

# GENEQ F100

## User Manual



## Statement

Please read carefully:

The final interpretation of this user manual belongs to **GENEQ INC.**

Thank you very much for your purchase. For directions on how to use the product, please be sure to read the user manual.

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

Information in this document is subject to change without notice; **GENEQ INC.** reserves the right to change or improve its products and to make changes in the content without obligation to notify any person or organization of such changes or improvements. If you have any questions, please contact customer service center, or contact our authorized dealers.

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



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First, thank you very much for purchasing Geneq F100 geodesic GNSS receiver (hereinafter referred to as F100). F100 is a GNSS receiver with strong performance and constant strength. It takes LINUX system as the development platform, stable and reliable, support secondary development, it can play well in different fields.

Product Features:

- 5W Receive/Transmit full protocol radio
- Super capacity smart battery
- Capsule design 2.0
- Smart Color touch screen
- Combined antenna
- Tilt Survey 3.0
- Intelligent base
- Type-C port

The next I will show you the excellent performance and usage of F100

## 1. Product Overview



---

### ❶ Satellite indicator light

Extinguish: No receiving satellites;

Blink red: Satellites received, but not positioning success;

Blink green: Positioning success, but not fixed;

Green light on: Fixed solution;

Red/Green lights flicker alternately: GNSS motherboard dysfunction;

---

②	Datalink indicator light	Green light on: Datalink setup success; Blink green: Data transmission; Blink blue: Blue light flashes according to the set static sampling interval;
③	Bluetooth indicator light	Extinguish: No Bluetooth connection; Blue light on: Bluetooth connection with device;
④	Power indicator light	Green light on: Electric quantity: 30%-100%; Blink green: Electric quantity: 10%-30%; Blink red: Electric quantity: < 10%, beeping sound: interval per second. Red light on when charging, green light on after charging;
⑤	Power button	Power button, used to start and close devices
⑥	Display	1.45-inch color touch screen, used for interface display and settings;



①	5pin	To connect external power supply and external radio
②	Type-C	For charging and data transfer
③	SIM	NANO SIM Card

## 2. Technical Specification

### 2.1. GNSS

- Channels: 336
- Signal tracking

Satellite Navigation System	Signals
GPS	L1 C/A, L2E, L2C, L5
GLONASS	L1 C/A, L2 C/A, L3 CDMA
BDS	B1, B2, B3
Galileo	E1, E5A, E5B, E5AltBOC, E6
NAVIC	L5
SBAS	L1 C/A, L5
QZSS	L1 C/A, L1 SAIF, L1C, L2C, L5

- Position accuracy

Position Mode	Plane Precision	Elevation
Static	$\pm (2.5+0.1 \times 10^{-6}D)$ mm	$\pm (5+0.4 \times 10^{-6}D)$ mm
RTK	$\pm (8+1 \times 10^{-6}D)$ mm	$\pm (15+1 \times 10^{-6}D)$ mm

- Initialization time: < 10s
- Initialization reliability: > 99.9%



- Update rate: up to 50Hz

## 2.2. System configuration

Operation system	Linux
Internal Storage	32G
Bluetooth	BT5.0, BLE
WIFI	802.11b, g, n Hotspot / client mode
Radio	RX/TX, Power:5W, Frequency: 403-470MHz
Network (EG25-G)	
Mode	Frequency
<b>LTE FDD</b>	B1/B2/B3/B4/B5/B7/B8/B12/B18/B19/B20/B25/B26/B28
<b>LTE TDD</b>	B38/B39/B40/B41
<b>UMTS</b>	B1/B2/B4/B5/B6/B8/B19
<b>GSM</b>	B2/B3/B5/B8

## 2.3. Tilt Survey

Horizontal precision	0.6mm/°Tilt
30°Rod tip accuracy	Within 2cm
60°Rod tip accuracy	Within 5cm

## 2.4. Weight and Measurement

---

- Weight 1.55KGS
- Measurement 154mm x 154mm x 76mm

## 2.5. Environmental

---

- Work temperature -30°C ~ +65°C
- Stock temperature -40°C ~ +80°C
- Humidity 100% Condensing
- Ingress protection IP67
- Shock & Vibration Withstand 2m along with rod drop onto hardwood floor, 1.2m drop without pole

