

AgriBus-GMini User's Guide - RTK -

Ver. 1.0.2

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RTK

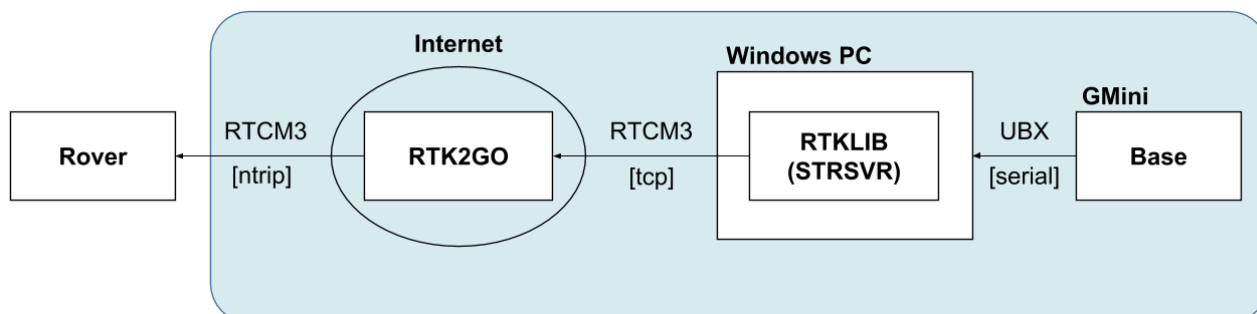
Procedures for performing RTK-based positioning using AgriBus-GMini (hereinafter referred to as GMini) are explained.

GMini is equipped with GNSS modules manufactured by u-blox Corporation, and RTK-based positioning can be performed by using RTK2GO, which is a NTRIPcaster service. However, RTK positioning is not always possible because it is not guaranteed to work. Please note.

■ National Bureau of Standards

This chapter explains how to set the GMini as the reference station (Base). This corresponds to the shaded area shown below.

In order to distribute the information of the reference station (Base) to the Internet, PCs must be connected to the Internet at all times.

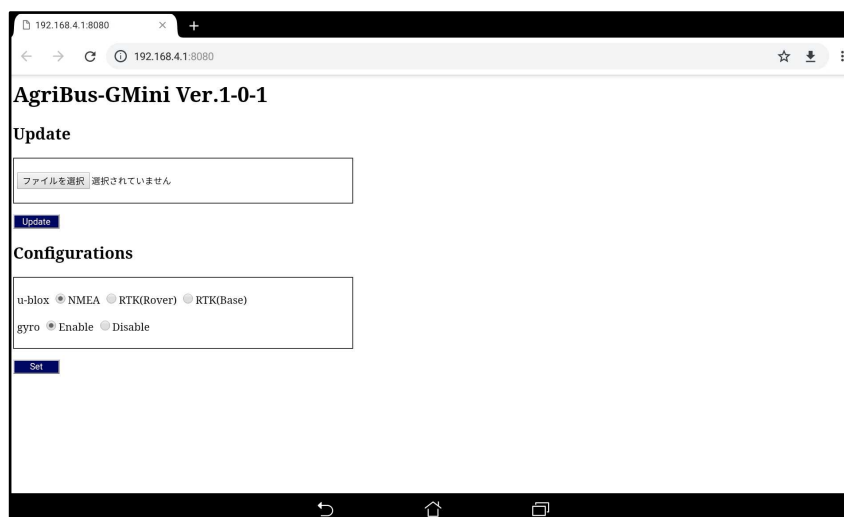


★ Advance preparation

Set the GMini for the base station from the web-browser.

1. If the AgriBus-NAVI is running, exit the AgriBus-NAVI.
2. Enable WiFi on your smartphone/tablet or PC after you start the GMini.
3. [AGBGM-AP-XXXX] is displayed in the WiFi availability list, so select it.
The XXXX is four random alphanumeric characters.
4. You will be prompted to enter a password. Enter the following password.
Password: 12345678
5. Launch a web browser on your smartphone/tablet or PC.
6. Enter the following URL in the address bar to display the Web page.

