Smart Construction Rover
Dual GNSS Receiver ”SC Rover”
Installation Manual

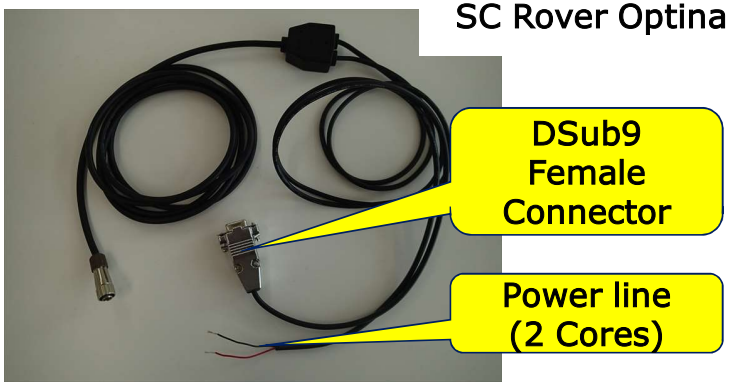
What is "SC Rover‟ Setting Tool App "RTFSetting ‟ ?

- "RTFSetting" Setting Tool App is a dedicated app for setting “SC Rover".
- This is an Android device-only App.
- This App may not be available on all Android devices.
- “SC Rover” and Android device are set with Bluetooth communication.

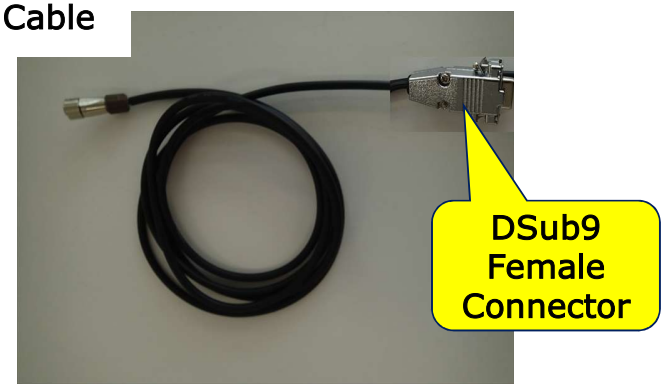
“SC Rover” receiver port and Connection cable

Power source: 9V ~ 36 Vdc or 4.8Vdc (battery)