## 2.6. Electrical

---

- Power 9-28V DC, 2A
- Battery Internal battery, 7.2V, 13600mAH, 97.92Wh

## 2.7. Data Interface

---

- 5Pin To connect external power supply and external radio

- Type-C For charging and data transfer
- SIM NANO SIM 卡

## 2.8. User Interface

---

- Button 1\* button (Power button)
- Indicator light 4\* Indicator lights  
Respectively are: satellites, datalink, Bluetooth, Power
- Display 1.45-inch color touch screen

## 3. WEB UI

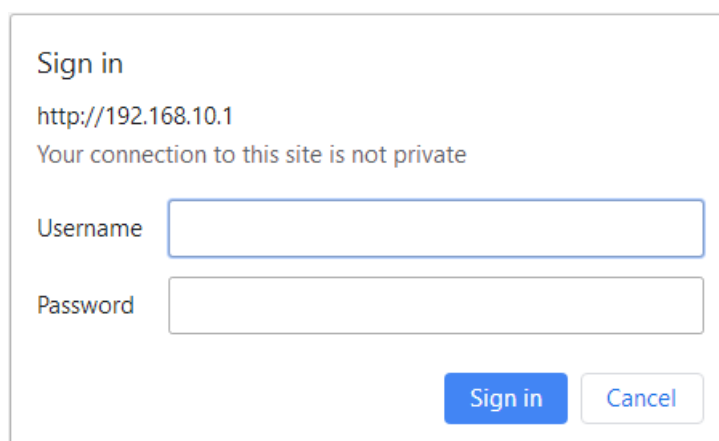
---

F100 has built-in WIFI hotspot. You can log into the WEB UI through WIFI connected smartphone, PC or controllers. The specific operation is as follows.

Firstly, make sure that the WIFI mode of F100 is in [hotspot] state. Then open the smartphone /PC/ hand controller and look for the wireless network with the name of SN and connect to the network. Then open the browser and type in the address bar of the browser: 192.168.10.1. After typing, the browser will access to the login interface.

◆ Username: admin

◆ Password: password



Sign in

http://192.168.10.1

Your connection to this site is not private

Username

Password

### 3.1. Status

---

【Status】 Here you can view the receiver's Position, Data link status, Satellite and information.

### 3.1.1. Position

【Position】 Here you can view the receiver's position information, including System Mode, Latitude and Longitude, Height, Status, Satellite and so on.

Status

**Position**

Datalink

Satellites

Information

Settings

Download

Management

- System Mode: Rover
- Longitude: 113.430350757 °
- Latitude: 23.165009637 °
- Height: 63.146 m
- Status: Single
- Satellites: 41 [GPS: 11, BeiDou: 17, GLONASS: 6, Galileo: 7]
- PDOP: 0.759
- HDOP: 0.442
- TDOP: 0.432
- HRMS: 0.780
- VRMS: 1.093
- Local Time: 2020-07-02 09:22:00
- UTC Time: 2020-07-02 01:22:00

### 3.1.2. Datalink

【Datalink】 Here you can view the receiver's Datalink status. Here you can "connect" or "disconnect" or "restart" the network, as well as "Set Parameters".

Status

Position

**Datalink**

Satellites

Information

Settings

Download

Management

**Network:**

ConnectDisconnectRestartSet Parameter

- Current Status: Initializing
- APN: cmnet
- APN User:
- APN Password:
- Network Provider: Undefined
- Local IP:
- Network Type:
- Signal Level:
- User: F10011205019
- IP Address/Port: 47.107.86.207/6070
- Mountpoint: F10011205019Get MountpointChange

"Setting parameters" include "System mode", "Current datalink", "Automatically start Base", "Data type", "Site ID", "PDOP Threshold", "Base Position", "Record Raw Data", "Network Link", "APN", "Network Type", "Connect mode", "Caster Address", "Caster Port", "Mountpoint", "Password", etc.

Status

Position

Datalink

Satellites

Information

Settings

Download

Management

System Mode
☐ Static
☐ Rover
☒ Base

Current Datalink
☐ UHF
☒ Network
☐ External
☐ Bluetooth
☐ Dual

---

Automatically Start Base
☒ NO
☐ YES

Data Type

RTCM3.2

Site ID

Pdop Threshold

3.5

[1-99]

Base Position
☒ Single
☐ Repeat Position
☐ SMARTBASE

---

Record Raw Data
☒ NO
☐ YES

---

Network Link
☐ WIFI CLIENT
☒ SIM CARD NETWORK

---

APN

cmnet

APN User

APN Password

Network Type
☒ Auto
☐ GSM
☐ CDMA1x

Connect Mode

NTRIP

Caster Address

47.107.86.207

Caster Port

6070

Caster Port

6070

Mountpoint

F10011205019

Password

....

