GNSS Conductor GF

User's Guide

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FURUNO ELECTRIC CO., LTD.

www.furuno.com

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- GLONASS (Russia)
- Galileo (Europe)
- QZSS (Japan)
- SBAS (USA: WAAS, Europe: EGNOS, Japan: MSAS)

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Revision History

Version	Changed contents	Date
0	Initial release	2017.02.27
1	Corrected Figure 4.10 in Section 4.1.7.1.	2017.06.05
2	Corrected Section 1.1.	2022.01.28

Table of Contents

1 Outline

This document describes how to install and operate the GNSS Conductor GF, which is the communication software for FURUNO Multi-GNSS Disciplined Oscillator.

1.1 Features

Supported features of the GNSS Conductor GF:

- Control of the evaluation kits for the following Multi-GNSS Disciplined Oscillator
  - GF-8701
  - GF-8702
  - GF-8703
  - GF-8704
  - GF-8705
  - GF-8801
  - GF-8802
  - GF-8803
  - GF-8804
  - GF-8805
- Display of NMEA (eSIP) output of the evaluation kits
- File-Logging of NMEA output of the evaluation kits
- Support for Windows® 7 (32bit, 64bit) [1)]

Notes:

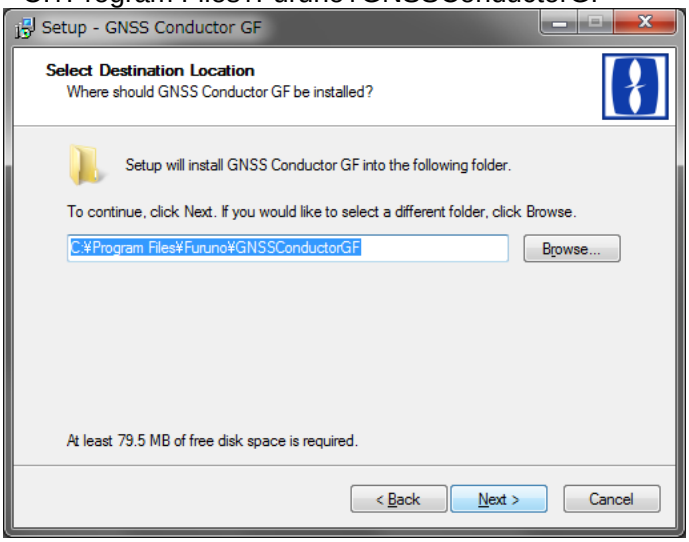
1) The resolution of the display should be 1024*768 and more.

2 How to Install

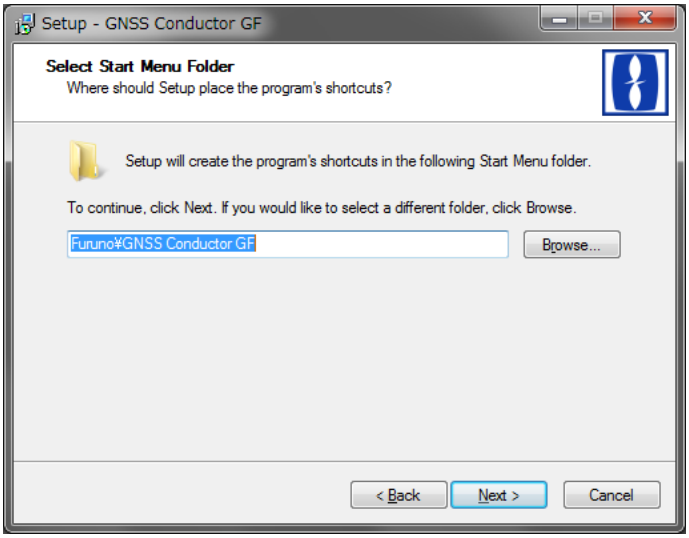
<1> Execute the setup file "setup.exe".

<2> Click **"Next >"**.

