



Nearest Light

Revision 2.03

Summary

Nearest Light is an application that finds the lights nearest to your present position, using the monthly Light List updates published by the United States Coast Guard. Lights are Aids to Navigation (ATON) that serve as signposts for the mariner, either to mark navigable channels or hazards to navigation. They may be lighted or unlit, on pilings or floating – their characteristics are described on nautical charts and in the Light List.

The full Light List is published in printed and PDF formats. Lights are listed in reference number order, however, and follow the channels. While the latitude and longitude are provided for most lights, the list is not ordered by either latitude or longitude. Instead, you must first locate the area you are in, and then identify the channel you are following before you can match a light from the light list with the light you are looking at. This is not very helpful when you are using your position to find the lights around you.

Nearest Light takes care of that problem by utilizing the Light List that is now published in XML form, and searching that list for all the lights in your current area, using a GPS receiver connected to your computer (or a manual position), sorting that list, and showing you all the lights nearest to your position.

Installation

Nearest Light, also abbreviated as NL in this document, is downloadable from the Internet and checks for all prerequisites and downloads and installs the necessary files.

Nearest Light is compatible with Windows XP, Vista, and Windows 7, 32 or 64 bit. NL requires Windows Installer 3.1 and the .NET 4 library and will automatically install those if not found.

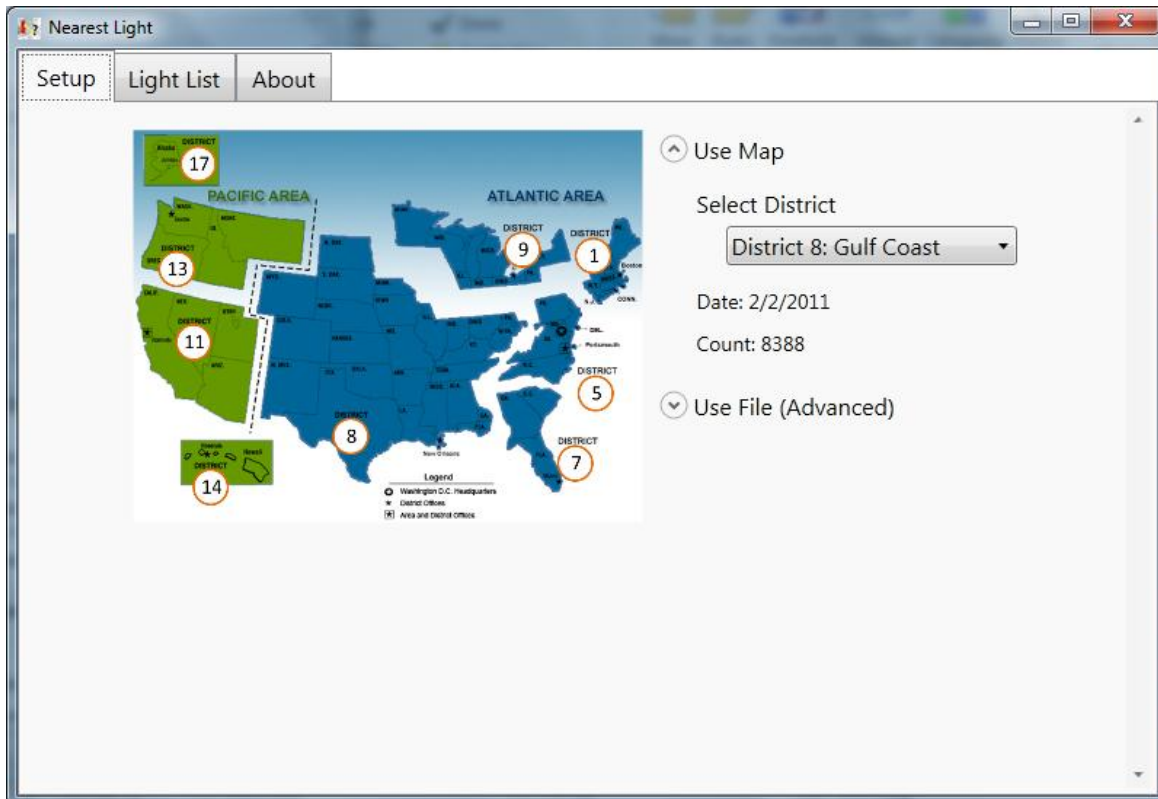
NL checks online each time it starts up to see if there are any updates. If an update is found, the user is asked to download the update. If the computer is offline, NL will proceed after a few seconds.