Auto Connect
☐ NO
☒ YES

---

External Serial Port Baud Rate

38400

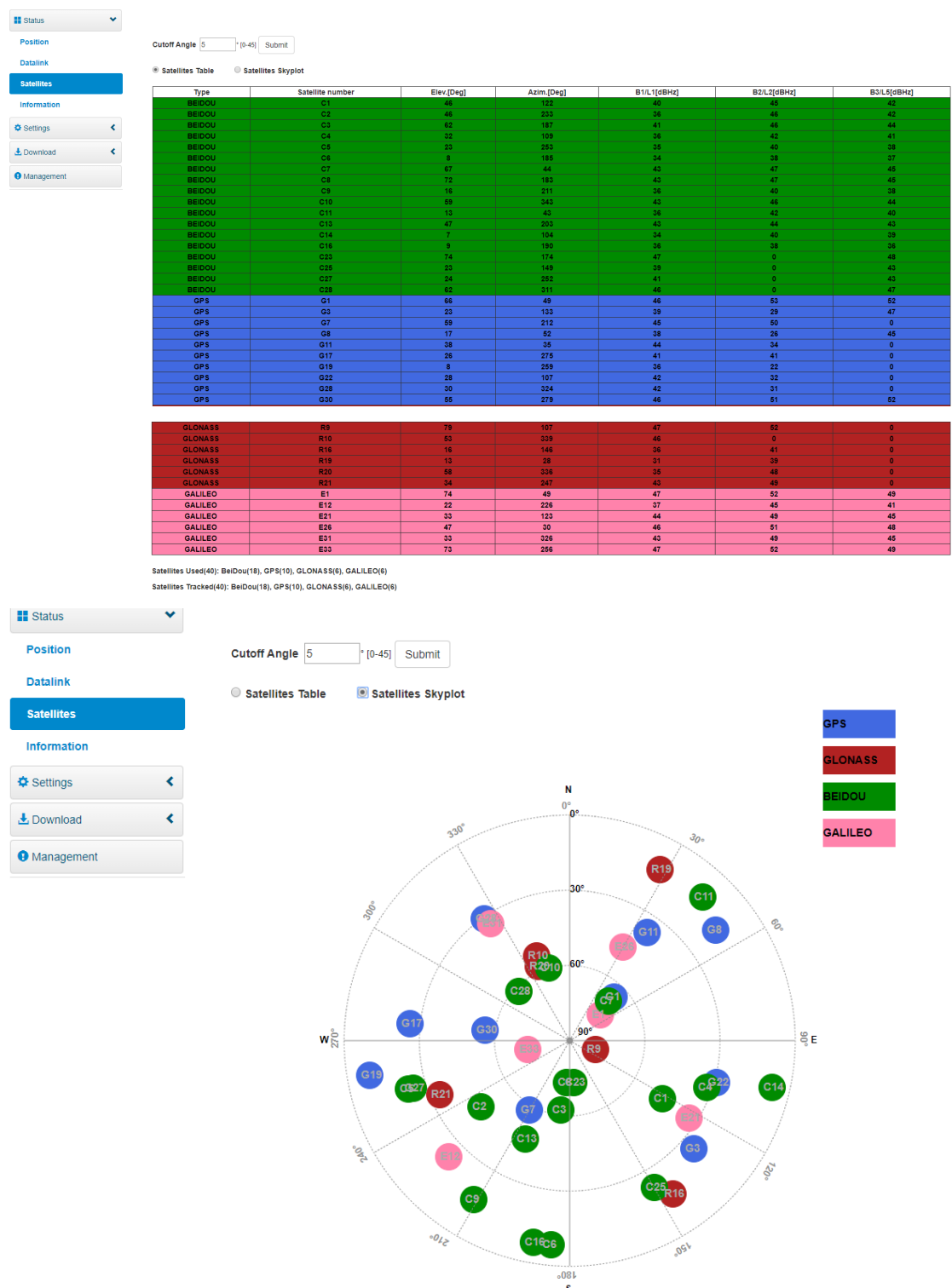
Save

Save and start base

Cancel

### 3.1.3. Satellites

【Satellites】 Here you can view the receiver's satellite list and satellites skyplot, and set the satellite cut-off Angle.



### 3.1.4. Information

【Information】 Here you can view the receiver's master control board information, Antenna information, GNSS board information, Network information, UHF information.

