1. Welcome

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 Navigator,* 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 Navigator* turns your iPhone, iPod, or iPad 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 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.

It includes a starting timer where you can select either a 15 minute, 10 minute, 5 minute, or 3 minute sequence and choose to use a revolving timer or a countdown/count up timer. You then choose to go into either Helm or Navigate mode. In Helm mode the timer screen displays until the countdown reaches 0:00 then automatically switches to either the upwind screen displaying Target 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 headers or lifts.

In Nav mode once you start the timer it will switch to a pre-start screen showing the time and distance to each end of the start line, the line bias, and the time to go. After the timer reaches 0:00 it will automatically switch over to the navigate page and display the time and distance to each layline, the Cog and the Heading. At any time a single tap will take you to the Wind page where all you wind data is displayed.

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

2. 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 Navigator* 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 the router has a 12VDC input voltage. In general, marine electrical systems are 12 VDC, if not a 12VDC input will need to be created for your router. This topic is beyond the scope of this manual. The 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 you iPhone, iPod, or iPad by going into "Settings", then "Wi-Fi" and tap to turn it on. Make sure "Ask to Join Networks" is on and then select your network from the list and enter the password for it.

3. Transmitting Data to *Ventus Navigator*

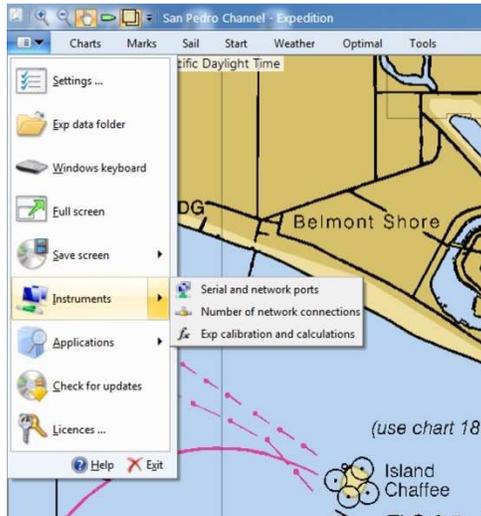To setup Expedition to transmit the selected data to your *Ventus Navigator*:
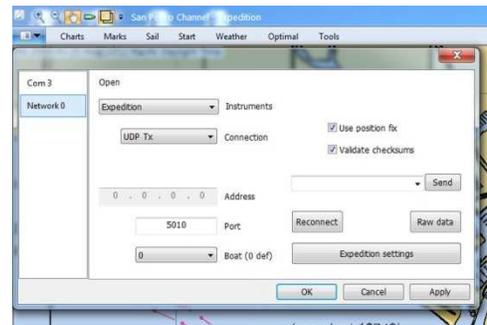

Fig. 1

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 as the connection type,

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

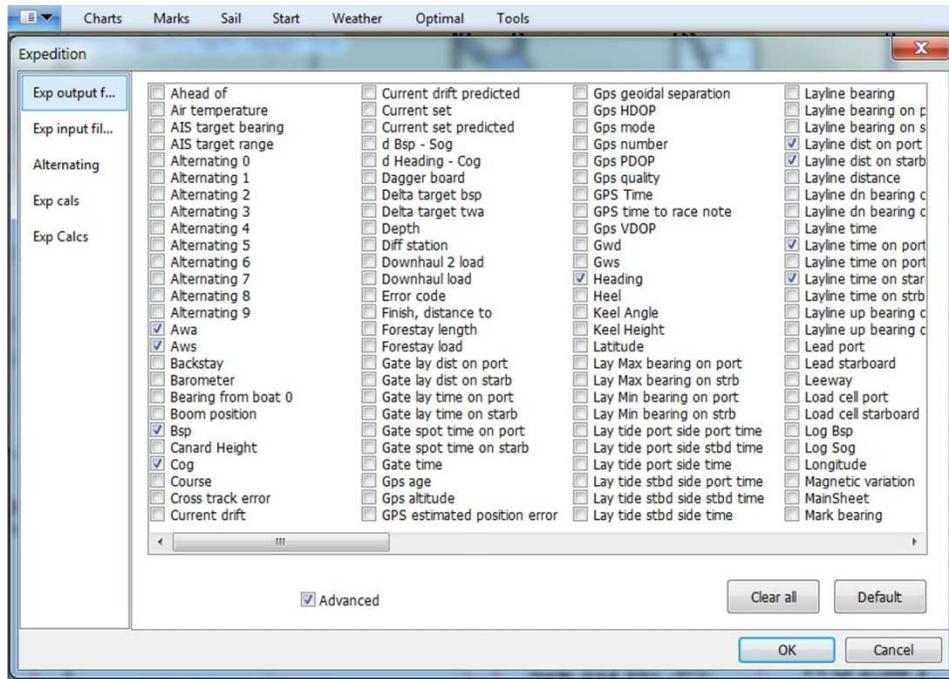   Don't do anything with the boat (0 def) box

Fig. 3

Click on the Expedition settings box

Click on the Exp output box (Fig. 3)

Place a check mark in the box next to each of the data channels you want to transmit

The standard channels you need to select for the pre-set pages in *Ventus Navigator* are:

Awa, Bsp, Heading, Layline dist on port, Layline dist on strb, Layline time on port, Layline time on strb, Start bias length, Start time on port, Start time on strb, Target Bsp, Target Twa, Twa, Twd, and Tws.

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 Navigator*. 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.

