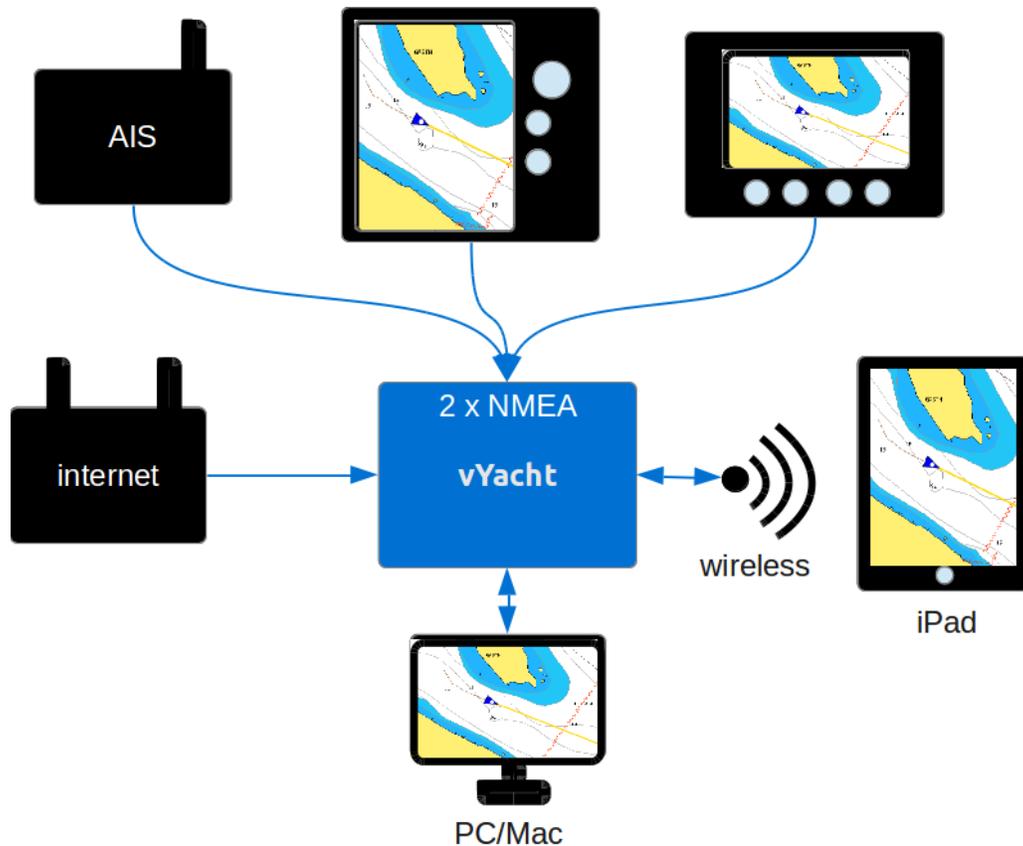**vYacht**
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vYacht NMEA Wifi Router

The vYacht's Wifi Router brings GPS and instrument data to your iPad and on-board computer. Simply attach the NMEA 0183 output of your charting plotter to the router and the position is automatically broadcasted in a secure way via WiFi and ethernet. All instrument data can be used in marine charting software like iNavX on the iPad or most PC based navigation software.

The standard and cheaper iPad Wifi does not come with a GPS. If you still want to use it for navigation the Wifi router is the perfect option. In addition to GPS it can even transfer AIS or instrument data.