Status

Position

Datalink

Satellites

Information

Settings

Download

Management

Receiver:

Device Model: F100

Hardware Version: V1.22

Firmware Version: 0.22.191210A

MCU Version: 3.15

Battery Power: 10%

Data Memory: Internal Storage Total 28.58 GB; Free 28.58 GB

Serial No.: F10011205019

BOOT Version: 1.12

OS Version: 1.12

Sensor Version: 1.1.2

Power Source: battery

Manufacture Date: 2020-05-24

Antenna:

Antenna Type: FOFA80SX105A

H: 465

HL2: 229

R: 770

HL1: 196

GNSS Board:

GNSS Model: BD990

GNSS BOOT Version: 5.38

GNSS Serial: 5850C00574

GNSS Firmware Version: 5.37

Network:

NETWORK Model: EG25-G

Firmware Version: EG25GGBR07A07M2G

Network Provider: Undefined

Signal Level: 0%

Caster Address: 47.107.86.207:6070

IMEI: 867698041335954

Local IP:

Network Type:

Protocol: NTRIP

Mountpoint: F10011205019

UHF:

Radio Model: TRM501

Firmware Version: G001.02.16Q

Radio Protocol: TrimMark III

Serial: TRM50120050005

Channel: 1 [460.050 MHz]

## 3.2. Settings

【Settings】 Here you can set “Working Mode”, “Satellite Settings”, “Device Configuration”, “NMEA Message”, “View logs”, “Configuration set”

### 3.2.1. Working Mode

【Working Mode】 Here you can set “System Mode”, “Current datalink”, “Data type”, “Site ID”, “PDOP Threshold”, “Base Position”, Record Raw Data”, “Network Link”, “APN”, “Network Type”, “Connect mode”, “Caster Address”, “Caster Port”, “Mountpoint”, “Password”, “External serial port baud rate setting” etc.

Status

Settings

Working Mode

Satellite Settings

Device Configuration

NMEA Message

View Logs

Configuration Set

Download

Management

System Mode
☐ Static
☐ Rover
☒ Base

Current Datalink
☐ UHF
☒ Network
☐ External
☐ Bluetooth
☐ Dual

---

Automatically Start Base

☒ NO
☐ YES

Data Type

RTCM3.2

Site ID

Pdop Threshold

3.5

[1-99]

Base Position

☒ Single
☐ Repeat Position
☐ SMARTBASE

---

Record Raw Data

☒ NO
☐ YES

Network Link

☐ WIFI CLIENT
☒ SIM CARD NETWORK

---

APN

cmnet

APN User

APN Password

Network Type

☒ Auto
☐ GSM
☐ CDMA1x

Connect Mode

NTRIP

Caster Address

47.107.86.207

Caster Port

6070

Mountpoint

F10011205019

Password

....

Auto Connect

☐ NO
☒ YES

---

External Serial Port Baud Rate

38400

Save

Save and start base

Cancel

### 3.2.2. Satellite Settings

【Satellite Settings】 Here you can set “Satellite cutoff Angle”, “GPS, GLONASS, Beidou, GALILEO, SBAS”, “Receiver dynamic model selection”, and “RTK Timeout” setting.



Status

Settings

Working Mode

Satellite Settings

Device Configuration

NMEA Message

View Logs

Configuration Set

Download

Management

Cutoff Angle

5

[0-45]

GPS

Enable

Disable

GLONASS

Enable

Disable

Beidou

Enable

Disable

GALILEO

Enable

Disable

SBAS

Enable

Disable

Receiver Dynamic model

Kinematic

Static

RTK Timeout

30

[1-300]

Save

Cancel

### 3.2.3. Device Configuration

【Device Configuration】 Here you can set “Time zone”, “Direct link Mode”, “Sensors”, 5-pin serial port baud rate”, “Speaker”, “Base Alert”, “Device Debug”, “Power on automatically when connect5-pin cable”, “Network Enable”, “WIFI Hotspot share Network”, “Static File Naming Way”

Status

Settings

Working Mode

Satellite Settings

Device Configuration

NMEA Message

View Logs

Configuration Set

Download

Management

Time Zone

GMT+8:00

Direct Link Mode

Disable

Sensor

5Hz

5-pin Serial Port Baud Rate

115200

Speaker

Enable

Disable

Base Alert

Enable

Disable

Device Debug

Enable

Disable

Power on automatically when connected 5-pin cable

Enable

Disable

Network Enable

Enable

Disable

WIFI Hotspot Share Network

Enable

Disable

Static File Naming Way

RINEX 3.02

RINEX 2.11

Save

Cancel

### 3.2.4. NMEA Message

【NMEA Message】 Here you can set “GGA,ZDA,GEDOP,GSA,GSV,GEREF,GST,VTG,GESNR,RMC, GLL, GEVCV and External Port Output NMEA”