URLs: <http://192.168.4.1:8080> or <http://agribus-gmini.local:8080>

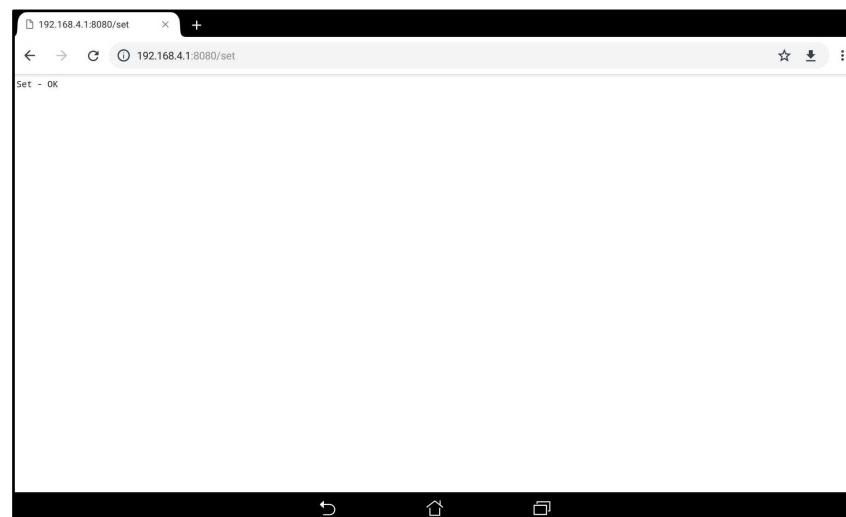


7. In the Configurations, select the following and click Set.

- Ublox : RTK(Base)
- Gyro : Disable



8. After a few seconds, if the webpage switches and "Set-OK" appears, the setting is successful. If "Set-FAIL" is displayed, start over from the beginning.



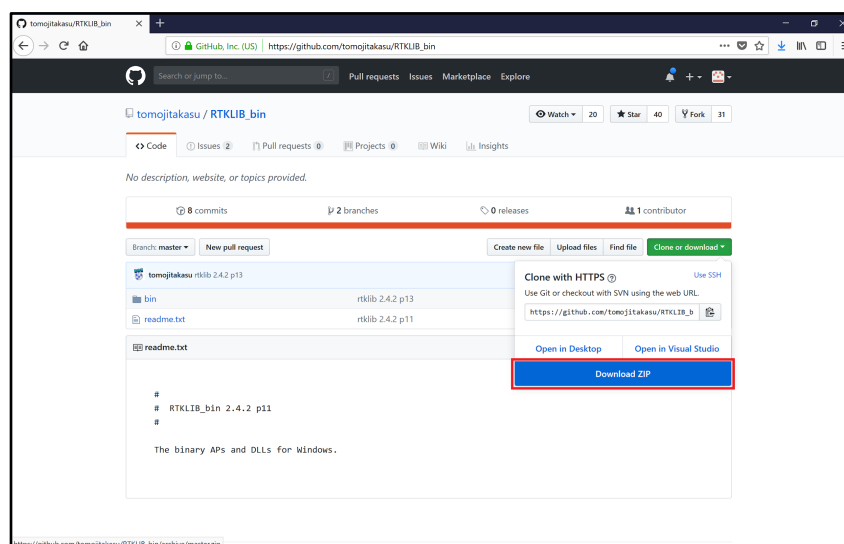
■ Connection method

1. Connect GNSS antennas to the GMini.
2. Connect the USB-cable between the GMini and the PC to start the GMini.
3. Connect to the Internet after starting the Windows PC.
4. Install the RTKLIB on the Windows PC.