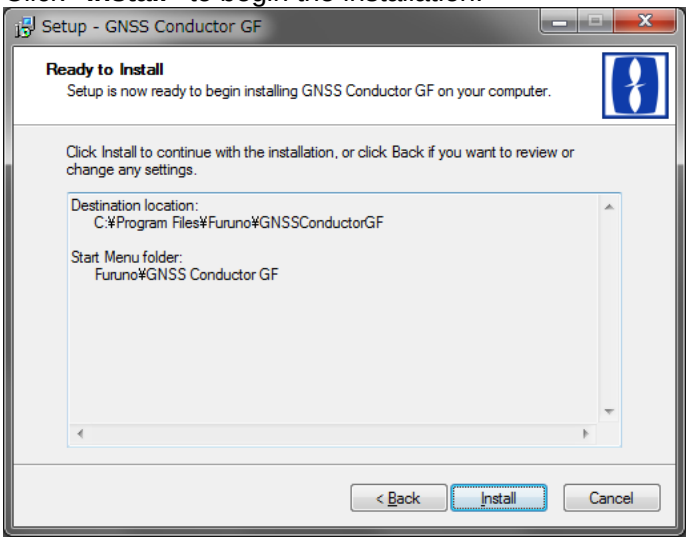
<3> Select a folder to install the GNSS Conductor GF, and click **"Next >"**.
The default folder is below.
C:¥Program Files¥Furuno¥GNSSConductorGF



<4> Select a Start Menu folder to create the shortcut, and click **"Next >"**.
The default Start Menu folder is below.
Furuno¥GNSS Condutor GF



<5> Click **"Install"** to begin the installation.



<6> After the installation is complete, click **"Finish"**.

3 Basic Configuration

3.1 Starting Method

Connect the evaluation kit to the PC with the USB cable. Then, make sure that the PC recognizes the evaluation kit and check the port number.

From the Start Menu, select **"Programs"** - **"Furuno"** - **"GNSS Conductor GF"** - **"GNSS Conductor GF"** to start the GNSS Conductor GF.

3.2 Connectivity Options

The first time GNSS Conductor GF is launched, a dialog for prompting to configure the GNSS connection will appear. Clicking **"OK"** on the pop up dialog will display the Connectivity Options window.

The Connectivity Options window can also be opened by clicking the **"Connectivity"** button on the main screen.

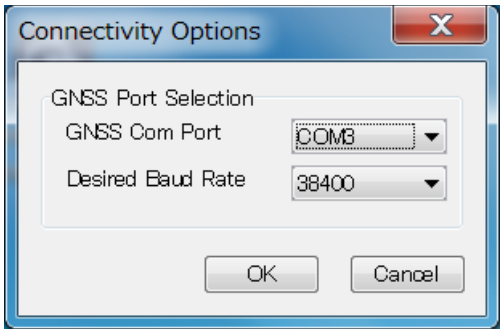


Figure 3.1 Connectivity Options

GNSS Port Selection

- **GNSS Com Port :** Select COM port number.
- **Desired Baud Rate :** Select baud rate.

