

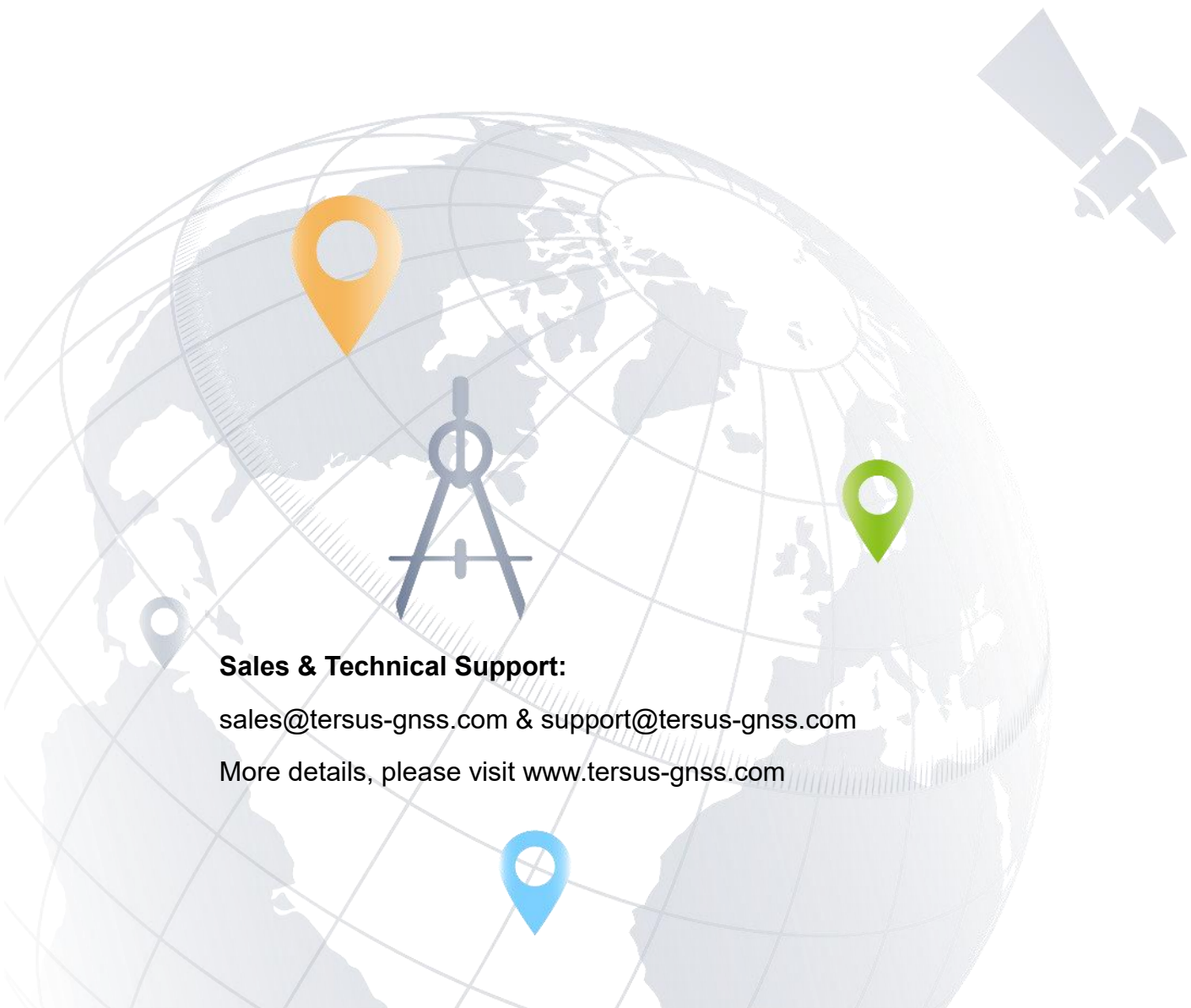
## Guide

Version V1.1 - 20240723



# LUKA GNSS Receiver Firmware Upgrade Guide

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## Revision History

Version	Revision date	Change Summary
V1.0	20230725	Initial release
V1.1	20240723	Update the section2.2.2

## 1. Interfaces of LUKA

The bottom of LUKA GNSS receiver is shown as below.

