TECHNICAL NOTES

Article Number -   00046-2012

Date -   23rd June 2017

Article applies to - iAIS/WLN10/WLN10HS/WLN20/NavLink/SonarServer/AIT3000 and

Nomad Wi-Fi Products

ISSUE: Using our Wireless Products with an existing wireless network

All of Digital Yacht's wireless NMEA devices use the same Wi-Fi module that is pre-configured during production with settings that will give good operation for the majority of customers. However, some customers have requested the ability to change some of these settings i.e. the wireless SSID network setting, or to make the product join an existing wireless network onboard the boat.

This Tech Note provides a command reference that explains how to check and change many of the settings. This procedure is not recommended for all customers and assumes a certain level of experience and expertise in wireless networking.

<u>PLEASE NOTE</u>: This Tech note was last revised in 2015 and at the beginning of 2017 we changed the default IP address of our wireless NMEA products to 192.168.1.1. This Tech Note is still applicable to the latest units but please use 192.168.1.1 instead of 169.254.1.1 on units purchased after 2016.

SOLUTION:

To configure our wireless NMEA products you need to use a free terminal program called Tera Term. To carry out this configuration, it is necessary to have a Windows PC that has a wireless adaptor and a copy of "Tera Term" installed. A copy of this program is included on the Digital Yacht "Software and Drivers" CD-Rom (in the Utilities folder), or is available for download at the link below;

https://osdn.net/projects/ttssh2/releases/

Select and download the latest release and you only need to install the bare minimum of packages as none of the plugins or language packs are needed.

After installing Tera Term, it is necessary to connect the PC to our wireless device using the Windows Wireless Network utility, scan for available networks and connect to the device to be configured.
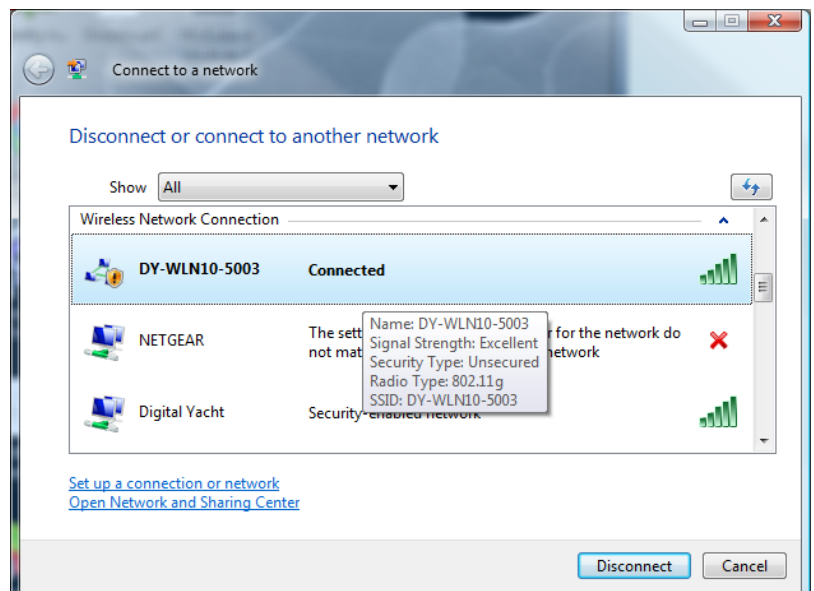
Once connected, run Tera Term and when the "New Connection" window is displayed, select the TelNet service, enter the IP address and Port number of our wireless device – which is 169.254.1.1 Port 2000.
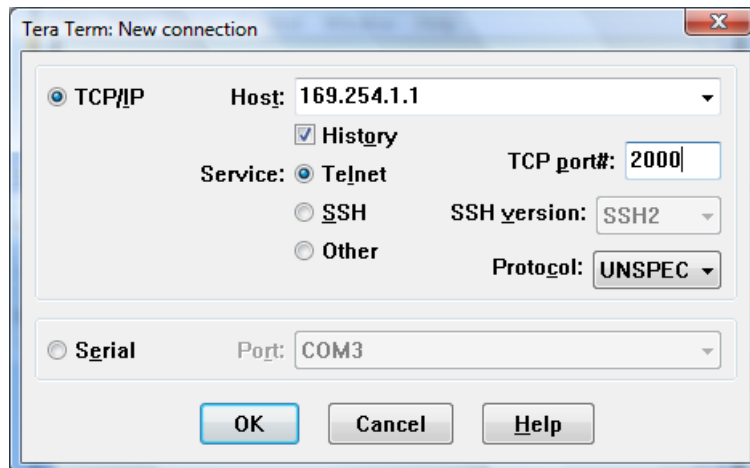

