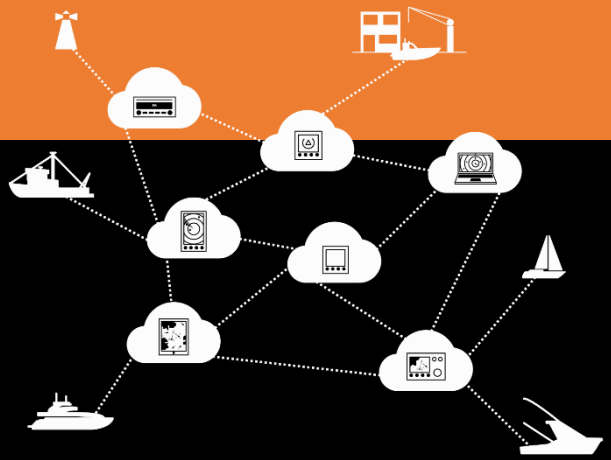
Meet the Manufacturers 2018 Hosted by SMG

A series of technical presentations

By Paul Sumpner of

Digital Yacht

March 2018



What you will learn today...

- Internet Onboard
- Interfacing + Sensors
- Marine Apps
- AIS Solutions

The presentation will be mainly technical but with a quick overview of the products and their sales features

Please save questions to the end

Internet Onboard

Staying Connected in the Modern World or....

“How to keep the family happy!”

February 2018

Don’t take away my internet…

The Internet is part of our every day life and can cause real problems and anxiety when we are disconnected

What we take for granted at home, in the office or even when travelling is a challenge to achieve on a boat but not impossible

Getting online, onboard...

1. Long range Wi-Fi
2. 3G/4G Mobile Network
3. Satellite Broadband

Everything has a cost...

	Wi-Fi	3G/4G	Sat
Range (typical)	1 Mile (from Hotspot)	15 Miles (from Array)	Unlimited
Coverage	All major Marinas and Towns	Good/Improving in many areas	Worldwide
Speed (typical)	> 1Mb/sec	<20Mb/sec	2Mb/sec
Cost (typical)	£5 per day (unlimited)	£25 per month for 30GB roaming	$1-$6/MB (VSat)

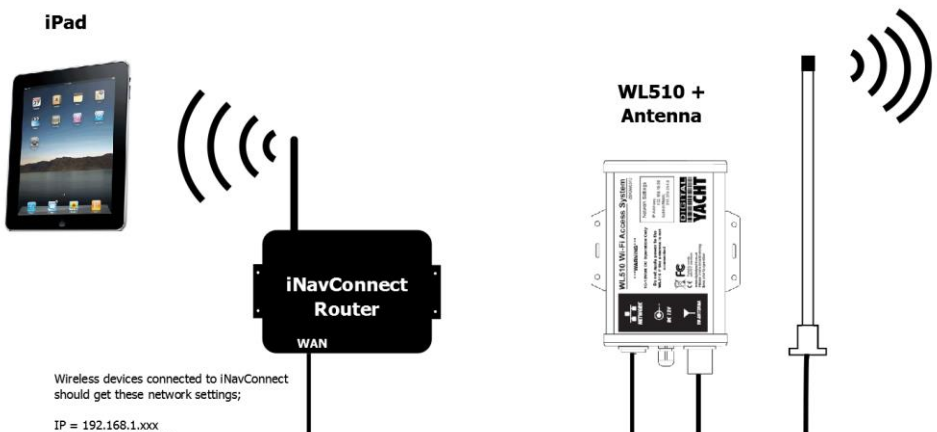
Long Range Wi-Fi Solution 1...

- WL70R Bundle
  - \+ iKConnect Router
  - \+ WL70 Antenna (5m USB)
- WL70 provides long range connection
- iKConnect creates the Wireless Network (LAN)
- 1x LAN + LAN/WAN Sockets for other devices
- UK RRP = £300 + VAT

Long Range Wi-Fi Solution 2...

- WL510 + iNavConnect
  - \+ iNavConnect Router
  - \+ WL510 Adaptor (10m Coax)
- WL510 provides long range connection
- iNavConnect creates the Wireless Network (LAN)
- 1x LAN socket
- UK RRP = £645 + VAT
- Swap for iNavHub to get NMEA0183

Links in a Chain...



It is important that the Marina Hotspot is not providing IP addresses in the same ranges as those used by the WL510 or iNavConnect
i.e. 192.168.10.xxx
or 192.168.1.xxx

Marina Hotspot

WL510 Getting Connected Guide...

In your computer's Browser type 192.168.10.20 in the address bar

You should see the login page shown in Fig 1

EXPERT TIP – Bookmark this page so you do not have to remember this IP address


Figure 1

Login by typing "wl510" in to the Username and Password boxes.

Once logged in, you will see the Main page shown in Fig 2, where you can see that the WL510 is not connected (associated) with a wireless hotspot.


Figure 2

Click on the "Wireless" tab and you will display the window shown in Fig 3 and then click the "Select" button to scan for available wireless networks (Hotspots) which will appear in a new pop up window (see Fig4)

EXPERT TIP – The list can be sorted in various ways, by clicking on the column label

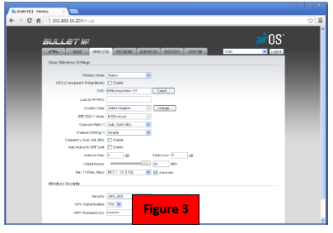


Figure 3

Select the wireless network that you wish to connect to by clicking on the tick box at the start of the line.

Now click on the "Select" button. You will now be returned to the page in Fig 3 and if the network is password protected, the cursor will be in the enter password box.

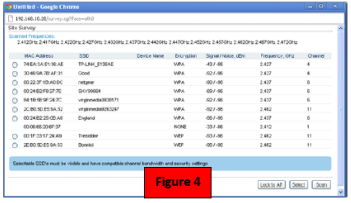


Figure 4

Once you have entered the correct password (if necessary) click the "Change" button at the bottom of the page, followed by the "Apply" button that will appear at the top of the page.

After 5-10secs, the WL510 will have finished connecting to the hotspot and if you click on the "Main" tab, you will see a page similar to that in Fig 5, showing the name of the hotspot (SSID) and a coloured signal strength meter that shows you are connected (associated).


Figure 5

Long Range Wi-Fi Practical Tips...

