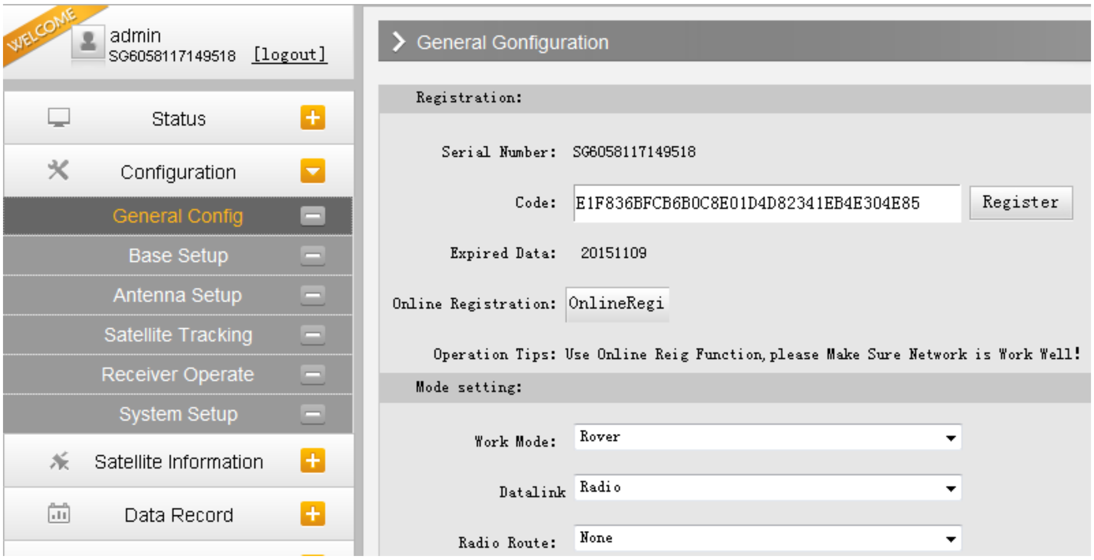
1) Connect New G1 with computer via 7-pin to USB cable and set the USB port to output as Ethernet on New G1. (a driver is required to installed on computer to enable this function).



2) Login the internal Web UI of New G1 with the default username and password (admin/admin).

3) Get into “General Config” interface under “Configuration”;

4) Choose “Rover” in “Work Mode” and “Radio” for “Datalink”, then click “Enter” button to save configurations;


WELCOME
admin
SG6058117149518
[logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
General Gonfiguration
Register
OnlineRegi

Registration:

Serial Number: SG6058117149518

Code: E1F836BFCB6B0C8E01D4D82341EB4E304E85

Expired Data: 20151109

Online Registration: OnlineRegi

Operation Tips: Use Online Reig Function, please Make Sure Network is Work Well!

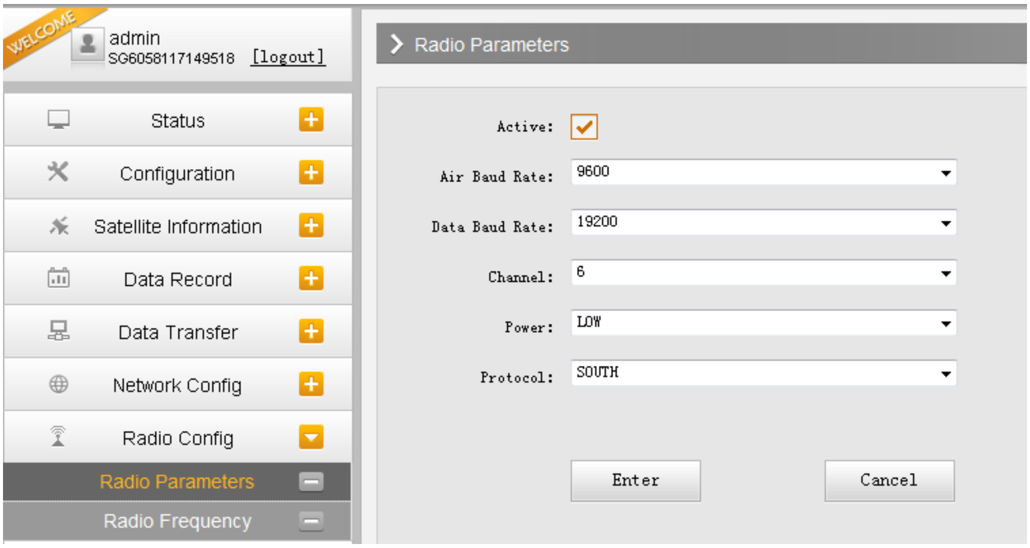
Mode setting:

Work Mode: Rover

Datalink: Radio

Radio Route: None

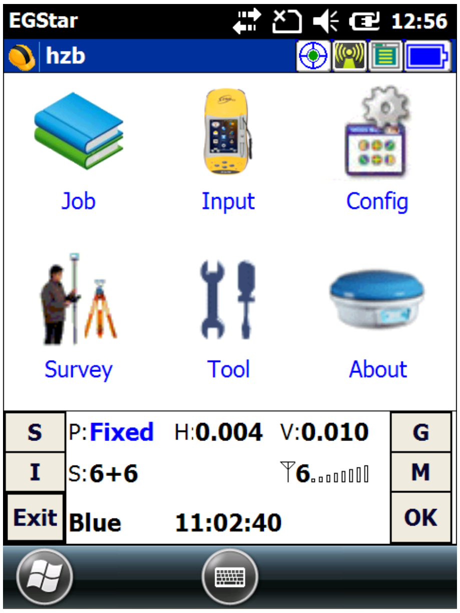
5) Get into “Radio Parameters” interface under “Radio Config”, configure the same radio parameters as set on base station for rover station such air baud rate, channel value, power and protocol


WELCOME
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Radio Parameters
Radio Frequency
Enter
Cancel

admin
SG6058117149518 [logout]

Radio Parameters

Active: ☑
Air Baud Rate: 9600
Data Baud Rate: 19200
Channel: 6
Power: LOW
Protocol: SOUTH

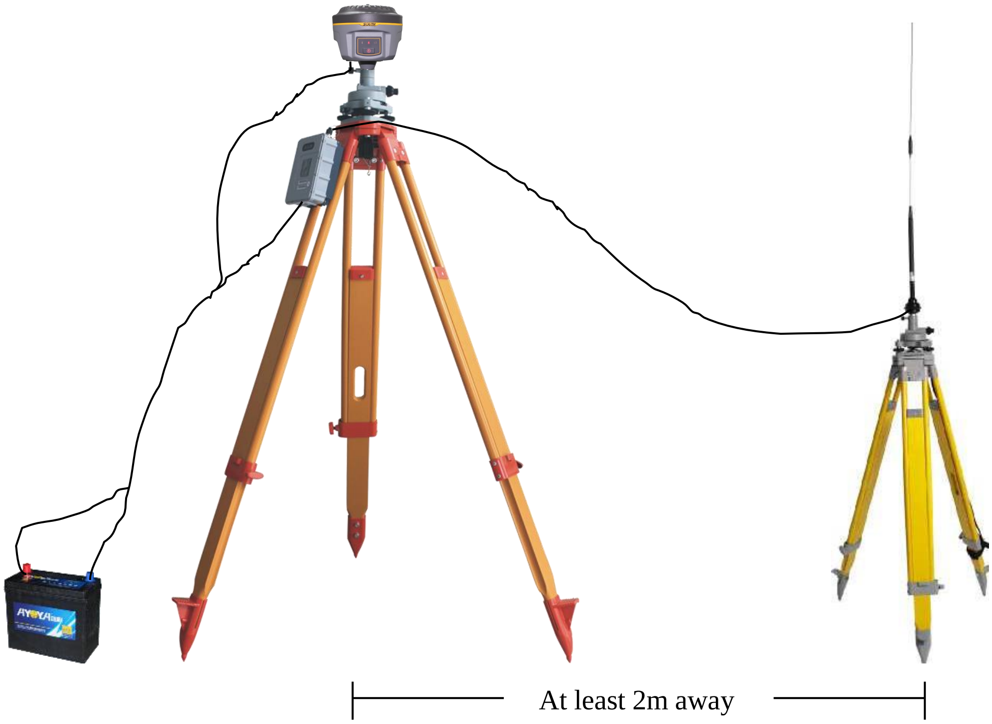

EGStar
12:56
hzb
Job
Input
Config
Survey
Tool
About
S
I
Exit
G
M
OK

P:Fixed H:0.004 V:0.010
S:6+6 6
Blue 11:02:40

§8.2.2 By using radio (external radio)

§8.2.2.1 Base station setup

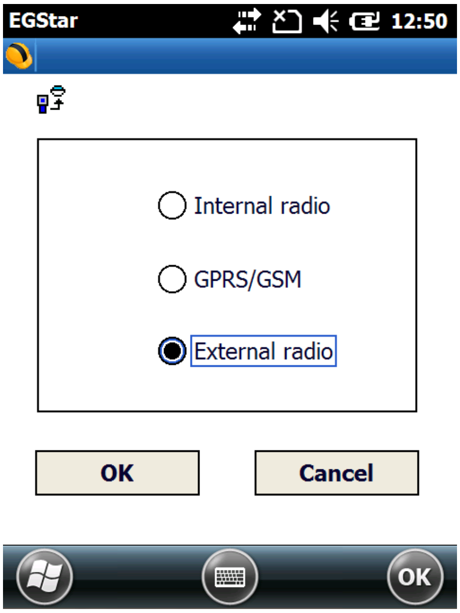
1) Set a tripod to the location with known coordinates (or unknown), attach base receiver to the tribrach adapter set (the measuring plate is recommended to install under base receiver).
2) Mount the UHF antenna set onto a tripod, and connect it to the external radio which is linked with the external power supply via the multi-function cable.
3) Power on the base receiver and set the receiver as base with external radio mode. (set on the control panel, or on internal Web UI or on the software installed on data collector).