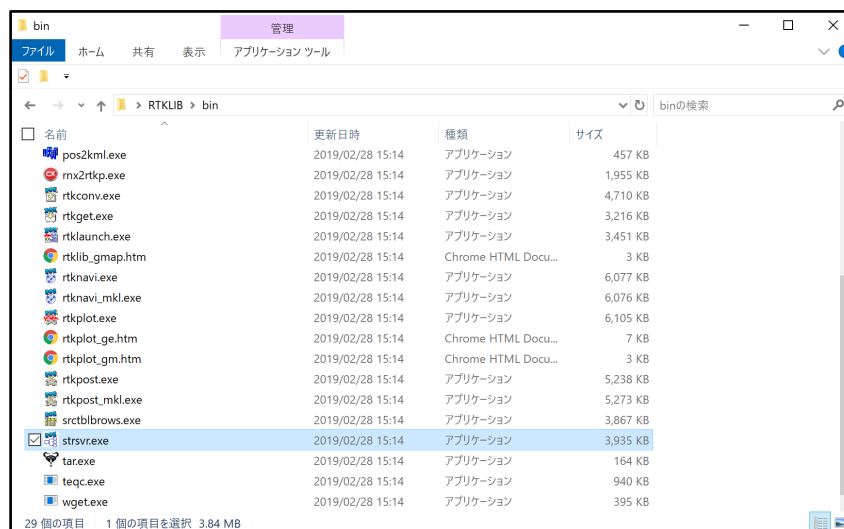
Download the zip file from [Download ZIP] and expand the zip file to the appropriate location.

- Open Repository in GitHub (binary programs for Windows)。

https://github.com/tomojitakasu/RTKLIB_bin



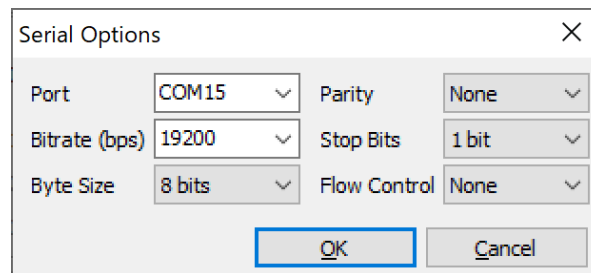
5. Execute strsvr.exe in the folders expanded in 3.



6. Set the following in the STRSVR.

[(0) Input]

- a) Type : Serial
- b) Serial Options
 - Port : Set according to your environment.
 - Bitrate(bps) : 19200
 - Byte Size : 8bits
 - Parity : None
 - Stop Bits : 1bit
 - Flow Control : None



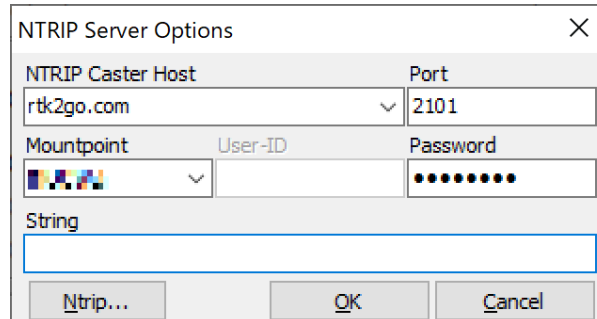
A dialog box titled "Serial Options" with a close button (X) in the top right corner. It contains six settings, each with a label and a dropdown menu:

- Port: COM15
- Parity: None
- Bitrate (bps): 19200
- Stop Bits: 1 bit
- Byte Size: 8 bits
- Flow Control: None

At the bottom, there are two buttons: "OK" and "Cancel". The "OK" button is highlighted with a blue border.

[(1) Output]

- c) Type : NTRIP Server
- d) NTRIP Server Options
 - NTRIP Caster Host : rtk2go.com
 - Port : 2101
 - Mountpoint : Set any character string
 - Password : BETATEST

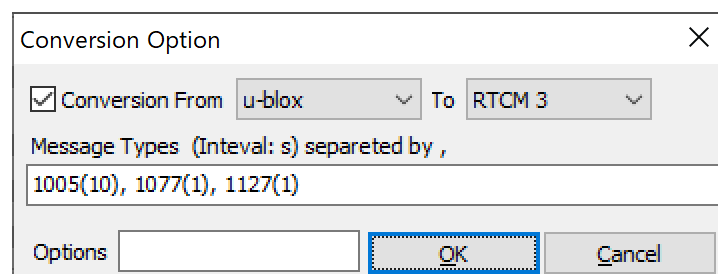


A dialog box titled "NTRIP Server Options" with a close button (X) in the top right corner. It contains several fields and buttons:

- NTRIP Caster Host: rtk2go.com (dropdown)
- Port: 2101 (text field)
- Mountpoint: [icon] (dropdown)
- User-ID: [empty] (text field)
- Password: [dots] (password field)
- String: [empty] (text field)

At the bottom, there are three buttons: "Ntrip...", "OK", and "Cancel". The "OK" button is highlighted with a blue border.