SC Rover Optinal Cable

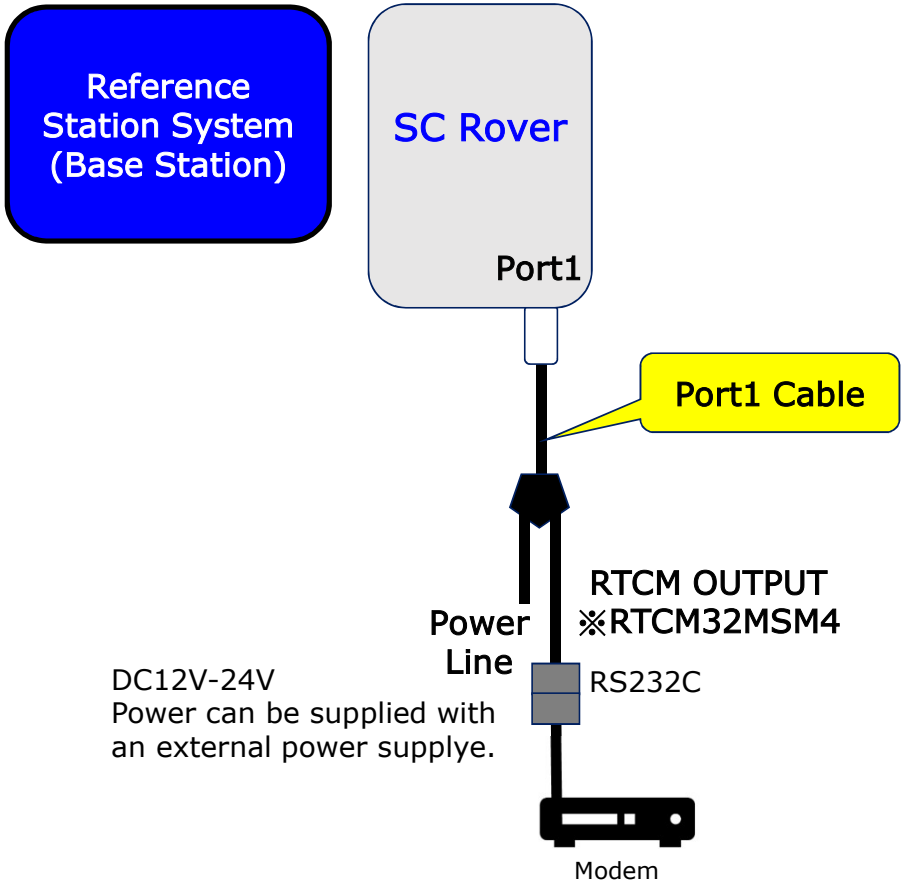


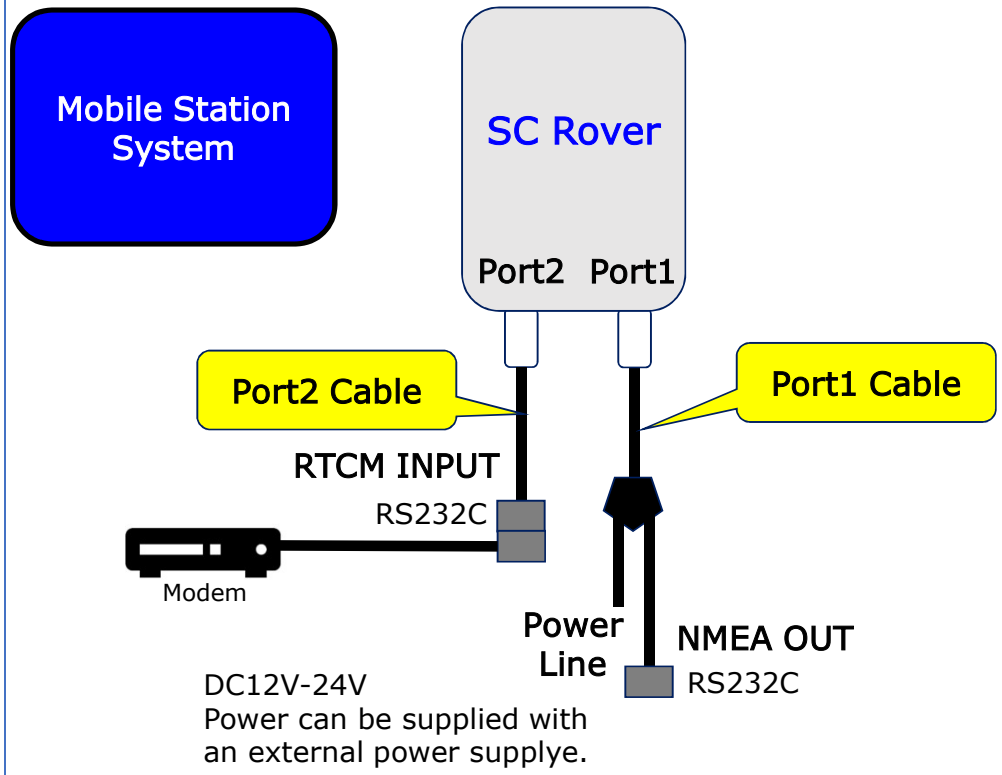
Port1 Cable



Port2 Cable

"SC Rover" Connection Cable





"SC Rover" ：Internal switch（Back side of receiver: Inside battery case ）

When using an external power supply, but with a built-in battery and using the battery as a countermeasure against momentary interruption

