SEA*iq* Manual (5.4)

This documents the use and operation of the SEA*iq* marine navigation software. It is organized around the Tabs at the bottom of the SEA*iq* apps:

- *Navigate*: Display marine charts and navigation objects.
- *Status*: Status bar showing important information.
- *AIS*: View current AIS targets.
- *Routes*: View and edit routes and waypoints.
- *Settings*: Adjust settings to control operation of the app.
- *Quick*: User-customized menu of commonly used settings.
- *Files*: Manage marine charts and other data files.

Navigate Tab

The Navigate Tab is used to display the current sets of charts along with any additional objects, such as waypoints, routes, AIS targets, and your vessel's position.

SEA*iq* works like most iPad apps using the standard gestures for panning, zooming, and rotating the display.

When you first open SEA*iq* you will see the base chart of the world. Any charts you have downloaded will show up as light magenta outlines on the display. You can see the chart by zooming into the display.

SEA*iq* uses "chart quilting" algorithms to automatically select which charts to display depending on what charts are covered by the area of the display, the scales of the charts, and how far zoomed in you are. Additionally, most vector charts provide so-called SCAMIN information that tells SEA*iq* at what scale different features should show up. This helps reduce clutter and is part of what gives vector charts their "smooth scaling."

The chart display aims to follow the relevant International Hydrographic Organization (IHO) standards. Symbols and other display characteristics come from the S-52 standard. Symbols are specifically generated for your displays characteristics.

A number of aspects of the chart display can be changed according to your preferences. These include: units for depth soundings, colors to assign different water depths, and color modes to protect your night vision. See the Settings section for more information.

Details for this Location

If you want to know what any symbol represents you can double tap on it and select "Details for this Location". You will be presented with a list of symbols near where you touched and what feature is represents. Most features have more information and you can read it by pressing the detail button on the row.

We encourage new users to try this feature out. Many mariners are not aware how much information is stored in vector charts, in part because most chart plotters either strip this information out or don't make it accessible. SEA*iq* attempts to make it easy for you to access all information.

Scale Bar

On the left side of the display is a scale bar indicating the current display scale. In some cases the entire scale bar may not be visible.

If the scale bar is black and grey, then it represents *10nm* in length. It is divided into 5 segments of equal length.

If the scale bar is orange and grey, it represents *1nm* in length. It is divided into 10 segments, each one *cable* (*0.1nm*) in length.

True North Compass

The top left corner of the Navigation tab is an orange compass rose indicating direction of True North on the display. If you rotate the display, this symbol will rotate as well.

If you want to rotate back to True North-up, you can touch this symbol and the display will rotate back to True North being up.

Follow Vessel and Course-Up Mode

If you have a GPS fix, the display will show your vessel in its current location. If course information is also available, it will show that as well using an arrow. If you want the display to follow your vessel's location, you can touch the grey arrow in the top right of the display. It will turn magenta and center your vessel on the display.

You can enter Course-Up Mode from Follow Vessel Mode by touching the arrow again. The magenta arrow will change to pointing upwards and the display rotated so the vessel's current course is upwards.

Status Bars

SEA*iq* has two status bars that are used to present sensor data and other information to the user. The top status bar appears on the top of the navigation display, while the side status bar appears on the side of the navigation display. They are similar in some ways though the side status bar includes many advanced features not available in the top status bar. The bars can be controlled through the *Status Bar* section of the Settings tab.

Buttons on the top and hand side are used to control which status bar (if any) should be displayed. Note that on smart phones the side status bar is displayed in full-screen in portrait mode, due to lack of screen space.

Routes & Waypoints

Routes and waypoints can be edited both here and graphicly on the <u>Navigate</u> tab. The following settings are available for routes and waypoints.

Settings

- *Route/Waypoint Display* : Choose whether you wish to view all routes, no routes, or only the active route/waypoint. *If no route or waypoint is active, then no routes or waypoints are shown.* This setting is intended for users with many routes/waypoints, or otherwise to reduce clutter.
- *Lock Waypoints from Graphical Editing* : When enabled, waypoints can not be moved graphicly. You can edit their position numerically and change other related settings. Also, new waypoints may be created. This setting can be used to prevent inadvertently moving your waypoints.
- *Use Small Symbols & Thin Lines* (**Only SEA*iq* Pilot**) : When enabled, the routes and waypoints are drawn using smaller symbols and a thinner line, rather than the standard IHO S-52 styles. This can be useful if you find the standard presentation obscures too many chart details.
- *Show Line to Next Waypoint* : When enabled, a line is shown from Own-Ship to the active waypoint in the route.
- *Show Info for Active Route* (**Only SEA*iq* Pilot**) : When enabled, the length and course of each leg in your route is displayed. If not enabled, the same information can be displayed by selecting the route.
- *Auto Active Route* (**Only SEA*iq* Pilot**) : When enabled, a prompt is given asking you to activate a route when Own-Ship is near it. Own-Ship must be moving at least *2kn*, within *1NM* of the route, and within *30°* of the route's course. You can be prompted at most once every *5 minutes*.
- *Show Wheel-Over Lines* (**Only SEA*iq* Pilot**) : When enabled, wheel-over lines are shown on routes. They are placed *1* ship's length prior to the waypoint. In the case of waypoints with *Turn Radius*, the distance is measured prior to the beginning of the turn. For a wheel-over line to be shown, the segment it is on must be at least *4* ship's lengths and the turn must be at least *15°*.
- *Show Route Turn Predictor* (**Only SEA*iq* Pilot**) : When enabled and Own-Ship is approaching a waypoint with turn radius, an alternate course predictor is shown in magenta displaying Own-Ship motion if it immediately began turning with the specified radius. The next waypoint must be within *2NM* of current position and Own-ship must have SOG at least *1kn*. The predicted turn is shown *2NM* beyond the end of the turn.
- *Show Upcoming Waypoints* (**Only SEA*iq* Pilot**) : When enabled, the next 3 waypoints are listed in the status bar along with their DTG and ETA. Waypoints marked as "minor" are excluded.
- *Follow Monitor* (**Only SEA*iq* Pilot**) : When enabled, AIS targets ahead/astern of Own-Ship are monitored in the side status bar. At most *3* vessels are shown. The closest *1* astern and up to *2-3* (depending on whether a ship astern is included) ahead. To be listed, a vessel must satisfy these requirements:

  - A length at least (*Settings / Meeting Points / Small Vessel Length*).
  - SOG at least *0.5kn*.
  - Not be filtered by *Settings / Vessels / Hide Fishing Vessels* or *Settings / Vessels / Hide Recreational Vessels*.
  - Within a given distance (*Settings / Meeting Points / Distance Threshold*) of the current active route.
  - Moving in the same direction on route and within *25°* of the route course.
  - Ahead or astern of Own-Ship by no more than *2NM*.

  Vessels are shown top-down in order farthest ahead to farthest astern. Each ship's name is shown along with its current SOG, relative SOG with Own-ship, and range. If Own-Ship is closing at least at

given speed (*Settings / Route Settings / Speed Limit Delta*) then the speed is highlighted in red. The status information is updated every *5 seconds*.

Waypoint Advance

- *Waypoint Advance Notification* : When enabled, an alert is generated when advancing waypoints in the active route.

Arrival Notification

- *Arrival Alarm* (**Only SEA*iq* Pilot**) : When enabled, an alarm is generated when Own-Ship is within Arrival Distance (a separate setting) of the current waypoint. In the case of waypoints with a Turning Radius (**Only SEA*iq* Pilot**), the distance is to the beginning of the turn, not the waypoint itself. The alarm dismisses itself after *5 seconds*.
- *Arrival Distance* (**Only SEA*iq* Pilot**) : Distance from Own-Ship to current waypoint at which the arrival alarm fire.
- *Arrival Buzzer* (**Only SEA*iq* Pilot**) : When enabled, a buzzer alarm will always be used for the waypoint arrival alarm. If not enabled, a spoken alarm (if spoken alarms are enabled) will be used.

Cross-Track Distance (XTD)

- *XTD Alarm* : When enabled, an alarm is generated when the XTD setting (below) is exceeded. The alarm fires at most every *2 minutes*.
- *Default XTD* : Maximum distance Own-Ship may be from route before the XTD alarm fires. May be overridden by route-specific or segment-specific XTD.
- *Show XTD Lines on Active Route* (**Only SEA*iq* Pilot**) : When enabled, red and green lines are shown to port/starboard of the active or selected route.
- *Fill XTD Area on Active Route* (**Only SEA*iq* Pilot**) : When enabled, semi-transparent light-green fill is used to fill in the route.
- *Show XTD for Bow & Stern* (**Only SEA*iq* Pilot**) : When enabled, the XTD is shown for the bow & stern of Own-Ship.
- *Show XTD in Top Status Bar* (**Only SEA*iq* Pilot**) : When enabled, route XTD information is shown in the top status bar. The XTD is longer be shown in the side status bar, If Bow and Stern XTD has been enabled, the normal XTD is shown in the top, along with Bow and Stern on the right.
- *Show XTD for Next Segments* (**Only SEA*iq* Pilot**) : When enabled, the XTD for the next 2 route segments are shown in the status bar. The XTD is calculated by extending the segment out *20NM* prior the first waypoint.

Speed Limit

- *Speed Limit Alarm* (**Only SEA*iq* Pilot**) : When enabled, an alarm is generated when Own-Ship exceeds a speed limit on the current active route segment. The alarm fires at most every *2 minutes*.
- *Speed Limit Delta* (**Only SEA*iq* Pilot**) : Own-Ship must exceed the speed limit by at least this amount for the speed limit alarm to fire. This can be used to allow for variability in sensor readings.

Planned Speed

- *Planned Speed Enable* (**Only SEA*iq* Pilot**) : When enabled, the planned speed will be enabled for planning purposes. A slider will be shown that allows you to adjust the planned speed. The planned

speed affects calculations such as meeting points and ETA's for future route segments. Unless a route segment has a lower speed limit, Own-Ship will be assumed to use the planned speed.

- *Planned Speed* (**Only SEA*iq* Pilot**) : When *Enable Planned Speed* is turned on, this speed will be used for planning purposes for Own-Ship on the current route.

Manage

- *Routes* : Select to view and edit all routes.
- *Waypoints* : Select to view and edit all waypoints.
- *Import* : Import routes and waypoints. See <u>Import/Export Help</u> for more information.
- *Erase All Routes & Waypoints* : Erases all routes and waypoints, after confirming this is what you want to do. It cannot be undone.

Waypoints

You can create a waypoint graphicly by double tapping in the Navigate tab and selecting *Add Waypoint*. You will then be presented with a small dialog where you can edit the waypoints name, description, latitude, longitude, and enable *Go-To* mode. In SEA*iq* Pilot, you can also set a goal time to arrive a waypoint and see the last time the waypoint was passed.

When creating a waypoint, you can add the new waypoint to an existing route, or create a new route with the waypoint. When graphicly adding a waypoint to a route, the best location in the route is selected for the waypoint. This is based on the relative locations of the other waypoints already in the route.

You can move a waypoint after it is created. Single tap to select the waypoint you want to edit. Then touch and drag the waypoint to the new location; the latitude and longitude are displayed next to the waypoint as it is dragged.

You can double tap on a selected waypoint to bring a dialog to edit the waypoint, including change its name, change its description, add it to a route, manually edit its location, delete it, etc.

You can also view all waypoints by selecting the Route tab, pressing the settings button and choose *Waypoints*.

Routes

Create and edit routes either graphicly or through menus. A route is created graphicly by:

1. Single tap to select the first waypoint.
2. Double tap at location of second waypoint and select *Add New Route*.
3. While route remains selected, double tap and select *Add New Waypoint to Route*.
4. Repeat the previous step to add further waypoints.

When a route is selected:

- You will see it highlighted
- Bearings and distanced between waypoints in the route are displayed
- You can move any waypoint in the route by touching it and dragging it
- When any new waypoint is created it will be added to the selected route, at the location SEA*iq* selects

as the best location (you can edit the order of waypoints manually by going to the Route tab and selecting the route.

The route tab lists all the routes you have created. You can also edit a route by selecting it there and editing the waypoints in the route using the *Edit* button and moving or removing waypoints in the route.

If you want to follow a route, select the route and press the *Follow* button. You can press the *Advance* button to advance to the next waypoint in the route. The waypoints in the current route are colored red and the current active waypoint has a second inner circle.

Waypoint Edit

The following settings are available for waypoints.

- *Name*: The name of the waypoint.
- *Description*: A description of the purpose, location, etc of the waypoint.
- *Latitude & Longitude*: The location of the waypoint. The format used depends on the <u>Units Settings</u>.
- *Turn Radius*: When not zero, any route using this waypoint will use the given turning radius for this waypoint. Additionally, tick marks are made at the center of the implied circle and the beginning and end of the turn. If wheel-over lines are enabled, they are shown shown *1* ship-length prior to beginning of the turn. After setting an initial turn radius here, you can adjust the radius graphicly by selecting the route and dragging/dropping the center point of the turn. **(Only SEA*iq* Pilot)**
- *Goto*: Indicates whether this waypoint is the current goal waypoint.
- *Monitor*: Indicates whether this waypoint should be monitored in the vertical status bar. When monitored, the DTG and ETA are displayed. **(Only SEA*iq* Pilot)**
- *Goal Time*: Indicates if there is a goal time to arrive at this waypoint. This is used for calculating *Speed Required* information in the status bar. **(Only SEA*iq* Pilot)**
- *Time Passed*: This shows the last time Own-Ship has passed the waypoint. **(Only SEA*iq* Pilot)**
- *Logbook*: When this is enabled, a logbook entry will be created automatically when passing the waypoint. **(Only SEA*iq* Pilot)**
- *Minor*: When enabled, the waypoint is presented less prominently than other waypoints. This can be used to reduce clutter in routes with many closely packed waypoints. **(Only SEA*iq* Pilot)**
- *In Routes*: A summary of the routes containing this waypoint.
- *Add to a Route*: You can use this to select a route to add this waypoint to.
- *Split for Routes*: This is only shown when a waypoint is shared by more than one route. You can split the waypoint into duplicates that in each of the routes. This is helpful if, for instance, you with to create a similar route where some of the waypoints differ somewhat, such as when reversing a route.

Route Segment Edit

Each portion of a route between two waypoints is called a route segment. Similar to how waypoints may have attributes, each segment in a route may have optional attributes as well. **(Only SEA*iq* Pilot)**

- *XTD Port* and *XTD Starboard*: These can be used to set a cross track distance (XTD) for a particular segment. Both port and starboard XTD can be set (or not set) independently of the other. When either of these are not set, that XTD will default to the *Route XTD* or the app-global *XTD Alarm Range*.
- *Speed Limit*: Indicates the speed limit for a route segment. When calculating ETA, location of meeting points, and required speeds for goal times, it is assumed that Own-Ship and AIS targets observe speed limits.
- *Passing Restricted*: This flag is used to indicate segments of routes where passing of vessels is restricted. An alert is generated when a meeting point with another vessel is detected for a route segment where passing is restricted. Such alerts are only generated for vessels that exceed the *Small Vessel Length*.

Settings

The Settings tab is used to control operation of SEA*iq*. Almost all settings can be accessed from this table and/or its sub-tables.

- *Store* : Select this to purchase an in-app Upgrade to enable premium features, or to restore the upgrade if already purchased.
- *Display* : Settings related to display.
- *Presets* **(Only SEA*iq* Pilot)** : Setup and manage preset buttons.
- *Status Bar* : Control behavior and appearance of the status bar.
- *Use Virtual Keyboard* : Turn this on to display virtual keyboard when you touch a text area. This is only used on Microsoft Windows touch devices, for which Microsoft does not automatically open the virtual keyboard.
- *Units* : Select units to use for depth, distance, speed, degrees, etc.

Pilot

- *Pilot Setup* **(Only SEA*iq* Pilot)** : Settings to adjust when boarding vessel.
- *Logbook* **(Only SEA*iq* Pilot)** : Maintain logbook.
- *STM* **(Only SEA*iq* Pilot)** : Enable use of STM function.

  This function is overridden (temporarily disabled) when playing back NMEA recordings (Settings / Record & Playback), Virtual Boarding (Settings / Virtual Board), or using the simulator (Settings / Simulator).

Vessels

- *Vessel Display* : Settings for display of Own-Ship and AIS targets.
- *Own-Ship* : Settings related to the display and size of Own-Ship.
- *Follow Mode* : Follow Mode causes display to automatically track Own-Ship.
- *Routes & Waypoints* : Settings related to use and display of Routes and Waypoints.
- *Meeting Points* **(Only SEA*iq* Pilot)** : Control display and alarms for AIS Target Meeting Points.
- *Mariners Tools* : Manage Mariners Tools. These include the following: Mariners Notes, Variable Range Markers, Electronic Bearing Lines, Clearing Lines, Fenders, Views, and Groups.
- *Tracks* : Tracks record the movement of Own-Ship.
- *Docking* **(Only SEA*iq* Pilot)** : Control display of Docking Aids to assist in docking large vessels.

Chart Settings

- *Vector Charts* : Manage appearance of vector charts.
- *Raster Charts* : Control display of Raster Charts, BSB and KAP files. This includes charts based on satellite imagery.
- *IHO S-63 Charts* : Set up and manage charts in the S-63 format.
- *Bathymetry & Overlays* **(Only SEA*iq* Pilot)** : Control settings related to depth information and overlays.
- *Chart Sources* : Menu of chart sources with automatic download and update support.

NMEA & AIS

- *AIS Sharing* : Connect to SEA*iq*'s global AIS feed over the Internet.
- *NMEA & AIS* : Set up and manage an external NMEA/AIS feed over WiFi.
- *AIS Network Feed* (**Only SEA*iq* Pilot**) : Allows you to connect to a specific AIS network feed over the Internet.
- *Record & Playback* (**Only SEA*iq* Pilot**) : Control settings related to recording NMEA/AIS feeds and playing them back.
- *Navicom Dynamics PPUs* (**Only SEA*iq* Pilot**) : Settings related to configuring *Navicom Dynamics* PPUs.
- *AD Navigation PPUs* (**Only SEA*iq* Pilot**) : Settings for configuring *AD Navigation* PPUs.
- *Trelleborg PPUs* (**Only SEA*iq* Pilot**) : Settings for configuring *Trelleborg* PPUs.
- *AIS Virtual Board* (**Only SEA*iq* Pilot**) : Allows an AIS target to be treated as Own-Ship.
- *AIS Vessel Select* (**Only SEA*iq* Pilot**) : These settings are used for devices that are not directly connected to Own-Ship. These allow an AIS target to be selected to use as Own-Ship for purposes of determining MMSI, name, size, and AIS antenna position.

Other

- *Tides & Currents* : Manage settings related to tides and currents.
- *Waterway Guide* : Enable this in order to display Waterway Guide markers. A database of markers will be downloaded. The markers are displayed when at display scale *1:500,000* or greater. You can turn off the setting to temporarily disable display of the markers.

  The following types of markers are shown:

  - ♦ Marinas
  - ♦ Services
  - ♦ Navigation Aids
  - ♦ Anchorages
  - ♦ Bridges
  - ♦ Locks

  Single-tap on a marker to select it. Double-tap to open more details. You can choose *View in Browser* to view the web page on Waterway Guide. The markers can be used when offline. The final step of viewing the Waterway Guide web page requires an internet connection.

  This database may be updated as often as once per day.
- *Weather* : Download and display weather data and GRIB files.
- *Sailing* (**All but SEA*iq* Pilot**) : Aids for use when sailing.
- *Alarms & Sounds* : Control over alarm settings.
- *Anchor Monitor* : Set up and manage an anchor monitor.
- *Feeds* (**Only SEA*iq* Pilot**) : Manage automatically downloaded internet data.
- *Simulator* (**Only SEA*iq* Pilot**) : Simulate operation of vessel anywhere in the world, with optional simulated drift.

About

- *Application* : Shows the specific software version you are running.
- *Version* : The current version of SEA*iq*

- *Online Documentation* : Use this to accesss detailed documentation online. You can find the same documentation by pressing the Help (?) button in various menu bars.
- *Contact Us* : Press the button to send us an email. Some basic information is filled out, such as the app and version you are running and the current location being displayed. Diagnostic information is also attached. We do our best to respond promptly to comments ann questions sent to us.
- *SEAiq Web Site* : A link to the http://seaiq.com web site.
- *Review in Store* : Rate this app in the AppStore.
- *Enterprise Subscription* **(Only SEA*iq* Pilot)** : Manage SEA*iq* account.
- *Administration* : This sub-menu is used for customization and backup/restore.
- *Advanced Settings* : Additional settings that are not needed by the typical user.
- *Licenses* : Licenses for software used in SEA*iq*.

Display

The settings here control color, brightness, and other aspects of your display.

Settings

- *Colors* : Choose either Day (normal), Dusk, or Night color modes, depending on the current lighting conditions. You may want to use *Calibrate Brightness* in conjunction with this to fine tune brightness level. A related setting is *Use Green for Dark Palette* under *Status Bar* settings, which controls the color for the status bar in Dusk/Night modes. When Night mode is selected, red badges on the bottom tab bar showing the number of AIS targets are disabled, as is the system status bar along the top.
- *Brightness Adjustment* : When enabled, a panel is displayed on the Navigation tab with a slider and the current display brightness level. Move the slider to set the desired brightness. This affects the device's overall brightness level.

  - ♦ IOS: if the brightness level changes spontaneously, check if IOS Settings / Wallpapers & Brightness / Auto-Brightness is enabled. You may want to turn it off.
  - ♦ Windows: this may not function on certain Windows devices. If the brightness level changes spontaneously, check if Settings / Display / Change Brightness Automatically is turned on. You may want to turn it off.
- *Use Dark Palette for Day* : When enabled, a dark background is used during daytime.
- *Use Green for Dark Palette* : When enabled, green colors are used for the status bar and other non-chart objects when dark palette is in use. This is normally when Dusk or Night color mode is selected, or when a dark palette is selected for daytime.
- *Alternate Color Palette* : Enabling this changes to an alternate color palette. This is still based on S-52 colors, but has somewhat different conversion to display. *Only change this if needed. Please contact us if you find this setting necessary to change.*
- *Full Screen* : Press this to toggle full-screen mode.

Side-Bar

- *Narrow Side-Bar* : When enabled, the side bar is made somewhat narrower. This is to allow more display area to be used for charts.
- *Side-Bar Side* : Select side for side bar. The default is right side.

Keep Awake

- *Keep Awake* : When enabled, your device will not go to sleep when SEA*iq* is running and SEA*iq* will keep running in the background. If you want your device to go to sleep, you can disable the Keep Awake mode or stop the SEA*iq* app.

  On IOS: This feature requires that Background App Refresh be enabled for this app. A warning will be shown if this has not been enabled. In some cases you may find that SEA*iq* will only run for *3-5 minutes* when in the background; see *Settings / Display / Keep Awake Always* to prevent this (at some additional battery usage).
- *Keep Awake Warning* : This is only for IOS. When enabled along with *Keep Awake* and appropriate system settings are not enabled, then a warning will be periodically generated. This is to alert you that software may not actually keep awake. In particular, IOS requires that *Background App Refresh* system setting be turned on for this app. Some users may wish to turn this warning off if they want to

allow this app to sleep when in the background.
- *Keep Awake Always* : This is only for IOS. When enabled along with *Keep Awake*, should never go to sleep, even when running in the background for long periods. Without this, in some cases the app may sleep after *3-5 minutes* in the background.

You will need to allow access to Location Services and warning will be shown if this is not available.

When enabling this (and *Keep Awake* is also on), hardware GPS is turned on and always left on, even when not needed for positioning. This normally affects battery life.

Multi-Window

- *Split Screen* : Toggle split-screen mode. The chart display is split vertically.
- *Status Pane* : Enable this to add a small chart display at the bottom of the status bar. Certain information normally included in chart windows may not be shown in this display, because of its small size.
- *Show Overlay in Status Pane* (**Only SEA*iq* Pilot**) : Enable this to show bENC overlays in in the status bar's small chart display. To avoid clutter, bENC's are not displayed when this is not enabled.
- *New Window* (**Only SEA*iq* Pilot**) : Press this to add an extra chart window.

This is only available on Windows and MacOS.

Resolution

- *Display DPI* : Dots-per-inch (DPI) is a measure of your display's resolution. It is normally only necessary to set this on Microsoft Windows, which often does not report accurate DPI.
- *Reset DPI* : Pressing this button reverts to default system DPI.

Advanced

- *Disable Rotation Gestures* : Enable this to prevent rotating chart display through touch gestures.
- *Disable Graphics Framebuffer* : SEA*iq* makes use of a graphics framebuffer to optimize display performance. On some platforms, this use of a framebuffer can cause problems and you may wish to disable it. Examples include some lower-end Android tablets. Normally, disabling the framebuffer slows graphics performance. *Only change this if needed. Please contact us if you find this setting necessary to change.*
- *Disable Graphics Anti-aliasing* : SEA*iq* uses antialiasing to make lines appear smooth. On some platforms, this can cause problems such as slow display performance, and you may wish to disable it. Examples include some lower-end Android tablets and Windows laptops. *Only change this if needed. Please contact us if you find this setting necessary to change.*
- *Disable Graphics Point-Sprites* : SEA*iq* uses so-called *point sprites* to improve performance for graphics. On some platforms, this can cause problems such as incorrect display, and you may wish to disable it. Examples include some Android tablets, such as Lenova Yoga tablets. *Only change this if needed. Please contact us if you find this setting necessary to change.*

Status Bar

SEA*iq* uses status bars for presenting sensor data and other information on the <u>Navigate</u> display.

There are two different status bars a vertical bar on the left or right side of the display and a horizontal bar on the top of the display.

- *Vertical Status Bar*: This is shown along the side of the display. Available data is logically grouped together and font-size is used to emphasize more important information so it is easier to read. Data is also shown in a context-sensitive fashion. For instance, when AIS is enabled the most recently selected AIS target will be displayed. You can drag the status bar to scroll it up and down.
- *Horizontal Status Bar*: This is shown along the top of the display. It displays COG, SOG, HDG, and ROT. It can also optionally display XTD.

Settings

These settings control which status bars are displayed. Note that you can also select these using the buttons on the top and left/right of the Navigate tab.

- *Edit Status Bar* : When enabled, the panels in the vertical status bar can be graphicly reordered. After turning this on, go to the status bar, re-order the panels, then come back and turn this off. Note that only currently visible panels may be reordered.

  This automatically disables itself whenever SEA*iq* restarts.
- *Apple Watch* (**Only SEA*iq* Pilot**) : When enabled, data will be made available on Bluetooth for access by other devices. This is intended to be used for display on an *Apple Watch* by running the companion app, SEA*iq* Watch. SEA*iq* Watch provides a number of status displays, including ROT/HDG/COG/SOG, SOG-only, Vessel Motion, and Docking.

  The normal operation is to run SEA*iq* Pilot (or SEA*iq* Pilot VPP) on your Apple iPad and SEA*iq* Watch on your iPhone. SEA*iq* Watch is required because your iPhone is paired with your watch and SEA*iq* Pilot is normally run on iPads.

  Steps to use your Apple Watch with SEA*iq* Pilot:

  - ◆ Pair your Watch with your iPhone.
  - ◆ Turn on Bluetooth on your iPhone.
  - ◆ Turn on Bluetooth on your iPad.
  - ◆ Run SEA*iq* Pilot or SEA*iq* Pilot VPP on your iPad.
  - ◆ Turn on *Settings / Status Bar / Apple Watch* (this setting). You will be asked if you will allow use of Bluetooth; select Yes.
  - ◆ Run SEA*iq* Watch on your Apple Watch.
  - ◆ If information is not appearing, check the status displayed in SEA*iq* Watch on your iPhone.

  We suggest making the following settings on your iPhone Watch App by choosing your watch and going to the General settings:

  - ◆ Background App Refresh / SEAiq Watch
  - ◆ Wake Screen / Wake Screen On Wrist Raise
  - ◆ Wake Screen / On Tap / Wake for 70 Seconds

♦ Wake Screen / On Screen Wake Show Last App / Always

For further information, please see detailed help information in the SEA*iq* Watch app.

Own-Ship Panels

- *Show Lat & Lon* : This controls whether the GPS position should be displayed in the status bar on the side of the display. It can be useful to not have latitude and longitude displayed in order to reduce clutter. This setting also controls the GPS validation data.
- *Show GPS Diagnostics* : This controls display of GPS diagnostic information, such as the fix type (GPS, DGPS, etc), HDOP, HPE, number of satellites, etc.

  If altitude is provided, then it is displayed as follows:

  ♦ *ALT*: Altitude above mean-sea-level (MSL).
  ♦ *GSP*: Geoidal separation (difference between MSL and WGS84 geode.
  ♦ *HAE*: Height above ellipsoid (WGS84).
- *Show GPS Satellites* : This controls display of GPS satellite information (when available). This information is normally only available when using an NMEA feed with *xxGSV* sentences. Information shown includes: satellite system, satellite number, elevation, azimuth, and signal to noise ratio.
- *Precise Heading* (**Only SEA*iq* Pilot**) : When enabled, heading is displayed with an extra degree of precision (*359.9°*). This should only be enabled if you know your heading sensor has the required level of precision.

  When this and *Settings / Alarms / Heading Tick* are enabled, then the ticks are made on *1/2°*.
- *Precise Course* (**Only SEA*iq* Pilot**) : When enabled, course is shown with an extra degree of precision (*359.9°*). This should only be enabled if you know your course sensor has the required level of precision.
- *Precise Rate of Turn* (**Only SEA*iq* Pilot**) : When enabled, ROT is shown with an extra degree of precision (*10.1°/m*). This should only be enabled if you know your ROT sensor has the required level of precision.
- *Vessel Motion* (**Only SEA*iq* Pilot**) : This controls whether to display a section in the status bar displaying vessel motion. It gives the bow and stern speeds to port/starboard and the vessel's speed ahead/astern. The estimated speed accounts for the position of the antenna, course and speed (COG/SOG), heading (HDG), and rotation of the vessel (ROT). All of these sensors must be available. The calculations assume vessel rotates about its center.

  If all of the settings are not present but at least COG, SOG, and HDG are present then a simplified analysis is shown that only has 1 lateral speed in place of the bow and stern that corresponds to the lateral speed of the GPS antenna. In this case, *GPS* is shown for the lateral motion and *NA* for where the stern motion would have been shown.

  Normally, a single digit of precision is displayed. If *Precise Heading*, *Precise Course*, and *Precise Rate of Turn* are enabled, then 2 digits of precision are shown.
- *Show Radius-of-Turn* (**Only SEA*iq* Pilot**) : When enabled, a panel is shown with the radius of turn based on current SOG and ROT of Own-Ship. A maximum turn radius of *5nm* is displayed.
- *Beam/Length/Draft* (**Only SEA*iq* Pilot**) : This controls whether to display a panel with length, width, and draft for Own-Ship.
- *Show Bow-Waypoint Range* (**Only SEA*iq* Pilot**) : When enabled, a panel is shown with the distance along the route from bow to the next waypoint. For waypoint with a turning radius, the waypoint is considered to be the mid-point of the curve. In cases where the bow has passed the next waypoint but

the waypoint has not advanced, a negative distance is shown.

- *Wind Direction* : Choose format for presenting wind direction (true and apparent): relative to Own-Ship heading (+/- 180) or with absolute bearing (0-360).

  Wind direction is normally reported as a direction relative to Own-Ship's heading. To convert to absolute bearing, heading data must be available. If not, then the wind is reported as relative values.
- *Velocity Made Good* : When enabled, Velocity Made Good (VMG) will be shown in the status bar. This is normally used by sailors. For VMG to be calculated, you must be following a route and have SOG and COG.
- *Squat (Estimated)* **(Only SEA*iq* Pilot)** : Squat is a hydrodynamic effect that occurs as large vessels move through shallow water. Depending on various factors, the vessel may sit deeper in the water than its draft while stationary. This extra depth is called *Squat*.

  Squat is complex. The values calculated for squat are only rough estimates for the actual squat. Many other factors not accounted for in the estimate may affect squat, such as movement of other vessels in a confined channel. This feature should only be used by Pilots familiar with squat, the formulas described below, and their correct use. *If you are unsure, leave this feature disabled.*

  When this setting is enabled, a panel is shown with the estimated squat for both open water and confined channels. A confined channel is generally considered to be a channel less than 3 times as wide as the vessel's beam. The estimated squat value is only displayed in the status bar and is not otherwise used in SEA*iq*.

  Estimating squat require that the *Block Coefficient* be set for Own-Ship (see *Own-Ship* settings).

  - ♦ Open Water: Squat $= 1/100 \quad C_b \quad V^2$
  - ♦ Confined Channels: Squat $= 1/50 \quad C_b \quad V^2$

  In the formulas above, *Squat* is calculated in meters and *V* is the vessel speed in knots.
- *Pivot Point (Estimated)* **(Only SEA*iq* Pilot)** : The pivot point is the point around which the vessel appears to be turning for an observer standing on board the vessel. The location of the pivot point is not constant and depends on external factors acting on the vessel such as use of tugs, bow thruster, vessel's rudder, vessel motion ahead or astern, wind forces, current, and water resistance. Having an estimate of the pivot point can provide insight into a vessel's motion.

  When enabled, this feature presents a panel with the current position of the pivot point. Also, the pivot point will be displayed graphicly with when display scale is at least *1:20,000*.

  The estimated pivot point is calculated with the following formula: *lateral_speed / ROT*. *lateral_speed* is the component of the vessel's motion amidships transverse to the centerline (motion to port/starboard) in *metre/second*. ROT is the vessel's rotation in *radians/second*. The result is the position along the centerline forward/aft of amidships, in *metres*. *This calculation assumes the center of gravity is amidships (50% of length of the vessel). Note that this assumption is not likely to hold if there is a large difference between the fore and aft draft.*

  The pivot point is presented relation to various positions on the vessel, depending on its location:

  - ♦ *AMIDSHIPS*: at most *0.5m* forward or aft of amidships.
  - ♦ *BOW*: at most *0.5m* forward or aft of the bow.
  - ♦ *STERN*: at most *0.5m* forward or aft of the stern.

♦ *FWD OF BOW*: The pivot point is forward of the bow, outside the vessel. Distance is measured from the bow.
♦ *AFT OF BOW*: Between amidships and the bow. Distance is measured aft from the bow.
♦ *FWD OF STERN*: Between the stern and amidships. Distance is measured forward from the stern.
♦ *AFT OF STERN*: The pivot point is aft of the stern, outside of the vessel. Distance is measured from the stern.

The estimated pivot point should only be used by pilots familiar with the concept of pivot point, the calculation above, the assumption regarding the center of gravity being amidships, and correct uses of pivot point. *If you are unsure, leave this feature disabled.*

Options

- *Show Time* : When enabled, the current local time is displayed at the top of the vertical status bar.
- *Show Solar Events* : When enabled, information about solar events (sunrise, sunset, dawn, and dusk) is displayed in the status bar. When viewing routes, the time period (day, night, twilight) is shown with the ETA for each waypoint (except for daytime events at least *2 hours* before sunset). When following a route, the estimated position for upcoming events in the next *12 hours* are shown graphically as long as they are at least *1nm* from Own-Ship.

  In all cases, *Nautical Dusk and Dawn* are used to determine dusk, dawn, and extent of twilight.
- *Show Chart Information* : When enabled, information about the currently displayed charts is shown in the vertical status bar.
- *Lock Onto AIS Targets* **(Only SEA*iq* Pilot)** : The default behavior is to show a panel for an AIS target only if selected. When this switch is enabled, the most recently selected AIS target is shown in the status bar. The "locked" target and any meeting points associated with it are marked by grey selection identifier (rather than the normal black one).
- *Lock Onto Waypoints* **(Only SEA*iq* Pilot)** : The default behavior is to show a panel for a waypoint only if selected. When this switch is enabled, the most recently selected waypoint remain displayed in the status bar.
- *Return Order of Status Bar to Default* : Pressing this button reverts SEA*iq* to using the default status bar ordering.

Vertical Status Bar

The vertical status bar includes a wide rangeof context-sensitive display features. All the information is displayed in *Panels* which include related groups of information. As you will see some panels are only shown if enabled by the user, either explicitly though a setting or implicitly through some other action. For instance, when an AIS target is selected, a panel will be shown containing information about that target.

- *Source*: Gives the source of the data being presented. Either Internal, NMEA, AIS, Virtual (Virtual Boarding), or Simulator. If dusk or night mode is enabled, then battery level and time may be displayed as well.
- *Local Time*: Shows local time in large font.
- *Position*: Displays current latitude and longitude, along with related information such as the horizontal position error (HPE). Can be disabled in the Status Bar settings.
- *Virtual Board*: Displayed when Virtual Boarding feature is enabled. Indicates which vessel has been "boarded" and whether information is available for that target.
- *GPS Diagnostics*: Show detailed diagnostics about the GPS position.
- *GPS Satellites*: Show list of satellites and information about their position and relative signal strength.

- *Alarms*: A list of recent alarms and the time since the alarm was generated.
- *Verify*: Displays iPad latitude and longitude information. This panel is only enabled if using an NMEA/AIS WiFi feed and the NMEA/AIS *Verify GPS Position* setting has been enabled.
- *Water Level*: Displays information on the most recently selected water level station. This will include the name of the station, the reported time for the water level, the actual water level, and the reference for the water level (ie, MLLW for Mean Low Low Water).
- *Anchor*: Displayed only if the anchor monitor is enabled. Shows the distance and bearing to the anchor, as well as the *Scope* and *Alarm* settings.
- *HDG (Unadjusted)*: Shows the Heading (HDG) as received by the sensor. This is shown when an adjustment is made to HDG (Settings / Own-Ship / Heading Adjustment).
- *Heading/ROT*: Shows the Heading (HDG) and Rate-of-Turn (ROT), in a large font.
- *Course/Speed*: Shows the Course (COG) and Speed (SOG), in a large font.

- *Estimated Squat*: Only displayed when the *Show Estimated Squat* is enabled in the Status Bar settings. Shows estimates of the squat for confined and open water areas.
- *Estimated Pivot Point*: Shows the pivot point's position relative to Own-Ship. Only displayed if the *Show Pivot Point* setting is enabled on the *Status Bar* settings.
- *Swept Path*: Only displayed if the *Show Swept Path* setting is enabled on the *Vessel* settings. Shows the Drift angle, Beam width, and Effective Beam width.
- *HDG and STW*: Shows the Heading (HDG) and boat Speed Thru Water (STW) in large font.
- *Maneuver*: When available, shows rudder angle, engine RPM, and thruster percent.

- *Docking*: Only displayed if Docking mode is enabled. Shows distance to dock and speed for bow and stern.
- *Motion*: Only displayed if *Show Vessel Motion* is enabled in the Status Bar settings. Shows the speed and direction of movement (port/starboard) of the bow and stern, and the speed ahead/astern. If ROT is not available, only the lateral speed will be shown, in place of the bow/stern speeds.
- *Tacking*: See Sailing Settings Help information
- *Depth*: Displays depth information, if available from NMEA.
- *Apparent Wind*: Shows apparent wind speed and direction, if sensor data is available.
- *True Wind*: Shows true wind speed and direction, if sensor data is available.
- *Current*: Shows derived current direction and speed, if required sensor data is available.
- *EBL/VRM*: Shows information about currently selected EBL/VRM.
- *Waypoint*: Shows information about active waypoint and related information such as ETA.
- *AIS*: Shows information about current AIS target.
- *Speed Required*: Gives information about the speed required for the current goal. Requires a *Goal Time* to be set on one of the future waypoints in the current route.
- *Own-Ship Dimensions*: Shows Own-Ship name, length, and beam. Enabled by *Settings / Status Bar / Show Own-Ship Dimensions*.
- *Bow Waypoint*: Shows distance and time from Own-Ship bow to next waypoint.
- *Turn Radius*: Shows turning radius implied by current SOG and ROT.
- *Stopping*: Shows estimated time and distance to stopping point.
- *Chart Info*: Shows information about currently displayed charts.

If there is sensor data that is not displayed in one of the panels listed above, additional panels will be added with simple formatting for those sensors.

Units

These settings control units to represent various various types of values.

Settings

- *Depth Unit* : Metres, Feet, or Fathoms. *Depth values for raster charts are determined by the chart and the units are shown in the bottom right corner of the display (or can be found by querying the Chart Details).*
- *Horizontal Unit* : Metres, Feet, or Yards. Similar to Depth, but used for horizontal measurements.
- *Use Metres for Own-Ship* (**Only SEA*iq* Pilot**) : This is used to override other settings. This can be helpful for users who wish to use *feet* except when configuring Own-Ship, which is often specified in metres. When disabled, the Own-Ship units are the same as for other horizontal distances.
- *Distance Unit* : Nautical miles, Miles, or Kilometres. Horizontal units are used for distances less than a threshold (default *0.25NM*).
- *Speed Unit* : Knots, Miles-per-hour, or Kilometres-per-hour.
- *Bearing Type* : True North or Magnetic North.
- *Lat & Lon Format* : DDMMSSFF or DDMMFFFF (FF is fractions of seconds/minutes).
- *Date Format for Month/Day* : Select MM/DD or DD/MM.
- *Temperature Unit* : Select Celsius or Fahrenheit.

Small Distances

- *Use Horizontal Units for Small Distances* (**Only SEA*iq* Pilot**) : When enabled, horizontal units are used for distance up to the threshold below. By default this is enabled and a threshold of *0.25NM* is used.
- *Threshold for Small Distances* (**Only SEA*iq* Pilot**) : Distances below this value are displayed using *Horizontal Lengths* rather than *Distance* units. Values can range from *0NM* to *1NM*. The default is *0.25NM*.

Other

- *Use Horizontal Units for XTD* (**Only SEA*iq* Pilot**) : When enabled, horizontal units (metre/ft) are used for XTD. The default is for XTD to be a distance (NM/mi/km).
- *Use m/s for Wind Speed* : When enabled, *m/s* is used for displaying wind speeds instead of normal speed units.
- *Antenna Offsets from Beam* (**Only SEA*iq* Pilot**) : When enabled, antenna offsets are shown/measured from ship's beam. When disabled, antenna offsets are measured outside from centerline.

Internationalization

- *Locale* : Locale specifies the language to use.

  Important: English is the default and official language for this software. In many cases, translations are contributed by other users. If concerned about the accuracy, we recommend using the default English localization.

  Please contact us if you are interested in contributing translations for your language(s). New translations are checked for weekly and automatically downloaded and installed.

Pilot Setup

When boarding a vessel, Pilots have common tasks they carry out. The goal of this menu is to include those tasks in one place. The settings here are duplicates of those available in *Own-Ship Settings* and *Bathymetry Settings*.

Enable *Open When Own-Ship Change* if you want these settings to be presented whenever AIS reports a different Own-Ship.

Settings

- *Open When Own-Ship Changes* (**Only SEA*iq* Pilot**) : When enabled, the Pilot settings are presented whenever Own-Ship MMSI changes.

- *NMEA/AIS Summary* : Overview of overall NMEA network setup.