- e) Conversion Option
 - Conversion : [From] u-blox [To] RTCM3
 - Message Types : 1005(10), 1077(1), 1127(1)



A dialog box titled "Conversion Option" with a close button (X) in the top right corner. It contains the following elements:

- ☒ Conversion From: u-blox (dropdown) To: RTCM 3 (dropdown)
- Message Types (Interval: s) separated by , : 1005(10), 1077(1), 1127(1) (text field)
- Options: [empty] (text field)





At the bottom, there are two buttons: "OK" and "Cancel". The "OK" button is highlighted with a blue border.

[Options...]

- f) Station ID : Set an arbitrary value.
- g) Lat/Lon/Height : Set the antenna position

※. Set the latitude/longitude/altitude of the antennae by using a Google Map or the like.

Options

Buffer Size (bytes)	32768	Period of Rate (ms)	1000
Server Cycle (ms)	10	File Swap Margin (s)	30
Inactive Timeout (ms)	10000	Output Debug Trace	None
Reconnect Interval (ms)	10000	<input type="checkbox"/> NMEA Cycle (ms)	0
<input checked="" type="checkbox"/> Station ID			
Lat/Lon/Height			 ...
Offset E/N/U (m)	0.0000	0.0000	0.0000
Antenna Info			
Receiver Info			
FTP/HTTP Local Dir	...		
HTTP/NTRIP Proxy			

OK Cancel

7. Press Start.

STRSVR ver.2.4.2

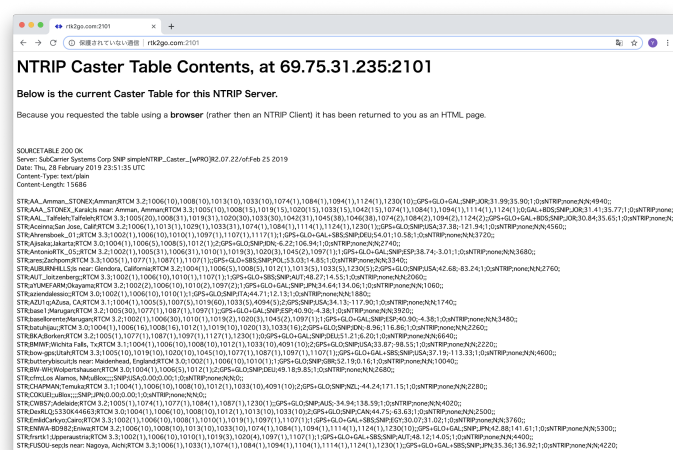
2019/02/28 07:20:56 GPST Connect Time: 0d 00:00:20

Stream	Type	Opt Cmd	bytes	bps
<input checked="" type="checkbox"/> (0) Input	Serial	109,208	44,672
		Conv		
<input checked="" type="checkbox"/> (1) Output	NTRIP Server	4,400	1,900
<input type="checkbox"/> (2) Output		0	0
<input type="checkbox"/> (3) Output		0	0

☐ (1) rtk2go.com/...