4. Using *Ventus Navigator*

Once you have made sure you iDevice is connected to your boat network, tap on the *Ventus Navigator* app. The Home screen will appear and you have 5 options: the Timer, Helm pages, Nav pages, Custom pages, and setup. The program is designed to give the helmsman or trimmer, and the navigator 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 from the Home page would be to tap the timer button and then select the timer options you want, start the timer, and then choose either Helm mode or Nav mode by tapping the Mode button on the left side. The Helm mode is designed to give the helmsman and trimmer the basic data they need in large easy to read numbers. The Nav mode is designed to give much more detailed data to the navigator who has more time to read and use the data. In either mode the pages will progress automatically as the race progress, showing upwind numbers when the Twa is less than 130 degrees and downwind numbers when the Twa is 130 or greater. When the countdown timer reaches 0.00 and the race starts the pages will automatically switch over to the upwind pages or the downwind pages depending on the Twa.

Timer Page

The timer is configured so you can choose a starting sequence of either15 minutes, 10 minutes, 5 minutes, or 3 minutes. Make your selection by tapping the desired number at the top of the screen. Next choose whether you want it to run as a revolving clock where once it counts down to 0.00 it starts back over with the selected sequence, or in count down/ count up mode where once it counts down to 0.00 it will start counting up to record the amount of time the race takes.

Start the timer by tapping the "Start" button on the lower left of the screen. You can sync the timer to the next 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 where you can select to go to the Helm, Nav, or Custom pages manually.

Once the timer is running select either Helm or Nav from the Mode button on the left side. If you go to Helm mode the counter will continue until it reaches 0 and then switch over to either the Helm Upwind screen or the Helm Downwind screen depending on the True wind direction.

If you go to Nav mode once the timer is started it will switch over to the Nav-Start page and stay on that page until the counter reaches 0.00. Then it will automatically switch over to the either the Nav Upwind or Nav Downwind screens depending on the True Wind direction. If you need to sync the timer to the next minute while on the Nav-Start page simply tap the Home button, then the Timer button, and then the Sync button at the appropriate time. You can then return to the Nav-Start page by taping the Nav button on the left hand side.

Helm Pages

The Helm pages are designed to give the helmsman or trimmers the important numbers they are looking for to sail the boat efficiently. Upwind and reaching that is your Target Boat Speed and your Boat Speed, downwind it is your Target True Wind Angle and your True Wind Angle. *Ventus Navigator* will automatically show the correct page based on your Twa. If the Twa is less than 130 it will display the Upwind Page, when the Twa is 130 or more it will display the Downwind Page.

In Helm mode these pages will display automatically once the countdown timer reaches 0.00. You can also go to these pages any time by pressing the Home button and then selecting Helm.

Upwind it will display your Target Boat Speed in the upper box and your actual Boat Speed in the lower box. Downwind it switches to display your Target Twa in the upper box and your actual Twa in the lower box.

At the bottom of the both screens the Twd is shown on the left and there is a bar graph showing 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.

Nav Pages

In Nav mode there are 4 standard pages; the Timer, the Nav-Start page, the Nav-Navigate page, and the Nav-Wind page. The timer page comes up the same as it does in Helm mode. You select the time sequence you want, the revolving clock or the countdown/count up clock, and then start the timer. After you start the Timer, select Nav mode and it will automatically switch to the Nav-Start page where the navigator will have more data to relay to the helmsman. **To take advantage of this page you will need to ping both ends of the starting line in Expedition**. At any time you can switch to any other Nav page or go back to the standard timer by tapping the Home button on the left hand side of the screen and then selecting the page you want to go to.

On the **Nav-Star**t page the top line will display "Time to Port" which is the time Expedition calculates it will take you to sail to the port end 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.* Next to the "Time to Port" data is the "Burn Time Port". This is the amount of time you need to burn off before starting at that end. The second line has "Time to Strb" and "Burn Time Strb". The third line shows the time to go from the timer and the line bias. 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. If you need to sync the countdown time to the next minute simply tap the Home button, then the Timer button, and then the Sync button. You can return to the Nav-Start page by tapping the Nav mode button.

After the timer has counted down to 0.00 the Nav-Start page will automatically switch over to the **Nav-Navigate** page which displays Time Port Lay and Time Star Lay, the time it will take you to reach the layline for the next mark. The second line shows Distance Port Lay, Distance Star Lay, and the third line displays your COG, and Heading all based on the next mark. Having both the COG and Heading displayed will help you see the effect of any current you may be sailing in.

The **Nav-Wind** page is pre-configured 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 minute.

Pages

Tapping **Pages** on the Home screen takes you to the list of twelve available pages; the six pre-set pages are listed on top and the six programmable pages you can set up with the data of your choice are on the bottom outlined in red. 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 to select the layout, data, and name that you want tap and hold any one of the six 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 5 – Custom Pages)

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.

5. 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

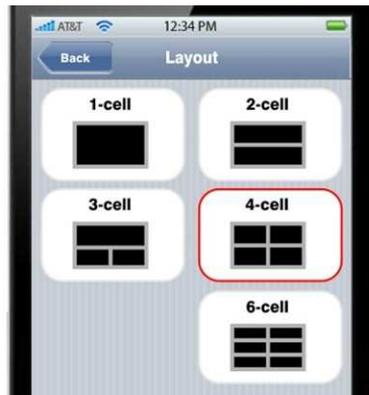Fig. 4   Fig. 5

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.

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.

6. Suggest 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