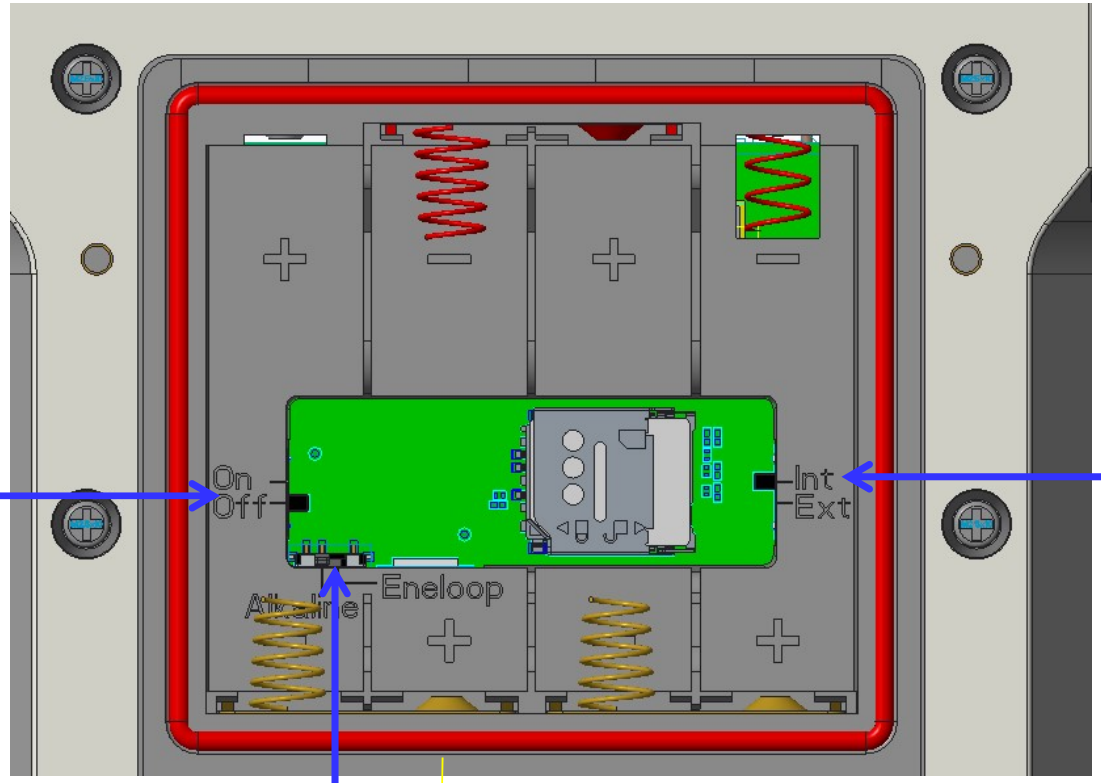
ON
Temporarily use the battery for momentary interruption

On

OFF
Using a battery as a power source

Off

When using batteries, "Off"



Int

Int : Setting Mode
Ext : Normal mode

Ext

Usually use "Ext"

Alkaline

Eneloop

There is no problem if you use the switch with the wrong settings.
*Operating time when using batteries will change slightly.

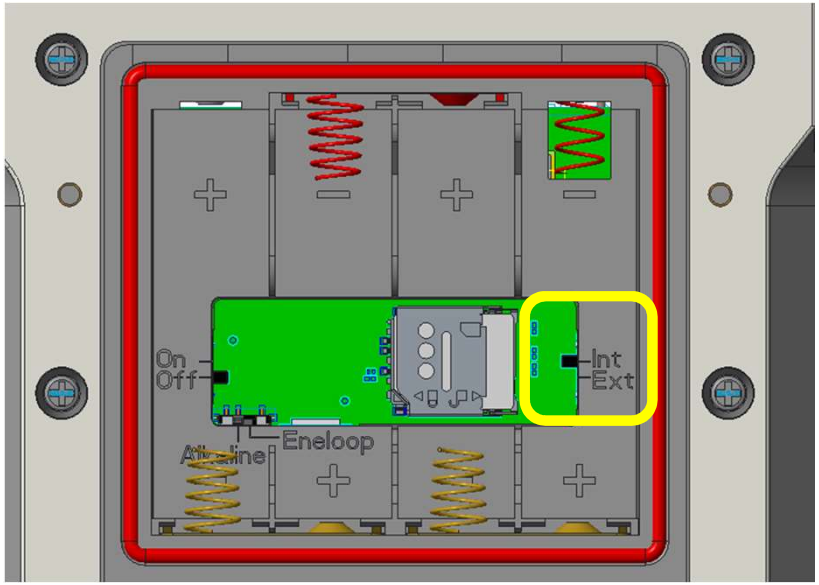
Alkaline : Using alkaline batteries
Eneloop : Using Nickel-metal hydride rechargeable battery

The continuous operation time when using Eneloop is about 4 hours.

"SC Rover" Setup

"SC Rover" ：Setting preparation (Set to setting mode ）

■ Turn off the power of "SC Rover".
■ Open the lid on the back of the main unit and switch the switch in the yellow frame to "Int".
■ Turn on the power of "SC Rover" main unit with a battery or an external power supply.
*BATT Lump : Green when using batteries, red when using external power supply
■ After turning on the power, "SC Rover" starts in the setting mode. (It takes a few minutes to start up.)
GNSS lamp is off, WiFi lamp is on, and BT lamp is on, and you can access it by the Settings app.