Start Stop Options... Exit

8. Check that your web browsers are accessing <http://rtk2go.com:2101> and delivering it as a reference station.

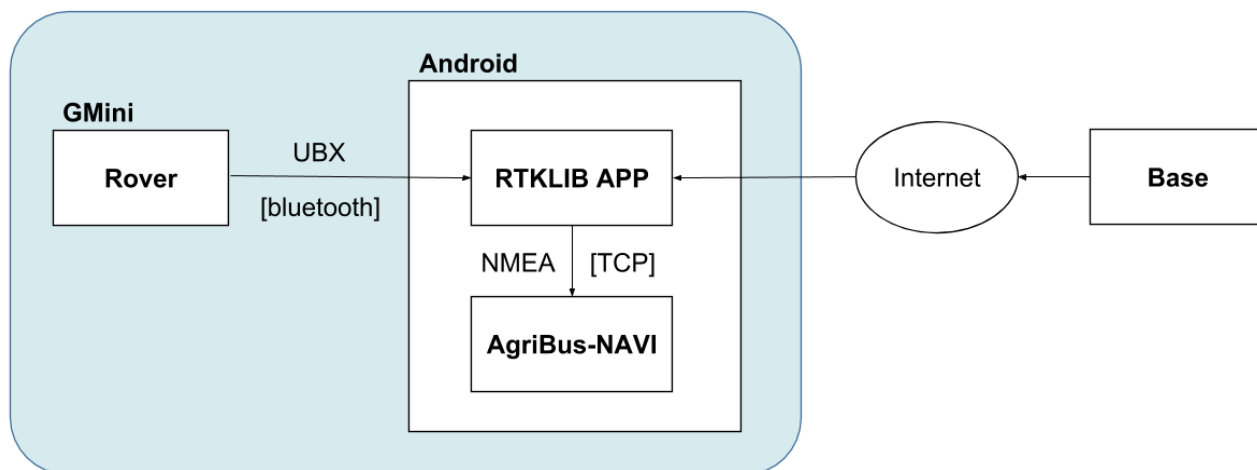


■ Mobile station

This chapter explains how to set the GMini as a mobile station (Rover). This corresponds to the shaded area shown below.

To a 3G/4G or a WiFi for Base access to the Smart Phone/Tablet

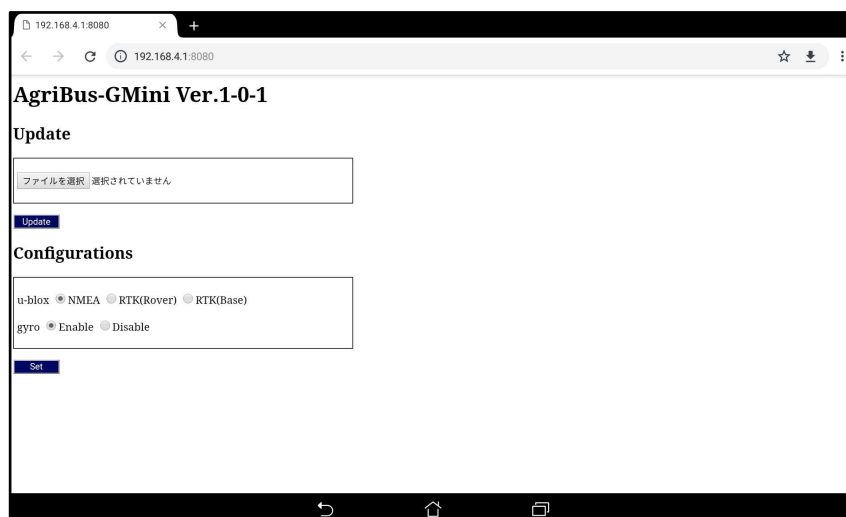
You need to always connect.



