



VRTOOL
SIDEKICK

User Manual

VRTool sidekick (**VSK**) combines a **sailing calculator** and a **GPS logger**. It transforms your GPS enabled phone in a powerful sail boat racing tool. VSK is useful alone, but is designed to work in concert with VRTool on the desktop.

While sailing, **VSK** monitors your current sailing performance. VSK uses the GPS position, current wind conditions and boat *polar* chart to calculate and show sailing data. This is displayed as text and plot on the polar chart.

As a **GPS logger**, VSK can be set to save boat positions and other sail variables periodically. The points can later be uploaded

to **VRTool** desktop for further analysis and document of your sailing legs.



VRTool desktop allows track planning, weather routing optimization using *NOAA* wind forecasts, chart visualization with vector charts, winds, marks, routes and tracks.

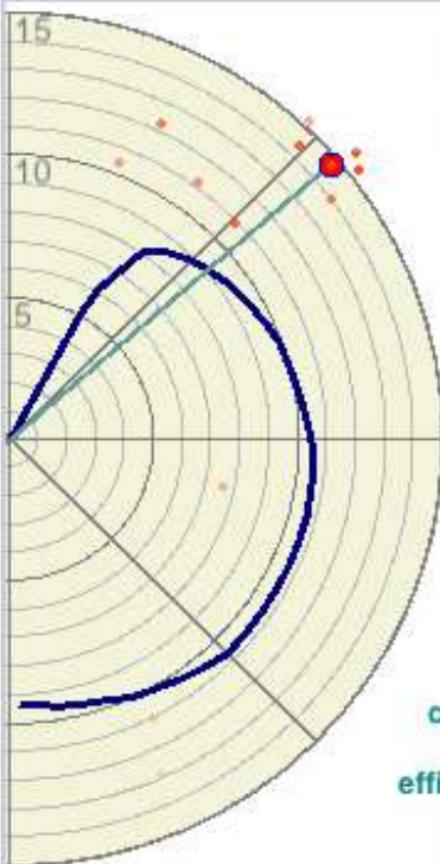
VRTool embedded web server can be used to share sailing information with the crew using onboard mobile devices.

To learn about VRTool desktop software, visit www.tecepe.com.br/nav/vrtool

Polar Chart

show all

Wind



SOG: 14.7 Kn

COG: 91°



Jib

wind
22 kn / 140°(SE)

TWA: 49°

calc BS: 9.1 Kn

efficiency: 162.3 %

delta: 5.6 Kn



Sailing



GPS



Options



Help

Installing and configuring VSK

VSK is available from the *AppStore*. Once the app is installed comes the hard part: you must obtain and install the **polar chart** for your *particular* kind of boat.

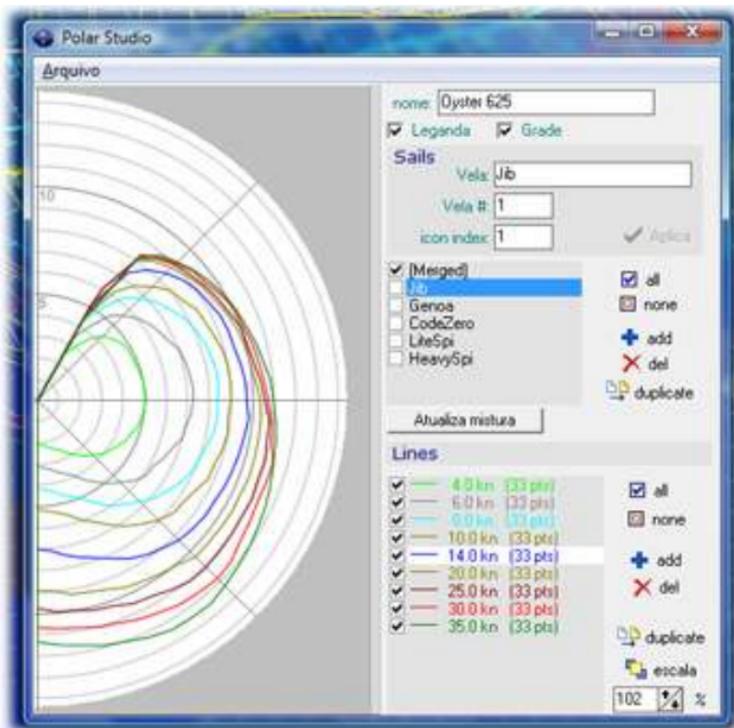
The polar chart is a set of curves, for a number of wind speeds, relating *wind speed* & *wind angle* to boat speed. You can use it to compare actual boat speed to the optimized speed from the chart.