At least 2m away

NOTE: place the 2 tripods at least 2m away from each other against signal interference.

Using EGStar3.0

Set the base receiver as base working mode from “Config—Device Config—Instrument Config—Work mode setting—Set work mode--Base”, choose the External option in “Set data link”.


EGStar
12:50
OK
Cancel
OK

○ Internal radio

○ GPRS/GSM

● External radio

§8.2.2.2 Radio settings

1) Make sure all connections are alright, then power on the radio by pressing power button, and then press “C” button to define the channel for data transmission.
2) Please keep in mind the channel is selected to match the settings in controller later on.
3) Radio starts to transmit when TX LED is flashing.

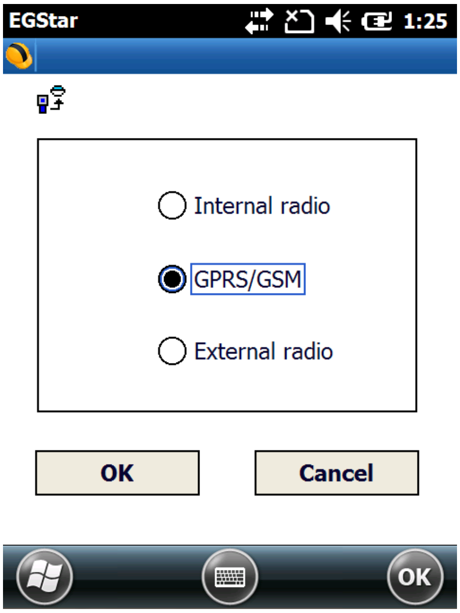
§8.2.2.3 Start Base Station (Please refer to 8.2.1.2)

§8.2.3 By using internet (GPRS)

1) In this mode, base station is no longer to set up as CORS is permanently installed.
2) Insert a SIM card into the SIM card slot in battery component.
3) Power on the rover receiver and connect with controller via Bluetooth.

EGStar3.0 settings

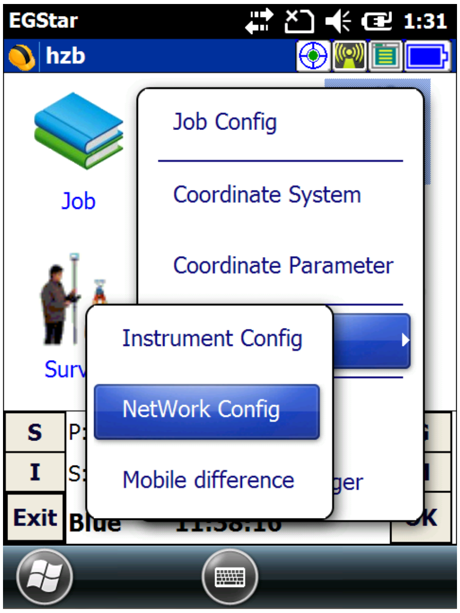
1) Go to “Config—Device Config—Instrument Config—Work mode setting—Set data link” interface to choose “GPRS/GSM” option for rover station.
2) Then return to main interface and go to “Config—Device Config—Network Config” page.
3) Add a new NTRIP connection in this page or select the existed one to re-edit/use directly.

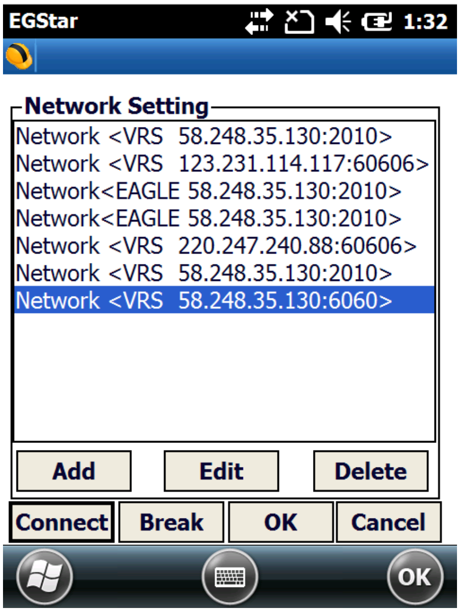

EGStar
1:25
OK
Cancel
OK

○ Internal radio

● GPRS/GSM

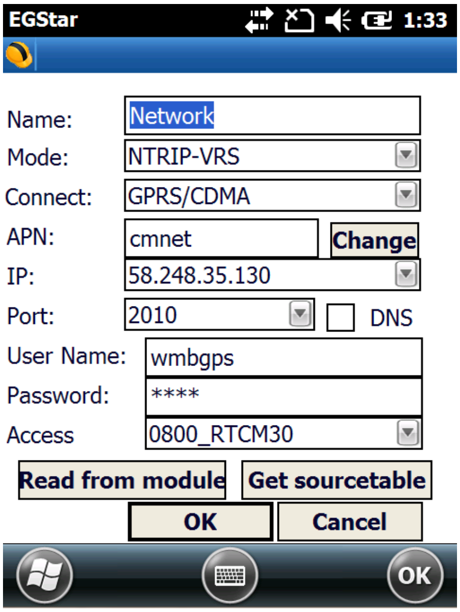
○ External radio


EGStar
1:31
hzb
Job
Surv
Job Config
Coordinate System
Coordinate Parameter
Instrument Config
NetWork Config
Mobile difference
S
I
Exit
Blue
11:38:10


EGStar
1:32
Add
Edit
Delete
Connect
Break
OK
Cancel
OK

Network Setting

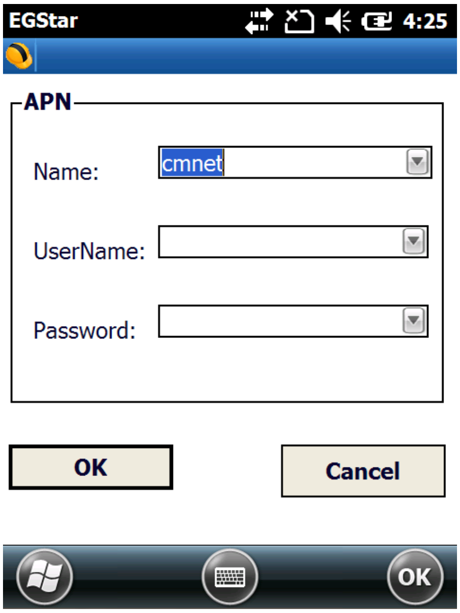
Network <VRS 58.248.35.130:2010>
Network <VRS 123.231.114.117:60606>
Network<EAGLE 58.248.35.130:2010>
Network<EAGLE 58.248.35.130:2010>
Network <VRS 220.247.240.88:60606>
Network <VRS 58.248.35.130:2010>
Network <VRS 58.248.35.130:6060>


EGStar
1:33
Change
Read from module
Get sourcetable
OK
Cancel
OK

Name: Network
Mode: NTRIP-VRS
Connect: GPRS/CDMA
APN: cmnet
IP: 58.248.35.130
Port: 2010 ☐ DNS
User Name: wmbgps
Password: ****
Access 0800_RTCM30

4) Input a name for NTRIP connection and choose “NTRIP-VRS” for “Mode” and choose “GPRS/CDMA” for Connect.

5) Then click on “Change” button to define the ANP for your local SIM card.


EGStar
4:25
OK
Cancel

APN

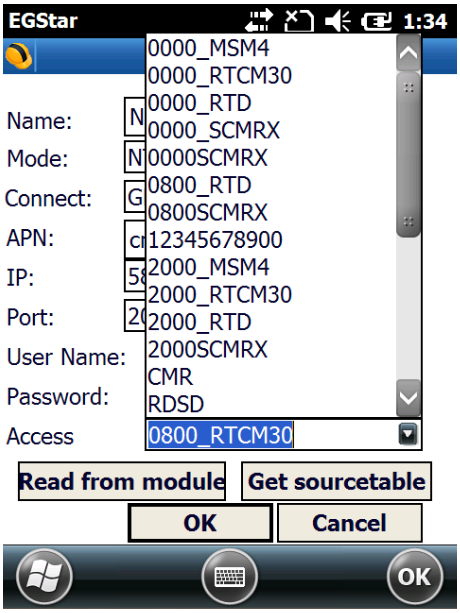
Name: cmnet

UserName:

Password:

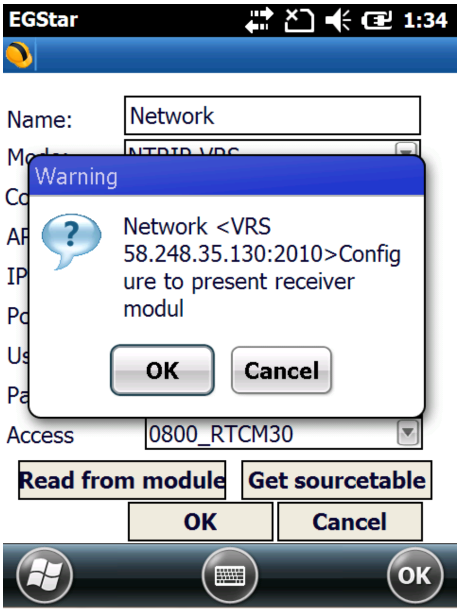
6) Input the IP address and port, then input the assigned username and password for your NTRIP connection.

