Ventus *PRO*-Android   www.ventusnavigation.com

1. Welcome

Ventus *PRO*-Android is the newest addition to our line of Apps to work specifically with Expedition Navigation Software. This is the first and only program that lets you control essential functions in Expedition from a remote device. Our thanks to Nick White for graciously working with us, and making the necessary changes to Expedition, that allow Ventus to not only receive data from Expedition but to also send commands back to it.

Minimum Device Recommendations: An Android device with the minimum requirements of a dual core processor, 1 gig of memory.
Android operating system 3.0 or higher is **required** to run Ventus PRO.

> **Note: Expedition version 9.0.18 or higher is required to work with Ventus *PRO*.** The standard channels you need to select for the pre-set pages in *Ventus PRO* are:
> **Awa, Bsp, Heading, Mark Bearing, Mark Range, Start bias length, Start Time to Burn, Start Time to Gun, Start Time to Line, Start time on port, Start time on Strb, Target Bsp, Target Twa, Twa, Twd, and Tws**.

Accurate instruments that are easily readable anywhere on the boat are one of the best investments you can make in improving your performance. In the past that has only been possible with very expensive instrument packages with race processors that could be accurately calibrated over the full range of your sailing conditions. *Ventus PRO,* used in conjunction with Expedition software, is now the unbeatable alternative.

If you use Expedition Routing and Navigation software this is the "must have" app. *Ventus PRO* turns your Android device into a complete handheld navigation system, giving you full access to all the power of Expedition wirelessly from anywhere on the boat. Add as many displays as you want without the cost of expensive display units and the hassle of re-wiring you boat. See all the performance data from anywhere on the boat; at the chart table or even from your bunk.

It is pre-configured with page sets to get the data your helmsman, trimmers, and navigator need in easy to read format and that automatically switches the data for starts, upwind legs and downwind legs. You can toggle the display back and forth to Night mode with a black

background and red numbers to preserve night version, or the Day mode which has a high contrast white background for viewing in bright light. In addition to the pre-configured pages it also gives you complete flexibility in setting up your own custom pages with the layout you want and the ability to display any of the data Expedition puts out in any of the data boxes. You can choose from pages that display one data stream in very large, easy to read numbers, or layouts with two, three, four or six data boxes.

Ventus *PRO* activates the start timer in Expedition and you can select either a 15 minute, 10 minute, 5 minute, or 3 minute sequence which all start a count up timer when they reach zero; or a revolving 5 minute timer . When any of the timers reach 0:00 they automatically switch to the Target Page which either displays the upwind screen with Target Bsp and Bsp, the reaching screen which displays Polar Bsp and Bsp, or the downwind screen displaying Target Twa and Twa depending on what the Twa is at the start. The app will switch between those displays as needed as you move through the race. At the bottom of both pages there is a bar graph showing you Twd trends and headers or lifts.

2. New Ventus Pro Functions:

- Uses the Expedition Timer Functions
- Ability to set the ends of the starting line
- Ability to see the active mark in your current course
- Ability to select the mark you want to have active in your current course
- MOB button on every page
- Scale Font size in Custom Pages by using the standard "pinch" method

In addition to the pre-set pages you can configure you own pages with the Expedition data you want for different conditions. Set up pages for offshore racing, next leg data, or a Pilot page to get you to your favorite anchorage. Expedition has over 250 channels of data that you can display as you choose, including alternating streams where you can display things like range and bearing in a single data box.

If you like Expedition you will love this app. Please email us with your thoughts and ideas on how to improve it. We want to hear from you, contact our Support Team at:

support@ventusnavigation.com

3. Router Setup

If you don't already have a wireless router set up in your boat you will need to install one to have Expedition talk to your new *Ventus Navigation* product. When you purchase a router consider buying one that transmits and receives on 2.4GHZ and 5GHz bands. This will help with interference in congested markets. Apple products are able to communicate on either band and will lock onto the strongest signal. When considering what router to buy make sure if it is an external router that it has a 12VDC input voltage. In general, marine electrical systems are 12VDC, if not a 12VDC input will need to be created for your router. This topic is beyond the scope of this manual. There are also many new portable routers on the market that plug into you USB port and don't require an external power source. Visit our web site for some routers we have tested. An external router will come with a power supply that plugs into the wall transforming 110 VAC into 12VDC. You can purchase a cable with a connector that matches the input to your router or you will need to cut off the VDC connector coming out of the 110VAC power supply to wire the router to your boat.   Connect the wires to either your 12VDC system or a power adapter plug. MAKE SURE TO KEEP THE POLARITY OF THE WIRES CORRECT; the + wire to the + terminal and the – wire to the – terminal. If you don't, you could damage your router. The only sure way to wire the connector with the correct polarity is to check with an ohm meter. The outside of the small plug that goes into your router is the negative (ground) wire and the inside of the plug is the positive (hot) wire. Do a continuity check to find the negative wire by connecting one lead of the tester to the outside of the plug and then connecting the other lead of the tester to the other end of the wires to see which one is the ground wire. 12VDC power adapter plugs have a fuse in them but if you wire directly in to your 12VDC system you should install an in-line fuse into the positive wire. Make sure to select the proper amperage fuse for your router. The specifications for this will be in the documentation that comes with the manual or on the AC power supply transformer.

Follow the instructions that come with the router to set your personal ID and password to log onto the router. Once you do that your computer will see the router and you can set up a wireless network connection with it. Do the same thing on your Android by going into "Settings", then "Wireless & Networks" and tap WLAN to turn on Networking and then WLAN Settings to select your network from the list and enter the password for it.

4. Transmitting Data to *Ventus PRO*

To setup Expedition to transmit the selected data to your *Ventus PRO*: For all the Ventus features to work it is **important that you have your boat's polars load in Expedition in three places; Nav, Perf, and Start**. Find these by going to Sail>Polars and then selecting from the tabs at the top of the page. Select your boats polars and then Load. Do this for all three tabs. Generally you can use the same polar file in all three places however you can fine tune the polar files for the three different sailing situations. Some offshore navigators will use the standard boat polars for Performance to give feedback to the driver and trimmers and use a slightly turned down polar file for Navigation, maybe set them at 95%. This is because when you are routing long races you know the boat will not be sailed at 100% efficiency all the time so after several days of sailing the boat will be somewhat behind the predicted location of 100% polars. The start polars are also often turned down some since there is generally a lot of maneuvering going before the start and the boat rarely has a chance to get up to full speed.
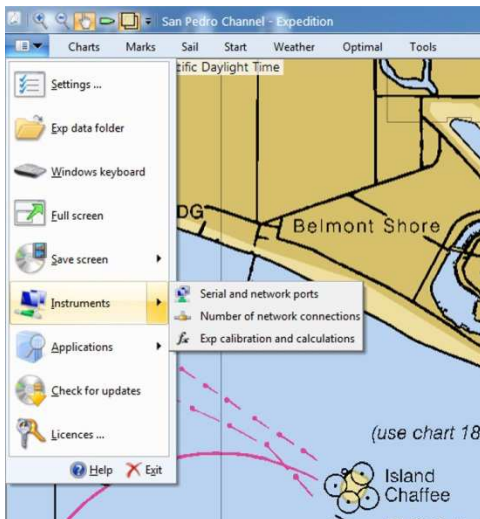

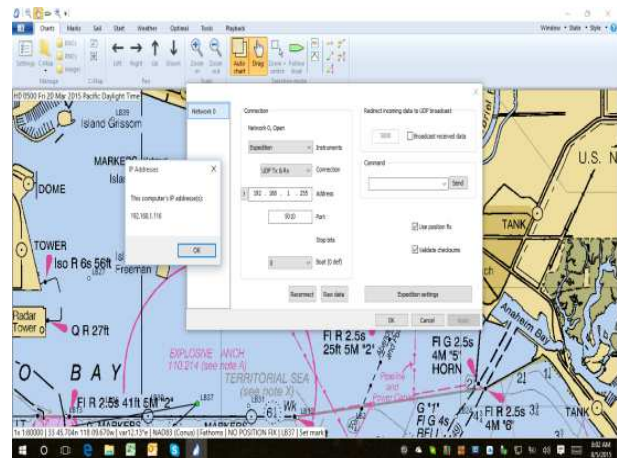Fig. 1   Fig. 2

Select Instruments from the drop down File Menu. (Fig. 1)

    Select Number of Network Connections

        Increase the number of connections by 1. Usually you won't already have any networks configured to run with Expedition other than the instrument input so the number of network connections will be 1.