If you purchased the version with additional ethernet then you can even route internet through the same wireless network.
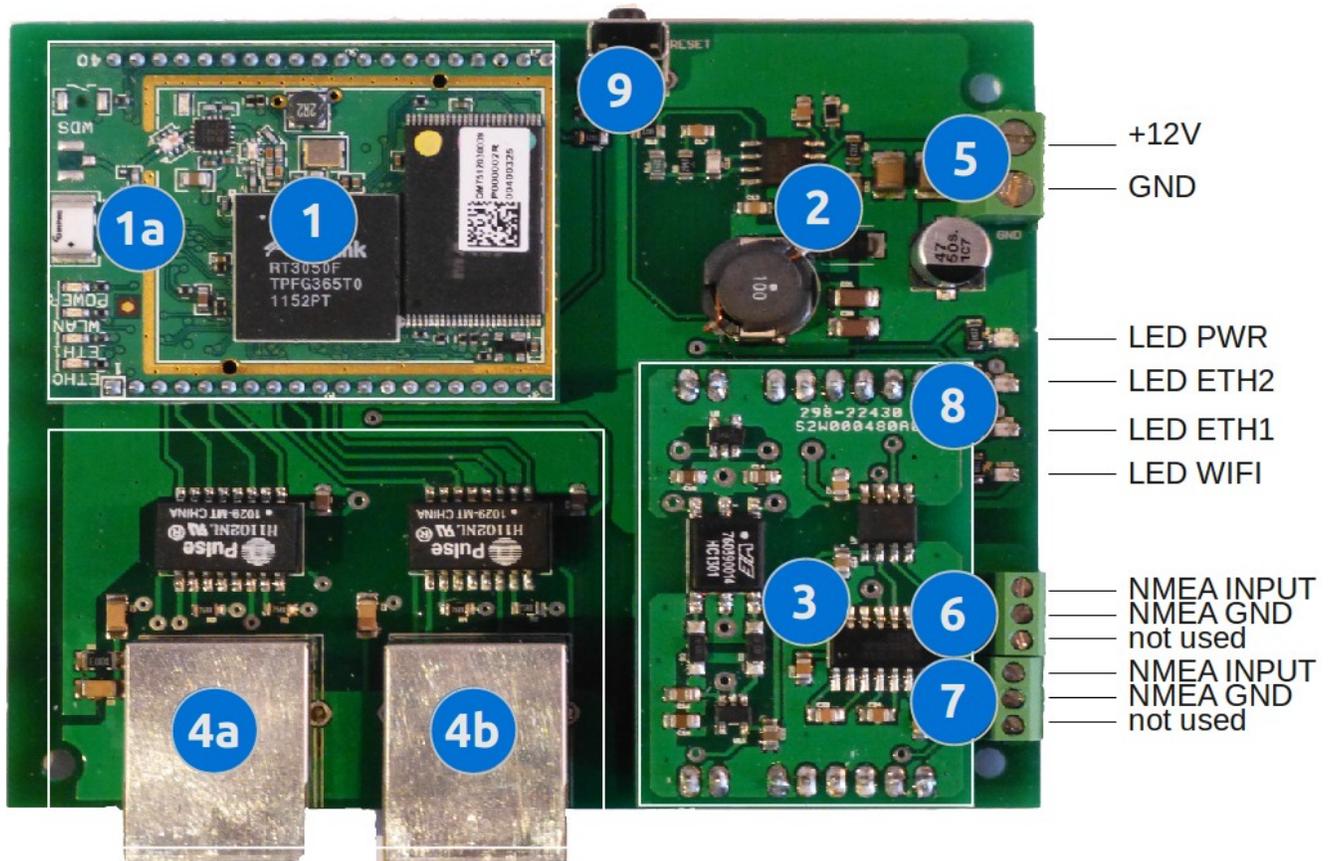
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Features

The new vYacht's WiFi Router comes as a kit: board and case. The main reason is to keep the costs even lower for those who want the option.

