Sailing Master
User Manual

www.dsetechnology.co.uk

Revision Draft 0.2 August 2012

Table of Contents

Introduction

Sailing master is designed as a performance training tool for sports and leisure sailors alike. By using your iPhone's sensors, Sailing Master provides you with information only otherwise available through spending vast amounts of cash on expensive equipment. And because it is on your iPhone it is light and compact it opens up this kind of tool to all sailors. Equip your iPhone with a waterproof case and you can use Sailing Master on the smallest to largest sailing boats, from sail boards and dingies to large yachts.

Sailing master provides:

Simple, easy to use navigation features up-loadable from GPS exchange (.GPX) files or set up from within the app.

Start line countdown timer and distance tool.

Data logging for post race analysis of performance against polar diagrams or exported to TrakPal Pro.
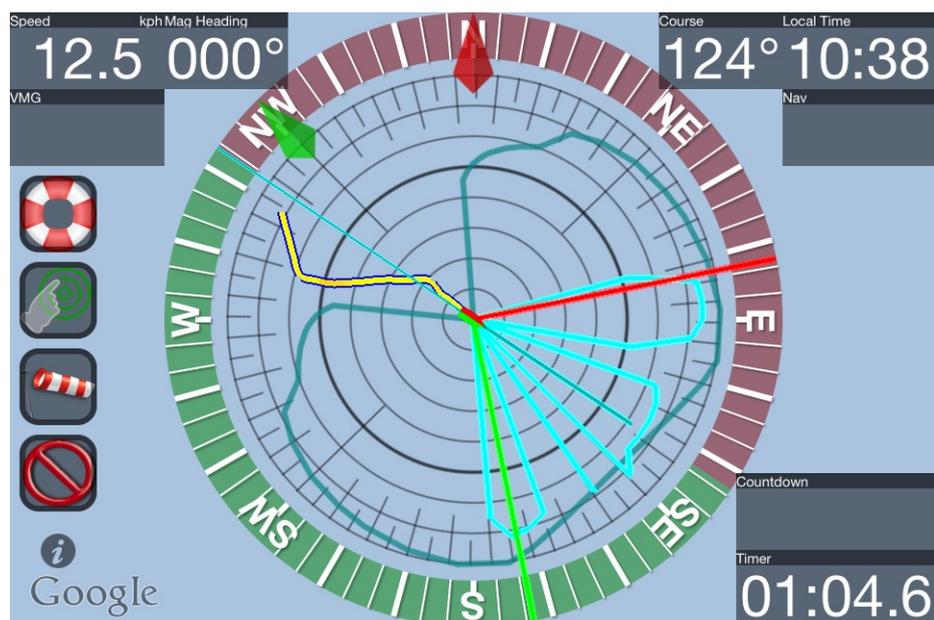
Real time graphical display of speed against polar performance.

Indicators to assist in detecting lifts and headers.

Log files and GPS Share feature are compatible with data files recorded using TrakPal Lite or Pro.

This version of the User Manual relates to software release version 1.0.

Quick Start

In a race situation adopt the following procedure.

Tap i button and tap Race Mode. Sailing Master will enter Start Mode and is indicated on the main UI by a green countdown bar.

In start mode you can drop markers for each end of the start line. Either use the buoy button 🛟 or marker mode ⊚. Create a start line by tapping markers to select Port (red) and Starboard (green) markers.

On the 5 minute gun tap countdown and the large 5 minute start will be displayed with a countdown timer and distance to line. There is a cancel button at the top left of the display which will cancel start mode.

Once the countdown reaches zero Sailing Master will enter race mode.

Key features Sailing Master provides to ensure you are getting the most out of your boat during a race:

Speed indicator line providing real time graphical indication of boat performance against optimum polar diagram. Tap the green arrow to rotate the polar to the current true wind angle. Tap 🧭 to select wind speed.

Sailing Master provides an example polar file. You will want to find data for your own boat and rig.

Tail line and colour coding on Speed provide key tools for judging lift and headers.

Post race you can analyse your performance by reviewing data logs against polar line in the boat edit screen or by exporting logs to TrakPal Pro.