7) Press “Get Sourcetable” button to obtain mountpoint list, then select the appropriate one from the list in Access option, press “OK” button to confirm and return to Network Setting interface.


EGStar
1:34
Name:
Mode:
Connect:
APN:
IP:
Port:
User Name:
Password:
Read from module
Get sourcetable
OK
Cancel

0000_MSM4
0000_RTCM30
0000_RTD
0000_SCMRX
0000SCMRX
0800_RTD
0800SCMRX
12345678900
2000_MSM4
2000_RTCM30
2000_RTD
2000SCMRX
CMR
RDSD

Access: 0800_RTCM30


EGStar
1:34
Read from module
Get sourcetable
OK
Cancel

Name: Network

Warning

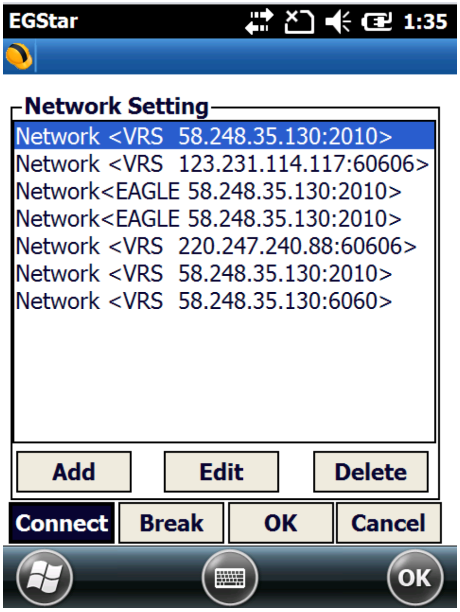
Network <VRS 58.248.35.130:2010>Configure to present receiver modul

OK Cancel

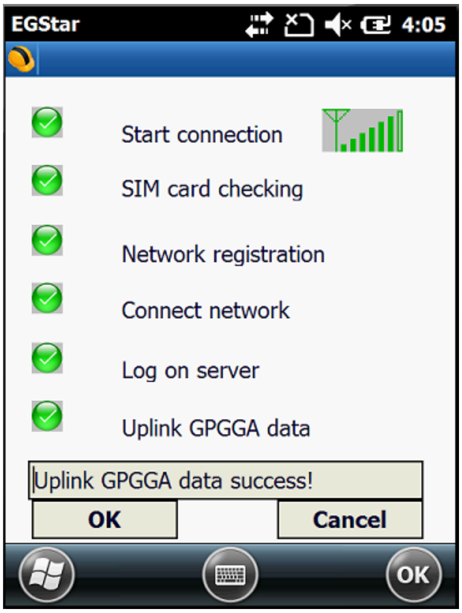
Access: 0800_RTCM30

8) Press “Connect” button to access CORS network and obtain corrections from selected mountpoint.

9) After the message “Uplink GPGGA data success” appears in the status bar, click “OK” button to return to main interface, and check the general info at the bottom.


EGStar
1:35
Network Setting
Add
Edit
Delete
Connect
Break
OK
Cancel
OK

Network <VRS 58.248.35.130:2010>
Network <VRS 123.231.114.117:60606>
Network<EAGLE 58.248.35.130:2010>
Network<EAGLE 58.248.35.130:2010>
Network <VRS 220.247.240.88:60606>
Network <VRS 58.248.35.130:2010>
Network <VRS 58.248.35.130:6060>


EGStar
4:05
OK
Cancel
OK

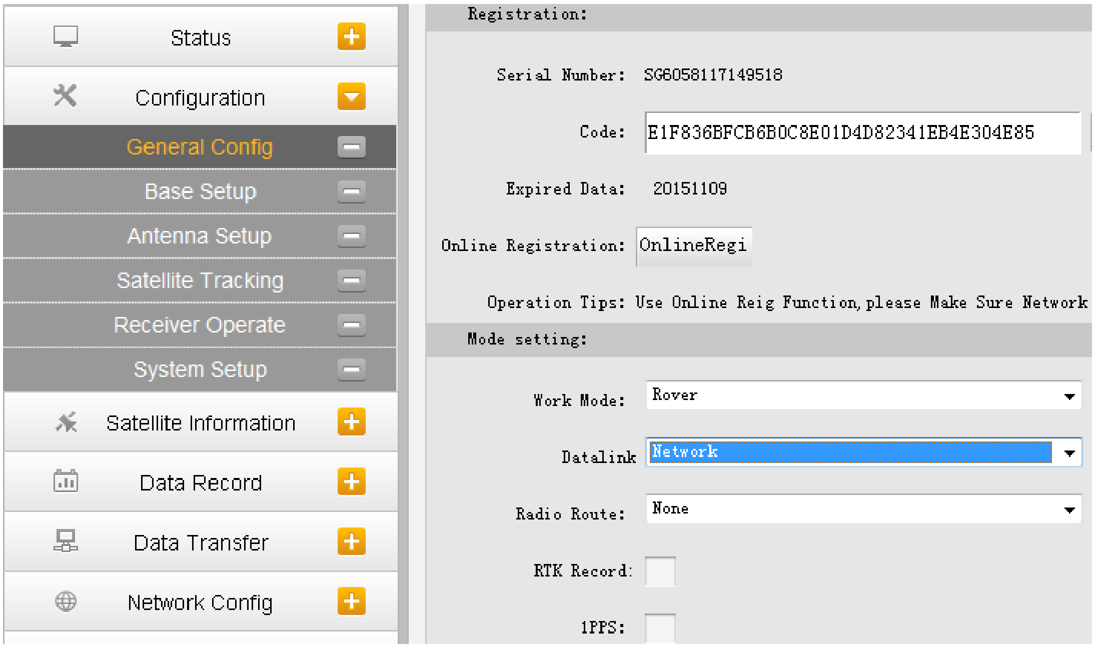
✓ Start connection
✓ SIM card checking
✓ Network registration
✓ Connect network
✓ Log on server
✓ Uplink GPGGA data

Uplink GPGGA data success!

NOTE; the parameters would be automatically saved up once input, the receiver would track the CORS info most recently input and connect when it gets started next time.

Web UI settings

1) Login the web UI of New G1 and go to “General Config” interface, then choose “Network” in “Datalink” option, click on “Enter” button to confirm and save the settings.
2) Then go to “GSM/GPRS Config” interface under “Network Config” to check if the SIM card is detected, and input the APN information at the bottom.


Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config

Registration:

Serial Number: SG6058117149518

Code: E1F836BFCB6B0C8E01D4D82341EB4E304E85

Expired Data: 20151109

Online Registration: OnlineRegi

Operation Tips: Use Online Reig Function, please Make Sure Network

Mode setting:

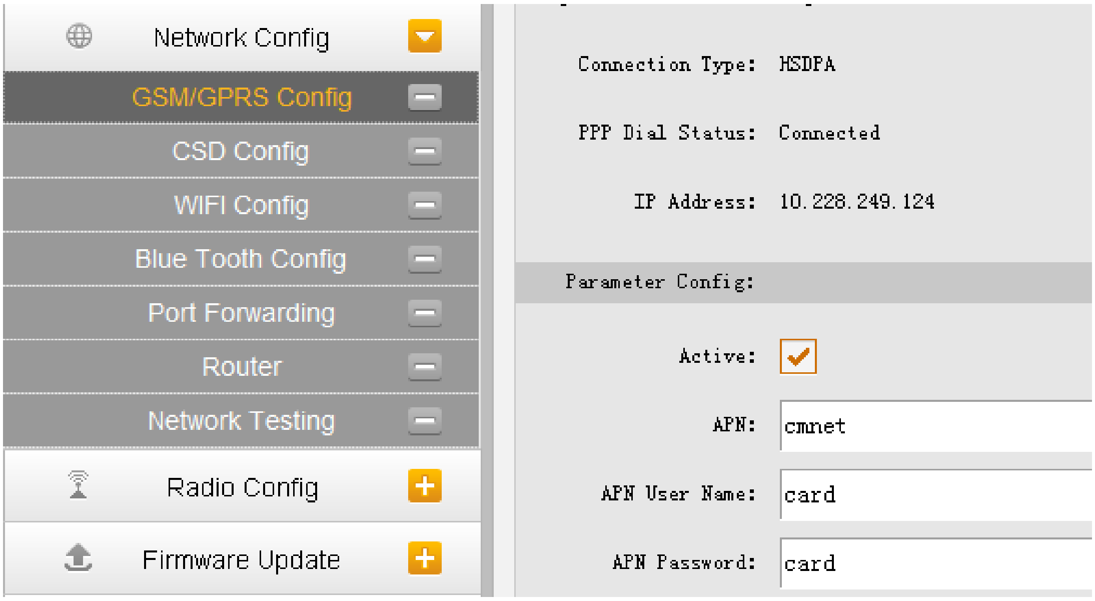
Work Mode: Rover

Datalink Network

Radio Route: None

RTK Record: ☐

1PPS: ☐


Network Config
GSM/GPRS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Radio Config
Firmware Update