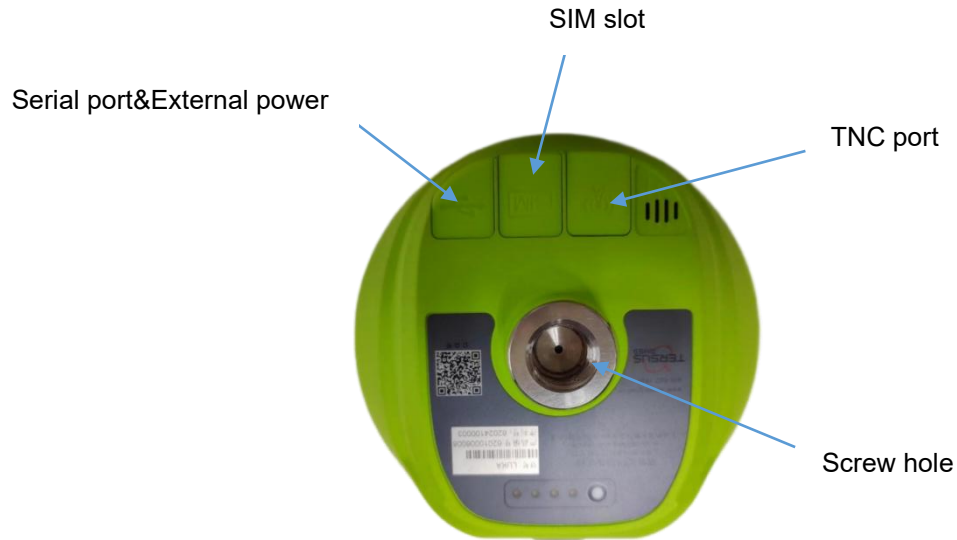



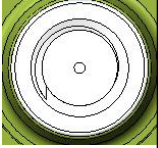


Figure 1 Bottom of LUKA

Table 1 Interfaces on the bottom side

Icon	Name	Connections
	Serial port & external power	Device, computer, USB drive, external power, communication, external radio
	SIM slot	Nano SIM card
	TNC port	410-470MHz radio antenna
	Screw hole	5/8" x 11 UNC-2B connector for corresponding connector and pole.

## 2. Firmware Upgrade

There are two methods to upgrade firmware for LUKA GNSS Receiver: wired upgrade and wireless upgrade.

### 2.1 Wired Upgrade

#### 2.1.1 View LUKA firmware version

When LUKA GNSS receiver is powered on, to connect LUKA, put controller near the NFC logo on LUKA, the controller pair Bluetooth with LUKA automatically, or click [Device] -> [Connect] under an opened project, and select [LUKA] for the Device Type, select [Bluetooth] for the Connect Type. Click [Connect Config] to search and pair the Bluetooth address of LUKA. The antenna is selected as [LUKA] by default. Then click [Connect] to enable the communication between controller and LUKA.

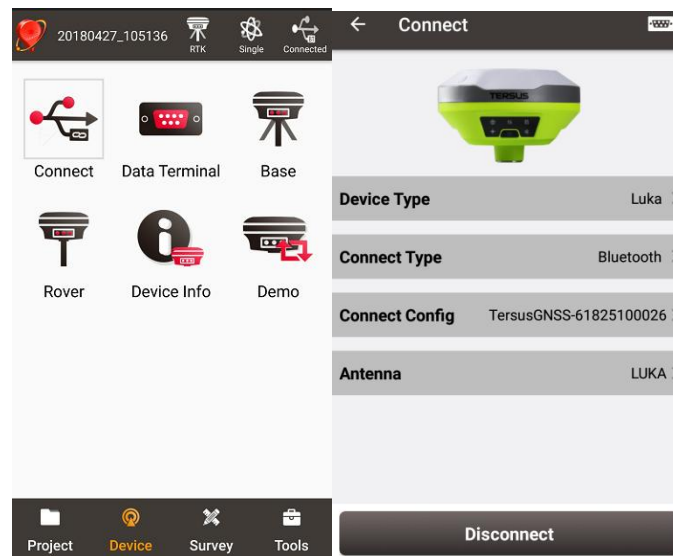



Figure 2 Connect to LUKA via Bluetooth

Click the device information icon  on the top tool bar of Nuwa, the LUKA info is shown as below. You can view LUKA firmware version.

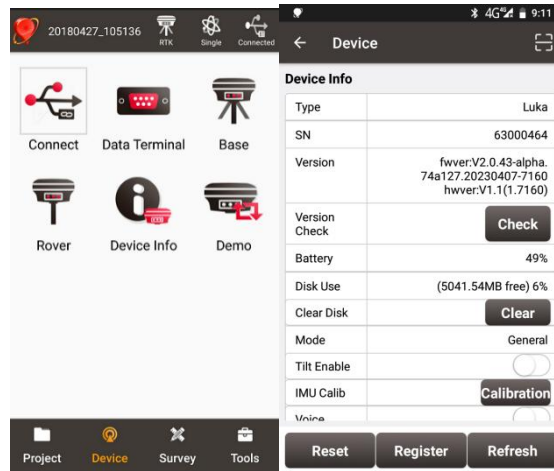


Figure 3 View LUKA firmware version

### 2.1.2 Upgrade the firmware through a USB flash drive

**Please be noted that your LUKA firmware version is V2.0.49 beta or higher, you can upgrade the firmware through a USB flash drive.**

The detailed steps are as follows.