Status

Settings

Working Mode

Satellite Settings

Device Configuration

NMEA Message

View Logs

Configuration Set

Download

Management

Output General

GGA: 1HZ ZDA: 1HZ GEDOP: Off

GSA: 1HZ GSV: 5S GEREf: 5S

GST: 1HZ VTG: 1HZ GESNR: 5S

RMC: Off GLL: Off GEVCV: 1HZ

External Port Output NMEA ☒ Enable ☐ Disable

Save Cancel

### 3.2.5. View Logs

【View Logs】 Here you can view and download “APP Log” and “OS Log”.

Status

Settings

Working Mode

Satellite Settings

Device Configuration

NMEA Message

View Logs

Configuration Set

Download

Management

View Logs

1. APP Log Download View

2. OS Log Download View

### 3.2.6. Configuration Set

【Configuration Set】 Here you can upload the configuration file and Save Current Settings.

Status

Settings

Working Mode

Satellite Settings

Device Configuration

NMEA Message

View Logs

Configuration Set

Download

Management

Choose File

No file

Upload Configuration

Name	Create Time	Operation
<div>Save Current Settings</div>		

### 3.3. Download

【Download】 Here you can download the raw data and the backup data.

#### 3.3.1. Raw Data

【Raw Data】 Here you can download and delete the original data, and convert according to the required RINEX format and compressed format. You can also edit the file name and choose the antenna fetching method, etc.

Status

Settings

Download

Raw Data

Backup Data

Management

Select	Name	Size (MB)	Antenna Height (m)	Start Time	End Time	Operation
<input type="checkbox"/>	50191841.dat	0.53	1.800	2020-07-02 11:19:36	2020-07-02	<div>ConvertDownloadEdit</div>

Select All

Package

Delete Selected

## Edit

File Name

50191841.dat

Point Name

5019

Antenna Measurement

Antenna vertical height(from bottom)

Antenna Height

1.800

m

SaveCancel

### 3.3.2. Backup Data

【Backup Data】 Here you can download and delete the backup data.

Status

Settings

Download

Raw Data

Backup Data

Management

Select	Name	Size (MB)	Operation
Select All	Package	Delete Selected	

### 3.4. Management

【Management】 Here you can “Upgrade online”, “Device Registration”, “RTX/XTRa License Information checking”, “Security Settings”, “Format Internal Disk”, “Self-Test”, “Restore Factory Settings”, “Reset”.

Status

Settings

Download

Management

Install New Firmware ?

Choose File No file chosen

Upload File

Registration

Expire Date: 20200825

Function: L1+L2,GPS+BeiDou+Galileo,50Hz,TiltOn

AuthCode: 6D81F1B8491C64636B863247BCFB12C

Submit

RTX/XTRa License Information

RTX Start Date: --

RTX Expiration Date: --

XTRa Start Date: 2019-04-15

XTRa Expiration Date: 2030-12-31

Security

Enable Login Authentication

Old Password:

New Password:

Confirm Password:

Change

Enable WIFI Connect Authentication

The length of the wifi password must be greater than 7.

Change

Format Internal Disk

OK

Self Test

OK

Restore Factory Settings

OK

Reset

OK

## 4. Panel Settings

### 4.1. Power on or off

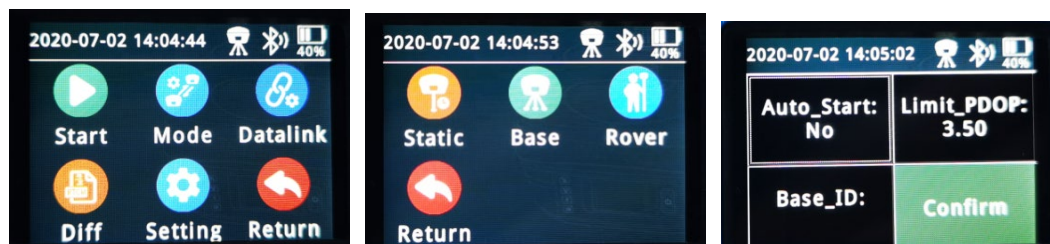
Short press the power button to start the machine, long press the power button to shut it down. After receiver is started, the default setting will be the working mode setting of the last shutdown, and the setting interface in relevant mode