Connection Type: HSDPA

PPP Dial Status: Connected

IP Address: 10.228.249.124

Parameter Config:

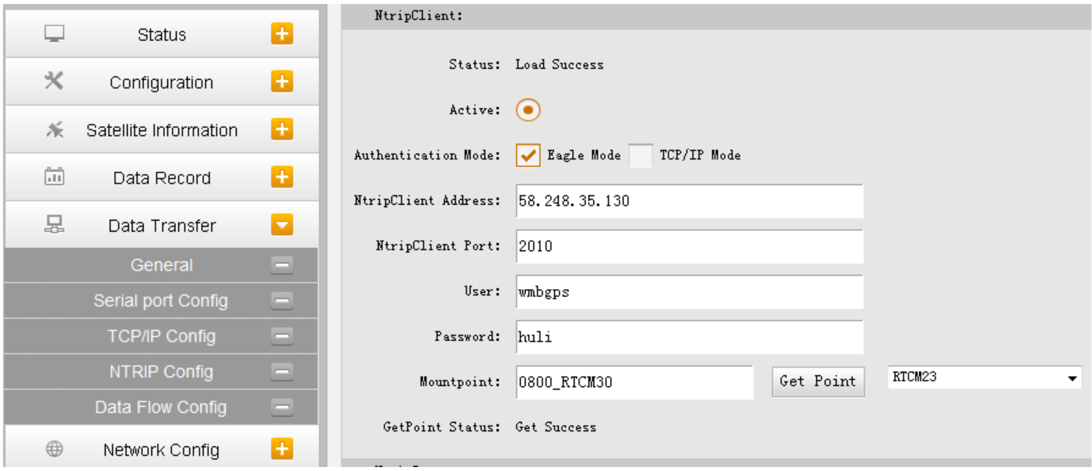
Active: ☑

APN: cmnet

APN User Name: card

APN Password: card

3) Go to “NTRIP Config” interface under “Data Transfer”, and input the CORS server information including IP, Port, User and password, then click “Get Point” button to download mountpoint list from server. Then select the appropriate one from the list and click on “Enter” button at the bottom to access.


Status
Configuration
Satellite Information
Data Record
Data Transfer
General
Serial port Config
TCP/IP Config
NTRIP Config
Data Flow Config
Network Config
Get Point

NtripClient:

Status: Load Success

Active: ●

Authentication Mode: ☑ Eagle Mode ☐ TCP/IP Mode

NtripClient Address: 58.248.35.130

NtripClient Port: 2010

User: wmbgps

Password: huli

Mountpoint: 0800_RTCM30 RTCM23

GetPoint Status: Get Success

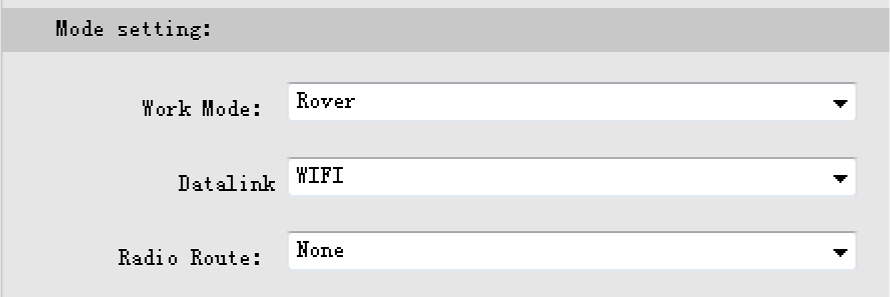
§8.2.4 By using internet (WIFI)

WiFi datalink is a new feature and new technology adopted on New G1, it is more faster and stable in network RTK job.

Set the receiver as rover with WIFI mode on the control panel or on Web UI.

Web UI settings

1) Login the web UI of New G1 and go to “General Config” interface, then choose “WIFI” in “Datalink” option, click on “Enter” button to confirm and save the settings.



Mode setting:

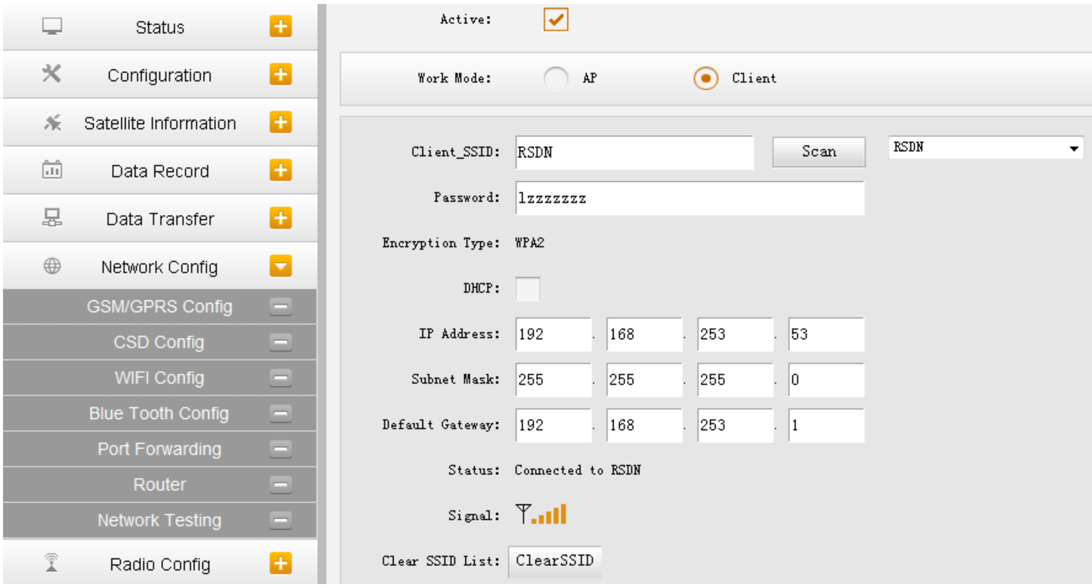
Work Mode: Rover

Datalink WIFI

Radio Route: None

2) Then go to “WIFI Config” interface under “Network Config”, there the option of “Client” is activated if WIFI used as datalink.

3) Click on the “Scan” button to search the surrounding available WIFI hotspot, then select a proper one and input the password, click the “Enter” button at the bottom to confirm and access


Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
GSM/GPRS Config
CSD Config
WIFI Config
Blue Tooth Config
Port Forwarding
Router
Network Testing
Radio Config
Scan
RSDN

Active: ☑

Work Mode: ○ AP ● Client

Client_SSID: RSDN

Password: lzzzzzzz

Encryption Type: WPA2

DHCP: ☐

IP Address: 192 . 168 . 253 . 53

Subnet Mask: 255 . 255 . 255 . 0

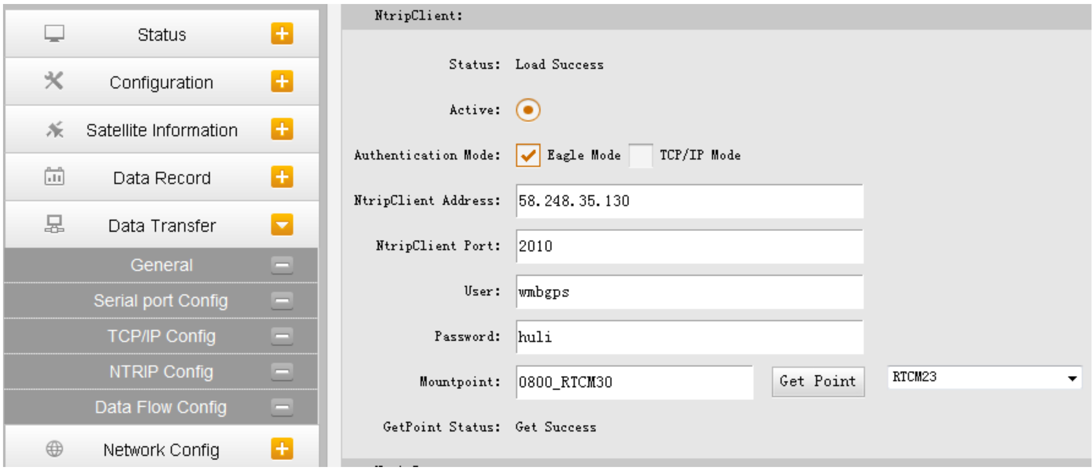
Default Gateway: 192 . 168 . 253 . 1

Status: Connected to RSDN

Signal:

Clear SSID List: ClearSSID

4) If the WIFI connection is successfully connected, go to “NTRIP Config” interface under “Data Transfer”, and input the CORS server information including IP, Port, User and password, then click “Get Point” button to download mountpoint list from server. Then select the appropriate one from the list and click on “Enter” button at the bottom to access.