Starting the Application

Once installed, a shortcut is created on the desktop and the application can be found in the USPS program directory. The application has three tabs – **Setup**, **Light List**, and **About**. Once the application is set up for your district, you can usually go directly to the Light List tab where you will spend most of your time. The function keys F1, F2, F3 can be used as keyboard shortcuts to these tabs.

Setup

Nearest Light has two forms of Setup – **Use Map** and **Use File (Advanced)**. **Use Map** is new in v2 and automatically downloads the correct district file from the USCG NAVCEN website.



You must be online (connected to the Internet) to use this feature, including changing from one district to another. Simply select your USCG district from the map shown. If your area straddles two districts, please see **Appendix B** for additional instructions.

A “Loading...” message will appear and the wait could be as long as a minute (usually less) for the larger districts and slow networks. At the conclusion of the download, the date of the update will be shown along with the current count of lights in the list.

Once your district file has been loaded, you no longer need an Internet connection for planning and real-time GPS use.

If this method fails, due to one of the following reasons, you may need to refer to the **Use File** method in **Appendix A**:

- 1) Not connected to the internet and a previously saved file is available
- 2) USCG NAVCEN is temporarily down (see **Appendix A** for the URL to verify)
- 3) An internal application error has occurred

Light List

This is the primary tab where you will spend the most time. The top section contains 3 key controls. The bottom section contains a table showing the selected light data, count of lights, font size, and some controls for the table.

Nearest Light

Setup Light List About

Show Lights within nm of GPS *no GPS device found*

Position: Lat Lon

Count: 11 FontSize: 10 Font+ Font- Print Table...

District	LLNR	XREF	Aid Name	Aid Type	ASSIGNED_LATITUDE	ASSIGNED_LONGITUDE	Characteristic	Both/Night/Day	Aid Location	Stru
8	26260		Onyx Pipeline West Light	PA	28-34-05.000N	096-31-52.000W	Q G			NR c
8	26250		Onyx Pipeline Light A	PA	28-34-09.000N	096-31-48.000W	Q G			NW i
8	26265		Matagorda Ship Channel Light 57	FD	28-34-17.994N	096-31-55.313W	FI G 2.5s			SG c
8	26270		Matagorda Ship Channel Light 58	FD	28-34-21.861N	096-31-51.812W	FI R 2.5s			TR o
8	26245		Onyx Pipeline Light B	PA	28-34-17.000N	096-31-42.000W	Q R			NW i
8	26235		Matagorda Ship Channel Light 55	FD	28-33-54.458N	096-31-22.017W	FI G 4s			SG c
8	26255		Onyx Pipeline East Light	PA	28-34-20.000N	096-31-38.000W	Q R			NR c
8	26240		Matagorda Ship Channel Light 56	FD	28-33-58.391N	096-31-18.458W	FI R 4s			TR o
8	26275		Matagorda Ship Channel Light 59	FD	28-34-41.436N	096-32-28.672W	Oc G 4s			SG c
8	26280		Matagorda Ship Channel Light 60	FD	28-34-45.330N	096-32-25.171W	Oc R 4s			TR o
8	26285		Matagorda Ship Channel Light 61	FD	28-35-04.929N	096-33-02.035W	FI G 4s			SG c

Range

Show Lights within nm of

All lights within this range will be displayed in the table with a count of the number of lights shown. Decimal values such as 0.5 or 7.2 may be used. Using a large range on a slower netbook may result in a longer wait.

To simplify calculations for a large list which may have 8000 lights or more, lights are selected from a bounding box so that for a 2nm range, all lights 2nm to the E, W, N, and S of the selected position are shown. That means the actual range to lights in the corner of the bounding box may exceed 2nm by a factor of 1.414. The actual distance is then computed for each light within this box.

Show Lights within nm of

Changing the range will change the background color while you are typing. When you stop typing for 2 seconds, the light list will automatically be refreshed using the new range. This behavior might be a little disconcerting at first but does not affect entry and simplifies operation.

The last used range is retained when closing and restarting the application.

GPS Selection

no GPS device found

If no GPS device is connected or configured, the GPS button will be grayed out, and the manual position selection will have to be used.

Lat: 30 25.277N, Lon: 097 56.422W, Sats: 07, HDOP: 1.4

If a GPS device is connected and receiving data, the GPS button will be enabled and the current latitude, longitude, number of satellites, and horizontal dilution of position will be displayed and updated every second. For more information about GPS receivers, please see **Appendix C**.