Hardware	
NMEA Interfaces	Two isolated NMEA 0183 interfaces
WiFi / internet interfaces	WiFi for wireless network to iPad, PC and Mac Two optional 10/100Mbps-LAN/WAN-Port for cable network to PC and Mac and internet
Powersupply	12V DC (standard on-board) For fixed installations attach to navigational instrument switch/fuse
Size(l x w x t)	92.4 mm * 78 mm * 1.6 mm (board only)
Wireless range	Dependend on the location of the router. Installed centrally and close to the nav corner the router works well everywhere on sailing vessels measuring 40 feet. Please provide feedback about experiences on much larger vessels.
Temperature range	Most components are rated -40 to +85 °C. However the RT3050 chip on the actual wireless module is rated -10 to +55 °C operating temperature.
Power consumption	The FCC certified wireless module on this board consumes the vast amount of power. But even if used for heavy duty downloads it will consume max. 1.5W.
Case	
Available Colors	blue, white or mixed body/lock
Size(l x w x h)	102 mm * 96 mm * 29 mm
Material	Printed PLA. PLA as a base material is often used for through hull fittings. Printed PLA is very stable and has good UV (ultra-violet) tolerance.
Water resistance	The router should be installed into a dry place. The WiFi only version can be made watertight by using marine sealant.
Software	
OS	openWrt firmware
NMEA GPS & AIS processing	GPSD

NMEA WiFi Router Board Layout

Board components and modules	
1	Wireless module running NMEA processing software on a Linux (openwrt) kernel.
1a	Integrated chip WiFi antenna
2	Power supply based on an efficient TPS54231 step down converter
3	NMEA 0183 module with isolated power supply and signal isolation for ground loop and overcurrent protection
4a	Ethernet module/jack by default configured for cable bound LAN access to NMEA data.
4b	Ethernet module/jack by default configured for WAN access. Connect this jack to an active internet connection. The vYacht WiFi Router will automatically share internet and NMEA data via wireless.
5	12 V power connector
6	NMEA input I

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Board components and modules	
7	NMEA input II
8	LED status indicators
9	Reset button

Ethernet connections
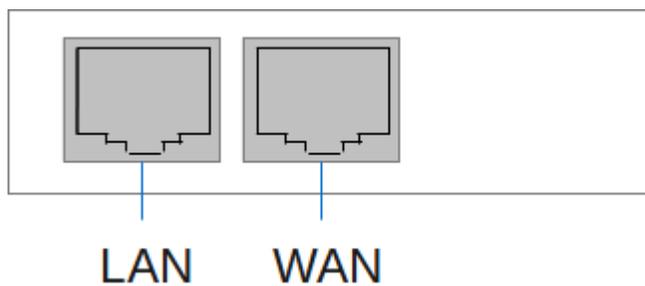
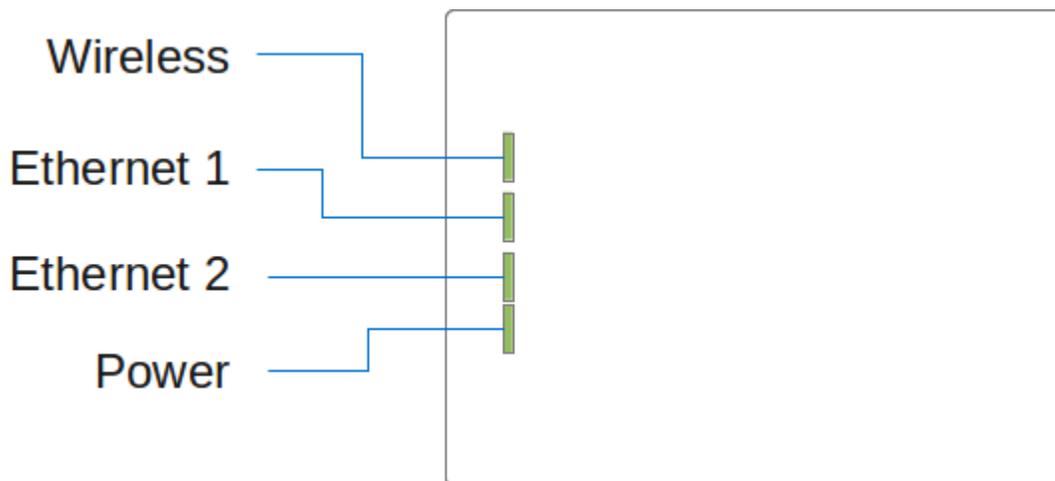Illustration 1: Ethernet connectors

