



**NAVILOCK®**



**NL-402U**  
**Operation manual (60095-a)**

## 1. Introduction

The NL-402U is a USB GPS receiver with an internal antenna and a u-blox5 GPS & GALILEO SuperSense® GPS/Galileo chip set. The USB port enables the connection with a notebook, UMPC, tablet PC or car PC. Thanks to its compact design, it is the ideal companion on any trip

### 1.1. Contents\*

- 1x Navilock NL-402U
- 1x Operation manual
- 1x 8cm CD ROM

\* Before using the device, please make sure that all the parts are included in the package. If any parts are missing or damaged, please contact your dealer immediately.

#### Important health and safety information

When using this product, take the following precautions in order to avoid possible damages and legal consequences. Always follow all safety and operation manuals exactly and keep them for future reference. Observe all warnings in the operation manual and on the product. In order to avoid injuries, electrocution, fire and damages to the product, observe the following precautions:

#### ELECTRIC SECURITY

This product is designed for operation with power supply via the USB port. Any other operation mode can be dangerous and may void the warranty claims for this product. This unit contains an internal back-up battery.

**NOTE: RECYCLE OR DISPOSE OF USED BATTERIES OR RECHARGEABLE BATTERIES IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS AND THE INSTRUCTIONS INCLUDED WITH THE PRODUCT.**



#### PRECAUTIONS REGARDING DIRECT SUNLIGHT

Make sure the unit is not exposed to very high humidity and temperatures. Never leave the unit, the battery or the rechargeable battery for an extended period in a vehicle or plate, where the temperature can increase to over 60°C (140°F), for example on the dashboard of a car, the window sill or behind a pane of glass, which is directly exposed to the sun or very strong UV light. Otherwise the unit or the vehicle may be damaged, and the battery or the rechargeable battery may overheat.

#### Damages requiring repairs

Disconnect the unit from the AC supply in the following cases; also disconnect the rechargeable battery and contact an authorized repair man or your dealer.

- Liquid or an object has entered the product.
- The product has fallen down or was damaged.
- There are visible signs of overheating.
- When operated normally, the product does not function flawlessly.

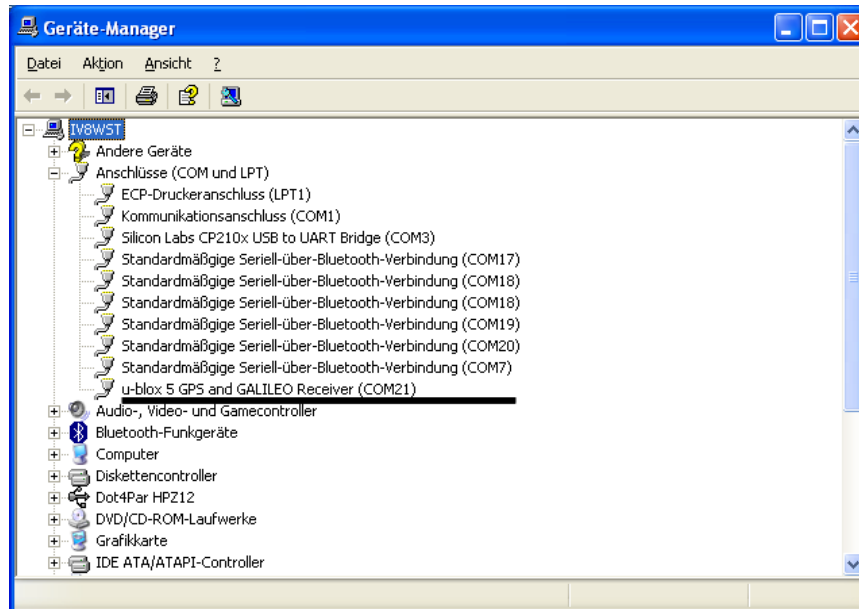
#### Avoid using the unit directly after strong temperature changes.