Own-Ship Size

- *Name* (**Only SEA*iq* Pilot**) : Name used for save/load.
- *Source* : Select AIS or manual size.
- *Length* : Manual setting for the Own-Ship length.
- *Beam* : Manual setting for the Own-Ship beam.

Antenna Position

- *: Image depicting position of antenna relative to Own-Ship.*

AIS Antenna Position

- *Source* : Select AIS or manual offset position.
- *Distance to Bow* : Manual setting for GPS antenna position. Indicates how far behind the bow the antenna is.
- *Distance from Centerline* : Manual setting for GPS antenna position. Indicates how far to Port or Starboard the antenna is relative to the centerline.

Ext GPS Antenna Position

- *Distance to Bow* : Manual setting for External GPS antenna position. Indicates how far behind the bow the antenna is. This is used for PPU's with integrated GPS.
- *Distance from Centerline* : Manual setting for External GPS antenna position. Indicates how far to Port or Starboard the antenna is relative to the centerline. This is used for PPU's with integrated GPS.
- *Use as Conning Position* (**Only SEA*iq* Pilot**) : When enabled, the external GPS Antenna distance to bow is used as the position on Own-Ship for predicted course vectors, beam lines, EBL/VRM/CL, XTD, etc. Note that (for these purposes) the conning position is always placed on the centerline of the vessel.

Own-Ship Draft

- *Source* (**Only SEA*iq* Pilot**) : Select AIS or manual draft setting.
- *Draft* (**Only SEA*iq* Pilot**) : Manual setting for draft of the vessel. This can be used to help configure Safety Depth and Safety Contour.

Own-Ship Air Draft

- *Air Draft* (**Only SEA*iq* Pilot**) : Manual setting for air draft of the vessel. This value is used unmodified to determine the *Safety Air Draft*, which is used to calculate clearance and other air-gap related presentation.

Own-Ship Heading Adjustment

- *Heading Offset* (**Only SEA*iq* Pilot**) : Depending on how the product is oriented on the vessel, it may be necessary to set a heading correction.

  Follow these instructions to adjust it:

    - Press the *Heading Offset* setting.
    - Select one of the common orientations or enter a value.
    - Confirm resulting heading is correct.
    - Adjust with +/- buttons if necessary.
    - Return to the Navigate tab to further verify correctness of the setting.

Own-Ship Block Coefficient

- *Block Coefficient* (**Only SEA*iq* Pilot**) : This value is used to estimate Squat. It must be in the range 0 to 1. You must manually enter a value for the current vessel. See Settings / Status / Squat for more information.

Chart Settings

- *Calculated Depth & Contour Settings* : This is the calculated Shallow Contour, Safety Depth, Safety Contour, and Deep Contour, based on the draft, UKC, and deltas.
- *Current Depth & Contour Settings* : This shows the current value(s) for the Shallow Contour, Safety Depth, Safety Contour, and Deep Contour These are the same as given on the *Vector Charts* settings. When values are equal, they are elided.
- *Update Chart Settings* : Press this button to change current Shallow Contour, Safety Depth, Safety Contour, and Deep Contours values to the calculated ones.

Tidal Adjustment

- *Tidal Adjustment* : Provide adjustment to depths based on current tides. See below for more information.
- *Fill Tidal Adjustment* : This allows you to fill based on currently selected tide adjustment. Requires that you have selected an object with tidal data.

Logbook

These settings are used to manage your logbook. Your logbook contains any number of entries you can add at any time by double-tapping on the *Navigate* tab and choosing *Add Logbook Entry*.

Important: When generating printable logbook reports, data about routes is used based on the current status of your routes. If you edit your routes before printing them, then the report may not reflect the same information at the time the entry was added.

When Logbook is enabled, each waypoint has a Logbook setting. Whenever Own-Ship advances past one of these waypoints, a Logbook entry is automatically added.

Settings

- *Enable* : Enable use of the Logbook. When enabled, the *Add Logbook Entry* option is presented on the *Navigate* tab when you double tap on the chart.
- *Log When Own-Ship Changes* : Automatically create logbook entries when Own-Ship changes.
- *Entries* : View entries in the current logbook.

Manage

- *Export* : Create logbook report to export.
- *Archive* : Exports logbook as an HTML file and start new logbook.

Logbook Entry

A Logbook entry contains the following information:

- Time the logbook entry was created
- Location, course, and speed of Own-Ship
- Active route
- Optional text comment giving any information you would like.
- Safety Related: an indication if this entry is related to safety of any kind.
- Optional image. The image can be selected from any of these sources:
    - ♦ (Camera Image): take a new picture using your device's camera.
    - ♦ (Camera Roll): select an image from the existing images in your device's *camera roll*.
    - ♦ (Screenshot): add the current chart display in the *Navigate* tab as an image.
  After an image has been added you can touch the image to view it. You can press the red circle to remove the image.

After you submit a logbook entry, it is stored on your device and will be included in any reports you generate.

Sea Traffic Management (STM)

This is used to provide support for Sea Traffic Management (STM). It allows communication and exchange of mariner information including routes. *This feature is currently experimental and should only be used for evaluation purposes.*

The typical STM user will turn on *Cross-Route Meeting Points* in *Settings / Meeting Points*, so that meeting points will be estimated for STM-enabled vessels that are on different routes from Own-Ship.

This function is temporarily disabled when playing back NMEA recordings (Settings / Record & Playback), Virtual Boarding (Settings / Virtual Board), or using the simulator (Settings / Simulator). This is because these other functions involve situations where Own-Ship does not correspond to a real vessel.

For ships that are distributing an STM voyage plan, information is displayed on the ships label. The first item that applies from the list below is selected.

- No Schedule: If voyage plan does not include a complete schedule.
- Not Started or Expired: If the current times is before the beginning or after the end of the schedule.
- Not on Route: if ship is not close to route. The *Meeting Point / Distance Threshold* is used for this.
- *time* Early or Late: If time deviation with scheduled location is exceeded.
- *distance* Behind or Ahead: If position deviation is exceeded.
- *speed* Too Fast or Slow: If speed deviation is exceeded.
- Planned SOG: *speed*: Planned speed at current location, according to schedule.

Status Bar

When STM is enabled and active, a panel will be shown in the side status bar. It begins with a brief status section:

- CONN (Yes/No): Is system connected to the STM system (ie, VIS private instance)? This is checked every *30s* by issuing *getMessage* requests (or similar). When this is *No*, the normal reason is that the device does not have an internet connection, but there could be other causes such as server failure.
- SCH (Yes/No): Has a schedule been uploaded to STM? For this to be Yes, an RTZ voyage plan with an active (*Used for Monitoring*) status, and a schedule must have been successfully uploaded to STM.
- SOG (Actual/Plan): Indicates if the system currently has a planned speed enabled or if the actual speed is in use.

This is followed by a log of recent events, up to 10 lines. Each line includes a brief description and may end with an indication of the number of minutes since the event occurred and a number of duplicates. For instance "(x3, 4M)" means that the event occurred 3 times and the most recent occurrence was about 4 minutes ago.

Settings

- *Web Site* : A link to documentation on use of STM. Other information on STM can be found at https://www.stmvalidation.eu web site for further information.
- *Account* (**Only SEA*iq* Pilot**) : Setup STM account credentials.

Voyage Plans

- *Share Voyage Plan* (**Only SEA*iq* Pilot**) : Controls whether voyage plan (RTZ route and schedule) for Own-Ship is shared. When disabled, an attempt will be made to mark current voyage plan inactive.
- *Show All Voyage Plans* (**Only SEA*iq* Pilot**) : Controls whether routes are displayed. When enabled, all routes are shown. When disabled, only route for a selected target is shown. It is also possible to select an STM target and show/hide its voyage plan.
- *Own-Ship Plan* (**Only SEA*iq* Pilot**) : Show the current voyage plan for Own-Ship.
- *Other Plans* (**Only SEA*iq* Pilot**) : List voyage plans that have been received.

Text Messages

- *TXT Messages* (**Only SEA*iq* Pilot**) : This shows all received text messages.
- *Show Areas from TXT Messages* (**Only SEA*iq* Pilot**) : Control whether areas (polygons and circles) from TXT messages are displayed. You can select the Position in a TXT message to jump to the location of the area objects.
- *Erase All TXT Messages* (**Only SEA*iq* Pilot**) : Erase All TXT messages that have been received. This cannot be undone.

Manage

- *Status & Diagnostics* (**Only SEA*iq* Pilot**) : This shows diagnostics describing the current status of your STM configuration.
- *Update Now* (**Only SEA*iq* Pilot**) : Press this to trigger an immediate update by contacting the server. Updates are normally automatically made every *1-2min*.
- *Erase Data* (**Only SEA*iq* Pilot**) : Press this to erase all STM data. Note that old data will not be re-downloaded. Only new or changed plans will be downloaded. This should normally not be used.
- *Server Status* : Use this link to view status of Navelink. If you encounter a problem, you can also report it using this link https://management.navelink.org/#/report.

Configuration

- *Max Time Deviation* (**Only SEA*iq* Pilot**) : Sets the maximum deviation from scheduled time. Vessels exceeding this are flagged. When Own-Ship exceeds this deviation a new voyage plan will be proposed. The default is *15min*.
- *Max Speed Deviation* (**Only SEA*iq* Pilot**) : Sets the maximum deviation from scheduled speed. The default is *1kn*. Vessels exceeding this are flagged. When Own-Ship exceeds this deviation a new voyage plan will be generated and distributed.

  In order to determine if threshold is exceeded, the planned speed for the current position on the route is compared with the current vessel speed.
- *Max Position Deviation* (**Only SEA*iq* Pilot**) : Sets the maximum deviation from scheduled position. The default is *1NM*. Vessels exceeding this are flagged.

  In order to determine if threshold is exceeded, the planned position along the route for the current time is compared with the current position along the route.

  Note that this distance corresponds to the relative position along the route. The maximum distance from the route is limited by *Settings / Meeting Points / Threshold*.

Debug

- *Create Debug AIS Targets* **(Only SEA*iq* Pilot)** : Control whether debug targets are shown for STM routes. This is used to facilitate testing.
- *Allow Virtual Boarding (Debug)* **(Only SEA*iq* Pilot)** : Control whether virtual boarding is supported for STM. If virtual boarded and this is not enabled, then STM will be disabled. This option has no effect in production system.
- *Simulator MMSI* **(Only SEA*iq* Pilot)** : An MMSI to use for simulator. This is only for use in debugging and not production systems.
- *SMAPPUDEV001* **(Only SEA*iq* Pilot)** : Configure for test setup for SMAPPUDEV001.
- *SMAPPUDEV002* **(Only SEA*iq* Pilot)** : Configure for test setup for SMAPPUDEV002.
- *SMAPPUDEV003* **(Only SEA*iq* Pilot)** : Configure for test setup for SMAPPUDEV003.

Sea Traffic Management (STM) Account

This is used to provide support for Sea Traffic Management (STM). It allows communication and exchange of mariner information including routes.

The settings here are for enabling your account information. Normally, this information is provided by your organization.

Note that separate account login information is provided for use in production and Devel/Stage environments. This is used automatically when the system is chanced to Deve/Stage setting.

Settings

- *Enable STM* (**Only SEA*iq* Pilot**) : Enable use of STM function. Each user should only activate once instance of STM.
- *User ID* (**Only SEA*iq* Pilot**) : STM user name for use in all environments..
- *Application ID* (**Only SEA*iq* Pilot**) : STM application ID for use in production environments..
- *API Key* (**Only SEA*iq* Pilot**) : STM API key for use in production environments..

Devel/Stage

- *System* (**Only SEA*iq* Pilot**) : Select STM version to run. The default is to use Production system. Only use Staging in specific scenarios, such as in a bridge simulator.
- *Devel/Stage Application ID* (**Only SEA*iq* Pilot**) : STM application ID for Developer/Staging environments.
- *Devel/Stage API Key* (**Only SEA*iq* Pilot**) : STM API key for Developer/Staging environments.

URL's

- *Production URL* (**Only SEA*iq* Pilot**) : STM URL for Production systems. If no value is provided, *https://vis.stm.sjofartsverket.se* is used.
- *Stage URL* (**Only SEA*iq* Pilot**) : STM URL for Staging systems. If no value is provided, *https://vis-test.stm.sjofartsverket.se* is used.
- *Devel URL* (**Only SEA*iq* Pilot**) : STM URL for Development systems. If no value is provided, *https://vis-test.stm.sjofartsverket.se* is used.

Vessel Display (Own-Ship & AIS)

These control how your vessel and other vessels (AIS targets) are depicted on the Navigation display. Most settings apply equally to your vessel and to AIS targets. Note that your vessel will only be depicted if its location is known from the devices integrated GPS or from GPS information supplied from external NMEA.

Settings

- *Course Vectors* : The speed vector controls how long of a course vector to display for all vessels. You can disable course vectors entirely or select *1*, *3*, *6*, *12*, or *60 minutes*. A final option is to use a vector corresponding to *1 day*. The vector is displayed to show where the vessel moves in the given amount time if it maintains current course, speed, and rate-of-turn. For *1 day* course length, a straight vector is used.
- *Variable Course Predictor* (**Only SEA*iq* Pilot**) : When enabled, a panel at the bottom of the navigation display can be used to adjust the length of the predicted courses, measured in minutes.
- *Use Straight Course Vectors* (**Only SEA*iq* Pilot**) : When enabled, course vectors for all vessels are straight (no turning). Note that this setting only affects course vectors and not other similar item such as swept path, docking paths, etc. This is intended to be used in situations where incorporating rate-of-turn into course vectors may be confusing, such as when there is strong drift and slow vessel speed.
- *Show Course from Bow & Stern* (**Only SEA*iq* Pilot**) : When enabled, course vectors for all vessels are shown from both bow and stern, instead of center or conning position. The dual vectors are only shown if sufficient information is available, such as as *ROT* and *HDG*, for the two vectors to be useful. This does not affect *Trial ROT*, which is only shown from center/conning.
- *One Minute Ticks* : Enable to display tick symbols on course vectors at positions corresponding to every minute.
- *Six Minute Ticks* : Enable to display tick symbols on course vectors at positions corresponding to every *6 minutes*.
- *Show Vessel Heading* (**Only SEA*iq* Pilot**) : When enabled, heading lines are displayed.
- *Show Beam Lines* (**Only SEA*iq* Pilot**) : When enabled, beam lines are drawn amidships perpendicular to the vessel's heading.
- *Use Fill for Vessels* : When enabled, vessel (Own-Ship and AIS) use fill in addition to outlines. This can make them easier to identify. Use with care because this may obscure features beneath the vessels.

True-scale

- *Use True-scale When Small* (**Only SEA*iq* Pilot**) : Vessels are normally only displayed in in True-scale when the scaled vessel on the display is at least *6mm* long. When enabled, the threshold is reduced to *1.5mm*, which means True-scale is used at much smaller sizes.
- *Use Course When Heading Unavailable* : Normally, True-scale is only be used if the vessel's heading is known. When this setting is enabled, the vessel's course is used if the heading is not known. **In many cases a vessel's course may not match its heading; this results in inaccurate display.**

Own-Ship

- *Use Recreational Outline for Own-Ship* (**All but SEA*iq* Pilot**) : When enabled, a different outline is used for Own-Ship.
- *Show Predicted Position* (**Only SEA*iq* Pilot**) : Show predicted position of Own-Ship.

- *Buffer Around Own-Ship* (**Only SEA*iq* Pilot**) : When enabled, a buffer is drawn around Own-Ship.
- *True-scale History* (**Only SEA*iq* Pilot**) : When enabled, a recent history of Own-Ship True-scale positions is displayed.
- *Show Side-Heading Lines* (**Only SEA*iq* Pilot**) : When enabled, additional heading lines are displayed on either side of Own-Ship's heading, extending *2NM* from the center of the vessel. You can choose relative bearings of *3°*, *5°*, or *10°*.
- *Thick Heading Lines* (**Only SEA*iq* Pilot**) : When enabled (and heading lines are enabled), Own-Ship heading is shown with increased thickness.
- *Show Swept Path* (**Only SEA*iq* Pilot**) : When enabled, shows swept path of Own-Ship. The swept path is indicated by lines that begin from the current outermost extremities of the vessel to port and starboard from the current course of the vessel. This is useful primarily when the vessel is drifting due to current or wind and the effective beam may be significantly higher than the beam. The length of the swept path is same as the predicted course length, but at most *6 minutes*.

  When Swept Path is enabled, the vertical status bar includes a panel with Own-Ship's beam width, drift (crab) angle, and effective beam width at the current time.

  Finally, when n Electronic Bearing Line (EBL) is selected which is between Own-Ship beam and length, the EBL panel in the status bar is shown the maximum drift possible for Own-Ship's effective beam to be at-most the length of the EBL. *This is the maximum angle and assumes the vessels COG approaching the EBL is a right angle.*

  Please keep the following caveats in mind:

  - ♦ The calculations used assume the vessel is rectangular.
  - ♦ The swept path uses the beam and length information supplied by AIS or the values in the Own-Ship settings. Typically, correspond to the LOA and the molded beam. If you instead want to have the LWL and the beam (at waterline), you can adjust the Own-Ship settings.
  - ♦ The effective beam width is for the current moment in time. It may change if the vessel's HDG or COG changes.
  - ♦ The predicted swept path assumes ROT has a similar effect on course as heading. However, as a vessel turns in the presence of current or wind, the course and heading are normally not affected the same.
- *Trial Rate-of-Turn* (**Only SEA*iq* Pilot**) : When enabled, a slider appears below the main navigation panel. You can use this to set a Trial ROT of up to *30°/m* in either direction. An orange-colored course vector is then displayed (in addition to the normal black one) that shows the vessel's predicted course at that rate-of-turn. The Trial ROT is displayed above the slider along with the turning radius at the current SOG (if the vessel speed is moving at least *1kn*).

  Similarly, if following a route, the goal waypoint is shown with an additional turning radius corresponding to the current SOG.

  You can zero the Trial ROT by pressing the *O* button above the slider. You can disable it by pressing the *X* button.

  A switch labeled *CHL* (Curved Heading Line) is available to control the behavior of the course vector when approaching waypoints/turns. When CHL is enabled and Own-Ship is within *3NM* of a turn, the predicted course straightens when it reaches the bearing for the next course leg. *CHL* is automatically disabled when *Use Drift in Course Predictions* is enabled.

A switch labeled *RAD* (Radius) is provided to allow selecting by radius-of-turn instead of ROT. The display will be updated to show the rate of turn required at the current Own-Ship speed to maintain the selected radius of turn.

- *Trial Speed* (**Only SEA*iq* Pilot**) : When enabled, a slider appears below the main navigation panel. You can use this to set a Trial SOG of up to *25kn*. The slider value is used for all calculations related to Own-Ship speed. Because of the pervasive effect of this setting, the panel for the slider has a magenta background.

  Example uses include testing for effects of changing on ETA, CPA, or meeting points with other vessels.

  As opposed to Trial ROT, this does not create a new predicted course vector. However, the Trial SOG is used in both the normal predicted course vector and in the Trial ROT course vector (if enabled).

  This mode is disabled by pressing the *X* button in the panel.
- *True-scale Status* : Shows current status of True-scale for Own-Ship. This is used for trouble-shooting why Own-Ship may not be displayed in true-scale. See *Settings / Vessel Display / True-scale Vessel Display* for more information. Similar information is available in *True-scale Outline* diagnostic for an AIS target.
- *Show Own-Ship Wind & Drift* : When enabled (and appropriate sensor data is available from NMEA), vectors are shown for apparent wind, true wind, and drift. The vectors originate from the center of Own-Ship. The apparent wind has one set of "tails"; the true wind has two sets of tails. The drift has an arrow head pointing away from Own-Ship. The vectors only indicate direction, not speed. In some cases, not all vectors may be shown.

  Important: normally the sensor data required for this feature is not available from the AIS Pilot Plug that pilots use, so turning this on has no effect.
- *Use Ship Shape for Unscaled Own-Ship* (**Only SEA*iq* Pilot**) : When enabled, a ship image is used for unscaled Own-Ship. This is used instead of the concentric circles specified by IHO S-52 standard.
- *Use Green Fill for Own-Ship* (**Only SEA*iq* Pilot**) : When enabled, the True-scale image for Own-Ship has green fill instead of the normal IHO S-52 black color. See *Settings / Raster* for other options that can affect Own-Ship coloring. Enabling this feature will override *Use Fill for Vessels* and provide fill for Own-Ship, even if other targets do not use fill.

AIS Targets

- *Use Red for Targets* : When enabled, AIS targets are drawn using a red color that some people find contrasts better than the standard blue color. This only affects AIS targets from your main feed; targets from AIS Network Feed and AIS Sharing are colored orange.
- *Target Labels* : Settings for control of labels on AIS targets.
- *Flag AIS Targets by Type* : When enabled, each AIS target with is shown with a flag that has color according to its type:

    - ◆ Blue: Passenger vessels
    - ◆ Green: Cargo vessels
    - ◆ Red: Tankers
    - ◆ Yellow: High-speed vessels
    - ◆ Medium Blue: Tugs, Pilot boats, etc
    - ◆ Magenta: Yachts, Other
    - ◆ Brown: Fishing boats

- *Show AIS CPA* : When you select an AIS target, an information box appears with information about the Closest Point of Approach (CPA) with Own-Ship. This information is also displayed on the vertical status bar. You can also enable *Show AIS CPA* in order to have the CPA positions displayed visually. The positions of the AIS target and Own-Ship when they are at the estimated CPA are marked with magenta circles. Dotted magenta lines show the path of vessels to the CPA and connect the positions. This can be helpful to understand the relative positions of the vessels when they are at the CPA.

  CPA gives distances based on center of Own-Ship and target. They vessels maintain course (COG & SOG), regardless of current ROT.
- *CPA Alarm* (**Only SEA*iq* Pilot**) : Alarm fires when new vessels with CPA at most *1nm* within *15 minutes*.

  Strictly speaking, an alarm is generated for any vessel which will approach within the range and time.

  Estimates are based on center of Own-Ship and target. They assume vessels maintain course (COG & SOG), regardless of current ROT.
- *Show AIS BCR* (**Only SEA*iq* Pilot**) : When you select an AIS target, an information box appears with information about the Bow Crossing Range (BCR) with Own-Ship. This information is also displayed on the vertical status bar. You can also enable *Show AIS BCR* in order to have the BCR positions displayed visually. The positions of the AIS target and Own-Ship at the estimated point are marked with orange circles. Dotted orange lines show the path of vessels to the BCR and connect the positions. This can be helpful to understand the relative positions of the vessels.

  BCR gives distances for centers of Own-Ship and target, not their bow or stern. The calculation assumes vessels maintain (COG & SOG), regardless of the current ROT.
- *Hide Course Vectors for Tugs* (**Only SEA*iq* Pilot**) : When enabled, course vectors for AIS targets marked as tugs or towing are not displayed. This can be helpful when tug boats are surrounding Own-Ship and their course vectors clutter the display.
- *Hide Physical AIS Aids-to-Navigation* : When enabled, physical AIS Aid-to-Navigation (ATON) targets are not displayed. This does not affect chart symbols, only symbols resulting from AIS.
- *Hide Virtual AIS Aids-to-Navigation* : When enabled, virtual AIS Aid-to-Navigation (ATON) are not displayed. This does not affect chart symbols, only symbols resulting from AIS.
- *Hide Recreational Vessels* (**Only SEA*iq* Pilot**) : When enabled, AIS targets identified as recreational vessels are not displayed. This capability relies on the vessel type information reported by AIS. Recreational vessels include the following types (again, as identified by AIS): Diving, Sailing, and Pleasure vessels.

  Recreational vessels at least *Settings / Meeting Points / Small Vessel Length* are displayed, regardless of this setting.
- *Hide Fishing Vessels* (**Only SEA*iq* Pilot**) : When enabled, AIS targets identified as fishing vessels are not displayed. This capability relies on the vessel type information reported by AIS.

  Fishing vessels at least *Settings / Meeting Points / Small Vessel Length* are displayed, regardless of this settings.
- *Hide Recommended Routes* : When enabled, recommended routes received over AIS are not displayed. This can be helpful to reduce clutter. Recommended routes are transmitted as AIS Binary Broadcast (code=8, DAC=1, FID=27, or similar).
- *Hide Gantry Cranes* (**Only SEA*iq* Pilot**) : When enabled, gantry cranes will not be shown. Currently, this only applies to special AIS binary broadcast in Hamburg Harbour.

- *Show AIS Target Routes* (**Only SEA*iq* Pilot**) : When enabled, routes reported for AIS targets are shown. When disabled, only the route for the selected target is displayed.

  These are transmitted as AIS Binary Broadcast (code=8, DAC=265, FID=1/2, or similar) and are primarily in use only in Northern Europe.

True-scale Vessel Display

When zoomed in sufficiently far, SEA*iq* will display vessels (both Own-Ship and AIS targets) scaled and positioned to their approximate shape. This can be useful in many situations, such as when navigating in small areas.

In order for True-scale display to be used for a given vessel, the following conditions must all be met.

- The current position of the vessel must be known.
- The vessel's heading (HDG) must be known. Alternatively, if the setting *Use course if heading is not available* is enabled, the vessel's course over ground (*COG*) will be used when *HDG* is not available. **IMPORTANT: course may not match the heading and this may result in an incorrect representation.**
- The size and relative position of the GPS antenna offset must be known.
- The display must be zoomed in enough for the displayed vessel to be at least *8mm* in size. This threshold is *2.0mm* when *Show True-scale when small* is enabled.

The size of Own-Ship may come from the local AIS feed (in "AIVDO" sentences) or may be set manually by the user. The settings in the AIS feed are given preference, unless *Settings / Own-Ship / Size / Source* is set to *Manual*, in which case your manual settings will be used.

For AIS targets, the size information is reported less frequently than the vessel's position so there may be a delay after a vessel is first displayed before the shape is available. SEA*iq* saves this information to prevent the delay when the same vessel is encountered again.

Frequently Asked Questions

- *Why is my vessel not being displayed in True-scale?* See the condition listed above that need to be met for True-scale display of a vessel. See the *Status* field under the *Own-Ship* settings for the current status of True-scale for your vessel. This will explain why or why not True-scale is being used.
- *Why is an AIS target not being displayed in True-scale?* See above and the "True-scale Outline" diagnostic field for the AIS target.
- *Why are some vessels displayed in True-scale and some not?* It may be the case that some vessels meet the conditions required for True-scale display and some do not. For instance, a large vessel may large enough to meet the 6mm size requirement at the current zoom, while a small vessel does not.
- *Why is a vessel being shown in the incorrect position?* SEA*iq* requires accurate information to display vessels correctly. It is unfortunately common for AIS information, especially the size and location of GPS antenna, to be incorrectly configured in the AIS transponder. You can see the information that is being reported by looking in the Diagnostics information for an AIS target. Another source of error can occur if the *Use course if heading is not available* is *ON*: if course is used due to lack of heading data a vessel may be being shown with an inaccurate orientation. If you still feel the display is incorrect, please let us know.

Vessel Truescale Predictor

Settings

- *Show Predicted Position* **(Only SEA*iq* Pilot)** : Show predicted position of Own-Ship. Predicted positions account for rate-of-turn, when available.
- *Number of Predicted Positions* **(Only SEA*iq* Pilot)** : Up to 4 predicted positions can be displayed, each representing a fixed interval according to the *Predicted Vessel Position Interval*. Predicted positions account for rate-of-turn, when available.
- *Predicted Vessel Position Interval* **(Only SEA*iq* Pilot)** : Interval between predicted vessel positions.
- *Use Fill for Predicted Position* **(Only SEA*iq* Pilot)** : When enabled, fill is used for predicted vessel position.

Vessel Truescale Buffer

These options control display of a buffer line around Own-Ship.

Settings

- *Buffer Enable* (**Only SEA*iq* Pilot**) : When enabled, a buffer is drawn around Own-Ship.
- *Buffer Range* (**Only SEA*iq* Pilot**) : When buffer is enabled, this is the range to use. The default is *10m*. If the buffer Monitor Safe Water are both enabled, then the buffer zone is included in the safe water area.

Vessel History

When enabled, these settings control display of recent history of Own-Ship True-scale positions.

This feature requires an Enterprise Subscription.

Settings

- *True-scale History* (**Only SEA*iq* Pilot**) : When enabled, a recent history of Own-Ship True-scale positions is displayed. You can select between different time intervals and overall duration for the positions.

  The positions are only shown if the Own-Ship True-scale is already enabled. You can view *True-Scale Status* in Own-Ship settings to see if all prerequisites are met.

  While in *NMEA Playback* mode, the vessel trail will be cleared when jumping forward and backward.
- *Interval* (**Only SEA*iq* Pilot**) : This is the minimum interval between each vessel history. In some cases, such as when using *Virtual Board* the actual interval may be larger because AIS updates may be longer.
- *Duration* (**Only SEA*iq* Pilot**) : Span of time for which histories should be shown. For the longest history (*60 minutes*), the interval between items must be *30 seconds*.
- *Use Fill* (**Only SEA*iq* Pilot**) : When enabled, light fill is sed for vessel history.

Own-Ship Acceleration

These settings control the derivation of acceleration and display of related data.

This feature requires an Enterprise Subscription.

Settings

- *Derive Acceleration* **(Only SEA*iq* Pilot)** : This controls whether to derive acceleration of Own-Ship.

  When decelerating, a panel in status bar shows time-to-stop (TTS) and distance-to-stop (DTS).
- *Dampening* **(Only SEA*iq* Pilot)** : This controls how much dampening to use when deriving acceleration of Own-Ship. The acceleration rate is estimated based on an average of the previous *30*, *60*, or *120 seconds*. Longer durations may be more accurate but less-responsive to changes, and vice-versa. The default is a *60 seconds*.
- *Show Speed Marks on Route* **(Only SEA*iq* Pilot)** : When enabled, following a route, SOG is at least *1kn* and decelerating at least *1kn/min*, markers are placed at the estimated stopping position.

  Speeds are based on predicted SOG. *Important: this differs from Show Extra Predictor With Acceleration.*
- *Show Extra Prediction With Acceleration* **(Only SEA*iq* Pilot)** : When enabled, a separate prediction line is shown that incorporates acceleration. The prediction is only shown if acceleration is at least *0.25kn/minute*. The ticks on the prediction line correspond to speeds of *1kn* (thin) and *5kn* (thick). The vector ends with an arrow if Own-Ship is predicted as still moving at the end.

  When *Use Drift in Course Predictions* is enabled the predictor will include drift. When drift is available, reported speeds are based on STW (Speed-Thru-Water) not SOG. The stopping point indicates STW of *0kn*. *Important: this differs from Show Speed Marks on Route.*

AIS Target Label Options

Settings

- *Show Labels for Targets* : Choose method for determining whether AIS labels are shown. When *Off*, labels are not shown unless the vessel is selected. When *On*, each AIS vessel is normally labeled with the vessel name.

  When set to *Auto* labels are shown according to an algorithm to detect when the display is cluttered. For instance, vessels with SOG less than *2kn* normally do not have labels shown.

  For *On* and *Auto*, labels for certain vessel types (pilot, tug, towing, dredging, law enforcement, military, and rescue) are normally shown.
- *Prioritize Labels for Important Vessels* (**Only SEA*iq* Pilot**) : When enabled, labels for *important* vessels are normally shown. Important vessels include tugs, towing, dredge, law enforcement, military, pilot, and rescue vessels.
- *Use Fill for Labels* : When enabled, labels are shown with solid background. This can make labels easier to read but can obscure other objects. Labels for selected objects always use solid background.
- *Hide Labels for Small Vessels* (**Only SEA*iq* Pilot**) : When enabled, labels are shown for small vessels (those less than the Meeting Point / Small Vessel Length). Exceptions are made for certain vessel types (pilot, tug, towing, dredging, law enforcement, military, and rescue), or if manually selected by the user.
- *Offset AIS Target Labels from Route (Experimental)* (**Only SEA*iq* Pilot**) : When enabled, labels for targets on the active route are moved off the route and connected with a line. The XTD is used to determine how far to move labels away from the route.

Fields

- *Show Pilot on Labels* (**Only SEA*iq* Pilot**) : When enabled, labels are visible, and a pilot's name is available, it is displayed on the label. Note that pilot names are only available on Hi-Res PPU targets (Settings / AIS Sharing / Hi-Res PPU Targets).
- *Show HDG on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its HDG.
- *Show COG on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its COG.
- *Show SOG on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its SOG.
- *Show Draft on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its draft.
- *Show Destination* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its destination displayed (when available). The data used for the destination is that transmitted by the target's AIS.
- *Show ETA on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its ETA displayed (when available). The data used for the ETA is that transmitted by the target's AIS.
- *Show CPA on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target within *10nm* of Own-Ship is shown with its Closest Point of Approach (CPA).

CPA gives distances based on center of Own-Ship and target. This assumes vessels maintain course (COG & SOG), regardless of current ROT.

- *Show BCR on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target within *10nm* of Own-Ship is shown with Bow Crossing Range (BCR).

  BCR gives distances for centers of Own-Ship and target, not their bow or stern. The calculation assumes vessels maintain (COG & SOG), regardless of the current ROT.

Own-Ship Settings

These settings define characteristics of Own-Ship. They are used for displaying Own-Ship in True-scale and other features that depend on the dimensions, etc, for Own-Ship.

Settings

Dimensions

- *Name* **(Only SEA*iq* Pilot)** : Name used for save/load.
- *Alarm When AIS Changes* **(Only SEA*iq* Pilot)** : When enabled, changes to Own-Ship information reported by AIS triggers warning dialogs.
- *True-scale Status* : Shows current status of True-scale for Own-Ship. This is used for trouble-shooting why Own-Ship may not be displayed in true-scale. See *Settings / Vessel Display / True-scale Vessel Display* for more information. Similar information is available in *True-scale Outline* diagnostic for an AIS target.

Size

- *Source* : Select AIS or manual size.
- *Length* : Manual setting for the Own-Ship length.
- *Beam* : Manual setting for the Own-Ship beam.

Antenna Position

- *: Image depicting position of antenna relative to Own-Ship.*

AIS Antenna Position

- *Source* : Select AIS or manual offset position.
- *Distance to Bow* : Manual setting for GPS antenna position. Indicates how far behind the bow the antenna is.
- *Distance from Centerline* : Manual setting for GPS antenna position. Indicates how far to Port or Starboard the antenna is relative to the centerline.

Ext GPS Antenna Position

- *Distance to Bow* : Manual setting for External GPS antenna position. Indicates how far behind the bow the antenna is. This is used for PPU's with integrated GPS.
- *Distance from Centerline* : Manual setting for External GPS antenna position. Indicates how far to Port or Starboard the antenna is relative to the centerline. This is used for PPU's with integrated GPS.
- *Use as Conning Position* **(Only SEA*iq* Pilot)** : When enabled, the external GPS Antenna distance to bow is used as the position on Own-Ship for predicted course vectors, beam lines, EBL/VRM/CL, XTD, etc. Note that (for these purposes) the conning position is always placed on the centerline of the vessel.

Draft

- *Source* (**Only SEA*iq* Pilot**) : Select AIS or manual draft setting.
- *Draft* (**Only SEA*iq* Pilot**) : Manual setting for draft of the vessel. This can be used to help configure Safety Depth and Safety Contour.

Air Draft

- *Air Draft* (**Only SEA*iq* Pilot**) : Manual setting for air draft of the vessel. This value is used unmodified to determine the *Safety Air Draft*, which is used to calculate clearance and other air-gap related presentation.

Heading Adjustment

- *Heading Offset* (**Only SEA*iq* Pilot**) : Depending on how the product is oriented on the vessel, it may be necessary to set a heading correction.

  Follow these instructions to adjust it:

    - Press the *Heading Offset* setting.
    - Select one of the common orientations or enter a value.
    - Confirm resulting heading is correct.
    - Adjust with +/- buttons if necessary.
    - Return to the Navigate tab to further verify correctness of the setting.

Block Coefficient

- *Block Coefficient* (**Only SEA*iq* Pilot**) : This value is used to estimate Squat. It must be in the range 0 to 1. You must manually enter a value for the current vessel. See Settings / Status / Squat for more information.

Windage

- *Lateral Windage* (**Only SEA*iq* Pilot**) : Manual setting for windage of the Own-Ship. This can be used to help estimate wind forces on the vessel.

Manage

- *List All* (**Only SEA*iq* Pilot**) : List all vessel records.
- *Import* (**Only SEA*iq* Pilot**) : Import vessels.
- *Export All* (**Only SEA*iq* Pilot**) : Export all vessels.
- *Erase All* (**Only SEA*iq* Pilot**) : Erase all vessel records, after confirmation. This cannot be undone.

Advanced

- *Default to Using Ext GPS as Conning Position* (**Only SEA*iq* Pilot**) : When enabled, new vessesls will default to using External GPS Offset as conning position. This is a setting that is retained across all vessels.

- *Reset Ext GPS Antenna Position When Own-Ship Changes* (**Only SEA***iq* **Pilot**) : When enabled, *External GPS Antenna Position* will be reset when changing to a new vessel. This is typically used with *Use AIS Distance to Bow as Default for Ext GPS Offset* and *Use PPU Baseline as Default for Ext GPS Offset* to trigger an automatic value being filled into the *External GPS Antenna Position* (otherwise the previously filled value will be used). This setting is retained across all vessels.
- *Use AIS Distance to Bow as Default for Ext GPS Position* (**Only SEA***iq* **Pilot**) : When enabled, new vessesls use AIS *Distance to Bow* as the default value for *External GPS Distance to Bow*. This is typically used if your External GPS antenna will normally be placed a similar distance to the bow as the AIS antenna.

  For this to be activated the following conditions must hold:

  - ◆ The *Distance to Bow* for External GPS must be unset (equal to *0m*) for this vessel.
  - ◆ Position source must be from an External GPS (not AIS or Virtual Boarding).
  - ◆ *Distance to Bow* reported by AIS for the vessel must be at least *1m*.

  This setting is retained across all vessels.
- *Use PPU Baseline as Default for Ext GPS Position* (**Only SEA***iq* **Pilot**) : When enabled, new vessesls will default to using *1/2 baseline* as the default value for *External GPS Distance to Bow*. This is typically used with 2-pod PPUs that are expected to be placed in a symmetrical placement.

  For this to be activated the following conditions must hold:

  - ◆ The *Distance from Centreline* for External GPS must be unset (equal to *0m*).
  - ◆ Position source must be from an External GPS (not AIS or Virtual Boarding).
  - ◆ PPU must report a Baseline value of at least *1m*.
  - ◆ *Heading Offset* must be within *10°* of positive or negative *90°*. This is used to determine if offset is to port or starboard.

  This setting is retained across all vessels.
- *Unmangle AIS Information* (**Only SEA***iq* **Pilot**) : This option is used on the occasional vessel where the AIS antenna position reports a position different than where the SOG and COG is being calculated for. This causes incorrect prediction vectors to be displayed, most noticeably when vessel is rotating.

  When this option is enabled, the antenna position is "moved" to the Ext GPS Antenna position. This change only affects the prediction vectors and associated data; the position of the vessel is unchanged.

  If unsure about how to use this setting, you should leave it disabled.
- *Barge* (**Only SEA***iq* **Pilot**) : Settings to display a barge attached to Own-Ship.
- *Turbine* (**Only SEA***iq* **Pilot**) : Settings to display an oversize wind turbine as cargo on Own-Ship... if you happen to be carrying such an item.

Conning Position

Various information are based on the position of the *Conning Position*. These include the following:

- Displayed COG and SOG values.
- Graphical course vector.
- Cross-Track-Distance (XTD). Note that *Show XTD for Bow & Stern* will cause XTD to be shown from bow and stern.
- Display of estimated *mark* position on wharf for *Conning*.

The actual position used for this point of reference may vary depending on various factors listed below.

- If size of ship, antenna offset, HDG, or ROT are unknown, then the Conning Position is the position of the GPS antenna. If only ROT is missing from the above items, then the Conning Position will be amidships at the position of the GPS antenna offset.
- If the above items are known and *Use GPS Antenna for Default Conning* is off then the center of the vessel will be used as Conning Position.
- Alternatively, if *Use GPS Antenna for Default Conning* is on, then the amidships position of the GPS antenna is used as the Conning Position.

Note that when course information (graphical vector or COG/SOG) is shown for a different location than the GPS antenna position, then the values are adjusted according to the different rotational motion of the two positions. For these calculations, the center of the vessel is used as the point around which the vessel is rotating.

Heading Offset

These settings control an offset to Own-Ship heading. The offset is an adjustment added to the heading sensor data for Own-Ship. This can be useful in situations where the heading value being received is innaccurate. Also, it is needed for use with some PPU devices (typically multi-pod devices) where the orientation of the two pods affects the received heading.

A notice is shown in the bottom-right of the chart display when a heading adjustment is active. Also, a panel labelled *Heading (Unadjusted)* is shown in the status bar showing the unadjusted value.

Settings

- *Heading Offset* (**Only SEA*iq* Pilot**) : The heading offset is added to the sensor value to generate the heading to use. The default heading offset is *0°* (no change). Negative values correct to Port and positive values correct to Starboard. Normally the desired setting is either *90°* or *-90°*. **The heading offset is associated with vessels (according to their *MMSI*). Once changed, the Heading Offset maintains its value. It is necessary to change the setting back to *0°* when you no longer need it.**
- *Calculated Heading* : This shows the current (possibly corrected) value of the heading.
- *Add 1 Degree* : Adjust by *1°* to starboard.
- *Subtract 1 Degree* : Adjust by *1°* to port.
- *Add 10 Degrees* : Adjust by *10°* to starboard.
- *Subtract 10 Degrees* : Adjust by *10°* to port.

Common Orientations

- *Slave is Forward* : Set heading correction to *0°* (no correction). This corresponds to the slave being ahead.
- *Slave is to Port* : Set heading correction to *90°*. This corresponds to the slave being to port.
- *Slave is to Starboard* : Set heading correction to *-90°*. This corresponds to the slave being to starboard.
- *Slave is Astern* : Set heading correction to *180°*. This corresponds to the slave being directly astern.

Advanced

- *Automatic Heading Offset* (**Only SEA*iq* Pilot**) : When enabled, the user will be automatically be prompted select a new *Heading Offset* when it differs from AIS heading by more than *30°*. When the offset setting is within *10°* of cardinal direction (0° / 90° / -90° / 180°) then the cardinal direction is used instead. A prompt will be shown at most once every *5min*.
- *Use Heading Offset Only for NMEA* (**Only SEA*iq* Pilot**) : When enabled, heading offset is only when heading is from NMEA. It is not used for AIS sources.

Follow Mode

These settings control how vessel *Follow Mode* operates. When enabled, *Follow Mode* cause the display screen to follow the movement of your vessel. You enter this mode by tapping the arrow in the top-right of the display. Tapping a second time changes to course-up display. You can exit *Follow Mode* by tapping the arrow again or (if *Sticky* mode is not enabled) by panning or zooming the display.

