

TOPGNSS Model GNSS100L GPS Receiver Configuration for Use With NMEATime

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I have found that the Model GNSS100L “USB hockey puck” GPS receiver performs well with the NMEATime2 app. The combination can be used to synchronize a PC clock to GPS time, enabling use of digital modes such as FT4 and FT8 that require an accurate clock. The receiver can also provide accurate GPS coordinates to Winlink and other ham radio applications. The receiver seems to have better sensitivity than other units I have tried. It works well in the basement of my home, finding satellites in all quadrants of the sky. In addition, it (and the NMEATime software) can make use of both GPS and GLONASS satellites, unlike some other units that are limited to the US-operated GPS constellation.

This document provides a procedure for configuring the GNSS100L to work with NMEATime. The receiver has a backup battery, so should retain its configuration when is unplugged from the PC. I have not investigated to see how long the configuration is retained in the absence of power. Should NMEATime fail to acquire lock following a PC shutdown, try reconfiguring the GPS receiver before deciding that it no longer works. This procedure should also work with other GPS receivers that incorporate the **u-blox** chipset.

1. Install the **u-center** application, Version 22.07 from the following website. Newer versions may not work with legacy **u-blox** devices (Version 8 and below).

<https://www.u-blox.com/en/product/u-center>

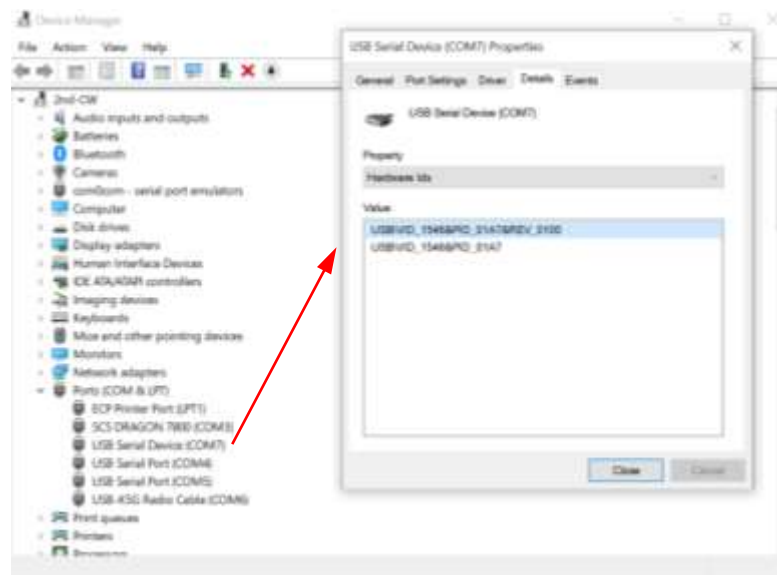
DO NOT install the **u-blox** sensor driver and VCP drivers. The standard Windows USB COM port driver can be used to communicate with the GPS receiver and is compatible with both the NMEATime application and the **u-center** configuration utility. The proprietary **u-blox** drivers are for use with various sophisticated mapping and geolocations apps, but not with apps like NMEATime that expect to see basic NMEA messages in ASCII format via a simple serial port interface.

2. Plug in the device. Windows should detect it and install a suitable USB COM port driver. You might want to disconnect the computer from the internet temporarily to prevent Windows from downloading the unwanted drivers mentioned above. If Windows does not automatically install a suitable driver, open the device properties in Device Manager. On the Driver tab, click on Update Driver → Browse my computer for drivers → Let me pick from a list of available drivers. You should pick something generic-sounding like “USB Serial Driver.”
3. After installing the driver, the device should be assigned a COM port number, which you need to take note of. While the device properties window is still open, open the Details tab and select “Hardware Ids” from the dropdown list of properties. This will tell you the version number of the **u-**

blox receiver in your device. The Vendor ID (VID) should be 1546 and the Product ID (PID) should be one of the following:

ProductID	Chipset Version
0x01A5	u-blox 5
0x01A6	u-blox 6
0x01A7	u-blox 7
0x01A8	u-blox M8

On my computer, the assigned COM port was COM7, as shown below.