If the unit is exposed to strong temperature and humidity fluctuations, condensation can form in the unit. In order to avoid damage to the unit, please wait until the condensation has dried off before using the unit.

**NOTE: If you bring the unit from a cold to a warm environment, or vice versa, first let it get accustomed to the new temperature before turning it on.**

## 2. Starting operation

2.1. Plug the USB cable in a free USB port on your notebook etc. The NL-402U will be recognized by your Windows operating system, which will attempt to install a driver. Abort this process, and start "ublox5\_install.exe" from the CD-ROM, or download the driver from the Navilock website. Follow the installation instructions. After the installation is completed, restart your computer. Then the GPS COM port will be available in the Device Manager under Connections. Set this port in your navigation or route planner software. Do not use another program that accesses this port at the same time.



## 3. LED indicator

- Flashes, with Satfix
- Lights, without Satfix

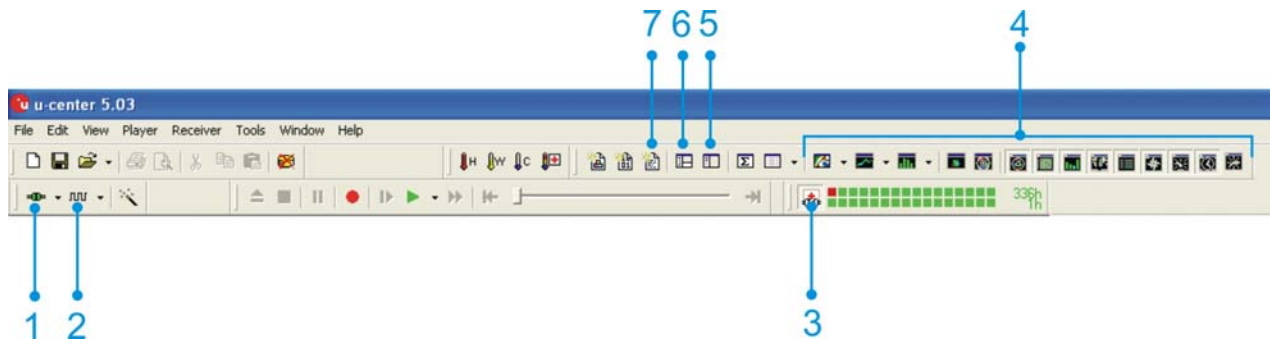
## 3. Application environment

The NL-402U can be used as a USB GPS receiver under Windows 2000/XP/Vista. The corresponding driver is available on the CD-ROM.

## 4. Functional test with u-Center 5

1. Install the u-Center software on your unit. Select the version suitable for your system. U-Center is a pure test program and cannot be used for navigation or orientation. It must always be closed after the test. It blocks the COM port and does not allow any access of the navigation or route software to the COM port. It also serves for updating the Assist GPS data and switching to EGNOS.