Status LED (top view)

Illustration 2: Status LED

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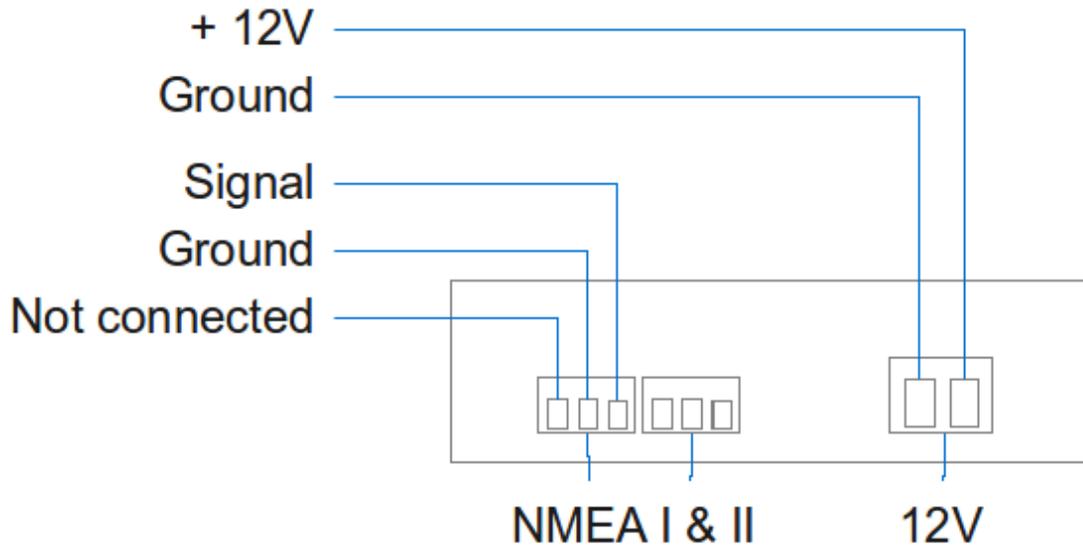## NMEA and power connectors (side view)

Illustration 3: NMEA and power connectors

Board connectors	
12 V power	+12V and GND need to be connected to the on board 12V power supply. Rated +28V absolute max. Its not recommended to connect this device to a 24 V power supply for permanent use.
NMEA I and II inputs	Isolated NMEA receiver with input and ground. Version 1 NMEA 0183 devices will be connected signal -> input, ground -> ground. Version 2 NMEA 0183 devices will be connected 1 signal line -> input, shield -> ground. Rated +/- 15V max.

Installation

The vYacht NMEA Wifi Router is not watertight. It should be installed into a dry location below the deck.

1. Connect 12V on-board power supply to the vYacht NMEA Wifi Router's 12V input

2. Connect the NMEA 0183 output of your charting plotter, AIS or any other NMEA source to either of the two isolated NMEA inputs of the router.