### 4.2. Working Status Interface

【Working Mode】 Here you can set "Base station", "Rover Station", "Static". After entering the main interface, you can right-click to enter the main setting interface

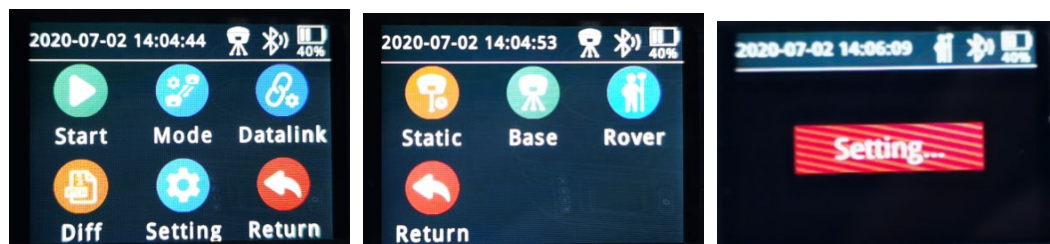
#### 4.2.1. Base Station Mode Interface

Click "Work Mode" → click "Base" to enter the base station setting interface, including whether to start automatically, limit PDOP, base station ID→ Click "Ok" after setting. If automatic recording is selected, click "Ok" to start recording automatically; If you do not select automatic recording, you need to manually click "Start Recording" to start recording.



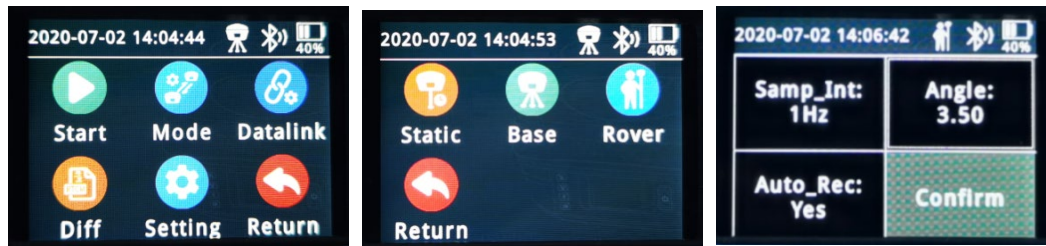
#### 4.2.2. Rover Station Mode Interface

Click "Working Mode" → click "Rover" to finish "Rover Station settings"



#### 4.2.3. Static Mode Interface

Click "Working mode" → click "Static" to enter the static setting interface, including sampling interval, cut-off Angle and whether to automatically record Settings → click "Confirm" after setting. If automatic recording is selected, click "Confirm" to start recording automatically; If you do not select automatic recording, you need to manually click "Start Recording" to start recording.

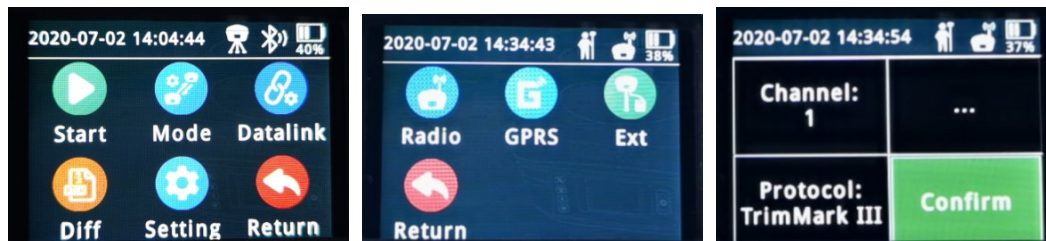


### 4.3. Datalink

【Datalink】 Here you can make Radio, GPRS, External Settings

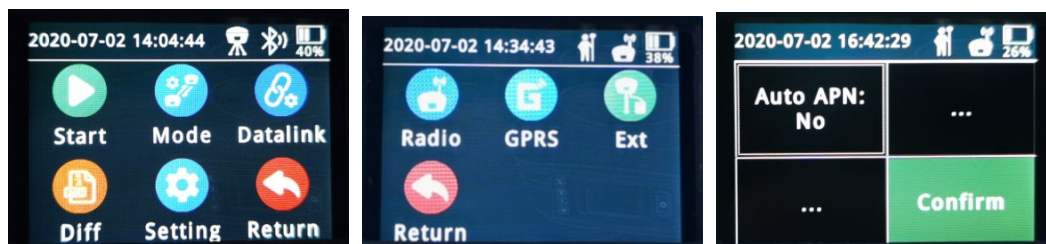
#### 4.3.1. Radio

Click "Data link" → click "Radio" to enter the interface of radio setting, including channel and radio protocol setting → Click "Confirm" after setting.



