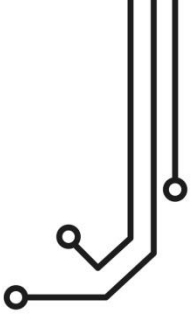


NAVLINK2 WIRELESS NMEA2000 SERVER

Installation and instruction Manual

Tel: 01179 554 474
www.digitalyacht.co.uk

Version 3.00

1. Introduction

Congratulations on the purchase of your NavLink2 Wireless NMEA 2000 Server. This product replaces our original NavLink2 product and features a new smart web interface for configuration via a web browser on your mobile device.

It is recommended that your product is installed by a professional installer, particularly when it comes to interfacing with other equipment.

Before installing and operating this unit, please consult the user manual of the navigation equipment that you are connecting this unit to.

2. Before you start

You will need the following items and tools to complete the installation:

- The Wireless NMEA 2000 Server (supplied)
- Spare/suitable connection to the NMEA2000 network
- M3 or M4 screws or other appropriate fixings (not supplied).

To receive/display wireless data from the NavLink2 you will need:

- Suitable navigation software running on a PC, iPhone/iPad, Mac or other wireless device.
- A fully working and powered NMEA 2000 network.

3. Installation

The NavLink2 is IP54 rated (water resistant) and should be installed below deck in a dry location. When locating the unit you should consider:

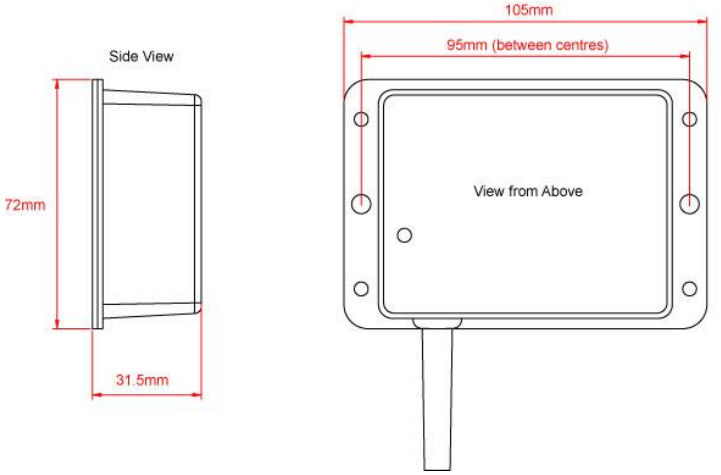
- Routing of the NMEA 2000 cable to the network.
- Sufficient space around the unit for cable connections.
- Maintaining the compass safe distance of 0.5m.
- Best location for Wi-Fi reception i.e. not inside a metal enclosure

3.1 – Connecting to NMEA 2000 Network

- Connect the NavLink2 cable, to a spare connector on the NMEA2000 network.
- NavLink2 takes its power (LEN=2) from the NMEA2000 network so no additional connections are necessary.
- If you are creating a new NMEA2000 network, then you may wish to consider Digital Yacht's NMEA2000 Starter Kit, that provides all of the cables, connectors and terminators required for a basic NMEA2000 network.
- If you are connecting NavLink2 to a non-standard NMEA2000 network, then a suitable adaptor cable will need to be sourced from the relevant manufacturer;
  - SeaTalkNG (Raymarine P/No A06045)
  - Simnet (Simrad P/No 24006199)

3.2 – Mounting

- Using suitable fixings, attach the NavLink2 unit to a flat surface.
- Unit may be installed in any orientation.



3.3 – Powering NavLink2

- Apply power to the NMEA 2000 network and the NavLink2 the LEDs should start to illuminate or flash, as per Table 1…

Condition	STATUS LED (Green)	DATA IN LED (Yellow)	ERROR LED (Red)	DATA OUT LED (Yellow)	LINK LED (Green)
ON (Solid)			System Error		TCP Connection
Fast Blink	No Wi-Fi connection	Data	Data Error	Data	
Slow Blink		Data	Network Error	Data	UDP Connection
OFF	Wireless device connected	No Data From N2K	All OK	No Data From App	No Power

Table 1

3.4 – Setting up the Wireless Network

- By default, NavLink2' creates a wireless Access Point (hotspot) on-board your boat. The Name (SSID) of the Access Point will be "**NavLink2-xxxx**" where xxxx is the unique four digit code of your device.
- To connect to the NavLink2 you will need to scan for wireless networks, find and select it in the network list and then when prompted, enter the default WPA2 password, which is "**PASS-xxxx**", where xxxx is the same, unique four digit code that is in the hotspot name.
- As soon as a wireless connections is established, the Status LED will stop flashing and stay permanently ON, whilst a wireless device is connected.