4 General Usage

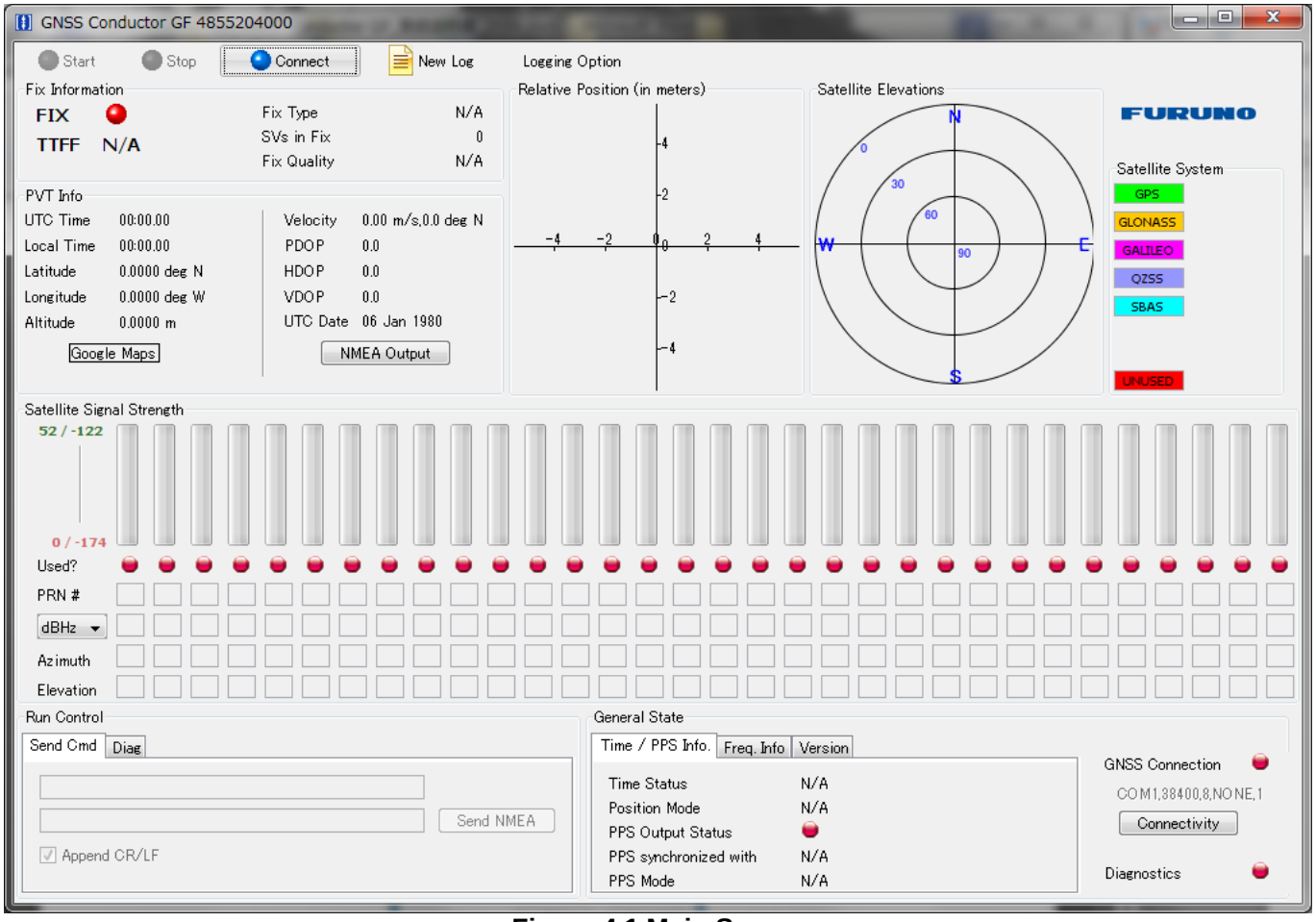


Figure 4.1 Main Screen

The initial state of the GNSS Conductor GF is to be disconnected from the evaluation kit. Click the **"Connect"** button on the command bar to establish a connection to the evaluation kit – the connection method was selected in the aforementioned "Connectivity Options" window.

The GNSS Conductor GF will now query the evaluation kit to determine what state it is in. If the device is already running, the output data will be displayed in the main screen. The user may now use the **"Start"** and **"Stop"** buttons to control the GNSS run appropriately.

Should the device not respond to the query sent by GNSS Conductor GF, re-enter the "Connectivity Options" window and ensure the chosen port is the correct one. If you are sure that the port is correct, but the GNSS Conductor GF still cannot get a response from the device, try unplugging the device and re-attaching it. After waiting five seconds, try clicking **"Connect"** once more.

4.1 Main Screen

4.1.1 Command Bar

Figure 4.2 Command Bar

- **Start :** Start evaluation kit run.
- **Stop :** Stop evaluation kit run.
- **Connect / Disconnect[2] :** Connect or disconnect the communication between evaluation kit and PC.
- **New Log :** Create a new file for log data.
- **Logging Option :** Open "Options" dialog. See Section 4.1.1.1 for details.

Notes:
2) The **"Connect"** button will change to **"Disconnect"** after a connection is successfully established.

4.1.1.1 Options Dialog

The "Options" dialog appears by clicking **"Logging Option"** button on the command bar. The dialog controls the configuration of log files[3] generated by GNSS Conductor GF.