1) Download the latest firmware file from Tersus website <https://www.tersus-gnss.com/software/luca-gnss-receiver>

Please be noted that the downloaded file is a .zip file, unzip this file to find the firmware file of .BIN format.

2) Prepare a USB flash drive, ensure the file system of this drive is **FAT32**. Create a folder named "**LukaUpdate**" under the root directory of the USB flash drive, then put the latest firmware file in it . Make sure there is only **one** firmware file in this folder.

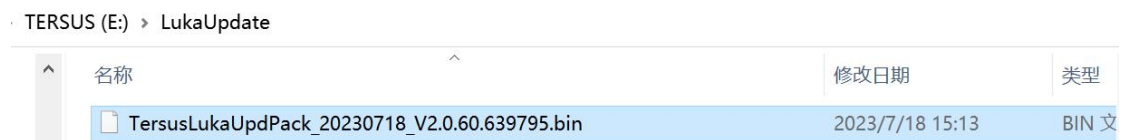


Figure 4 Copy the .BIN firmware file to a USB flash drive

3) Ensure LUKA is powered off, and use the Type-C OTG cable to connect LUKA to the USB flash drive.



Figure 5 Connect LUKA to a USB flash drive

4) Press and hold the power button for 3s to turn on LUKA, the firmware upgrade program will automatically start after boot up.

Firmware upgrade includes system upgrade and board upgrade. The system upgrade is automatically performed upon startup, the six indicators on the LED panel are all on during system upgrade. After the system upgrade is completed, the indicator lights are all off, and the host automatically restarts. The host program automatically upgrades the board. During the board upgrade, the power light is displayed based on the actual battery level (on, slow flashing, fast flashing), and the satellite, data, and static lights are turned on one by one, and then turned off simultaneously. Complete the board upgrade within 2 minutes, and the satellite light will flash. You can connect to the controller to view the firmware version number. If the LUKA firmware version is consistent with the latest firmware version in the USB flash drive, it means the firmware upgrade is successful.

**Note:** Please make sure the battery has enough power for the firmware upgrade. The GNSS board inside LUKA will upgrade when the firmware is upgrading, any forced power failure will cause the system crash.

### 2.1.3 Upgrade the firmware through the built-in storage of the host

The detailed steps are as follows.

1) Download the latest firmware file from Tersus website <https://www.tersus-gnss.com/software/luca-gnss-receiver>

Please be noted that the downloaded file is a .zip file, unzip this file to find the

firmware file of .BIN format.

- 2) Prepare a Type-C USB cable, when LUKA is turned on, connect the Type-C port of LUKA to the computer with a Type-C USB cable.



Figure 6 Type-C USB cable connect the computer and LUKA

- 3) The computer interface will automatically pop up two removable disks. As shown in the figure below.



Figure 7 Two Removable Disks

- 4) Choose the Update removable disk and put the firmware file in the .BIN format on this removable disk. As shown in the figure below, copy the firmware to the Update drive.

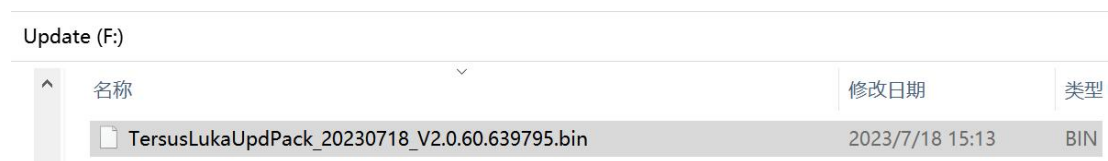


Figure 8 The FW is placed in the Update removable disk

- 5) Unplug the Type-C USB cable, press and hold the power button for 5 seconds to shut down LUKA .
- 6) Make sure that LUKA is turned off, then press and hold the power button for 3 seconds to turn on LUKA.