- There are two types of wireless hotspots you generally connect to..
  - + Protected Networks (WEP, WPA/WPA2)
  - + Open “Captive Portal” Networks
- With protected networks; bars, restaurants, etc. you need to make sure you have typed in the correct wireless password
- “Captive Portal” networks have no wireless password, but when you try to load a webpage, a re-direct to the hotspot’s homepage is triggered
- Sometimes you must force the re-direct by typing the hotspot’s gateway/DNS address in to your browser
- Some browsers are now stopping HTTPS re-directs, so use an HTTP url to trigger the re-direct i.e. http://google.co.uk
- Check the Hotspot’s IP Address range is not 192.168.1.xxx or 192.168.10.xxx

3G/4G Solution...

- 4GConnect and 4GConnect Pro
  - \+ 4GConnect LTE Router
  - \+ Pro includes 2x LTE Antennas (7m LMR200)
- 4GConnect creates wireless network
- If no internet connection (WL510) on the WAN socket, uses 3G/4G network
- Unlocked, can use SIM for any network
- UK RRP = £299 + VAT (4GConnect)
  UK RRP = £499 + VAT (4GConnect Pro)

4GConnect Practical Tips...

- Default IP Address is http://192.168.1.1 but it is easier to remember http://4gconnect.lan then it does not matter what IP address you use
- When you first receive the 4GConnect you will need to fit a data SIM card and configure the APN settings for the mobile network you are using (see table on next page)
- Change the SSID and Password of the 4GConnect – this should be done on all wireless routers
- Plug the WL510 or other internet connections in to the WAN socket, which has priority and is regularly checked for internet availability
- You can send and receive SMS messages via the web interface

UK APN Settings...

Airtel Vodafone APN: airtel-ci-gprs.com Username: leave blank Password: leave blank	**ASDA Mobile** (Uses Vodafone network) APN: asdamobiles.co.uk Username: web Password: web	**BT Mobile** (Uses Vodafone network) APN: btmobile2.bt.com Username: bt Password: bt	**EE** APN: everywhere Username: leave blank Password: leave blank	**GiffGaff** (Uses O2 network) APN: giffgaff.com Username: giffgaff Password: leave blank
Manx Telecom APN: 3gpronto Username: leave blank Password: leave blank	**O2** APN: mobile.o2.co.uk APN: payandgo.o2.co.uk Username: o2web Password: password	**Orange** APN: orangeinternet Username: leave blank Password: leave blank	**Sure Mobile** APN: internet Username: leave blank Password: leave blank	**Tesco Mobile** (Uses the O2 network) APN:prepay.tesco-mobile.com Username: tescowap Password: password
Three APN: 3internet APN (4G): three.co.uk Username: leave blank Password: leave blank	**T-Mobile** APN: general.t-mobile.uk Username: leave blank Password: leave blank	**Virgin Mobile** (Uses T-Mobile network) APN: goto.virginmobile.uk Username: user Password: leave blank	**Vodafone** APN: internet Username: web Password: web	**Wave Telecom** APN: pepper Username: leave blank Password: leave blank

4GConnect Pro Installation...

- The two external LTE antennas supplied with the Pro kit should be mounted one wavelength apart for optimum MIMO performance
- Below are the frequencies (wavelengths) and channel capacity used by UK operators

Operator	800MHz (40cm)	1800MHz (17cm)	2600MHz (12cm)
EE	2 x 5MHz	2 x 45MHz	2 x 35MHz
Three	2 x 5MHz	2 x 15MHz	
02	2 x 10MHz		
Vodafone	2 x 10MHz		2 x 20MHz + 1 x 25MHz

- We found Vodafone to be the best network in our tests on South Coast

4GConnect Pro Installation...

- The two external LTE antennas are supplied with 7m of LMR200 Cable
- Extending the cables should be avoided due to the high attenuation of signals at these high frequencies (see below)
- Digital Yacht offer alternative LMR400 cables in 10m or 20m lengths

LMR200	LMR400
450MHz - 0.228dB/m	450MHz - 0.089dB/m
900MHz - 0.326dB/m	900MHz - 0.128dB/m
1800MHz - 0.466dB/m	1800MHz - 0.185dB/m
2500MHz - 0.554dB/m	2500MHz - 0.222dB/m

- If you can move the 4GConnect closer to the antennas to avoid extending the cables then this is the preferred option

Remote Access...

- Getting the new iKommunicate Alexa Skill working was a challenge
- Unless you have an expensive Fixed IP address SIM, then most 3G/4G mobile connections cannot be externally accessed
- We created a Cloud Service http://ikommunicate.cloud which allows the 4GConnect to “dial out” and become remotely accessible

“Alexa ask iKommunicate...
What is the wind?”

Interfacing + Sensors

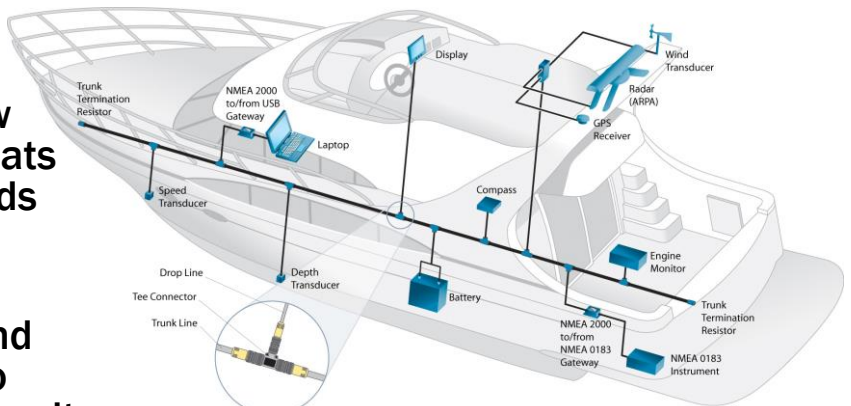
Creating, accessing and combining data or....

“Data, data everywhere!”