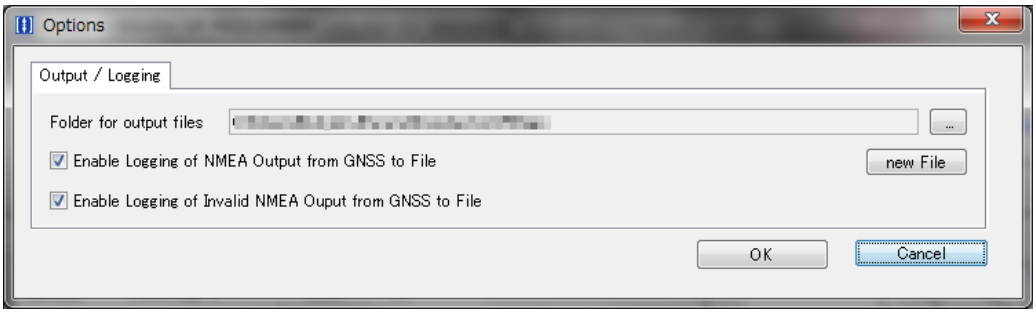


Figure 4.3 Options Dialog

- **Folder for output files :** Path for log files. The **"…"** button selects a suitable output directory.
- **Enable Logging of NMEA Output from GNSS to File :** Logging of NMEA received from the evaluation kit.
- **Enable Logging of Invalid NMEA Output from GNSS to File :** Logging of invalid NMEA received from the evaluation kit.
- **New File :** Create a new file for log data.

Notes:
3) The format of the log file is:
nmeaOutputLog_YYYY_MM_DD_hh_mm_ss.txt
(YYYY: Year, MM: Month, DD: Day, hh: Hour, mm: Minute, ss: Second)
(Example) nmeaOutputLog_2016_12_21_09_32_41.txt

4.1.2 Fix Information

The "Fix Information" panel displays the fix status and the fix information.

Figure 4.4 Fix Information

- **FIX :** Fix status. The led color shows the following fix status:
  ***Red*:** No GNSS fix
  ***Yellow*:** 2D GNSS fix
  ***Green*:** 3D GNSS fix
  ***Blue*:** Differential fix
- **TTFF :** Time to first fix (TTFF) in seconds.
- **Fix Type :** Fix type.
- **SVs in Fix :** Number of satellites used in fix.
- **Fix Quality :** Fix quality.

4.1.3 PVT Info

Standard position (Latitude, Longitude and Altitude), velocity, time (UTC time and UTC date) and accuracy (PDOP, HDOP and VDOP) fields are displayed here.

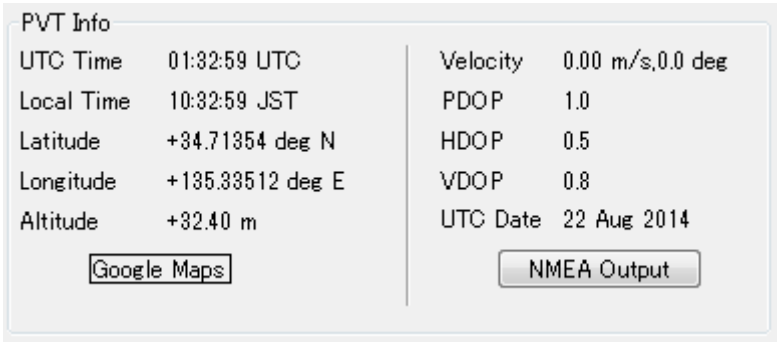


Figure 4.5 PVT Info

- **Google Maps :** Open the default browse and shows the actual position on Google Maps. [4)]
- **NMEA Output :** Open the "NMEA Status" window.

Notes:
4) It is required to connect to the Internet.

4.1.3.1 NMEA Status

These two tubs respectively represent the outbound from the receiver NMEA info and the inbound commands (eSIP) sent by the GNSS Conductor GF.