If you entered course-up or heading-up mode, you can re-orient the display to true-north-up by pressing on the orange compass rose ("N") in the top-left of the navigation display.

Settings

- *Use Offset in Follow Mode* : When enabled and in Follow Mode, the vessel is offset backwards so that a larger part of the display area is in front of it. Otherwise, the vessel is in the center of the display.
- *Follow Mode is Sticky* : When disabled, any manual movement of the display (panning, zooming, rotation) immediately disables Follow mode. When enabled, Follow mode remains enabled after you pan/zoom/rotate the display, but is temporarily disabled. When you have not adjusted the display for *30 seconds*, Follow mode re-centers the display on your vessel.
- *Preferred Orientation* (**Only SEA*iq* Pilot**) : When in offset or heads-up mode, you can choose to orient using the vessel's course (COG) or heading (HDG). Normally these are very similar, but when moving slowly or astern they can be quite different.

Meeting Points (Only SEA*iq* Pilot)

When an AIS target is following the same route, it can be useful to estimate where they may meet along the route. This is called their *Meeting Point*.

If traveling opposite directions, the meeting point is where the two vessels pass each other. When the vessels are in the same direction the vessel behind is overtaking the vessel in front, the meeting point is the location where they are overtaken.

This feature is commonly used when navigating rivers and similar confined channels, where the vessels can be expected to follow the course of the river. SEA*iq* will estimate the time until they meet and the approximate point of meeting along the route. The meeting point is displayed as a magenta circle along with the name of the target.

The AIS tab has an option called *Route Traffic* for organizing targets on your current route along with their meeting points.

Conditions for Meeting Point

IMPORTANT: the meeting point estimate uses a number of assumptions, such as that the vessels are actually following the same route, they maintain current speed, etc. The estimate is only accurate to the degree that the assumptions hold. In the case of vessels with similar speeds overtaking each other, the estimate may have a significant amount of error.

The following conditions must be met for a meeting point to be displayed:

- Own-Ship must be following a route.
- The target must be moving at least *1kn*.
- Both vessels must be within a maximum distance from the route. The default maximum is *1nm*, but this can be adjusted in the settings below.
- Each vessel must be within 25 degrees of the direction of the route segment it is on.
- To be displayed on the chart, the meeting point must be a minimum range from Own-Ship. This is done to avoid clutter. The default minimum range is *0.25NM*.
- The meeting point must be somewhere along the route.

You can see the time to meeting by pulling up the AIS record. The current status is displayed under "Route Meeting Point." If there is no meeting point, the status given will help you understand why not. The possible status values for meeting point are:

- Vessels meet in *time*
- Own-Ship overtakes Target in *time*
- Target overtakes Own-Ship in *time*
- Vessels moving apart
- Own-Ship pulling away from Target
- Target pulling away from Own-Ship
- Own-Ship/Target not on route
- Speed for Target below *1kn* threshold
- No position for Target/Own-Ship
- No course for Target/Own-Ship

- No speed for Target/Own-Ship
- Vessels meet past end of route

Manipulating Meeting Points

You can select a meeting point and drag it to a new location along the route. As the meeting point is moved, the required change in speed to move the meeting point is shown. A speed is given both for Own-Ship and the target. If either vessel (but not both) were to change their speed to what is shown, then the meeting point would change to the location. If the required new speed for one of the vessels would be greater than *35kn* then that speed will not be shown.

Alternatively, you can select a vessel and drag it along the route. As you do this, both Own-Ship and the target will be moved so that their positions correspond to where they would be at a given time. If the new position of the target is where it is estimated to be after *5 min*, then the Own-Ship position will also be estimated for *5 minutes*.

Settings

- *Show Meeting Points* (**Only SEA*iq* Pilot**) : This enables display of Meeting Points for AIS targets.
- *Show Lines for Meeting Points* (**Only SEA*iq* Pilot**) : When enabled, lines are shown at meeting points perpendicular to the route. This only applies to vessels larger than *Small Vessel Length*.
- *Distance Threshold* (**Only SEA*iq* Pilot**) : This is the maximum distance Own-Ship or an AIS target may be from the current route and still be considered to be following the route. Further conditions for a vessel to be considered following a route are in the Meeting Point overview.
- *Small Vessel Length* (**Only SEA*iq* Pilot**) : AIS targets less than this length are treated differently. They have meeting points shown with green Meeting Point symbols. This can be used to identify smaller vessels. See other settings for other effects.

Display Filters

- *Only Show Selected AIS Target* (**Only SEA*iq* Pilot**) : When enabled, only show the meeting point for the currently selected AIS target.
- *Minimum Range* (**Only SEA*iq* Pilot**) : Only display the meeting points that are at least this far from Own-Ship. This can help in reducing clutter and distractions around Own-Ship. The default minimum range is *0.25NM*
- *Ignore Small Vessels* (**Only SEA*iq* Pilot**) : When enabled, meeting points for small vessels are not shown.

Alarms

- *Meeting Point Alarm* (**Only SEA*iq* Pilot**) : Alarm fires when new vessels appear on your route with a meeting point.
- *Passing Restriction Alarm* (**Only SEA*iq* Pilot**) : Alarm when a meeting point is detected along active route segment where passing is restricted. This only applies to vessels larger than *Small Vessel Length*.

Cross-Route Meeting Points

- *Enable Cross-Route* (**Only SEA*iq* Pilot**) : When enabled, cross-route distances are displayed. This function does not require that same-route meeting points be enabled. For any vessel at most one type of meeting point will be identified. If types of meeting points are enabled, then targets with a known route will use cross-route meeting points and other vessels will use same-route meeting points: cross-route meeting points are given preference.
- *Threshold Distance* (**Only SEA*iq* Pilot**) : Distance threshold used to consider when two vessels are approaching. A cross-route meeting point will be identified only if two vessels approach within this distance at some particular time. The default value for this is *1NM*.

  Important: a large threshold value can cause confusing results. Be sure to use the smallest threshold value for meeting points that you are interested in learning about.

Cross-Route Meeting Points

Meeting points can also be found in situations where the other vessel is following another route that crosses or approaches Own-Ships route. We call the Cross-Route Meeting points *MPX's*. MPX's are shown with an *X* in them.

Similar with single-path meeting points, MPX assume both vessels will exactly follow their current routes.

There are 2 types of MPX that may be shown. These are called First Point of Approach (FPA) and Closest Point of Approach (CPA). The FPA is shown for situations where the two vessels approach each other close enough to require warning the mariner, but later have a closer approach. In these cases, information about both the FPA and CPA is shown. The MPX Threshold Distance is used to determine the maximum distance at which an approach will be considered for FPA.

Goal Point

You can select the FPA meeting point and then slide it to determine what speed change is required to change the meeting point. These calculations are updated continuously as the position moves. The steps used to calculate changes to the meeting point are as follows.

1. The closest point to either Own-Ship or Target route is located.
2. The closest point from the point in (1) is found on the other route.
3. The two points are considered the *Goal Points* for each of Own-Ship and the Target.
4. The time required for Own-Ship to reach its Goal Point at its current speed is calculated. This is the Goal Time.
5. The speed required for the Target to reach its Goal Point at the Goal Time is calculated.
6. If the required speed is at least *30kn* the speed is labeled *High*.
7. The same calculation in 4-6 is made again, but with roles of Own-Ship and Target reversed. The Goal Time for the target is calculated and then the required speed for Own-Ship.

Target Advance

It is also possible to select the Target vessel and slide it on its route. The time for the Target to reach that point is calculated and then point the Own-Ship would be at the same time is shown, along with the distance between the two vessels. This can be used to see how the two vessels will approach each other.

Mariners Tools

Tools are graphical objects that appear on top of marine charts and are used for measuring distances/bearings, keeping notes, or other purposes. The following types of tools are supported:

- *Electronic Bearing Line (EBL)*: These appear as a line on the display from a given point and following a certain bearing.
- *Clearing Line*: These are similar to EBL's but they end in a perpendicular line, like a 'T'. You can graphicly adjust the length of the two lines in the 'T'. **(Only SEA*iq* Pilot)**
- *Variable Range Marker (VRM)*: These appear as circles showing all points that are a given distance from the center.
- *Mariners Note (MARNOT)*: These are shown as a symbol and an optional text. A wide choice of symbols are provided, including various informational symbols, symbols for aids-to-navigation, obstructions, fishing, diving areas, etc. You can also associate lines, polygons, and/or media files with Mariners Notes.
- *Fender*: These are used to identify wharves or edges of navigable areas (eg, for turning basins). When Docking mode is enabled, distances and angles to fenders are displayed graphicly and in the status bar. **(Only SEA*iq* Pilot)**
- *View*: These are used to identify common areas you wish to display. They store both the location and the specific scale to use. After you have created at least one view you can bring up a list of them to jump to by double tapping and selecting *Jump to View*.
- *Group*: These are used to group collections of tools together. Visibility for all tools in the group can be controlled by enabling/disabling the Group tool or double-tapping and selecting *Toggle Group*. Each tool can be in at most one group. Exporting a Group will include all associated tools with it.
- *Vessel*: These are used to display vessels for various purposes. When created, the vessel has the same size as Own-Ship. Open up details of the vessel to adjust its size. Select bow/stern and drag/drop to rotate the vessel. Select center and drag/drop to move the vessel around. When a vessel tool is selected and docking aids are enabled, then it will be used as a docking target, showing distances and other approach information for Own-Ship.

  You can press *Add Maneuver* to create a multi-step maneuver for the vessel. This will open a panel at the bottom of the display where STW, Bow, and Stern speed vectors can be edited with sliders. Press the add (+) and delete (-) buttons to add and remove steps from the maneuver. You can press the advance and backup buttons (or tap other steps) to move between steps on the maneuver. If docking aids are enabled, then distances to nearby fenders will be shown.

Tools are used by mariners in various ways to help reference and manage chart information.

Creating and Manipulating Tools

Create a Mariners Note, View, or Group by double tapping anywhere on the navigation display and selecting *Add Tool*, then *Add Mariners Note*, *Add View*, or *Add Group*.

EBLs, VRMs, Clearing Lines, and Fenders are similar but first select a point on the display and then double tap on a second position and select *Add EBL*, *Add Clearing Line*, *Add Fender*, or *Add VRM*. For EBLs and Clearing Lines, the first position is the beginning of the EBL and the second is the end. For VRMs, the first position is the center of the circle and the second position indicates the radius.

Tools are graphicly edited by first tapping on the object to select it. Once selected, you can move them by

touching near the object and dragging it. For EBLs, you can move either end of the EBL to a new location, causing the range and bearing to be adjusted accordingly. If you drag the line, then the range and bearing will remain the same but the origin of the EBL will be moved accordingly. Clearing Lines are similar to EBLs, except that you can also drag the ends of the "T" to adjust its length. For VRMs, if you move the center, that will adjust the center position but the radius will stay the same. If you drag the circle, then the radius will be adjusted without moving the center.

You can attach an EBL, VRM, or Clearing Line to a vessel (either Own-Ship or an AIS target) or a waypoint. This is done by dragging the object until the origin of the EBL/CL or the center of the VRM is on the desired vessel. The default is to attach a tool to the center of the vessel; if you are zoomed in sufficiently, you can drop it specifically on the bow or stern of the vessel. Once attached, the object will move along with the given vessel. You can also drag the object off by selecting it and moving it. Only EBLs, VRMs, and Clearing Lines may be attached to other objects.

Any tools may be manually edited by selecting it and double tapping on it. A dialog will appear showing the attributes of the tool. In the top-right is a delete button. Next to it is a button for exporting/forwarding that object via email, iTunes File transfer, or opening it in another app (see Import and Export for more information).

Display

Mariners Notes are only displayed when the display scale is at least *1:100,000* or when they are associated with an area (see below).

Mariners Notes can be associated with areas or lines on the chart. To do this, select the Mariners Note by single tapping on it and then double tapping and choosing *Add Point to Mariners Note*. When at least 3 points have been added, the polygon they identify will be shown with partially transparent fill. You can also select *Fill Color*, *Line Color*, and *Line Style*. Fill can be disabled, in which case the line is displayed as a line segment.

Fenders are only displayed when the scale is at least *1:100,000*. More information about fenders can be found in <u>Docking Help</u>.

Settings

- *List All Tools* : This presents a table of all tools, grouped by type. You can select tools in order to edit them.
- *List All Groups* : This presents a table of all Groups.

Display

- *Show Mariner Notes* : Mariners Notes are only shown if this is enabled. The default is on.
- *Show Variable Range Markers (VRM)* : VRMs are only shown if this is enabled. The default is on.
- *Show Electronic Bearing Lines (EBL)* : EBLs are only shown if this is enabled. The default is on.
- *Show Clearing Lines* (**Only SEA*iq* Pilot**) : Clearing Lines are only shown if this is enabled. The default is on.
- *Show Fenders* (**Only SEA*iq* Pilot**) : Fenders are only shown if this is enabled. The default is on.
- *Show Views* (**Only SEA*iq* Pilot**) : Views are only shown if this is enabled. The default is on.
- *Show Groups* (**Only SEA*iq* Pilot**) : Group tools are only shown if this is enabled. This only affects

the graphical group symbol, not the tools included in the group. The default is on.
- *Show Vessel Tools* (**Only SEA*iq* Pilot**) : Vessel tools are only shown if this is enabled. The default is on.

Manage

- *Erase All* : This button erases all tools. A confirmation dialog asks you if you are sure. This cannot be undone.
- *Export* : Export all Tools using whatever method you select. See *Import and Export* for more information.
- *Import* : This is used to import tools using the *iTunes File Transfer* method. See Import/Export Help for more information.

Import and Export

There are a number of options for importing and exporting tools. The options are similar to those for routes and waypoints; we recommend reading Import/Export Help for an introduction.

Tools can be exported as a group (using *Export* or *Export Mariners Notes*) or individually (using the forwarding button in the tool edit dialog). Tools can be exported using email, iTunes File Transfer, or opened in another application (only SEA*iq* apps will import them).

When exporting a *Group* tool, all the tools in that group will be included.

There is no industry standard format for Tools as there is for GPX. SEA*iq* uses an XML based format, so they can be edited as a text file, if desired. However, other programs may not be able to import them.

Tracks

Tracks are used to record and display the path Own-Ship has taken. In addition, the position is stored every *15* minutes with a timestamp and a marker you can select to determine the position and time at that point.

If the tracks file ever grows to exceed *5MB*, the file will be archived (saved in the *Files* tab), a new tracks file is started, and a notification dialog is shown.

Settings

- *Enable Tracks* : When enabled, the past course Own-Ship is monitored and displayed. This does not apply to AIS vessels.
- *Save & Restart Tracks* : This button saves the current tracks and restarts them. The saved tracks file can be found in the *Files* tab.
- *Restart When Own-Ship Changes* (**Only SEA*iq* Pilot**) : When enabled, tracks are restarted whenever Own-Ship changes. Old tracks are saved in the Files tab.
- *Less Conspicuous Tracks* (**Only SEA*iq* Pilot**) : When enabled, the tracks are shown as thin lines.

Manage

- *Erase Tracks* : This button erases the currently stored tracks.
- *Export* : This button exports the current tracks via email, iTunes file sharing, or direct transfer to another app. See Import/Export Help for more information.
- *Imported Files* : Tracks can be imported in the GPX format. The file must have a *.gpx* or *.GPX* suffix. You can transfer the file using iTunes File Transfer. Then select *Imported Files* and choose the desired GPX file. Files are listed along with the number of track points they have. You can add as many files as you like. As they are added, they are listed on the upper section. If you want to remove an active tracks file that has been imported, then you can select it to remove it. See Import/Export Help for more information.

Docking Aids

SEA*iq* includes support for displaying extra data when docking vessels. This features are intended to be useful for large commercial vessels (100+ metres) with accurate Rate-of-Turn (ROT) sensor data. It is not intended for use with small recreational craft.

This feature attempts to provide as accurate of information as possible. In particular, it accounts for the location of the GPS antenna on the vessel and ROT, and their effects on the movement of different parts of the vessel.

When first using this feature, we recommend trying it with the Simulator to get a feel for how it works.

To use this feature, you will define one or more *fenders*. A fender may correspond to a wharf your vessel will be docking alongside or mark the boundaries of navigable areas.

As Own-Ship approaches fenders, fenders will automatically be selected for display, as described below.

For maneuvers such as approaching locks, you can set the *Centerline* flag in a fender. Then the information shown will help in aligning Own-Ship with the given centerline. Information for a centerlines is only shown when Own-Ship is at most *100m* distance.

Settings

- *Show Docking Aids* : Enable to display docking information in the Navigate tab. For docking information to be displayed, you need to create fenders.
- *Status* : This displays the current status of Docking mode.
- *List All Docking Fenders* : This presents a table of all fenders.

Alternate Maneuvers

- *Use VRMs as Single Point Mooring* : When enabled (and Docking Aids are enabled), the closest VRM is treated as a single point mooring. The VRM must have a radius of at most *400m* and its center must be within *1NM* from the bow of Own-Ship.
- *Use VRMs as Turning Circle* : When enabled (and Docking Aids are enabled) and Own-Ship is near or inside a VRM, the VRM is treated as a turning circle. The bearing and range of Own-Ship center to VRM is displayed in a panel in the Status Bar. The Distance to outside of VRM is shown as though it were a fender. The VRM must have radius at length length of Own-Ship and at most *1000m* and the center of Own-Ship must at most 1 ships-length outside the VRM for this to be activated.
- *Use AIS Target as Docking Target* (**Only SEA*iq* Pilot**) : When enabled (and Docking Aids are enabled), an AIS target can be used as a possible fender. The target is treated as though it had a fender beginning at the bow on nearest side to Own-Ship. It extends aft the length of the vessel and a further *0.5nm* beyond the stern. This can be used as an aid when pulling alongside another vessel. The bow of the vessel is used as *0* mark to allow relative position of bow and stern to be determined.

  The vessel used for this is (1) the currently selected AIS target, or (2) the closest vessel at least the Small Vessel threshold for Meeting Points (Settings / Meeting Points / Small Vessel Length). Note that for (1), you can enable Settings / Status Bar / Lock Onto AIS Targets so that the AIS target is not lost when you select other items.

You may find it helpful to use this with *Settings / NMEA & AIS / Advanced / Interrogate Closest AIS Target* in order to have faster updates for the target position.

Important: Own-Ship and AIS target motion are incorporated into the estimate of closing speed with target. Rotational motion of AIS target (if available) is not used.

- *Use Closest Vessel Tool as Docking Target* **(Only SEA*iq* Pilot)** : Additionally, when this is enabled the closest Vessel Mariners Tool is used as a docking target. For this purpose, fenders are placed to position position Own-Ship *over* the target (not alongside). If a Vessel Tool is selected, then that takes precedence as the target.
- *Use Safety Contour as Fender* **(Only SEA*iq* Pilot)** : When enabled, safety contours and shore features are used as if they were fenders. Only charts with at least *1/30,000* compilation scale are used for these (unless *Use Small Scale Charts for Fenders* is on.

When enabled, this feature may affect performance and battery life.

Options

- *Use Fender Corners* **(Only SEA*iq* Pilot)** : When enabled, docking mode shows distances to fender "corners" from points on Own-Ship. When disabled, distances to fenders are only shown when the closest point is not a corner. The default is to use corners.
- *Inset Shoulder Points* **(Only SEA*iq* Pilot)** : When enabled, shoulder points of vessel are 15% from bow/stern. The default is enabled. When disabled, shoulder points of vessel are corners of the "rectangle" indicated by the length and beam. Note that distances always treat the vessel as a rectangle, regardless of the shape drawn on the display.
- *Only Show Distances* : The default is to show distance, speed, and angle to the wharf. Enable this if you only want the distance to be shown.
- *Use Speed Units* **(Only SEA*iq* Pilot)** : The default for docking velocity is to use *Settings / Units / Horizontal Units*. Enable this to use *Settings / Units / Speed Units* instead.
- *Prefer cm/s Instead of m/s* **(Only SEA*iq* Pilot)** : Prefer *cm/s* instead of *m/s*. This only applies when *Use Speed Units* is not enabled and *Horizontal Units* is set to *Metre*.
- *Use Small Scale Charts for Fenders* **(Only SEA*iq* Pilot)** : When enabled, charts with as low as *1:100,000* compilation scale will be used for fenders.

Instructions

Here are the steps to setup and use Docking Aids:

- Set up NMEA/AIS and true-scale support for your vessel.
- Go to the Navigate tab and identify the wharf you intend to dock alongside.
- Create one or more fenders to identify the wharf you will be docking alongside or to mark boundaries of navigable areas. Single tap to mark one point of the fender, then double tap a second point, choose *Add Tool*, then choose *Add Fender*. You can select a fender, then graphicly adjust it or double tap another location and select *Add Point to Fender*. The new point will be inserted into the fender at the best location that can be determined.
- Turn Docking Mode on.
- When your vessel approaches the fenders, you should see the Docking Aids displayed as described below.

Display

The following docking aids are visible on the Navigate tab. Note that docking aids are only shown at display scale of at least *1:20,000*.

- Additional predicted course lines are drawn as black dotted lines. These predict the movement of various points on the vessel, showing how it is moving over the next 6 minutes. The lines account for ROT. The points predicted are the bow, stern, and 4 shoulders (15% from bow/stern on either side). Predicted courses are only given if there is sufficient sideways movement away from the vessel.
- Minimum distances and velocity of change are given between key points on the vessel (bow, stern, 4 shoulders) and fenders. The lines for these distances are drawn as black dashed lines. The distance is given in metres. Velocity is given in *metres/second* unless you enable *Use Speed Units*, in which case the units normally shown for speed will be used. Positive speed means distance from fender is increasing; negative is decreasing.
- Information about the "wharf" that Own-Ship is approaching is displayed in the right hand status bar under *Docking*. The fender selected as the wharf is the closest fender less than *250m* and with an angle to Own-Ship of at most *30°*. If all fenders have an angle greater than *30°* then the closest fender is shown.
- The interior angle between the vessel and the fender. This is always an angle between *0* and *90* degrees. This is only shown for the "wharf" fender (see above). It is only shown on the chart display when at most *100m* from the wharf.

Creating Fenders from Charts

You can also create a new fender by extracting it from vector chart features. The advantage of this approach is that that (1) it is automatic, (2) the placement is based on chart features which (hopefully) have been carefully surveyed.

You can create a fender by double tapping on a wharf. Select *Details for this Location*. Then look for a *Shore-line Construction* feature and select that. Then select *Add as Fender*. This will create a new fender object placed along the wharf. You should double check that the fender placement is appropriate.

Some important caveats:

- This capability requires that IHO S-57 "Shore-line Construction" features are included in your chart.
- This feature only works on vector charts. In situations with matched raster and vector charts (such as NOAA charts for USA) where raster charts are preferred, you can try switching to the vector charts, creating any fenders you want, then switching back to the raster charts.
- Some chart features contain sequences of points that are all nearly in line with each other. When points are detected that are at most *2.5m* from the being "in line" with adjacent points, those points are removed to avoid clutter.
- Some charts divide a wharf into multiple chart Shore-line Construction chart features. When this is detected, those features are coalesced into a single fender.

Single Point Mooring and Variable Range Markers

To aid in docking with a single point mooring (SPM), you can use a Variable Range Marker (VRM) to indicate the location where you are docking.

The following information is displayed in a block named *Docking-SPM* in the vertical status bar when docking to a SPM is enabled:

- The distance from Own-Ship's bow to the closest point of the VRM. If the bow is inside the VRM then *OK* is displayed.
- The velocity component of the bow in the direction of the closest point of the VRM. A negative velocity indicates the bow is approaching the VMR and a positive velocity means it is moving away.
- The angle between Own-Ship's centerline and the line from the bow to the closest point on the VRM.

Note that currently no information is displayed in the chart area.

The following conditions must be met for the SPM information to be displayed.

- The VRM must have a range of at most *500m*.
- The VRM must have a fixed location or be attached to a waypoint. It cannot be attached to Own-Ship or to an AIS target.
- The distance from the bow to the center of the VRM must be at most *1nm*.
- When more than one VRM meets these requirements, the closest to the bow is chosen.

Vector Charts

These settings customize the display of vector charts.

Settings related to depth can customize the chart display to your vessel. These control how water areas, contours, and depth soundings are depicted. It can even cause wrecks and other obstructions to be displayed differently, depending on these settings and the depth of the object. The idea is that by setting these appropriately for your vessel, it will be easier for you to identify possible dangers to your vessel.

Settings

- *Display Categories* : Allows selection of which categories of features to display. The options are as defined in the IHO S-52 standard.

  - ♦ *All*: Shows all features that are normally displayed.
  - ♦ *Standard*: Shows standard features.
  - ♦ *Display Base*: Shows only essential features.
- *Use Simplified Points* (**Only SEA*iq* Pilot**) : When enabled, charts are displayed with simplified symbols for buoys and other aids-to-navigation.
- *Use Plain Areas* (**Only SEA*iq* Pilot**) : When enabled, charts are displayed with simple boundaries that may decrease clutter in some situations.
- *Identify Features with Extra Info* (**Only SEA*iq* Pilot**) : When enabled, features that have extra information associated with them are highlighted with a special symbol. You can access this information by double tapping the feature and selecting *Details for this Location*.
- *Use National Text* (**Only SEA*iq* Pilot**) : Use national text when available in the chart.
- *Show Chart 1 ENC* : Chart 1 is a standard "chart" that lists the symbols from the IHO S-52 standard. It is not used directly for navigation. Enabling this option causes ENC Chart 1 to be displayed.

  It is placed in Central Africa at *15°N / 5°W*. You can enter the Chart 1 sub-menu to find a menu item that jumps to display Chart 1. You can also find a link to Chart 1 documentation.

  You may notice some differences between the published images and the chart portrayal here. Please check settings which affect the chart portrayal, including the following:

  - ♦ *Settings / Vector Charts / Safety Depth*: Use default of *30m*.
  - ♦ *Settings / Vector Charts / Safety Contour* Use default of *30m*.
  - ♦ *Settings / Vector Charts / Deep Depth* Use default of *30m*.
  - ♦ *Settings / Vector Charts / Shallow Depth* Use default of *2m*.
  - ♦ *Settings / Vector Charts / Use Simplified Points*: In some places this must be turned On to match the published image. In others, it must be disabled.
  - ♦ *Settings / Vector Charts / Advanced / Show Zone of Confidence*: Turn On.
  - ♦ *Settings / Vector Charts / Advanced / Show Soundings*: Turn On.
  - ♦ *Settings / Vector Charts / Advanced / Show Isolated Dangers*: Turn On.

Depths

- *Number of Depth Shades* (**Only SEA*iq* Pilot**) : When enabled, only two shades of blue are used to color depth areas.

- *Safety Depth* : The safety depth primarily controls the coloring of depth soundings. Depths at least as shallow as the safety depth are black; deeper soundings are grey. If *Red Safety Contour and Depths* is on, then red is used instead of black.
- *Shallow Contour* : Areas at least this shallow are colored dark blue.
- *Safety Contour* : Areas at least this shallow are colored medium blue. Additionally, Safety Contour value causes the contour next shallower to that depth to be highlighted.
- *Deep Contour* : Areas at least this shallow are colored light blue.
- *Shallow Pattern* : When enabled, any areas shallower than the Safety Contour have a hash pattern drawn on them to highlight the possible danger. This is particularly useful for the night color modes (see below).
- *Red Safety Contour & Depths* **(Only SEA*iq* Pilot)** : When enabled, the following changes are made to display of chart contours and soundings:

    ♦ The Safety Contour is shown in red and 50% thicker than specified by IHO-52.
    ♦ If Shallow Pattern is also enabled, then it the hash pattern is in red. Be sure to note that the Shallow Pattern is shown for depths shoaler than the Shallow Contour, which may not be the same as the Safety Contour.
    ♦ Soundings at most the Safety Depth are in red instead of black. Note that in many cases the Safety Depth is different from the Safety Contour.
- *Soundings Range* **(Only SEA*iq* Pilot)** : When enabled, only soundings inside this range are displayed.

    The range of soundings that are displayed accounts for tidal adjustment. Consider if sounding range is *10m* to *20m* and the chart has a 9m sounding. If the tidal adjustment is *0m* then the *9m* sounding is outside the range and is not shown. With a tidal adjustment of *2m*, the sounding is displayed as *11m*.

Lights

- *Full Light Sectors* : When enabled, light features are shown on charts with lines extending to their nominal range.
- *Show Light Descriptions* : When enabled, light features are shown with textual characteristics.
- *Show Descriptions for Sector Lights* **(Only SEA*iq* Pilot)** : When enabled along with "Show Light Descriptions", descriptions for sector lights are shown. In cases with multiple sector lights, only the attributes shared by all sector lights are shown. Attributes that differ between lights are not included in the description.

    This is a non-standard feature and should be used with care.
- *Always Show Name for Lights* **(Only SEA*iq* Pilot)** : When enabled, extra effort is used to show a name for lights. This may be useful when lights are on features (such as Piles) whose names are not normally displayed.

    This is a non-standard feature and should be used with care.

Date Dependent

- *Ignore Dates* : When enabled, all features are shown regardless of current date.
- *Highlight Date-Dependent* : When enabled, features that are only shown during certain dates are highlighted. Only currently visible features are shown; to see features for other dates, turn on *Ignore Dates*.
- *Date Override* : When enabled, features that are only shown during certain dates use the given date to determine whether to be displayed. *Ignore Date* takes precedence over this.

- *Advanced Settings* : Advanced settings for charts.

Sounding Ranges

These options control display of soundings.

Settings

- *Automatically Set Range* **(Only SEA*iq* Pilot)** : When enabled, shallow and deep sounding ranges are automatically set using the Shallow and Deep Contour settings.
- *Shallow Sounding Range* **(Only SEA*iq* Pilot)** : Soundings shallower than this depth are not displayed. If this is set to *0* then negative soundings are displayed (ie, only *Deep Sounding Range* causes soundings to be hidden).
- *Deep Sounding Range* **(Only SEA*iq* Pilot)** : Soundings deeper than this depth are not displayed.

Vector Charts Advanced

Settings

- *Shorten Names for Aids-to-Navigation* : When enabled, aids-to-navigation with long names are shortened to avoid clutter. When names are long, only the last word in the name is shown. For example: "by San Francisco Main Ship Channel Lighted Whistle Buoy 8" becomes "by 8".
- *Hide 'bn' & 'by' Prefixes for ATONs* (**Only SEA*iq* Pilot**) : When enabled, hide 'bn' and 'by' prefixes for Aids to Navigation. Also 'Nr' prefix for berths are removed.
- *Show Notice Marks* : When enabled, symbols for Notice Marks are shown in place of the generic symbols specified by the standard. This only applies when a single Notice Mark is present. This only applies to iENCs and Port ENCs.
- *"Norwegian Coast Style" Chart Display* (**Only SEA*iq* Pilot**) : In "Norwegian Coast Style" presentation, shoals are presented without danger circles (DANGER01 & DANGER02) (ref. Colour & Symbol specifications for ECDIS, 4TH edition July 1997). Shoals are presented only with upright digits: no brackets or additional symbols (eg "+"). Soundings are presented with italic digits, with an inclination of *17°* (ref INT 1, Chapter II, number 10). Shoals shallower than safety depth have bold digits. Wrecks are always shown with a wreck symbol and the sounding is shown to the side in parenthesis.
- *Disable Hash-Fill for Precautionary Areas* (**Only SEA*iq* Pilot**) : When enabled, Precautionary Areas are not shown with a hash fill. This is a non-standard format and should be enabled only with care.
- *Disable Display of Bottom Surface Type* (**Only SEA*iq* Pilot**) : When enabled, information about bottom surface (NATSUR, NATQUA) is not displayed. This is typically done to reduce clutter.
- *Disable Display of Water Turbulence and Sand Waves* (**Only SEA*iq* Pilot**) : When enabled, water turbulance (WATTUR) and sand wave (SNDWAV) features are not displayed. This is typically done to reduce clutter.
- *Disable Display of Tidal Stream* (**Only SEA*iq* Pilot**) : When enabled, tidal stream (TS_FEB) features are not displayed. This is typically done to reduce clutter.
- *Disable Display of Ferry Routes* (**Only SEA*iq* Pilot**) : When enabled, Ferry Routes are not shown. This is typically done to reduce clutter.
- *Show Zone-of-Confidence* : When enabled, Zone-of-Confidence data is displayed.
- *Use SCAMIN* (**Only SEA*iq* Pilot**) : Vector charts contain information about the range of scales that each feature should be displayed at. These attributes are called SCAMIN and SCAMAX (scale minumum and maximum). Disabling this causes scale to be disregarded. It is recommended that this be left enabled. When used with S-102 charts, disabling this causes no soundings to be shown.
- *Disable Display of System of Marks Outline* (**Only SEA*iq* Pilot**) : When enabled, borders identifying Navigational Systems of Marks are not displayed. This is typically done to reduce clutter.
- *Disable Display of Dredged Area Patterns & Related Items* (**Only SEA*iq* Pilot**) : When enabled, the dot patterns in dredged areas are not shown. The appearance is similar to that of normal depth areas. This also prevents display of outlines for Fairway features, which are commonly shown around dredged areas. This is typically enabled in order to reduce clutter on the display.
- *Show Soundings* (**Only SEA*iq* Pilot**) : Choose method for determining whether Soundings are shown. When *Off*, soundings are never shown. When *On*, soundings are always shown. When *Auto*, soundings are shown according to other settings, such as *Display Categories*. This only affects chart soundings, not overlays.
- *Show Depth Contours* (**Only SEA*iq* Pilot**) : Choose method for determining whether Depth Contours (other than safety contours) are shown. When *Off*, contours are never shown. When *On*, contours are always shown. When *Auto*, contours are shown according to other settings, such as *Display Categories*. When enabled, *Disable Display of Deep Depth Contours* overrides this setting.

- *Disable Display of Deep Depth Contours* (**Only SEA*iq* Pilot**) : When enabled, depth contours deeper than the Deep Contour setting are not shown. This is typically enabled in order to reduce clutter on the display.

  Note that to be hidden, a contour must be deeper than all contour settings: Shallow, Safety, and Deep Contour.
- *Highlight Low-Accuracy* : When enabled, features with low-accuracy such as obstructions, with be highlighted.
- *Show Isolated Dangers* : When enabled, isolated dangers in areas deeper than the Safety Contour are marked.
- *Isolated Danger in Shallow Areas* : When enabled and *Show Isolated Dangers*, isolated dangers in areas shallower than the Safety Contour are marked. Only isolated dangers no deeper than Safety Contour are shown.
- *Disable Large Overscale* (**Only SEA*iq* Pilot**) : When enabled, a large "Overscale" warning is not shown in the center of the chart display. This does not affect Overscale warning in the bottom left.
- *Warn About Old Charts* (**Only SEA*iq* Pilot**) : When enabled, a large "Old Chart" warning is shown in the center of the chart display if the chart's *Issue Date* is at least 3 months old.

  You can find the date of the a chart by double tapping in a location, pressing *Details for this Location* and then choosing *Chart Information*.
- *Use Fill for Shoreline Construction* (**Only SEA*iq* Pilot**) : When enabled, shoreline constructions features are shown with with semi-transparent fill.
- *Use Fill for Bridges* (**Only SEA*iq* Pilot**) : When enabled, bridge features are shown with semi-transparent fill.
- *Show Bollard Names* (**Only SEA*iq* Pilot**) : When enabled, bollard and similar (MORFAC) names are shown. Also, promotes features to at least the Standard display category.
- *Disable Display of Various Navigation Lines* (**Only SEA*iq* Pilot**) : When enabled, various types of navigation lines are not displayed. The lines include recommended tracks, recommended traffic lanes, recommended route centerlines, ferry route, deep-water route part, deep-water route center-lines, are not displayed. This should be used with care. It is typically enabled in order to reduce clutter on the display.
- *Disable Display of Coverage Outlines* (**Only SEA*iq* Pilot**) : When enabled, coverage outlines for chart cells are hidden. This can be used to reduce clutter on charts.
- *Disable Display of Administrative Area & Similar* (**Only SEA*iq* Pilot**) : When enabled, administrative areas (ADMARE) and similar (CONZNE, STSLNE, TESARE) are not displayed. Specifically, viewing group 36050 is disabled. This is normally selected in order to reduce clutter.
- *Disable Display of Restricted Area Symbols* (**Only SEA*iq* Pilot**) : When enabled, symbols corresponding to restricted areas (RESARE) are not displayed. This is normally selected in order to reduce clutter. Any outlines and patterns are still shown (as selected by other options).
- *Disable Display of No-Wake Restricted Areas* (**Only SEA*iq* Pilot**) : When enabled, No Wake restricted areas (RESARE) are not displayed. This is normally selected in order to reduce clutter. Other types of restricted areas are not affected.
- *Reduce Text Clutter* : When enabled, many chart features with text are not shown with the text. Specifically, all text items with text group greater than *20* are not shown.
- *Red Shallow Shading* (**Only SEA*iq* Pilot**) : When enabled, any areas shallower than the Safety Contour have a red shading to highlight the possible danger.
- *Hide Chart Outlines* (**Only SEA*iq* Pilot**) : When enabled, chart outlines are not shown. This can be used to reduce screen clutter. This applies to both raster and vector charts.
- *Prefer Shoreline from bENCs* (**Only SEA*iq* Pilot**) : When enabled, shore and land features from ENC are displayed below bENC. This may be useful if the ENC has inaccurate shoreline interfering with bENC.

Raster Charts

Electronic charts are normally one of two types, vector or raster charts. For reasons described on our website, SEA*iq* is primarily intended for use with vector charts.

However, in certain situation raster charts can be useful. Two examples are: (1) when vector charts are not available for the desired areas, and (2) when using specialized raster charts such as those generated from satellite imagery.

Settings

- *Prefer Raster (BSB/KAP) Charts* : When enabled, raster charts are preferred over vector charts. Otherwise vector charts are preferred. One exception is that the vector SEA*iq* Base Chart of the Earth is always used.
- *Use Red for Own-Ship* : When enabled and viewing raster charts, a red color is used for Own-Ship (and related objects) in place of the normal black color. See Settings / Vessels for other settings that can affect display of Own-Ship.
- *Alternate Own-Ship Dusk Colors* : When enabled and viewing raster charts in *Dusk* color mode, a black color is used instead of the normal white color. This is useful when viewing NOAA raster charts which use light background for dusk. This option is enabled by default. Note that *Use Red for Own-Ship* takes precedence over this setting. See Settings / Vessels for other settings that can affect display of Own-Ship.

IHO S-63 Charts

S-63 is an International Hydrographic Organization (IHO) standard for distributing S-57 vector charts. S-63 prevents unauthorized copying of charts and also provides confidence that the charts have not been tampered with.

SEA*iq* can use S-63 charts from any source. The simplest method is to use one of the automatic chart download and updater for charts from <u>PRIMAR</u>, <u>ChartWorld</u>, <u>Admiralty (AVCS)</u>, <u>OneOcean</u>, or <u>Australian Hydrographic Office (AHO)</u>. In addition to making the initial download easy, these methods will also automatically check for updates and prompt you when they are available.

When installing S-63 charts, it is important to install both the chart file(s) and the S-63 cell permit file(s). The chart files contain the charts and associated data; cell permit files contain keys and other information required to process the charts.

Cell permits can be installed in any of these types of files:

- *PERMIT.TXT*: The standard S-63 file name.
- *ABC_PERMIT.TXT*: Any file that ends with *PERMIT.TXT*.
- *AVCSPermits.zip*: A zip file distributed for Admiralty AVCS (UKHO). This archive contains *PERMIT.TXT* which will automatically be used.
- *ENC.zip*: A zip file distributed by Australian Hydrographic Office (AHO). This archive contains *PERMIT.TXT* which will automatically be used.
- *If you use a service that distributes cell permits in an archive format, please let us know and we can consider adding to the supported archives.*

Settings

User Permit

- *Request* : Pressing this button requests to register your device for a User Permit. Your device must be connected to the internet.
- *User Permit* : This shows the S-63 user permit for SEA*iq* on this device. Each piece of hardware has its own unique S-63 user permit, which normally needs to be given to your S-63 chart vendor so they can create so-called chart permits. Tapping on this selection allows you to export the user permit in number of ways.

Certificates

- *Use Default Certificates* : S-63 requires you to have a certificate in order to confirm that the charts you are using are authentic. SEA*iq* comes with embedded certificate files and the normal behavior is to use those. Disable this if you do not want to use these certificates. In which case you must be sure to download your own certificates. When processing charts, SEA*iq* checks all available certificates and accepts the chart only if one certificate authenticates the chart data.
- *Download IHO Certificate* : This allows you to download a certificate from IHO. This is used to verify charts signed using the IHO certificate.

  SEA*iq* comes with the default PRIMAR and IHO certificates. This is only required if you disable *Use Default Certificates* because you wish to download them yourself.

The download link used is
https://iho.int/uploads/user/Services%20and%20Standards/ENC_ECDIS/data_protection/S-63_SA_Certificate

- *Download PRIMAR Certificate* : This allows you to download a certificate from PRIMAR. This is
  used to verify charts signed using the PRIMAR certificate.

  SEA*iq* comes with the default PRIMAR and IHO certificates. This is only required if you disable *Use
  Default Certificates* because you wish to download them yourself.

- *Diagnostics* : Displays list of all charts you have installed permits for and lists the status and any
  errors/warnings.

Deprecated

- *Extra User Permit* : This allows you to enter a secondary user permit. The S-63 standard allows charts
  purchased for a *Data Client* such as SEA*iq* on one device to be used with the same Data Client on
  another device (IHO S-63, v1.1.1, April 2012, section 10.5.3). If you purchased charts for SEA*iq* on
  another device, you can enter the other device user permit here. This allows those charts to be viewed.

  Important: This function is deprecated. It will not function for new installations after 1 July 2020. It
  will be disabled for all installations after 1 May 2021. More information.

You can find diagnostics by going to the *Settings* tab, selecting *S-63 Data Protection*, and then *Diagnostics*.
You will be presented with detailed information about the import status of each chart cell.

Bathymetry

Bathymetry is the study of underwater depth. The settings here affect how underwater features are displayed. Note that other settings, such as the *Safety Depth*, *Safety Contour*, *Shallow Contour* and *Deep Contour* also affect display of underwater features.

Use these features with care! Incorrect use can result in confusing display of depth related information. If you are unsure about the correct use of these features, leave the settings at their default values.

Settings

Bathymetric ENCs

- *Show bENC Overlays* (**Only SEA*iq* Pilot**) : Enables display of Bathymetric overlays (bENCS). In some areas of navigation where detailed depth information is required for safe navigation, special digital charts called Bathymetric ENCs (bENCs) have been created. bENCs contain detailed information about depth not available in the normal charts for these areas. The bENCs are specialized in that they only contain bathymetric information and do not include other navigation information such as aids to navigation or bridges. Getting the full picture of both the bathymetric information and navigation requires displaying information from both bENCs and the corresponding ENCs.