Status
Configuration
Satellite Information
Data Record
Data Transfer
General
Serial port Config
TCP/IP Config
NTRIP Config
Data Flow Config
Network Config
NtripClient:
Get Point

Status: Load Success

Active: ●

Authentication Mode: ☑ Eagle Mode ☐ TCP/IP Mode

NtripClient Address: 58.248.35.130

NtripClient Port: 2010

User: wmbgps

Password: huli

Mountpoint: 0800_RTCM30 RTCM23

GetPoint Status: Get Success

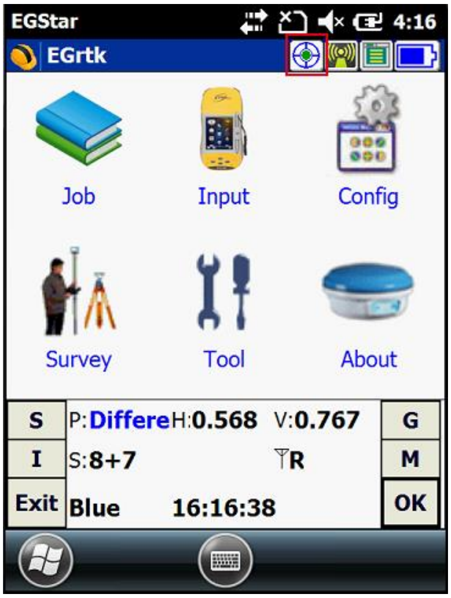
§8.2.5 Tilt Survey

Electronic Bubble

Start electronic bubble

a) In the main interface, click the calibration setting button on the top of the interface, then get into the setting interface.

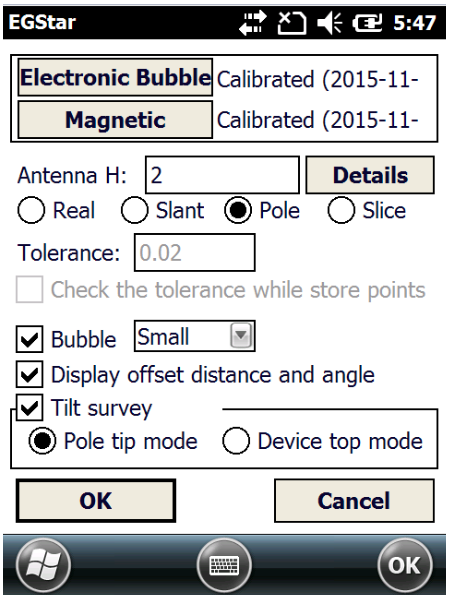
b) Mark on the checkbox of “Bubble” option in the setting interface, click ‘OK’ return to Point survey interface, there appears the electronic bubble on the upper left of the screen.


EGStar
4:16
EGrtk
Job
Input
Config
Survey
Tool
About
S
I
Exit
G
M
OK

P:Differe H:0.568 V:0.767

S:8+7 R

Blue 16:16:38


EGStar
5:47
Details
OK
Cancel
OK

Electronic Bubble Calibrated (2015-11-

Magnetic Calibrated (2015-11-

Antenna H: 2

○ Real ○ Slant ● Pole ○ Slice

Tolerance: 0.02

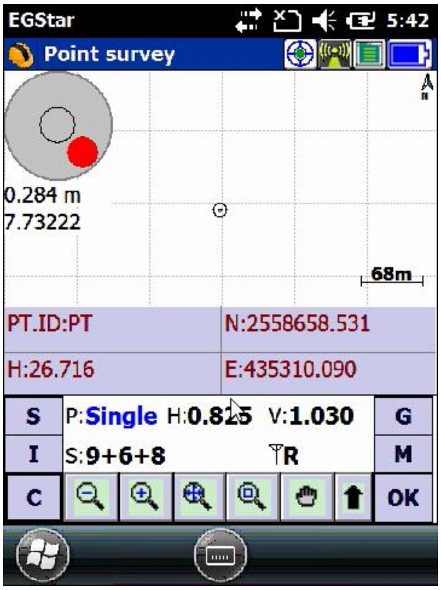
☐ Check the tolerance while store points

☑ Bubble Small

☑ Display offset distance and angle

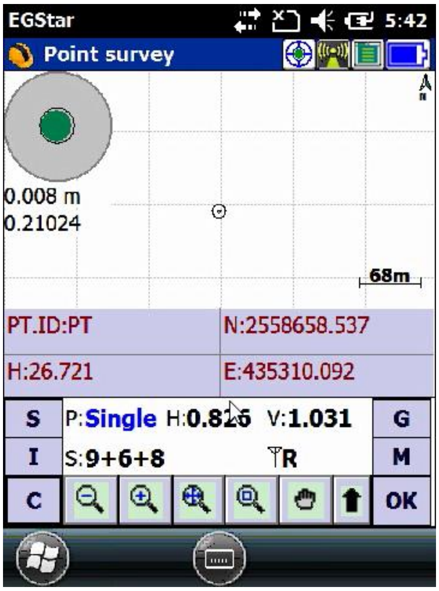
☑ Tilt survey

● Pole tip mode ○ Device top mode


EGStar 5:42
Point survey
68m
S
I
C
G
M
OK

0.284 m
7.73222

PT.ID:PT N:2558658.531
H:26.716 E:435310.090
P:Single H:0.825 V:1.030
S:9+6+8 R


EGStar 5:42
Point survey
68m
S
I
C
G
M
OK

0.008 m
0.21024

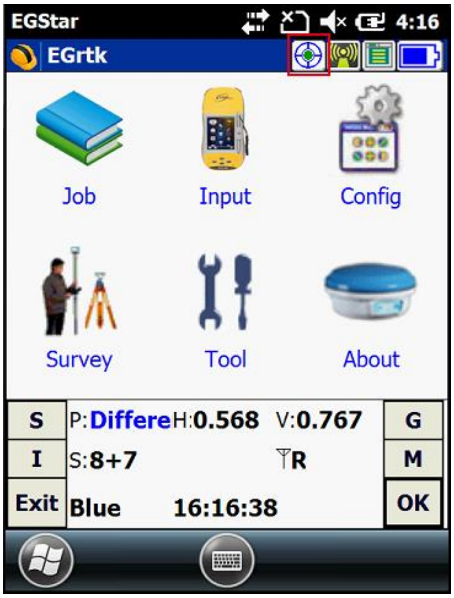
PT.ID:PT N:2558658.537
H:26.721 E:435310.092
P:Single H:0.825 V:1.031
S:9+6+8 R

Sensors Calibration

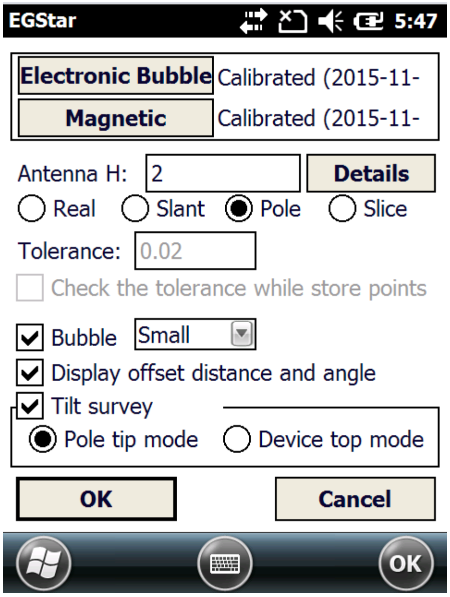
New G1 supports tilt survey function, but before doing the tilt surveying on New G1, the sensors calibration shall be done.

1. Electronic Bubble calibration

Get into calibration interface by clicking on calibration setting button on the top of the screen. Click “Electronic Bubble” in the calibration setting interface,


EGStar 4:16
EGrtk
Job
Input
Config
Survey
Tool
About
S
I
Exit
G
M
OK

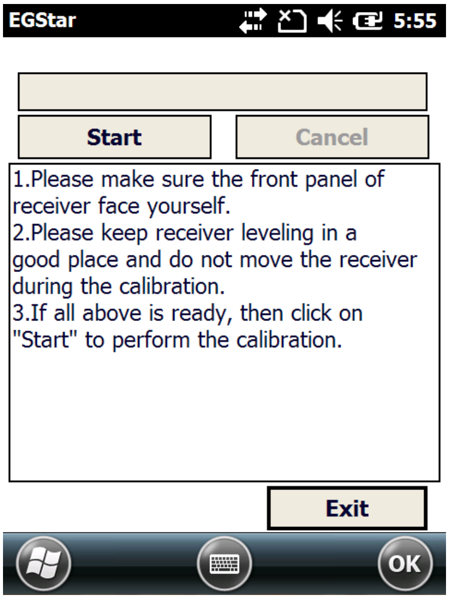
P:Differe H:0.568 V:0.767
S:8+7 R
Blue 16:16:38


EGStar 5:47
Electronic Bubble
Magnetic
Details
OK
Cancel

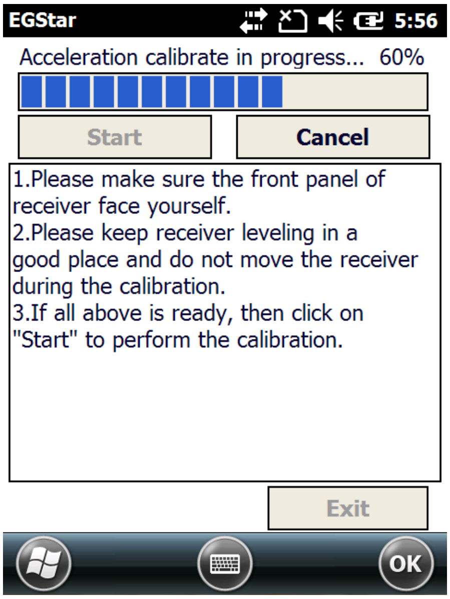
Electronic Bubble: Calibrated (2015-11-
Magnetic: Calibrated (2015-11-

Antenna H: 2
○ Real ○ Slant ● Pole ○ Slice
Tolerance: 0.02
☐ Check the tolerance while store points
☑ Bubble Small
☑ Display offset distance and angle
☑ Tilt survey
● Pole tip mode ○ Device top mode

In the acceleration calibration interface, make sure the device is level, hold and click “Start” button to start the calibration, until it’s finished.