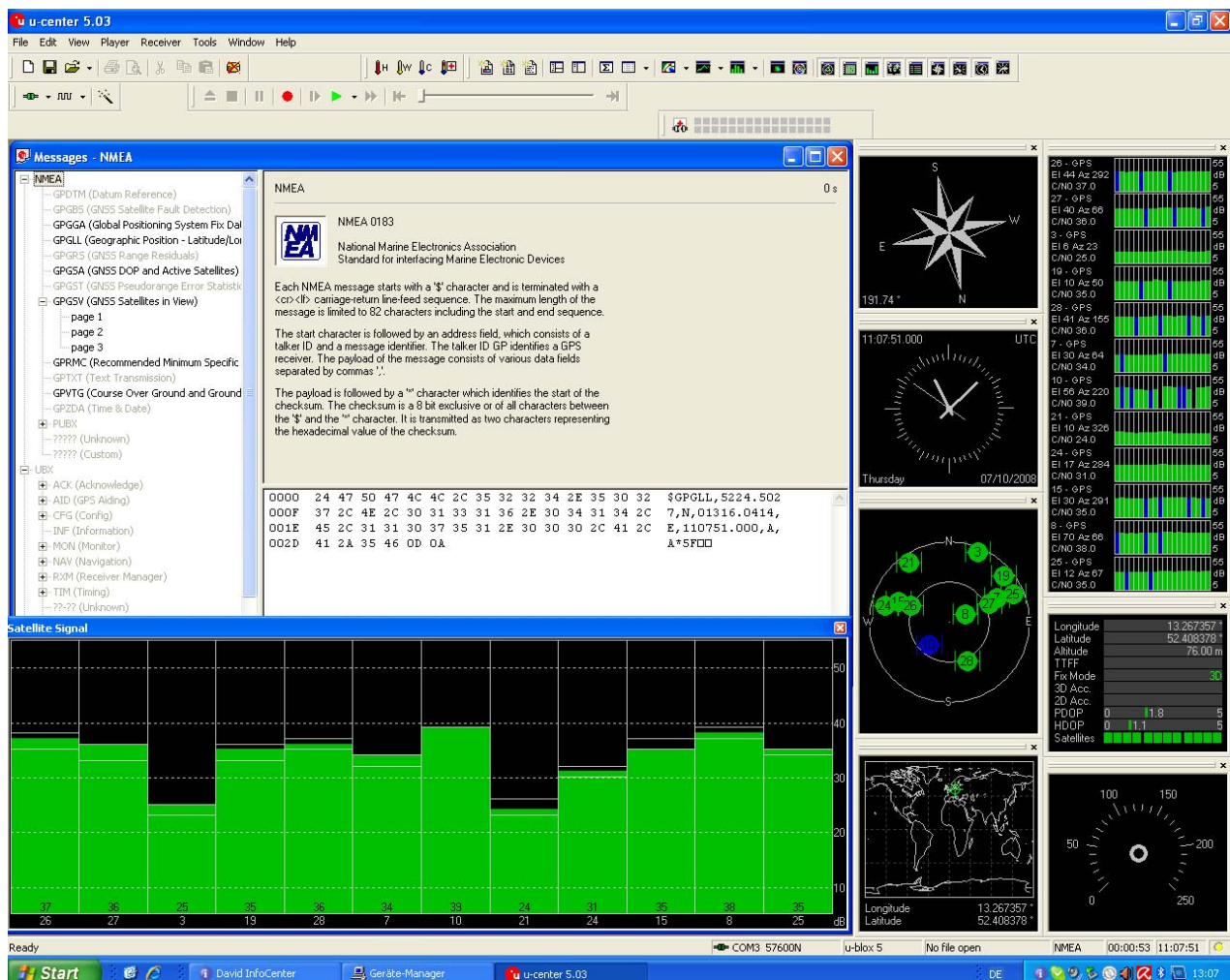
If the NMEA protocol is displayed in u-Center, but you cannot find a receiver in the application software, the connection problem is not with the receiver, but with the selected software setting. In this case, the software manufacturer support center may be able to help you.



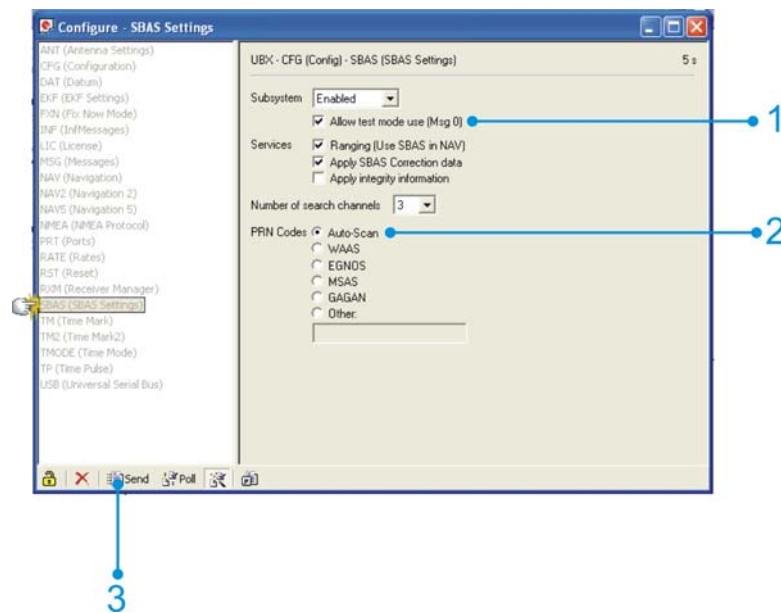
After starting the u-Center software, check the functionality of your NL-402U.