  When this setting is enabled, SEA*iq* modifies display of standard ENCs to replace underwater features (such as depth soundings, underwater contours, underwater depth areas, and dredged areas) with data from a bENC chart. Note that ENC navigation features are layered above bENC so that items such as buoys remain visible.

  Use this feature with care. In some situations it can be confusing. If you are uncertain about the accuracy of the display, we recommend disabling this feature.

  Below are some further notes/caveats:

  - When enabled, you will see *(bENC Enabled)* in the bottom-right corner of the display.
  - Enabling and disabling the feature will trigger SEA*iq* to reprocess charts. There may be a delay while this happens.
  - bENCs must not overlap each other, even if they have different compilation scale. In fact, the bENC charts (if there is more than one loaded) should normally all be at the same compilation scale.
  - Small-scale charts sometimes have inaccurately placed land area (LNDARE), built-up area (BUAARE), and river (RIVERS) features. So these features are placed in the overlay for compilation scales less than *1:15k* and in the "underlay" for smaller scales.
- *Hide Unsurveyed Area Features in bENCs* (**Only SEA*iq* Pilot**) : When enabled, causes Unsurveyed Area (UNSARE) features to not be displayed in bENC overlays. This allows features from an underlying ENC to be shown. Note that in some situations this can mix ENC and bENC features in ways where the boundaries are hard to distinguish.

S-102 bENCs

- *Show IHO S-102 bENCs* (**Only SEA*iq* Pilot**) : When enabled, IHO S-102 bENCs will be displayed.

- *Style* **(Only SEA*iq* Pilot)** : Select between vector and raster style presentation for S-102 bENCs. Vector display is normally recommended.
- *Sun Illuminated Raster* **(Only SEA*iq* Pilot)** : When enabled, the raster display of charts will be shaded to give idea of the sea-bed contour. This option is only effective when in raster mode and using day-time color palette.
- *Contour Interval* **(Only SEA*iq* Pilot)** : Set contour interval for S-102 bENCs. The minimum allowed value is *0.25m*.
- *Precise Mariner Contours* **(Only SEA*iq* Pilot)** : When enabled, contour lines for precise value of Safety Contour, Shallow Contour, and Deep are added to the display. This ensures that the coloring of depth areas is precise. However, this also means that there may be more contours than otherwise indicated by the differences in depth. In particular, if any of the mariner-designated contours does not exactly match the regular intervals, then an extra contour is added at exactly that depth.
- *Align to Safety Contour* **(Only SEA*iq* Pilot)** : When enabled, contours are all aligned to the safety contour for S-102 bENCs.

  For example, if the Safety Contour is *6.75m* and the contour interval is *1m* then all contours will be *X.75m*.
- *Interpolate Contour Lines* **(Only SEA*iq* Pilot)** : When enabled, contour lines will be interpolated to their estimated location within grid squares. This can cause the contour lines to be adjusted up to one grid contour from their location specified in the data file. Without this option enabled, the contours follow the grid squares.
- *Disable Hi-Res Cells* **(Only SEA*iq* Pilot)** : When enabled, S-102 chart cells with *5x5m* or higher resolution will be disabled and not used. This can help in situations where highest resolution cells may have patch-work coverage from use of lower resolution survey methods. The patch-work coverage can result in a display that mariners find unhelpful. Lower resolutions cells will be used instead, which normally will not exhibit the patch-work coverage.
- *Filter Areas Above Water Line* **(Only SEA*iq* Pilot)** : When enabled, S-102 grid points which are above the water line will be filtered from the cell. This is to address issues where S-102 cells have extensive coverage of above-waterline areas and these are obscuring shoreline features.
- *Heat Map* **(Only SEA*iq* Pilot)** : Show recent changes as a so-called heat map. Areas of shoaling are displayed as red. Areas of deepening are shown in blue. Areas of no or very small change are shown in green.

  When Sun Illuminated Raster option is enabled, the areas are shaded according to their relative depths (increasing depth is shown as valleys, decreasing depths are shown as hills. The height differences are emphasized with a *5x* increase in differences.
- *Heat Map Duration* **(Only SEA*iq* Pilot)** : Maximum age of a chart in days to be included in the heat map presentation. Default is 0 days (no limit).
- *NOAA S-102 Products* : Support for downloading S-102 products for USA from NOAA.

Tide

- *Tidal Adjustment* : Provide adjustment to depths based on current tides. See below for more information.
- *Fill Tidal Adjustment* : This allows you to fill based on currently selected tide adjustment. Requires that you have selected an object with tidal data.
- *Tidal Adjustment Warning* **(Only SEA*iq* Pilot)** : When enabled and tidal adjustment is active, a large warning is shown in the lower center of the display. It is shown in addition to similar warning the lower-right (which is always displayed). The large display is only shown if the display size is large enough.

Safety Depth & Contour

- *Draft* (**Only SEA*iq* Pilot**) : Manual setting for draft of the vessel. This can be used to help configure Safety Depth and Safety Contour.
- *Under Keel Clearance* : Here you can specify how much additional UKC you want to use. The UKC can be given either as a fixed depth or a percentage of the vessel's draft. For instance, in some locations, it is common practice to use *10%* of a vessel's draft as UKC.
- *Shallow Contour Delta* (**Only SEA*iq* Pilot**) : When set, this is subtracted from Safety Contour to set the Shallow Contour.
- *Deep Contour Delta* (**Only SEA*iq* Pilot**) : When set, this is added to Safety Contour to set the Deep Contour.
- *Calculated Depth & Contour Settings* : This is the calculated Shallow Contour, Safety Depth, Safety Contour, and Deep Contour, based on the draft, UKC, and deltas.
- *Current Depth & Contour Settings* : This shows the current value(s) for the Shallow Contour, Safety Depth, Safety Contour, and Deep Contour These are the same as given on the *Vector Charts* settings. When values are equal, they are elided.
- *Update Chart Settings* : Press this button to change current Shallow Contour, Safety Depth, Safety Contour, and Deep Contours values to the calculated ones.
- *Automatic Update* (**Only SEA*iq* Pilot**) : When enabled, the Shallow Contour, Safety Depth, Safety Contour, and Deep Contours are updated automatically when Own-Ship draft is changed. Additionally, the current Safety Contour is always shown in the bottom-right of the chart display.

Overlays

- *Show Overlays* (**Only SEA*iq* Pilot**) : When enabled, overlays are displayed.
- *Declutter Soundings* (**Only SEA*iq* Pilot**) : When enabled, soundings in overlay files (Autocad DXF, Shapefile, and XYZ files) are decluttered using a proprietary algorithm. This algorithm applies SCAMIN values to each sounding so as you zoom in/out the most important soundings are displayed.

  This feature is considered experimental and should only be used with care. If uncertain, leave this feature disabled.
- *Mask Soundings from Old Overlays* (**Only SEA*iq* Pilot**) : When enabled, overlay files (Autocad DXF, Shapefile, and XYZ files) are organized according to dates and newer soundings are shown in preference to older soundings.

  Files are organized by searching for date expressed as 8 decimal numbers in YYYYMMDD format, where YYYY, MM, and DD correspond to years, months, and days.

  This feature is considered experimental and should only be used with care. If uncertain, leave this feature disabled.
- *Mask Soundings Range* (**Only SEA*iq* Pilot**) : Range to use when calculating sounding masks. Default is *100m*.

  This feature is considered experimental and should only be used with care. If uncertain, leave this feature disabled.

Admiralty Information Overlays

- *Enable* (**Only SEA*iq* Pilot**) : Enabling this causes AIO overlays to be shown when available. In most cases, AVCS AIO cell permits are required and the current AIO distribution should be installed.

AIO notices will be shown based on the AVCS ENC's that are currently active. To read the information in the notice, you can can double tap in a notice and choose the item(s) marked with *(AIO)*.

- *Allow Unencrypted* **(Only SEA*iq* Pilot)** : Enabling this allows AIO overlays to be used with unencrypted cells. The default is to only allow encrypted cells from *GB* (UKHO AVCS) data server. This option is only provided for testing purposes; AIO is required to only be used with charts licensed from UKHO.

Tidal Adjustment

In situations where tidal height is important to navigation the mariner may find it useful to adjust display of bathymetric features to account for the current tide.

This feature works both with and without bENCs.

The default setting is *0*, which causes all bathymetric information to be displayed unmodified. This value may be changed to positive or negative values. Whatever value is selected will be *added* to the depth in the chart. If this is set to *10m*, then a *15.3m* sounding will be changed in the display to *25.3m*.

Since depth information are typically reference a low tide datum, you will normally use positive adjustments that correspond to a higher tidal state. A situation where a negative adjustment would make sense is an extreme low tide.

After changing the setting, SEA*iq* will proceed to update any chart you display, in order to reflect the adjustment. There may be some delay as the chart is re-processed.

If you are unsure about use of this feature, leave it set to the default value of *0*.

- When enabled, you will see *(Tidal Adjustment)* in the bottom-right corner of the display.
- If you ever want to change back to the default, just edit this setting back to the original default of *0* (no adjustment).
- All other depth related display information is updated accordingly, including Shallow, Safety, and Deep Contours. Soundings are reprocessed to account for the new effective Safety Depth.
- When *Sounding Range* and *Tidal Adjustment* are both used, then the *Tidal Adjustment* is applied to a sounding before determining if the sounding should be displayed. Changing the Tidal Adjustment may affect what soundings are displayed.
- This feature must be used with care. Tides are always changing. The setting you used an hour ago is likely no longer accurate.
- This is a static setting. By default, SEA*iq* does not attempt to dynamically track tidal changes. If you want to change it further because tidal height has changed, you can do so manually. Alternatively, see *Settings / Tides / Dynamic Tidal Adjustment* can be used to automatically update the adjustment.
- This setting is global in effect. Correct use may cause display of bathymetric information in one area to be more accurate. However, display of information in most other locations is likely to be less accurate.
- It is up to the mariner to check the vertical datum to determine the correct reference datum to use when setting the adjustment.
- Only depth related features are affected by this setting. Any shore features (such as the height of lights) are not affected.
- When interrogating meta-data information using "Details for this Location", the meta-data is displayed unmodified (no tidal adjustment).

Safety Depth / Contour

The following settings are used to update the values of the *Safety Depth* and *Safety Contour* chart display settings. This feature is used to simplify calculations for the *Safety Depth* and *Safety Contour* settings. It is always possible to set the values directly by going to the *Vector Charts* settings and editing the values there.

Before using these settings, you should normally ensure the dimensions for Own-Ship have been set in the *Own-Ship* settings, in particular the *Draft*.

Display Bathymetric ENCs (bENCs)

In some areas of navigation where detailed depth information is required for safe navigation, special digital charts called Bathymetric ENCs (bENCs) have been created. bENCs contain detailed information about depth not available in the normal charts for these areas. The bENCs are specialized in that they only contain bathymetric information and do not include other navigation information such as aids to navigation or bridges. Getting the full picture of both the bathymetric information and navigation requires displaying information from both bENCs and the corresponding ENCs.

When this setting is enabled, SEA*iq* modifies display of standard ENCs to replace underwater features (such as depth soundings, underwater contours, underwater depth areas, and dredged areas) with data from a bENC chart. Note that ENC navigation features are layered above bENC so that items such as buoys remain visible.

Use this feature with care. In some situations it can be confusing. If you are uncertain about the accuracy of the display, we recommend disabling this feature.

Below are some further notes/caveats:

- When enabled, you will see *(bENC Enabled)* in the bottom-right corner of the display.
- Enabling and disabling the feature will trigger SEA*iq* to reprocess charts. There may be a delay while this happens.
- bENCs must not overlap each other, even if they have different compilation scale. In fact, the bENC charts (if there is more than one loaded) should normally all be at the same compilation scale.

Charts (SEA*iq* USA)

Summary: Select the regions you want charts for and press Update to download them.

Important

NOAA is in the progress of updating their chart production and there are many important changes underway. The biggest change is that raster (RNC) charts are being phased out by NOAA. Also, coverage areas are being changed and charts are being regridded. Please see this link below for more information.

Instructions

This app provides simple access to all the vector and raster charts published by NOAA and the U.S. Army Corps of Engineers. The name of each region is displayed along with whether it has been selected. Simply select the regions corresponding to the areas you want. You can remove regions at any time and add regions whenever you are connected to the internet.

After selecting the desired regions, press the *Update* button. Charts for regions you have selected will be downloaded. Charts for regions newly disabled will be removed.

Your device must be connected to the internet to be able to download charts. The size of the data for charts is displayed with each region. We recommend using a WiFi connection to download charts. Once downloaded, charts are available for offline use (when you do not have internet or cell access).

After charts have been downloaded, select the Navigate tab to return to the digital chart display. Each chart is shown with a magenta outline. You can zoom to view the charts using normal gestures.

When viewing a chart for the first time, there may be a delay as the chart is processed to prepare it for viewing. Charts can require a significant amount of processing since they are being formatted specifically for your device and the options you have selected.

Later, return to the *Charts* tab for chart updates or to add/remove regions. Any region with missing or out-of-date charts will be displayed in red. When updating, only the new or changed charts for a region are downloaded. NOAA recommends updating your charts at least once a week.

Note that charts are downloaded only onto the current device. If you use this app on a different device you will need to select the regions you want on it and download those as well.

PRIMAR Charts

The settings here are for users with S-63 charts from <u>PRIMAR</u>. If you are using PRIMAR charts, you can enable occasional checks to see if you have any chart updates. When chart updates are available, you can download them directly from PRIMAR using an automatic download feature.

To use the remote update features from PRIMAR, you must have registered a S-63 user permit with PRIMAR that matches your S-63 *User Permit* or your *Extra User Permit*. You must select which user permit is registered with PRIMAR using the *User Permit* setting.

Settings

- *PRIMAR Web Site* : A link to the PRIMAR website.
- *Display Charts* : Control whether PRIMAR charts are displayed.
- *Chart Files* : View currently downloaded chart files.

    From time to time, you may wish to remove old update files. After deleting such files be sure to press *Update* to download any parts of those files that might still be needed.
- *Chart Status* (**Only SEA*iq* Pilot**) : This gives quick summary for PRIMAR charts. The number of cell permits and how many are expired or about to expire. Also displayed is the number of cells that are available and how updated they are relative to the dates listed in the PRODUCTS.TXT files that have been downloaded. The information applies to all charts with "PM" Data Server ID.

Download & Update

- *Download Updates* : Pressing this triggers an attempts to download charts from PRIMAR. You must be connected to the internet and have an account registered with PRIMAR. The update continues in the background.

    This capability can be used for your initial chart download as well as for periodic updates. For your initial chart download you may find it easier to download base or update zip files from PRIMAR: https://www.primar.org/enc-download.

    You can see the status being updated as the download proceeds. When complete, a notification is given.

    Keep in mind that chart updates can be quite large. You may want to wait until you are connected to a high speed internet connection before downloading updates for your charts. If there is a problem during the download, the update starts again from where it left off.
- *Status* : Status of PRIMAR updates.
- *Update Tracker* (**Only SEA*iq* Pilot**) : PRIMAR's website provides a service you can use to review chart changes in your updates. We recommend reviewing changes prior to making an update.
- *ENC Improver* (**Only SEA*iq* Pilot**) : Pressing this link will open PRIMAR's website on a link to provide feedback on ENCs.

Manage

- *Restore from Backup* : Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.

- *Erase All PRIMAR Charts* : This button erases all your PRIMAR chart files, after confirmation. This cannot be undone. You can download the files again. You can erase chart files individually by going to the *Charts* listing and pressing *Edit*.

  This may be useful when changing accounts to clear out old files. Also, we recommend doing this periodically to reduce the number of update files present on your device.

S-100 Charts

- *PRIMAR S-100 Web Site* : A link to the PRIMAR S-100 website.
- *Enable S-100 Charts* (**Only SEA*iq* Pilot**) : Control whether S-100 series PRIMAR charts are displayed and updated.

  This is normally only used for S-102 (Bathymetric) charts.

  Use of this function requires setting up S-100 p15 Data Protection, which is different from S-63 data protection scheme. In particular, the S-100 User Permit is different from the S-63 User Permit.
- *S-100 Chart Files* (**Only SEA*iq* Pilot**) : View currently downloaded PRIMAR S-100 series chart files.

  From time to time, you may wish to remove old update files in the PRIMAR Charts. After deleting such files be sure to do an *Update* to download any parts of those files that might still be needed.
- *Download S-100 Updates* (**Only SEA*iq* Pilot**) : Pressing this triggers an attempts to download S-100 series charts from PRIMAR. You must be connected to the internet and have an account registered with PRIMAR. The update continues in the background.

  This capability can be used for your initial chart download as well as for periodic updates. For your initial chart download you may find it easier to download base or update zip files from PRIMAR.

  You can see the status being updated as the download proceeds. When complete, a notification is given.

  Keep in mind that chart updates can be quite large. You may want to wait until you are connected to a high speed internet connection before downloading updates for your charts. If there is a problem during the download, the update starts again from where it left off.
- *S-100 Status* (**Only SEA*iq* Pilot**) : Status of PRIMAR S-100 series updates.
- *Restore S-100 Charts from Backup* (**Only SEA*iq* Pilot**) : Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.
- *Erase All PRIMAR S-100 Charts* (**Only SEA*iq* Pilot**) : This button erases all your PRIMAR chart files, after confirmation. This cannot be undone. You can download the files again. You can erase chart files individually by going to the *Charts* listing and pressing *Edit*.

  This may be useful when changing accounts to clear out old files. Also, we recommend doing this periodically to reduce the number of update files present on your device.
- *PRIMAR Server* (**Only SEA*iq* Pilot**) : Select which PRIMAR server to use for charts, *Prod* (Production) or *QA* (Quality Assurance). PRIMAR only distributes unofficial data on their QA server. When QA is selected, a warning will be shown on startup. You should only select QA if directed to by PRIMAR or a chart representative.

S-100p15 Data Protection

- *User Permit* (**Only SEA*iq* Pilot**) : This shows the S-100 user permit for SEA*iq* on this device. Each hardware device has its own unique user permit, which normally needs to be given to your chart vendor so they can create so-called chart permits. Tapping on this selection allows you to export the user permit in number of ways.
- *Register* (**Only SEA*iq* Pilot**) : Pressing this button requests to register your device for a User Permit. Your device must be connected to the internet.
- *Extra User Permit* (**Only SEA*iq* Pilot**) : This allows you to enter a secondary user permit for testing purposes.

Deprecated

- *S-63 User Permit* : Select which S-63 User Permit to submit to PRIMAR when requesting information about chart updates. *Normal* corresponds to the permit in the *User Permit* entry in the S-63 Settings. *Extra* corresponds to the user permit entered in the *Extra User Permit* field.
- *S-100 User Permit* (**Only SEA*iq* Pilot**) : Select which S-100 User Permit to submit to PRIMAR when requesting information about chart updates. *Normal* corresponds to the permit in the *User Permit* entry in the S-100 Settings. *Extra* corresponds to the user permit entered in the S-100 *Extra User Permit* field.

ChartWorld Charts

The settings here are for users with S-63 charts from ChartWorld. If you are using ChartWorld charts, you can enable occasional checks to see if you have any chart updates. When chart updates are available, you can download them directly from ChartWorld using an automatic download feature.

To use the remote update features from ChartWorld, you must have registered an account with ChartWorld and purchased charts.

Create ChartWorld Account

Creating a ChartWorld account is straight-forward except for the important step of creating a "ChartWorld Installation". An Installation provides ChartWorld the information it uses to package the charts for SEA*iq*. The instructions below explain all of the steps, including the creation of your SEA*iq* Installation.

- In a web browser, go to the ChartWorld website, www.chartworld.com.
- Select the *Register* option in the top-right corner.
- Fill in your details and press *Register* in the bottom-right corner.
- You should receive an email with your account name and temporary password.
- Go back to ChartWorld and *Login* (top-right) using your new account info. You may want to replace your temporary password.
- Select *Installations* on the left. Choose *New Installation*.
- Fill in the fields for your SEA*iq* Installation:
    - ♦ *Chart Display System:* Choose "Other"
    - ♦ *Original name of vessel/installation:* Enter "SEAiq" or your vessel's name
    - ♦ *Current name of vessel/installation:* Enter "SEAiq" or your vessel's name
    - ♦ *Your reference:* Enter whatever you like
    - ♦ *** Hardware Id:* Leave **empty**
    - ♦ *Hardware Id / BackUp:* Leave **empty**
    - ♦ *** ENC user permit:* **See below**
    - ♦ *ENC User permit / BackUp:* Leave empty for now (if you later have a second installation, you can add the new User Permit)
    - ♦ *Email address for update information:* Enter your email address
    - ♦ *Ship type:* Select "Not a Vessel"
    - ♦ *IMO No.:* Leave empty.
    - ♦ *Call Sign:* Leave empty.
    - ♦ ** Purpose of use:* Select "Navigation"
- The ENC User Permit is provided by SEA*iq* and it must be entered in your Installation exactly as given. We recommend using the following steps:
    - ♦ Go to SEA*iq*.
    - ♦ Go to the *Settings* tab and select *S-63 Charts*.
    - ♦ If *User Permit* is *Unregistered* the press the *Register* button (the device must be connected to the internet).
    - ♦ You can copy the User Permit to the ChartWorld website by hand or copy/paste it. On iPad this is done as follows: Select the *User Permit* item. Choose the option *Copy to Pasteboard*. Return to Safari and paste the value into the field. Pasting is done by pressing for a long time inside the field. After you lift your finger you should be given an option to paste the value.
- After creating your Installation, select it as your current installation.
- Enter your account and password in the ChartWorld settings in SEA*iq*. Your account will begin with

DC followed by 5 numbers (for example *DC12345*). Your password is normally 5 characters: 2 letters followed by 3 numbers (for example *AB789*). See *Account and Password* below for more information.

• Turn on *Display Charts*.

Account and Password

ChartWorld can use different usernames and passwords depending on whether you are accessing your account on their web site or download charts. Here are instructions to ensure that you enter the correct information in SEA*iq*.

• Account: This is always *DC* followed by 5 numbers.
• Password: This is normally 5 characters, two letters followed by 3 numbers. For example, *AB789*

You can confirm you are using the correct information by looking for the *FTP Chart Download* information that ChartWorld sent you. You will see a link like this: *ftp://DC12345:AB789@www.chartworld.com/DC12345/*. In this case, the account is *DC12345* and the password is *AB789*.

Purchase Charts

You are ready to purchase charts. Go to the ChartWorld store and find the S-63 charts you want. **Be sure to only purchase charts in the S-63 format.** Add them to your cart and checkout.

For many charts, you will be offered a choice of subscription periods. These only determine for how long you will receive updates for the charts. SEA*iq*, following the S-63 standard, will continue to display charts that have expired subscriptions, but will display a warning.

Important: do not set the Base Medium since this will prevent all the needed base charts from being provided by the server.

Download Charts

To download or update charts simply press the *UPDATE* button while connected to the internet. If any updates are available, they will be downloaded and installed. SEA*iq* will regularly check for update and offer to download them when they are available.

Troubleshooting

• If no files download: Double-check your account and password information. Read the guidelines above.
• If files are downloaded but none of the charts (or only some) are displaying: Check that you have not set the *Base Medium* setting in your ChartWorld account. If the account has been in existence for some time and you just used *Erase All* or activated a new device, then you may need to request ChartWorld to *Reset your account* so that all base chart files are once again included in the server download.
• If files are downloaded but none of the charts (or only some) are displaying: Check that you have registered your S-63 User Permit (in *Settings / S-63 Charts / User Permit* -- you may need to first use the Register button) with ChartWorld. Chart permits created for a different ECDIS program or a different S-63 User Permit can not be displayed on SEA*iq*.

- If you get a network error when updating, it may help to turn on *Settings / Advanced / Disable FTP Proxy*. Be sure to read the documentation for this setting.

Settings

- *ChartWorld Web Site* : A link to the ChartWorld website.
- *Display Charts* : Control whether ChartWorld charts are displayed.
- *Chart Files* : View currently downloaded chart files.

  From time to time, you may wish to remove old update files. After deleting such files be sure to press *Update* to download any parts of those files that might still be needed.
- *Chart Status* (**Only SEA*iq* Pilot**) : This gives quick summary for ChartWorld charts. The number of cell permits and how many are expired or about to expire. Also displayed is the number of cells that are available and how updated they are relative to the dates listed in the PRODUCTS.TXT files that have been downloaded. The information applies to all charts with "59" Data Server ID.

Account

- *Account* : Fill in the account registered with ChartWorld. This is sometimes referred to as your *Username* and sometimes as *Account*. This is always the letters *DC* followed by 5 numbers. For example, *DC12345*.
- *Password* : Fill in your ChartWorld password. This is typically 5 characters: 2 letters followed by 3 numbers. For example, *AB789*. This is different than the password you use to access your account information on the ChartWorld website.

Download & Update

- *Download Updates* : Pressing this triggers an attempt to download charts from ChartWorld. You must be connected to the internet and have an account registered with ChartWorld. The update continues in the background.

  This capability can be used for your initial chart download as well as for periodic updates.

  You can see the status being updated as the download proceeds. When complete, a notification is given.

  Keep in mind chart updates can be quite large. You may want to wait until you are connected to a high speed internet connection before downloading updates for your charts.
- *Status* : Status of ChartWorld updates.

Manage

- *Restore from Backup* : Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.
- *Erase All ChartWorld Charts* : This button erases all your ChartWorld charts, after confirmation. This cannot be undone. You can download the files again. You can erase chart files individually by going to the *Charts* listing and pressing *Edit*.

  This may be useful when changing accounts to clear out old files. Also, we recommend doing this

periodically to reduce the number of update files present on your device.

IMPORTANT: The ChartWorld server removes base files from your account after some time. This means that after erasing your files and then re-downloading your files, you may not get all the required files for the charts you have purchased. If this happens, please contact ChartWorld and request that they reset your account so that all base files become available again. ChartWorld has been notified of this issue.

AHO Charts

The settings here are for users with S-63 charts from the <u>Australian Hydrographic Office (AHO)</u>. If you are using AHO charts, you can enable checks to occasionally see if you have any chart updates. When chart updates are available, you can download them directly using this automatic download feature.

As with other S-63 chart sources, you will need to register your S-63 User Permit and provide it to your chart provider for them to create your chart permits. Please see *Settings / S-63 Charts / Help* for more information.

Downloading the AHO chart files does not require an account with AHO. However to use the AHO charts, you must install valid S-63 chart permits. Note that you install your permit files in the *Files* tab, using the normal import methods. You can install either the *ENC.zip* file or the *PERMIT.TXT* file contained within.

Downloads for base charts and updates from AHO can be quite large. Base charts may be over *200MB*. Updates may be up to *50MB*, depending on how many updates have been produced.

Recommended best practice is to only update your charts when you have a chance to validate the updates are correct.

Settings

- *AHO Web Site* : A link to the AHO website.
- *Enable* : Controls whether AHO charts are displayed and whether periodic checks are made for chart updates.
- *Chart Files* : View currently downloaded chart files.

  From time to time, you may wish to remove old update files in the AHO Charts. After deleting such files be sure to do an *Update* to download any parts of those files that might still be needed.
- *Chart Status* : This gives quick summary for charts from AHO. The number of cell permits and how many are expired or about to expire. Also displayed is the number of cells that are available and how updated they are relative to the dates listed in the PRODUCTS.TXT files that have been downloaded. The information applies to all charts with "AU" Data Server ID.

Download & Update

- *Download Updates* : This attempts to download charts from AHO. You must be connected to the internet. You do not need an account with AHO to download charts, but you need valid permit files in order to use them.

  You can see the status being updated as the download proceeds. When complete, a notification is given.

  Keep in mind that chart updates can be quite large. You may want to wait until you are connected to a high speed internet connection before downloading updates for your charts.
- *Download Status* : Status of AHO updates.

Manage

- *Restore from Backup* : Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.
- *Erase All AHO Charts* : This button erases all your AHO chart files, after confirmation. This cannot be undone. You can download the files again. You can erase chart files individually by going to the *Charts* listing and pressing *Edit*.

  This may be useful when changing accounts to clear out old files.

Advanced

- *New Download/Update (Experimental)* : Controls whether a new downloader will be used for AHO charts. This downloader makes more efficient use of the network.

Bremer Schiffsmeldedienst Charts

The settings here are for users with charts from <u>Bremer Schiffsmeldedienst (BSMD)</u>. If you are using these charts, you can enable occasional checks to see if you have any chart updates. When chart updates are available, you can download them directly from BSMD using an automatic download feature.

To use the remote update features from BSMD, you must have an account with BSMD.

Settings

- *BSMD Web Site* **(Only SEA*iq* Pilot)** : A link to Bremer Schiffsmeldedienst (BSMD) website.
- *Display Charts* **(Only SEA*iq* Pilot)** : Control whether BSMD charts are displayed.
- *Chart Files* **(Only SEA*iq* Pilot)** : View currently downloaded chart files.

  From time to time, you may wish to remove old update files. After deleting such files be sure to press *Update* to download any parts of those files that might still be needed.
- *Chart Status* **(Only SEA*iq* Pilot)** : This gives quick summary for BSMD charts. The number of cell permits and how many are expired or about to expire. Also displayed is the number of cells that are available and how updated they are relative to the dates listed in the PRODUCTS.TXT files that have been downloaded. The information applies to all charts with "5B" Data Server ID.

Account

- *User Name* **(Only SEA*iq* Pilot)** : Fill in the user name registered with BSMD.
- *Password* **(Only SEA*iq* Pilot)** : Fill in your BSMD password.

Download & Update

- *Download Updates* **(Only SEA*iq* Pilot)** : This attempts to download charts from BSMD. You must be connected to the internet and have an account registered with BSMD. The update continues in the background.

  This capability can be used for your initial chart download as well as for periodic updates.

  You can see the status being updated as the download proceeds. When complete, an alert is given.

  Keep in mind chart updates can be quite large. You may want to wait until you are connected to a high speed internet connection before downloading updates for your charts.
- *Status* **(Only SEA*iq* Pilot)** : Status of BSMD updates.

Manage

- *Restore from Backup* **(Only SEA*iq* Pilot)** : Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.
- *Erase All Charts* **(Only SEA*iq* Pilot)** : This button erases all your BSMD charts, after confirmation. This cannot be undone. You can download the files again. You can erase chart files individually by going to the *Charts* listing and pressing *Edit*.

This may be useful when changing accounts to clear out old files. Also, we recommend doing this periodically to reduce the number of update files present on your device.

Troubleshooting

- If you get a network error when updating, it may help to turn on *Settings / Advanced / Disable FTP Proxy*. Be sure to read the documentation for this setting.

Generic FTP

The settings here are for users with charts available from a File Transfer Protocol (FTP) server. This will make the initial download of charts and then periodically check for updates.

Only files will be downloaded from the server, no directories. Individual chart files may be used in some cases, such as for S-57 base cells (files ending in *.000*) or KAP (*.kap*) files. Overlays, Markup (*.markup*) and other files can be included as well. For situations where many charts are being provided, best practice is to provide chart data in ZIP archive files.

Settings

- *Display Charts* (**Only SEA*iq* Pilot**) : Control whether FTP charts are used.
- *Chart Files* (**Only SEA*iq* Pilot**) : View currently downloaded chart files.

  From time to time, you may wish to remove old update files. After deleting such files be sure to press *Update* to download any parts of those files that might still be needed.

Account

- *User Name* (**Only SEA*iq* Pilot**) : Fill in the user name registered with the FTP account.
- *Password* (**Only SEA*iq* Pilot**) : Fill in your FTP password.
- *Server* (**Only SEA*iq* Pilot**) : The host name or IP address of your FTP server. The host`name should not include an *ftp://* prefix.

Download & Update

- *Download Updates* (**Only SEA*iq* Pilot**) : Pressing this triggers an attempt to download charts from FTP. You must be connected to the internet and have an account registered with the FTP service. The update continues in the background.

  This capability can be used for your initial chart download as well as for periodic updates.

  You can see the status being updated as the download proceeds. A notification is given when complete.

  Keep in mind updates can be quite large. You may want to wait until you are connected to a high speed internet connection before downloading updates for your charts.
- *Status* (**Only SEA*iq* Pilot**) : Status of FTP updates.

Manage

- *Restore from Backup* (**Only SEA*iq* Pilot**) : Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.
- *Erase All Charts* (**Only SEA*iq* Pilot**) : This button erases all your FTP charts, after confirmation. This cannot be undone. You can download the files again. You can erase chart files individually by going to the *Charts* listing and pressing *Edit*.

This may be useful when changing accounts to clear out old files. Also, we recommend doing this periodically to reduce the number of update files present on your device.

Troubleshooting

- If you get a network error when updating, it may help to turn on *Settings / Advanced / Disable FTP Proxy*. Be sure to read the documentation for this setting.

Import from Media

The settings here are for users with charts they wish to import from CDROM or DVD. This feature is only available on laptops such as Windows and Apple MacBook.

Settings

- *Chart Files* (**Only SEA*iq* Pilot**) : View currently downloaded chart files.

  From time to time, you may wish to remove old update files. After deleting such files be sure to press *Update* to download any parts of those files that might still be needed.
- *Import Media* (**Only SEA*iq* Pilot**) : This is used to import charts, normally from DVD or CDROM.

  This capability can be used for your initial base chart installation as well as for periodic updates.

  Prior to importing the charts from DVD/CDROM, you must have first imported your permits. This is done by dragging and dropping your *PERMIT.TXT* file onto the program. The file appears in your *Files* tab (not here).

  You can see the status being updated as the import proceeds. Upon completion, a notification is given.

  Keep in mind chart imports can be quite large and may take some time.

  When complete, the imported file appears in the charts table here.
- *Status* (**Only SEA*iq* Pilot**) : Status of imports.
- *Erase All Charts* (**Only SEA*iq* Pilot**) : This button erases all your charts that were imported from DVD/CDROM, after confirmation. This cannot be undone. You can reimport the files again. You can erase chart files individually by going to the *Charts* listing and pressing *Edit*.

VentureFarther

<u>VentureFarther</u> is an online web toolkit for mariners. Please note that ongoing use of VentureFarther KAP download requires contributing to their site or paying a fee. *We encourage you to donate to the site to help support maintaining and improving this service*.

Setup

Here are the steps to setup your account with VentureFarther.

1. Go to <u>VentureFarther</u>. Choose *Join the Community*. Fill in the information and select *Done*.
2. Then go to *Profile / External Access Key*. Copy the key (long press, select the entire key, then Copy) from VentureFarther. Then paste it in the *External Access Key* field here. This allows SEA*iq* to login as you on VentureFarther.

Chart Download

To download charts, go to the Navigate tab. Double-tap and select *Download Satellite Chart*. When completed, the chart will appear on the display. The *Download Satellite Chart* option will only appear if a value is present in the *External Access Key* field.

After chart(s) are downloaded, they will be displayed if *VentureFarther* chart display is enabled. You do not need to turn on raster charts in order to display these charts.

Settings

- *Web Site* : A link to the <u>VentureFarther</u> website.
- *External Access Key* : This key is used to login to your VenturaFarther account.

  Go to VentureFarther account, go to *Profile / External Access Key*. Copy the key (long press, select the entire key, then Copy) from VentureFarther. Then paste it here (long press and select Paste).
- *Display Charts* : When on, VentureFarther charts are displayed. They are shown in preference to normal charts.
- *Imagery Source* : Choose source of chart imagery: <u>Google Earth</u> or <u>Microsoft Virtual Earth</u>.
- *Resolution* : Select charts based on low or high resolution imagery. This is only supported for imagery from Google Earth.
- *Charts* : Chart files.
- *Erase All Venture Farther Charts* : This button erases all your Venture Farther charts, after confirmation. You can then download new ones. You can also delete charts individually by going to the *Charts* listing and pressing *Edit*.

AIS Sharing

SEA*iq* AIS Sharing is an easy way to get AIS information for many parts of the world.

AIS Sharing has two sources of data. First, it provides access to all the feeds at the <u>AIS Hub</u>. AIS Hub is a cooperative way to get AIS data; people or organizations setup permanent AIS antennas and supply their feed to AIS Hub. In return AIS Hub sends that feed to the organizations. If you want to add AIS coverage for your area and it is not already provided, AIS Hub is one way to do that.

Devices such as Apple iPads and iPhones will normally turn off their cellular internet connection when they connect to a WiFi network. You can follow <u>these instructions</u> in order find different approaches to having both connections active at the same time.

If you have a local AIS base station that you would like included in AIS Sharing, you can email us at *info@seaiq.com* with an IP address and TCP or UDP port. We can add the feed directly to the SEA*iq* server.

Settings

- *AIS Sharing* : Enable connection to *AIS Sharing* server.
- *Diagnostics* : See diagnostics information on your connection to *AIS Sharing*.

Hi-Res PPU Data

- *Transmit Own-Ship* (**Only SEA*iq* Pilot**) : Enabling this causes your Own-Ship information to be transmitted to other vessels.

  This differs from normal AIS data in that it does not require AIS support for your vessel. Also, the information transmitted includes any adjustments you have made to the vessel's size and/or antenna offsets. Finally, the name of the pilot is included in the data that is shared.

  If this option is enabled on more than one instance of SEA*iq* on the same vessel, then you can see other images for Own-Ship. This can be helpful if you have several pilots with their own PPUs on a vessel and they want to cross-check their positions with each other. If the devices are using the same PPU, then the additional instances only create clutter and you may want to turn off *Transmit Own-Ship* for all but one.
- *Show Vessels* (**Only SEA*iq* Pilot**) : Enabling this causes other vessels sharing Hi-Res PPU data to be received and displayed.

  Note that you can not see your own data here. This only has an effect if someone else is transmitting data.
- *Hide Matching AIS* (**Only SEA*iq* Pilot**) : Enabling this causes the AIS targets matching a Hi-Res PPU to be suppressed. This is done to reduce clutter. The AIS data is only suppressed when Hi-Res PPU information about a vessel is complete: it should contain GPS position, COG, SOG, HDG, ROT, size, and antenna offset.
- *Hi-Res AIS Targets Panel* (**Only SEA*iq* Pilot**) : When enabled, a bar of 5 buttons is shown on the bottom of the display for AIS Hi-Res targets that are ahead of Own-Ship on the active route and up to *50nm*. The vessels are displayed in order of distance from Own-Ship, up to 5 vessels. Only vessels at least *Settings / Meeting Point / Small Vessel Lemgth* are shown.

For this to work, *AIS Sharing / Hi-Res Targets / Show Vessels* must also be enabled.

Alternate Server

- *Use Alternate Service* **(Only SEA*iq* Pilot)** : Use alternate *AIS Sharing* server. This is normally left disabled unless you are using an alternate service.
- *Service* **(Only SEA*iq* Pilot)** : Use this service name to choose an alternate AIS service. This is not normally required and you should not change this without instructions from your administrator.
- *User Name* **(Only SEA*iq* Pilot)** : Use this username to login to an alternate AIS service. This is not normally required.
- *Password* **(Only SEA*iq* Pilot)** : Use this password to login to alternate AIS service. This is not normally required.

Frequently Asked Questions

- *Can I use AIS Sharing without having my own AIS hardware?* Yes.
- *Can I use AIS Sharing while also using my own AIS hardware?* Yes.

- *What if a target is listed in both my WiFi AIS feed and AIS Sharing?* Your WiFi AIS feed is always given precedence over AIS Sharing?

- *How do I both connect to a WiFi NMEA/AIS and use cellular internet connection?* Read these instructions.

NMEA & AIS

NMEA is a marine industry standard for communicating information between on-board devices. Automatic Identification System (AIS) is a standard for exchanging vessel location and other information using VHF radio signals. AIS data is typically shared between on-board devices using NMEA.

SEA*iq* supports using external NMEA/AIS information over WiFi and (for devices that support it) Bluetooth. SEA*iq* can also be configured to act as an NMEA server, forwarding own its information to other devices.

With the appropriate configuration settings in SEA*iq* you can do the following:

- Display AIS targets on the Navigation tab and access information about vessels reporting AIS information under the AIS tab.
- Use your vessel's onboard GPS in place of your device's internal GPS.
- Access and display numerous sensors from your on-board systems.
- Use GPS on devices that do not include integrated GPS.
- Forward GPS from one device to another (when you have several devices and some do not have GPS hardware).

Numerous alarms are provided for NMEA data. Among these include an alarm to indicate data corruption. When at least *10 "sentences"* and *5% of the total* in the prior *5 minutes* have checksum errors, an alarm will be presented. These are shown no more frequentl than every *5 minutes*.

Important for Apple IOS: If you receive a dialog *SEAiq would like to find and connect to devices on your local network*, be sure to press *OK*. The most common issue users have is caused by not allowing this permission. This can be resolved by following these steps .

Settings

This section describes how to connect your device to an NMEA data feed over WiFi. Before adjusting these settings, you first ensure your NMEA data feed and this device are connected to the same network.

- *Enable* : This switch turns on NMEA support. Normally, you should enable this only after first setting the other configuration items.
- *Inactivity Alarm* : When enabled, an alarm is generated after *15 seconds* of inactivity during which no NMEA data was received. After pressing OK, the alarm is disabled for *1 minute*. If no data has still been received, it fires again.
- *Inactivity Alarm Reminder* : When enabled, a warning is generated when (1) data is received from NMEA and (2) the Inactivity Alarm is disabled. A warning is given asking if you would like to enable the Inactivity Alarm. Pressing *Alarm*, enables the inactivity alarm. Pressing *OK* disables this warning for *5 minutes*, after which it may fire again.

  This also functions similarly for *Extra NMEA Connection*, if that is enabled.
- *AIS Alarm* : When enabled, alarms reported from AIS are displayed to the user.

  AIS alarms normally are generated by the ship's AIS, not a PPU. Unfortunately, the meaning of AIS alarms may vary between ship's AIS systems.

  Alarms cause the display to flash with a warning message. After dismissing the alarm, no further AIS

alarms are reported for at least *2 minutes*.

Regardless of whether alarms are enabled, recent alarms from AIS can be viewed under *Settings / NMEA & AIS / Diagnostics*.

- *HDOP Alarm* (**Only SEA*iq* Pilot**) : When enabled, an alarm is generated if GPS HDOP exceeds *5.0* for 5 reports. HDOP is an abbreviation for Horizontal Dilution of Precision, an estimation of the accuracy of GPS positions. If an alarm occurs, it is disabled for *60 seconds* after you acknowledge it.

  The requirements for 5 reports is to avoid so-called false positive alerts where one or a few high-HDOP values are reported.

  HDOP alarms are not generated when RTK FIX is active.

  This alarm requires that an HDOP value is received from NMEA/AIS. Typically, this information is not available from a basic WiFi AIS Pilot Plug. If no HDOP is received, no alarm fires.
- *Own-Ship Data Alarm* : When enabled, an alarm is generated when the data source for Own-Ship GPS, COG, SOG, HDG, or ROT is lost or changes in a way likely to reduce data quality. Also, a listing of the source of these sensor data is shown in the Source panel of the status bar.
- *Show Device GPS* (**Only SEA*iq* Pilot**) : When enabled, the device's internal GPS position is displayed along with position from NMEA/AIS. A circle marked *INT* indicating the radius of Horizontal Position Error is also shown. The position is intended to be used to help validate GPS information reported from NMEA/AIS.