February 2018

The Connected Boat…

- We have all seen the classic “NMEA2000” boat
- Although NMEA2000 is very common now on new and recently upgraded boats there are tens of thousands of legacy installations
- NMEA0183 and SeaTalk systems keep on going and much as we want them to upgrade, many users will wait for these systems to die before changing them



Upgrading and Updating…

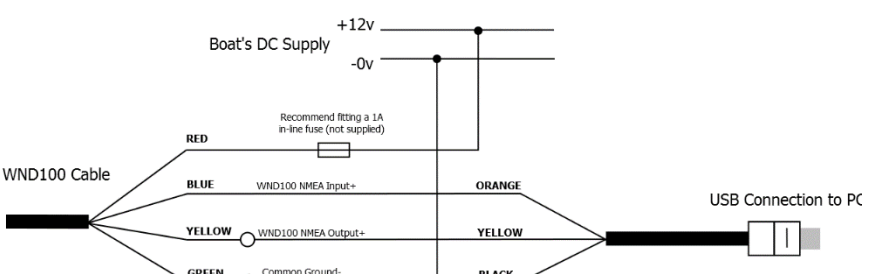
- Apps can provide additional functionality either on a Smart Phone, Tablet or PC
- Apps need the data in an understandable format, which in general is NMEA0183, either through wired or wireless interface

Digital Yacht Interfaces...

- All of our USB interfaces use the industry leading Serial to USB chipset from FTDI
- Drivers for Windows, Mac and LINUX (including Raspberry Pi)
- All of our NMEA0183 Inputs are opto-isolated
- All of our NMEA0183 Outputs are differential RS422
- SeaTalk interface is multi-transistor design that ensures optimum compatibility with Autohelm/Raymarine systems
- Wireless Interfaces are Access Point by default (DHCP up to 7 devices)
- IP Address 192.168.1.1, TCP or UDP mode on Port 2000
- Can be configured to join existing wireless network

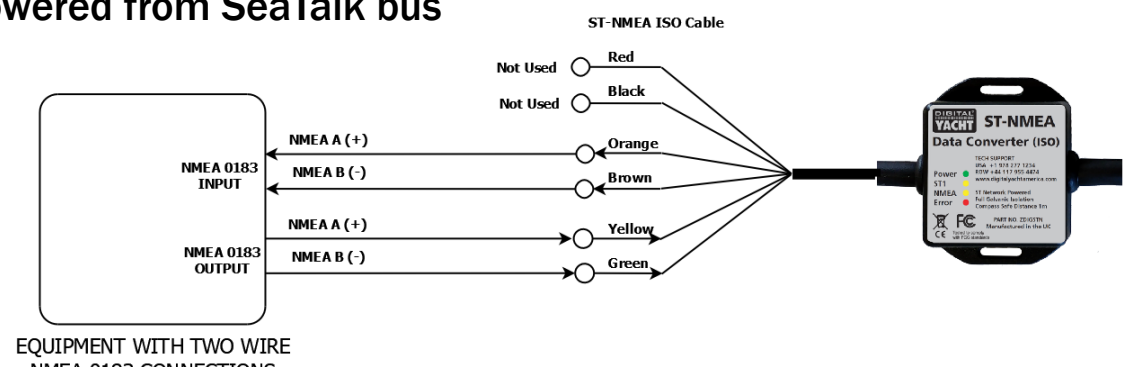
USB to NMEA Adaptor...

- Still one of our best selling accessories
- Indicator LEDs in USB lead and simple and reliable driver installation make this a useful accessory and diagnostic tool
- Passes through all data at whatever baud rate you need



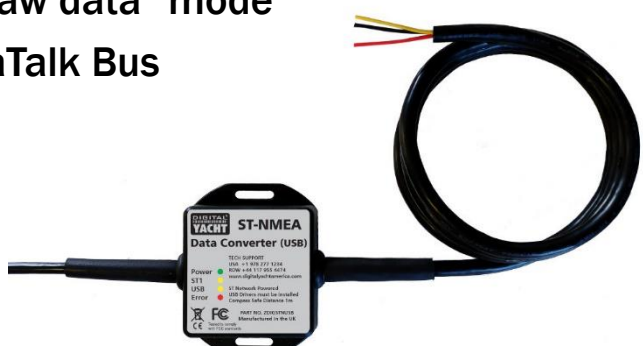
SeaTalk 1 to NMEA Interface...

- Our latest interface, released to fill the space left by the E85001
- Indicator LEDs to show NMEA and SeaTalk data being received, fully opto-isolated and multi-stage transistor SeaTalk interface
- Powered from SeaTalk bus



SeaTalk 1 to USB Interface…

- Same as the ISO version but with USB connection
- Indicator LEDs to show NMEA and SeaTalk data being received, USB and multi-stage transistor SeaTalk interface
- Special $STALK “raw data” mode
- Powered from SeaTalk Bus



Converted Sentences…

OUTPUT (Convert from SeaTalk to USB)		INPUT (Convert from USB to SeaTalk)
APB	1 sec	DPT
DPT	1 sec	HDG
HDG	1 sec	MTW
MTW	4 sec	MWV
MWV	1 sec	RMC
RMB	1 sec	VHW
RMC*	1 sec	
RSA	1 sec	
VHW	1 sec	
VLW	4 sec	

* NOTE – Time UTC from GPS is only updated every 10 secs on the SeaTalk network

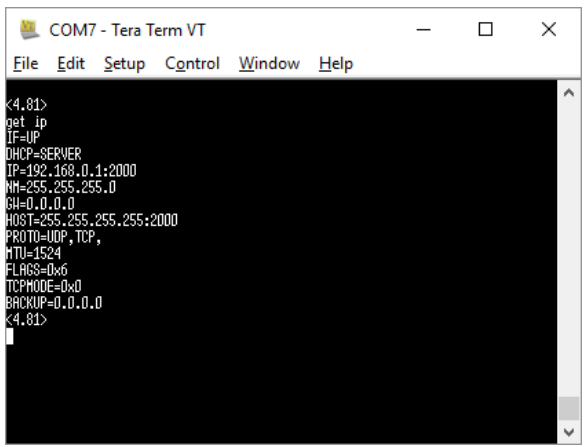
If the ST-NMEA receives more NMEA Sentences than the SeaTalk Network can handle it will automatically filter/discard excessive sentences, so you can connect a 10Hz GPS or Compass sensor without flooding the SeaTalk network.