1. Selecting the COM port
2. Selecting the baud rate
3. Downloading Assist GPS and updating the receiver
4. Visual display of the NMEA data
5. Configuration manager
6. NMEA/UBX message console
7. NMEA text console

As seen below, you can set up your u-Center by yourself. Everything important can be connected and displayed immediately. The green bars at the bottom of the picture show the reception quality at your position. If no bars are displayed, please change your position. The NL-402U cannot receive anything in a closed building. If the blue bars are displayed, the receiver is still acquiring the data and verifying the receipt data.



## 5. EGNOS configuration with u-Center 5



In order to switch the NL-402U to EGNOS reception, you must enter the configuration mode. There you can select different setting functions. More detailed information can be found in the current documentation at the URL <http://www.u-blox.com>.

To switch the NL-402U to EGNOS reception, please click in the menu bar on item 5. A small window will open, in which all settings for the receiver can be made.

First click on “SBAS” (**S**atellite **B**ased **A**gmentation **S**ystem), then the item SBAS Settings will open on the right. Click on the first free field before item 1 and 2. Then, click on item 3 “Sending”. The changed data will then be transmitted to the receiver. Close the window. You will be asked if you want to save this setting. Click on YES.

**EGNOS is still in operation mode. The long-planned switch-over to regular operation was repeatedly postponed. This is the reason why the use of the EGNOS correction in the NL-402U is deactivated in the default setup. That is not to say that by using these correction values the location determination will become better. The users must decide for themselves if they want to use this function or not.**

## 6. Assist GPS configuration with u-Center 5

The NL-402U supports AssistNow!

**AssistNow** is a standard **A-GPS service**, which increases the performance of the **GPS receiver**, by calculating a position almost immediately, even under difficult reception conditions. **A-GPS** improves all GPS capable applications, especially those that require a continuous state of readiness, for example applications for fleet management or **GPS capable hand-held devices**, whose users would like to access local services immediately, independently of the reception conditions.

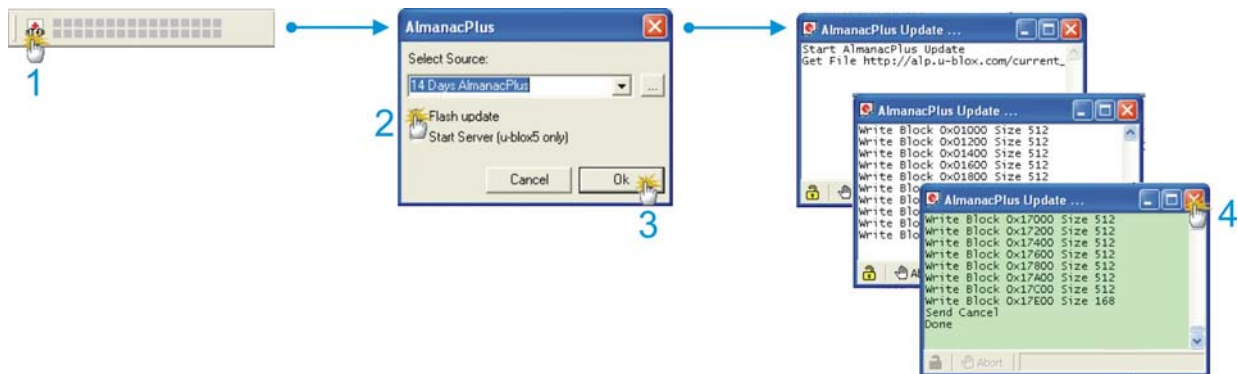
Without A-GPS, a GPS receiver must localize at least 4 satellites in direct line of vision, and then download their location data. This process takes 30 seconds under optimal reception conditions, but under less favorable conditions it may take much longer, e.g. in an urban environment or in a building, where the **GPS reception** is weaker. AssistNow sends the data directly to the GPS