If Tera Term successfully creates a TCP/IP connection to our wireless device, then you should see the window below with the word "*HELLO*" displayed.
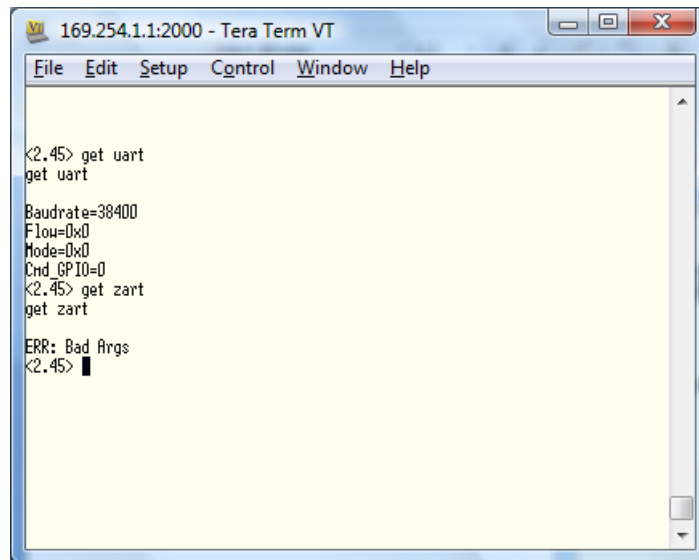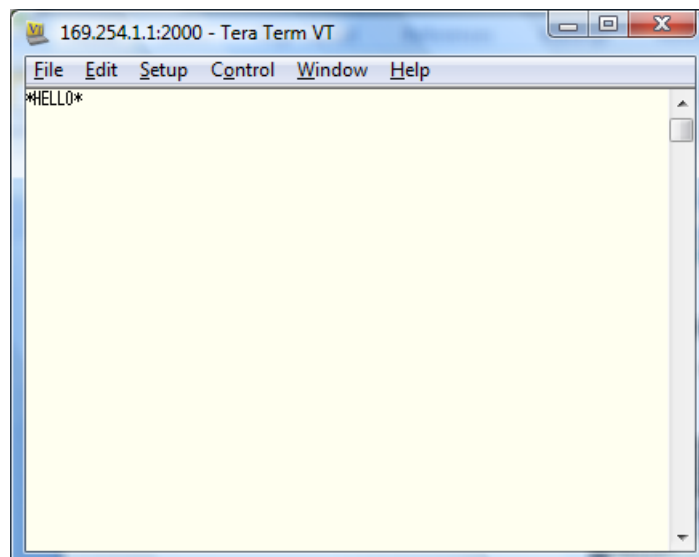