Select Instruments from the drop down File Menu again

    Select serial and network ports

        Select the new network connection, *not the one that has your instruments listed* (Fig. 2)

        Select Expedition from the instrument drop-list,

        Select UDP Tx&Rx as the connection type.

        Expedition will automatically broadcast the UDP data to the default address of 255.255.255.255 and in most case this will be correct. However in cases where you may be running more than one network you can enter in the IP address you want to broadcast to. To find the address your Device is connected to go to Settings and click on the wireless network it is connected to. It will display the Network IP and the Subnet Mask. In the screen shot below the IP Address is 192.168.1.126 and the Subnet Mask is 255.255.255.0 so you would input 192.168.1.255 into the Expedition address box.

        See the help files in Expedition for more information.

        Select the default port of 5010, or enter 5010 in the port box

        If for some reason you need to use a different port enter the port number you want here and also in your Android PRO on Settings page.

        Make sure the Boat (0 def) box is set to 0 which should be your default boat.
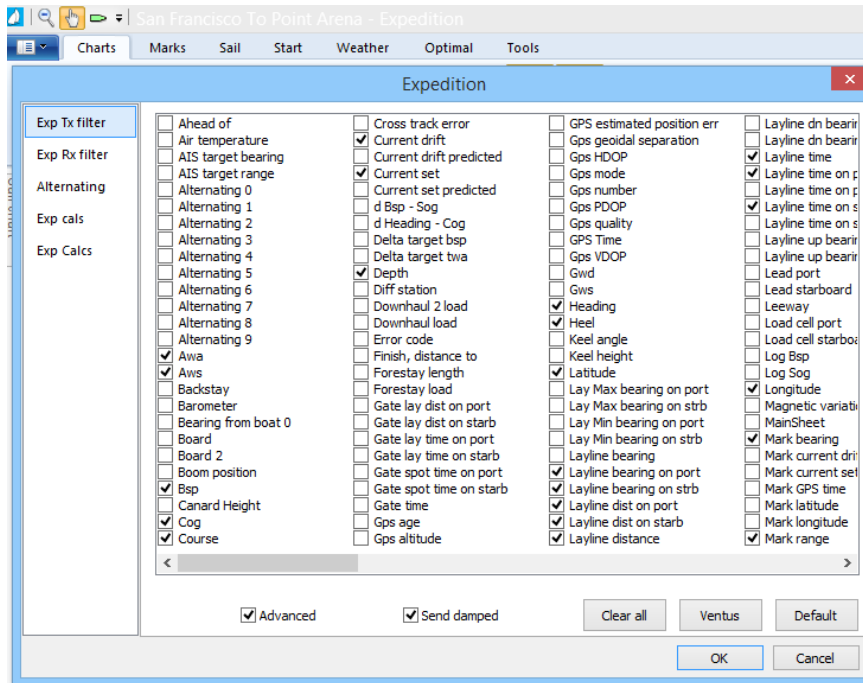
Fig. 3

Click on the Expedition settings box

Click on the Exp Tx filter (Fig. 3)

Place a check mark in the Advanced box to view all the possible data channels.

Place a check mark in the box next to each of the data channels you want to transmit or just select the **"Ventus"** button for all the channels you will most likely use.

The standard channels you need to select for the pre-set pages in *Ventus PRO* are:
Awa, Bsp, Heading, Mark Bearing, Mark Range, Start bias length, Start Time to Burn, Start Time to Gun, Start Time to Line, Start time to port, Start time to strb, Target Bsp, Target Twa, Twa, Twd, and Tws. Nick White has recently added a "**Ventus**" button on the Expedition Settings box and by checking that box all of the channels you need for Ventus will be selected along with quite a few others that people generally want to have.

When you configure custom pages you may need to come back into this list to check the boxes for other data you want to view in *Ventus PRO*. You can click on the "Advanced" box at the bottom of the page to see all of the choices for data that Expedition can send out.

Depth Units

Please note that Expedition only transmits depth data in meters. Changing the units you use in Expedition for other data will not change this.