  If other GPS positions are available but were not used for display of Own-Ship, they are also shown. Possible other positions include *AIS*, *NMEA* (for Primary NMEA), and *EXTRA* (for Extra NMEA).
- *NMEA Verification Alarm* (**Only SEA*iq* Pilot**) : When enabled, an alarm fires if NMEA/AIS and GPS position differ by at least *100m*. After acknowledging an alarm, it is disabled for *1 minute*.

  The alarm incorporates the relative positions of the NMEA and GPS antennas in determining the alarm distance. See *Own-Ship* settings.

Derived ROT

- *Derive ROT from HDG* (**Only SEA*iq* Pilot**) : When enabled, Rate-of-Turn (ROT) information from AIS for Own-Ship or NMEA is replaced with derived values. See the dampening setting below. This can be helpful when accurate heading is reported but not Rate-of-Turn. Or if the Rate-of-Turn information has a problem. If NMEA/AIS reports accurate Rate-of-Turn information, you should *not* use this feature. This feature is only supported with live Own-Ship data from NMEA/AIS. It is not supported with Virtual Boarding.
- *ROT Dampening* (**Only SEA*iq* Pilot**) : This controls how much dampening to apply to *Derive ROT from HDG* feature above. Dampening is used to decrease the impact of occasionally spurious data, at the cost of somewhat less responsiveness. Normally, more dampening results in more accurate ROT but longer delay in detecting it. Conversely, less dampening results in less accurate ROT but faster responsiveness. Three levels can selected from. This setting has no effect unless *Derive ROT from HDG* is enabled.

Standard WiFi Devices

- *PCA Non-Portable Pilot Unit* : Configure for use with the Panama Canal Authority <u>Non-Portable Pilot Unit</u> specification. This includes the following devices:

- ♦ <u>Trelleborg P3</u>
- ♦ Navicom Dynamics CanalPilot
- ♦ <u>SAL Navigation SPU-100</u>
- ♦ CAIM NaviMotion
- ♦ SAL SPU-100

The PCA NPPU standard uses UDP communication on port 17608. The network configuration for NPPU is the same as *Trelleborg CAT ROT (v2-5)*.

- *Navicom Dynamics GyroPilot* (**Only SEA*iq* Pilot**) : Configure for use with Navicom Dynamics GyroPilot. This is for MK2 onwards. Prior to MK2, the network configuration is different and depends on the serial number of the device, so please refer to your product documentation.
- *Navicom Dynamics ChannelPilot* (**Only SEA*iq* Pilot**) : Configure for use with Navicom Dynamics ChannelPilot. This is for MK3 onwards. Prior to MK3, the network configuration is different and depends on the serial number of the device, so please refer to your product documentation.
- *Navicom Dynamics HarbourPilot* (**Only SEA*iq* Pilot**) : Configure for use with Navicom Dynamics HarbourPilot Triton Lightweight. Prior to Triton, the network configuration is different and depends on the serial number of the device, so please refer to your product documentation.
- *Navicom Dynamics HarbourPilot* (**Only SEA*iq* Pilot**) : Configure for use with Navicom Dynamics HarbourPilot Triton Ruggedised. Prior to Triton, the network configuration is different and depends on the serial number of the device, so please refer to your product documentation.
- *Trelleborg CAT ROT (v1)* (**Only SEA*iq* Pilot**) : Configure for use with Trelleborg CAT ROTv1.
- *Trelleborg CAT ROT (v2-5)* (**Only SEA*iq* Pilot**) : Configure for use with following Trelleborg devices:

    - ♦ CAT ROT (v2) without CAT I
    - ♦ CAT ROT (v3) without CAT I
    - ♦ CAT ROT (v4) without CAT I
    - ♦ CAT ROT (v5) without CAT I
    - ♦ CAT ROT and CAT I (v2) *(using firmware before 1.2)*
    - ♦ CAT II (configuration 1)
    - ♦ CAT III (configuration 1)

  For CAT II and CAT III, please see documentation for further configuration steps that are required, as well as additional configuration options.

  The network configuration received UDP on port 17608 and is the same as *PCA NPPU*.
- *Trelleborg CAT ROT+I (v2,v4-5) & CAT XT (v4-5)* (**Only SEA*iq* Pilot**) : Configure for use with following Trelleborg devices:

    - ♦ CAT ROT and CAT I (v2) (using firmware 1.2 or later)
    - ♦ CAT ROT and CAT I (v4)
    - ♦ CAT ROT and CAT I (v5)
    - ♦ CAT XT (v4)
    - ♦ CAT XT (v5)
- *Trelleborg CAT ROT+I (v3) & CAT XT (v3)* (**Only SEA*iq* Pilot**) : Configure for use with following Trelleborg devices:

    - ♦ CAT ROT and CAT I (v3)
    - ♦ CAT XT (v3)
- *Trelleborg CAT PRO (Modes 1-3)* (**Only SEA*iq* Pilot**) : Configure for use with Trelleborg CAT PRO (<u>Documentation</u>). This enables connections to all available modules, including the EXT, HDG, and POS modules. You can press the CAT PRO status panel to see detailed diagnostics information from the modules. Additionally, you can use *Settings / Trelleborg PPUs / CAT PRO* section to change

various settings for your modules.

- *Trelleborg CAT PRO (Mode 4)* **(Only SEA*iq* Pilot)** : Configure for use with Trelleborg CAT PRO (Documentation). This enables connections to all available modules, including the EXT, HDG, and POS modules. You can press the CAT PRO status panel to see detailed diagnostics information from the modules. Additionally, you can use *Settings / Trelleborg PPUs / CAT PRO* section.
- *AD Navigation PPUs* **(Only SEA*iq* Pilot)** : Configure WiFi for use with all recent AD Navigation devices. All recent AD Navigation devices use the same WiFi configuration. Supported device include ADQ-2, ADX DUO, ADX XR, and ADX XR Lite. These all use host *10.33.3.3* and port *8023*. The ADX XR2 has a different setting.

  Some older devices may have custom settings; please contact your documentation or AD Navigation for your configuration details.
- *AD Navigation XR2* **(Only SEA*iq* Pilot)** : Configure WiFi for use with AD Navigation ADX XR2. These use host *10.33.3.4* and port *8023*.
- *AD Navigation XR2 (UDP)* **(Only SEA*iq* Pilot)** : Configure WiFi for use with AD Navigation ADX XR2 in UDP mode. These use host port *8000*. UDP mode may provide more reliable WiFi connectivity but requires a recent firmware version to be loaded in the device.
- *KSNTEK KSN11-W or KSN55 / PilotsTech AW2016* **(Only SEA*iq* Pilot)** : Configure for use with certain KSNTEK and PilotsTech devices, including:

  - ♦ KSNTEK KSN11-W
  - ♦ KSNTEK KSN55
  - ♦ PilotsTech AW2016

  These devices use connection type *TCP*, host *192.168.1.1* and port *8888*.
- *KSNTEK KSN11-C ROT or KSN55-C / PilotsTech AW2016C-ROT* **(Only SEA*iq* Pilot)** : Configure for use with certain KSNTEK and PilotsTech devices, including:

  - ♦ KSNTEK KSN11-C ROT
  - ♦ KSNTEK KSN55-C
  - ♦ PilotsTech AW2016C-ROT

  These devices use connection type *TCP*, host *192.168.2.1* and port *8888*.
- *PilotsTech AW2016C-ROT & AW2016-GPS* **(Only SEA*iq* Pilot)** : Configure for use with PilotsTech *AW2016C-ROT* and *AW2016-GPS*. The AW2016-GPS AW2016C-ROT should be connected to the AIS plug and the AW2016-GPS should be place in a location with good exposure to GPS satellites. In this configuration, the AW2016C-ROT provides AIS, HDG, ROT; the AW2016-GPS is used for GPS, COG, SOG.
- *PILOT CENKIN WiFi AIS Pilot Plug* **(Only SEA*iq* Pilot)** : Configure for use with PILOT CENKIN® WiFi AIS Pilot Plug.
- *CENKIN CP4* **(Only SEA*iq* Pilot)** : Configure for use with CENKIN CP4 WiFi AIS Pilot Plug. This device uses host *10.10.100.254* and port *8899*.
- *TRENZ PPU* **(Only SEA*iq* Pilot)** : Configure for use with TRENZ PPU via WiFi. This device uses host *10.10.10.100* and port *8919*. For Bluetooth operation, you can configure manually.
- *Navigandi Orbis* : Configure for use with Navigandi Orbis. Host *192.168.4.1*, Port *5*, and Connection Type *TCP*. See Navigandi Tech for more information.
- *Vesper XB-8000* : Configure for use with Vesper XB-8000. Host *192.168.15.1*, Port *39150*, and Connection Type *TCP*.

Connection

- *Connection Type* : Select WiFi or Bluetooth connection to external GPS device.

Bluetooth is not supported on Apple iPads/iPhones.
- *WiFi Setup* : Set up and manage an external NMEA/AIS feed over WiFi.
- *Bluetooth Setup* : Set up and manage an external NMEA/AIS feed over Bluetooth. *Not available on Apple iPad or iPhone.*
- *Status & Diagnostics* : This shows diagnostics describing the current status of your NMEA/AIS configuration.

Extra Connection (Advanced)

- *Enable* (**Only SEA*iq* Pilot**) : This switch turns on NMEA support for an additional feed. Normally, you should enable this after first setting the other configuration items. *You should not enable this unless you know that it is needed. This feature requires an Enterprise Subscription.*
- *Connection Type* (**Only SEA*iq* Pilot**) : Select WiFi or Bluetooth connection for extra GPS device.

    Bluetooth is not supported on Apple iPads/iPhones.
- *WiFi Setup* (**Only SEA*iq* Pilot**) : Set up and manage an extra NMEA/AIS feed over WiFi.
- *Bluetooth Setup* (**Only SEA*iq* Pilot**) : Set up and manage an extra NMEA feed over Bluetooth. *Not available on Apple iPad or iPhone.*
- *Status & Diagnostics* (**Only SEA*iq* Pilot**) : This shows diagnostics describing the current status of your Extra NMEA/AIS configuration, if enabled.
- *Inactivity Alarm* (**Only SEA*iq* Pilot**) : When enabled, an alarm is generated after *15 seconds* of inactivity during which no NMEA data was received. After an alarm is acknowledged, it is disabled for *1 minute*. If no data has still been received, it fires again.

Extra (2) Connection (Advanced)

- *Enable* (**Only SEA*iq* Pilot**) : This switch turns on NMEA support for an additional feed. Normally, you should enable this after first setting the other configuration items. *You should not enable this unless you know that it is needed. This feature requires an Enterprise Subscription.*
- *Connection Type* (**Only SEA*iq* Pilot**) : Select WiFi or Bluetooth connection for extra GPS device.

    Bluetooth is not supported on Apple iPads/iPhones.
- *WiFi Setup* (**Only SEA*iq* Pilot**) : Set up and manage an extra NMEA/AIS feed over WiFi.
- *Bluetooth Setup* (**Only SEA*iq* Pilot**) : Set up and manage an extra NMEA feed over Bluetooth. *Not available on Apple iPad or iPhone.*
- *Status & Diagnostics* (**Only SEA*iq* Pilot**) : This shows diagnostics describing the current status of your Extra (2) NMEA/AIS configuration, if enabled.
- *Inactivity Alarm* (**Only SEA*iq* Pilot**) : When enabled, an alarm is generated after *15 seconds* of inactivity during which no NMEA data was received. After an alarm is acknowledged, it is disabled for *1 minute*. If no data has still been received, it fires again.

Saved Devices

- *Load Device* : Load NMEA WiFi and Bluetooth settings for a saved device. Pres *EDIT* to remove unneeded configurations.
- *Save Device* : Press this button to save your NMEA WiFi and Bluetooth settings.
- *Configuration Name* : This is the name of the current configuration.

Advanced

- *Advanced* : Advanced settings for NMEA & AIS.

NMEA Server (All but SEA*iq* Pilot)

SEA*iq* supports forwarding GPS information to other devices as a new NMEA feed. This is useful, for instance, if you have an iPhone with GPS and a WiFi-only iPad without GPS. You can install SEA*iq* on both devices, configure the iPhone as an NMEA server and the iPad as an NMEA client.

In the example above, you first need to make sure both devices are on the same WiFi network. Then get the IP address of the iPhone by going to Settings, WiFi, and selecting the name of the network being used. Then pick a port number to use. Here we use 10000.

- iPhone (NMEA Server Settings)
  - *Server Enable*: ON
  - *Server Port*: 10000
- iPad (NMEA settings)
  - *Enable*: ON
  - *Use NMEA/AIS GPS*: ON
  - *Use UDP*: OFF
  - *Host*: *IP address of iPhone*
  - *Port*: 10000

The SEA*iq* NMEA server does *not* currently forward AIS data, only GPS-related data (location, course, speed, etc).

NMEA & AIS WiFi

Settings

The following settings can be used to connect your device to NMEA/AIS over WiFi. Before adjusting them, first ensure this device and your source of NMEA/AIS data are connected to the same network.

- *Host* : This is used to set the IP address of a TCP-based NMEA feed. You can specify either a hostname or IP address (decimal and dot). IP addresses are preferred because they do not require a Dynamic Name Server (DNS) to be configured.

  This field is not normally used for UDP feeds. For UDP, it can be set to an IP address in decimal and dot format. When set, only data from the given address is accepted. Currently, this is only required for Trelleborg CAT ROT v3 devices.
- *Port Number* : This is used to specify the port number for your NMEA data feed. It is required for both TCP and UDP based feeds. A port is an integer number in the range *1-65535*.
- *Connection Type* : This setting selects whether to use TCP (the default) or UDP connections. Most devices only support TCP. For devices that support both UDP and TCP, UDP is normally preferred.

  Products that support UDP include:

  - Panama Canal Non-Portable Pilot Unit (NPPU) devices
  - Trelleborg CAT ROT (all versions), CAT I, CAT PRO
  - AD Navigation XR2 (with appropriate firmware
  - Digital Yacht iAIS

  For UDP, if your device has a firewall, you need to disable it or open this port in the firewall.
- *Status* : Current status of your connection.

Configurations

Below are configuration setting for devices from a number of vendors.

Navicom Dynamics PPUs

Please refer to <u>Navicom Dynamics Settings</u> for complete instructions on configuring SEA*iq* Pilot with Navicom Dynamics PPUs.

Trelleborg PPUs

Please refer to <u>Trelleborg Settings</u> for complete instructions on configuring SEA*iq* Pilot with Trelleborg PPUs.

AD Navigation PPUs

Please refer to <u>AD Navigation Settings</u> for complete instructions on configuring SEA*iq* Pilot with AD Navigation PPUs.

Pilots TECH AIS Pilot Plug WiFi

SEA*iq* supports the <u>Pilots TECH</u> AIS Pilot Plug WiFi. Use the configuration below. Older units may use port *60000* instead of *8888*.

- *Host*: 192.168.1.1
- *Port Number*: 8888 (see above)
- *Connection Type*: TCP

GlobPilot

SEA*iq* supports the <u>GlobPilot</u> *WiFiAis* and *WiFiAisGPS*. Use the configuration below.

- *Host*: 192.168.1.1
- *Port Number*: 2000
- *Connection Type*: TCP

PILOT CENKIN® AIS Pilot Plug

SEA*iq* supports the <u>PILOT CENKIN® AIS Pilot Plug</u>. Use the configuration below.

- *Host*: 192.168.1.1
- *Port Number*: 2000
- *Connection Type*: TCP

CENKIN® CP4

SEA*iq* supports the <u>CENKIN CP4</u> AIS pilot plug. Use the configuration below.

- *Host*: 10.10.100.254
- *Port Number*: 8899
- *Connection Type*: TCP

Trimble SPS585 GNSS PPU

A pair of Trimble SPS585 GNSS receivers offer a combination of independent GNSS positioning and precise rate-of-turn with independent heading data. The primary SPS585 can receive corrections from a Virtual Reference Station (VRS) or a single GNSS base station (IBSS), when connected to the Internet, to deliver centimetre accurate 3D positions. If there is no VRS or IBSS available then the Trimble Centerpoint RTX subscription service can be used on the primary receiver Trimble RTX is a near global satellite service better than 10 centimetre accuracy without a GNSS base station. The receiver will also operate with SBAS corrections (such as WAAS, EGNOS etc) if available.

Typical Connection Settings: WiFi over TCP (Check details in the latest technical documentation from Trimble. Bluetooth is also available from the SPS585 receiver.

iPad Settings:

- WiFi network: "Trimble Moving Base" is the SSID of the SPS585 Primary Moving Base receiver

which is the Access Point.
- Password "abcdeabcde".

SEA*iq* Settings:

- *Host*: 10.10.10.22 (which is the SPS585 Heading receiver in Client mode)
- *Port Number*: 5018
- *Connection Type*: TCP

TRENZ Pilot Plug

SEA*iq* supports the TRENZ Pilot Plug. Support includes reporting battery level and other detailed diagnostics reported by the devices.

- *Host*: 10.10.10.100
- *Port Number*: 8919
- *Connection Type*: TCP

Digital Yacht: iAIS

Digital Yacht devices support both TCP and UDP. They recommend UDP because (1) the simpler configuration, and (2) UDP allows you to have multiple iPads and other devices access it (TCP only allows 1 device at a time).

iAIS does not provide GPS information unless it has been connected to another NMEA data feed from your vessel's other instruments. Because of this, you may want to enable *Only Use AIS Targets* so that SEA*iq* will use the internal device GPS for position.

- *Host*: *Leave empty*
- *Port Number*: 2000
- *Connection Type*: UDP

Vesper Marine: XB-8000

Below are the settings for the Vesper Marine XB-8000 AIS transponder. It is possible to change the settings for the Host; if you have done so, you will want to use your new setting instead.

- *Host*: 192.168.15.1
- *Port Number*: 39150
- *Connection Type*: TCP

ShipModul MiniPlex-2Wi

SEA*iq* supports the ShipModul MiniPlex-2Wi. Normally, you can use the configuration below. The port is always *10110*. The IP address *10.0.0.1* will be used when the device is operating as an "access point". However, when used in "infrastructure mode", the IP address may be different; please see the device's documentation for more information.

- *Host*: 10.0.0.1 (see above)
- *Port Number*: 10110

- *Connection Type*: TCP

PilotMate

SEA*iq* supports the PilotMate devices. Use the configuration in your documentation. When connected to the PilotMate device, it will be recognized as such and a diagnostic panel will appear in the status bar.

- *Host*: *See Documentation*
- *Port Number*: *See Documentation*
- *Connection Type*: TCP

NMEA & AIS Bluetooth

SEA*iq* supports connecting to AIS and NMEA devices using Bluetooth. Bluetooth is supported on Windows and MacOS (Macbooks and iMacs). Bluetooth can be used on Android with "helper apps" to bridge to Bluetooth. See comments below regarding various platforms.

Platform Notes:

- *Apple iPad/iPhone*: Bluetooth NMEA is not supported on Apple iPads/iPhones because of restrictions Apple places on Bluetooth devices. Note that basic Bluetooth GPS devices such as those from BadElf do work with iPads/iPhones. However, they do not require any configuration within SEA*iq*. Your iPhone/iPad will use the GPS and other data from the Bluetooth device without SEA*iq* needing any special configuration.
- *Windows 10*: SEA*iq* uses so-called Bluetooth SPP mode to connect to Bluetooth devices. There are reports that early versions of Microsoft Windows 10 disabled Bluetooth SPP mode. Whether or not your computer was affected, Microsoft has since reactivated SPP. In order to get Windows 10 to work you must install a build version newer than *10.0.10532* which was released on August 22, 2015. To check the build number on a machine open a command prompt and type *winver*. This is not part of the weekly patch sequence Microsoft pushes regularly. To install a new version you have to sign up for fast ring service at Microsoft: http://www.cnet.com/how-to/change-to-the-fast-ring-for-more-frequent-windows-10-preview-updates/ After you download the ISO, you will have to copy it to a USB drive. Then install from the drive. This may clear the Windows partition; be sure data is backed up. It is believed the next version of Windows 10 will fix this, but currently there is no ETA for release (as of 10/29/15).

Settings

These settings are used to connect your device to NMEA/AIS over Bluetooth. Before adjusting them, first ensure this device and your source of NMEA/AIS data have been paired.

- *Bluetooth Device* : Specify name of device to use. You can enter here or choose from the list of available devices.

  On Windows, this is normally a *COM port*, such as *COM8*. You can find this by pairing with your Bluetooth device. Press the Bluetooth symbol on your toolbar. Choose *Open Settings* and *COM Ports*. Look for the Bluetooth device you are using and the COM port for *Outgoing* data. For COM ports higher than 9, *COMXX* is automatically translated into the \\.\COMXX format.
- *Bluetooth Devices* : List of Bluetooth devices (and serial ports).
- *Status* : Current status of your connection.
- *Baud Rate* : Baud rate for a serial port, typically USB. Bluetooth devices normally do not require adjusting this. The default is *19200*. Typical baud values are 4800, 9600, 14400, 19200, and 38400. Other possible values include 110, 300, 600, 1200, 2400, 56000, 57600, 115200, 128000, and 256000.

Configurations

Below are configuration setting for devices from a number of vendors.

GlobalSat BU-353-S4

The GlobalSat BU-353-S4 is a USB Bluetooth puck. Since it requires a USB port, it can be used only on Windows and MacOS. Note that Bluetooth support on Windows and MacOS also provides support for USB devices.

In *Settings / NMEA & AIS* (under Connection):

- *Connection Type*: Blue

In *Settings / NMEA & AIS / Bluetooth Setup*:

- *Bluetooth Device*: *Select Using Devices Menu*
- *Baud Rate*: 4800

NMEA & AIS Advanced

Settings

Advanced

- *Hybrid NMEA/AIS & Internal GPS* (**Only SEA*iq* Pilot**) : When this is enabled, then the location information used is a mixture of NMEA/AIS and Internal. HDG and ROT come from NMEA/AIS. All other location data come from the internal GPS. This can be useful in situations where the internal GPS is more accurate than the location information from NMEA/AIS.

    - When this feature is active, *Hybrid* is displayed in the status bar as the location data source.
    - On IOS, you normally should enable *Use Accurate Location* in conjunction with this feature
    - When used with NMEA Recording, the location information recorded is only from NMEA/AIS, so there may be some discrepancy during playback.
    - Your device's position is normally different from Own-Ship's GPS antenna, so they need different offsets for True-Scale display. When this feature is enabled, the Ext GPS Position offsets are used instead of the AIS position offsets.
    - Your device's position is normally different from Own-Ship's GPS antenna, so they need different offsets for True-Scale display. When this feature is enabled, the Ext GPS Position offsets are used instead of the AIS position offsets.

- *Only Use AIS Targets* (**All but SEA*iq* Pilot**) : When enabled, the NMEA feed is only used for AIS targets. No other sensor (wind, etc) data from NMEA is used. This is normally only enabled if you are using an AIS feed that does not provide GPS or other sensor data.
- *Support for GNS2000* : When enabled, special commands are sent to the serial port to configure a GNS2000 device. These commands prevent the device from entering so-called *Static Mode* when your vessel is moving slowly. While other devices should quietly ignore and not be affected by the commands that are sent, we recommend this be left disabled unless you have one of the affected devices.
- *RSA Azipod Mode* (**Only SEA*iq* Pilot**) : When enabled, and rudder sensor data are available from NMEA, the status bar displays rudder position differently, showing azipod images instead of rudder lines. This is the only effect; since AIS pilot plugs do not normally provide rudder sensor angles, this setting normally have no effect. Full-scale simulators can often provide rudder/azipod information.
- *RSA Offset* (**Only SEA*iq* Pilot**) : This value is added to RSA values to correct for variations in expected orientation. This only affects the graphical orientation of the rudder angle display. When the offset is negative, the rudder value is negated afterwards. This is used to reverse the direction of orientation so that decreases in rudder angle result in clockwise rotationn.
- *Ntrip RTCM Feed* (**Only SEA*iq* Pilot**) : Set up and manage connection to an Ntrip RTCM feed. This should only be used after consulting your PPU vendor to confirm your configuration supports this feature.

COG/SOG Derivation

- *Always Derive COG/SOG* (**Only SEA*iq* Pilot**) : When enabled, COG/SOG will always be derived based on recent GPS positions. Any COG/SOG data from NMEA (Primary or Extra) is ignored.

    It is almost always preferred to have your GPS hardware determine COG/SOG since that hardware has access to the most complete information about position. If uncertain, do not enable this option.

- *Derive COG/SOG When Needed* (**Only SEA*iq* Pilot**) : If your device sometimes does not provide course and speed sensor data (COG/SOG), you can enable this setting so this data will be derived based on recent GPS positions. When enabled and COG/SOG data from NMEA is not available, the derived value is used.

  This is normally only used with the Navicom Dynamics Channel Pilot product.

  It is almost always preferred to have your GPS hardware determine COG/SOG since that hardware has access to the most complete information about position. If uncertain, do not enable this option.
- *Derive COG/SOG When Slow* (**Only SEA*iq* Pilot**) : When enabled, COG/SOG will be derived from GPS position when speed is less than a given threshold.

  It is almost always preferred to have your GPS hardware determine COG/SOG since that hardware has access to the most complete information about position. If uncertain, do not enable this option.
- *Slow Threshold* (**Only SEA*iq* Pilot**) : Use this to set a threshold speed for deriving COG/SOG from GPS position. When estimated speed is below this threshold, then the derived value will be used. The default is *3kn*.
- *Derive COG/SOG from GPS Dampening* (**Only SEA*iq* Pilot**) : This controls how much dampening to use when COG/SOG from GPS. The speed is estimated based on an average of the previous *10 seconds* (the default), *15 seconds*, or *20 seconds*. Longer duration may be more accurate but less responsive to changes, and vice-versa.

Sensor Masking

- *Ignore HDG from AIS Own-Ship* (**Only SEA*iq* Pilot**) : When enabled, HDG (Heading) from AIS is ignored. This can be used in cases where the HDG data from AIS is erroneous or suspected to be of poor quality.

  This has no effect on HDG from other sources, which may have similar setting for ignoring HDG.

  For cases where HDG has a constant (non-changing or very slowly changing) error, you may choose to use *Settings / Own-Ship / Heading Offset* instead of this.
- *Ignore ROT from AIS Own-Ship* (**Only SEA*iq* Pilot**) : When enabled, ROT (Rate-of-Turn) from AIS is ignored. This can be used in cases where the ROT data from AIS is erroneous or suspected to be of poor quality.

  This has no effect on ROT from other sources, which may have similar setting for ignoring ROT.
- *Ignore HDG from NMEA* (**Only SEA*iq* Pilot**) : When enabled, HDG (Heading) from Primary NMEA feed is ignored. This allows HDG from AIS to be used instead (or no HDG to be used if none is available from AIS). This can be enabled in cases where the HDG data from Primary NMEA is erroneous or suspected to be of poor quality.

  This has no effect on HDG from other sources, which may have similar setting for ignoring HDG.

  For cases where HDG has a constant (non-changing or very slowly changing) error, you may choose to use *Settings / Own-Ship / Heading Offset* instead of this.
- *Ignore ROT from NMEA* (**Only SEA*iq* Pilot**) : When enabled, ROT (Rate-of-Turn) from Primary NMEA feed is ignored. This allows ROT from AIS to be used instead (or no ROT to be used if none is available from AIS). This can be enabled in cases where the ROT data from Primary NMEA is erroneous or suspected to be of poor quality.

This has no effect on ROT from other sources, which may have similar setting for ignoring ROT.

- *Ignore All Own-ship Sensors from NMEA* (**Only SEA***iq* **Pilot**) : When enabled, COG, SOG, ROT, HDG, LAT, LON from NMEA are ignored. Other information such as battery level are still accepted. This is normally only used in exceptional situations.
- *Ignore HDG from NMEA Extra* (**Only SEA***iq* **Pilot**) : When enabled, HDG (Heading) from Extra NMEA feed is ignored. This allows HDG from another source (AIS or Primary NMEA) to be used instead (or no HDG to be used). This can be enabled in cases where the HDG data from Extra NMEA is erroneous or suspected to be of poor quality.

  This has no effect on HDG from other sources, which may have similar setting for ignoring HDG.

  For cases where HDG has a constant (non-changing or very slowly changing) error, you may choose to use *Settings / Own-Ship / Heading Offset* instead of this.
- *Ignore ROT from NMEA Extra* (**Only SEA***iq* **Pilot**) : When enabled, ROT (Rate-of-Turn) from Extra NMEA feed is ignored. This allows ROT from another source (AIS or Primary NMEA) to be used instead (or no ROT to be used). This can be enabled in cases where the ROT data from Extra NMEA is erroneous or suspected to be of poor quality.

  This has no effect on ROT from other sources, which may have similar setting for ignoring ROT.
- *Ignore HDG from NMEA Extra* (**Only SEA***iq* **Pilot**) : When enabled, HDG (Heading) from Extra NMEA feed is ignored. This allows HDG from another source (AIS or Primary NMEA) to be used instead (or no HDG to be used). This can be enabled in cases where the HDG data from Extra NMEA is erroneous or suspected to be of poor quality.

  This has no effect on HDG from other sources, which may have similar setting for ignoring HDG.

  For cases where HDG has a constant (non-changing or very slowly changing) error, you may choose to use *Settings / Own-Ship / Heading Offset* instead of this.
- *Ignore ROT from NMEA Extra* (**Only SEA***iq* **Pilot**) : When enabled, ROT (Rate-of-Turn) from Extra NMEA feed is ignored. This allows ROT from another source (AIS or Primary NMEA) to be used instead (or no ROT to be used). This can be enabled in cases where the ROT data from Extra NMEA is erroneous or suspected to be of poor quality.

  This has no effect on ROT from other sources, which may have similar setting for ignoring ROT.

Smoothing

- *Smooth COG/SOG* : If your device provides jumpy COG/SOG data, you can enable this setting. This may improve other derived data, such as derived current and true wind speed. This is normally only used on small sailing vessels.

  It is almost always preferred to have your GPS hardware be configured to apply appropriate smoothing. If uncertain, do not enable this option.
- *Smooth COG/SOG Amount* : This controls how much smoothing to use for COG/SOG. The speed is estimated based on an average of the previous *10 seconds* (the default), *30 seconds*, or *60 seconds*. Longer duration will increase smoothing but be less responsive to changes, and vice-versa.
- *Smooth STW* : If your device provides jumpy STW data, you can enable this setting. This may improve other derived data, such as derived current. This only has an effect if you have a STW sensor already; AIS Pilot Plugs do not normally provide STW. This is normally only used on small sailing vessels.

It is almost always preferred to have your sensor be configured to apply appropriate smoothing. If uncertain, do not enable this option.

- *Smooth STW Amount* : This controls how much smoothing to use for STW. The speed is estimated based on an average of the previous *10 seconds* (the default), *30 seconds*, or *60 seconds*. Longer duration will increase smoothing but be less responsive to changes, and vice-versa.
- *Smooth Apparent Wind* : If your device provides jumpy apparent wind (AWA & AWS), you can enable this setting. This may improve other derived data, such as derived true wind. This only has an effect if you have a wind sensor already; AIS Pilot Plugs do not normally provide apparent wind. This is normally only used on small sailing vessels.

It is almost always preferred to have your sensor be configured to apply appropriate smoothing. If uncertain, do not enable this option.

- *Smooth Apparent Wind Amount* : This controls how much smoothing to use for apparent wind. The speed is estimated based on an average of the previous *10 seconds* (the default), *30 seconds*, or *60 seconds*. Longer duration will increase smoothing but be less responsive to changes, and vice-versa.

Data Transfer

- *Transmit Waypoints* (**All but SEA*iq* Pilot**) : This is used to send waypoints to your chartplotter. Waypoints are transferred at a rate of *2/sec* using NMEA "$GPWPL" sentences. Note that special characters in the waypoint name may be replaced with underscores ('_'). No route information is transferred.
- *Transmit Current Goal* (**All but SEA*iq* Pilot**) : This is used to inform other devices on your vessel about the route you are on. It sends NMEA "$GPBWW", "$GPXTE", and/or "$GPRMB" sentences.

NMEA Server WiFi

- *Server Enable* : Enable this if you want to share location information with other devices on the network.
- *Server Port* : Port to use for sharing location information. A port is an integer number in the range *1-65535*.
- *Status* : Current status.

NMEA Server Serial

- *Enable* (**Only SEA*iq* Pilot**) : Enable this if you want to share location information with other devices. This particular feature is intended for use with USB to AIS pilot plug adaptors as part of training. It allows connection of an AIS pilot plug adaptor (available from companies such as PilotsTech) to a laptop, into which a normal pilot plug may be inserted. This allows simulation of a full use of the system without boarding a vessel.
- *Serial Device* (**Only SEA*iq* Pilot**) : Specify name of device to use. You can enter here or choose from the list of available devices.

  On Windows, this is normally a *COM port*, such as *COM8*. You can find this by pairing with your Bluetooth device. Press the Bluetooth symbol on your toolbar. Choose *Open Settings* and *COM Ports*. Look for the Bluetooth device you are using and the COM port for *Outgoing* data. For COM ports higher than 9, *COMXX* is automatically translated into the *\\.\COMXX* format.
- *Serial Devices* (**Only SEA*iq* Pilot**) : List of serial devices (including Bluetooth).
- *Baud Rate* (**Only SEA*iq* Pilot**) : Baud rate for a serial port, typically USB. AIS pilot plugs use *9600* (the default used for this). Bluetooth devices normally use *19200*.

Typical baud values are 4800, 9600, 14400, 19200, and 38400. Other possible values include 110, 300, 600, 1200, 2400, 56000, 57600, 115200, 128000, and 256000.

- *Status* (**Only SEA*iq* Pilot**) : Current status.

AIS

- *Show AIS Tracks* (**Only SEA*iq* Pilot**) : When enabled, tracks are shown for AIS targets so you can see the recent path of each vessel. Important caveats are listed below:

    ♦ Tracks are kept for *60 minutes*.
    ♦ New track segments are only kept when the vessel has moved at least *0.05NM* or it has been *6 minutes* since the last segment was added.
    ♦ To reduce clutter, tracks are only shown for vessels that are currently on or near the area of display.
    ♦ To limit clutter, tracks are only shown if at most *150* vessels are on the display.
    ♦ For targets from AIS Sharing, the tracks may be reset if the target leaves the screen.
    ♦ When playing back recordings, tracks may be reset when using the slider to jump position forward or backward.
    ♦ There are no provisions for saving or loading AIS target tracks. You can make an NMEA/AIS recording and then play it back.
    ♦ The tracks position used for vessels is their AIS antenna position.
    ♦ Occasionally the data used for vessels may change between different sources, such as when a vessel comes within range of your vessel's AIS. In these cases, the amount of tracks information and specific data may also change.

- *Prefer AIS Met Data from Internet* (**Only SEA*iq* Pilot**) : When enabled, meteorological AIS data from the internet is preferred over that from a PPU. This can be helpful in situations where AIS VHF connection is not very reliable.
- *AIS Lost Time* (**Only SEA*iq* Pilot**) : Number of minutes of inactivity before an AIS target is marked as lost.
- *AIS Forget Time* (**Only SEA*iq* Pilot**) : Number of minutes of inactivity before an AIS target is discarded.
- *Interrogate Closest AIS Target* (**Only SEA*iq* Pilot**) : When enabled, the closest AIS target (up to *5nm*) will be interrogated every second.

    This feature should be used with care. It requires a PPU and AIS system that allows transmission of AIS Interrogation requests (message type 15). It requests class A position reports (AIS message type 3) from the vessels.

    Important: On some vessels, this function has caused the ship's system to display a *Transmit Error*.

    Important: You should normally turn this off when not in use as it makes heavy use of AIS bandwidth.

QR Code

- *Create QR Code for Settings* (**Only SEA*iq* Pilot**) : Create a QR code image for current NMEA/AIS settings. A label can be printed for a device, which in turn is used to configure SEA*iq* settings for that device. The QR code reading function requires SEA*iq* version *5.4.11* or later and only runs on IOS. Also, note that tablet WiFi settings must be changed separately from this.

- *QR Code WiFi Network* **(Only SEA*iq* Pilot)** : SSID of WiFi Network to include in QR Code. The resulting QR Code will attempt to join the named WiFi network.
- *QR Code WiFi Password* **(Only SEA*iq* Pilot)** : Password of WiFi Network to include in QR Code. The resulting QR Code will attempt to join the WiFi network with the given passphrase. Important: only WPA networks are supported (not WEP).

Other

- *Detect External Simulator* **(Only SEA*iq* Pilot)** : When enabled, operation in an external simulator (such as a full-bridge simulator) is monitored. A full-bridge simulator is detected when the SSID of the WiFi network begins with the text "SIM Bridge". In this case, AIS Sharing is disabled. This is done to prevent sharing of Own-Ship to other vessels as a Hi-Res target. This feature has no relationship to the built-in Simulator function.

  Additionally, a WiFi network SSID of "SIM BridgeDisableAISSharing" will disable AIS Sharing even if this setting is disabled. The expectation is that this SSID will never be used except intentionally by certain users.

Settings / NMEA & AIS / Advanced / Ntrip

This feature allows you to access RTCM (SC 104) differential GPS data using Networked Transport of RTCM via Internet Protocol (Ntrip).

Ntrip allows this device to download RTCM corrections and then deliver them to your PPU. RTCM corrections provide differential GNSS data to your PPU, in order to improve accuracy. This can eliminate the need for your PPU to have an internet connection.

This feature requires (1) an Enterprise Subscription, (2) support from your PPU, and (3) an account with an Ntrip server providing RTCM corrections for your area. An Ntrip server account is not included with your Enterprise Subscription. It should only be used after first consulting your PPU vendor to confirm support for this feature. For some PPU's, you may require a special model or firmware update.

Settings

- *Enable* **(Only SEA*iq* Pilot)** : This switch turns on Ntrip support.
- *Type* **(Only SEA*iq* Pilot)** : Select the type of connection to make. Currently, version 1 and version 2 (the default) are supported. With either version, only connections via TCP are supported.
- *Host* **(Only SEA*iq* Pilot)** : This is used to set the IP address of an Ntrip server. You can specify either a hostname or IP address (decimal and dot). IP addresses are preferred because they do not require a Dynamic Name Server (DNS) to be configured.
- *Port Number* **(Only SEA*iq* Pilot)** : This is used to specify the port number for your Ntrip service. The Ntrip default port is *2101*. A port is an integer number in the range *1-65535*.
- *Mount* **(Only SEA*iq* Pilot)** : Select *mount* to use with this Ntrip service. You can also select this by viewing the source table after connecting.
- *Status* **(Only SEA*iq* Pilot)** : Current status of your connection to the Ntrip server.

Authentication

- *User Name* **(Only SEA*iq* Pilot)** : Use this username to login to an Ntrip service.
- *Password* **(Only SEA*iq* Pilot)** : Use this password to login to an Ntrip service.

Diagnostics

- *Source Table* **(Only SEA*iq* Pilot)** : This lists a table of Streams, Networks, and Casters reported by your server.
- *Diagnostics* **(Only SEA*iq* Pilot)** : This shows diagnostics describing the current status of your configuration.

Optional PPU Setup

- *Enable* **(Only SEA*iq* Pilot)** : This switch enables manual network configuration where RTCM data is delivered. For many devices, this can be disabled and the normal NMEA connection will then be used. The *Trelleborg CAT MAX* device requires enabling this feature.
- *Host* **(Only SEA*iq* Pilot)** : This is the IP address for your Ntrip PPU target. It is required for both TCP and UDP based operation. The host must be given as an IP address (decimal and dot). *DNS hostnames are not allowed*.

- *Port Number* **(Only SEA*iq* Pilot)** : This specifies the port number for your Ntrip PPU target. It is required for both TCP and UDP based operation. A port is an integer number in the range *1-65535*.
- *Connection Type* **(Only SEA*iq* Pilot)** : This selects whether to use TCP (the default) or UDP when delivering RTCM to the PPU. Most devices only support TCP.

  Products that support UDP include *Trelleborg CAT MAX*.

  Note that for UDP, the port number and IP address are both required. The port number corresponds to the PPU port to send the data to.
- *Status* **(Only SEA*iq* Pilot)** : Current status of your connection.

AIS Network Feed

Automatic Identification System (AIS) is a standard for exchanging vessel location and other information. These settings control access to a feed over a network.

This feature allows you to connect to an AIS feed over the internet. It can be used in conjunction with primary NMEA/AIS connections and with AIS Sharing, but it is treated somewhat differently.

- Data is used in this order of preference. (1) Primary NMEA/AIS feed, (2) AIS Network feed, (3) AIS Sharing.
- Only AIS data is used from your AIS Network feed. Non-AIS data (ie, generic NMEA) is ignored.
- Targets from the AIS Network feed are not counted in the count on the AIS tab at the bottom of the display.
- AIS Network feed data will not be recorded when using NMEA record/playback, unless *Settings / Record/Playback / Record AIS Network Feed* is enabled.
- Data for Own-Ship will only be recognized from the primary NMEA/AIS feed. Any Own-Ship data (ie, "!AIVDO" sentences) from the AIS Network feed will be treated as generic AIS targets.
- AIS Virtual Boarding can be used with any type of AIS target.
- AIS Network feed data will not be sent to AIS sharing (only AIS data from primary NMEA/AIS is used).
- AIS Network feeds are only supported using the TCP protocol. UDP is not supported.

Settings

- *Enable* : This switch turns on the AIS network feed. Normally, you would enable it only after first setting the other configuration items.
- *Host* : This is used to set the IP address of an AIS network feed. You can specify either a hostname or IP address (decimal and dot).
- *Port* : This is used to specify the TCP port number for your NMEA data feed. A port is an integer number in the range *1-65535*.
- *Connection Type* : This setting selects whether to use TCP (the default) or UDP connections. Almost always this will be set to TCP.
- *Status* : Current status of your connection.

Authentication

- *Authentication* (**Only SEA*iq* Pilot**) : Select method to use for authentication. Either connection ID (default) or username/password. The username/password is for "SAAB CoastWatch AIS Network Solution."
- *Export Unique ID* : This is used to register this instance of SEA*iq* with an external AIS network feed. This exports a file that contains the unique ID used by SEA*iq* when connecting to AIS network feeds. This can be used to register your copy of SEA*iq* with that service. Currently, this is only intended for use with the Marine Exchange of Alaska (http://www.mxak.org).
- *User Name* (**Only SEA*iq* Pilot**) : Use this username to login to an AIS service. This is not normally required.
- *Password* (**Only SEA*iq* Pilot**) : Use this password to login to an AIS service. This is not normally required.

Diagnostics

- *Diagnostics* : This shows diagnostics describing the current status of your configuration.