Connecting Up and Testing…

- All of our interfaces have a “Data” LED (normally Yellow) that flashes when data is received – no checking of data or baud rate
- The NMEA to USB Adaptor and WLN10(HS) units can be easily “Loop Back” tested
- Tera Term is a very useful test tool for Serial and TCP connections

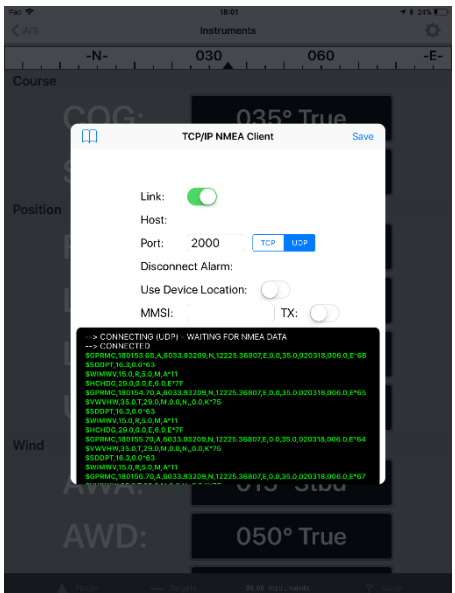
  https://ttssh2.osdn.jp/index.html.en

- Also useful for configuration



Testing on iOS Devices...

- Testing of wireless NMEA systems can be performed using phones or tablets and there are a number of free and useful tools available
- For iOS devices our free iAIS app is probably the best and not just for AIS systems
- Simply connect to the wireless device's network, run iAIS, navigate to the TCP/IP screen and then select either TCP or UDP
  - + TCP = IP 192.168.1.1 and Port 2000
  - + UDP = Port 2000



Testing on Android Devices…

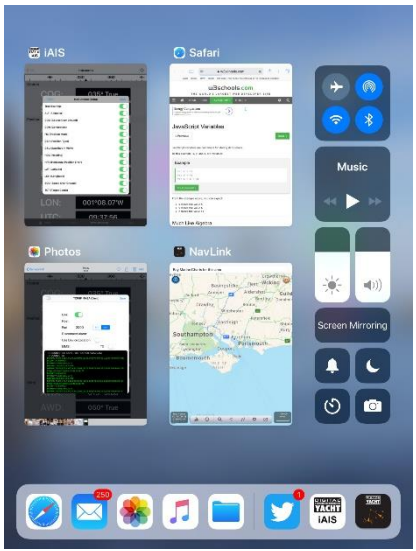
- Testing of wireless NMEA systems can be performed using phones or tablets and there are a number of free and useful tools available
- For Android devices the best free app is probably TCP/UDP Terminal
- Simply connect to the wireless device's network, run the app, click on "IP Port" and then select either TCP or UDP
  - + TCP = IP 192.168.1.1 and Port 2000
  - + UDP = IP 255.255.255.255 and Port 2000

Congestion in the Air...

- With so many boats with wireless networks and so many devices using Wi-Fi, the poor 2.4GHz RF Band is becoming very congested
- Generally the wireless interfaces in embedded devices and cheaper routers are less robust in congested environments
- It is highly recommended that you take a Wi-Fi survey of the vessel if you are having connection issues
- Wi-Fi Analyser App for Android or NetSurveyor-Pro for Windows are two very good free tools

Congestion on Devices…

- With more and more marine Apps, many of them using UDP or TCP data transfer, it is not unusual for conflicts to occur
- When an app creates a network connection it will often keep this open when the app is “sleeping” in the background
- It is good practice to only run one navigation app at a time and to close/quit any apps you are not using
- This is becoming a very common support issue



The Sensors...

- **Digital Yacht now have a full range of NMEA0183 based Sensors**

HSC100
Compass

DST800
Speed/Depth/Temp

GPS150
GPS/GLONASS

WND100
Wind

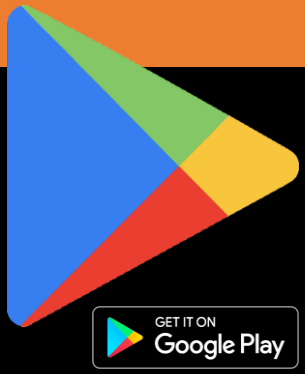
Easy to install...

- NMEA0183 is still the cheapest and easiest installation
- GPS150 - GGA/GLL/RMC/GSV/GSA/VTG/ZDA at 4800 baud and 1Hz (can be configured for lots of different modes)
- DST800 – DBT/DPT/VHW/VLW/MTW at 4800 baud and 1Hz
- HSC100 - HDG at 4800 baud and 10hz (can be configured for HDM, HDT and ROT)
- WND100 – MWV at 4800 baud and 5Hz
- Configure using Tera Term and USB-NMEA Adaptor

Marine Apps

Overview of popular Marine Apps or…

“There’s an app for that….I think”



February 2018

Latest Mobile Device Statistics

- 99% of devices use Android or iOS
- Q4/2016 sales
  - 350 Million Android Devices
  - 80 Million iOS Devices
- 77% of US adults own a Smart Phone and 51% own a Tablet
- Over 25 Billion iOS apps and 90 Billion Android apps were downloaded in 2016
- iOS users tend to be higher up the socio-economic scale than Android users, which accounts for why we see more iOS devices on boats than Android

Get rich quick

NO money in Apps !

- Unless you are the next “Angry Birds” developer, having your own app will not make you rich
- Even the most successful marine apps, with one or two exceptions, have not generated serious revenues
- No mechanism for resellers to make margin on app sales through the app stores

Topping the Charts

Creating the “Goto” App

- Even if an app is downloaded, will it be used ?
- How many apps have you downloaded and then removed or never used ?
- A “Goto” app is one that users return to time and time again and becomes part of their routine
- You can have many “Goto” Apps for different activities
- “Goto” apps can be real revenue generators, data collectors or brand extensions

So why bother ?