5. Using *Ventus PRO-Android*

Once you have made sure your Android is connected to your boat network, tap on the *Ventus PRO* app. The Home screen will appear and you have 6 options: the Timer, EXP Com, Targets, Pages, Setup, and MOB. The program is designed to give the helmsman or trimmer the data that is most relevant to them as a typical race progresses. In addition you can setup your own custom pages to display any of the Expedition data.

The normal sequence before the start of a race would be to tap the Timer button to take you to the Timer Page. Depending on the start sequence you may want to either start a timer first, or if the line is already set you may want to ping the ends of the starting line. Tap the EXP Com button to give you access to commands you can send to Expedition. To set the Port end of the starting line approach the port starting mark and press the "Set Port End" button. *NOTE this will not set the mark but will bring up a page where you can tap Set Mark or Cancel*. When you bow is at the mark tap Set Mark to record the actual location. Follow the same procedure to set the Starboard end. Return to the Timer Page by taping the Timer button.

Help Button: In the lower right corner of the home screen is the "**?**" help button. Tapping this when you have an internet connection will take you to our web site where you can view or download the most current version of our Android User Manual along with other helpful information. If you are at sea without an internet connection tapping the icon will load a pdf version of the manual that is stored in the app. **NOTE: You will need to have a pdf Viewer app load on you device.** A viewer can be downloaded for free from the Google Play Store.

Timer Page

The timer is configured so you can choose a starting sequence of 15 minutes, 10 minutes, 5 minutes, 3 minutes, or a 5 minute revolving timer. Make your selection by tapping the desired number at the top of the screen. Start the timer by tapping the "Start" button on the lower left of the screen. You can sync the timer to the next closest minute at any time by tapping the "Sync" button on the lower right side. The "Home" button will always take you back to the Home screen.

Target Pages

The Target pages are designed to give the helmsman or trimmers the important numbers they are looking for to sail the boat efficiently. Upwind that is your Target Boat Speed and your Boat Speed, reaching it is you Polar Bsp and your Bsp, downwind it is your Target True Wind Angle and your True Wind Angle. *Ventus PRO* will automatically show the correct page based on your Twa. If the Twa is between 0 and 55 it will display the Upwind Targets, if the Twa is between 56 and 124 it will display the Reaching Targets, and if the Twa is between 125 and 180 it will display the Downwind Targets.

At the bottom of the screens the Twd is shown on the left and there is a bar graph showing wind shift trends and headers or lifts. The base Twd is indicated by a red dot in the center and the dots to the left or right will light up green to indicate wind shifts and in which direction. Each dot represents a 2.5 degree shift. At the start the base Twd will be the wind direction at that time. As the race goes on if the wind has a persistent shift you can re-set the base wind direction for the graph by double tapping the Twd that is shown in the box on the left.

Start Pages

In the Timer mode you can select to view either "Start Ends" which displays Time and Burn Time to both ends of the line, Time to the Start Signal, and the Line Bias if you have pinged the ends of the starting line, or Start Closest which displays Time to Gun, Time to the closest place on the start line, and Burn Time to the closest place on the line. **To take advantage of these pages you will need to ping both ends of the starting line**. At any time you can switch back to the Timer by tapping the Timer button.

The Start and Burn times are the time which Expedition calculates it will take you to sail to those parts of the starting line from your current position including the time to tack or gybe and your acceleration. *Note – for these functions to work accurately you will need to have a good **Starting polar** in Expedition, for upwind starts this is generally between 75 and 85 percent of your performance polar, AND good calibration tables for your **Acceleration** and **Rate of turn** in different wind strengths.* "Burn Times are the amount of time you need to burn off before starting. Line Bias is expressed in boat lengths as either a positive or negative number. Positive numbers indicate the starboard end is favored and negative numbers indicate the port end is favored. For this to be accurate you have to have your proper boat length **in meters** set in the Expedition Settings > Racing menu and on your Android on the Settings page. If you need to sync the countdown time to the next closest minute simply tap Previous button to take you back to the timer page, and then the Sync button. You can return to the Start page of your choice by tapping either the Start Closest or Start Ends button. You can also access any of these pages by taping the **Pages** button.

After the timer has counted down to 0.00 the Start page will automatically switch over to the **Target** page.

There is also a pre-configured **Wind** page to display all your wind data. The top line displays the True Wind Direction and the True Wind Speed, the second line displays the True Wind Angle and the Apparent Wind Angle. If you go to this page to check the wind before the start it will also show you the time remaining to the start and has a Sync button to sync the timer to the next closest minute.