3. Depending on the NMEA source connected you will need to set the transfer speed to usually 4800 Baud (standard) or 38.4k Baud (e.g. AIS). This setting is performed via the WiFi Router Configuration (described below).
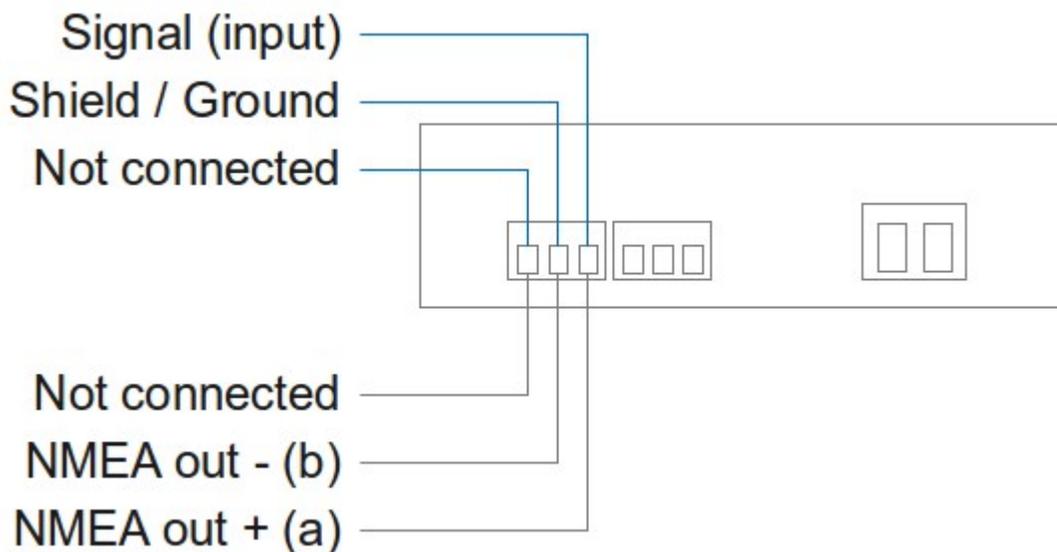
Illustration 4: Connecting a differential signal to the router

Usually no further steps are needed to serve NMEA data to your iPad or Android device via WiFi.

In case you use a laptop or PC/Mac it is recommended to use the cable bound ethernet connection rather than WiFi to safe power. Please refer to the Mac/PC set-up section.

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iPad set-up

The vYacht NMEA Wifi Router is configured as an automatic Access Point. This means that usually no particular installation steps are necessary to retrieve NMEA data from it.

1. Connect iPad to the vYacht NMEA Wifi Router. Select the access point with the name (SSID) vYachtWifi

2. Configure charting software to use vYachtWifi as the hostname (or the default IP address 192.168.10.1) and 2947 as the port.

iPad and iNavX

As an example the configuration of iNavX on an iPad is shown. Instead of the router name vYachtWifi the alternative IP address 192.168.1.1 was used to demonstrate that both possibilities can be used.

Illustration 5: wireless NMEA output in iNavX

PC or Mac set-up

When using your PC or Mac in order to connect the the vYacht NMEA Wifi Router you have two choices. Either you use the wireless access or you use the wired cable bound ethernet connection.

Ethernet cable connection

1. Connect your PC/Mac's ethernet port with the router's ethernet port using the ethernet cable coming as part of the vYacht NMEA Wifi Router package.

2. For Windows 7, please go to Start → Settings → Control Panel
   Look for the section Internet and Network
   Click on View network status and tasks → Manage network connection.
   Right click Wireless Network Connection, and select Properties.

3. For Windows 7, double click Internet Protocol Version 4 (TCP/IPv4).
   Select "Obtain an IP address automatically" and "Obtain DNS server address automatically".
   Click OK to finish the settings.

Using the router for internet connections

Some boats have a 3G or other internet routers on board. The NMEA Wifi Router is configured to allow the internet network traffic to be routed through the same vYachtWifi connection.

Just make sure that the internet router has a different IP address from the vYacht NMEA Wifi Router. The internet router needs to provide an IP address to the vYacht NMEA Wifi Router via DHCP.

Connect the internet router to the blue ethernet jack of the vYacht NMEA Wifi Router.

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vYacht NMEA Wifi Router Configuration

The vYacht NMEA Wifi Router provides a configuration tool which is installed on the router. The configuration tool allows changes to the wireless IP address and the NMEA data port number.

In order to access the configuration tool you need to connect to the Router as described above. You can perform this configuration from either device with a web-browser (such as Internet Explorer, Firefox or Safari).

The configuration can either be performed directly from your iPad after connecting to the vYacht NMEA Wifi Router or from your PC/Mac.

Once connected open a web browser and type vYachtWifi into the browser's address field.

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After a moment the configuration screen will appear informing about the status of the router. You will see two edit text fields and a change button. Use these to choose more appropriate settings for your environment.