receiver, thus enabling a quick calculation of the position. AssistNow sends the data directly to the GPS receiver, thus enabling a quick calculation of the position.

The offline service provides support data, which are valid up to 14 days. The user can thus profit for longer periods from the increased **satellite acquisition performance**, and they need an internet connection only occasionally, in order to update the support data.

The call-up and data transmission functions can be found in the menu bar of the u-Center.

Click on the AGPS function in the menu bar to update AssistNow and to load the NL-402U.



A small window with a small pull-down menu appears, in which you can see the validity of the data. Choose the desired validity period. Click on “Flash update”, and then on OK. The UPDATE window opens and shows that the u-Center has loaded the data and is transmitting them to the NL-402U. When this process is finished, the window turns green, and the messages “SEND CANCEL” and “DONE” are displayed. This finishes the process.

Further information to the u-Center can be found in the u-blox documentation under [http://www.u-blox.com/products/u\\_center.html](http://www.u-blox.com/products/u_center.html). If you have any questions, please contact u-blox directly.

### **Danger of explosion at contact with fire!**

Do not permanently expose the receiver to temperatures of over 60°C (140°F).

## 6. Possible sources of error and their elimination

- 6.1 The green LED doesn't light up after the first connection to the USB port. Make sure that the PC or notebook is turned on, and test the USB port, possibly with another USB device. If this other USB device works fine, please contact the support center. If this other USB device works fine, please contact the support center.
- 6.2 The green LED continues to light even after a long waiting time, but you still don't get a Satfix. The NL-402U needs up to 20 minutes for its first Satfix on another continent. To get a Satfix the view to the sky must be unobstructed. Move the NL-402U as far as possible from the wall. A house wall reflects the signal strongly and contributes to the Satfix time delay.

6.3 Your PC doesn't support the auto start function, and doesn't start the CD-ROM automatically. Please check under <http://msdn2.microsoft.com/en-us/library/Aa969329.aspx>.

6.4. The NL-402U came in touch with jet water (water jet from a shower head or strong rain (when it was mounted on a car roof). Do not connect the receiver with the notebook etc. under any circumstances, because it will otherwise be completely and irreparably destroyed. Return the receiver to our support center, mentioning "water damage". The support center will disassemble the receiver, dry it and check its functionality.

The Navilock repair center tries to be as obliging as possible, so please tell us the real reason for the defect. During the error analysis, we can generally detect if the cause for the defect was an external cause, water damage, fall, over-voltage or the wrong handling of the unit.



Failures are often the result of little causes. It is not always necessary to exchange the product immediately, because this will not solve the cause of the failure if it is not a GPS hardware problem.

Before visiting your dealer, please contact the Navilock support center. They will try to help you quickly and without further ado, so that the circumstances of an exchange, which might in any case be unnecessary, are avoided.

In this case, please write down a detailed description of the error, add this information to your end device and the software used in this device, as well as the operation environment (operating system, service pack version, CUP size and type, storage size, hard disk drive and interface etc.), and send an e-mail to [support@navilock.de](mailto:support@navilock.de).

A support member will look into your problem and work out a solution.

We hope your Navilock product brings you fun and enjoyment!