Pages

Tapping **Pages** on the Home screen takes you to the list of twelve available pages; the five pre-set pages are listed on top followed by the seven programmable pages you can set up with the data of your choice. Tap on the page you want. To change the data in any box on a Custom page tap on the box and hold for three seconds. You will then be able to select any of the Expedition data you want to see for that box.

To configure a Custom Page and select the layout, data, and name that you want tap and hold any one of the seven programmable pages for 3 seconds to go into setup mode where you can set that page with the layout and data you want. From any of the programmable pages you can also tap and hold for 3 seconds any data box to change the data that is shown in that box. (see section 6 – Custom Pages)

Exp Com

The Exp Com page takes you to the heart of what Ventus *PRO* can do for you; send key commands back to Expedition. There are 5 selections:
- Set Port End pings the port end of the Starting Line
- Set Strb End pings the Starboard end of the Starting Line
- Select Active Mark lets you pick the mark in the current active course you want to have active. It displays the current active mark and lets you move forward or backwards through the list of marks in the current course.
-Ping New Mark lets you Ping a new Active Mark by inputting range and bearing from you location. There are two choices; you can either select to make the Pinged Mark the new Active Mark in a new Active Course, or to add the new Pinged Mark to the current Active Course *following the Current Active Mark.* It also allows you to input a new mark at your current location by entering a range of zero. This is very useful for pinging a mark you are rounding to record its actual position, or pinging a gate mark that is to weather of the starting line.
- Strip Charts is and additional feature you can add to Ventus PRO as an In-App Purchase. The first time you tap it you will have the option to purchase the addition for $24.95. It displays Strip Charts for Twd and Tws and lets you view the data for the last 15 minutes, 30 minutes, or 60 minutes. Select between Tws and Twd by tapping the current name at the top right of the chart. The screen display the chart along with the current value, the high value, the low value, and the average value for your selected time frame.

Watch the page for the addition of new tools in the future.

Setup
Screen Mode: Select to have Night Mode either on or off. When Night Mode is on the

screens have a black background with red numbers to preserve night vision. When Night Mode is off, the display switches to a high contrast white background with Red numbers for viewing in bright conditions.

Boat Length: In order to have the correct value of Boat Lengths displayed for the Start Line Bias you must input your own boat length in meters on the Setup page.

Expedition Port Number: If you need to use a port different than the standard 5010 set that number here as well as in the Expedition setup page.

MOB Button

Ventus *PRO* now includes a MOB Button at the bottom left corner of each page. For safety this a double action button; when tapped it will bring up a new screen asking you if you want to "Execute Man Overboard?". To record the position tap "Yes". This option activates the MOB routine in Expedition which records the position and places a locked mark at that location. It will be displayed on your computer screen. At the same time Ventus switches over to a screen showing you the Lat and Lon of the MOB mark and the Range and bearing back to it.

Computers can be less reliable than a purpose built GPS, so always use your boat's GPS system as your primary MOB position fix system. Use the Ventus Navigation App to control Expedition as a backup - displaying the track on the Ventus screen is a visual way of seeing your way back. Ventus Navigation and its products are not designed or intended as a primary life safety control or a position fix system.

6. Custom Pages

The *Ventus Navigator* Custom Page designer allows you to see the data you want in the form you choose. From the Home menu tap Pages. You will see a list of the twelve pages in Ventus Navigator, the upper six are the pre-set pages and the lower six, outlined in red, are the programmable pages. If any of them have already been configured you will see them listed by their saved names.

Tap the desired page and hold for three seconds to go into the Page Setup
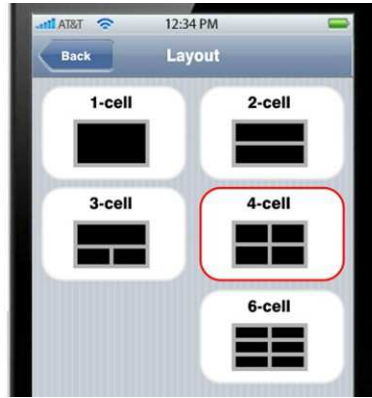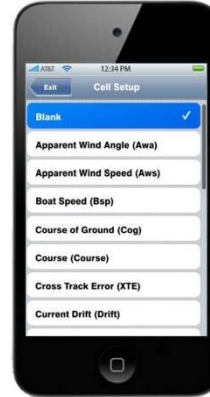
Fig. 4   Fig. 5

Tap the layout you want for your new page.