Main Screen UI
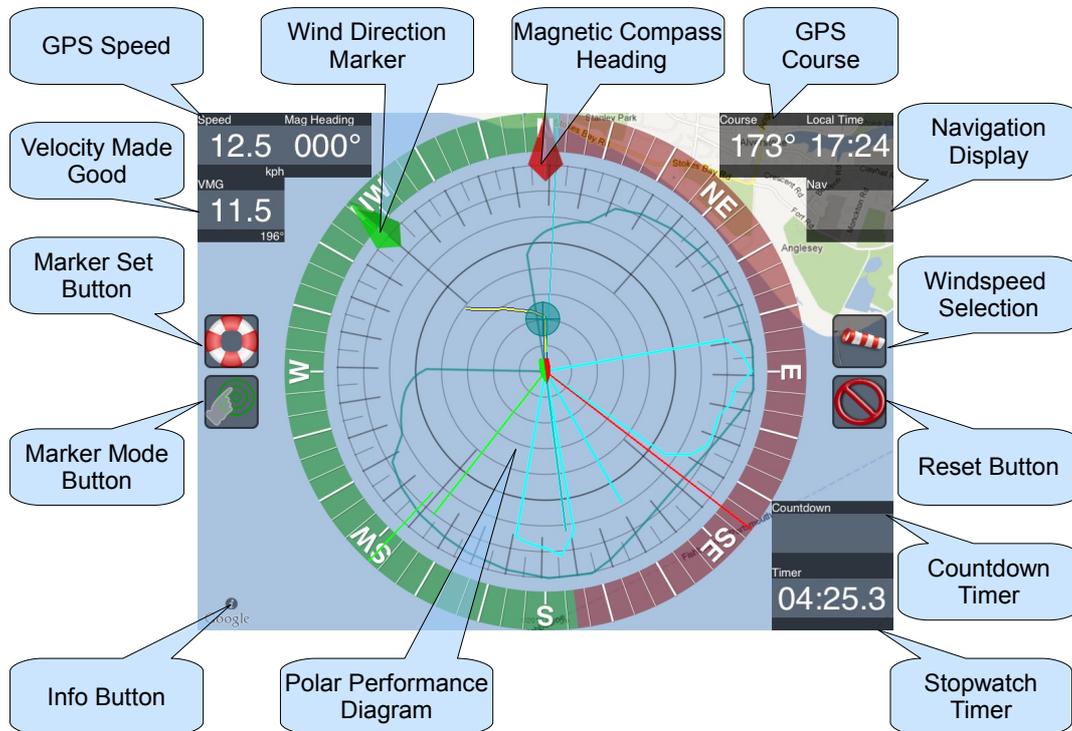
Sailing Master's main user interface consists of a central boat polar performance display surrounded by a red/green compass bezel. Around the peripherals of the screen are displays for Speed, Velocity Made Good (VMG), Magnetic Heading, GPS Course, Local Time, Navigation, a countdown and Timer.

Polar Performance

The Polar Performance display provides a graphical view of current boat performance against an optimal. Sailing Master allows you to produce polar diagrams tailored for your boat through appropriate trials. Alternatively, you can find the relevant data and upload it into Sailing Master via iTunes. Comparison of trials or race logs against uploaded data can give an indication of where performance is being lost.

To use the polar display select the data for your boat from the boat edit screen (i - boat edit screen). Select the current wind speed by tapping the windsock button. Rotate the polar to the current true wind direction by dragging the green arrow. We recommend using your local weather service to find out the current wind speed and direction.

Tack angle lines are displayed to port (red) and starboard (green). Tack angles are set in the boat performance data and screen.

A heading tail is shown to help in judging movement off you current course.
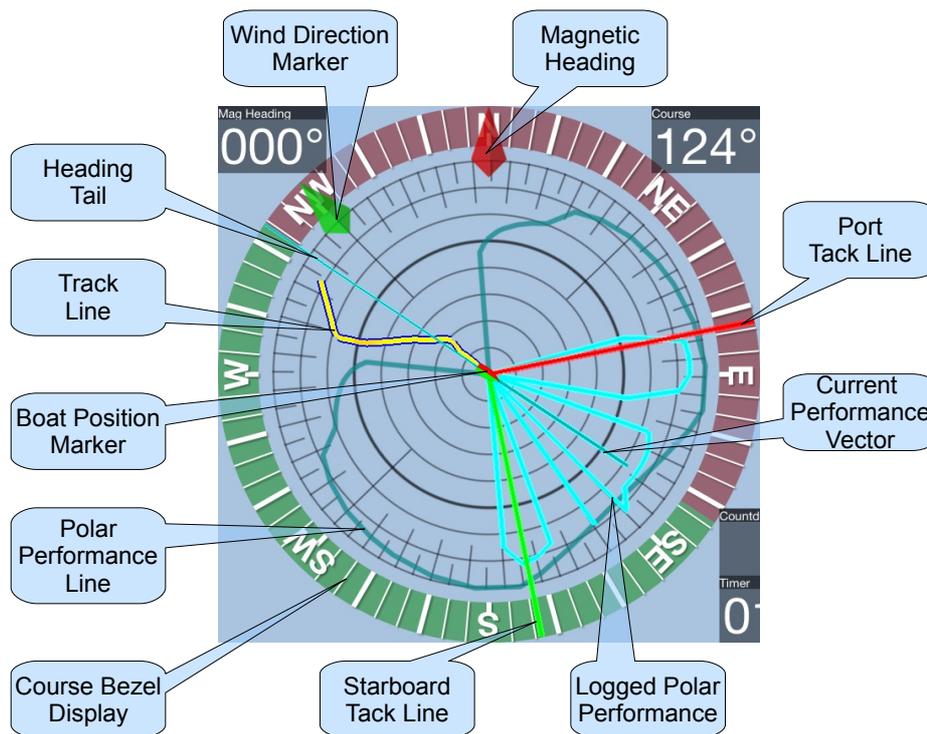
Markers