Selecting this option will cause the table to be updated from the current GPS position. However, the light list is not continuously refreshed in real time, since this is meant to be a planning tool and not a survey tool. Clicking on the GPS button will refresh the light list based on your current position.

If your position is inland, you may not see any lights displayed, and you will need to expand your range to pick up lights on the nearest coast or major river. For example, from Austin, a range of 150nm is required to begin picking up lights on the Lavaca River.

Manual Position

● Position: Lat Lon

A manual position may be entered, and this is the default selection when the application starts up. Manual positioning is useful for creating light lists centered on a survey area in advance of a COOP charting event, or for checking light list data from a COOP charting survey where lat/lons of ATONs have been recorded and you need to look up the light list number and federal/private designation and whether it had a RaRef (radar reflector), for example.

Changing either the latitude or longitude will change the background color while you are typing. When you stop typing for 2 seconds, the light list will automatically be refreshed using the new position. This behavior might be a little disconcerting at first but does not affect entry and simplifies operation.

The last used manual position is retained when closing and restarting the application.

Table Controls

Two buttons, and , control the size of the displayed and printed font. Font size may be increased for larger type and improved readability but will require more scrolling to see the full table contents.

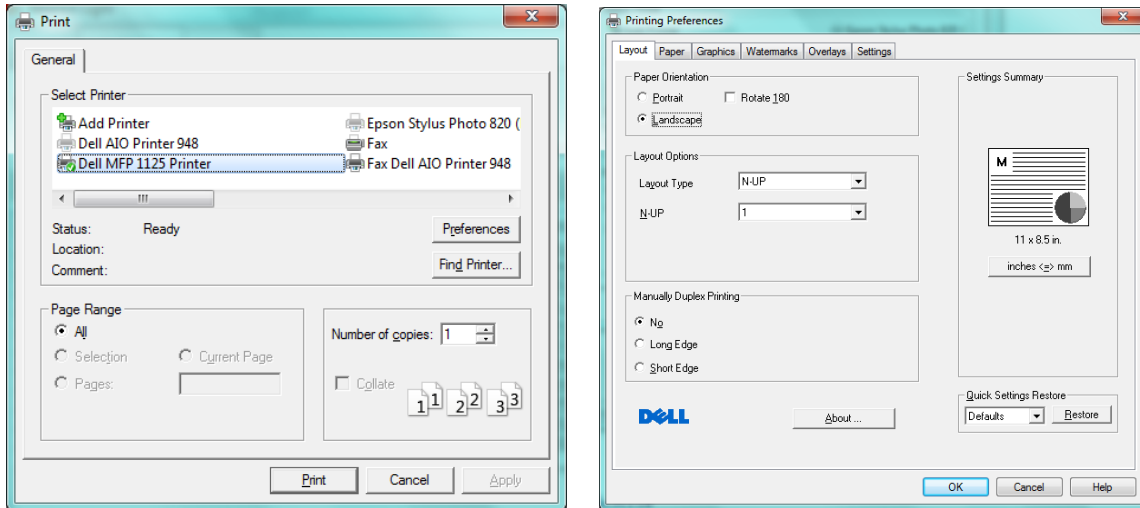
You may reorder the displayed list simply by clicking on any column header to sort the table. Clicking on the column header again will reverse the sort order.

By default, the table is sorted by distance (scroll to the far right) with the closest lights on top. The distance is in **meters** - multiply by 3 for feet. Generally, if you are reporting on a light, you should be within 10 (meters) of its listed position.

You may also reduce the column widths, which are automatically set to include the widest entry. Move the mouse cursor over the column divider on the column header line until the mouse cursor changes from a pointer to a left-right arrow. Then hold the mouse button down while reducing the width. This is useful for viewing as well as preparing the table for printing.