Firmware upgrade includes system upgrade and board upgrade. The system upgrade is automatically performed upon startup, the six indicators on the LED panel are all on during system upgrade. After the system upgrade is completed, the indicator lights are



all off, and the host automatically restarts. The host program automatically upgrades the board. During the board upgrade, the power light is displayed based on the actual battery level (on, slow flashing, fast flashing), and the satellite, data, and static lights are turned on one by one, and then turned off simultaneously. Complete the board upgrade within 2 minutes, and the satellite light will flash. You can connect to the controller to view the firmware version number. If the LUKA firmware version is consistent with the latest firmware version in the removable disk, it means the firmware upgrade is successful.



Figure 9 Upgrading

**Note:** Please make sure the battery has enough power for the firmware upgrade. The GNSS board inside LUKA will upgrade when the firmware is upgrading, any forced power failure will cause the system crash.

## 2.2 Wireless Upgrade

### 2.2.1 View LUKA firmware version

Refer to section 2.1.1.

### 2.2.2 Upgrade the firmware via a WiFi web page

The specific steps are as follows:

1) Turn on the WIFI function of LUKA GNSS receiver.

Switch to [Device] -- [WIFI Setting] -- [Set] -- [Mode Config], select [AP] -- [confirm] via NUWA, as shown below.

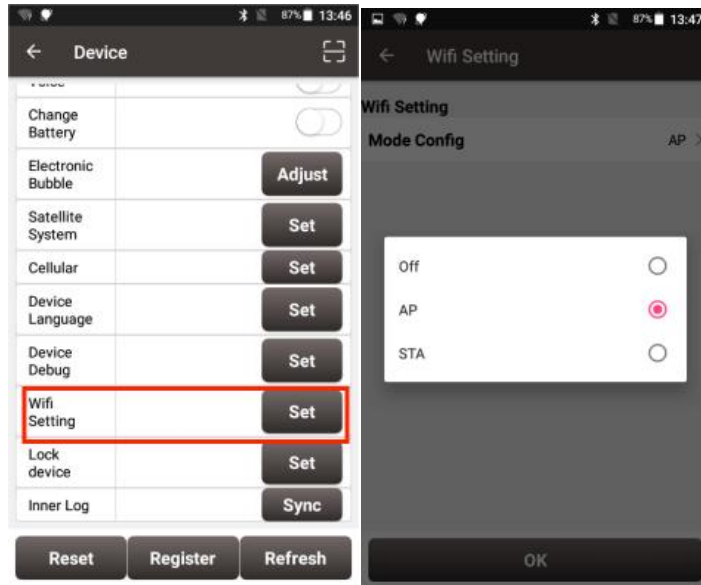


Figure 10 Open WIFI function

Note: the version of NUWA app must be upgraded to V2.2.9 or above.

2) Connect LUKA GNSS receiver WIFI and upgrade. Turn on your computer wifi and find the connection (TersusGNSS- "SN") in the wifi list.



Figure 11 Connecting to LUKA WIFI

3) Open the browser, enter the URL (192.168.2.1), and enter the account password (admin) in the pop-up. After login, enter the sub-menu, [Firmware] -- [Firmware Info]-- select file (load the latest Firmware) -- [Upgrade] , do not perform any operations after clicking. Wait patiently for the receiver to restart automatically.