Data for the *polar chart* can be obtained from boat manufacturer or designer. In most cases, it is available as an image or spreadsheet - and has to be imported. Use *VRTool Polar Studio* for that.

Even if you obtain data from the manufacturer, actual figures may be different due to the particular set of sails, boat weight, mast, propeller type etc.

You can also roll your experimental curves, using data gathered during sailing sessions.

Either way, it is a lot of work, but necessary to get the most out of VSK/ VRTool calculators.



VRTool Polar Studio

VSK accepts VRTool compatible multi-sail polars, (*.XML). Use the *Polar Studio* (a module of VRTool desktop) to create and graphically edit your boat curves.

You can also use an ASCII text editor, if you feel comfortable editing raw XML. To see how a VRTool polar chart file looks like, click [here](#).

Once you have your polars ready, upload it to a web server (i.e. in the cloud). You can use any internet service that allows file uploads and downloads.

VRTool desktop itself can be used as a web server. The web server has to be running anyway to interact with VSK.

- 1) On the PC, place your polars in
`<program files>\VRTool\htdocs\
This is the VRTool web server document root folder`
- 2) Activate VRTool embedded web server.
- 3) In VSK, set url to the polars file. For example:
`http://192.168.0.100:8080/polarsBavaria38.xml`

Some sample files can be found in:

Bavaria 38

www.tecepe.com.br/polars/polarsBavaria38.xml

Elan 33

www.tecepe.com.br/polars/polarsElan33.xml

J-24

www.tecepe.com.br/polars/polarsJ24.xml

J-92 deep keel

www.tecepe.com.br/polars/polarsJ92DeepKeel.xml

In VSK select tab *Options*. Type the polars location (URL) and press

[download polars XML] button.

If the download is successful, the boat model appears (see image below). Once the file is installed, you no longer need an Internet connection. The file persists, even if the app or the phone is restarted.



download from a web server

Connect the phone to the desktop

To send saved points from VSK to VRTool, both the phone and the PC must be connected to the same network. Use a wireless router or the phone access point to establish a wireless intranet around your boat (more on this [here](#))

Working with VSK

VSK uses the phone's internal GPS to calculate your current boat speed and course. You have input the **true wind** (no direct instrument interface is available at this time). VSK shows:

- True Wind Angle (**TWA**)
- Calculated Boat Speed (**calc BS**)
- Speed efficiency (actual boat speed/calculated speed)
- Recommended sail (requires multi-sail polars)

The chart shows your sailing point (fat red dot) and the polar chart line for the current wind speed.

In the **Sailing** tab we have two input fields:

- **SOG** (boat Speed Over Ground - in knts)
- **COG** (Course Over Ground)

You can type in the boat speed/course manually, or you can let VSK update those automatically, using GPS readings.

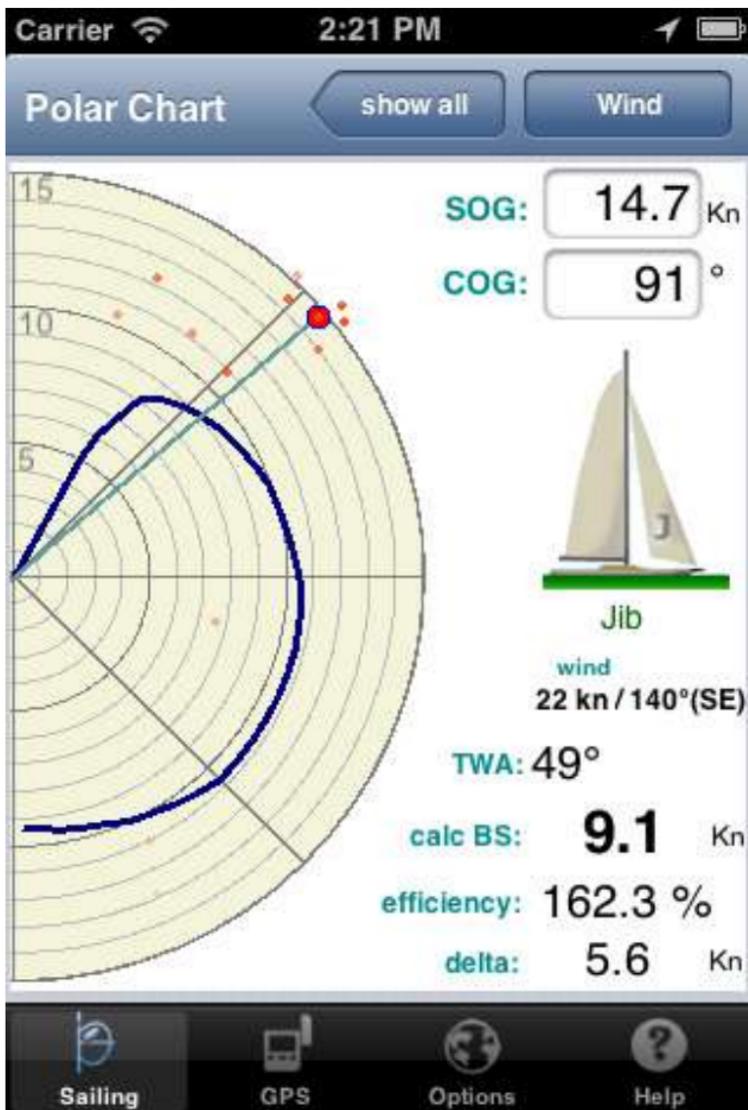
You have to input (and keep updated) the true wind parameters (TWS/TWD).