Markers can be dropped on the current location using the buoy button ⭕ or by entering marker mode by tapping the marker button ⚲. Once in marker mode the polar display is removed.

When in marker mode tap the screen to add a marker.

Tapping a marker at any time gives you the options to set as destination, set VMG heading to the marker or remove. When set as destination, navigation data is shown on the right of the display.

Speed

GPS speed is shown top left of the display. Tapping the speed display will bring up GPS data for speed, course, latitude, longitude and GPS accuracy. Units can be changed from the options menu (i - options).

The speed display will show green or red if current speed is increasing or dropping respectively.

Velocity Made Good (VMG)

Velocity made good can be set against a heading or from a marker. Tap VMG display to switch on then drag the red outline arrow to the desired heading.

To set the VMG heading from a marker tap on the required marker and select Set VMG. The VMG heading will then be set to the current heading to that marker.

Heading and Course

Mag heading is from the built in magnetometers, course is from the GPS sensors. Course will be the direction you are heading, whereas mag heading will be direction your device is pointing. Rotating your device through a figure of 8 may correct the magnetic heading.

Countdown and Timer

Bottom right of the display are the Countdown and Timer.

Countdown may be set to either a specific start time or a duration countdown. In start mode tapping countdown will start a 5 minute timer.

Tap Timer to reset. Timer is reset on the 5 minute start countdown reaching zero.

Log Reset

Press the reset button 🚫 to clear the current log data. If data logging is enabled a blue folder will be shown in this button. Logs will be saved before resetting.

Navigation Markers

Sailing Master provides a screen for managing navigation markers. Navigation markers set on the main screen are named according to the time they were set. To rename a marker to something more meaningful double tap on the list.

Tapping a marker on the map display will select the marker in the list and conversely tapping a marker on the list will centre the map on that marker.

Swipe a marker on the list to delete.

Markers may be loaded, saved, emailed or exported to other apps you may have on your device. Marker files are GPS eXchange format (.gpx). Sailing Master allows for the import of .gpx files from other apps or via iTunes.

Data Logging

Sailing Master will automatically record TrakPal Pro compatible logs files when logging is switched on. Logs are automatically given a name derived from the log start time. To rename a log double tap that log, swipe to delete.

Logs may be exported to other compatible apps or emailed.

Boat Performance
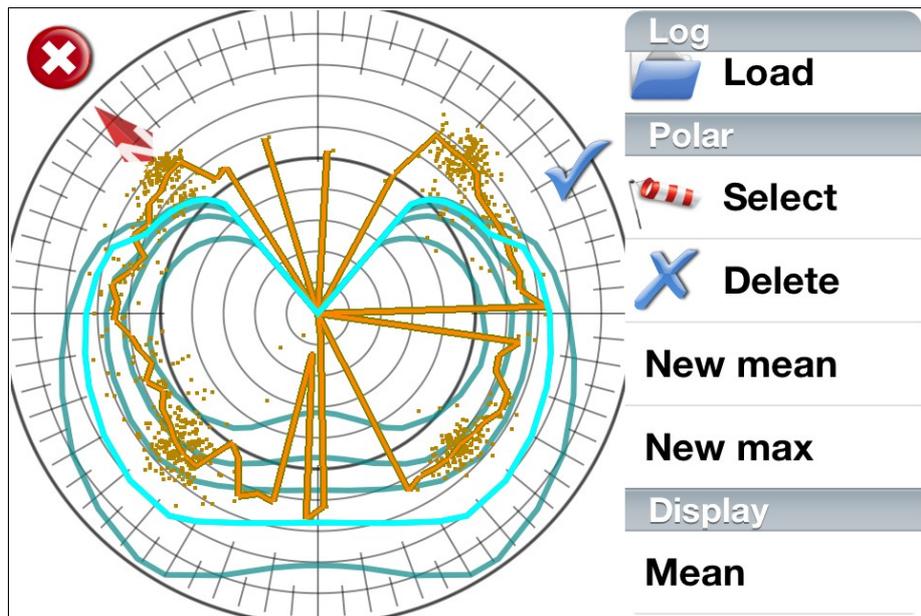
Sailing Master allows you to compare your current performance against polar diagrams stored as .xml files. These can only be imported via iTunes (refer to iTunes to find out how to do this.) Boat performance can be derived empirically by simple trials by sailing at various angles towards the wind and logging the data. Recorded logs can be loaded and analysed to generate polar diagrams specific to you boat.