The new page will be created with the number of data boxes you have chosen.

Tap and hold for 3 seconds any of the data boxes to select the data you want (Fig. 5)

Scroll through the data to make your selection for each box, then tap **Done.**

Enter the name you want the page to be saved as.

Font Size: You can set the font size in any of the custom pages you set up to display the data as large as possible in your boxes. Once you have a custom page set you can scale the data display using the standard "pinch" method for each of the display boxes for the data you are showing in that box. (larger for short data like bearings, smaller for long data like lat and lon. When you exit the page your selectons will be saved so that when you return to that page the data will be displayed in the size font you selected.

Note – to see any Expedition data on your device you must go into Expedition and make sure that channel is selected for transmitting. See 3-2 above.

7. Suggested Pages

Depending on the type of sailing you do you will want to set up some custom pages with different data. Here are some of the favorites.

Offshore:

A page with the 6 data box layout.

Top line – Mark Range (distance to the current mark you are sailing to)

        Mark Bearing (bearing to the current mark)

2nd line – Optimum vmc heading (heading to achieve optimum vmc current mark)

        Mark Time (time to the current mark based on current VMC to the mark)

3rd Line - Polar Bsp (polar boat speed at the current wind speed and angle)

        Vmc (the component of Sog towards the current mark)

Next Leg:

A page with the 4 data box layout.

Top line - Next Mark Awa (apparent wind angle for the next leg based on current wind)

        Next Mark Twa (true wind angle for the next leg based on the current wind)

2nd line - Next Mark Bearing (bearing to the next mark after rounding the current mark)

        Next Mark Range (range to the next mark after rounding the current mark)

Racing:

A page with the 3 data box layout.

Top line – Opposite Track (Cog on the opposite tack of gybe)

2nd line - Next Mark Awa (apparent wind angle for the next leg based on current wind)

        Next Mark Bearing (bearing to the next mark after rounding the current mark)

Pilot:

A page with the 6 data box Layout.

Top Line - Mark Range (distance to the current mark you are sailing to)

        Mark Bearing (bearing to the current mark)

2nd line - Course to Steer (to the current mark taking into account current and leeway)

        Mark Time (time to the current mark based on current VMC to the mark)

3rd line - Depth

        Sea temperature

FAQ

Q: *I have set up my Ventus PRO according to the instructions. It is receiving all my Expedition data just fine but I can't get the Timer to work, or send any of the commands back to Expedition.*

A: First make sure you are using at least version Expedition version 8.8.20. That is the first version that supported sending commands back to Expedition. ***However we always recommend updating to the most recent version Nick White has posted on the Expedition web site. He is constantly working on improvements.*** *http://www.expeditionmarine.com/download.htm*

There are usually 3 things that can cause problems with Ventus sending commands back to Expedition. First, in Exp in the network you have set up for Ventus make sure that you have selected UDP Tx & Rx so Exp will both transmit data and receive data.

Second, make sure you have a fresh, clean network connection between your phone and computer. Ventus remembers the network setup so that it won't lose connection with Expedition, so if you have just upgraded to PRO, or are in a new location accessing a different router, Ventus won't make the "Send" connection. To establish a new connection power down the phone completely, restart it, and then restart Ventus.

If neither if those two fix the problem the other possibility is the router. For the best connection, especially if you have a carbon deck, you should have a newer dual band router.

Q: *How do I change the Port number for my Ventus network? I see in the Expedition Network Setup a place to specify the Port number, but how do I change it to correspond in Ventus?*

A: Go to settings in your Ventus Android App. Enter the desired Port number in the box.

Q: *My Ventus app is working great except I want to also view the Heel since my new instruments include the heel sensor. I have set up a custom page for that data but nothing displays in the box.*

A: Go to your Instruments > Serial and Network Ports in Expedition and select the network you have setup for Ventus. Click on Expedition Settings and then click on Heel in the list of data channels available to add it to the data that is being sent to your Ventus app.