Print Table

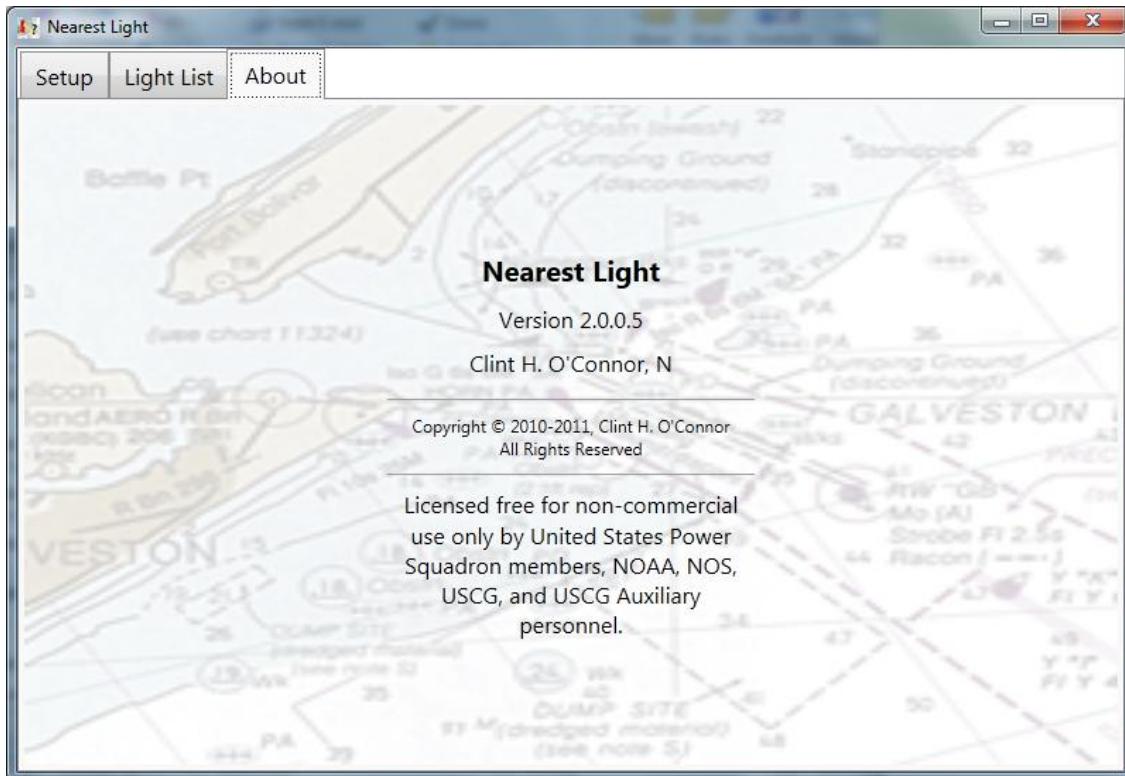
The **Print Table ...** button brings up the Printer dialog. This is a simplistic printing function which requires setting a couple of options for best results. This must be repeated for every table printed.



1. Set your font size to 9 (some experimentation may be required for your printer). Remember this optimum font when printing.
2. Choose your printer
3. Click on Preferences and change your printer setting from Portrait to Landscape
4. Close Preferences and click on Print

About

This tab contains information about the application version, author, and licensing information.



Appendix A – Use File (Advanced)

When using **Use File** setup, you must go on the Internet and manually download the light list from the Coast Guard for your District, shown highlighted in the red circled area below.

Current URL as of 11/6/2010 – if this fails, google “monthly updates to light lists”
<http://www.navcen.uscg.gov/?pageName=lightListCorrectionsMonthly>

The screenshot shows the USCG Navigation Center website. The header includes the Navigation Center logo, the text "NAVIGATION CENTER The Navigation Center of Excellence", and the U.S. Department of Homeland Security logo with "UNITED STATES COAST GUARD". A navigation bar contains links: Home, Consolidated Nav Info, DGPS Advisories, GPS Advisories / NANUs, GPS Testing Notices, LNM's, Almanacs, Nav Rules, AIS, Contact Us, Search.

The main content area is titled "MONTHLY UPDATES TO LIGHT LIST PUBLICATIONS". It contains several paragraphs of text explaining the purpose of the updates and providing instructions for users. A list of links for various districts is highlighted with a red circle:

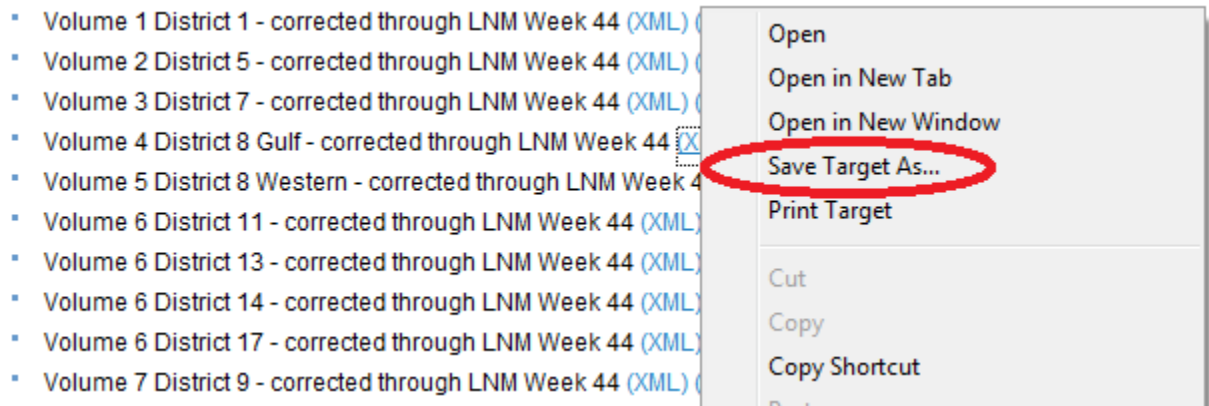
- Volume 1 District 1 - corrected through LNM Week 44 (XML) (PDF)
- Volume 2 District 5 - corrected through LNM Week 44 (XML) (PDF)
- Volume 3 District 7 - corrected through LNM Week 44 (XML) (PDF)
- Volume 4 District 8 Gulf - corrected through LNM Week 44 (XML) (PDF)
- Volume 5 District 8 Western - corrected through LNM Week 44 (XML) (PDF)
- Volume 6 District 11 - corrected through LNM Week 44 (XML) (PDF)
- Volume 6 District 13 - corrected through LNM Week 44 (XML) (PDF)
- Volume 6 District 14 - corrected through LNM Week 44 (XML) (PDF)
- Volume 6 District 17 - corrected through LNM Week 44 (XML) (PDF)
- Volume 7 District 9 - corrected through LNM Week 44 (XML) (PDF)

Below the list is a disclaimer: "Disclaimer: Monthly Light List updates are provided in PDF format. XML files of selected Light List fields (LLNR, Aid Name, Position, Light Characteristic) are also provided as a public service for data research. These data sets are provided for the convenience of the user and are provided "as is" and without warranties of any kind either expressed or implied. The content on this website may be changed or updated without notice; these changes may or may not be incorporated in any new version of the website. The USCG does not warrant or make any representations regarding the use or results of the use of the materials in this website in terms of its correctness, accuracy, timeliness, reliability, legality or otherwise. The USCG cannot accept any liability for any error, omission or failure to update such information. USCG does not warrant that the functions contained in the website materials will be uninterrupted or error-free, that defects will be corrected, or that this site or server makes it available, are free of viruses or other harmful components. The data sets published on this server could contain technical inaccuracies or typographical errors. Changes are periodically added to the information herein. If you have suggestions on format or find any errors or omissions, we encourage you to report them to our Navigation Information Service staff."

At the bottom of the page, there is a footer: "U.S. Coast Guard Navigation Center - NAVCEN MS 7310, 7323 Telegraph Road, Alexandria, VA 20598 - 7310 | (703) 313-5900" and a "Download Plug-Ins" link.

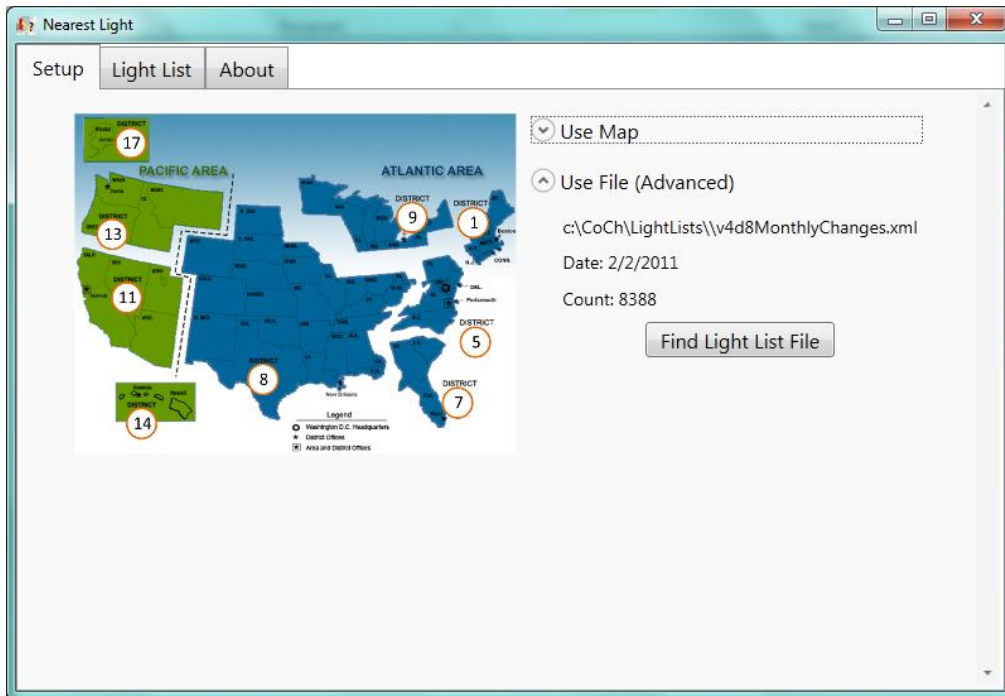
Once you have identified your District, do not click on the XML link. Instead, right-click on the link to get the context menu and then choose Save Target As...