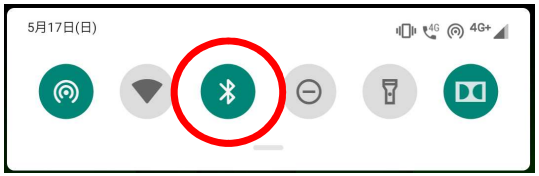


Turn on Bluetooth on Android device

Turn on Android device and turn on Bluetooth. (Ex : Motog7)

Motog7

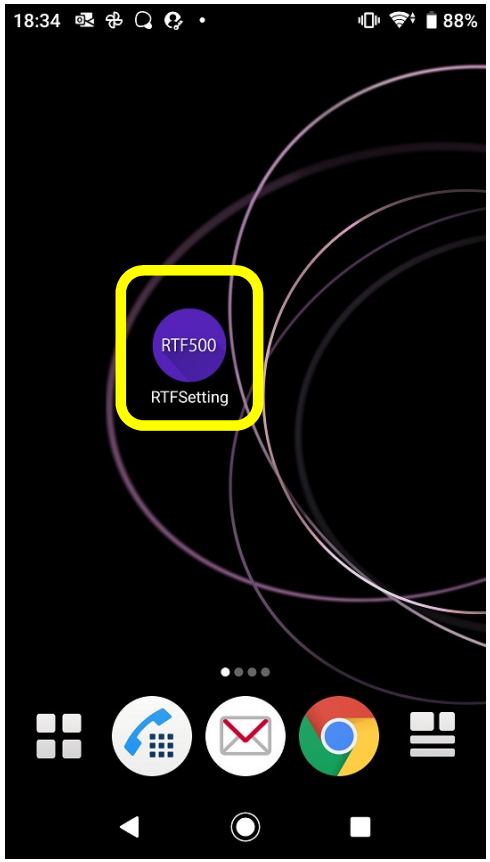
Hold your finger on the top of the screen and slide it down. (Swipe down)



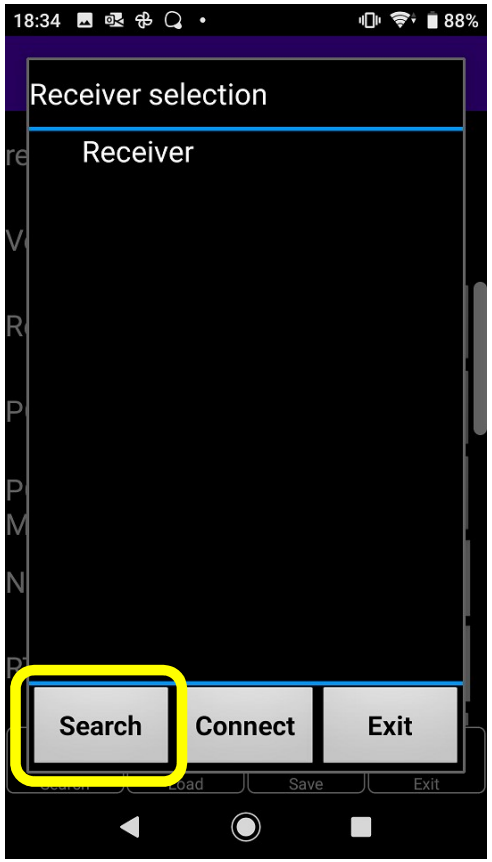
Make sure **Bluetooth** is **turned on.**

* The operation may differ depending on the Android device used.

“SC Rover” Setting App: Strat “RTFSetting”



Tap "RTFSetting" icon.



Tap "Search" button.

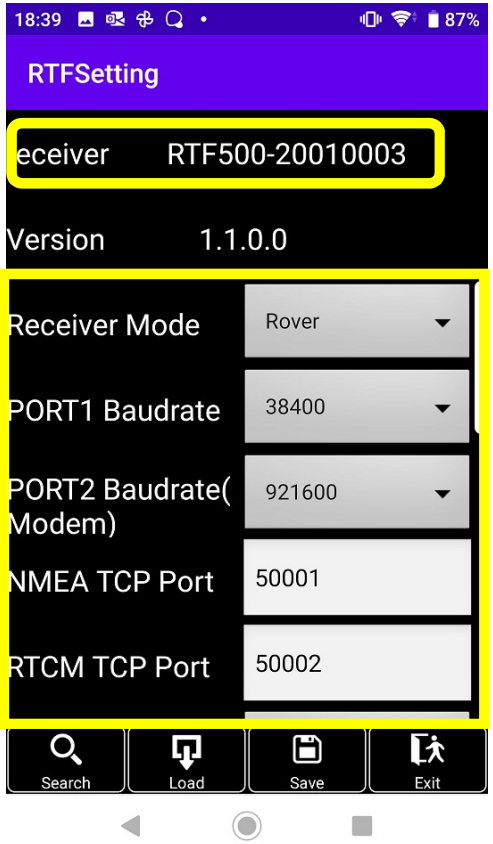
Select Receiver to set

The Receiver serial number referenced in "Search" is displayed.