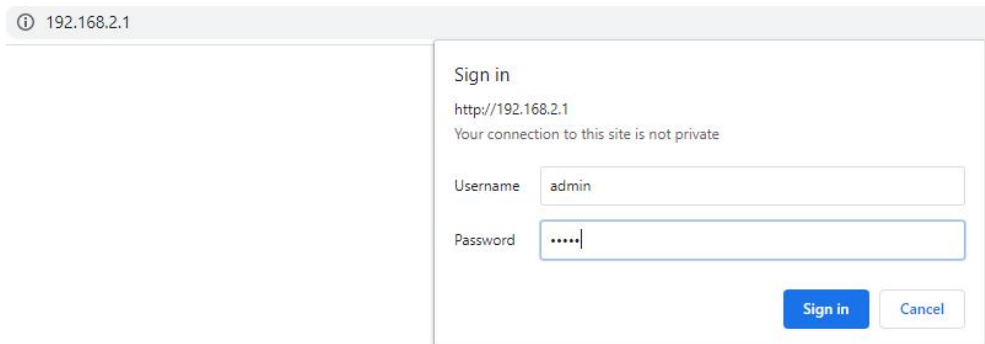


Figure 12 WIFI page

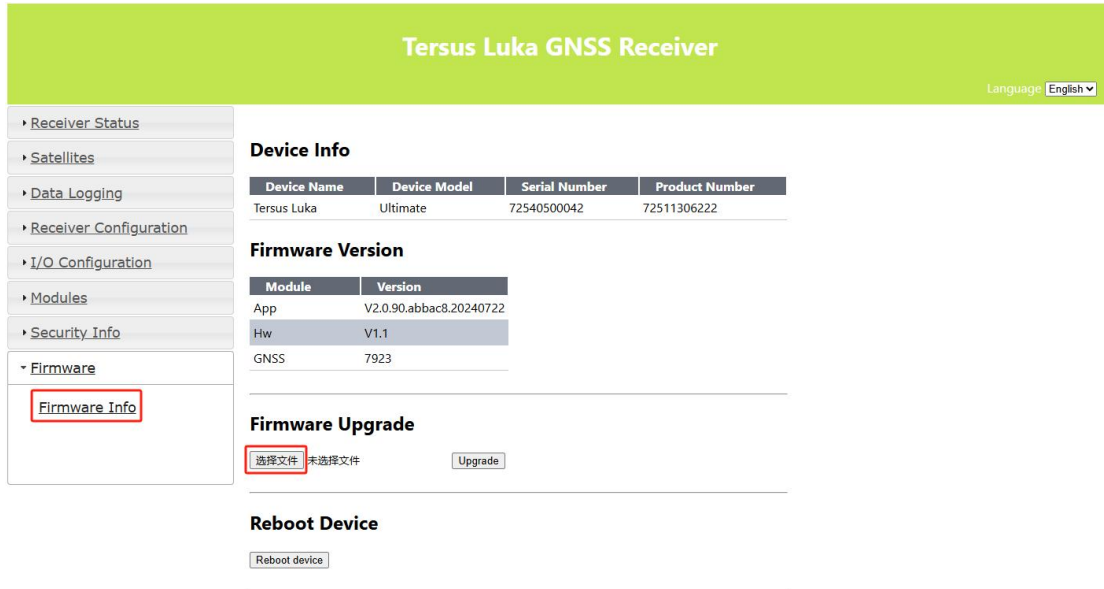


Figure 13. Upgrade via the LUKA WIFI page

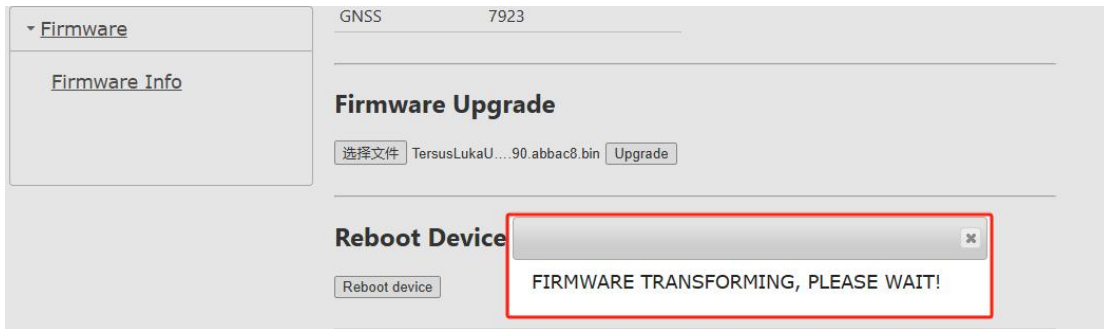


Figure 14. Transforming prompt

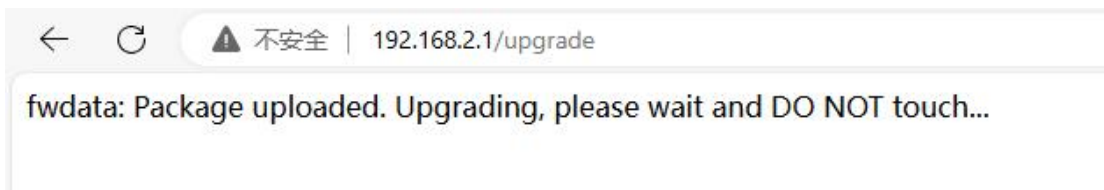


Figure 15. Upgrading prompt

4) Firmware upgrade includes system upgrade and board upgrade. The system upgrade is automatically performed upon startup, the six indicators on the LED panel are all on during system upgrade. After the system upgrade is completed, the indicator lights are all off, and the host automatically restarts. The host program automatically upgrades the board. During the board upgrade, the power light is displayed based on the actual battery level (on, slow flashing, fast flashing), and the

satellite, data, and static lights are turned on one by one, and then turned off simultaneously. Complete the board upgrade within 2 minutes, and the satellite light will flash. You can connect to the controller to view the firmware version number. If the LUKA firmware version is consistent with the latest firmware version you loaded, it means the firmware upgrade is successful.

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