AIS Virtual Board

Use this to "virtually board" an AIS target. This will treat that AIS target as though it is Own-Ship. While virtually boarded, you can enable many of the features that are available only for Own-Ship, such as docking modes.

Common uses for virtually boarding include:

- As an aid for training. You can experiment with features while not actually boarding a ship.
- To monitor a ship prior to boarding it. When you board a ship that you have virtually boarded, the virtual boarding will automatically be disabled.
- For monitoring ships from shore.

Warning: Because of how AIS works, information about AIS targets is not updated as frequently as for Own-Ship when connected to a pilot plug directly. Virtual Boarding is not considered suitable for navigation or piloting where predictable and reliable position updates are required. You should connect directly to PPU or AIS Pilot Plug. A warning is displayed on startup reminding this.

An alternative method to Virtual Board an AIS target is to select the target and view its "Full Details". You will see an option to Virtual Board the vessel.

You can disable virtual boarding by pressing the *X* in the *Virtual Boarding* status bar panel.

When virtual boarding is enabled, it takes precedence over all other features except the vessel simulator.

Settings

- *Virtual Board Status* (**Only SEA*iq* Pilot**) : The current status of Virtual Boarding. Tells you if, for instance, the vessel you selected for Virtual Boarding is no longer known.
- *Virtual Board* (**Only SEA*iq* Pilot**) : Presents list of current AIS targets. Select one you want to virtually board. If virtual boarding is active, the first option listed is to disable virtual boarding.

  You can also virtually board another vessel by selecting it on the Navigate tab, bringing up its full details and selecting *Virtually Board This Vessel*.
- *Automatic Board* (**Only SEA*iq* Pilot**) : When enabled, the user is prompted to board a vessel when nearby. The user is prompted when the following conditions are met: no Own-Ship is available, your device is at most *0.25NM* from a vessel, your device's course is within *2kn* of vessel's course (measured by comparing course vectors), and the vessel is not a pilot boat, port tender, tug boat, or recreational vessel. You can be asked to board at most once every *5 minutes*.

  This feature requires an internal GPS in your device. Enabling this causes the internal GPS to always be on, which may affect battery life.
- *Quick Boarding* (**Only SEA*iq* Pilot**) : When enabled, selecting an AIS target immediately triggers virtual boarding. Dialog boxes that are normally shown are prevented. The aim is to provide a mode where vessels may be rapidly interrogated and this is intended for use by pilot stations and similar situations.

AIS Target Label Options

Settings

- *Show Labels for Targets* : Choose method for determining whether AIS labels are shown. When *Off*, labels are not shown unless the vessel is selected. When *On*, each AIS vessel is normally labeled with the vessel name.

  When set to *Auto* labels are shown according to an algorithm to detect when the display is cluttered. For instance, vessels with SOG less than *2kn* normally do not have labels shown.

  For *On* and *Auto*, labels for certain vessel types (pilot, tug, towing, dredging, law enforcement, military, and rescue) are normally shown.
- *Prioritize Labels for Important Vessels* (**Only SEA*iq* Pilot**) : When enabled, labels for *important* vessels are normally shown. Important vessels include tugs, towing, dredge, law enforcement, military, pilot, and rescue vessels.
- *Use Fill for Labels* : When enabled, labels are shown with solid background. This can make labels easier to read but can obscure other objects. Labels for selected objects always use solid background.
- *Hide Labels for Small Vessels* (**Only SEA*iq* Pilot**) : When enabled, labels are shown for small vessels (those less than the Meeting Point / Small Vessel Length). Exceptions are made for certain vessel types (pilot, tug, towing, dredging, law enforcement, military, and rescue), or if manually selected by the user.
- *Offset AIS Target Labels from Route (Experimental)* (**Only SEA*iq* Pilot**) : When enabled, labels for targets on the active route are moved off the route and connected with a line. The XTD is used to determine how far to move labels away from the route.

Fields

- *Show Pilot on Labels* (**Only SEA*iq* Pilot**) : When enabled, labels are visible, and a pilot's name is available, it is displayed on the label. Note that pilot names are only available on Hi-Res PPU targets (Settings / AIS Sharing / Hi-Res PPU Targets).
- *Show HDG on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its HDG.
- *Show COG on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its COG.
- *Show SOG on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its SOG.
- *Show Draft on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its draft.
- *Show Destination* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its destination displayed (when available). The data used for the destination is that transmitted by the target's AIS.
- *Show ETA on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target is shown with its ETA displayed (when available). The data used for the ETA is that transmitted by the target's AIS.
- *Show CPA on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target within *10nm* of Own-Ship is shown with its Closest Point of Approach (CPA).

CPA gives distances based on center of Own-Ship and target. This assumes vessels maintain course (COG & SOG), regardless of current ROT.

- *Show BCR on Labels* (**Only SEA*iq* Pilot**) : When enabled and labels are visible, each AIS target within *10nm* of Own-Ship is shown with Bow Crossing Range (BCR).

  BCR gives distances for centers of Own-Ship and target, not their bow or stern. The calculation assumes vessels maintain (COG & SOG), regardless of the current ROT.

AIS Vessel Select

Use this to select AIS targets to use as Own-Ship. This is used when aboard a vessel and using a PPU that does not connect directly into the ships AIS pilot plug. By selecting a vessel, SEA*iq* can know which AIS target is Own-Ship and use this to determine particular, such as name and size. Also, the MMSI number is then used to save certain per-ship settings in a database to be used if you board the ship again.

The most common PPU devices supported by this feature are listed below:

- Navicom Dynamics: Channel Pilot, Harbour Pilot
- AD Navigation: ADX XR, XR2, XR Lite, and ADX DUO
- Trelleborg: CAT II and CAT III
- PilotsTech: KSN-55

Other situations where Vessel Select may be helpful include:

- Using an AIS pilot plug for GPS position and it is not connected to Own-Ship socket. It may be helpful to have the ship's name and size automatically filled in from AIS. In this case, AIS data would need to come from an internet source, since your plug is not connected to the ship's system.
- Using internal GPS of your tablet/laptop. Similar to above, it may be helpful to have the ship's name and size automatically filled in from AIS. In this case, AIS data would need to come from an internet source, since your plug is not connected to the ships system.

Vessel Select is different from *Virtual Boarding*. With Vessel Select, the position, course and other "dynamic" information come from your PPU and the static information come from the AIS target you select. With Virtual Boarding, no PPU information is used: all information comes from the AIS target.

To manually select a vessel, you select the AIS target and view its "Full Details." You will see an option to Select the vessel.

Settings

- *Vessel Select* (**Only SEA*iq* Pilot**) : Vessel Select is used to associate Own-Ship with an AIS target in order to determine vessel name, size, and other information. See also *Vessel Auto-Select* and *Suppress Selected Vessel*.
- *Vessel Auto-Select* (**Only SEA*iq* Pilot**) : When enabled, the user is prompted to select a vessel when nearby. The user is prompted when the following conditions are met: the target is not a pilot boat, port tender, tug boat, or recreational vessel, you are most *0.25NM* from vessel, your device's course is within *2kn* of vessel's course (measured by comparing course vectors). You can be asked to select a target at most once every *5 minutes*.

  If you already have a target selected, you must be at least *2NM* away from the current target before another target is suggested.
- *Suppress Selected Vessel* (**Only SEA*iq* Pilot**) : When enabled, an AIS target corresponding to the selected vessel is not displayed. This is to prevent duplicate images for the same vessel.

NMEA Record & Playback

This feature allows you to record NMEA/AIS data for later playback.

Operation is simple. Turn on recording of NMEA data and that causes all NMEA/AIS data to be recorded to a file whenever an NMEA connection is present. The file is named according to the date/time it was started. Every 2 hours, the current recording is automatically closed and a new recording begun.

For playback, you can select a recording. This causes controls to appear on the Navigation tab that you can use to start/stop playing. You can adjust the slider to move to any point in the recording. During playback, all the displayed sensor data and AIS targets correspond to the data at the time it was played.

Note that when playing back the data, the chart display can be different than when originally recorded. For example, you can pan/zoom as you see fit, change various chart settings, etc.

The recordings are stored as files with an *.nmea* file extension. The file name includes the vessel name (if available via AIS *AIVDO* sentences) and the date/time at which the recording started. You can view them by selecting the Playback menu. If you want to save a recording by using various options to export.

The format of the recording file is essentially exactly the same as it was received from the NMEA/AIS stream so you may be able to use 3rd party tools to process the data. Note that certain proprietary sentences using the vendor code *$PSIQ* are inserted into the data to annotate with timing information and improve the efficiency of playback. The annotations can be ignored.

By default, AIS data is only recorded from a primary NMEA/AIS feed. Data received from <u>AIS Sharing</u> or a <u>Network AIS Feed</u> are only recorded if the relevant options below are enabled. Note also that <u>Simulator</u> has an option to enable recordings of simulator.

Record

To start recording, simply turn *Enable* to *ON*. This setting is saved so whenever you use SEA*iq* with NMEA/AIS it will be recording data for you. This way you do not need to remember to start recording when you run SEA*iq*.

The Status field displays how long the current recording has been running and how many NMEA/AIS sentences it includes.

The current recording data cannot be viewed for playback. If you disable recording and then re-enable it, that will cause a new file to be opened for recording and the current one to be made available for playback.

Whenever a recording is started, all the current AIS targets will be automatically included in the recording so that playback can begin with all AIS included and you do not have to wait for AIS messages from each of them.

Recording for the current file will continue in the background even when you are playing back another recording.

Settings

Record

- *Enable* (**Only SEA*iq* Pilot**) : Start recording.
- *Show Notice* (**Only SEA*iq* Pilot**) : When enabled, a large notice is shown on the chart display indicating that recording is active.
- *Extra Text in File Name* (**Only SEA*iq* Pilot**) : This text is added to file names for recordings, in addition to the Own-Ship name and time/date. If you change this, the current recording is not affected; you can restart recording to start a recording with the new name.
- *Status* (**Only SEA*iq* Pilot**) : Current status of the recording, shown as the amount of time and the size of the recording file. Or *Disabled* if not recording.
- *Record Audio* (**Only SEA*iq* Pilot**) : Support for recording audio on your device. Requires integrated or external microphone. Please see the sub-menu for additional settings and documentation.
- *Record AIS Network Feed* (**Only SEA*iq* Pilot**) : When enabled, targets from the AIS Network Feed are included in your recording. This increases the storage and battery consumption of your recordings.
- *Record AIS Sharing* (**Only SEA*iq* Pilot**) : When enabled, targets from the AIS Sharing are included in your recording. This increases the storage and battery consumption of your recordings. *Important: please note that the coverage area for AIS Sharing may vary depending on the displayed areas. This will be reflected in your recording.*
- *Recording Range for Network Feeds* (**Only SEA*iq* Pilot**) : The range from Own-Ship for targets to include in recordings. When *0*, all targets are included.

Playback

- *Playback Recording* (**Only SEA*iq* Pilot**) : Select this to see the recordings available for playback. If you select one of the recordings, becomes active. The current selection is shown. You can see the status of the playback in the *Status* field.

  You can stop playback by pressing the *X* button on the Navigate tab.
- *Status* (**Only SEA*iq* Pilot**) : Current status of the playback, which is normally shown as the time being played.
- *Configure Own-Ship from Recording* (**Only SEA*iq* Pilot**) : When enabled, the configuration for Own-Ship is updated based on any data in the recording. This ensures the size and position of Own-Ship matches that during the recording. This is used when you have manually updated size or other configuration. This overwrites any changes you have made for Own-Ship. The following settings may be affected:

  - ◆ Vessel Size: Source, Length, and Beam
  - ◆ AIS Antenna Position: Source, Distance to Bow, and Distance from Centerline
  - ◆ External GPS Antenna Position: Distance to Bow, Distance from Centerline, and Use as Conning Position
  - ◆ Vessel Draft: Source and Draft
  - ◆ Heading Offset
  - ◆ Block Coefficient
- *Use Virtual Board & Vessel Select from Recording* (**Only SEA*iq* Pilot**) : When enabled, any virtual boarding or vessel selection at the time of the recording will be used during the recording. If you want to use different settings, will need to disable this.
- *Loop at End* (**Only SEA*iq* Pilot**) : When enabled, playbacks loop back to the beginning when they reach their end.

- *Diagnostics* : This shows diagnostics describing the current status of your playback.

Manage

- *Periodically Erase Old Recordings* (**Only SEA*iq* Pilot**) : When enabled, a prompt is periocially given to erase recordings at least 60 days old. They are only erased if confirmed by the user. If you want to save recordings, you can export them.
- *Erase All Recordings* (**Only SEA*iq* Pilot**) : Erases all recording, after confirmation. This cannot be undone.
- *Manage & Analyze Recordings* (**Only SEA*iq* Pilot**) : Select this to export, convert, or delete recordings.

  Conversion options include:

  - Convert to Routes: Create a Route (GPX format) showing path Own-Ship follows during the recording.
  - Convert to Tracks: Create a Track file (GPX format) showing path Own-Ship follows during the recording.
  - Convert to Vessel Trail: Create a Mariners Tool Group containing sequence of Vessel Tools for positions of Own-Ship.
  - Convert to Polygon: Create a Mariners Note with polygon showing swept path of Own-Ship.
  - Convert to Vessel Trail & Polygon: Create a Mariners Tool Group with Vessel and Mariners Note tools from both the previous items.
  - Convert to Spreadsheet: Create spreadsheet containing information about Own-Ship and/or AIS targets:
    - ◊ Own-Ship to Spreadsheet (Human Readable CSV): Create spreadsheet CSV file containing all Own-Ship reports.
    - ◊ Own-Ship to Spreadsheet (Machine Readable CSV): Create spreadsheet CSV file containing all Own-Ship reports.
    - ◊ AIS Reports to Spreadsheet (Human Readable CSV): Create spreadsheet CSV file containing lists of all AIS reports in the recording.
    - ◊ AIS Reports to Spreadsheet (Machine Readable CSV): Create spreadsheet CSV file containing lists of all AIS reports in the recording.
    - ◊ Raw AIS Reports to Spreadsheet (Human Readable CSV): Create spreadsheet CSV file containing lists of all AIS reports in the recording.
    - ◊ Raw AIS Reports to Spreadsheet (Machine Readable CSV): Create spreadsheet CSV file containing lists of all AIS reports in the recording.

  Some additional notes:

  - Spreadsheets are exported in the CSV (comma separated value) format. These use the UTF8 encoding. When importing to a spreadsheet program, choose comma as the only separator symbol.
  - Human-readable spreadsheets contain text fields with numbers formatted along with units corresponding to the current user-selected settings. These normally cannot be easily used for further processing since the numbers are combined with additional text.
  - Machine-readable spreadsheets use numbers in standard units (knots, metres, degrees true north, etc). By using numbers, these spreadsheets can be used for additional processing.
  - For outputs based on Own-Ship, you can use Virtual Boarding to select a different target for use in processing the recording.
  - When converting to Vessel Trail, Polygon, Track, or Route, the various Conversion Filter

values may be used to smooth and reduce clutter in the results.
  - ♦ Some conversion options allow exporting the file and/or combined convert-and-import options.
  - ♦ After converting to Polygon, you can edit the Mariners Note to change the style (color, fill, width) of the polygon.
  - ♦ After converting to Vessel Trail, you can then edit one of the Vessel Tools to change the style (color, fill, width) of the vessel. You will be prompted asking if you want to make the same change to all the Vessel objects.

Advanced

- *Max Duration of Recordings* (**Only SEA*iq* Pilot**) : The maximum duration of recordings. The default is *2 hours*. Once a recording reaches this length, it will be closed and a new one started. Note that longer recordings will have larger size and may exceed limits such as the maximum size attachment for emails.
- *Track/Route Conversion Filter* (**Only SEA*iq* Pilot**) : This is used to filter data during the conversion process to tracks or routes. Vertices are removed from the result, when doing so introduces no more than this amount of error.

    The *error* is defined as the maximum distance a vertex will be shown from "actual" line. For instance, removal of a vertex from a track/route will result in new segments; all vertices that were originally incident along that edge will be tested to see how far they are from the new edge.

    The default is *10m*. Lowering this can cause dramatic increase on the number of vertices when converting from a recording. This in turn can affect performance, in particular when *0m* (no filtering) is set. Increasing the value can have a dramatic reduction in the number of vertices.
- *Polygon Conversion Filter* (**Only SEA*iq* Pilot**) : This is used to filter data during the conversion process to polygons of swept path. Vertices are removed from the result when doing so introduces no more than this amount of error.

    The *error* is defined as the maximum distance a polygon vertex will be shown from "actual" line. For instance, removal of a vertex from a polygon will result in new edges of the polygon; all vertices that were originally incident along that edge will be tested to see how far they are from the new edge.

    The default is *1m*. Lowering this value can cause dramatic increase on the number of objects when converting from a recording. This in turn can affect performance, in particular when *0m* (no filtering) is set. Increasing the value can have a dramatic reduction in the number of objects.
- *Vessel Trail Conversion Filter* (**Only SEA*iq* Pilot**) : This is used to filter data during the conversion process to trail of vessel positions. Vessels are stripped from the result when doing so introduces no more than this amount of error.

    The *error* is defined as the maximum distance a vessel vertex will be shown from "actual" line of motion. For instance, removal of a vessel will result in new line of motion in the trail; all vessel vertices that were originally incident along that edge will be tested to see how far they are from the new edge.

    The default is *10m*. Lowering this value can cause dramatic increase on the number of objects when converting from a recording. This in turn can affect performance, in particular when *0m* (no filtering) is set. Increasing the value can have a dramatic reduction in the number of vessel objects.

NMEA Record & Playback / Audio

This feature allows you to keep audio recordings for later playback. Recordings are only made when NMEA/AIS data is also being recorded.

Audio recordings are stored in separate files and locations than for the NMEA/AIS data. The retention for audio data is handled differently than the NMEA/AIS data. This is done because the audio data is typically much larger than the corresponding NMEA/AIS data. The audio files for the NMEA/AIS data do not necessarily match on file-by-file basis. If you wish to export NMEA/AIS data and audio recordings, be sure to copy both sets of files.

Before using this, be sure to test your audio by using the *Test* button in the Diagnostics section. This will record *5 seconds* of audio and play it back to you. You will be able to evaluate the quality of the audio and get a rough estimation of the data usage per hour. If you find a problem with your device, please report it to us.

Recording audio may significantly affect battery life for mobile devices. The exact effect depends on the specifics of your device.

The quality of recordings and range of recorded sound is dependent on that of your microphone, recording format, and other aspects of your device.

The amount of data used for recordings is much higher than for NMEA/AIS data. We recommend enabling the *Automatically Erase Old Recordings* feature. If this is not enabled, a warning will be shown when audio recordings exceed *5GB* in total size.

When exporting NMEA/AIS recordings, audio data is not included in the export because of the data size. It is necessary to separately export the audio recording files. Each platform has its own preferred audio encoding format and may not be supported when copied to other platforms.

Settings

- *Enable* (**Only SEA*iq* Pilot**) : Enable creation of audio recordings on this device. When disabled, the current recording is temporarily stopped but the recording file is kept open in case you wish to restart the recording.
- *Status* (**Only SEA*iq* Pilot**) : Status of current recording.

Manage

- *Recordings* (**Only SEA*iq* Pilot**) : Listing of all available audio files. Select the file to export or play the file.
- *Automatically Erase Old* (**Only SEA*iq* Pilot**) : Automatically erase oldest audio recordings when amount of data exceeds *5GB*. No warning will be given when data is about to be erased.
- *Erase All* (**Only SEA*iq* Pilot**) : Erase all audio recordings.

Diagnostics

- *Test* (**Only SEA*iq* Pilot**) : Test audio record and playback.

Navicom Dynamics PPU Settings

These settings configure SEA*iq* Pilot for use with <u>Navicom Dynamics</u> Portable Piloting Units. See below for more information on using SEA*iq* with Navicom Dynamics products.

Navicom Dynamics PPUs support at most 5 WiFi client at a time.

ChannelPilot Vessel Selection

Each time a *ChannelPilot* is turned on, it requires you select the vessel the device is attached to. This is used to help calibrate the gyroscope and determine information such as the vessel name and size.

Method 1: Select from List of Vessels

- Choose *Vessel Select*.
- Select one of the listed vessels.
- You will get a confirmation dialog. Press *OK*.
- A moment later, you should get a second confirmation dialog, *ChannelPilot confirms XXX (MMSI:YYY) is selected*. Press *OK*.

Free-Running Mode

If you are using a *ChannelPilot* a vessel without AIS (such as a barge), you can trigger the gyroscope to calibrate itself in Free-Running Mode by selecting the last entry in the table, *Vessel Does Not Have AIS*. In Free-Running Mode, you will need to adjust *Settings / Own-Ship / Heading Offset* and then periodically update it if the gyroscope slowly wanders.

Method 2: Select Vessel Graphicly

Similarly, you can also make this selection by graphicly selecting a target on the *Navigate* tab or by finding the vessel you want on the *AIS* tab:

- Return to Navigation tab (or AIS tab).
- Wait for your vessel to appear.
- Single tap on your vessel to select it.
- Double tap on your vessel to bring up its details.
- Choose *Full Information*.
- Choose *Select as Own-Ship*.
- You will get a confirmation dialog. Press *OK*.
- A moment later, you should get a second alert, *ChannelPilot confirms XXX (MMSI:YYY) is selected*. Press *OK*.

Method 3: Vessel Auto-Select

Vessel Auto-Select is used to automatically prompt you when aboard a vessel. A vessel is selected by comparing your position and course with AIS targets in your area (see documentation for *Vessel Auto-Select* for more information about the criteria used to choose the most likely AIS target).

- Turn on Vessel Auto-Select. You can leave this setting enabled all the time.

- When aboard vessel and equipment is setup you will be prompted to select the vessel. Press *OK*.

If vessel is not selected for some reason, use one of the other methods to manually select your vessel. If you are on a vessel such as a barge, you will need to use *Method 1*.

HarbourPilot Vessel Selection

For *HarbourPilot* selecting a vessel is not as important as *ChannelPilot* but can still be helpful in order to acquire the vessel name, size, and other information from AIS. Vessel Select is also used in order to suppress the AIS target corresponding to Own-Ship (see *Suppress Selected Vessel*).

Follow the same instructions for *ChannelPilot* to select vessel. The difference is that the *HarbourPilot* will not generate the final confirmation dialog and that the *HarbourPilot* does not have (or need) a Free-Running mode.

Heading Offset

Depending on how a *HarbourPilot* is oriented, you may need to adjust the heading received from the device. This is done by adjusting *Settings / Own-Ship / Heading Offset*, which is added to the value received from the PPU. You should first set the basic orientation and then fine-tune as needed.

This may also be useful for the *ChannelPilot* when the heading value received from AIS and used to synchronize the gyroscope is inaccurate, or when operating free-running mode.

Settings

- *Navicom Dynamics Web Site* : A link to the http://navicomdynamics.com web site.

Devices

- *Navicom Dynamics GyroPilot* (**Only SEA*iq* Pilot**) : Configure for use with Navicom Dynamics GyroPilot. This is for MK2 onwards. Prior to MK2, the network configuration is different and depends on the serial number of the device, so please refer to your product documentation.
- *Navicom Dynamics ChannelPilot* (**Only SEA*iq* Pilot**) : Configure for use with Navicom Dynamics ChannelPilot. This is for MK3 onwards. Prior to MK3, the network configuration is different and depends on the serial number of the device, so please refer to your product documentation.
- *Navicom Dynamics HarbourPilot* (**Only SEA*iq* Pilot**) : Configure for use with Navicom Dynamics HarbourPilot Triton Lightweight. Prior to Triton, the network configuration is different and depends on the serial number of the device, so please refer to your product documentation.
- *Navicom Dynamics HarbourPilot* (**Only SEA*iq* Pilot**) : Configure for use with Navicom Dynamics HarbourPilot Triton Ruggedised. Prior to Triton, the network configuration is different and depends on the serial number of the device, so please refer to your product documentation.
- *Status & Diagnostics* : This shows diagnostics describing the current status of your NMEA/AIS configuration.

Vessel Select (ChannelPilot & HarbourPilot)

- *Vessel Select* (**Only SEA*iq* Pilot**) : Vessel Select is used to associate Own-Ship with an AIS target in order to determine vessel name, size, and other information. See also *Vessel Auto-Select* and *Suppress*

Selected Vessel.
- *Vessel Auto-Select* **(Only SEA*iq* Pilot)** : When enabled, the user is prompted to select a vessel when nearby. The user is prompted when the following conditions are met: the target is not a pilot boat, port tender, tug boat, or recreational vessel, you are most *0.25NM* from vessel, your device's course is within *2kn* of vessel's course (measured by comparing course vectors). You can be asked to select a target at most once every *5 minutes*.

  If you already have a target selected, you must be at least *2NM* away from the current target before another target is suggested.
- *Suppress Selected Vessel* **(Only SEA*iq* Pilot)** : When enabled, an AIS target corresponding to the selected vessel is not displayed. This is to prevent duplicate images for the same vessel.

COG/SOG Derivation

- *Always Derive COG/SOG* **(Only SEA*iq* Pilot)** : When enabled, COG/SOG will always be derived based on recent GPS positions. Any COG/SOG data from NMEA (Primary or Extra) is ignored.

  It is almost always preferred to have your GPS hardware determine COG/SOG since that hardware has access to the most complete information about position. If uncertain, do not enable this option.
- *Derive COG/SOG When Needed* **(Only SEA*iq* Pilot)** : If your device sometimes does not provide course and speed sensor data (COG/SOG), you can enable this setting so this data will be derived based on recent GPS positions. When enabled and COG/SOG data from NMEA is not available, the derived value is used.

  This is normally only used with the Navicom Dynamics Channel Pilot product.

  It is almost always preferred to have your GPS hardware determine COG/SOG since that hardware has access to the most complete information about position. If uncertain, do not enable this option.
- *Derive COG/SOG When Slow* **(Only SEA*iq* Pilot)** : When enabled, COG/SOG will be derived from GPS position when speed is less than a given threshold.

  It is almost always preferred to have your GPS hardware determine COG/SOG since that hardware has access to the most complete information about position. If uncertain, do not enable this option.
- *Slow Threshold* **(Only SEA*iq* Pilot)** : Use this to set a threshold speed for deriving COG/SOG from GPS position. When estimated speed is below this threshold, then the derived value will be used. The default is *3kn*.
- *Derive COG/SOG from GPS Dampening* **(Only SEA*iq* Pilot)** : This controls how much dampening to use when COG/SOG from GPS. The speed is estimated based on an average of the previous *10 seconds* (the default), *15 seconds*, or *20 seconds*. Longer duration may be more accurate but less responsive to changes, and vice-versa.

Other

- *Shuttle Pilot* **(Only SEA*iq* Pilot)** : Set up and manage Shuttle Pilot support.
- *Ntrip RTCM Feed* **(Only SEA*iq* Pilot)** : Set up and manage connection to an Ntrip RTCM feed. This should only be used after consulting your PPU vendor to confirm your configuration supports this feature.

NMEA Configuration

Current Models

The current Navicom Dynamics products use per-model configurations, as listed below. Presets for configuring these devices are provided in *Settings / NMEA & AIS / Standard Devices*.

- GyroPilot, MK2 Onwards (Serial: *GP XXXXX*)
  - ♦ <u>User Manual (MK3)</u>
  - ♦ *Host*: 192.168.10.10
  - ♦ *Port Number*: 5003
  - ♦ *Connection Type*: TCP
- ChannelPilot, MK3 Onwards (Serial: *CP XXXXX*)
  - ♦ *Host*: 192.168.10.20
  - ♦ *Port Number*: 5003
  - ♦ *Connection Type*: TCP
- HarbourPilot Triton Lightweight (Serial: *HPTL XXXXX*)
  - ♦ *Host*: 192.168.10.30
  - ♦ *Port Number*: 5003
  - ♦ *Connection Type*: TCP
- HarbourPilot Triton Ruggedised (Serial: *HPTR XXXXX*)
  - ♦ *Host*: 192.168.10.40
  - ♦ *Port Number*: 5003
  - ♦ *Connection Type*: TCP

Previous Models

Prior models use a configuration that is dependent on the serial number of the device, as described below. If you have any questions, refer to your product documentation.

The *Host* should use an IP address that is determined by the product serial number. The IP addresses take the form *192.168.X.Y*, where X is the first digit of the serial number and Y is the last 3 digits of the serial number (discarding any leading zeroes). For example:

- S/N 20001 is *192.168.2.1*
- S/N 20034 is *192.168.2.34*
- S/N 20146 is *192.168.2.146*
- S/N 30146 is *192.168.3.146*

The first digit of the serial number also corresponds to the version of the device (eg, Mk3 serial numbers start with 3). This is explained in the documentation that came with your device.

- *Host*: 192.168.**X.Y**(see above)
- *Port Number*: 5003
- *Connection Type*: TCP

Shuttle Pilot

These settings allow use of with the Navicom Dynamics Shuttle Pilot. It allows additional targets to be delivered over your NNMEA feed.

This feature requires activation with your Enterprise Subscription.

Settings

- *Enable* (**Only SEA*iq* Pilot**) : This switch turns on Shuttle Pilot support.
- *Talker ID* (**Only SEA*iq* Pilot**) : This controls the *NMEA Talker ID* that identifies the remote Shuttle Pilot device.
- *Vessel Name* (**Only SEA*iq* Pilot**) : This is the name to use when referring to the remote vessel.
- *Heading Offset* (**Only SEA*iq* Pilot**) : The heading offset is added to the sensor value to generate the heading to use. The default heading offset is *0°* (no change). Negative values correct to Port and positive values correct to Starboard. Normally the desired setting is either *90°* or *-90°*.
- *Length* (**Only SEA*iq* Pilot**) : Manually enter length of the remote vessel.
- *Beam* (**Only SEA*iq* Pilot**) : Manually enter beam of the remote vessel.
- *Distance to Bow* (**Only SEA*iq* Pilot**) : Manually enter distance from bow to antenna for the remote vessel.
- *Distance from Centerline* (**Only SEA*iq* Pilot**) : Manually enter distance from centerline to antenna for the remote vessel.
- *Status & Diagnostics* : This shows diagnostics describing the current status of remote vessel.

AD Navigation PPU Settings

These settings configure SEA*iq* Pilot for use with <u>AD Navigation</u> Portable Piloting Units. See below for more information on using SEA*iq* with AD Navigation products.

Device Configuration and Support Notes

Below are WiFi configuration settings for *AD Navigation* products. Presets for configuring these devices are provided in *Settings / NMEA & AIS / Standard Devices*.

AD Navigation ADQ-2

The <u>AD Navigation ADQ-2</u> is supported by SEA*iq*. This support includes the following:

- A preset is provided for standard WiFi configuration.
- Product model is displayed when connected.
- Battery level is shown when connected.
- Heartbeat and ADQ-2 device alarm. See Alarms below for more information.
- WiFi and Bluetooth operation. On Apple iPads/iPhones, only WiFi operation is supported (no Bluetooth).

SEA*iq* Settings (WiFi):

- *Host*: 10.33.3.3
- *Port*: 8023
- *Connection Type*: TCP

To use the ADQ-2 heartbeat alarm, turn on Settings / AD Navigation / Device Alarm. Note that turning on the alarm may *improve* battery life since the ADQ-2 can power-off Bluetooth when WiFi is used. Disabling the device alarm requires that you turn the unit off and then on again.

AD Navigation ADX DUO, ADX XR, ADX XR2, and ADX XR Lite

The <u>ADX DUO</u>, <u>ADX XR</u>, <u>ADX XR Lite</u> PPUs are supported by SEA*iq*. This support includes the following:

- A preset is provided for standard WiFi configuration.
- Product model is displayed when connected.
- Battery level is shown when connected.
- Device Specific Alarms (as specified by AD Navigation). See Alarms below for more information.
- WiFi and Bluetooth operation. On iPads/iPhones, only WiFi operation is supported (no Bluetooth).
- Vessel Select operation can be used to determine vessel name and size from AIS and to suppress display of the AIS target corresponding to Own-Ship. See *Vessel Select* below for more information.
- A Heading Offset can be adjusted to account for various possible pod orientations. See *Heading Offset below* for more information.

SEA*iq* Settings (WiFi):

- *Host*: 10.33.3.3
- *Port*: 8023

- *Connection Type*: TCP

Note that the ADX DUO does not have an integrated device alarm like the ADQ-2.

Please see *AD Navigation ADX DUO Alarms* below.

Vessel Select: ADX XR, XR2, XR Lite, and DUO

The ADX XR, XR2, XR Lite, and DUO are not connected directly to the AIS pilot plug but certain models may still receive AIS data.

Vessel Select is used to associate Own-Ship with an AIS target, which allows vessel name, size, and other information to be determined. Vessel Select is also used to suppress display of the AIS target corresponding to Own-Ship (see *Suppress Selected Vessel*).

Three methods are available for selecting a vessel:

Method 1: Select from List of Vessels

- Choose *Vessel Select*.
- Select one of the listed vessels.
- You will get a confirmation dialog. Press *OK*.

Method 2: Select Vessel Graphicly

Similarly, you can also make this selection by graphicly selecting a target on the *Navigate* tab or by finding the vessel you want on the *AIS* tab:

- Return to Navigation tab (or AIS tab).
- Wait for your vessel to appear.
- Single tap on your vessel to select it.
- Double tap on your vessel to bring up its details.
- Choose *Full Information*.
- Choose *Select as Own-Ship*.
- You will get a confirmation dialog. Press *OK*.

Method 3: Vessel Auto-Select

Vessel Auto-Select is used to automatically prompt you when aboard a vessel. A vessel is selected by comparing your position and course with AIS targets in your area (see documentation for *Vessel Auto-Select* for more information about the criteria used to choose the most likely AIS target).

- Turn on Vessel Auto-Select. You can leave this setting enabled all the time.
- When aboard vessel and equipment is setup you will be prompted to select the vessel. Press *OK*.

If vessel is not selected for some reason, use one of the other methods to manually select your vessel.

Heading Offset

Depending on how the pods of an ADX XR, XR2 XR Lite, and DUO are oriented, you may need to adjust the heading received from the device. This is done by adjusting *Settings / Own-Ship / Heading Offset*, which is added to the value received from the PPU. You should first set the basic orientation and then fine-tune as needed.

Settings

- *AD Navigation Web Site* : A link to the http://adnavigation.com web site.

Devices

- *AD Navigation PPUs* (**Only SEA*iq* Pilot**) : Configure WiFi for use with all recent AD Navigation devices. All recent AD Navigation devices use the same WiFi configuration. Supported device include ADQ-2, ADX DUO, ADX XR, and ADX XR Lite. These all use host *10.33.3.3* and port *8023*. The ADX XR2 has a different setting.

  Some older devices may have custom settings; please contact your documentation or AD Navigation for your configuration details.
- *AD Navigation XR2* (**Only SEA*iq* Pilot**) : Configure WiFi for use with AD Navigation ADX XR2. These use host *10.33.3.4* and port *8023*.
- *AD Navigation XR2 (UDP)* (**Only SEA*iq* Pilot**) : Configure WiFi for use with AD Navigation ADX XR2 in UDP mode. These use host port *8000*. UDP mode may provide more reliable WiFi connectivity but requires a recent firmware version to be loaded in the device.
- *Status & Diagnostics* : This shows diagnostics describing the current status of your NMEA/AIS configuration.

Alarms

- *ADQ-2 Alarms* (**Only SEA*iq* Pilot**) : This is used to enable a device alarm on certain NMEA devices.

  Currently, this is only supported on the AD Navigation ADQ-2. After approximately *15 seconds* of inactivity, the device's alarm fires. After turning this setting off, the ADQ-2 alarm needs to be reset by turning the unit off and then on again.
- *ADX DUO, XR, XR Lite & XR2 Alarms* (**Only SEA*iq* Pilot**) : This is used to enable alarms for AD Navigation products, including ADX DUO, ADX XR, ADX XR Lite, and ADX XR 2. See AD Navigation documentation for a list of the alarms available.

Vessel Select (DUO, XR, XR2)

- *Vessel Select* (**Only SEA*iq* Pilot**) : Vessel Select is used to associate Own-Ship with an AIS target in order to determine vessel name, size, and other information. See also *Vessel Auto-Select* and *Suppress Selected Vessel*.
- *Vessel Auto-Select* (**Only SEA*iq* Pilot**) : When enabled, the user is prompted to select a vessel when nearby. The user is prompted when the following conditions are met: the target is not a pilot boat, port tender, tug boat, or recreational vessel, you are most *0.25NM* from vessel, your device's course is within *2kn* of vessel's course (measured by comparing course vectors). You can be asked to select a target at most once every *5 minutes*.

If you already have a target selected, you must be at least *2NM* away from the current target before another target is suggested.

- *Suppress Selected Vessel* (**Only SEA*iq* Pilot**) : When enabled, an AIS target corresponding to the selected vessel is not displayed. This is to prevent duplicate images for the same vessel.

Diagnostics

- *XR2 Diagnostics* (**Only SEA*iq* Pilot**) : This shows diagnostics for ADN XR2.
- *Transmit UDP Broadcasts* (**Only SEA*iq* Pilot**) : When both this and UDP mode are enabled, small messages will be periodically broadcast. This is currently only required for use with *AD Navigation XR2* devices operating in UDP mode. For all other situations, we recommend this is left off.

Other

- *Ntrip RTCM Feed* (**Only SEA*iq* Pilot**) : Set up and manage connection to an Ntrip RTCM feed. This should only be used after consulting your PPU vendor to confirm your configuration supports this feature.

ADX XR2 Alarms

The *ADX XR2* has the following alarms. *For the most up-to-date information on AD Navigation alarms, please refer to their documentation*:

Name	Condition	Timeout	Recommended Action
LOW CHARGE	Battery charge 5% or lower on at least one pod.	10	Charge system
GYRO TEMP LOW	Internal MEMS temperature below 0-degree Celsius or colder than lowest temperature used for factory calibration.	10	Wait, this condition is normally temporary after startup of a cold system.
GYRO TEMP HIGH	Internal MEMS temperature more than 60-degree Celsius.	10	Take measurements to reduce temperature. Avoid pod charging in the sun.
HEADING POS	Heading position not calculated or unknow.	10	Consider relocating the system. A clear sky view is desired.
HEADING	No heading available.	0	Consider relocating the system. A clear sky view is desired.
HEADING COM	Communication from heading pod to MPU pod is lost.	10	Confirm heading pod is switched on. Consider moving the heading pod closer to the MPU pod.
POS	No main position calculation available from the position pod.	10	Consider relocating the system. A clear sky view is desired.
POS FIX	No RTK fix for the position pod.	10	Consider relocating the system. A clear sky view is desired. Make sure RTK data is sent to the MPU pod.
POS COM	Communication from position pod lost	10	Confirm position pod is switched on. Consider moving the position pod

			closer to the MPU
POS RTK	No RTK data available for the position pod.	10	Make sure RTK data is sent to the MPU. Consider moving the position pod closer to the MPU.
ROT	No Rate of Turn available.	0	Make sure the system is not overheated. If cooled to below freezing temperatures, wait 5 minutes with the system switched on.
BASELINE	No baseline available.	2	Consider moving heading and position pod closer to each other. Consider relocating the system. A clear sky view is desired.
BASELINE INSTABLE	Baseline between heading and position pod fluctuates more than 2 cm	5	Consider moving heading and position pod closer to each other. Consider relocating te system. A clear sky view is desired.
HDOP HIGH	Horizontal dilution of position higher than or equal to 1.5	10	Consider moving the position pod. A clear sky view is desired.
HDG RTK	No RTK data available for the heading pod.	5	Confirm position pod is switched on. Consider moving the position pod closer to the heading pod.
BASELINE LONG	Baseline longer than 410 meters.	10	Consider if this installation is done correctly. XR2 pods might have communication issues at these distances.
BASELINE SHORT	Baseline (distance) between pos and hdg pod shorter than 2 meters	10	Consider lengthening the baseline. Short baseline gives heading noise.
POSITION RMS	Position RMS higher than 3 meters	10	Consider relocating the system. A clear sky view is desired.
SATELLITES LOW HDG	Heading pod tracks 5 satellites or less	10	Consider relocating the system. A clear sky view is desired.
SATELLITES LOW POS	Position pod tracks 5 satellites or less	10	Consider relocating the system. A clear sky view is desired.
PILOTPLUG DATA UNAVAILABLE	No incoming data detected from pilot plug	10	Confirm pilot plug connections if AIS transponder data is intended to be used.
INTERNAL USE ADNAV	For development and production test only.	10	Should never be set. Contact dealer or manufacturer.
EXTERNAL POWER	External power not available.	10	Might not be an error. Check external power source if charging is required.

ADX XR, XR2, XR Lite, DUO Alarms

The ADX DUO, XR, and XR Lite have the following alarms:

- Battery status: The system shuts down shortly after reporting *0%* charge. An alarm is triggered when battery is reported to be *10%* or less.
- Position RMS: An alarm is triggered if the system reports *2.5m* or more for more than *90 seconds*.

- Heading position RMS: If the Heading pod is in RTK fix (satellite compass used), the heading position RMS should not exceed *0.1m* (before 4.9.33.00013 this limit is *0.01m*).
- Heading mode: An alarm is triggered alarm if No Data is reported for more than *30 seconds*.
- Heading extrapolation time: An alarm is issued if this value exceeds *20 seconds*.
- Number of satellites for Position and Heading pod should trigger an alarm if they are 5 or less for more than *30 seconds*.

Tides & Currents

Settings

SEA*iq* includes support for various forms of tide and current data. It is always important to consider the source of your data. This is not intended as a complete description of tidal/current data. There are numerous references and other forms of documentation, including from the various data sources that SEA*iq* employs.

- Official/Unofficial data: Some of the tidal/current data is official and some is Unofficial.
- Online/Offline: Online data requires an internet connection in order to access. Offline predictions do not require an internet connection: they use so-called harmonic analysis to predict tide/current at particular times. There are numerous potential sources of error in tidal predictions. Note that real-time tidal data may also come from AIS broadcasts; this is similar to online data source but uses AIS over VHF broadcast and does not require internet connection.
- Reference/Subordinate Stations. For predictions, stations are divided into reference and subordinate stations. Reference stations have full harmonic analysis and may maintain permanent sensor on station. Subordinate stations are defined in terms of a reference station, typically with some time offsets, level offsets, and/or multipliers. All tidal predications should be taken with a grain of salt; this is particularly so in the case of subordinate stations because they are estimates of estimates.

Tidal predictions from NOAA and CHS may be downloaded in advance in order that they are available even when you are offline. When you choose to download the data, it downloads at least several weeks of data. This is the procedure for setting this up:

- Make sure you are connected to the internet.
- Create a VRM that includes all the stations you wish to download. This VRM should be in a fixed location, not attached to a vessel. You can create a VRM by (1) single tapping to select a center location, (2) double-tap a second location and choose Add Tool / Add VRM, (3) give your new VRM a descriptive name such as "Tidal VRM" so you know what it is for, (4) adjust the position of the VRM as needed.
- Choose *Select Stations* here and pick the VRM you just created.
- Press *Update* to download the data. This may take some time, depending on the number of stations in the VRM.
- When compilete, you can see how far in the future your predictions have been downloaded by viewing *Status*
- Periodically, you will want to *Update* your data to ensure you have needed predictions.