1.Please make sure the front panel of receiver face yourself.
2.Please keep receiver leveling in a good place and do not move the receiver during the calibration.
3.If all above is ready, then click on "Start" to perform the calibration.

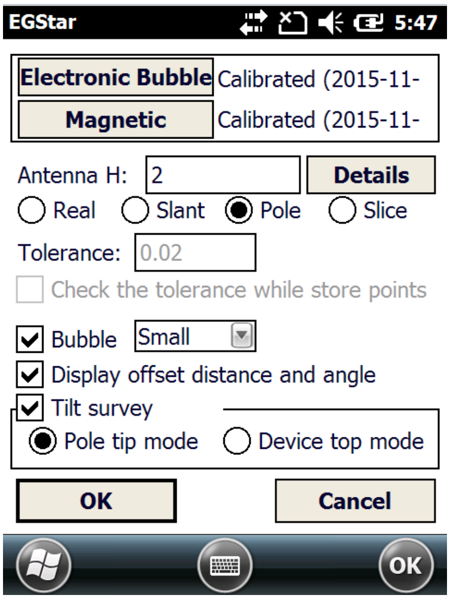


Acceleration calibrate in progress... 60%

1.Please make sure the front panel of receiver face yourself.
2.Please keep receiver leveling in a good place and do not move the receiver during the calibration.
3.If all above is ready, then click on "Start" to perform the calibration.

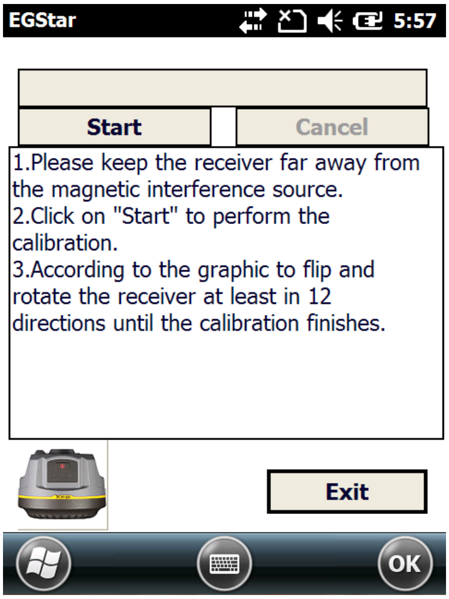
2. Magnetic calibration

In the calibration setting interface, click “Magnetic” to enter the magnetic calibration interface.

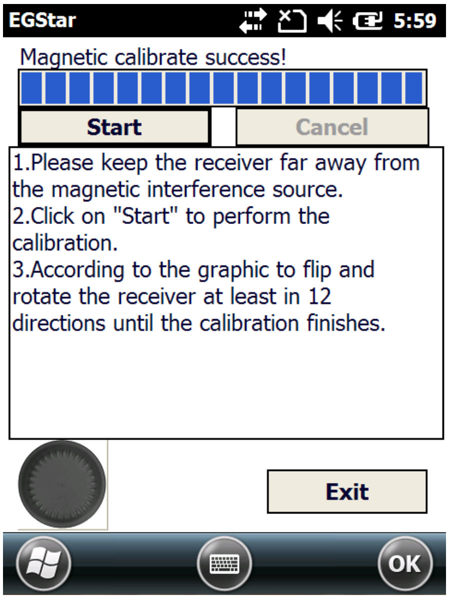


Electronic Bubble Calibrated (2015-11-
Magnetic Calibrated (2015-11-
Antenna H: 2
○ Real ○ Slant ● Pole ○ Slice
Tolerance: 0.02
☐ Check the tolerance while store points
☑ Bubble Small
☑ Display offset distance and angle
☑ Tilt survey
● Pole tip mode ○ Device top mode

In the megnetic calibration interface, click “Start” to start the calibration, then flip and rotate the New G1 according to the sketch map on the left bottom of the screen (you can also draw “∞” after New G1 is connected to the carbon fiber pole), until the calibration is finished 100%.



1.Please keep the receiver far away from the magnetic interference source.
2.Click on "Start" to perform the calibration.
3.According to the graphic to flip and rotate the receiver at least in 12 directions until the calibration finishes.



Magnetic calibrate success!

1.Please keep the receiver far away from the magnetic interference source.
2.Click on "Start" to perform the calibration.
3.According to the graphic to flip and rotate the receiver at least in 12 directions until the calibration finishes.

Tilt Surveying

After finishing the calibration for sensors, you can start tilt survey with New G1 in the tough conditions such as under the eave or around the wall, this function can correct the slant coordinates to the normal coordinates within 30° angle of inclination.

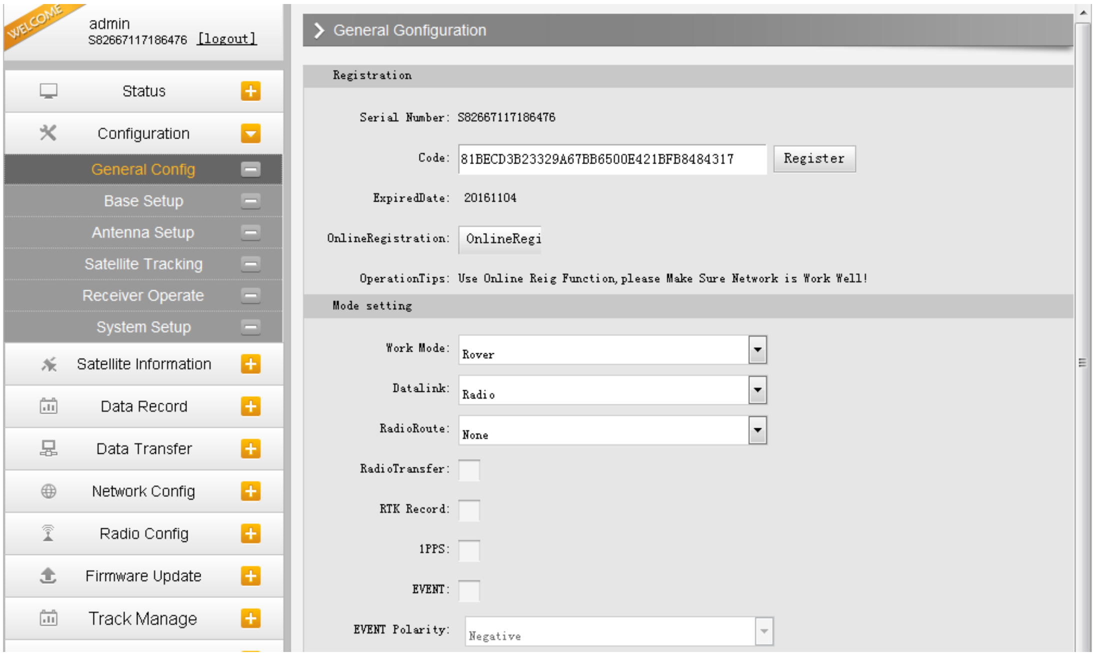
SPECIAL REMIND: We recommend you to do the measurement in usual way with the pole centering in the open air area, the tilt survey function is not the mainly measuring method for the normal fieldwork.

ChapterⅨ Hardware Registration

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

Login the web UI management of New G1 with WiFi or USB network connection.

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


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
General Config
Base Setup
Antenna Setup
Satellite Tracking
Receiver Operate
System Setup
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Track Manage
General Gonfiguration
Registration
Register
OnlineRegi
Mode setting

Serial Number: S82667117186476

Code: 81BECD3B23329A67BB6500E421BFB8484317

ExpiredDate: 20161104

OperationTips: Use Online Reig Function, please Make Sure Network is Work Well!