To create a polar diagram from scratch using recorded data logs, first enter a name for your boat, load the required log file. Rotate the log file round by dragging the 'N' arrow to offset for wind direction. You can then get an idea of performance by selecting to show either the Max or Mean lines. Once you are happy a polar line can be created to either the max or mean line. The created line used data mirrored across the centre line. The polar can then be saved for future use or edited by selecting it using the wind icon and dragging the points to the desired position. Press the tick icon to accept any edits.

Once you have created or loaded boat performance data you quit the edit window by pressing the cross icon top left of screen. You will be prompted with 3 options. Save to use the current data on the main screen, discard to cancel loaded or edited data and cancel to remain on the edit screen

Options

Map Type

Selects the map type used in the main screen background display.

Speed Units

Speed units used. Select from miles per hour (mph), kilometres per hour (kph), metres per second (mps) and knots.

Distance Units

Distance units used. Select from feet, kilometres, metres and nautical miles. These units are used for values upto 1000 then units derived from speed are used, for example, if distance units are metres and speed is mph distances upto 1000 metres are shown as metres, above 1000m distance units are shown as miles.

Speed Averaging

Used to determine the response time for lift/header indication on the speed display. The larger the number the slower the display adjusts to changes in speed.

Tail Averaging

Used to determine the response time for tail line lift/header indication. The larger the number the slower the tail line responds to changes in direction.

GPS Share

GPS Share allows you to transmit live GPS data between devices via a LAN or Bluetooth. To use an ad-hoc Bluetooth network you must enable Bluetooth from your device's settings. One device, for example an iPhone, is designated the GPS host then other devices can be connected to it. This enables you to show position data on devices that do not include a GPS, like the iPod Touch. Map data cannot be shared this way.

GPS Share is compatible with TrakPal Pro and TrakPal Lite allowing the option for different styles of repeater.

Suggestions and Feedback

We want to hear from you! If you have any issues or comments please feel free to contact us via the suggestions and feedback form included in the app. If this fails to work for whatever reason you can always use the contact form at www.dsetechnology.co.uk.

Supported File Formats

GPS eXchange Format (.gpx)

Sailing Master supports GPS eXchange Format files for import and export of marker data. If imported data includes a track this will also be loaded and displayed.

See http://www.topografix.com/gpx.asp for more information.

TrakPal Data Log (.dat)

Sailing Master log files are stored as binary data files compatible with TrakPal Pro. Visit www.dsetechnology.co.uk for more information on this product.

Boat Data (.xml)

An example boat data .xml (example.xml) file is included in Sailing Master. This may be copied off your device via iTunes and edited on your PC using a text editor. Specific polar data for your boat may be available off the internet.

Boat data xml format is as follows:

Element: sailingmaster

Description: Root element.

```
<sailingmaster>

    <boat>boatType</boat>[1..*]

</sailingmaster>
```

Type: boatType

Description: Details of boat and boat performance.

```
<...

 name="xsd:string" [1]

 tackangle="xsd:decimal" [1]

 units="unitsType" [1]>

    <performance>performanceType</performance>[1..*]

</...>
```

Type: performanceType

Description: Data on boat performance for given windspeed. Each angle requires a corresponding boat speed. Angles are in range 0 to 180 degrees and are reflected about the 0 degrees axis. Windspeed is in unitType.

```
<...

 windspeed="xsd:decimal" [1]>

    <angles>anglesType</angles> [1]

    <boatspeed>boatspeedType</boatspeed> [1]
```

```
</...>
```

Type: anglesType

Description: Angles in range 0 to 180 degrees. Each angle requires a corresponding boatspeed.

```
<...>
    xsd:decimal [0..*]
</...>
```

Type: boatspeedType

Description: boatspeed in unitsType. The number of boatspeed decimals must be equal to the number of angles.

```
<...>
    xsd:decimal [0..*]
</...>
```

Type: unitsType

Description: Units used for file speed data. Valid values are mph (miles per hour), m/s (metres per second), knots (nautical miles per hour) or kph (kilometres per hour).

Base xsd type: string

Value: {"mph"|"m/s"|"knots"|"kph"}