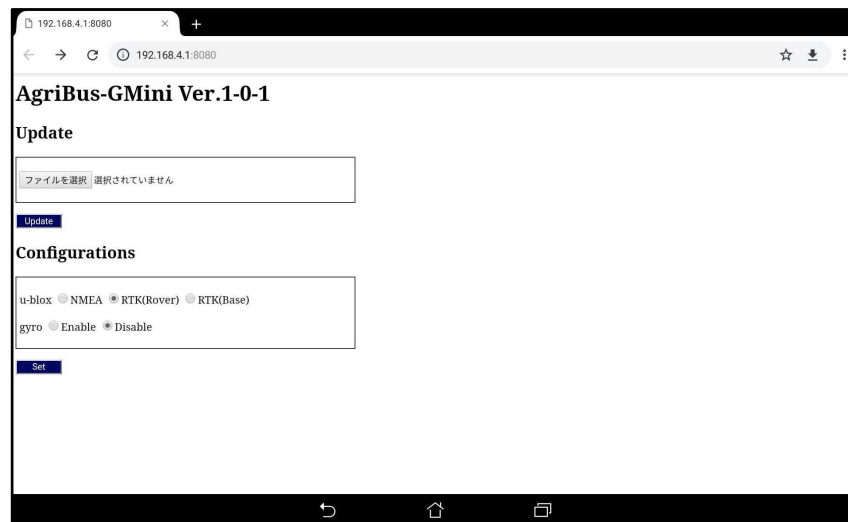
★ Advance preparation

Configure the GMini for the mobile station from the web-browser.

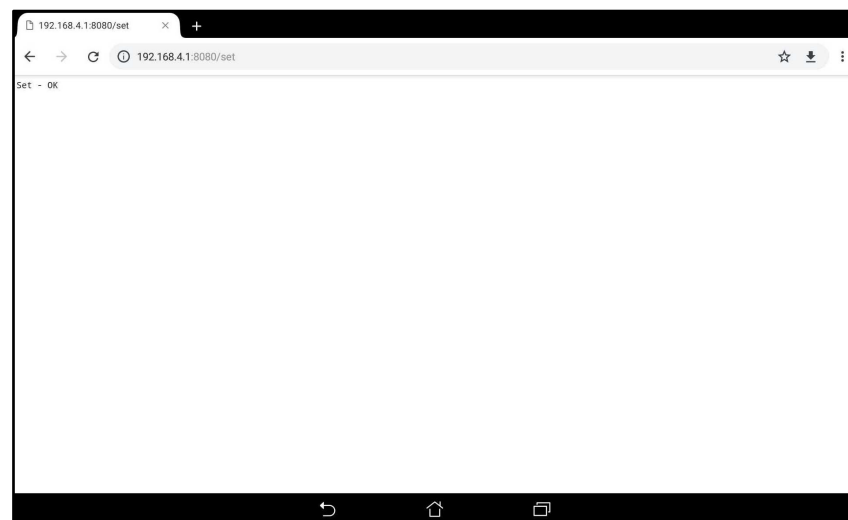
1. If the AgriBus-NAVI is running, exit the AgriBus-NAVI.
2. Enable WiFi on your smartphone/tablet or PC after you start the GMini.
3. [AGBGM-AP-XXXX] is displayed in the WiFi availability list, so select it.
The XXXX is four random alphanumeric characters.
4. You will be prompted to enter a password. Enter the following password.
Password: 12345678
5. Launch a web browser on your smartphone/tablet or PC.
6. Enter the following URL in the address bar to display the Web page.
URLs: <http://192.168.4.1:8080> or <http://agribus-gmini.local:8080>



7. In the Configurations, select the following and click Set.
 - Ublox : RTK(Rover)
 - Gyro : Disable



8. After a few seconds, if the webpage switches and "Set-OK" appears, the setting is successful. If "Set-FAIL" is displayed, start over from the beginning.



■ Connection method

1. Connect GNSS antennas to the GMini.
2. Connect the USB-cable to the GMini and start the GMini.
3. Turn on the Bluetooth in Smart Phone/Tablet Settings.
4. Bluetooth pairs the GMini.

Choose AGBGM-BT-XXXX from the available devices.

The XXXX is four random alphanumeric characters.

※. If you have already paired, this step is not necessary.



5. Install the RTKGPS+for AgriBus-GMini apps on your smartphone/tablet.

- RTKGPS+ for AgriBus-GMini

https://play.google.com/store/apps/details?id=com.agri_info_design.gpsplus.rtkgps

6. Set the following in the RTKGPS+for AgriBus-GMini app.

[Input streams]

a) Input Rover

- Enable rover : ON
- Type : Bluetooth
- Stream settings GMini paired in [Bluetooth device] 4.
- Format : u-blox

b) Input Base ※. Set the reference station according to each environment.

The following is an example of the setting when using the base station described in the previous chapter.