In order to see what you are typing in Tera Term, click on Setup>Terminal and then make sure the "Local Echo" option is ticked (see below). I also recommend setting the Transmit to "CR+LF" which will put a space between lines and make it easier to read the terminal screen. Once you have done this click "OK" to return to the terminal window.
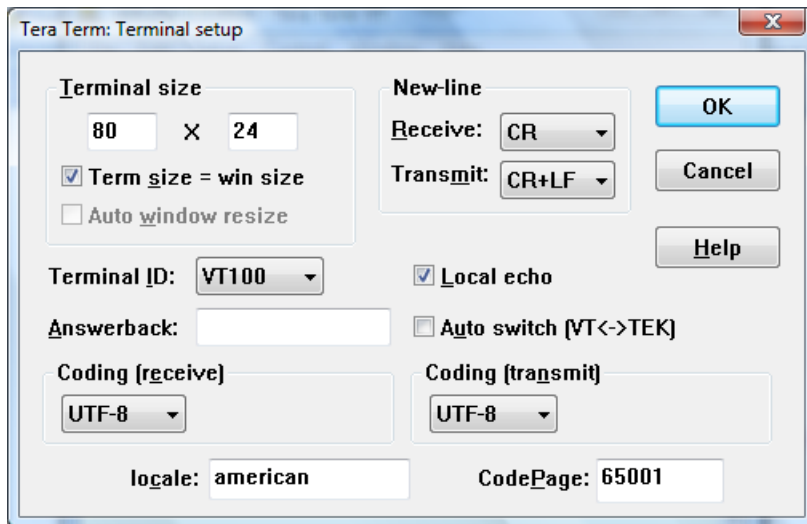
To change the configuration, you need to be in "Command" mode. To put our wireless device into "Command" mode, type **$$$** on your PC keyboard and then press the ENTER key. You should see the text CMD appear, just below the *HELLO* text, in the terminal window. Press the ENTER key again and a cursor will appear with the current software version shown.
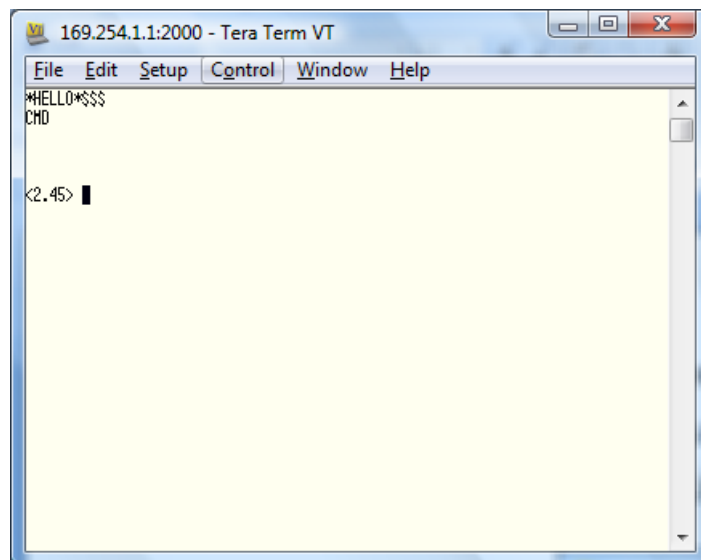
You are now in "Command" mode and can type in any of the commands that are listed in this document.

Most of the commands are either "get" commands to display the current settings, or "set" commands to change the settings. If you get a command wrong, then you will see an error message. In the window below, I have issued a command **get uart** to display the serial port settings and then I have intentionally entered the same command wrongly **get zart** to show the error message returned. You must always press the ENTER key after typing in the command to make the PC send the command to the unit.

```
169.254.1.1:2000 - Tera Term VT
File  Edit  Setup  Control  Window  Help

<2.45> get uart
get uart

Baudrate=38400
Flow=0x0
Mode=0x0
Cmd_GPIO=0
<2.45> get zart
get zart

ERR: Bad Args
<2.45>
```
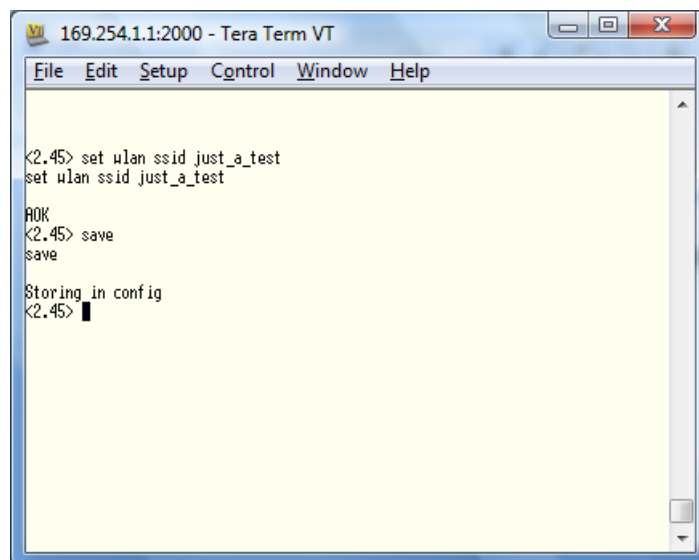
If you wish to change the SSID of the wireless device, then you should use the following command;

set wlan ssid XXXXXXXX   (where XXXXXXXX is the name of the SSID you wish to set)

It is recommended that you only use standard letters or numbers and use – or _ symbols instead of spaces between words.