3.5 – Accessing the Web Interface

- The NavLink2 has a built-in web interface that can be used to configure the unit and display the data that it is sending to apps.
- Any device, connected to NavLink2, can access its web interface by typing http://192.168.1.1 or http://navlink2.local in to its browser's address bar.

- This will display the Home page shown in Figure 1, from which you can go to the Data Modes, View Data and Settings pages.

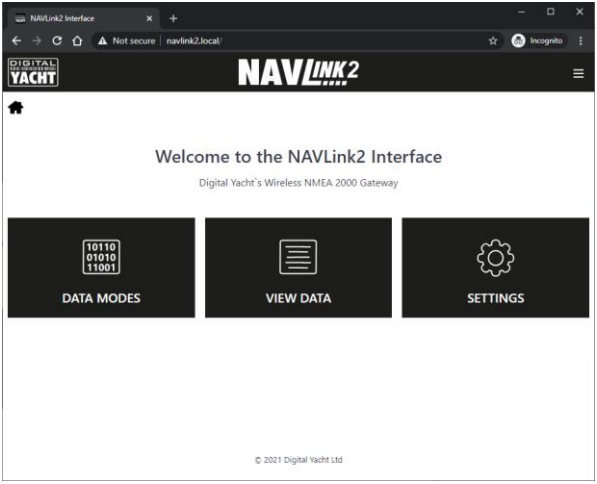


Figure 1

3.6 – NMEA Data Configuration

- The Data Modes page (see Figure 2) allows you to configure the NavLink2 for different NMEA data conversions and wireless network protocols.
- By default the NavLink2 will be in High Speed Gateway Mode, where all Instrument, GPS, Navigation and AIS data is converted from NMEA 2000 to wireless NMEA 0183 that the majority of apps support.
- The table on the next page shows the different NMEA modes that NavLink2 supports and which you choose using the “NMEA Modes” selector menu.
- TCP is the default protocol that NavLink2 uses, and is best for fast, secure, single device connections. TCP mode must be used for driving an autopilot.
- If you wish to allow multiple devices (up to 7) to receive the NavLink2 data at the same time, you should select UDP protocol.
- If you are using an App that can output Autopilot data, make sure to select the GPS Location “From Wireless App”

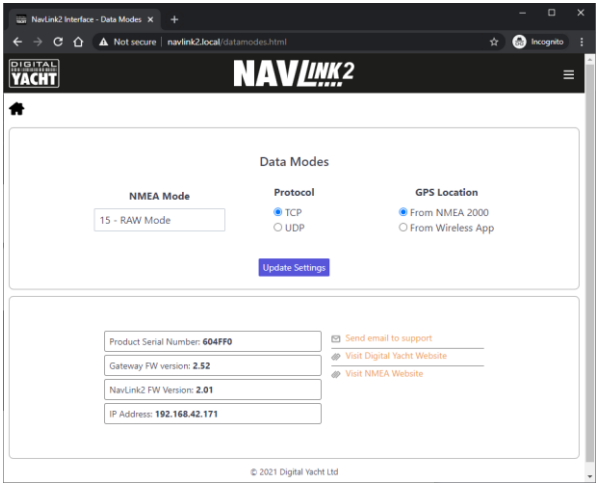


Figure 2

- The following table shows the various NMEA2000 to NMEA0183 conversions the NavLink2 supports.

MODE	Interface	NMEA DATA	Sentences
0 - Gateway	NMEA0183	GPS/Navigation/Instruments	RMC, HDG, VHW, MWV, DPT, MTW,MDA, APB, RMB, VLW, XTE, ROT, RSA
1 - Gateway HS (*Default*)	NMEA0183	GPS/Navigation/Instruments/AIS	RMC, HDG, VHW, MWV, DPT,MTW, MDA, APB, RMB, VLW,XTE, ROT,RSA,VDO, VDM
2 - GPS (1Hz)	NMEA0183	GPS Only (1Hz)	RMC, GSA, GSV, ZDA
3 - GPS HS (10Hz)	NMEA0183	GPS Only (10Hz)	RMC, GSA, GSV, ZDA
4 - Wind (5Hz)	NMEA0183	Wind Only (5Hz)	MWV
5 - AIS (Navionics)	NMEA0183	AIS + GPS Only	VDO, VDM, RMC, DPT
6 - Heading	NMEA0183	Heading Only (10Hz)	HDG
7 - Instrument	NMEA0183	GPS/Navigation/Instruments (1Hz)	RMC, HDG, VHW, MWV, DPT, MTW,MDA, APB, RMB, VLW, XTE, ROT, RSA
8 - Depth	NMEA0183	Depth+Water Temp+GPS (1Hz)	DPT, MTW,MDA, VHW, VLW, RMC
9 - For Future Use			
10 - For Future Use			
11 - For Future Use			
12 - For Future Use			
13 - For Future Use			
14 - Full Mode	NMEA0183	All Conversions at N2K update rate	APB,RSA,VHW,HDG,ROT,DPT,VLW,RMC,XTE,VDR,GSV,GSA,MWV,MWD,MDA,MTW,GGA,VTG,ZDA,VWR,RMB,VDO,VDM
15 - RAW Mode	N2Net	RAW NMEA2000 data over Wi-Fi	Not Applicable