- Enable base : ON
- Input Base : NTRIP Client
- Stream settings : [Host] rtk2go.com [Port] 2101
[NTRIP Mountpoint] Any set strings
[NTRIP user] None [NTRIP password]BETATEST]
- Format : RTCM3
- Base station position : RTCM Antenna position

[Output streams]

c) Solution1

- Enable Solution 1 : ON
- Type : TCP Client
- Stream settings : [Host] localhost [Port] 51020
- Format : NMEA 0183

[Processing options]

d) Processing options 1

- Positioning mode : Kinematic
- Frequencies : L1
- Navigation system : GPS(ON), SBAS(ON), GLONASS(OFF)
- Elevation mask(°) : 20 ※. Set as appropriate for each environment.
- SNR mask(dbHz) : 40 ※. Set as appropriate for each environment.
- Integer ambiguity resolution:Continuous
- Processing cycle(s) : 1

6. In the RTKGPS+for AgriBus-GMini app, select [Server]-ON.

Check that the bar chart is displayed and data is received from the mobile station and the base station.

After a while, confirm that RTK positioning (Fixed /Float) is successful.



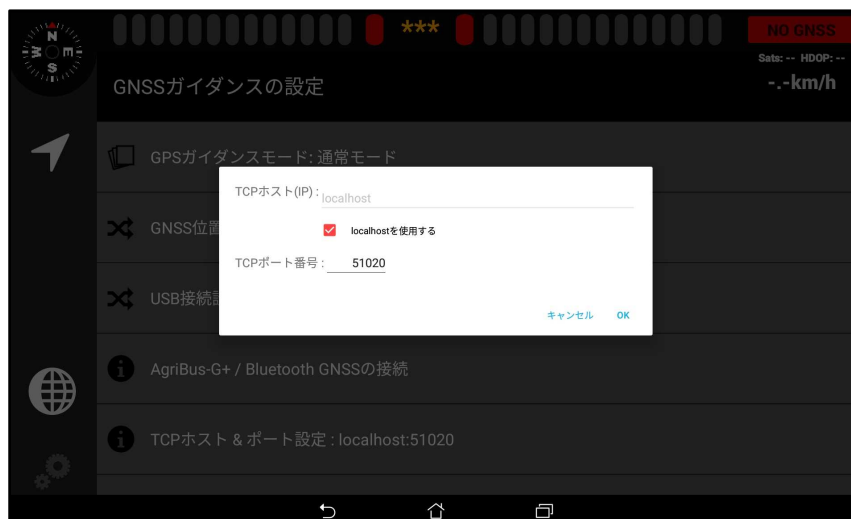
7. Start the AgriBus-NAVI and click the wheel at the bottom left of the window.

8. Select [Internal-Port Communication] in [GNSS Location Source].



9. Configure TCP Host & Port Configuration as follows:

- TCP Host (IP) : Use localhost
- TCP port number : 51020



10. The GPS guidance screen reappears.

The upper-right corner of the display changes to "FIX /FLOAT" depending on the status of the antennas and satellites.

In addition, the location data may not be retrieved immediately after the GMini is started and may be set to "NO GNSS".

If this happens, wait for a while.



QA

1. What is RTKLIB?

RTKLIB is a group of RTK-positioning calculation software developed by Chiji Kosu (Tokyo University of Marine Science and Technology).

For more information, see the URL below.

- RTKLIB

<http://www.rtklib.com/>

2. The GMini cannot be successfully set as the reference station?

For more information on RTKLIB(STRSVR) and RTK2GO, see the URLs below.

- RTKLIB ver. 2.4.2 Manual

http://www.rtklib.com/prog/manual_2.4.2.pdf

- RTK2GO

<http://www.rtk2go.com/>

3. Don't Fix anymore?

If a distant reference station is used, the accuracy is lowered.

Ideally, a base station within 10km is used.

4. You want to return to the factory default setting (Single /D-GNSS)?

Set the following in the webpage Configurations.

※. Refer to P3 or P8 for how to access the Web page.

- Ublox : NMEA
- Gyro : Enable