The serial number of **"SC Rover"** is printed on the back cover of main unit.

Tap the Receiver you want to set, then tap "Connect" button.

"SC Rover" : Setup



When "SC Rover" and Android device are connected via Bluetooth, the serial number of the connected receiver will be displayed.

Once connected, the contents of the current receiver settings will be displayed.

Mobile Station System (Rover) : Setting

Items	Setting Value / Description
Receiver Mode	Please set to Rover.
PORT1 Baudrate	Set PORT1 Cable (RS232C) communication speed. Please adapt the speed with the capture device or App for the NMEA output port.
PORT2 Baudrate （Modem）	Set PORT2 Cable (RS232C) communication speed. This setting is used when using RTK with the radio. Please match with the RS232C communication speed of the radio.
NMEA TCP Port	50001 This is the port number for NMEA output to SmartMate. Please do not change.
RTCM TCP Port	50002 This is the port number for outputting RTCM messages (RTK correction data) to SmartMate. Please do not change.

Items	Setting Value / Description
NMEA Out Rate	This is the output cycle of the NMEA message output to PORT1 or TCP port (50001). Please select from 1Hz, 5Hz, 10Hz.
GGA Use	Select ON to output NMEA-GGA and OFF to not output.
GNS Use	Same as above
GSA Use	Same as above
GSV Use	Same as above
RMC Use	Same as above
VTG Use	Same as above
ZDA Use	Same as above
Elevation Mask	Elevation mask setting. Please select from 5 degrees, 10 degrees, 15 degrees, and 20 degrees.

Reference Station System (Base Station) : Setting

Items	Setting Value / Description
Receiver Mode	Please set to Base Station.
PORT1 Baudrate （Modem）	Set PORT1 Cable (RS232C) communication speed. This setting is used when using RTK with the radio. Please match with the RS232C communication speed of the radio.
RTCM Out TCP Port	Please set the TCP port number to output the RTCM message. *Not normally used.
GPS	Select ON when using GPS satellites and OFF when not using them. When using a radio, select GPS, GLONASS, Beidou, or Galileo. If the total number of satellites exceeds 30, the communication speed of the radio may not be in time and the positioning result may be affected. (Assuming an air-intermediate speed of 4800 bps for the radio.） Ex）GPS + GLONASS, GPS + Beidou, etc.
GLONASS	Same as above
Beidou	Same as above
Galileo	Same as above

Items	Setting Value / Description
Base Lat	Enter the coordinates (latitude) of the location where the base station GNSS antenna is installed in decimal (degree format). Ex) 35.379506622
Base Lon	Enter the coordinates (longitude) of the location where the base station GNSS antenna is installed in decimal (degree format). Ex) 139.644391867
Base Alt	Enter the height (ellipse height) of the location where the base station GNSS antenna is installed. Ex) 50.123（m)
NTRIP Caster Host	Set when using SC_Rover as an NTRIP server. Please enter the Host address of NTRIP Caster.
NTRIP Caster Port	Please enter the connection port number to NTRIP Caster.
NTRIP Caster MountPoint	Please enter the mout point to NTRIP Caster.
NTRIP Caster Password	Please enter NTRIP Caster password.

*NTRIP Caster support is scheduled to be released after October 2020.
Currently, entering the connection information does not work.

"SC Rover" : Correction wave of the Reference Station (Base Station)

- When using an external radio with the "SC_Rover" Base station, the correction wave to be transmitted is fixed to "RTCM32MSM4".
  *SC_Rover can also be sent with "RTCM32MSM7", but the amount of data is about 1.7 times that of "RTCM32MSM4". In order to reduce the transmission data size, please transmit the data with "RTCM32MSM4".