It is now necessary to type **save** followed by the ENTER key to store the settings in the units memory. The settings will be applied the next time the unit is rebooted or powered up.


```
169.254.1.1:2000 - Tera Term VT
File  Edit  Setup  Control  Window  Help

<2.45> set wlan ssid just_a_test
set wlan ssid just_a_test

AOK
<2.45> save
save

Storing in config
<2.45>
```
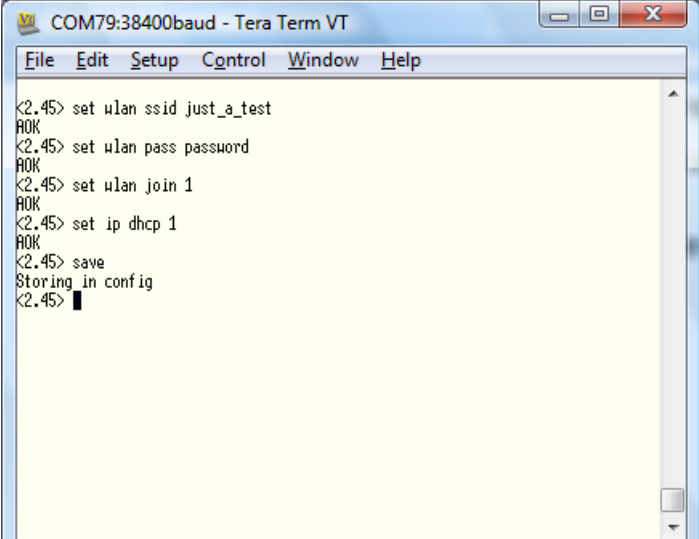
The AOK message that was displayed after the command was sent, is the acknowledgement message that confirms the command was correct and that the setting has been changed. You must save all settings though for them to take effect. It is not necessary to save after every command i.e. you can enter a series of commands and then save, but you will lose the settings if the unit reboots or power cycles before you have done a save.

Digital Yacht wireless products can only create OPEN (unencrypted) networks which does mean that anyone can connect to them. At sea this is very unlikely to cause a problem, unless you don't trust your crew (!), but it is possible to make all of our wireless products connect to an existing encrypted wireless network. This is particularly useful if you already have a wireless network on the boat and do not want to have multiple wireless networks or keep changing networks to get the wireless NMEA data.

To configure our wireless products to connect to an existing network, enter the following commands;

set wlan ssid NETWORK_NAME
set wlan pass PASSWORD
set wlan join 1
set wlan chan 0
set ip dhcp 1
save

You will need to replace the NETWORK_NAME and PASSWORD text with the relevant values for your wireless network. This should work with all WEP, WPA and WPA2 type networks.

Your existing wireless network must be setup to provide DHCP to our wireless device i.e. your network automatically issues an IP address and the other network settings to our wireless device.

Once you have saved the new settings, press the RESET button on the Wireless Product or power the unit off and then back on again. If everything is correctly configured and the wireless product is connected to your existing wireless network, then you should see just the Green LED flash (and Yellow LED if NMEA data is being received) but the Red LED should not come ON at all. If you have got any of the settings wrong and connection to your network was not possible, then the Green and Red LEDs will alternately flash.

Now it is necessary to find out what IP address your wireless network has given the iAIS/WLN10/WLN10HS and to do this, you need to go to your wireless router web interface and login – refer to the manufacturers manual for details of how to do this. Then find the DHCP Client List and you will see a device called WiFly-GSX and this is your Digital Yacht wireless device. Make a note of the IP address and if possible, set the router to reserve this IP address for your device – thus ensuring that the IP address is always the same. Below is an example from a TP-Link wireless router where you can see that the IP address is 192.168.1.102.

Now it should be possible to connect your iPhone/iPad/Laptop/etc. to the wireless router, and set up a TCP connection to the IP address that the wireless device has been given (192.168.1.102 in this example) and port 2000.

If your wireless device has UDP enabled (all units sold since April 2012) or you have enabled this yourself by following our Tech Note 00030-2012, then you do not need to find out what IP address your wireless product has been given, simply connect your iPhone/iPad/Laptop/etc. to your wireless network and then initiate a UDP connection on port 2000.

All wireless NMEA data connections on your wireless network are totally transparent to other users on the network who might be printing a file, accessing the internet, etc. and all normal networking activity can be done at the same time as you are receiving NMEA data on the network.

So now you have a single, password protected wireless network on your boat over which your NMEA data can be transmitted and the same network can be used for internet and other networking activities.