The Supporting Apps

- If you cannot create a chart topping #1 app, there are still benefits to manufacturers in creating apps
- An app that extends the functionality of your hardware product is now almost mandatory
- The app becomes an important accessory and buying decision “tick box”

Knowledge is Power

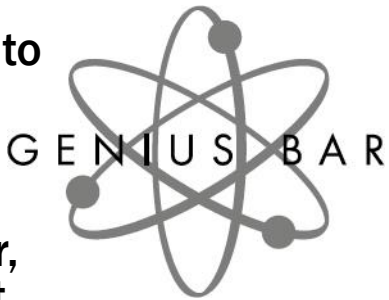
Finding the Right App

- 2.2 Million Apps on App Store (iOS)
- 3 Million Apps on Play Store (Android)
- Poor App naming, tags and categorization can make it really difficult to find good apps
- Many have limited reviews with polarized comments
- Opportunity to become an “App Expert”

Ask the expert

Embrace the Apps

- You may not sell the app, but being able to talk about it and demonstrate it, adds value to what you are doing and differentiates you from the pack
- Show some customers a mounting bracket, transducer or cable and their eyes glaze over, show them an app on your iPad and they get excited
- Become the “App Expert” in your area



Keep up to date

The Best Marine Apps

- Things are constantly changing in the app world and keeping up to date takes time and commitment
- Digital Yacht maintain a list of the apps customers are using with our products which can be downloaded from here…
  - Best Marine Apps for iOS V1.06
  - Best Marine Apps for Android V1.06

Legacy Systems

Upgrade Opportunities

- We all like to buy new systems, but when money is tight, perhaps an upgrade is the best solution
- Many old systems can be upgraded to work with new Apps

The right tool for the job

Some Free Utility Apps

- **Supporting the latest marine electronics requires more IT and Networking knowledge than ever before, but there are some really useful apps that can help…**

Fing
Network Scanner

iTerminal
SSH+Telnet Client

iAIS
Viewing TCP+UDP NMEA data

Apple iOS Apps

WiFi Analyzer
Spectrum Analyzer

TCP/UDP Terminal
viewing NMEA data

Fing
Network Scanner

Android Apps

Important News from Navionics

New Chart Integration SDK

Navionics has released a software development kit (SDK) which enables iOS developers to integrate the world's most popular charts within their mobile apps.

To see Navionics Nautical Chart and SonarChart™ for marine areas and lakes within compatible apps, users simply need to purchase the Navionics Boating app or renew their Navionics+ subscription, if expired.

A number of developers have already announced their intention to support this new SDK and Digital Yacht were one of the first, releasing an upgrade of our iAIS app to display Navionics charts.

Why not do it yourself ?

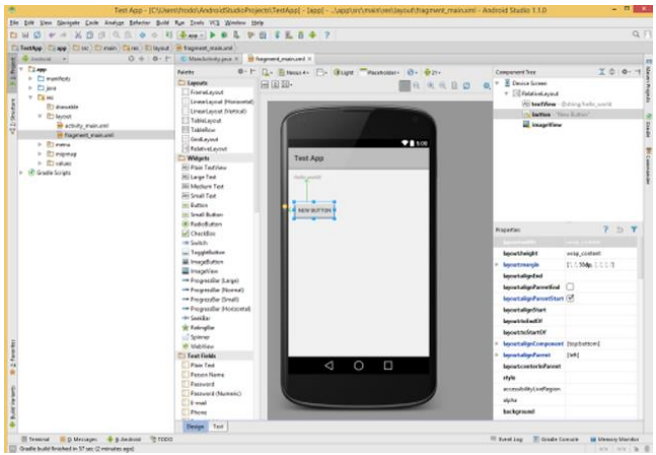
Writing your own apps

iOS App Development costs

- Mac computer with latest OSX
- $99 USD yearly subscription

Android Development costs

- Old laptop running LINUX
- $25 one time fee



Both Apple and Google take 30% of all app revenue

The app is dead long live the app

Web App Opportunities

- What if you could create an App that ran on all platforms ?
  - All mobile devices have an HTML5 compatible web browser and can run Web Apps written in JavaScript
- How do you get the Web App to the mobile device ?
  - Host it on a webserver
- How do I get a webserver on a boat ?
  - Install an iKommunicate
- How do I install my web app and data ?
  - Copy the web pages on to the iKommunicate's 8GB SD Card

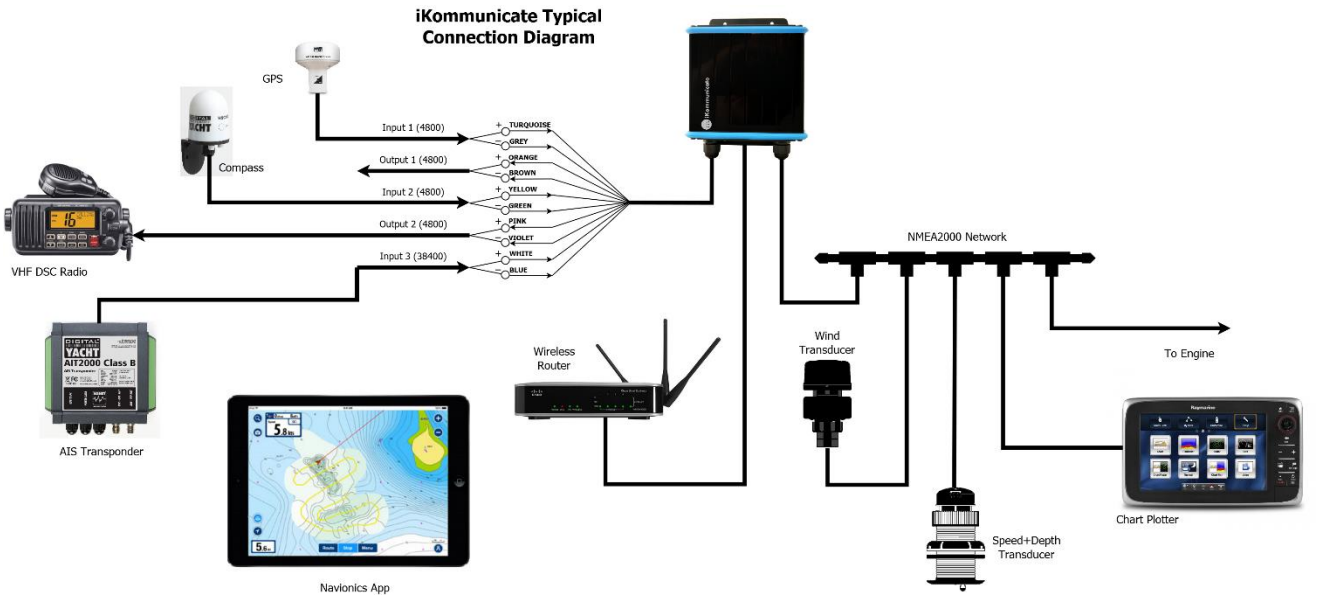
Background

What is iKommunicate ?