Press the **[Wind]** button.

A small panel opens and let you type:

- **TWS** (True Wind Speed) in knts
- **TWD** (True Wind Direction)

Click **[ok]** button to accept the new wind parameters.



Sailing tab

Click the **[Show all]** button to show all polar lines, for various wind speeds. When a GPS tick is received, only the line for current wind speed is shown.

Checking option **[x] Sticky points plot** will show up to 100 previous sailing points on the chart. Older points are fainter. If you change wind speed, sticky points are cleared.

You can turn the GPS device on/off by using the GPS switch, on GPS tab.

Note: the GPS has to be turned on each time the app is restarted.

For each position received, VSK calculates:

- **SOG** (boat Speed Over Ground)
- **COG** (Course Over Ground)
- **TWA** (True Wind Angle)

Input the leg **destination** position (the next mark in the race).

1. Click the **[i]** button to edit the latitude and longitude of destination, using decimal notation.

2. Use negative values for South latitudes and West longitudes.

For example, to input 23°30'S/46°30'W, type -23.5 and -46.5.

3. Press **[ok]** to accept.

If the leg destination is set, the program also calculates:

- **Distance** to destination
(uses great circle calculation)
- **Direction** to destination
- **VMC** (Velocity Made good to Course)
This is the projection of boat speed in direction of destination (the useful part of the actual boat speed)

The boat attitude chart shows the wind vector (blue arrow) and destination direction (orange arrow below).



GPS tab

In the bottom there is the **Best to Destination** section. This is the course with the best VMC possible to the destination, with current wind conditions. It shows:

- calculated boat speed (Spd)
- Best course to destination (Cap)
- Best True Wind Angle (BTWA)
- Best VMC to destination

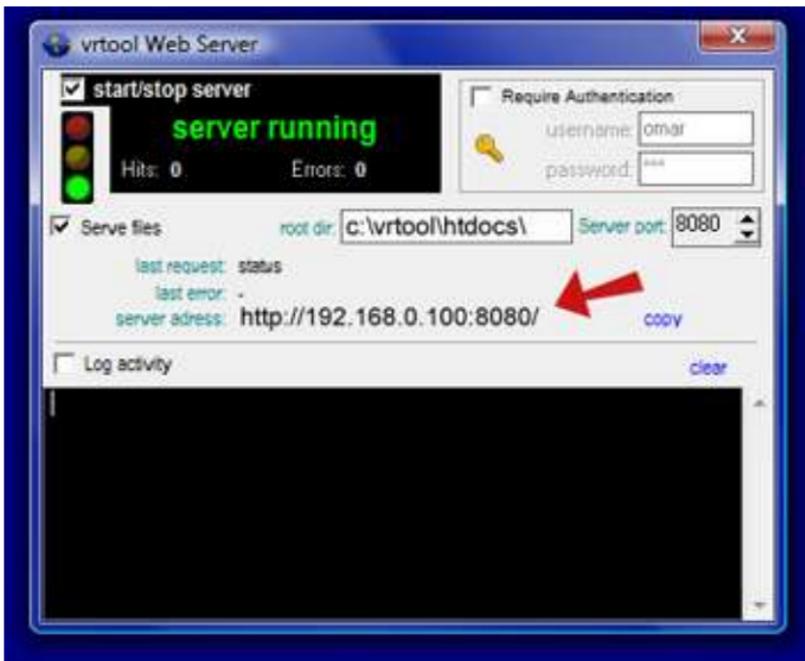
In the **Logger** tab you can configure and share the GPS points you have saved in the current sailing session.