- To see what data the NavLink2 is converting and sending to your app, from the Home page, go to the “View Data” page as shown in Figure 3.

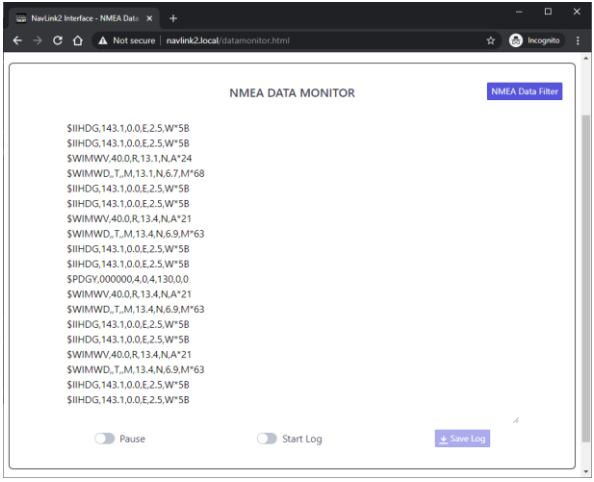


Figure 3

- If your app does not support particular sentences or it is receiving the same data from another device, you can filter certain sentences by clicking the “NMEA Data Filter” button and clicking the check box next to the sentences you do not want to receive.
- From the “View Data” page you can also log the data to a text file by clicking the “Start Log” button, waiting a suitable logging period and then clicking the “Stop Log” button. At this point the “Save Log” button becomes active and you can download the log file to your device.

3.7 – Wireless Network Configuration

NavLink2 can operate in two wireless network modes.

1. Access Point mode (default) where it creates its own wireless network that other devices can connect to.
2. Station mode, where NavLink2 will join the boat’s existing wireless network.

With the release of the NavLink2 V2.00 firmware, we now support combined “AP + STA” mode, where the NavLink2 will always create its own network, even when Station mode is selected and NavLink2 has joined another network.

This has the advantage that you can always access the NavLink2, even if you have made a mistake with the Station mode configuration i.e. mis-typed the wireless password.

To change the network configuration, from the Home page, go to the Settings page as shown in Figure 4.

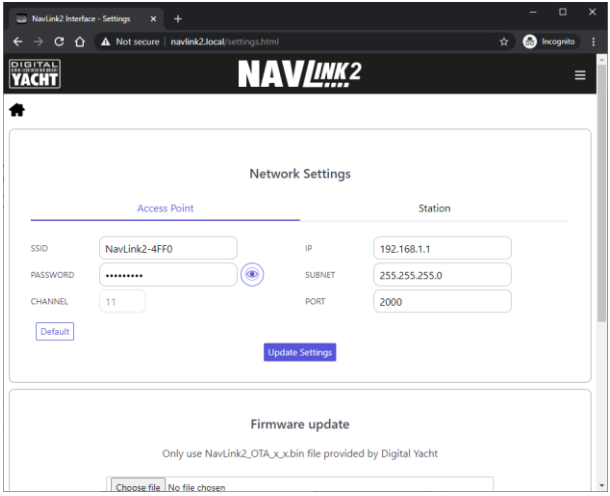


Figure 4

By default, the Access Point tab is selected. From here you can change the SSID (wireless network name), wireless password, wireless channel, static IP settings and Port used by your NavLink2.

We recommend only changing these settings if you are experienced in computer networking. Digital Yacht cannot provide support on specific networking issues.

If you wish to make NavLink2 join an existing wireless network on the boat, click the Station Mode tab and you will see the settings shown in Figure 5.