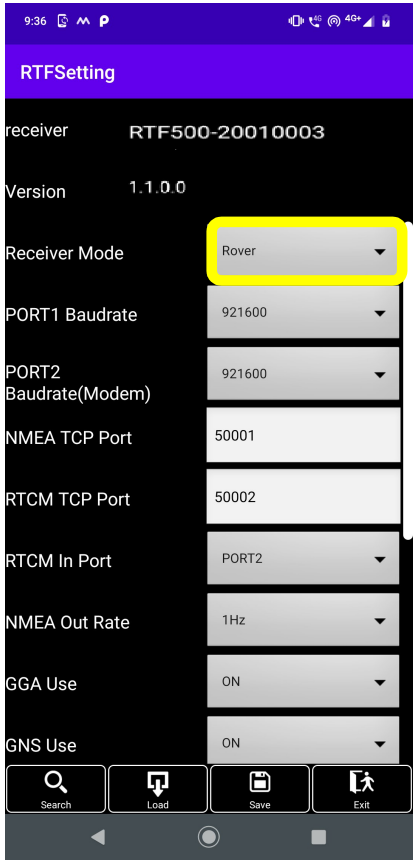
- Depending on the wireless receiver used at the Base station, the satellite information to be transmitted can only be transmitted by GPS + GLONASS or GPS + BEIDOU.

- If the mobile station GNSS receiver does not support the correction wave **"RTCM32MSM4"**, RTK will not be in the "FIX" state.

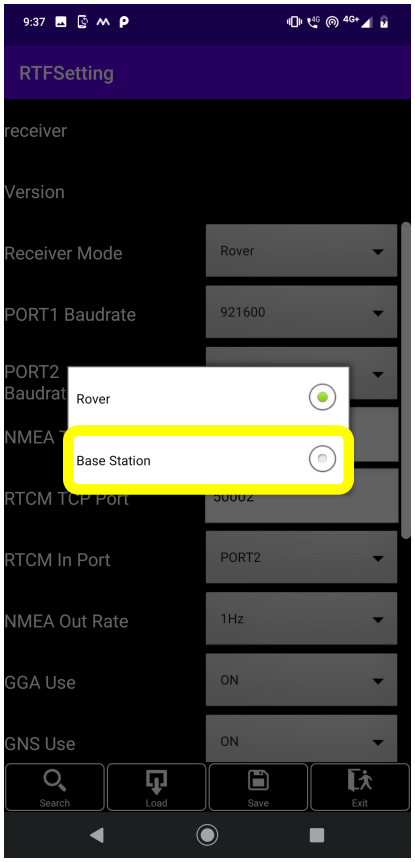
- Even if the mobile station receiver supports the correction wave "RTCM32MSM4", it may not be in the "FIX" state due to specifications such as manufacturer compatibility.

- Depending on the specifications of the radio used, it may not be possible to send satellite information of the Base station.

Reference Station System (Base Station) : Setup

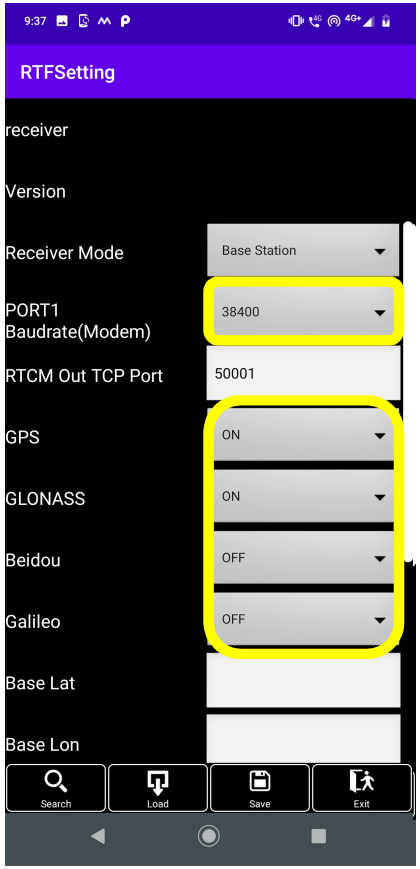


Tap "Receiver Mode".



Tap "Base Station".

Reference Station System (Base Station) : Setup



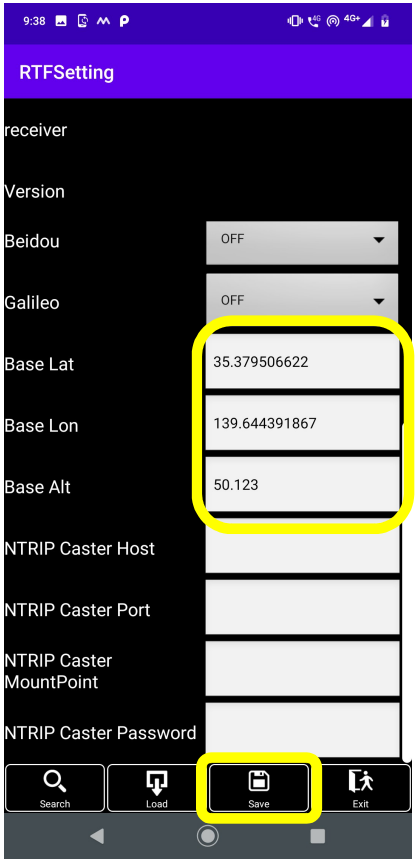
When using an external radio, **"PROT1 Baudrate (Modem)"** Select the baud rate of the radio used in.