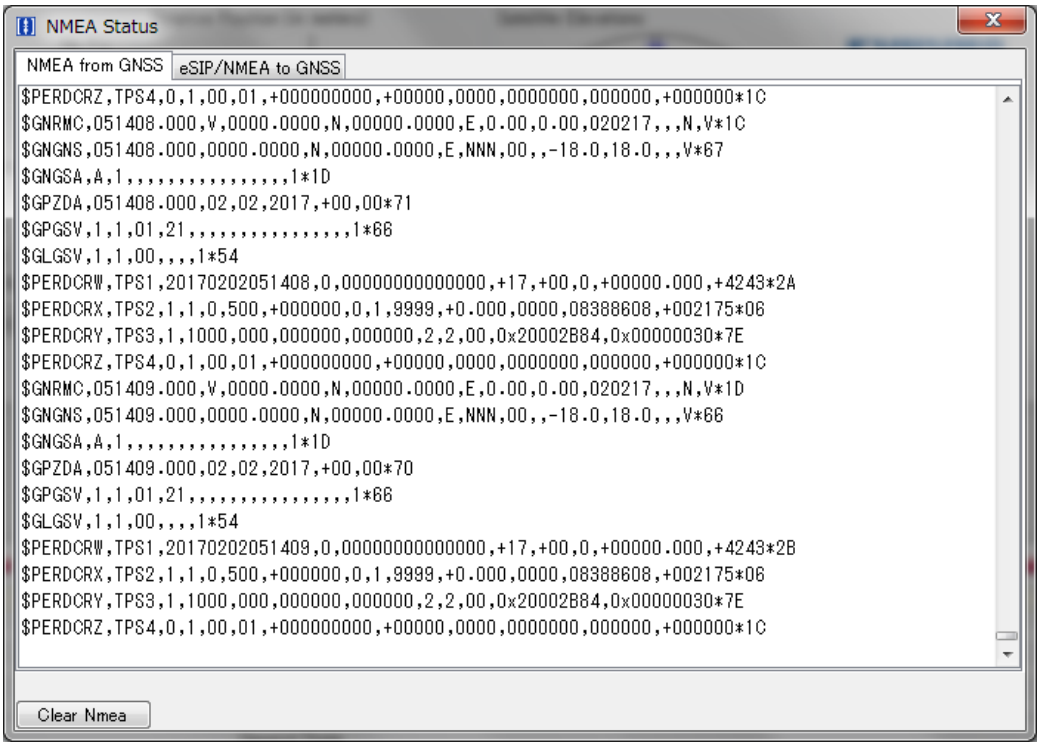


Figure 4.6 NMEA Status

- **NMEA from GNSS :** NMEA output from evaluation kit.
- **eSIP/NMEA to GNSS :** eSIP commands sent to evaluation kit.
- **Clear Nmea :** Clear the display.

4.1.4 Relative Position

This panel plots current and previous reported positions. This view will use the first valid fix as its center, and plot all future positions relative to that. The axes will change scale depending on the center of extent of the points – e.g. the scale will increase to keep points visible if a new position is a large distance from the previous center.

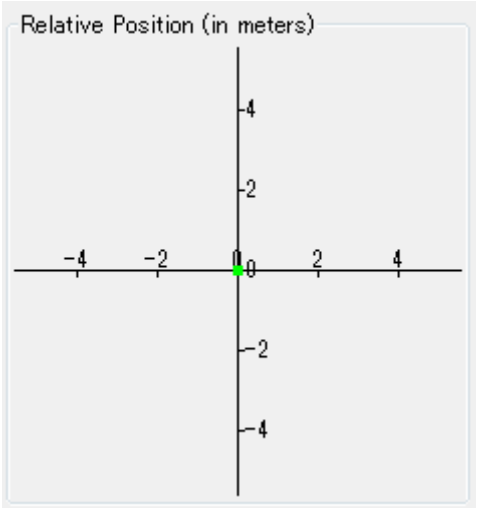


Figure 4.7 Relative Position

4.1.5 Satellite Elevations

This is an azimuth-elevation plot of the satellites that the GNSS receiver is currently tracking. The number indicates the satellite number while the concentric rings correstpond to elevations of 0 to 60 degrees. The satellites are colored as below:

***Green*:** GPS
***Yellow*:** GLONASS
***Purple*:** QZSS
***Light blue*:** SBAS
***Red*:** Not used in position fix

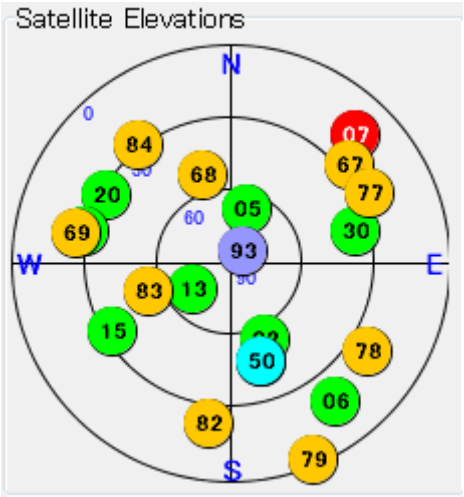


Figure 4.8 Satellite Elevations

4.1.6 Satellite Signal Strength

This panel displays the signal strength level.