Work Mode: Rover

Datalink: Radio

RadioRoute: None

RadioTransfer: ☐

RTK Record: ☐

1PPS: ☐

EVENT: ☐

EVENT Polarity: Negative

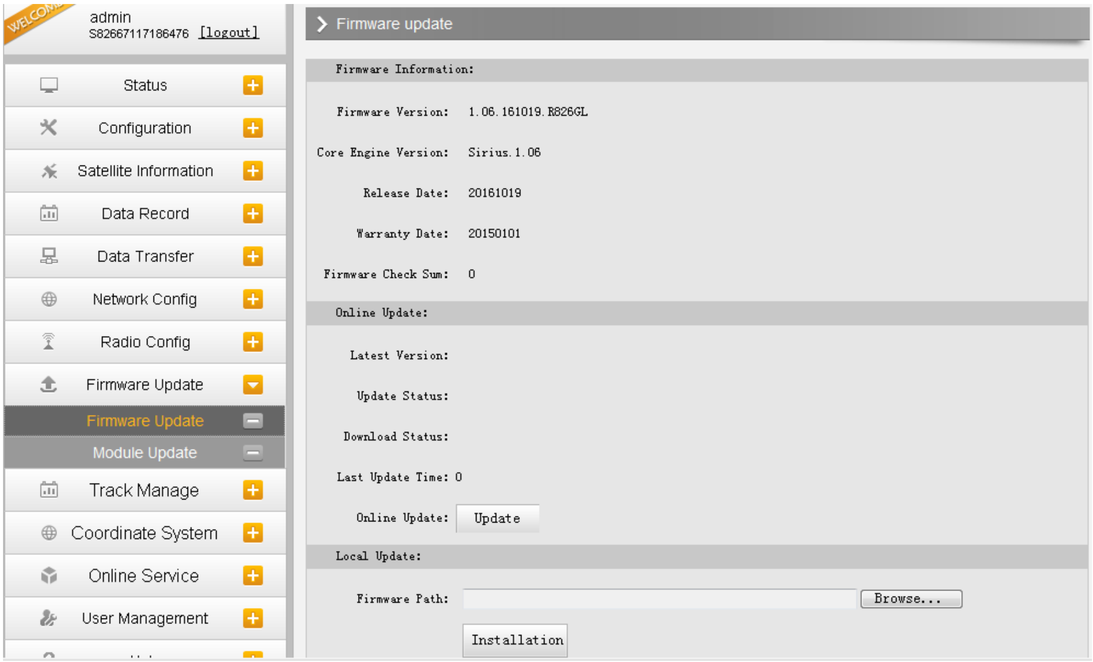
Enter the registration code and click on "Register" button, a prompt message will appear. And the ExpiredDate would be changed.

Chapter Ⅹ Firmware Update

This chapter will explain how to update the firmware for New G1, detail steps are written below.

Login the web UI management of New G1 with WiFi or USB network connection.

Go to "Firmware Update—Firmware Update" configuration page, all the information of the firmware which current installed on New G1 would be displayed here.


WELCOME
admin
S82667117186476 [logout]
Status
Configuration
Satellite Information
Data Record
Data Transfer
Network Config
Radio Config
Firmware Update
Firmware Update
Module Update
Track Manage
Coordinate System
Online Service
User Management
Firmware update
Update
Browse...
Installation

Firmware Information:

Firmware Version: 1.06.161019.R826GL

Core Engine Version: Sirius.1.06

Release Date: 20161019

Warranty Date: 20150101

Firmware Check Sum: 0

Online Update:

Latest Version:

Update Status:

Download Status:

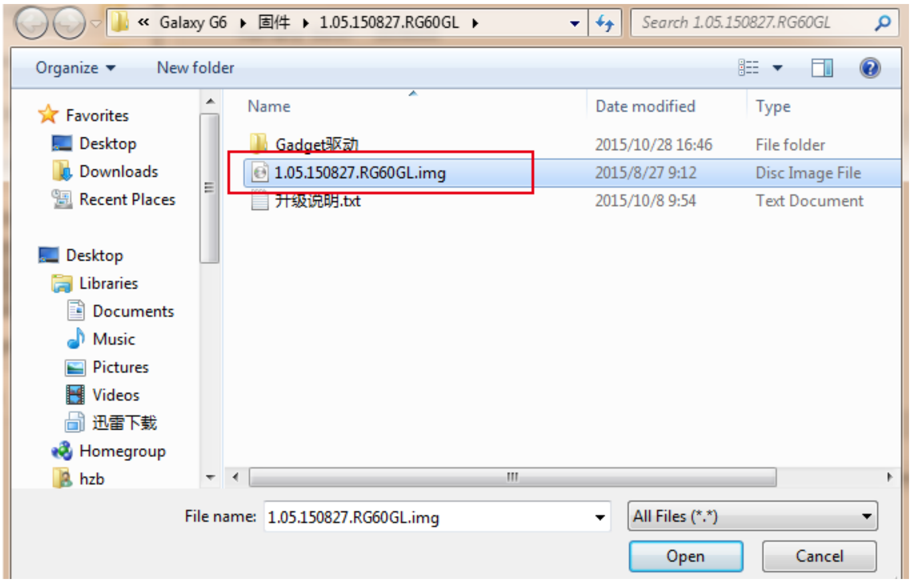
Last Update Time: 0

Online Update: Update

Local Update:

Firmware Path:

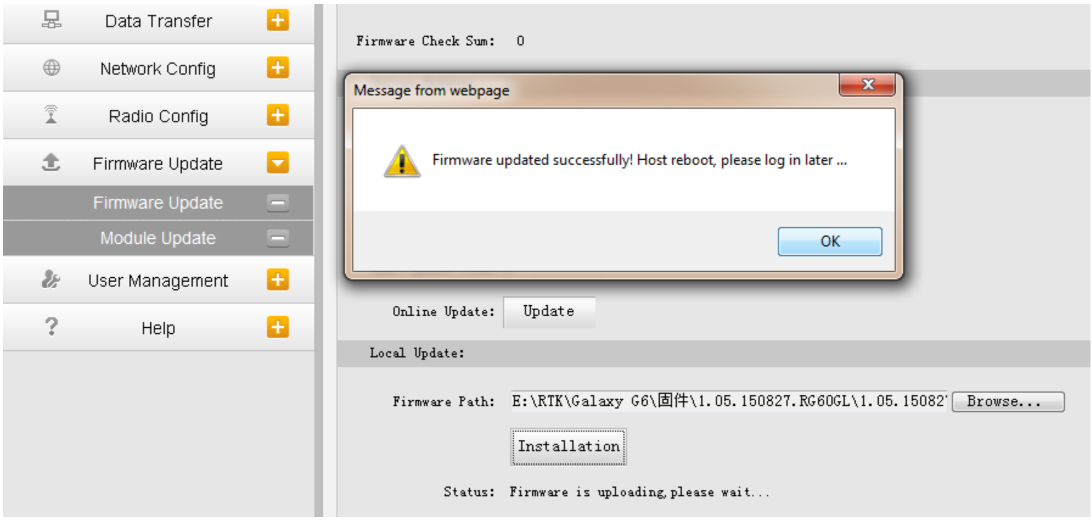
Click on "Browse" button to load firmware file (Please take in mind that the firmware is ended with .img as the extension name).


« Galaxy G6 ▸ 固件 ▸ 1.05.150827.RG60GL ▸
Search 1.05.150827.RG60GL
Organize ▾
New folder
Favorites
Desktop
Downloads
Recent Places
Desktop
Libraries
Documents
Music
Pictures
Videos
迅雷下载
Homegroup
hzb
All Files (*.*)
Open
Cancel

Name	Date modified	Type
Gadget驱动	2015/10/28 16:46	File folder
1.05.150827.RG60GL.img	2015/8/27 9:12	Disc Image File
升级说明.txt	2015/10/8 9:54	Text Document

File name: 1.05.150827.RG60GL.img

And then click "Installation" button to start upgrading.


Data Transfer
Network Config
Radio Config
Firmware Update
Firmware Update
Module Update
User Management
Help
Message from webpage
OK
Update
Browse...
Installation

Firmware Check Sum: 0

Firmware updated successfully! Host reboot, please log in later ...

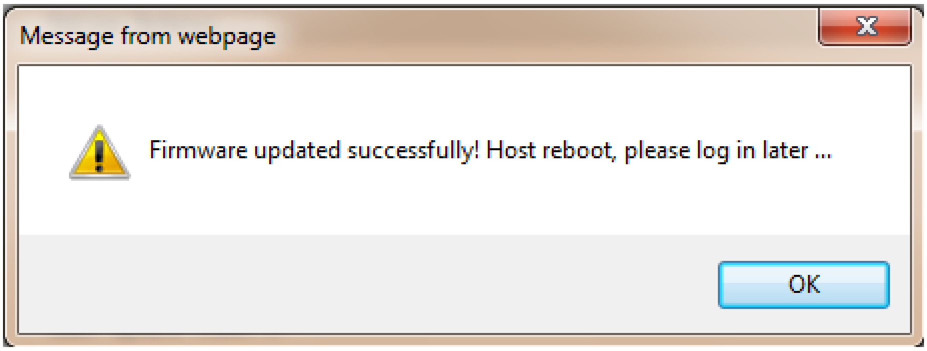
Online Update:

Local Update:

Firmware Path: E:\RTK\Galaxy G6\固件\1.05.150827.RG60GL\1.05.15082'

Status: Firmware is uploading, please wait...