Set **"GPS" + "GLONASS" or "GPS" + "Beidou" to "ON".**

*If other satellites are turned on, data transmission may not be possible depending on the specifications of the radio.

* It depends on the specifications of the radio used.

When using "SC Rover" as a base station, the correction wave to be transmitted is fixed to **"RTCM32MSM4"**.

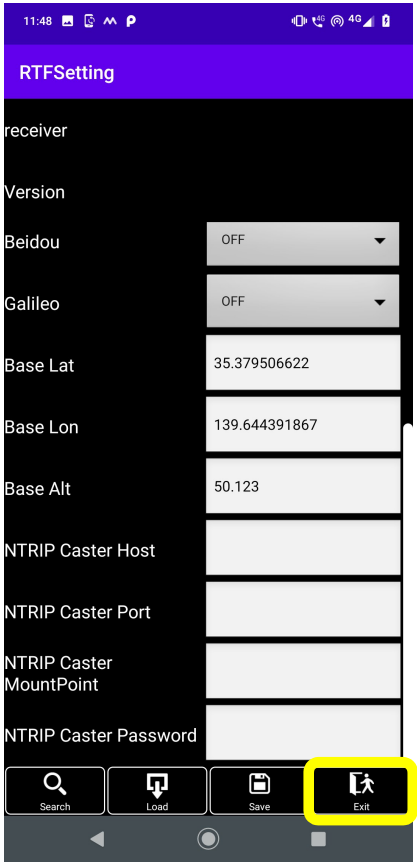


Please enter the following information into Base station:

Latitude (Lat)
… Degree (Decimal number)
Longitude (Lon)
… Degree (Decimal number)
Elliptical height (Alt)
…Meter

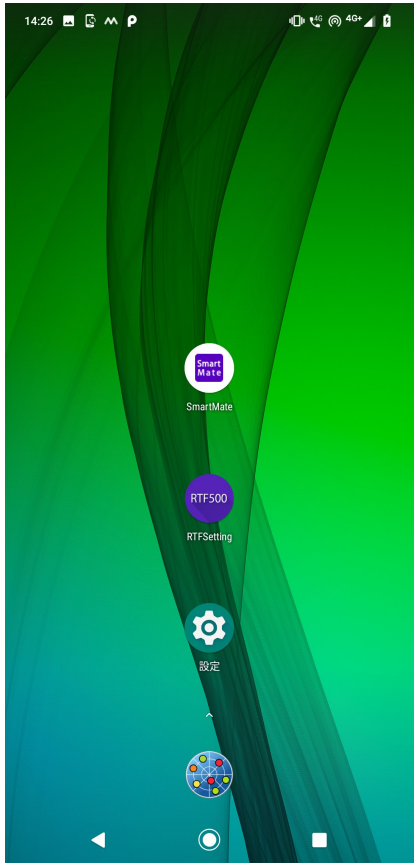
Confirm the input value and tap **"Save"** .

Reference Station System (Base Station) : Setup



When the "Write successful" message is displayed,
Tap "Exit"

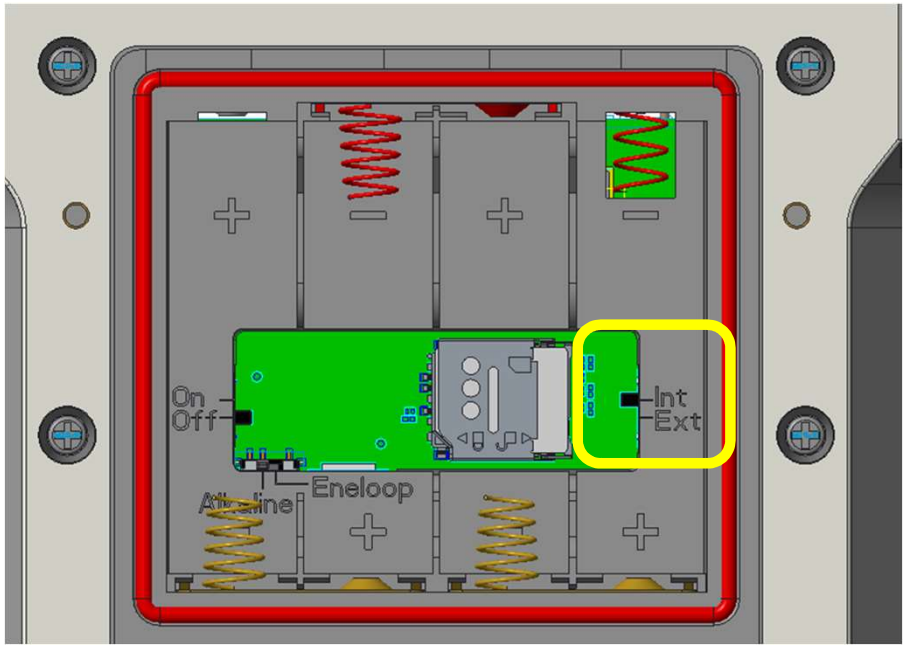
This completes the Base Station settings.