<i>Internet Explorer:</i>	Save Target As...
<i>Firefox:</i>	Save Link As...
<i>Google Chrome:</i>	Save Link As...



This will present you with a file dialog to save the file. Note the filename as you will need it later. The default directory is c:\CoCh\LightLists – I recommend that you not change this.

In **Setup**, click on the **Use File** option instead of **Use Map**. Click on **Find Light List File**. You will again be presented with a file dialog to load the file you just downloaded from USCG. The filename includes the volume and district – for example, v4d8. After a few seconds, the light list should load and show the date of the file and the count of lights in the full list.



Appendix B – Straddling Districts

Currently, Nearest Light works with only one district at a time.

If you are in an area that straddles two districts, the recommended procedure is to plan one survey at a time into each district.

Alternatively, load each district in turn while online, using **Use Map**. When you are offline, you will need to use the **Use File** method (**Appendix A**) to select between the two districts.

Appendix C – GPS Receivers

Nearest Light is designed to work with serial NMEA 0183 GPS communication protocols. The standard NMEA (National Marine Electronics Association) protocol has the following serial characteristics:

- Baud rate 4800
- Data bits 8
- Stop bits 1

Many GPS receivers are either serial or serial USB – that is, they have USB cables, but use a serial protocol. For most modern portables, the serial port is no longer available and you will either need a GPS receiver with a USB cable or you will need to use a USB-serial adapter. Another possibility is a Bluetooth GPS, configured as a serial device, but this has not been tested and the complexity is beyond the scope of this manual.

Within the GPS receiver, you may need to change the setup to output in NMEA format at 4800 baud (only the GPS sentences are required). The method for doing this varies by model so you will need to consult your GPS receiver documentation for help.

The following units are known to work:

- Microsoft Pharos GPS-500 III GPS Receiver – not waterproof but cheap (amazon.com)
- Ambicom USB GPS Navigation Receiver (amazon.com)
- Garmin 72H with Garmin [serial cable](#) and Keyspan USB-serial adapter
- Garmin 76-series with Garmin [serial cable](#) and Keyspan USB-serial adapter
- US GlobalSat BU-353 Waterproof WAAS Enabled USB GPS Receiver (usglobalsat.com, amazon.com) – enable WAAS with the supplied utility
- US GlobalSat MR-350P Bulkhead-mount WAAS Enabled serial GPS Receiver – requires USB cable set adapter (usglobalsat.com, amazon.com) – enable WAAS with the supplied utility

In general, any SiRF Star III-based GPS with NMEA 0183 *should* work, such as the HOLUX GR-213 USB GPS Receiver, which uses the SiRF Star III. WAAS is not always enabled by default so you may need to enable this feature with the supplied utility.

The Keyspan USB-serial adapter, if needed, is highly recommended for best compatibility (amazon.com). Others may work but have not been tested.

Windows 7, if online, will automatically find the latest Prolific driver for some serial adapters, including the USGlobalSat devices. Try plugging the USB GPS or USB-serial adapter in first before using the driver that comes with it.

Garmin

Garmin uses a proprietary format by default. For many Garmin units, you can change the setup to output to NMEA at 4800 baud. However, the Garmin 18 USB “hockey puck” does not work. Nor do any of the Garmin USB cables, even with the Garmin USB drivers. The only cable known to work is the serial cable coupled to a USB-serial adapter.

Unless you have a Garmin serial cable or need one for other uses such as waypoint upload/download, I recommend getting one of the other receivers listed above. They can be had for approximately the same price or less than the special Garmin cable and USB-serial adapter.

NMEA 2000

NMEA 2000 units, found on newer boats, will not work but may also have an NMEA 0183 interface that can be used instead.