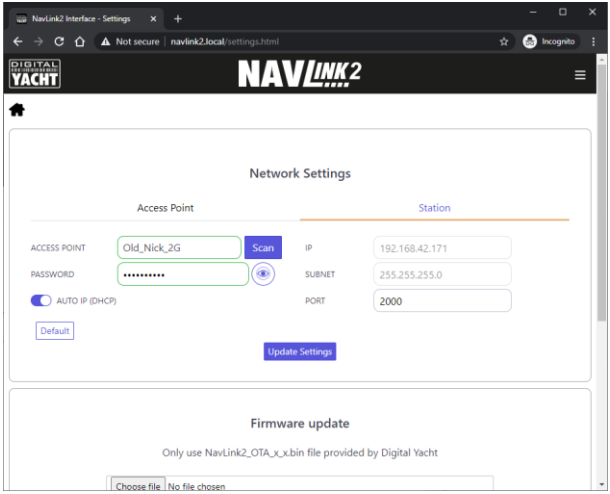


Figure 5

From here you can scan for and select the wireless network you want NavLink2 to connect to and enter the wireless password of this network – click the "Eye" icon to view the hidden password.

By default, NavLink2 will automatically get an IP address from the wireless network it connects to (this will be displayed "greyed out" in the IP box). If you want to control the IP address NavLink2 has on the network, turn off "Auto IP" and enter fixed IP address settings

Once you have made all the changes, click the "Update Settings" button to apply the changes and reboot the NavLink2. After about 20 seconds, NavLink2 will reboot and join the selected network. It's "Status" LED will initially flash but then stay ON if it has successfully joined the network.

If you make a mistake with a setting or forget a password, reset the NavLink2 to factory defaults by pressing and holding the Reset button for 10 secs or more.

4. Normal Operation

The NavLink2 is powered from the NMEA2000 network, so as soon as the network is turned on, the NavLink2 will boot up.

If it is in the default AP Mode, then within a few seconds you should see its wireless network appear on your mobile device. If you have previously told your device to automatically connect to this network, then it will associate with the NavLink2.

This association is indicated by the green Status LED, which flashes when first turned on, staying permanently ON, all of the time that a wireless device is connected to the NavLink2 network.

NOTE – Most operating systems will show a “No Internet” warning when connecting to a wireless device like NavLink2. This does not indicate a problem, it is just warning you that NavLink2 does not have a connection to the internet like a normal wireless router would normally have.

If the NavLink2 is in STA mode, and the wireless network that you configured it to connect to is available, then NavLink2 will associate with it and the green Status LED will stop flashing and remain permanently ON, unless it loses wireless connection with that network, at which point it will flash again.

Every time NMEA2000 data is received, the “DATA IN” LED will flash. On some large networks, it is not unusual for the yellow LED to be constantly flickering. If the navigation App sends out some data, the “DATA OUT” LED will flash.

In the event of wireless connection problems, press and hold the Reset button for 4-5 seconds which reboots the interface. In busy marinas with high levels of wireless activity, reliable connection to the NavLink2 in Access Point mode may be difficult, but once underway (at sea) a strong and reliable connection will be achieved.

If you experience wireless connection issues in Access Point mode, try setting NavLink2 to use another wireless channel. More information on this can be found at https://digitalyacht.net and then search for “Wi-Fi Congestion”.

You should never see the red “ERROR” LED turn on, except briefly at power up. If you see the “ERROR” LED flashing, this indicates that an NMEA conversion has been detected and the data rejected. NavLink2 is designed to safely carry on

working in this situation, but it will have recorded details of the error in its memory. Please contact Digital Yacht when convenient and we will investigate what has happened.

In the unlikely event that the red “ERROR” LED is permanently ON, please contact Digital Yacht immediately as this indicates a more serious problem has occurred that is stopping normal and safe operation.

4.1 - Interfacing with Mobile Apps

NavLink2 is compatible with any app that can receive wireless NMEA data and we have created an online guide on how to connect to the most popular ones…

https://digitalyacht.net/configure-apps-software/

The IP address and port that the NavLink2 transmits data on are;

IP Address	-	**192.168.1.1**
Port	-	**2000**

By default the NavLink2 is set to operate in TCP mode but you can select UDP mode using the web interface. Most apps that support UDP connections do not ask you to enter the IP address just the port number, however if they do, set an IP address of 0.0.0.0

Please note that on both iOS and Android devices, it is best to always completely close an app, as highlighted in this article.

Some apps, only support a limited number of NMEA sentences and do not like receiving lots of data. Use the NMEA Mode selection in the web interface to change the amount and type of data transmitted e.g. for the Navionics Boating App we have found that Mode 5 “AIS and GPS only” is the best mode to use.