Settings

Labels

- *Show Labels* : Show labels for tide stations. Not all tide sources are supported.
- *Use Fill for Labels* : Show labels with solid background. This makes them easier to see, but may obscure other details.

Automatic Selection

- *Track Nearby Tide Stations* (**Only SEA*iq* Pilot**) : When enabled, the next and previous tide stations along your route are calculated. Own-Ship must be following a route. To be selected, a station must meet the following conditions:

    ♦ Within the *Distance Threshold* (see below) from the route.
    ♦ No more than *20NM* from Own-Ship along the route.
    ♦ The reference level must be well-defined (not "NA", "Gauge", "Pool", or similar).
    ♦ It must have a tide reading no more than *1 hour* old.

- *Distance Threshold* (**Only SEA*iq* Pilot**) : This is the maximum distance a tide station may be from the current route to be automatically selected for Own-Ship. The default is *1NM*.
- *Interpolate Tide for Own-Ship* (**Only SEA*iq* Pilot**) : When enabled, the water level at Own-Ship is estimated using linear interpolation based on relative positions along the route. Please understand that interpolation is based on the closest position of the route to the station. If a station is past the end of a route then then interpolation is based on the end-point of the route. *Important: Depending on conditions, linear interpolation may not be an accurate method to estimate tides. Knowledge of local conditions should be used to evaluate accuracy of estimates.* The following conditions must hold for this to be enabled:

    ♦ *Track Nearest Tide Stations* must be enabled.
    ♦ A next and previous station must be identified.
    ♦ The times of most recent readings reported at the two stations must be no more than *15min* apart.
    ♦ The two stations must report the same reference level.

- *Dynamic Tidal Adjustment* (**Only SEA*iq* Pilot**) : When enabled and a tidal value is present for the current position of Own-Ship, an adjustment is made to chart display.

    Alternately, a tide station can be opened and *Select for Tide Adjustment* pressed to manually select a tide station. This is disabled by pressing the disable (*X*) button in the status panel.

    The tidal adjustment is applied globally to all charts based on the estimated value at Own-Ship's current position. Thus, viewing any chart showing water with different tidal levels than the current adjustment will be displayed erroneously.

    This has the similar effect as manually editing *Settings / Bathymetry / Tidal Adjustment*. Please refer to documentation of that setting for more information.

    When this feature is enabled, the tidal adjustment is automatically updated (eliminating any prior value). When this feature is disabled, the tidal adjustment is reset to *0* or *No Adjustment* (regardless of any prior value).

    Dynamic tidal adjustment is only used if the sensor data is no older than the value of *Tide Sensor Timeout* setting (default: *15min*).

    When the value is changed, it is rounded down (never up) to the next lowest *5cm* value. The chart display then only changes when the current estimated level is less than the adjusted value or more than *10cm* above it. This means the adjustment is (1) always less than the estimated water level and (2) is no more than *10cm* less.

    Important: This feature must be used with care.
- *Tide Sensor Timeout* (**Only SEA*iq* Pilot**) : Maximum age for real-time tide data, after which the sensor data is colored red in the status bar an no longer used for dynamic tidal adjustment. The default

is *15min*.

Own-Ship Set & Drift (Advanced)

- *Use Set & Drift in Own-Ship Predictions* (**Only SEA*iq* Pilot**) : When enabled, a panel is displayed with sliders for set and drift for current. This allows Own-Ship course predictions to account for set and drift, potentially increasing their accuracy. AIS targets are not affected. The set and drift are assumed to already be a component of Own-Ship's COG/SOG. This option only has an effect when the vessel turns; as the vessel turns the set and drift component stay fixed but the remaining components turn.

  Enabling this feature disables the *Trial Rate-of-Turn CHL* feature.
- *Set Follows Route* (**Only SEA*iq* Pilot**) : When enabled along with *Use Drift in Course Predictions* and following a route, the bearing of the route closest to Own-Ship is used for the *set*. This can be useful in rivers or other areas where drift is expected to roughly follow the direction of the route.

  Note the set has a single fixed value for a particular position of Own-Ship at the current time and predicted movement of Own-Ship does not affect various course predictions. In other words predictions do not change set when, for instance, Own-Ship is following a curve.

Sources

- *USA (NOAA) Online Tides/Currents* : Enables downloading a list of NOAA tide and current stations. You can select a station to get a link to official online data.

  NOAA indicates tidal current predictions as being in Beta.

  This requires an internet connection. However, you can download predictions so that they are available when off-line.
- *NOAA PORTS* (**Only SEA*iq* Pilot**) : Enables download and display of <u>NOAA PORTS</u> data for many ports in the USA. The stations are identified using red diamonds with *P*. An attempt is made to update the stations every *6 minutes*.

  Please let us know if you are in an area with PORTS coverage that is not included in SEA*iq*.
- *NOAA NBDC Buoy Data* : Enables download of environmental data from NOAA <u>National Buoy Data Center (NBDC)</u> stations. The stations are located around the world, but most densely around the USA, England, and South Korea. The stations appear as yellow diamonds on the display, which can be selected and queried for their data. These are updated every *15 minutes* when connected to the internet.
- *Canada (CHS) Tides* : Enables downloading a list of CHS tide stations. You can select a station to get a link to official online data.

  This requires an internet connection. However, you can download predictions so they are available when off-line.
- *Canada SPINE Levels (CHS)* (**Only SEA*iq* Pilot**) : Enables periodic downloading of tide interpolations that CHS creates. These are made using the SPINE method, described by CHS as follows: "The service web de prÃ©visions et dâ interpolation des niveaux dâ eau (water level forecast and interpolation web service -- also called SPINE) is a system allowing one to obtain water levels at any time on the St. Lawrence navigation channel between Saint-Joseph-de-la-Rive and the Port of MontrÃ©al."

The requested position of forecasts correspond to location of buoys along the St Lawrence Seaway, which are treated as "virtual tide stations." Requests are made every *5 minutes*. This requires an internet connection.

When SPINE is enabled, AIS water level values are ignored for purposes of the *Track Nearby Tide Stations* and related features.

- *Australian Tide Stations (AHO)* **(Only SEA*iq* Pilot)** : Enables download of stations for Australia, Antarctic, and South Pacific. The stations are displayed as symbosl with links to online data. When enabled, an attempt is made to update these every day.

  This requires an internet connection.
- *Pegel Online Tides (Germany)* : Enables download of real-time water level data from PegelOnline (https://www.pegelonline.wsv.de). This requires an internet connection. An attempt is made to update these every *10 minutes*.
- *Environmental Data Germany* **(Only SEA*iq* Pilot)** : Enables download of real-time environmental data for various areas of Germany. This requires an internet connection and an account. See sub-menu for setting user name and password. An attempt is made to update these every *10 minutes*.
- *Norway Online Tides* **(Only SEA*iq* Pilot)** : Enables downloading a list of stations for Norway. You can graphicly select a station to get a link to official online tidal data.

  This requires an internet connection.
- *Port of London* **(Only SEA*iq* Pilot)** : Enables download and display of real time water level for a few stations near the Port of London. Currently, there are two stations available, each of which are displayed in 2 locations. This requires an internet connection. An attempt is made to update the stations every *2 minutes*.
- *SHOM Online Tides (France)* **(Only SEA*iq* Pilot)** : Enables display of predicted and real-time water level stations in France from SHOM (https://data.shom.fr).

  This requires an internet connection.
- *Port of Rouen (France)* **(Only SEA*iq* Pilot)** : Enables download and display of real time water level for stations near the Port of Rouen. An attempt is made to update the stations every *2 minutes*.
- *AyeTides* : Enables integration with the AyeTides and AyeTides XL apps. You can graphicly select a station to get a link the station.

  Pressing the link switches to the AyeTides app and shows you data for that station. When done, you can press the back button in AyeTides to return to SEA*iq*.

  This requires a purchase of *AyeTides* or *AyeTides XL* app. An internet connection is initially required to load the of stations. Once stations are downloaded, AyeTides can be used off line.
- *Open AyeTides* : Tapping this item switches to the AyeTides or AyeTides XL (if installed) in order to view tidal information. The current position in the chart display is given to AyeTides so it shows tidal stations in you area. When done, you can press the back button in AyeTides to return to SEA*iq*.

Prediction Download

- *Select Stations* : A Variable Range Marker is used to identify the area where you want stations data downloaded. Every station contained within the VRM is attempted to be downloaded.
- *Update Stations* : Press the *Update* button to begin downloading station data.
- *Status* : Status of downloaded stations. You can view the download status for all stations here.
- *Erase Downloaded Data* : Press the ERASE button to erase all downloaded prediction data.

S-104/S-111 Meteorological Data

- *Show IHO S-111 Surface Currents* (**Only SEA*iq* Pilot**) : When enabled, IHO S-111 Surface Currents products will be displayed.

  This is an experimental feature. Not all variations of S-104 products may be supported. Please contact us if you wish to use this feature.
- *Show IHO S-104 Water Level* (**Only SEA*iq* Pilot**) : When enabled, IHO S-104 Water Level products will be displayed.

  This is an experimental feature. Not all variations of S-104 products may be supported. Please contact us if you wish to use this feature.
- *Show IHO S-104 Water Level Gridded* (**Only SEA*iq* Pilot**) : When enabled, IHO S-104 Water Level grids will be displayed. Currently, the gridded data is displayed numerically as there is no standardized presentation for S-104 gridded data.
- *Browse Forecasts* (**Only SEA*iq* Pilot**) : When enabled, a slider is shown allowing you to view forecasts.
- *Ignore Old Files* (**Only SEA*iq* Pilot**) : When enabled, any IHO S-104 and S-111 data for periods more than 24 hours in the past are ignored. This can be used to reduce overhead from old meteorological data.
- *Diagnostics* (**Only SEA*iq* Pilot**) : List information about available S-104 and S-111 data.
- *NOAA S-111 Surface Current Products* : Support for downloading S-111 Surface Current products for USA from NOAA.

Advanced

- *USA Offline Tides/Currents* : Enables downloading harmonics for USA tides and currents. This data is based on NOAA developed harmonic constituents, but the harmonics may be somewhat out of date and should not be considered official.

  This uses tidal data from XTide (http://www.flaterco.com/xtide). It is advertised as "NOT FOR NAVIGATION" and having "ABSOLUTELY NO WARRANTY." Further information can be found in the diagnostics information for individual stations.
- *Global Offline Tides/Currents* : Enables downloading a harmonics file for stations covering much of the world. The harmonics file these predictions are based on is not maintained. Use at your own risk.
- *Ignore Subordinate Stations* (**Only SEA*iq* Pilot**) : When enabled, so-called subordinate stations will be ignored. Only reference stations will be shown. This can be useful in cases where only reference stations are needed and the additional subordinate stations cause clutter.
- *Always Show Direction of Current & Wind* (**Only SEA*iq* Pilot**) : When enabled, any stations reporting surface current or wind will have an arrow showing the direction (when at least display scale *1:25k*). When disabled, the direction is only shown when a station is selected.

Weather

SEA*iq* supports overlaying weather data on charts. The data that is displayed can be either automatically downloaded (requires an internet connection) or manually installed by you (useful if you are on passage). Currently, wind direction/strength and pressure can be displayed.

Wind is depicted using arrows showing the direction and speed of the wind at various data points. The location corresponding to the prediction is indicated with a tiny circle at the mid-point of the arrow. Speed is shown using feathers along the shaft of the arrow. Knots are always used for wind speed, regardless of other display settings you may have made. There may be any number of long feathers, each indicating *10kn* of wind speed. A short feather indicates an additional *5kn* of wind speed. Speeds are rounded up to the next *5kn*. *22kn* is displayed the same as *25kn*: 2 long feathers and 1 short one.

If you want the original information about a data point, you can double tap on the center of an arrow and select "Details for this Location." Along with other information about the GRIB file, you will see the direction and speed predicted for the location you selected.

Note that times shown for weather data are in local time unless specified otherwise.

Settings

- *Show Weather Data* : Enable this in order to show weather data.
- *Automatic Download* : Enable this to automatically download weather data for the area you are viewing. Requires an internet connection.

Automatic

- *Status* : Current status of the weather display.

Manual

- *GRIB File* : Select a GRIB file to display.
- *Request GRIB from SailDocs* : Format an email to request from SailDocs a GRIB file for the currently displayed area. See the body of the email for more information.

Settings

- *Show Wind* : Enable this in order to show wind data.
- *Show Pressure* : Enable this in order to show pressure data.

Instructions

Automatic Download

Automatic download is the preferred method for when you have a reliable internet connection. SEA*iq* will automatically download weather data for the areas that are visible on the chart display. As you pan the display, it will automatically download data for new areas that are displayed.

Using this feature simple:

- Set *Show Weather Data* to *ON*.
- Set *Automatic Download* to *ON*.
- Go to the <u>Navigate</u> tab. As the data is downloaded, it will be displayed. You should see the time corresponding to the GRIB data in the center of the display. The time is given both as a date (in local time) as well as the time relative to now (plus or minus number of days and hours).
- At the top of the display are buttons to move forward and backward in the forecasts to see weather patterns evolve over time.

SEA*iq* downloads the NOAA GFS 0.5x0.5 degree forecasts from <u>http://nomads.ncep.noaa.gov</u>. These forecasts are updated every 6 hours. Data is downloaded for 10x10 degree blocks for the visible area of the display. After current data for the visible area is displayed, it progressively downloads more forecasts, in 6 hour increments, for up to 7 days.

Whenever automatic download is enabled, SEA*iq* will be using internet bandwidth to download and update the GRIB data. Once SEA*iq* has downloaded all forecasts for the current display then it will stop downloading, until you move the display to a new area or new forecasts become available.

Manual Download

Important: we strongly recommend testing this feature before heading out on passage to ensure everything works. Ideally, you should test it using your SSB/Pactor just as you would at sea.

This method of viewing GRIB files is useful for situations where you will not have a normal internet connection (such as when on passage or in remote locations) but you do have an alternate method of acquiring GRIB files (such as Single Sideband radio with Pactor Modem or Satellite phone).

Weather data is exchanged using files in a standard format called GRIB. GRIB stands for "Gridded Binary". **SEA*iq* requires GRIB files to end in ".GRB" or ".grb".**

You can request GRIB files via email from <u>SailDocs</u> following their <u>instructions</u> or the instructions <u>here</u>. If you are at sea, you will probably want to use the AirMail program to request the data. It is fine if other weather data is included besides wind and isobar, but only wind and isobar will be shown.

The instructions below assume you will use an email formatted by the *Request GRIB from SailDocs* button in SEA*iq*. If you are using an different method, then you can skip the first few steps.

- Download a GRIB file. Go to *Settings*, then *Weather*. Press *Request GRIB from SailDocs*. SEA*iq* will format a valid request to *SailDocs* for the 10-by-10 degree area at the center of your current display. You will see some instructions below the line describing the format. Make any further edits as needed. Then press *Send*.
- Got to the Mail app and wait for the email response from *SailDocs*. Select the GRIB attachment and choose to open it with this app. Alternatively, if you are using a different method to get a GRIB file, you might for instance transfer it from your laptop using iTunes File Transfer.
- Return to *Settings*, then *Weather*.
- Select *GRIB File* to choose the GRIB file you want to display.
- Set *Show Weather Data* to *ON*.
- Set *Automatic Download* to *OFF*.
- Go to the <u>Navigate</u> tab. You should see the time corresponding to the GRIB data in the center of the

display. The time is given both as a date (in local time) as well as the time relative to now (plus or minus number of days and hours). Also, if the GRIB file contained multiple forecasts, you will see which forecast is currently displayed.

- At the top of the display are buttons to move forward and backward in the forecasts to see weather patterns evolve over time.

Sailing

This panel is used to control settings primarily related to sailing. Currently, only one setting is supported, which enables display of status information that can be helpful when sailing to wind.

We hope you find this feature helpful. Please keep in mind that this support in SEAiq is fairly simplistic and is targeted more at simple needs of cruisers than for racing, etc.

Settings

- *Sailing to Wind* : For use when tacking up-wind.

Sailing to Wind

This is used to display extra status information that can be helpful when tacking into the wind. It processes various sensor data and presents it to help understand whether you are on the best tack and when to change tacks.

This setting requires NMEA data about the Apparent Wind Angle (AWA) to your vessel. If True Wind Angle is available, it will be used, otherwise it will be derived. It also assumes you have a waypoint you are currently set to follow.

When enabled an extra panel is displayed in the vertical status bar, labeled *Sail to Wind*. It includes 4 data points:

- BTW: Bearing to Waypoint. This gives the bearing to the waypoint your are currently navigating toward.
- WIND: Wind Direction (Fixed, not Relative). This is the compass direction that wind is coming from. Note that AWA and TWA are normally give relative to the current heading of the vessel. Giving a compass direction rather than fixed direction, allows the direction to be compared to BTW. Typically, you will want to be on a tack that matches the relative directions: on a port tack if wind is to port of your waypoint, and vice-versa.
- TACK0: Current angle to waypoint. This is the relative angle of your vessel's course to your waypoint. This shows how far downwind your course is from your waypoint. Note that this value corresponds to your course (COG) not heading (HDG).
- TACK1: Estimated angle to waypoint for alternate tack. This is an estimate of what angle you may have if you tack. When TACK1 is significantly smaller in magnitude than TACK0, that can indicate tacking will put your vessel on a more direct course to the next waypoint. Note that this estimate assumes your vessel can head into the wind similarly on either tack. It also does not account for how current will affect your vessel differently on each tack.

Alarms & Sounds

Here you can configure settings related to alarms. Alarms are used to notify you of important events.

On mobile devices, best practice is to leave the app running in the foreground, with *Keep Awake* turned on.

Other alarms are available and can be configured in the respective setting panels.

- Routes
  - ♦ *Waypoint Advance*: Alerts you when advancing to the next waypoint on the active route.
  - ♦ *Waypoint Arrival*(**Only SEA*iq* Pilot**): Fires when arriving within designated distance from the next waypoint.
  - ♦ *Route XTD Alarm*: Fires when Own-Ship Cross Track Distance (XTD) exceeds the designated distance from the actve route.
  - ♦ *Speed Limit Alarm* (**Only SEA*iq* Pilot**): Fires when Own-Ship is following a route segment with a speed limit and speed exceeds the limit.
- NMEA/AIS
  - ♦ *Inactivity Alarm*: Indicates when no recent data has been received.
  - ♦ *Inactivity Alarm Reminder*: Prompts you when data has been received but the Inactivity Alarm is disabled.
  - ♦ *AIS Alarm*: Indicates when an alarm is reported via AIS.
  - ♦ *HDOP Alarm*: Fires when HDOP (Horizontal Dilution of Precision) has been received that exceeds *2.0*.
  - ♦ *NMEA Verification Alarm*: Fires when NMEA/AIS and GPS position differ by at least *100m*.
  - ♦ *Excessive Checksum Alarm*: Fires when many checksum errors have occurred. See NMEA documentation for detailed description.
- Meeting Points
  - ♦ *New Meeting Point* (**Only SEA*iq* Pilot**): Indicates when a new meeting point has been detected for an AIS vessel.
  - ♦ *Passing Restricted Meeting Point* (**Only SEA*iq* Pilot**): Indicates when a meeting point has been detected in a route segment marked as Passing Restricted.
- *Anchor Alarm*: Generate an alarm when Own-Ship moves too far from anchor position.

Settings

- *Disable Sound* : This disable all audible alarms, including voice and audible alarms. Heading ticks or playing back audio recordings are not affected.
- *Use Voice for Alarm* : Enable to get a voice alarm. This also requires that the volume on your device not be muted. The default voice for your language will be selected.

  On *Apple IOS* you can change the default voice by going to IOS *Settings / Accessibility / Spoken Content / Voices / English* (or other language) and choose the voice you wish to use. You may find that downloading the *Enhanced* version for a voice will improve the quality.

  On *Apple MacOS* you can change the default voice by going to MacOS *Settings / Accessibility / Spoken Content / System Voice* and choose the voice you wish to use. You may find that downloading the *Enhanced* version for a voice will improve the quality.
- *Speed for Spoken Alarms* : Control how fast spoken text is. This is a number from 1-100%. The default is 50%.

  • *Recent Alarms* : A table of alarms that have fired recently.

Own-Ship

  • *Heading Tick* (**Only SEA*iq* Pilot**) : Enable to get a tick every time Own-Ship heading (HDG) changes *1°*. If *Settings / Status Bar / Precise Heading* is enabled, the ticks are every *1/2°*. If *Settings / Status_Bar / Use Course When Heading Unavailable* is enabled, then COG may be used for generating ticks. Ticks are not emitted when playing back a recording at fast speed.
  • *Disable Entry/Exit Alarms* : When enabled, alarms for Own-Ship entering/exiting a Mariners Note polygon are prevented.

Wind Speed

  • *Wind Speed Alarm* : Enable to create alarm if the speed is exceeded. Alarms fire at most every *minute*. Both a text and audible alert are generated. If the speed is exceeded during this time, then another warning is generated using the maximum speed since the last alarm was generated.
  • *Wind Speed is True* : Enable to base alarm on true wind speed. When disabled, the alarm is triggered by apparent wind speed.
  • *Wind Speed* : Set this to the speed you would like an alarm generated.

Wind Direction

  • *Wind Direction Alarm* : Enable to create alarm if wind direction is outside the designated range. Alarms fire at most every *minute*. Both a text and audible are generated. If the direction exceeds range again during this time, then another warning is generated using the largest difference since the last alarm was generated.
  • *Wind Direction Port* : The bearing to port where an alarm is generated.
  • *Wind Direction Starboard* : The bearing to starboard where an alarm is generated.

Depth

  • *Depth Alarm* : Enable to generate an alarm if a lower depth is reported. If the depth is exceeded during this time, then another warning is generated using the shoalest depthd since the last alarm was generated.

    This alarm requires a sensor reporting *Depth Below Keel*.

    This alarm does not use depth information reported by charts.
  • *Depth* : Set this to the depth at which you would like an alarm generated.

Own-Ship COG/SOG

  • *Speed Alarm* : Enable to create alarm if Own-Ship speed exceeds a designated amount. Alarms fire at most every *minute*. Both a text and audible alert are generated. If the speed is exceeded during this time, then another warning is generated using the maximum speed since the last alarm was generated.
  • *Speed* : Set this to the speed you would like an alarm generated.
  • *Off Course Alarm* : Enable to create alarm if Own-Ship course is outside a designated range. Alarms fire at most every *minute*. Both a text and audible alert are generated.
  • *Course Bearing Port* : The bearing to port beyond which an alarm is generated.

- *Course Bearing Starboard* : The bearing to starboard beyond which an alarm is generated.

AIS

- *New AIS Vessel Alarm* : When enabled, an alarm fires whenever a new vessel. The alarm only applies to targets received from AIS and the target must be within the *AIS Vessel Alarm Range*.
- *New AIS Vessel Alarm Range* : The maximum range for new AIS target alarms. A value of zero means there is no limit.

Diagnostics

- *Test Alarm* : Signal an alarm after *10 seconds*.

Anchor Monitor

The Anchor Monitor can (1) estimate the location of the anchor on the seabed and (2) trigger an alarm when your it detects Own-Ship moving too far from that location.

This monitor improves on the simple alarm most mariners are accustomed to. When setting your anchor, the monitor estimates the actual location on the seabed where the anchor is set. It does this by accounting for the GPS antenna's position relative to the bow, your current heading, and the scope you have let out. After the anchor is set, the estimated location is displayed, along with the predicted circle of swing and alarm circle.

The extra accuracy can be helpful when you wake up in the middle of the night and check if your anchor is dragging. You can clearly see the location and orientation of your vessel relative to the original estimated anchor location and swing circle. Improved accuracy may allow use of a smaller alarm radius, so you can get an earlier warning when dragging begins. It can also be helpful when maneuvering your vessel's bow above the anchor to raise it.

All calculations are based on the location where the anchor (normally) attaches to your vessel, the bow. The Monitor uses your vessel's size, position of GPS antenna, (as specified in the Vessel True-scale settings) and heading to identify the location of your bow. It works best when using your vessel's GPS with a fixed antenna location on your vessel. When using an mobile device, of course results will vary as the device is moved within the vessel.

If all this sounds complicated, that is fine. You can use a value of zero for *Scope*. Then the *Alarm Distance* can be used in similar manner to a basic anchor alarm. You may also want to use a zero scope in more complex anchoring situations, such as when using multiple anchors.

Important

- The advanced features for tracking the location of your anchor are intended to *improve* the accuracy of information available to help determine if the anchor is dragging. There are still many sources of error.
- This feature is primarily focused on helping to determine if the anchor is dragging. As such, it attempts to track movement of the vessel's bow, where the anchor is normally attached. In particular, the dashed alarm circle on the Navigate display indicate the maximum swing of the bow.
- The term *scope* is used here somewhat loosely. Here it is intended to correspond to the horizontal distance of the bow from the anchor. This does not account for the vertical drop to the seabed and so may be somewhat less than the actual amount of chain/rode that has been let out.

Instructions

Setup

- If you are using an iPad, you may also want to enable the *Use Internal Heading Sensor*. Keep the iPad facing forward toward the bow.
- For best results, we recommend setting the size of Own-Ship vessel and location of your cockpit (if you are using your iPad's GPS) or the location of your GPS antenna (if you are using an NMEA feed from your vessel). This allows SEA*iq* to infer the position of the bow and factor that into initial anchor placement and alarms.

While Anchoring

We recommend setting the anchor position during the normal process of anchoring, at the point when the anchor has been physically set into the seabed and Own-Ship is backed up on it. The rode should be somewhat straight and the bow pointed toward where the anchor is set. At that point you should also know approximately how much scope is out.

- Set the *Scope Radius* according to how much chain/rode you have let out. As discussed above, this value is really the horizontal swing radius and should be somewhat lower to account for the depth in which you are anchoring.
- Switch the *Set Anchor* switch to *ON*. SEA*iq* will then estimate the location of the anchor in the seabed based on Own-Ship's current position, shape, heading, and the scope you specified above. This also enables the alarm below.
- If necessary, adjust the *Alarm Length* to indicate the additional distance beyond the *Scope Radius* should cause an alarm to be triggered. This amount can be used to account for inaccuracies in the *Scope Radius*, GPS, and other factors. If you find you are getting "false alarms," you may want to increase the *Alarm Length*. In many cases, this value can remain the same between uses.
- Set the *Enable Alarm* switch to *ON*. An alarm will now be generated when the bow moves more than the *sum* of the *Scope Radius* and *Alarm Length* from the estimated location of the anchor.
- If using the alarm, check that the *Keep Awake* setting is *ON*.

Display

The Navigate tab will show:

- A black anchor symbol at the estimated location of the anchor.
- Two black dotted circles. The inner circle indicates the scope radius which is the expected range of the bow. The outer circle shows the swinging radius of the stern.
- A dashed circle for the alarm radius. An alarm will fire if the bow moves beyond this circle.

You need to be at most 1:20,000 scale for circles to be shown.

Changing Alarm

After setting the anchor, you can change it by single-tapping on the anchor to select it and dragging it to a new location. You can also graphicly adjust the scope and alarm distance by tapping them and dragging them to a new distance.

Alarms

If an alarm is generated, you will first want to ensure the vessel is safe. If you feel the alarm was generated unnecessarily, you may want to increase the *Alarm Length*.

Settings

- *Set Anchor* : Enabling this sets an anchor monitor.
- *Enable Alarm* : Enable this if you want an alarm generated if Own-Ship moves too far from where the anchor was set.
- *Scope* : This is the estimated scope or swing radius currently used for your anchor.

- *Alarm Length* : This is the extra distance the bow can move beyond the scope, beyond which an alarm is generated.
- *Use Shackles* **(Only SEA*iq* Pilot)** : Enable this if you want to use Shackles for anchor-related units.

Feeds

SEA*iq* has the ability to automatically download and update numerous types of data from the internet. Several preset feeds are provided that are of common interest, but many users employ this feature for their specialized needs.

Feeds are normally only updated when connected to the internet. You need to take care to connect to the internet from time to time so that your feeds may be updated. You can request an immediate update by pressing the UPDATE button. The current status of your feeds can be determined by checking the Diagnostics.

When updating feeds, SEA*iq* attempt to use network bandwidth efficiently by first checking if the data has changed before downloading the entire new file. This requires standard support from the server.

Settings

- *Update Now* (**Only SEA*iq* Pilot**) : Pressing the *Update* button causes all feeds to be updated immediately, rather than waiting for the next scheduled time.
- *Diagnostics* : This allows you to view the status of currently active feeds.

Common Feeds (See also Tides)

- *St Lawrence Seaway Notices/Shoals* : Enables download of current information on notices-to-mariners and shoals for the St Lawrence Seaway published by the Canadian Coast Guard. These appear as orange information circles, in some cases also with magenta rectangular areas. These are updated once per day when connected to the internet.
- *HydroTel Feed* (**Only SEA*iq* Pilot**) : Hydrotel Data Service.
- *Whale Alert* (**Only SEA*iq* Pilot**) : Enables download and display of recent whale sightings reported to Whale Alert. Note that access to this information requires an account and is normally only available to professional mariners. If you wish to submit whale alert sightings, please do so via the free *Whale Alert* app.
- *UHU GPS Jammer/Spoofer Detection* (**Only SEA*iq* Pilot**) : Settings for reporting jammer/spoofer events detected by UHU Technologies. An attempt is made to update the stations every *minute*.

User-Generated Feed Files

Feeds are also an open-ended feature that can be extended to download and periodically update various forms of data. Please contact us if you have any questions on how to use feeds.

User-generated feeds are considered an advanced because they designed to be open-ended in nature. They are specified using files in the XML format. If you have a specific need not currently addressed in SEA*iq*, please contact us about your requirements.

Feed files are based on the RSS XML format, with the following extensions:

- *<seaiq:refresh>*: Indicates how often the link will be checked for new data. If not present, the default is every 5 minutes. The time is expressed as follows:
    - ♦ P indicates the period (required)
    - ♦ nY indicates the number of years

- ◆ nM indicates the number of months
- ◆ nD indicates the number of days
- ◆ T indicates the start of a time section (required if you are going to specify hours, minutes, or seconds)
- ◆ nH indicates the number of hours
- ◆ nM indicates the number of minutes
- ◆ nS indicates the number of seconds

For instance *P1D* refreshes once per day. *PT15M* refreshes every 15 minutes.

- *<seaiq:insert_date>*: Causes today's date (in DDMMYYYY format) to be substituted for **%DATE%** in the *l* field. This is used for feeds with links that change every day.
- *<seaiq:file>*: Specifies an alternate name to use for the downloaded file. If not present, the name will be the same as the name in the link URL.

HydroTel

The settings here are for users of HydroTel data services for the Pilbara Ports Authority in Australia. An account is required in order to use this service.

An attempt is made to update sensor data every 5 minutes. If a failure occurs during an update, the prior data is shown. The time associated with a particular site is the oldest of the times available for that site.

Settings

- *Enable Service* (**Only SEA*iq* Pilot**) : Enable use of HydroTel service.
- *Username* (**Only SEA*iq* Pilot**) : Username for HydroTel service.
- *Password* (**Only SEA*iq* Pilot**) : Password for HydroTel service.
- *Status* : Status of Hydrotel updates.

Whale Alert

This feature is used to download and display locations for recent whale sightings, from Whale Alert (http://www.whalealert.org).

Note that access to this information requires an account and is normally only available to selected professional mariners.

If you wish to submit whale alert sightings, please do so via the free *Whale Alert* app.

An attempt is made to update whale sightings every day.

Settings

- *Username* (**Only SEA*iq* Pilot**) : Username for Whale Alert service.
- *Password* (**Only SEA*iq* Pilot**) : Password for Whale Alert service.

Simulator

The simulator allows you to simulate operation of a vessel anywhere in the world. This can be a good way to try out SEA*iq* and see how various maneuvers can be displayed. Please note this simulator is not intended to emulate "real-world" conditions.

When the simulator is enabled, you can use sliders to control the vessel's speed in water (STW), bow and stern motions. A pause button can be used to stop the vessels motion until pressed again.

The following methods for moving the simulated vessel are supported:

- Select the center of the vessel and drag/drop to move it.
- Select the center of the vessel and rotate it. If you are using a mouse with scroll-wheel or some trackpads, you can also use scrolling gestures to rotate.
- You can move the vessel to a new location by selecting the vessel, then dragging.
- Double tap a new location and select *Move Simulator Here*.
- You can re-orient by (1) selecting the bow or stern of Own-Ship and (2) dragging it.

You can move the simulator to the same position, HDG, and ROT as any AIS target or Own-Ship. Select the desired vessel, double-tap to get full details, and choose *Copy to Simulator* (all the way on the bottom). After this, the simulated Own-Ship will follow its own course.

A current can be simulated using the Drift settings. Finally, an advanced setting, *Disable ROT Sensor*, can be turned ON to cause SEA*iq* to simulate its behavior as though Own-Ship does not have a rate-of-turn sensor.

The simulator does not support *Settings / Own-Ship / Heading Offset*.

Settings

- *Enable* : Turns on the simulator. This overrides all other settings (eg, Virtual Boarding). The position is the last position the simulated vessel was placed at. You can move it onto the screen by double tapping and selecting *Move Own-Ship to Here*.

Advanced

- *Record Simulations* (**Only SEA*iq* Pilot**) : When enabled, recordings are made of the simulation, which may then be played back. Note that this requires that the simulator and NMEA recordings must be enabled for this to have an effect. The simulator is shown as if it were an AIS target. You can use Virtual Boarding to board the vessel if you want it to be treated as Own-Ship. Similarly, to use *Settings / Record & Playback / Manage Recordings / Convert* functions, use Virtual Board first during playback so that the vessel will be treated as Own-Ship.
- *Disable ROT Sensor* : This can be used to simulate situations where Own-Ship lacks a rate-of-turn (ROT) sensor. This can be useful to better understand how SEA*iq* behaves when ROT sensor data is impaired, which unfortunately is a common occurrence with AIS pilot plugs.

Administration Settings

The settings listed here are used to manage your installation of this software.

Settings

- *Reset Settings to Defaults* : Reset your settings to system defaults.

  If you have an Enterprise Subscription and a template has been created, those settings are used.
- *Check for Software Update* : Check if an update is available.
- *Disable Automatic Check for Software Updates* : When enabled, automatic checking for software updates is disabled. You can still manually check for and install updates.

Customization

- *Edit Quick Settings* (**Only SEA***iq* **Pilot**) : This is turned on to control which settings are in quick list. It allows you to make certain features you use often easily available. The method of use is to turn this on, then review all the settings, marking them as being locked or not. When done, this is turned off.

  Each setting can be individually edited, including sub-menus.

  When this is turned on, you are able to edit which settings should be in the quick list.

  When this is turned off (the normal mode), those settings you have added are in the Quick menu.

  This automatically disables itself whenever SEA*iq* restarts.

  This cannot be turned on when *Settings / Enterprise Subscription / Use Quick Tab from Server*.
- *Edit Visible Settings* (**Only SEA***iq* **Pilot**) : This is turned on to control which settings are visible. It allows you to hide features you do not use or need to adjust on a normal basis. The method of use is to turn this on, then review all the settings, marking them as being shown or hidden. When done, this is turned off and the hidden settings disappear.

  Each setting, including sub-menus, can be individually shown/hidden. Whether a setting is shown or hidden has no effect on its value.

  When this is turned on, you are able to edit which settings should be shown or hidden. While editing, all settings are shown along with a selector. The selector has two choices, *S* and *H*, for show and hide. You can adjust these values as you like.

  When this is turned off (the normal mode), all settings marked as hidden are no longer shown. To view or access those settings, you need to turn this switch back on.

  This automatically disables itself whenever SEA*iq* restarts.
- *Show All Settings* (**Only SEA***iq* **Pilot**) : Enable this to temporarily make all settings visible. This does not affect your selection of which should be hidden. Disable this again to hide settings.
- *Reset Hidden Settings* (**Only SEA***iq* **Pilot**) : Press *Reset* to clear all your hidden settings. All settings are marked as visible. This cannot be undone.
- *Manage Hidden Settings* (**Only SEA***iq* **Pilot**) : List all hidden settings.

Backup & Restore

- *Backup Settings* : Use this to save your settings, which you can load on another device or restore from later.

  This saves almost all your settings. Saved items do not include routes, waypoints, tools, or database of vessel information. Each of these has other mechanisms for restoring.
- *Restore Settings* : Restore settings you had previously saved. We recommend restarting this app after restoring your settings.

Locking

- *Lock Settings* **(Only SEA*iq* Pilot)** : When turned on, any settings you have locked can no longer be modified.
- *Password* **(Only SEA*iq* Pilot)** : When a password is set and the lock is enabled, the password must be re-entered to unlock the settings.
- *Edit Locked Settings* **(Only SEA*iq* Pilot)** : This is turned on to control which settings are locked. It allows you to lock features you do not use or need to adjust on a normal basis. The method of use is to turn this on, then review all the settings, marking them as being locked or not. When done, this is turned off.

  Each setting can be individually locked.

  When this is turned on, you are able to edit which settings should be locked.

  When this is turned off (the normal mode), all settings marked as locked cannot be changed. To modify those settings, you need to turn this switch back on.

  This automatically disables itself whenever SEA*iq* restarts.
- *Reset Locked Settings* **(Only SEA*iq* Pilot)** : Press *Reset* to reset locks on all settings. All settings are marked as unlocked. This cannot be undone.
- *Manage Locked Settings* **(Only SEA*iq* Pilot)** : List all locked settings.

Enterprise Account

These settings allow you to view and manage your account information.

Please email us to inquire about creating an account for your enterprise.

Settings

- *Account* (**Only SEA*iq* Pilot**) : Name of the account your copy is licensed under.
- *User Name* : User's name for your account.
- *User Email* (**Only SEA*iq* Pilot**) : Email address associated with your user account.
- *Account Status* (**Only SEA*iq* Pilot**) : Status of your account.
- *Server Status* (**Only SEA*iq* Pilot**) : Status of last check on your account.

Manage

- *Import* (**Only SEA*iq* Pilot**) : Import credentials for your SEA*iq* account.
- *Manual Login* (**Only SEA*iq* Pilot**) : You can use these to manually enter your account details. This should match the information in your account email. You must enter the information exactly as it appears in your account email.
- *Update* (**Only SEA*iq* Pilot**) : Update your account status. This forces an immediate account update with the SEA*iq* account server.
- *Stop* (**Only SEA*iq* Pilot**) : This button cancel use of your account credentials.
- *Use Account to Sign-in to AIS Sharing* (**Only SEA*iq* Pilot**) : This only has an effect when used with an Alternate AIS Sharing server. When enabled, your Enterprise Subscription account credentials are used to sign into your AIS Sharing server. With matching configuration on the server side, this eliminates the need to manage separate credentials for an AIS Server.

Automatic Import & Export

- *Use Settings from Server* (**Only SEA*iq* Pilot**) : When enabled, settings installed for your Enterprise Subscription account are automatically adopted.
- *Use Quick Tab from Server* (**Only SEA*iq* Pilot**) : When enabled, the Quick Tab from your Enterprise Subscription account is automatically adopted. This only has an effect if *Use Settings from Server* is also enabled. Turning this on causes your current Quick Tab to be lost; this cannot be undone. Also, you will be unable to edit the Quick Tab while this is enabled.
- *Use Routes from Server* (**Only SEA*iq* Pilot**) : When enabled, routes from your Enterprise Subscription account are automatically adopted. No changed to routes or waypoints can be made as long as the setting remains enabled. Any routes you have are replaced. A copy is placed in *Settings / Advanced / Archive*.
- *Show Mariners Tools from Server* (**Only SEA*iq* Pilot**) : When enabled, Mariners Tools from your Enterprise Subscription account are shown, in addition to any tools you have created. No changes are made to your tools.
- *Use Chart Files from Server* (**Only SEA*iq* Pilot**) : When enabled, chart, overlay and other types of files are automatically downloaded from your Enterprise Subscription account.

  This provides a very easy way to distribute files to all the users in your account without having to setup your own server.

This features requires special activation for your account.

File updates are checked every *30 minutes* if you are connected to the internet. You can also press the *Update* button to trigger an immediate check for changed files.

When downloading, your device needs to be connected to the internet and have an active account. Once started, the update continues in the background. You can see the status being updated as the download proceeds. When complete, a notification is made. Keep in mind chart updates can be quite large. You may want to wait until you are connected to a high speed internet connection before downloading updates for your charts.

If files were removed from the server, they are removed also from your device, as the last step of the update.

- *Save Recordings to Server* **(Only SEA*iq* Pilot)** : When enabled, recordings are uploaded to your Enterprise Subscription account after completion. For this feature to have an effect recordings must be enabled. Recordings are stored for a year before removal. To access recordings, contact your account administrator.

This features requires a special activation for your account.

Files from Server

- *Chart Files* : View currently downloaded files from server.
- *Status* : Status of downloads/updates.

Debug

- *Age (Debugging)* **(Only SEA*iq* Pilot)** : Artificially advance time 4 days.
- *Use Test Account Server* **(Only SEA*iq* Pilot)** : Use a test version of the account server.

Advanced Settings

The settings listed here are not used by the typical user. They should not be used without first carefully reading the documentation below. Any items listed here may be changed or removed in future versions.

Settings

Modes (Experimental)

- *Transit Mode* (**Only SEA*iq* Pilot**) : Enable *Transit* mode. Turning this on has the same effect as making the following changes. You can still adjust the settings. This is the opposite of *Maneuver* mode (aside from Straight Course Vector, Follow Offset, and True-Scale Prediction).

    ♦ Meetings points: On
    ♦ Meeting point alarms: On

    ♦ Presets: On
    ♦ Vessel Motion: Off
    ♦ Swept Path: Off
    ♦ True-Scale History: Off
    ♦ Bow & Stern Course Vectors: Off
    ♦ Disable Tug Course Vectors: Off
    ♦ Follow Offset: On
    ♦ Straight Course Vector: On
    ♦ True-Scale Prediction: On

- *Close Maneuver Mode* (**Only SEA*iq* Pilot**) : Enable *Maneuver* mode. Turning this on has the same effect as making the following changes. You can still adjust the settings. This is the opposite of *Transit* mode (aside from Straight Course Vector, Follow Offset, and True-Scale Prediction)

    ♦ Meetings points: Off
    ♦ Meeting point alarms: Off
    ♦ Side-Heading Lines: Off
    ♦ Presets: Off
    ♦ Vessel Motion: On
    ♦ Swept Path: On
    ♦ True-Scale History: On
    ♦ Bow & Stern Course Vectors: On
    ♦ Disable Tug Course Vectors: On
    ♦ Follow Offset: On
    ♦ Straight Course Vector: On
    ♦ True-Scale Prediction: On

Position

- *Monitor Safe Water* (**Only SEA*iq* Pilot**) : When enabled, the predicted swept-path of Own-Ship is monitored for any depth areas (or dredged areas) that are shoaler than then *Safety Contour* setting.