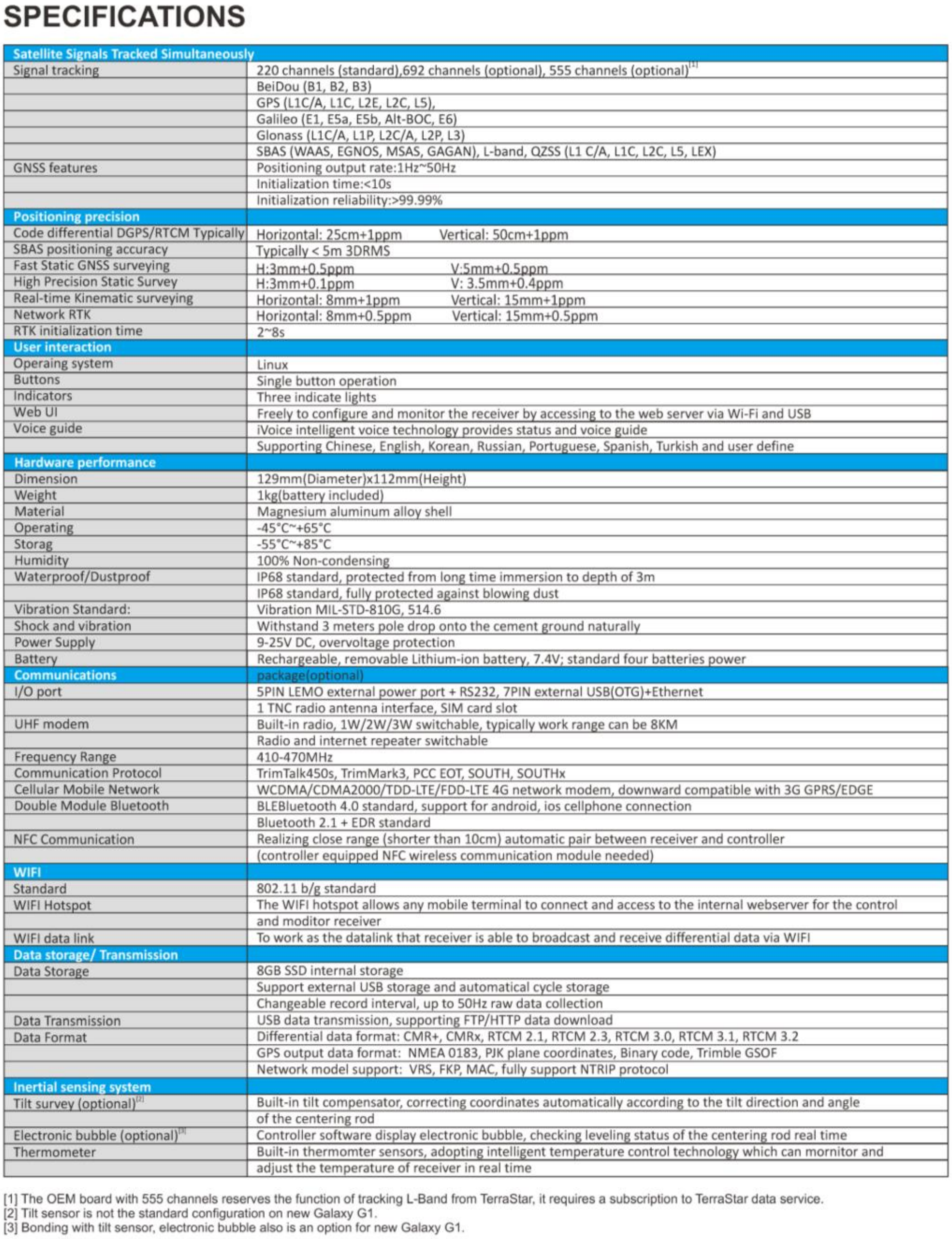
After the firmware is completed upgrading, a dialog will appear saying “Firmware updated successfully! Host reboot, please log in later…”, then the receiver will restart automatically.


Message from webpage
OK

Firmware updated successfully! Host reboot, please log in later ...

SPECIAL REMIND: New G1 doesn’t support to update the firmware with the help of ***INstar*** *program any more, in the future, update the firmware for New G1 shall be done through the Web UI.*

Appendix A New G1 technical specifications



SPECIFICATIONS

Satellite Signals Tracked Simultaneously	
Signal tracking	220 channels (standard),692 channels (optional), 555 channels (optional)[1]
	BeiDou (B1, B2, B3)
	GPS (L1C/A, L1C, L2E, L2C, L5),
	Galileo (E1, E5a, E5b, Alt-BOC, E6)
	Glonass (L1C/A, L1P, L2C/A, L2P, L3)
	SBAS (WAAS, EGNOS, MSAS, GAGAN), L-band, QZSS (L1 C/A, L1C, L2C, L5, LEX)
GNSS features	Positioning output rate:1Hz~50Hz
	Initialization time:<10s
	Initialization reliability:>99.99%
Positioning precision	
Code differential DGPS/RTCM Typically	Horizontal: 25cm+1ppm Vertical: 50cm+1ppm
SBAS positioning accuracy	Typically < 5m 3DRMS
Fast Static GNSS surveying	H:3mm+0.5ppm V:5mm+0.5ppm
High Precision Static Survey	H:3mm+0.1ppm V: 3.5mm+0.4ppm
Real-time Kinematic surveying	Horizontal: 8mm+1ppm Vertical: 15mm+1ppm
Network RTK	Horizontal: 8mm+0.5ppm Vertical: 15mm+0.5ppm
RTK initialization time	2~8s
User interaction	
Operaing system	Linux
Buttons	Single button operation
Indicators	Three indicate lights
Web UI	Freely to configure and monitor the receiver by accessing to the web server via Wi-Fi and USB
Voice guide	iVoice intelligent voice technology provides status and voice guide
	Supporting Chinese, English, Korean, Russian, Portuguese, Spanish, Turkish and user define
Hardware performance	
Dimension	129mm(Diameter)x112mm(Height)
Weight	1kg(battery included)
Material	Magnesium aluminum alloy shell
Operating	-45°C~+65°C
Storag	-55°C~+85°C
Humidity	100% Non-condensing
Waterproof/Dustproof	IP68 standard, protected from long time immersion to depth of 3m
	IP68 standard, fully protected against blowing dust
Vibration Standard:	Vibration MIL-STD-810G, 514.6
Shock and vibration	Withstand 3 meters pole drop onto the cement ground naturally
Power Supply	9-25V DC, overvoltage protection
Battery	Rechargeable, removable Lithium-ion battery, 7.4V; standard four batteries power
Communications	package(optional)
I/O port	5PIN LEMO external power port + RS232, 7PIN external USB(OTG)+Ethernet
	1 TNC radio antenna interface, SIM card slot
UHF modem	Built-in radio, 1W/2W/3W switchable, typically work range can be 8KM
	Radio and internet repeater switchable
Frequency Range	410-470MHz
Communication Protocol	TrimTalk450s, TrimMark3, PCC EOT, SOUTH, SOUTHx
Cellular Mobile Network	WCDMA/CDMA2000/TDD-LTE/FDD-LTE 4G network modem, downward compatible with 3G GPRS/EDGE
Double Module Bluetooth	BLEBluetooth 4.0 standard, support for android, ios cellphone connection
	Bluetooth 2.1 + EDR standard
NFC Communication	Realizing close range (shorter than 10cm) automatic pair between receiver and controller
	(controller equipped NFC wireless communication module needed)
WIFI	
Standard	802.11 b/g standard
WIFI Hotspot	The WIFI hotspot allows any mobile terminal to connect and access to the internal webserver for the control
	and moditor receiver
WIFI data link	To work as the datalink that receiver is able to broadcast and receive differential data via WIFI
Data storage/ Transmission	
Data Storage	8GB SSD internal storage
	Support external USB storage and automatical cycle storage
	Changeable record interval, up to 50Hz raw data collection
Data Transmission	USB data transmission, supporting FTP/HTTP data download
Data Format	Differential data format: CMR+, CMRx, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2
	GPS output data format: NMEA 0183, PJK plane coordinates, Binary code, Trimble GSOF
	Network model support: VRS, FKP, MAC, fully support NTRIP protocol
Inertial sensing system	
Tilt survey (optional)[2]	Built-in tilt compensator, correcting coordinates automatically according to the tilt direction and angle
	of the centering rod
Electronic bubble (optional)[3]	Controller software display electronic bubble, checking leveling status of the centering rod real time
Thermometer	Built-in thermomter sensors, adopting intelligent temperature control technology which can mornitor and
	adjust the temperature of receiver in real time

[1] The OEM board with 555 channels reserves the function of tracking L-Band from TerraStar, it requires a subscription to TerraStar data service.
[2] Tilt sensor is not the standard configuration on new Galaxy G1.
[3] Bonding with tilt sensor, electronic bubble also is an option for new Galaxy G1.

Appendix B GDL-20 radio technical specifications

General specifications	
Frequency bands	450-470MHz
Channel interval	0.5MHz
Channel transfer rate	19200bps
Channel number	8
Frequency Stability	±2.0ppm
Modulation mode	GMSK
Antenna impedance	50Ω
Ambient temperature	-25°C～60°C
Humidity	10-90% relative humidity, non-condensing
Receiver Specifications	
Receiver sensitivity	≤0.25μV(12dB SINAD)
Adjacent Channel Selectivity	≥65dB
Modulation signal frequency deviation	≤±5.1KHz
Intermodulation Rejection Ratio	≥65dB
Audio distortion	≤3%
Transmitter indicators	
RF output power	10W/25W Switchable
Adjacent Channel Rejection Ratio	≥65dB
Spurious frequency components	≤4μW
Residual FM	≤-35dB
Remaining AM	≤2%
Carrier frequency modulation mode	TWO PIN
RS-232 interface	
rate	19200bps can be set
Data stream	1 start bit, 8 data bits, no parity (parity bit can be set), 1

	stop bit
power	DC power supply
voltage	12-15V, the typical of 13.8V, the voltage of the power supply will affect the size of the RF power of the transmitter
Power consumption	
Receiver standby current	≤100mA
The machine operating current of the transmitter	8A
voltage	13.8V
power	15W/25W

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

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

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

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.