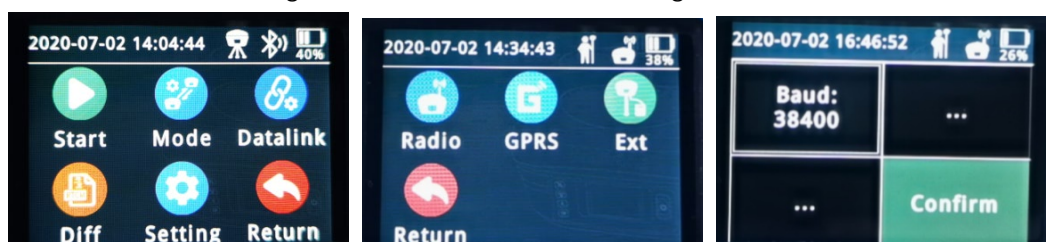
#### 4.3.2. GPRS

Click "Data link" → click "GPRS" to enter the GPRS setting interface, which is mainly about "whether automatic APN" → Click "OK" after setting.



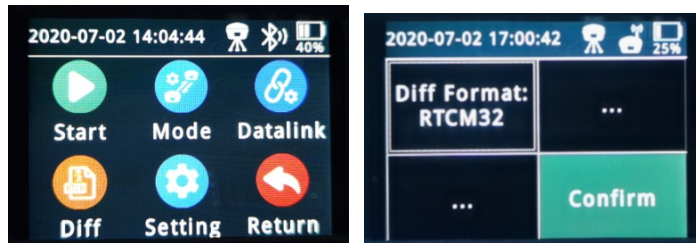
#### 4.3.3. External

Click "Data link" → click "External" to enter the interface of external setting, which is mainly about "Baud rate setting" → Click "Confirm" after setting



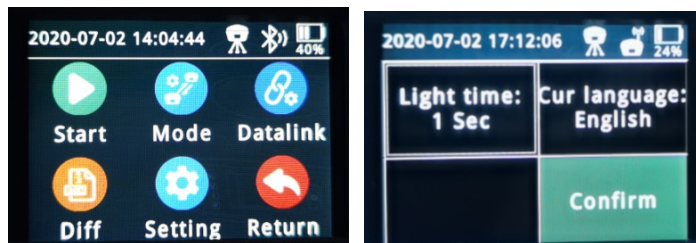
#### 4.4. Differential

【Differential】 Here you can set the "Differential". Click "Differential" to enter the interface of Differential format setting. Click "Confirm" after setting.



#### 4.5. System Settings

【Differential】 Here you can do backlight time, language Settings. Click "Setting" to set the backlight time and Language. Click "Confirm" after setting.