Inform your **boat name**. This will be used to identify the boat track that will receive the points. The points you send to VRTool will be added to the end of a track named **TR_boatname**. If it doesn't exist, VRTool creates a new track.

Tip: Multiple boats can send points to the same VRTool host, if they are connected to the same network.

VRTool software receives data from VSK in its embedded web server, which **must be active** to receive points. See VRTool documentation and [WIKI](#) about this.

In the image bellow, note the address pointed by the red arrow. This is the network address of the VRTool embedded web server.

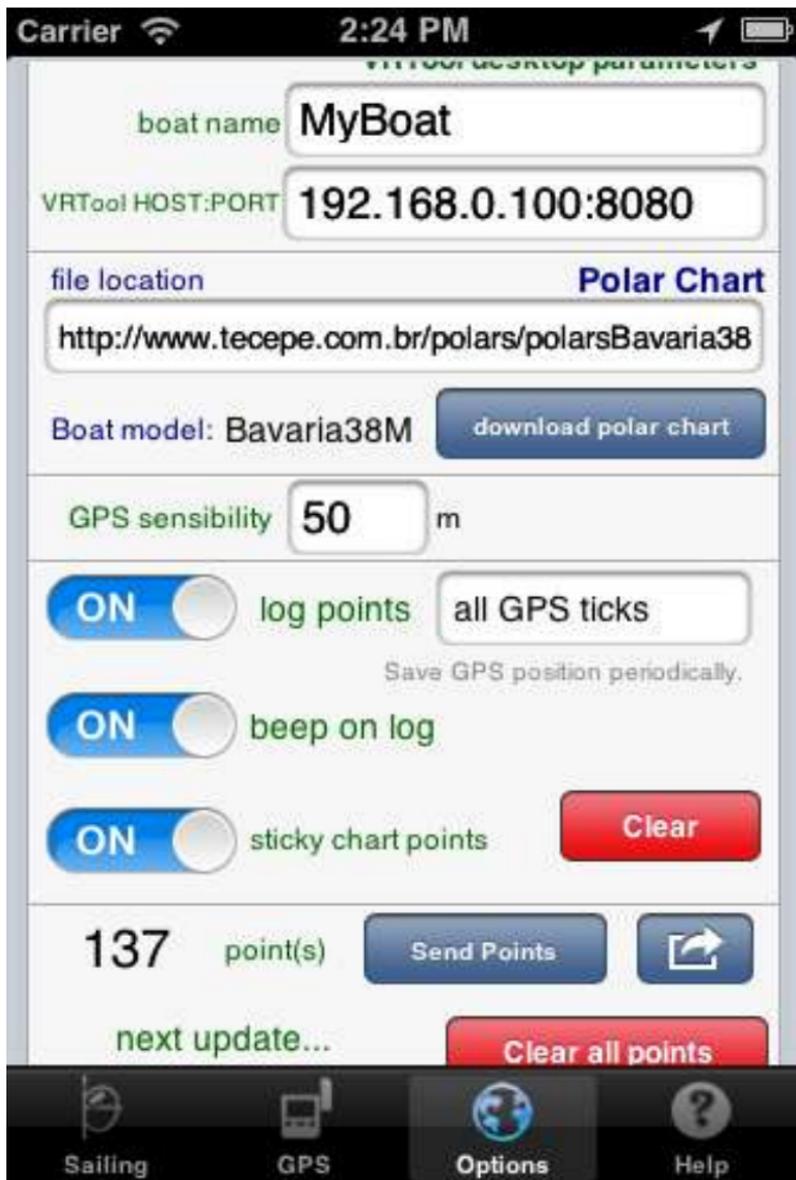


VRTool embedded webserver

Input the **HOST:PORT** part to the **VSK** Logger settings (in this case, the IP number "**192.168.0.100:8080**").

The **GPS sensibility** parameter controls how often the GPS device informs positions. If too small, you get instable speed readings (due to imprecision of GPS positions). If too large, it takes too long to update (default=50m).

You can control the periodicity of logged points (all ticks, 1 min, 10 min, 1 h , 1 day). Or you can choose to disable automatic logging and do it manually, by pressing the **[Log now!]** button, in the GPS tab.



GPS Logger options

Saved positions can be shared:

- By E-mail using button 
- Copy-paste to Notes
- Upload to VRTool desktop, using **[Send Points]** button
(remember to configure the VRTool host before uploading points).



points sent to VRTool

Note: for VSK compatibility, make sure you have VRTool 2.20+ or Navigator 6.0+ on the PC.

VRTool website, forum and WIKI:

<http://www.tecepe.com.br/nav/vrtool>

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