- Next generation Universal Gateway
- Three NMEA0183 Ports and one NMEA2000 interface
- Outputs multiple protocols over Ethernet/Wi-Fi…
  - TCP/UDP
  - Signal K (JSON)
  - Rosepoint
- Has its own webserver that can host web apps, document storage, custom web pages, etc.

How does it connect together ?

Next Generation Interfacing

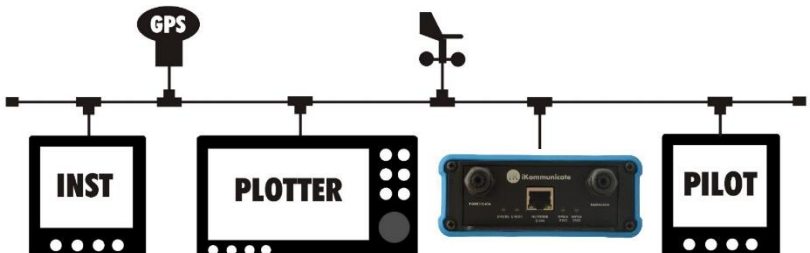


Easy Installation

For Any System

iKommunicate features NMEA 0183 and NMEA 2000 interfaces so can just “T” into the NMEA 2000 back bone

- Supplied with a 1m NMEA 2000 drop cable
- Multi core NMEA0183 IN/OUT and power cable
- Just connect to a router and NMEA/Signal K data will be available to the on board network
- Updateable as standards develop using micro SD card or over internet/network



RJ45 network connection allows easy connectivity to any on board router or direct to PC. Digital Yacht also have the iK Connect compact router for a complete solution

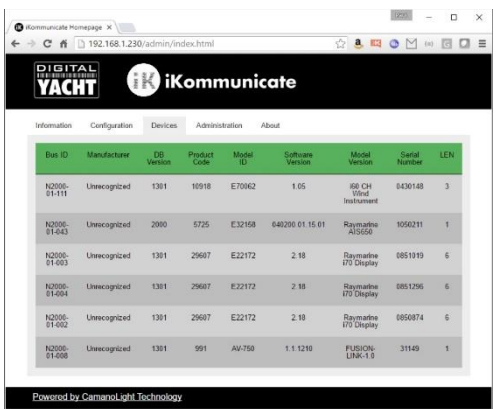
Also features NMEA 0183 connectivity

DEALER NOTE!
Add iKommunicate to every new install or upgrade

NMEA to Signal K interface

Configuring iKommunicate

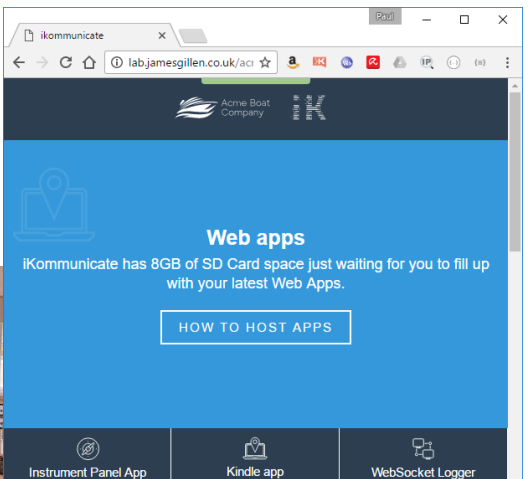
- iKommunicate is designed to be connected to a normal wired Ethernet network via its RJ45 connector
- On most networks just type http://ikommunicate.lan in to the browser to bring up the web interface. Password is: admin
- The “Configuration” tab is used to set a number of different settings including (Boat details, IP address, baud rate, enable NMEA data)
- The “Devices” tab lists all devices on the NMEA2000 network
- On the “Administration” tab you can change the Admin password and check for firmware updates
- Click the Digital Yacht logo to return to the Home page so you can access the integrated apps or docs again



Providing a “turnkey” experience

On Board Web Server

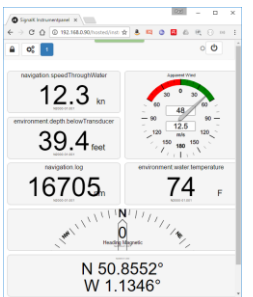
- iKommunicate includes some web Instrument apps and room for plenty more on its 8GB micro SD card
- Any software developer can create web apps for iKommunicate and its easy to modify the open source code we have published on GitHub
- Also possible to store manuals, drawings and photos of the boat, on iKommunicate and view on any device with a browser – great for boat builders
- Web pages can easily be branded and customised by any web designer



No more handbooks to clutter up the boat!

Content is king !

Apps, apps and more apps

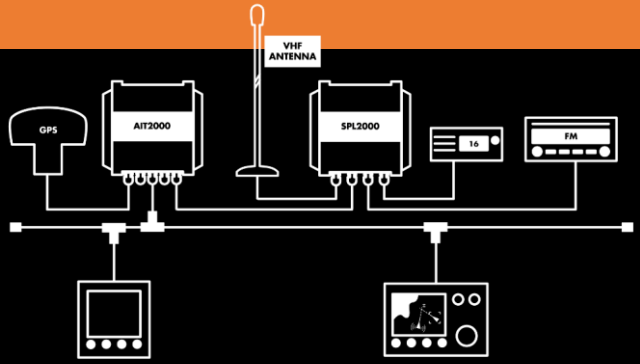


AIS Solutions

Digital Yacht's AIS Solutions or...