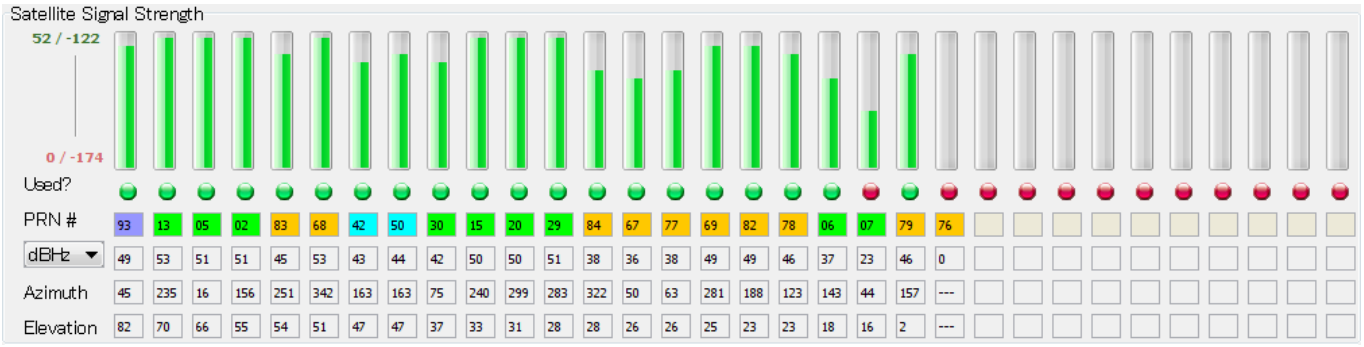


Figure 4.9 Satellite Signal Strength

- **Used? :** Used or not used in position fix. (***Green*****:** Use, ***Red*****:** Not use)
- **PRN # :** Satellite number.[5)]
- **dBHz / dBm[6)] :** Signal strength.
- **Azimuth :** Azimuth [degree]
- **Elevation :** Elevation [degree]

Notes:

5) The background of the PRN display is color-coded for each satellite system:
   Green**:** GPS
   Yellow**:** GLONASS
   Purple**:** QZSS
   Light blue**:** SBAS
6) It is selectable from the drop-down menu.

4.1.7 Run Control

This panel is used for sending commands or setting the diagnostic mode.

4.1.7.1 Send Cmd

This tab allows the user to send a pre-constructed eSIP command to the GNSS device. As the user types in the upper box, the lower one fills with correctly formatted NMEA (i.e. prepending a '$' and appends '*<checksum>').

Pressing enter causes the **"send NMEA"** button to be clicked. Pressing up or down inside a text field will cycle through the history of commands entered.

If the eSIP command is rejected, a dialog box will inform the user.

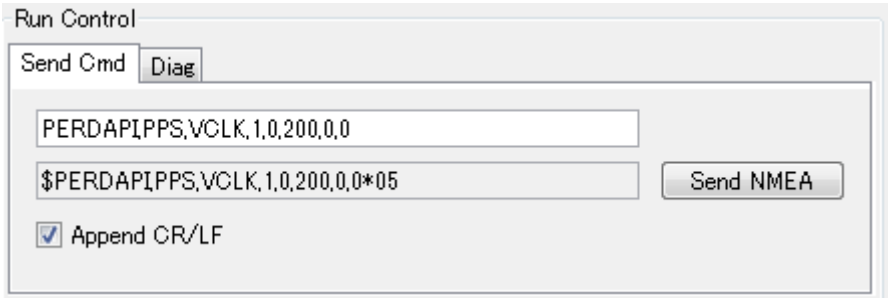


Figure 4.10 Send Cmd

- **Send NMEA :** Send the message in the lower box.
- **Append CR/LF :** Add "<CR><LF>" at the end of a command.

4.1.7.2 Diag

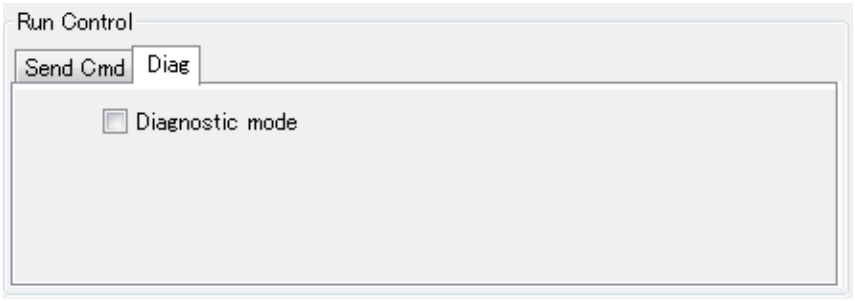


Figure 4.11 Diag

- **Diagnostic mode :** Enable the diagnostic mode[7)] on the device. If the device is not already running at 230400 bps, it will be switched to that rate.