## 7. Specifications

Chip set manufacturer/type	u-blox5 GPS & GALILEO SuperSense®
Channels	50 channels
Sensitivity	-160dBm
Frequency	L1, 1575.42MHz
C/A Code	1.023MHz chip rate
Target precisions:	
Position Horizontal	2.5m CEP, 5.0m SEP or SBAS 2.0m CEP, 3.0m SEP
Time	1 microsecond synchronized with GPS time
Speed	0.1m/sec. 95% (SA off)
Date:	WGS-84
Protocol:	NMEA-0183 V3.01 GGA, GSA, GSV, RMC, VTG
Detection rates:	
Hot start	3.5s average (with ephemerides and almanac)
Warm start	25s average (with ephemerides, but without almanac)
Cold start	30s average (neither ephemerides nor almanac)
Re-Acquisition	1s average (recovery time after interruption)
UP-DATE Rate:	4Hz
Dynamic prerequisites:	
Acceleration limit	smaller than 4g
Height limit	18,000 meters (60000 feet) maximal
Speed limit	515 meter/sec. (1000 knots) maximal
Performance:	
Power supply	5 Volt via USB
Connection:	USB
Operating temperature:	-40°C ~ +85°C
Dimensions:	65 mm x 45 mm x 22 mm

## 8. Certificate

CE  
FC



## **9. Warranty period**

Your GPS receiver will be repaired free of charge within the legal warranty period, unless it was damaged due to external cases, humidity dropping or other damages due to improper usage. Your dealer is always ready to help you. Please send your unit for repairs directly to:

**Navilock Repair Center  
Beeskowdamm 13/15  
D-14167 Berlin-Zehlendorf**

Postage must always be paid by the client.

Please add a proof of purchase and a detailed error description. "Doesn't work" or "defective" is not a detailed error description. Time-based error, meaning how often an error occurs, must be expressly mentioned. **For logistic reasons, we cannot accept returned packages without the postage being paid by the client.**

## **10. Support**

For additional support questions, please contact our support center:

[support@navilock.de](mailto:support@navilock.de) / [www.navilock.com](http://www.navilock.com) or by telephone: +49 30 84716503\*.

You can also call the Service Hotline at the following hours: Mo – Fr.: 9:00 – 16:30.

\* You will be charged a connection fee for a telephone call to Germany/Berlin, in accordance with the connection fee overview of your telephone service provider. Callers from Germany, who subscribed to a national telephone flat-rate service and can call nation-wide fixed-telephone numbers free of charge, can call us without incurring additional charges.

You can also find current product information on our homepage. [www.navilock.com](http://www.navilock.com)

## **11. Final provision**

The information and data contained in this manual may be changed without prior notice. Errors and misprints reserved.

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## Conformity declaration

Please download the Declaration of Conformity from <http://www.navilock.de/support/> in the conformity area.



## WEEE note

The WEEE (Waste Electrical and Electronic Equipment) directive, which came into force on 13 February 2003, lead to a comprehensive change in the disposal of used electric products. It is the main purpose of this directive to avoid electric waste products (WEEE), while simultaneously promoting the re-usage, recycling and other forms of reconditioning in order to reduce the amount of waste. The WEEE logo on the product and the package shows that the product should not be disposed of with regular garbage. You are responsible for disposing all used electric and electronic devices at the corresponding collection sites. The separate collection and meaningful re-usage of electronic waste helps to deal with natural resources more economically. In addition, re-using electronic waste contributes to the preservation of the environment and human health. Additional information regarding the disposal of electric and electronic devices, their re-usage and the collection sites can be found at your local authorities, disposal companies, specialist shops and the manufacturer of the product.

## RoHS conformity

This product meets the requirements of directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003, concerning the limited usage of dangerous substances in electric and electronic devices (RoHS) and its amendments.

## FCC Class

An FCC certification of radiation limits on digital devices. Class A certification is for business use. Class B, for residential use, is more stringent in order to avoid interference with TVs and other home devices. See Part 15, Subpart B, of the Federal Register (CFR 47, Parts 0-19).