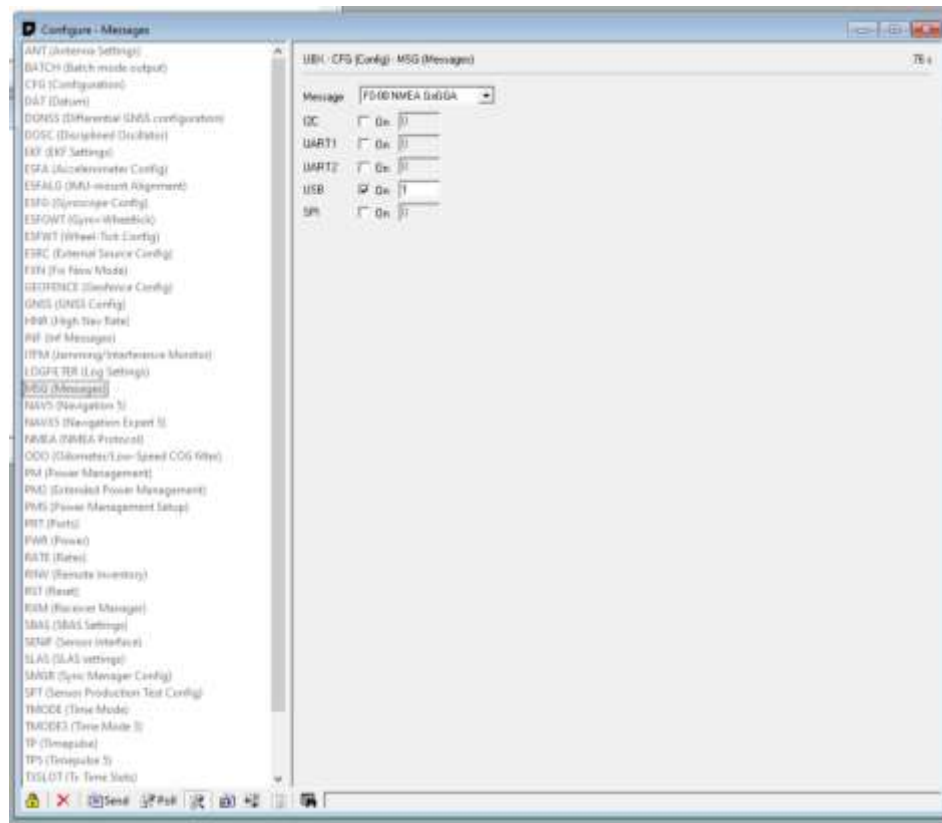
4. Now open the u-center utility. From the u-center main menu, set up the workspace as follows:
 - a. View → Configuration View (used to send configuration messages to the device, instructing it to stream NMEA messages over the serial port).
 - b. View → Text Console (displays the resulting NMEA data stream).
 - c. View → Docking Windows → Satellite Position (shows the position of all visible satellites on a map of the sky).
 - d. View → Docking Windows → Data (shows your lat/lon coordinates and altitude).

5. Open a connection to the device. From the u-center main menu:
 - a. Choose Receiver → Connection and pick the COM port associated with your device.
 - b. Choose Receiver → Baudrate and set it to factory default of 9600 baud (if it is not already there).
 - c. Choose Receiver → Action → Coldstart.

(Coldstart erases all stored data from satellites and starts the acquisition process from the beginning. The u-blox chipset can decode NMEA messages from the “GPS” satellites of several different countries on two different frequency bands.)

6. In the left side of the Configuration window, highlight CFG (Configuration).

7. In the right side of the Configuration window, select “Revert to default configuration.” Click on the Send button in the bottom left of the Configuration window.
8. In the left side of the Configuration window, highlight MSG (Messages).
9. In the right side of the Configuration window, select the message “F0-00 NMEA GxGGA.” Uncheck all of the ports except USB and enter “1” in the update rate box. See the following figure. Click the Send button in the bottom left of the Configuration window.



10. Repeat the preceding step for the GxGSA, GxGSV, GxZDA, and GxRMC messages. The update rates should be set as follows: GxGSA: 2, GxGSV: 2, GxZDA: 1, and GxRMC: 1. Click the Send button for each.
11. Repeat the previous step for the GxVTG message. Uncheck all the boxes and click the Send button.
12. All other NMEA messages should be disabled by default. If the preceding steps have been performed correctly, the Test Console should be displaying only GGA, GSA, GSV, and RMC messages.
13. In the left side of the Configuration window, highlight GNSS (GNSS Config).

14. In the right side of the Configuration window, place check marks in all the “Configure” check boxes. Place checkmarks next to GPS and Glonass to enable them and uncheck all the others. These are the only constellations used by the NMEATime app. Check Auto set and click the Send button.



15. In the left side of the Configuration window, highlight PRT (Ports).
16. In the right side of the Configuration window, change the baud rate to 19200. Click the Send button.
17. In the left side of the Configuration window, highlight CFG (Configuration).
18. In the right side of the Configuration window, select “Save current configuration.” Click the Send button.
19. From the u-center main menu, choose Receiver → Action → Save Configuration. That completes the configuration procedure.