Notes:

7) The following steps are instructions to enable the diagnostics mode.
<1> Click **"Stop"** button.
<2> Click **"New Log"** button.
<3> Check **"Diagnostic mode"** check box.
<4> Click **"Start"** button.
<5> After finishing the logging, click **"Stop"** button. And then, uncheck **"Diagnostic mode"** check box.
<6> Turn off the evaluation kit.

4.1.8 General State

4.1.8.1 Time / PPS Info.

This panel displays the time and PPS information.

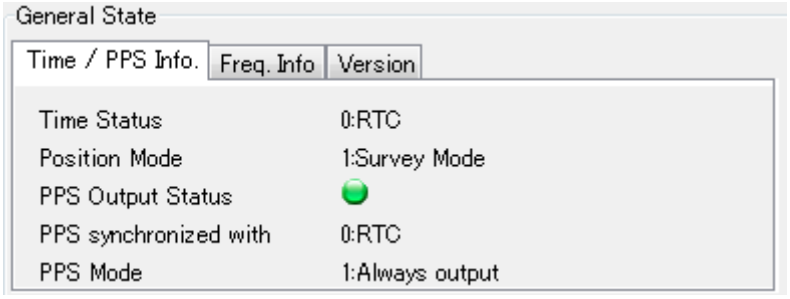


Figure 4.12 Time / PPS Info.

- **Time Status :** Time status.
- **Position Mode :** Position mode.
- **PPS Output Status :** PPS output status.
  ***Green*:** PPS output ON
  ***Red*:** PPS output OFF
- **PPS synchronized with :** PPS synchronization status.
- **PPS Mode :** PPS output mode

4.1.8.2 Freq. Info

This panel displays the frequency information.

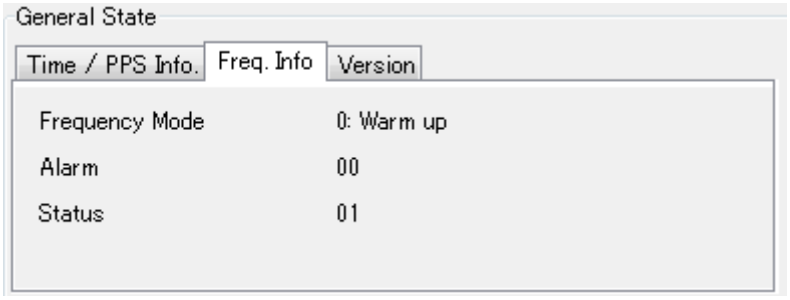


Figure 4.13 Freq. Info

- **Frequency Mode :** Frequency mode
- **Alarm :** Alarm
- **Status :** Status

4.1.8.3 Version

This panel displays the hardware type and the software data of the GNSS receiver.

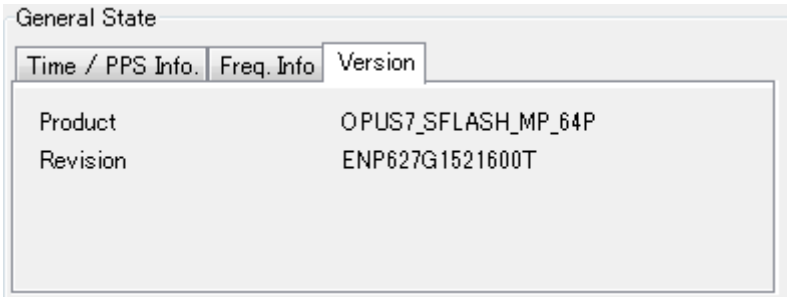


Figure 4.14 Version

- **Product :** Hardware type
- **Revision :** Software type

4.1.8.4 Communication Status

This panel displays the communication status.

Figure 4.15 Communication Status

- **GNSS Connection :** Communication connection status.
  ***Green*:** Connected to GNSS device.
  ***Red*:** Not connected to GNSS device.
- **COMxx,yyyyy,8,NONE,1 :** Communication setting.
  ***COMxx*:** COM port number
  ***yyyyy*:** Baud rate
  ***8*:** Data length
  ***NONE*:** Parity bit
  ***1*:** Stop bit
- **Connectivity :** Open "Connectivity Options" dialog. See Section 3.2 for details.
- **Diagnostics :** Diag mode ON/OFF. See Section 4.1.7.2 for details.
  ***Green*:** Diag mode ON
  ***Red*:** Diag mode OFF