"The art of seeing and being seen"

February 2018



Class B AIS Transponders

The Digital Yacht Range

- Entry level transponder with internal GPS
- NMEA0183 and USB
- New IP67 plastic case
- Optional NMEA2000 output (AIT1500N2K)

- Mid-range transponder with external GPS
- NMEA0183, NMEA2000 and USB
- Aluminium case
- Optional SPL2000 Splitter or GV30 combo antenna

- First portable AIS transponder
- Built-in GPS, USB and Wi-Fi
- Powered via USB
- Supplied with portable VHF antenna
- Not available in US at the moment

- Transponder with built-in splitter and Wi-Fi
- NMEA0183, NMEA2000, USB and Wi-Fi
- Larger Aluminium case
- Easy installation, ideal for larger yachts

Class B AIS Transponders

General Info

- Latest firmware is V1.10
- Firmware Update Tool available
- Standard LED indications on all units
- All units have an NMEA0183 low speed (4800 baud) input (except the Nomad)
- NMEA2000 units do not convert 0183 to 2000, just output AIS and GPS* PGNs
- Special configurations possible i.e. Two 38400 O/Ps or iNavX Autopilot O/P
- Built-in USB is not isolated so permanent connection to computer should use USB to NMEA adaptor

* Only GPS rapid update PGNs

	**Green indicator only** • The AIS transponder is powered up, has a position fix and has transmitted at least one vessel information report. Everything is working correctly.
	**Green indicator flashing** • Indicates possible Boot Loader (software corrupted) or PA Transmitter fault – contact Digital Yacht for advice on this condition.
	**Red indicator only** • During normal operation the AIS transponder has detected a system error. • Usually indicates low supply voltage but check cause of the error in proAIS2.
	**Red indicator flashing** • During normal operation the AIS transponder has detected a high VSWR reading, which usually indicates a VHF antenna or Splitter (if fitted) problem.
	**Green and Blue indicators** • The "Silent" switch has just been operated and transmitting has stopped. • Within 3 minutes the LED combination will change to Yellow and Blue.
	**Yellow and Blue indicators** • "Silent mode" has been activated using the optional silent mode switch or via proAIS2 and this combination of indicators is illuminated to show that the transmitter is disabled.
	**Red and Blue indicators** • This indicates that a system error has occurred whilst the unit is in "Silent mode" unless the cause of the error is removed, the unit will not be able to start transmitting again when "Silent mode" is exited.
	**Yellow indicator only** • The AIS radio channels are exceptionally busy so there is currently no available timeslot for transmission. • The unit has just exited silent mode and this yellow indicator will illuminate until the first AIS message has been sent. • The AIS transponder has been commanded by the local authority (via an AIS base station) to cease transmissions.
	**Yellow indicator flashing** • The unit has just turned on and is obtaining a position fix prior to transmitting its first vessel information report (typically takes 3-4 minutes). • Position fix has been lost. The AIS transponder will attempt to regain position fix for 30 minutes before entering an error state.
	**Red and Yellow indicators** • This is a new AIT2000 unit that has not yet been properly configured with an MMSI number. • The unit is only getting power via the USB cable.

Class B AIS Transponders

General Info

- USB connection is “fit for purpose” not mini-USB connector
- Every unit has a 4800baud NMEA0183 output for driving a DSC VHF radio
- All units have true dual channel AIS reception
- Every unit supports all current AIS messages including Class B Static, AtoNs, AIS SARTs, Base Stations and SAR Aircraft
- All units are supplied with a CD that includes proAIS2, SmarterTrack Lite and our NMEA Display program

Message ID	Name	Description
1	Position report	Scheduled position report; (Class A shipborne mobile equipment)
2	Position report	Assigned scheduled position report; (Class A shipborne mobile equipment)
3	Position report	Special position report, response to interrogation; (Class A shipborne mobile equipment)
4	Base station report	Position, UTC, date and current slot number of base station
5	Static and voyage related data	Scheduled static and voyage related vessel data report; (Class A shipborne mobile equipment)
6	Binary addressed message	Binary data for addressed communication
7	Binary acknowledgement	Acknowledgement of received addressed binary data
8	Binary broadcast message	Binary data for broadcast communication
9	Standard SAR aircraft position report	Position report for airborne stations involved in SAR operations, only
10	UTC/date inquiry	Request UTC and date
11	UTC/date response	Current UTC and date if available
12	Addressed safety related message	Safety related data for addressed communication
13	Safety related acknowledgement	Acknowledgement of received addressed safety related message
14	Safety related broadcast message	Safety related data for broadcast communication
15	Interrogation	Request for a specific message type (can result in multiple responses from one or several stations)(4)
16	Assignment mode command	Assignment of a specific report behaviour by competent authority using a Base station
17	DGNSS broadcast binary message	DGNSS corrections provided by a base station
18	Standard Class B equipment position report	Standard position report for Class B shipborne mobile equipment to be used instead of Messages 1, 2, 3(8)
19	Extended Class B equipment position report	Extended position report for class B shipborne mobile equipment; contains additional static information(8)
20	Data link management message	Reserve slots for Base station(s)
21	Aids-tonavigation report	Position and status report for aids-to-navigation
22	Channel manage-ment(6)	Management of channels and transceiver modes by a Base station
23	Group assignment command	Assignment of a specific report behaviour by competent authority using a Base station to a specific group of mobiles
24	Static data report	Additional data assigned to an MMSI Part A: Name Part B: Static Data
25	Single slot binary message	Short unscheduled binary data transmission (Broadcast or addressed)
26	Multiple slot binary message with	Scheduled binary data transmission (Broadcast or addressed)

AIS Antennas/Splitters

Pros
- Single Antenna Solution
- Top of mast for Maximum Range
- Easy Installation – no cables to run
- No loss of performance

Cons
- 4x the cost of dedicated antenna
- Misses targets while VHF transmits

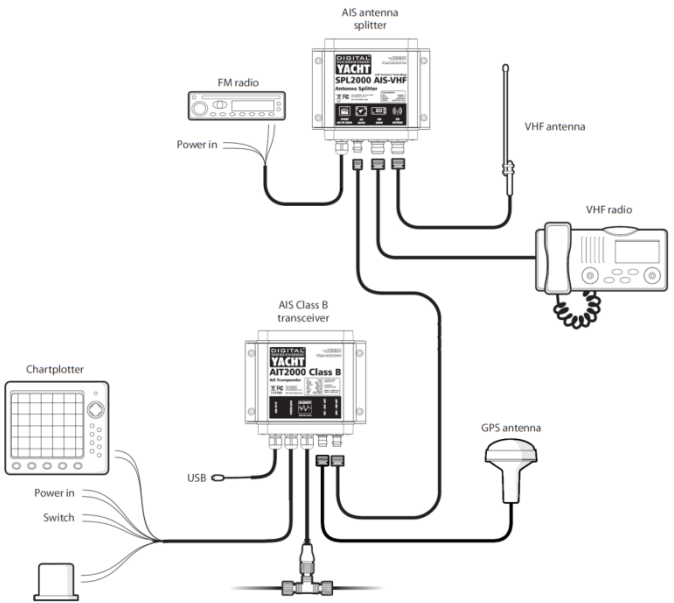
Vs

Pros
- Low Cost
- Backup Emergency Antenna for VHF
- Not affected by VHF voice activity

Cons
- Less Range at deck level (10-15NM)
- Installation can be time consuming/costly
- “Not Another Antenna !”