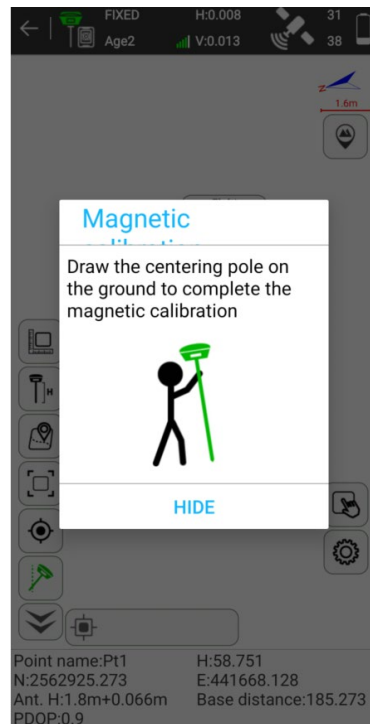


### 5. Tilt Calibration Instructions

#### 5.1. Magnetic Calibration

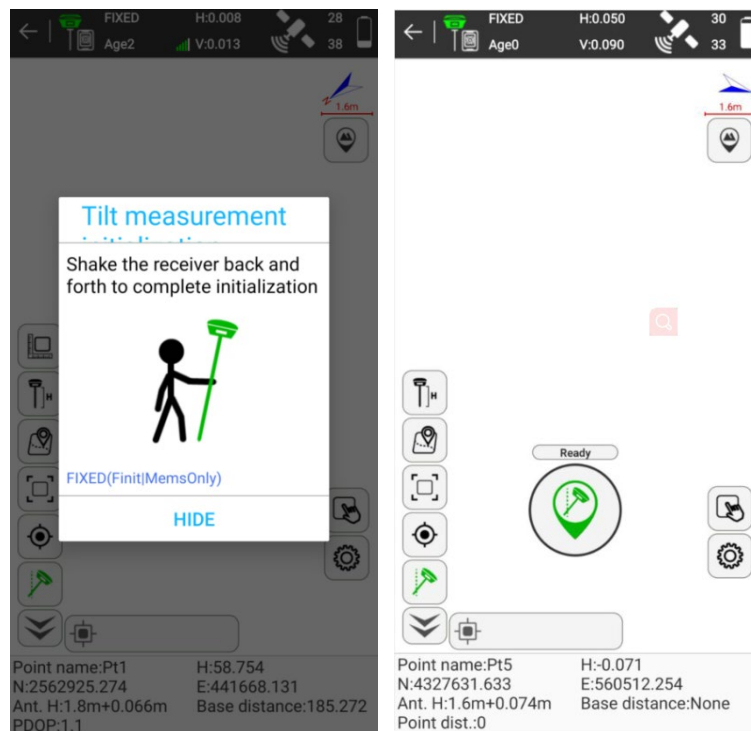
After the receiver is turned on and get fixed solution, the calibration can begin. The specific operation mode is as follows: the pole can be calibrated by drawing a circle on the ground. Generally, it only needs to draw one or two circles, as shown in the figure below.





## 5.2. MEMS Calibration

After the instrument reaches the fixed solution and the magnetic calibration be completed, the MEMS calibration can be started. There are two calibration methods: 1. Shake the receiver back and forth; 2. Walk 20 or 30 meters, carrying the instrument. When the MEMS status shows Green "Ready", the calibration is finished.



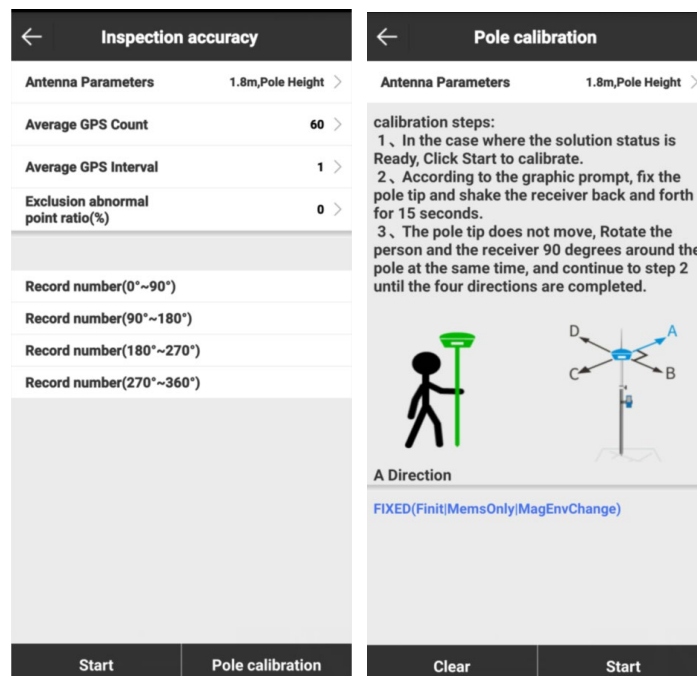


### 5.3. Pole Calibration

F100 does not require a dedicated pole. Any pole can be used. It only needs to be calibrated when changing the pole. Each pole should be calibrated only once, as shown in the figure below.

Calibration steps:

- If the solution state is available, click Start to calibrate
- Fix the pole tip and shake the receiver back and forth for 15 seconds according to the prompt
- Without moving the bar tip, rotate the receiver and the person around the pole 90° at the same time. Continue step 2 until the 4 directions are completed



## 6. Accessories

### F100 Accessory

Type	Model	Description	Quantity
Standard accessories			
Adapter	KSA-45P-45W	Type-C Port, 15V/3A, With US、UK、 EU、 AU Plug	1
Charging Cable	CTMM-1.5	TYPE-C --TYPE-C, 1.5m	1
USB Cable	CUTM-1.5	USB--TYPE-C,1.5m	1
UHF Antenna	QT400-T	TNS-J F:403-473	1
Tape	MTSP4	3m tape	1
Pallet	TRB1	Pallet	1
Connector	CNTRC	Connect Tribrach and Plummet	1
Bracket		Bracket	1
Instrument Case		Yellow, Rigid plastic case	1

Tel. : 514 354-2511  
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