After the operation is completed, the screen returns to the home screen.

"SC Rover" : Return from setting mode to measurement mode

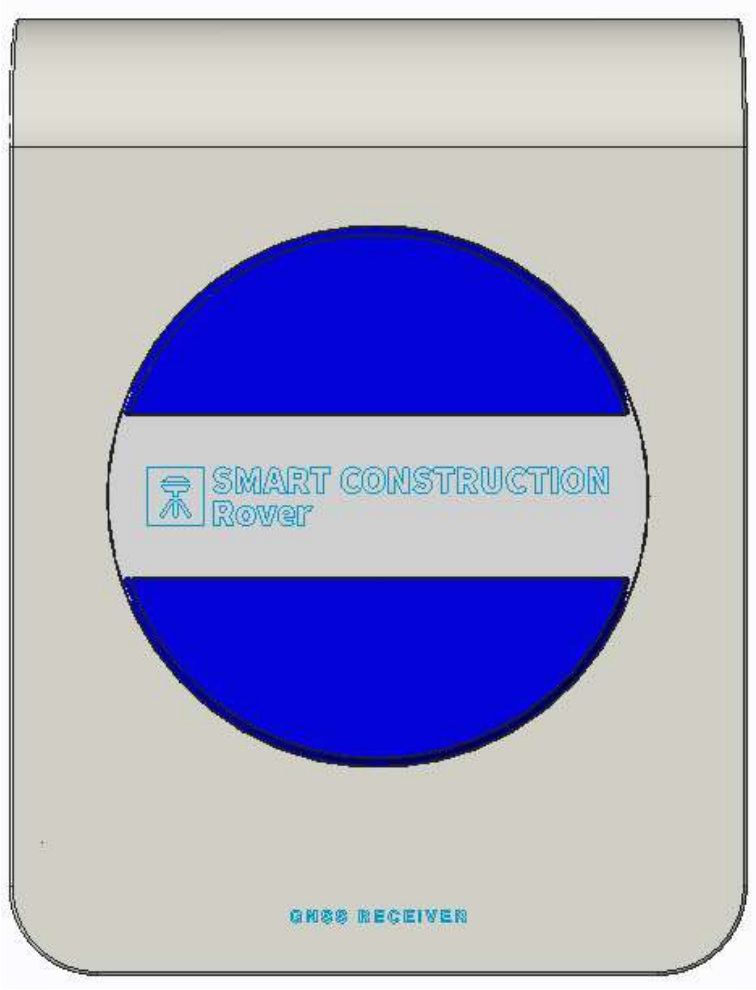
- Turn off the power of the "SC Rover" main unit.
- Return the switch in the yellow frame on the back of the "SC Rover" from "Int" to **"Ext".**
- Turn on the power of "SC Rover" and turn it "ON".



This completes the Base Station setup procedure.
Please connect to the radio and check the operation.

Fin

SC Rover Product Appearance



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Declaration of Conformity

Hereby, LandLog declares that Smart Construction Rover (model#: SC Rover) 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.

Smart Construction Rover product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC, and fulfills the requirements of EN 62368-1:2014/A11:2017.

FCC ID: 2AXNO-SCROVER-01

This SC Rover product is manufactured by AKASAKATEC INC.
3F. Marina Plaza 4-2, Shiraho, Kanazawa-ku, Yokohama-shi, Kanagawa, 236-0007 Japan
Phone : +81-45-774-3570

NOTE: 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.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

Referring to the multi-transmitter policy, multiple-transmitter(s) and module(s) can be operated simultaneously without C2PC.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Shielded cables must be used with this unit to ensure compliance with the Class B FCC limits.