AIS Antennas/Splitters

- Single Antenna is shared by the AIS and VHF
- Two intelligent switches sense when AIS or VHF is transmitting
- Class B transmission only lasts 26mS so the detection and switching has to be very fast
- VHF gets priority and whilst transmitting no AIS reception is possible
- When not transmitting both systems connect to the same aerial and receive the same RF
- Older splitters introduced a 3dB (half power) loss on VHF and AIS reception
- No losses in transmission as only one system connected to antenna
- Latest SPL1500 and SPL2000 features “Zero Loss” Technology where the signal from the antenna goes through a pre-amplifier before being split

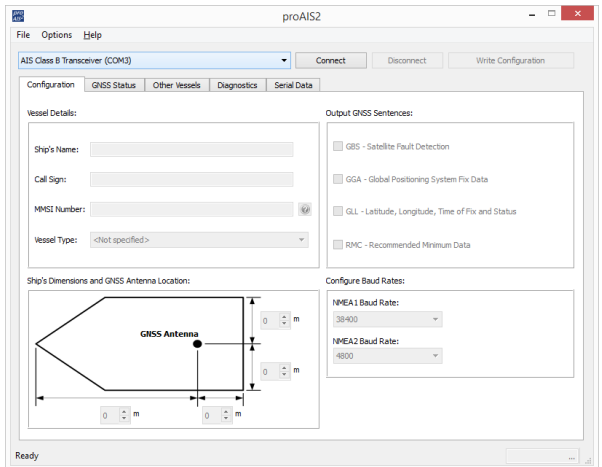


AIS Installations

proAIS2 for PC and Mac

IMPORTANT NOTES

- Latest V1.9 Release
- Double click Setup.exe to install on Windows or proAIS2.dmg for Mac
- USB drivers are automatically installed as part of the main install
- Do not insert USB cable until instructed to do so by the installer
- Run proAIS2 and connect to transponder

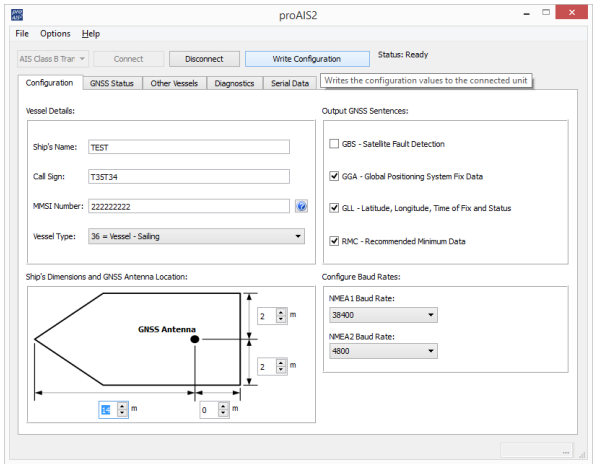


AIS Installations

proAIS2 MMSI Programming

AIS Transponder Configuration

- Can be done just using USB power
- Will receive AIS targets but no NMEA, GPS reception or Transmit
- Reset Tool Available to reset MMSI, the only “unchangeable” data

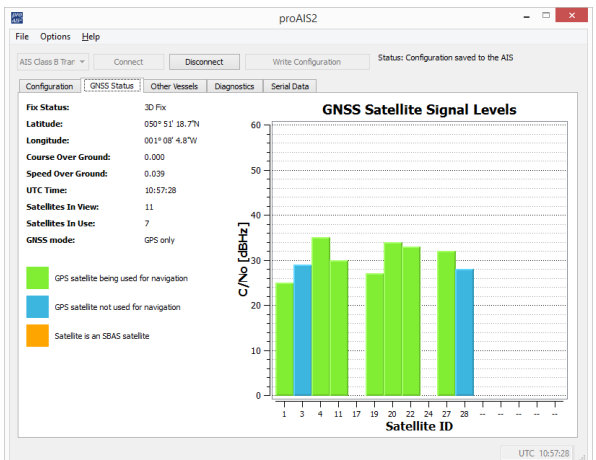


AIS Installations

proAIS2 GPS Monitoring

If using our new AIT1500 and Nomad with internal GPS antenna or mounting the AIT2000/3000 GPS antenna below deck, testing GPS reception is critical

- Use GNSS Status Page of proAIS2
- Green = Used for Navigation
  Blue = Not used for Navigation
  Yellow = Satellite is SBAS
- Values should be 15dBHz of better

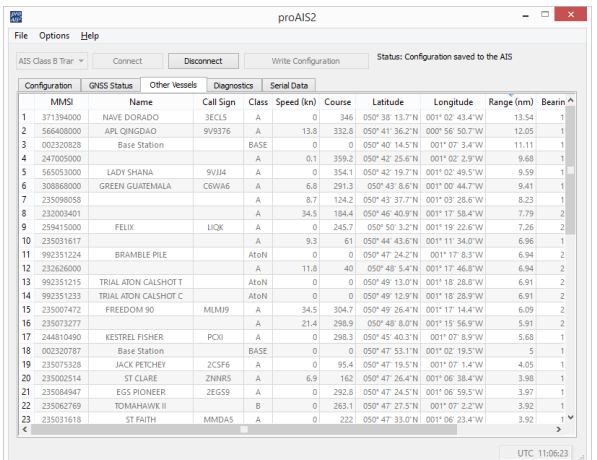


AIS Installations

proAIS2 AIS Reception

AIS Reception can be checked using the “Other Vessels” page of proAIS2

- Even a bad antenna will give some reception
- Click twice on the Range Column header to sort by range descending
- Turn ON any “noisy” equipment i.e. LED Lighting and check that the number of targets remains the same
- Restart proAIS2 to refresh list and allow 3 minutes for all targets to appear



AIS Installations

proAIS2 Diagnostics

The proAIS2 “Diagnostics” page is an invaluable source of information

- Image shows normal operation
- Key things to check
  - Supply Voltage
  - Voltage SWR (ideally <2:1)
  - No Alarms
- “*DSC Start/Stop*” Message is normal
- Occasional “*TX attempt failed (msg 18 CP busy)*” message is normal