    If Vessel Buffer is enabled, the buffer area is added to the size of the safe area.

Only ENCs with scale at least *1:30,000* are used for calculation of safe water. When Bathymetric ENCs are in use, they are used in preference to ENCs. Any areas that overlap only use data from the bENC.

At most *12 minutes* of predicted course are monitored.

Raster charts and non-ENC overlays (such as Autocad DXF, Shapefile, XYZ, and GML data) are not considered when checking safe-water.

When areas are detected in predicted path, an alarm generated at most once every *2 minutes*. Areas in predicted path identified as potentially unsafe water are outlined in red.

Safety scans are calculated periodically, every *5 seconds*. You may notice there is a small lag before unsafe areas are updated.

When executing turning maneuvers, there may be small areas at edge of Own-Ship's swept path that are not included in the monitoring for safe water.

This feature is intended as an aid and is not a substitute for careful monitoring of Own-Ship's course.
- *Check Route for Obstructions* (**Only SEA*iq* Pilot**) : When enabled, charts are analyzed for dangers with the active route.

Only ENCs with scale at least *1:100,000* are used for calculation of safe water. When Bathymetric ENCs are in use, they are used in preference to ENCs. Any areas that overlap only use data from the bENC. For areas where bENCs are used, only features in the bENCs are included in the analysis (none from ENCs in the overlapping areas).

Raster charts and non-ENC overlays (such as Autocad DXF, Shapefiles, XYZ, and GML data) are not considered when checking safe-water.

When determining which items to highlight, the Safety Contour is used for Depth Areas and Depth Contours. The Safety Depth is used for Soundings. The current tidal offset is incorporated into the analysis.

Analyzing the charts can be processing-intensive and you may experience lagging behavior, especially on older devices.

The results are presented graphicly on the chart display, with potentially unsafe areas marked in red. The most detailed chart information for each area is used for the analysis: when not zoomed into the most detailed chart, the features of the lower scale charts may not match those of the more detailed charts and in many cases features such as soundings may not be available. Sometimes Scale-Minimum (SCAMIN) attributes on features may prevent display of features (such as soundings). In those cases, you can zoom in further until they are displayed or you can turn off SCAMIN in Settings / Vector / Charts / Advanced.

Results can also be viewed in tabular format by selecting the sub-menu. The feature that were detected as a possible problem are listed in approximate order based on position along the route. The list of problems is cut off at *100* maximum items. You can select a menu item to jump to the location of the feature in question.

This feature is intended as an aid and is not a substitute for careful analysis of a route for safety.

- *Use Accurate Internal GPS* : Normal behavior when using IOS location services is to only display updates when the vessel has moved at least 5m and/or heading has changed at least *5°*. This is done to conserve battery. When this option is enabled, these minimum thresholds are not used. This may result in more accurate display of location (especially when moving slowly), at the cost of increased battery use.
- *Internal GPS Alarm* (**Only SEA*iq* Pilot**) : Generate an alarm if the internal GPS position has not been received in *30 seconds* or has a horizontal position error of at least 25m. An alarm is generated at most every *2 minutes*.
- *Use Internal Heading Sensor* : When enabled, the heading heading sensor/compass is used to display the vessel's orientation. We normally recommend against enabling when the device is not in a fixed mount. This setting has no effect when course information comes from an external NMEA/AIS feed.

  Troubleshooting: on IOS, if you do not get HDG sensor, please check that *IOS Settings / Privacy / Location Services / System Services / Compass Calibration* is turned on.
- *Use Goto Waypoint for XTD* (**Only SEA*iq* Pilot**) : When enabled, the XTD displayed is for the route segment ending with the current goto waypoint. If the current goto waypoint is the next waypoint in the route, XTD is not affected. When disabled, the XTD is for the current position of Own-Ship on the active route.

  When showing XTD for other than the segment Own-Ship is closest to, the route segment is considered to be straight and any turning radius is ignored. The *Default XTD Alarm Range* is used for scaling the XTD bar, even if the route or route segment has a separate maximum XTD assigned to it. The XTD panel is highlighted in magenta to visually indicate the different calculation is being used. The XTD is calculated as though the route segment were extended backwards *20NM*, so Own-Ship must be within this distance of the route segment.

  Enabling this causes 3 buttons to be displayed in the *Waypoint* status bar panel: Back, Own-Ship, and Advance. These cause the current goto waypoint to be adjusted forward, back, or reset to the current position of Own-Ship.
- *Prefer Distances Along Route* (**Only SEA*iq* Pilot**) : When enabled, and users selects a location near (within *Settings / Meeting Point / Distance Threshold*) the active route, then distances are shown from Own-Ship's current position along route. When disabled, distances are always *as the crow flies*. If *Meeting Points* are enabled, a line will be drawn from cursor to closest point on route.
- *Use Rhumb Lines for Routes* (**Only SEA*iq* Pilot**) : When enabled, all routes will follow rhumb Line paths (loxodrome). Distances along routes will always use Rhumb Lines. The default is to always use Great Circle paths (orthodrome).

  Note that even when enabled, all other measurements use Great Circle bearings and distances. For instance, *XTD* is calculated using Great Circle.

  Note that following Great Circles uses *shortest* distances between points. Rhumb lines result in *longer* distances, sometimes substantially longer distances. *Unless you have a specific reason to use rhumb lines, we recommend use of the default great circles.*

  Rhumb Lines are normally only used when loading routes originally designed for use with rhumb lines, when used alongside systems that require use of rhumb lines, or when used alongside paper charts with Mercator projection.
- *Hide Own-Ship Predictor When Stationary* (**Only SEA*iq* Pilot**) : When enabled, the Own-Ship predictors will not be displayed if Own-Ship SOG is less than *0.15kn* and ROT is less than *2°/m*. This can be useful when Own-Ship is tied to dock and GPS is reporting small motion that create distracting predictions.

- *Substitute Heading for Course* (**Only SEA*iq* Pilot**) : When enabled, vessel HDG is substituted for COG. This may be helpful in situations where COG is inaccurate. This can result in showing an incorrect course vector when actual HDG and COG differ. *This feature is experimental and may removed.*
- *Scale for Manned Model Simulations* (**Only SEA*iq* Pilot**) : When enabled, Own-Ship SOG is scaled by *5* and ROT is scaled by *1/5*. This is for use in manned model simulations with scale *1/25*.
- *Display Own-Ship as Rectangle* (**Only SEA*iq* Pilot**) : When enabled, Own-Ship is shown as a rectangle instead of the normal ship shape.
- *Use GPS Antenna for Default Conning* (**Only SEA*iq* Pilot**) : When enabled, the default conning position is the amidships at the GPS position. When not enabled, the default conning position is the center of Own-Ship. The conning position is used as reference point for various other items such as the source of the course vector, XTD, and for measuring COG/SOG.
- *Long Beam Lines for Own-Ship* (**Only SEA*iq* Pilot**) : When enabled and beam lines are enabled, the beam lines for Own-Ship are *2NM* in length. When not enabled, the size is based on a fixed display size.
- *Show Relative Courses* (**Only SEA*iq* Pilot**) : When enabled, predicted courses for AIS targets are shown relative to the course for Own-Ship. Additionally, the Own-Ship predicted course vector is not shown.

  It is important to understand that when this option is enabled the course vectors for AIS targets no longer represents the courses for the targets, only the positions relative to Own-Ship. Because of this, a warning, *"Relative Courses"*, is displayed in the bottom-right corner of the display.
- *Auto-configure PPU (Experimental)* (**Only SEA*iq* Pilot**) : Auto-config for selected PPU models. When enabled and certain models of PPU are detected, various settings may be adjusted to match best practices. This only has effect after a connection is first made to the PPU. Therefore, it is necessary to first configure NMEA settings.

  Current devices that are supported include:

  - AD Navigation ADQ2. The following changes are made:
    - ◊ Set Heading Offset to 0 (none)
    - ◊ Turn off Automatic Heading Offset
    - ◊ Turn off Vessel Auto-Select
    - ◊ Turn off Vessel Select / Suppress Selected Vessel
    - ◊ Turn on ADQ-2 Alarms
    - ◊ Turn off ADX DUO, XR, & XR Lite Alarms
  - AD Navigation ADX DUO, ADX XR, and ADX XR Lite. The following changes are made:
    - ◊ Turn on Automatic Heading Offset
    - ◊ Turn on Vessel Auto-Select
    - ◊ Turn on Vessel Select / Suppress Selected Vessel
    - ◊ Turn off ADQ-2 Alarms
    - ◊ Turn on ADX DUO, XR, & XR Lite Alarms
- *Alarm When WiFi SSID Changes* : When enabled, an alarm is generated after WiFi SSID changes. An alarm is generated at most once per minute. This is used to alert you if the WiFi changes to connect to a different WiFi signal. *Only available on Apple iPad and iPhone.*
- *Own-Ship Acceleration* (**Only SEA*iq* Pilot**) : Control whether to derive acceleration of Own-Ship and display.

Other

- *Disable FTP Proxy* : When enabled, FTP requests are longer be proxied. Apple IOS has a bug in FTP software that can cause crashes. Other platforms often have problems with FTP client software.

  Enabling this option may cause occasional crashes and/or FTP-based data transfers to fail.
- *Require Secure Downloads* : When enabled, only secure web requests (*https*) will be used. Any downloads with *http* will be changed to *https* (secure web). This can increase security at some network overhead, which can affect mobile devices.
- *Show Magenta Disk Under Targets* (**Only SEA*iq* Pilot**) : When enabled, AIS targets are drawn with a magenta disk underneath them. This can make it easier to identify targets in a cluttered display.
- *Default Turning Radius* (**Only SEA*iq* Pilot**) : This is the default turning radius to use for all waypoints. It may be overridden by setting the turning radius in a specific waypoint.
- *Elbe & Hamburg Speed Limit* (**Only SEA*iq* Pilot**) : Enable to track speed limit on the Elbe River and Hamburg Harbor. The Elbe River speed limit is based on estimated high water and current according to time to next/previous high-water event. The Hamburg Harbor speed limit uses queries to a web service.

  The speed limit alarm is only shown when Own-Ship SOG exceeds the speed limit by *Speed Limit Delta* (see *Settings / Routes and Waypoints / Speed Limit Delta*).
- *Elbe & Hamburg Speed Limit Alarm* (**Only SEA*iq* Pilot**) : This feature is for the Elbe River and Hamburg Harbor. Enable for an alarm to be generated when Own-Ship SOG exceeds the speed limit by *Speed Limit Delta* (see *Settings / Routes and Waypoints / Speed Limit Delta*). This feature has no effect unless the overall *Elbe & Hamburg Speed Limit* is enabled. An alarm will be generated at most once every *5min*.
- *Simulated Canada SPINE Levels* (**Only SEA*iq* Pilot**) : Enables use of simulated data source for CHS SPINE forecasts. This setting has no effect unless *Canada SPINE Levels (CHS)* is also turned on.

  Additionally, all sensors are allowed to be used when out-of-date for dynamic tidal adjustment and similar features. *This is not limited only to SPINE sensors.*

  This prevents correct operation of normal SPINE. It should only be used if participating in a simulation involving SPINE.
- *Show Wind Force* (**Only SEA*iq* Pilot**) : When enabled, a windage for Own-Ship is available (*Settings / Own-Ship / Lateral Windage*), and a source of wind data is available within *5nm*, show estimated wind force in status bar. Please review the following notes.

  - The reported force is only an estimation.
  - This requires that the Lateral Windage be entered.
  - The closest wind station (up to *5NM*) is used.
  - Wind angle is shown but is not factored into force calculation.
  - The force is calculated using the following equation: *Force = 0.000052 x Windage x Wind^2*. Force is Metric Tons (MT). Wind is *m/s*. Windage is in *m^2*. Please note that the constant used in this equation may not be suitable in all situations.
  - Only lateral force (from sides) is currently displayed.
  - When possible wind direction is expressed relative to the angle of attack. *0°* is head-on (full effect). *90°* is glancing (no effect).
  - If gust speed is provided but gust direction is not, then wind direction is used for gust.
  - Motion of Own-Ship is not included in force calculation.

Diagnostics

- *Diagnostics* : Displays internal diagnostics information.
- *Graphics Diagnostics* : Displays internal diagnostics information about graphics.
- *Locale Debugging* : When enabled, all strings affected by the locale setting are surrounded by brace or bracket symbols. This can help translators identify strings available for translation.
- *Chart Update* : SEA*iq* determine when your set of charts has changed and automatically recalculate them. Pressing this button forces an update.

  You should never need to use this button. We recommend using this only if you believe your charts are not being updated properly. Please contact us to let us know about the situation.
- *Archived Files* : View archived files. These may be created from time to time.
- *Keep Activity Log* : When enabled, a log of system activity is maintained. This is stored and then is available for export. Enabling this requires storage to be available for the log.
- *Erase Cache* : When enabled, all data *caches* associated with this app are erased. When done, the switch is automatically turns off. This switch does not erase any charts, waypoints, routes, or other user data.

  SEA*iq* stores various kinds of temporary data in order to save results of work it does. For instance, prior to viewing a vector chart, there is extensive processing that needs to be done to prepare it for display. The results are saved for later use in what is called a *cache*. Normally, the amount of space used is fairly small (less than 100MB). Also, the data is identified so that the system does not backup this data and may automatically erase it if needed (on systems which support this). In some cases, you may want to explicitly remove all extra cache data, which is the purpose of this switch.

  Erasing the cache does *not speed up SEAiq.* In fact, it slows it down somewhat since the results of the processing must be calculated again.

  We recommend using this only if you want to erase temporary data associated with the app in order to free up storage space.
- *Demo Mode* : When enabled, the program randomly wanders around any charts that are loaded.
- *Feature Activation* : This is used to activate special features.
- *Chart Listing* : List your currently installed chart cells, along with a summary for each chart.

Debugging

- *Randomly Talk* : When enabled, the device will randomly talk.
- *Simulate Panic* : Pressing this button causes SEA*iq* to panic (process a unrecoverable error). This is used to validate crash reporting.
- *Simulate Crash* : Pressing this button causes SEA*iq* to crash (unexpected unrecoverable error). This is used to validate crash reporting.
- *Simulate Error* : Pressing this button causes SEA*iq* to crash based on an internal consistency error. This is used to validate crash reporting.
- *Simple Dialog* : Pressing this button causes SEA*iq* to generate a dialog. This is used to validate dialogs.
- *Alarm Dialog* : Pressing this button cause SEA*iq* to generate an alarm dialog that automatically dismisses itself. This is used to validate dialogs.
- *Downgrade* : This makes the app behave as if it were not upgraded.

Deprecated

- *Use Old Geodesic Intersect* : SEA*iq* now uses a new set of geographic calculations. This may improve accuracy in certain situations. There can be significant computational overhead for these new calculations.

  This is most noticeable on devices without hardware acceleration for mathematical calculations, such as 32-bit Apple iPad/iPhones.

  Only change this if needed. Please contact us if you find this setting necessary to change.
- *Use Old S-52 Rules* : When enabled, the IHO S-52 *v3.4* chart presentation rules are used. The default is to use 4.01. This only affects vector charts. There is no reason to use *v3.4* unless you find a problem with *4.01*; please contact us if this is the case).

AIS

Automatic Identification System (AIS) is a standard for exchanging vessel location and other information using VHF radio signals.

SEA*iq* can acquire information about vessels either from VHF-based AIS receiver/transponder, or indirectly over the internet via *SEAiq AIS Sharing*. Additionally, SEA*iq* Pilot supports connection to a separate network feed. Note that SEA*iq* allows any or all of these AIS data acquisition methods to operate at the same time.

AIS targets from Settings / NMEA & AIS are colored a blue or red color (depending on Settings / Vessels / Use Red for Targets). Targets from Settings / AIS Network Feed and AIS Sharing are colored orange.

On this tab, you can see AIS targets. Tap on one in order to get detailed information.

Once you have AIS configured, you should be able to see vessels on your Navigation Tab that are reporting their position via AIS. You may notice that after first turning on AIS, the ships are shown according to their MMSI number. After a brief wait, you should see the ships name appear in place of the MMSI number. The delay is because the detailed vessel information is not broadcast as often as the ships location information.

The number of current AIS targets is displayed as a badge on the AIS tab.

The Settings / Vessels menu affects display of AIS vessels, as well as your own vessel. For instance, enabling Beam Lines will turn on Beam Lines for your vessel and for AIS vessels.

If you enable the True-scale Display under Vessel settings, then you can see the actual shape of the ship as adjusted for antenna location, but only when zoomed in sufficiently close for the ship to be at least 6mm long.

You can see all AIS targets by selecting the AIS tab. The targets are listed according to the distance from your vessel, with closest first. By selecting one of the vessels, you can access all the detailed information that is reported by AIS. If you have a connection to the internet, you can press the search button at the top to look up the vessel at www.vesselfinder.com.

You can select a vessel by single tapping it. A selection box will wrap the vessel and information about the vessel will appear in a box next to it. The vertical status bar will display information about this vessel until you select a different AIS target. Double tapping the selected vessel provides detailed AIS data for that vessel. Yet more detail can be found by further selecting Full Information.

Alternatively, you can double tap a vessel and select "Details for this Location." You will the vessel listed along with other nearby features.

Target Information

The following data is available for AIS target vessel. In many situations, only some of the data may be available for a particular target.

- *General*
  - ♦ *Vessel Name*: Name of the vessel (for Vessels)
  - ♦ *ATON Name*: Name of the aid-to-navigation (for ATONs).
  - ♦ *MMSI*: MMSI stands for Maritime Mobile Service Identity. It is a unique 9 digit number

assigned to vessels and other maritime related entities.

- ◆ *Call Sign*: Radio call sign
- ◆ *Ship Type*: Type of vessel, eg Cargo Ship. Also may include information hazardous cargo.
- ◆ *Aid Type (only for ATONs)*: Type of ATON
- ◆ *Fixed/Floating (only for ATONs)*: Whether ATON is fixed or floating.
- ◆ *Real/Virtual (only for ATONs)*: Whether ATON is real or virtual.
- ◆ *Off Position (only for floating ATONs)*: Indicates if the ATON is off-position.

- • *Status*
  - ◆ *Status*: Current operational status. For example: "Underway using engine" or "at anchor." Note that it is common for the status to be inaccurate.
  - ◆ *Bearing*: Bearing from Own-Ship
  - ◆ *Distance*: Distance from Own-Ship
  - ◆ *Closest Approach*: Estimated Closest Point of Approach to Own-Ship. The estimate uses both vessel's current, course, speed, and relative position. The estimate does not account for Rate-of-Turn.
  - ◆ *Latitude*: Vessel's latitude (LAT)
  - ◆ *Longitude*: Vessel's longitude (LON)
  - ◆ *Course Over Ground*: Current course (COG)
  - ◆ *Speed Over Ground*: Current speed (SOG)
  - ◆ *Heading*: Current speed (HDG)
  - ◆ *Rate-of-Turn*: Current Rate-of-Turn (ROT)
  - ◆ *Destination*: Current Destination. It is common for this the destination information to be incorrect.
  - ◆ *ETA*: Current Estimated Time of Arrival (ETA). As this information is manual input by the crew, it is common for it to be out-of-date or incorrect.
  - ◆ *Maneuver*: Indicates whether vessel is under a special maneuver.

- • *Vessel*
  - ◆ *Length*: Length of vessel
  - ◆ *Width*: Width of vessel
  - ◆ *Draft*: Draft of vessel
  - ◆ *IMO Number*: International Maritime Organization (IMO) numbers are unique identifiers for ships and for registered ship owners and management companies.

- • *Diagnostics*
  - ◆ *Vendor ID*: Vendor of AIS hardware.
  - ◆ *Fix Type*: Type of position fix.
  - ◆ *RAIM*: Receiver autonomous integrity monitoring (RAIM) is a technology developed to assess the integrity of global positioning system (GPS) signals in a GPS receiver system. This field indicates whether RAIM is in use.
  - ◆ *Accuracy*: Indicates the expected level of accuracy of position information.
  - ◆ *Report*: The type of the last AIS report (message) that was received for this vessel.
  - ◆ *Age*: Time since receipt of the last report.
  - ◆ *True-scale Outlin*:Indicates the scale at which a True-Scale outline will be used to for this vessel. Or if True-scale is not enabled, gives diagnostics listing the required information that is missind.
  - ◆ *To Bow*: Distance from the GPS antenna to bow of the vessel.
  - ◆ *To Stern*: Distance from the GPS antenna to the stern of the vessel.
  - ◆ *To Port*: Distance from the GPS antenna to the port side of the vessel.
  - ◆ *To Starboard*: Distance from the GPS antenna to the starboard side of the vessel.
  - ◆ *Accurate Rate-of-Turn*: Indicates whether this vessel appears to have an accurate Rate-of-Turn indication. ROT is considered "accurate" if a non-zero ROT has been reported in the last 6 minutes. Vessels that have only reported non-numerical *To Starboard*, *To Port*,

and Zero ROT are considered to be "inaccurate." Note that this is not a evaluation of the actual accuracy of the ROT being reported, only whether the vessel seems to be reporting values indicating it has an accurate ROT sensor.

The accuracy information is used to determine how course information for vessels is displayed. If ROT is inaccurate, the course vector is drawn from the GPS antenna position along the centerline of the vessel. If ROT is accurate (and other conditions are met), the course vector is drawn from the center of the vessel (which requires accurate ROT information to correct the COG/SOG for any rotational movement of the GPS antenna.

- *Advanced* **(Only SEA*iq* Pilot)**
    - ♦ *Virtually Board this Vessel*: Selecting this row will enable *Virtual Boarding* for this vessel. The vessel will be treated as Own-Ship. For instance, it will drawn using black colors.
    - ♦ *Select for Navicom Dynamics ChannelPilot*: Selecting this option will cause a special message to be sent to a ChannelPilot to inform it that this vessel is the Own-Ship.
    - ♦ *Copy to Simulator*: Selecting this item causes information about this vessel to be copied to the Simulator. The simulator will appears directly on this vessel and have the same course, speed, and heading.

Organization of Targets

Vessels can be organized in several different ways. The current format is indicated in a button on the toolbar at the top. Different formats may be selected by pressing the button.

- *Default*: The default format organizes targets according to estimates of importance in the current situation.
- *Vessel Name*: Vessels are listed according to their name
- *Distance from Own-Ship*: Vessels are listed according to their distance from Own-Ship
- *CPA: Closing/Opening*: Vessels are grouped depending on whether they are approaching Own-Ship or moving apart.
- *Route Traffic* **(Only SEA*iq* Pilot)**: Vessels are listed according to their position along the current route, with items included also for waypoints and vessel meetings points.

Default

AIS targets are listed in multiple groups. The targets are assigned to groups in this order of precedence:

- *Dangerous*: Targets at most *0.1nm* from your vessel.
- *Approaching*: Targets at most *0.5nm* from your vessel with a TCPA of at most 5 minutes.
- *Lost Target (Close)*: Targets that have not reported their position in the last 10 minutes and are at most *10nm* from Own-Ship.
- *Unknown Position*: Targets with no known position. Note that this is not necessarily an error. Sometimes targets report their general information before reporting their position.
- *Nearby*: Targets at most *5nm* from your vessel.
- *Other*: All other targets.

Vessel Name

Vessels are listed in alphabetical order according to the vessel name. Vessels whose names are unknown are listed in a separate section at the bottom according to their MMSI number.

Distance from Own-Ship

Vessels are listed according to their distance from Own-Ship, with closer vessels listed first. For vessels whose distance is unknown, they are listed in a separate section at the bottom.

CPA: Closing/Opening

Vessels are listed in three different groups:

- *Closing*: The vessel is approaching Own-Ship, with a CPA at where the vessels are at most *5nm* apart.
- *Opening*: The vessel is moving away from Own-Ship, but the current distance between vessels is at most *5nm*.
- *Other*: All other vessels, listed in order of their distance from Own-Ship.

Route Traffic (Only SEA*iq* Pilot)

The Route Traffic display is intended for use when you are following a route. The idea is to display information about Own-Ship, Waypoints, AIS Targets, and Meeting Points with AIS Targets in a simple format.

If you are not currently following a route, no useful information will be shown.

All information is displayed in a table format. The table is oriented according to the position on the route relative to the location and direction that Own-Ship is following. Each item other than Own-Ship itself is shown with distance from Own-Ship. Except for waypoints, only objects from *10nm* astern of Own-Ship to *50nm* ahead of it are displayed.

Own-Ship and AIS targets are shown using unscaled icons that are oriented relative to the direction of the route. For example a vessel that is crossing the route at 90 degree angle will be shown on the table oriented sideways, regardless what the direction of the route is at that point. A vessel that is following the route exactly will be shown oriented vertically.

Each row in the table corresponds to one of the following items:

- *Own-Ship*: Shown as a black symbol, along with COG, SOG, LOA, and XTD. Own-Ship is by definition at position *0*.
- *Waypoint*: Waypoint along the route. Tapping on the row will bring up information about the Waypoint.
- *AIS Target*: Shown as a triangular symbol, along with COG, SOG, LOA, XTD, and information about meeting point with Own-Ship. Tapping on the row will bring up all details about the AIS target.
- *Meeting Point*: Shown as a magenta or green symbol indicating the type of meeting point (overtake or passing) and textual description of when the meeting point will occur. Tapping on the row will change the location displayed in the Navigate tab to center on the location of the meeting point.

Route ETA (Only SEA*iq* Pilot with Enterprise Subscription)

The Route ETA display is intended for use in monitoring ETA of vessels at particular waypoints in a route. Two waypoints can be specified, an Incoming and an Outgoing waypoint. The route does not need to be your active route.

All information is displayed in a table format in 3 sections. The first section shows ETAs of vessels at the Incoming waypoint. The second section shows ETAs of vessels at the Outgoing waypoint. The final section allows you to specify the route and two waypoints.

Only vessels moving in the direction of the route are listed as Incoming. Only vessels moving in the opposite direction of the route are listed as Outgoing.

Vessels must be at least the Meeting Point "Small Vessel Length" to be listed. This allows small vessels to be filtered out.

Vessels outside the actual route may be listed. Their position must be in a *270* degree arc centered on the direction of the first or last segment in the route. The vessels course must be within *30* degrees of the first/last waypoint.

Files/Charts (SEA*iq* and SEA*iq* Pilot)

SEA*iq* and SEA*iq* Pilot are the only marine navigation apps that allow use of any marine charts in a wide variety of standard formats on your iPad/iPhone.

A free downloader is includes for charts from the NOAA and US Army Corps of Engineers charts for USA and its territorial waters. Automatic download and updating of charts from <u>PRIMAR</u>, <u>ChartWorld</u> and other vendors are also available.

<u>There are many freely available charts you can download from the internet.</u>

SEA*iq* does not come with any marine charts so you have to install them yourself. Often, charts are installed in the form of zip files, which are special files that contain other files. They are useful for packaging many files together that can then be treated as a single unit.

There are several ways to transfer charts into SEA*iq*, including download directly from the internet using the iPad Safari browser, transferring from Email or another app such as DropBox, and using iTunes File Transfer.

The remainder of this help information is structured as follows:

- Supported Chart Formats
  - ♦ S-57 and Inland ENC Charts
  - ♦ S-63 Charts
  - ♦ KAP/BSB Raster Charts
- Creating Zip Files
  - ♦ Apple Mac OS
  - ♦ Microsoft Windows
- Transferring Charts to your iPad
  - ♦ Installing from the Web
  - ♦ Installing from Email or other App
  - ♦ iTunes File Transfer
- FAQ and Troubleshooting

Supported Chart Formats

This section describes the chart formats that are supported by SEA*iq* and how they must be packaged in order to be correctly recognized.

Note *We want SEAiq to work with all charts in supported formats. However, because of the variety of charts available you may try charts we have been unable to test. Be sure to test your charts before purchasing the upgrade. If you have problems with any charts, please let us know and we will do our best to get your charts working with SEAiq.*

S-57 and Inland ENC Charts

S-57 and Inland ENC Charts are similar formats; Inland ENC has somewhat different display as it is intended for navigation on inland waterways. For the purposes of this document, we will use S-57 to refer to both standards.

S-57 charts are normally distributed in a Zip file with a folder named *ENC_ROOT*, which in turn should contain a file *CATALOG.031* along with the charts (normally in sub-folders). This is normal for S-57 charts: if you have valid S-57 charts, they should include the *CATALOG.031* file along with the charts. The *ENC_ROOT* folder should normally either be the so-called root folder of the Zip file or there may be a single folder that contains the *ENC_ROOT* folder.

SEA*iq* will accept *Zip* files that do not contain a *CATALOG.031* file but include S-57 chart datasets. You can also install *.000*, *.001*, ..., *.015* files directly. However, we normally recommend using Zip files to package sets of charts together, along with a *CATALOG.031* file, since this can avoid a number of errors, such as neglecting to install an update file.

S-63 Charts

Charts in the IHO S-63 format are essentially the same as S-57 but are encrypted. If you use charts from either PRIMAR or ChartWorld, you can visit the relevant settings for downloading and updating them. Go to Settings / S-63 Charts to for settings related to S-63, as well as detailed help information.

BSB/KAP Raster Charts

The BSB/KAP formats were developed by MapTech and are a commonly used format for raster charts. This format is used by NOAA for their raster charts. Also, the *ge2kap* program is used by many mariners to generate KAP files from satellite imagery, usually from Google Earth.

SEAiq by default does not display any raster charts. You must change the Display Raster Charts switch in the Raster Chart Settings to ON in order for Raster Charts to be displayed.

BSB files are catalogs listing the associated KAP files. KAP files contain the actual raster chart image data. KAP files can be used standalone without a BSB file. There are several options for how charts can be installed in SEA*iq*:

- Chart sets with both BSB and KAP files can be used as part of Zip files. The Zip file must contain a single folder named *BSB_ROOT*, which in turn contains BSB catalog files with the *.BSB* suffix and the corresponding *.KAP* files. The raster files distributed by NOAA have this format.
- Simple chart sets in zip files composed only of KAP files. The zip file may only contain files with the *.kap* or *.KAP* suffix. If any other non-KAP files are in the zip file, the file will not be accepted.
- Individual KAP files can be installed directly (not packaged in a zip file).

Creating Zip Files

These are instructions to package your charts in a Zip file. Many charts are already distributed as Zip files. If you have charts that are structured as described above then you can skip this section.

Instructions for MacOS

Creating Zip files is a built-in feature for recent versions of MacOS. Follow these steps steps:

1. Select the folder named *ENC_ROOT*.
2. Select *File* from the bar at the top of the screen.
3. Select *Compress "ENC_ROOT"* (mid-way down the menu).

4. When done compressing, you should now have a file called *ENC_ROOT.zip*.
5. **IMPORTANT:** You may want to rename the file if you are installing multiple sets of charts because each Zip file must have a different name.
6. Follow the steps below for installing the Zip file onto your iPad/iPhone.

Instructions for Microsoft Windows

For Windows, we recommend the free 7-Zip utility for creating zip files: http://www.7-zip.org

Here are the steps to create a Zip file of your charts using 7-Zip.

1. Go to the folder containing the folder named *ENC_ROOT*.
2. Right click on *ENC_ROOT* folder.
3. Select 7-Zip sub menu (if it is not there, then there may have been a problem installing 7-Zip).
4. Select *Add to ENC_ROOT.zip* option.
5. When done compressing, you should now have a file called *ENC_ROOT.zip*.
6. **IMPORTANT:** You may want to rename the file if you are installing multiple Zip files, because each Zip file must have a different name.
7. Follow the steps below for installing the Zip file onto your iPad/iPhone.

Transferring Charts to Your iPad

Once you have your charts in the appropriate format, you can now transfer them to your iPad. Most users will transfer their charts from their laptop using the iTunes File Transfer. However, you can also download charts directly from the web into SEA*iq* using the Safari Web browser or you can install charts from another app, such as from an email attachment.

While downloading from Safari or email can be very convenient, we normally recommend using iTunes File Transfer, especially if you are working with many charts. That way you will have a copy of your charts on your laptop and the actually transfer to your iPad will be faster.

From the Web

If you have link to a chart zip file that is formatted correctly, you can download and install the file in one step, without using iTunes. Just click the link. After downloading onto your iPad you will be asked which app should handle the charts. Select SEA*iq* or SEA*iq* Pilot.

Once SEA*iq* has started, select the Files tab and check that the charts were imported without errors.

From Email or other App

This is very similar to installing from the Web. Select a Zip file, choose SEA*iq* to open it, and then check that it has been imported correctly.

iTunes File Transfer

iTunes File transfer is a way to transfer files back and forth between your laptop and your iPad. Once you have your charts in appropriate Zip files, follow these instructions to transfer them to your iPad:

1. Run Apple iTunes.
2. Attach your iPad/iPhone to your computer.
3. Select your iPad/iPhone on the upper right of the iTunes window. Be sure to not press the eject portion of the button.
4. Select the *Apps* item in the upper bar.
5. Scroll to the bottom of the window until you see the *File Sharing* section. **In iTunes on MacOS, the apps listed under *Sync Apps* scroll separately from the window frame they are in. This can sometimes be confusing. If only the list of apps is scrolling, then you may need to click on the area outside the apps list.**
6. Select SEA*iq* in the *Apps* section underneath *File Sharing*.
7. Press the *Add...* button
8. Find the Zip file you want to install on this iPad/iPhone.
9. Press the Open button.
10. The small activity window at the top of the screen should show the file being copied. **Be sure to wait until the copy is complete before proceeding.**
11. You should now see your file listed in the SEA*iq* or SEA*iq* Pilot Documents.
12. The charts should now be on your iPad/iPhone. Press *Files* on the bottom of this screen to see your charts. All the Zip files you transferred should appear in the list.

FAQ and Troubleshooting

- **I don't see the *File Sharing* section on the Apps window.** The frame scrolls separately from the apps list. You may need to click outside the Apps list.
- **I don't see SEA*iq* listed in the *File Sharing* section.** Check that you installed SEA*iq* or SEA*iq* Pilot on this device.
- **After installing charts, SEA*iq* shows the zip file and says "Zip file appears to be corrupt."** This means the file you transferred did not appear to be a valid Zip file.
    - Did you wait until the transfer completed? Check that iTunes shows the transfer is complete, then press the Navigate tab, and then the *Chart* tab again.
    - Try transferring the Zip file again.
    - Try transferring the Zip file back to your computer using the *Save To...* button below *File Sharing*. Then unzip the file on your computer to see if the contents are the same as what you started with. If not, then something was corrupted along the way.
    - Try creating the Zip file again and transferring to the device.
- **After installing charts, SEA*iq* shows the zip file and says "Zip file does not contain ENC_ROOT/ folder".** This means SEA*iq* was able to open the Zip file but it did not appear to contain a folder named *ENC_ROOT*. Try unzipping the file on your computer. Everything should unzip into a folder named *ENC_ROOT*.
- **After installing charts, SEA*iq* shows the zip file and says "Invalid S-57 zip file".** This means SEA*iq* was able to open the Zip file and found the *ENC_ROOT* folder, but did not find the file named *CATALOG.031* in the *ENC_ROOT* folder. Try unzipping the file on your computer. There should be an *ENC_ROOT* folder containing *CATALOG.031* and further file and folders containing charts. We recommend that you not modify *ENC_ROOT* folders before Zipping them because the catalog file specifies exactly where the files should be; if you move them SEA*iq* may not be able to find them. If you are having problems, you can test out the S-57 charts distributed for the US waters by NOAA, using the link above. Any of the Zip files NOAA distributes should work with SEA*iq* and SEA*iq* Pilot **as-is**.
- **I installed the charts and everything seems fine. Now what?** Click on the Navigate tab to return to the chart display. There should be light magenta outlines for the charts you installed. You can pan and zoom using normal gestures. If you only installed a few charts or they are for very small areas, then

you may have a hard time seeing the charts for the large scale view. Zoom into where the charts are and you should see the outline. Keep zooming and eventually SEA*iq* will open the chart, process the contents, and then display it.

Sources for Marine Charts

There are numerous sources for free marine charts on the web that you can download. All of these can be downloaded directly to SEA*iq* on your iPad; alternatively, they may be saved to your laptop and then transferred to the iPad using iTunes File Transfer as described in the Help information on the Files tab.

Web Sites Listing Free Charts

- Open Sea Chart is a community-driven directory of free marine charts. If you are aware of marine charts that are not listed on Open Sea Chart, you can add them to the list.
  - ♦ http://openseachart.org
- OpenCPN maintains a list of charts that can be downloaded for free
  - ♦ http://opencpn.org/ocpn/chart_sources
- Dacust has a list of charts you can download.
  - ♦ http://dacust.com/inlandwaters/index.html

Vector Charts

- NOAA provides high quality vector charts of the USA and territorial waters.
  - ♦ http://www.charts.noaa.gov/ENCs/ENCs.shtml
  - ♦ http://www.charts.noaa.gov/ENCs
- The US Army Corps of Engineers provides charts of some inland waterways in the USA (in both S-57 and Inland ENC formats):
  - ♦ http://www.agc.army.mil/Missions/Echarts.aspx
- Numerous charts of inland waterways in Europe. Below are some of the links. Note that these links change from time to time and the format of the Zip files changes sometime. Please let us know if you have trouble with any of them.
  - ♦ Austria: http://www.doris.bmvit.gv.at/fileadmin/group_upload/8/ECDIS_Download/Edition_5.zip
  - ♦ Belgium: http://ris.vlaanderen.be/IENC/
  - ♦ Czech Republic: http://193.86.76.109/lpm/maps_S57.asp?lang=en
  - ♦ Germany: https://www.elwis.de/Service/Inland-ENC-der-WSV/IENC-Dateien/index.php.html
  - ♦ Netherlands: https://www.vaarweginformatie.nl/frp/main/#/page/infra_enc
  - ♦ Romania: http://www.afdj.ro/electronic_map.html
  - ♦ Serbia: http://www.plovput.rs/elektronske-navigacione-karte
- Charts for the South China Sea (requires registration):
  - ♦ http://scsenc.eahc.asia

Raster Charts

There are also several sources of free raster charts available on the internet.

- NOAA provides-high quality raster charts of the USA and territorial waters:
  - ♦ http://www.charts.noaa.gov/RNCs/RNCs.shtml
  - ♦ http://www.charts.noaa.gov/RNCs

- Land Information New Zealand (LINZ) publishes free raster charts for New Zealand and much of the South Pacific.
    - ♦ http://www.linz.govt.nz/sea/charts/nzmariner-official-raster-navigational-charts-rncs
    - ♦ http://topo.linz.govt.nz/hydro/

Store

By purchasing the SEA*iq* Upgrade, you enable most SEA*iq* features on all your Apple devices (iPad, iPhone, and iPod). For SEA*iq* Pilot, there are some features that require an Enterprise Subscription in order to enable (these are colored light blue). Once purchased, the upgrade does not expire. Below are some commonly asked questions about the upgrade.

- **Without the upgrade, is the app usable? I don't see any charts.** The SEA*iq* apps are all usable chart viewers without the upgrade. They do not include any marine charts, but it is very simple to install charts.
  - SEA*iq* USA: Connect your device to the internet and go to the Chart tab. Select regions you want charts for, and then press the *Update* button (there is also a *Help* button with more information). It will automatically download the latest charts.
  - SEA*iq* and SEA*iq* Pilot: You can use the chart downloader from NOAA by going to Settings / NOAA and US ACOE. Additionally, you can go to the Files tab and press the *Help* button for instructions on how to install your charts, or download some of the freely available charts on the Web. For charts purchased from PRIMAR, ChartWorld, or Admiralty Charts (UKHO), you can find information in the respective menus.
- **Why do you provide free versions of the apps?** We want to make it easy for users to try out our apps and see what they have to offer. After you are satisfied, you can upgrade it for a modest price. In particular, for SEA*iq* and SEA*iq* Pilot, we encourage you to load the charts you want to use and make sure they work to your satisfaction before purchasing the upgrade. If you do have a problem, please let us know and we will do our best to correct the issue.
- **I have a problem with the app but I haven't purchased the upgrade. How do I get help?** We are always interested in feedback about our apps, both positive and negative. If you find a problem, please let us know so we can fix it. You can send an email by selecting *Send Us an Email* in Settings.
- **How do I install the upgrade on my other iPad/iPhone? Do I have to pay for the Upgrade again?** The upgrade is good for all devices associated with your iTunes account. Just install the app on your other devices and press the *Restore* button. *Important: the devices must share the same iTunes account.*
- **Will I lose the upgrade if I have to reinstall IOS on my device?** No. The upgrade does not expire. Just press the *Restore* button.
- **I purchased the upgrade. How do I know it worked?** First, you should see that the button on the Store now reads *INSTALLED*. More importantly, all the buttons and features that were colored light magenta and displayed a warning when you used them, now are white and allow you to use them.
- **If you have any other questions, please let us know.** You can send an email by selecting *Send Us an Email* in the Settings.

Import & Export

SEA*iq* supports a number of methods for importing/exporting waypoints, routes, and tracks. Some of the uses for this feature include:

- Backup your Waypoints, Routes, or Tracks to your laptop.
- Send a Route or Tracks to a friend.
- Transfer your Waypoints and Routes to SEA*iq* on another iPad. This example is explained in detail below (see: *Example: Transferring Between SEAiq on Different iPads*.
- Transfer your Waypoints, Routes, and Tracks from SEA*iq* to another app (or vice-versa).
- Display your Tracks in Google Earth.

You may find it useful to install other data sharing apps such as <u>DropBox</u> and <u>FileApp</u> (both are free for basic use). For instance, with DropBox you can save your data to their online storage and share it with others. FileApp provides other methods to transfer data to/from your laptop. These apps (as well as others) support the *Copy To* method to transfer data back and forth with SEA*iq*.

To get started, you need to determine the following things about what you want to do:

- What *direction* will the transfer be in?
  - ♦ Export from SEA*iq* or Import into SEA*iq*
- What *object(s)* do you want to transfer?
  - ♦ Waypoints, Routes, or Tracks
- What *format* will data be transferred in?
  - ♦ GPX (*.gpx*), KML (*.kml*), Transas (*.rt3*), Maris (*.rtu*), Mona Lisa 2.0 (*.rtz*), SevenCs Lisy (*.rte*), NACOS Platinum (*.nacos*), and Sam Electronics ECDIS (*.sam* or *.dat*).
- What *method* will you use to transfer the data?:
  - ♦ Email, Save File, or *Copy To* another app

Note that in many cases you will be both exporting and importing. For instance, if you want to transfer a route from SEA*iq* on one iPad to SEA*iq* on another iPad, there are several options available that involve exporting from your first iPad and then importing into your second iPad. See the section below *Example: Transferring Between SEAiq on Different iPads* for more information on this example.

The following objects can be transferred.

- All Routes and Waypoints
- Individual Route
- Individual Waypoint
- Tracks

The following formats are supported:

- GPX routes and tracks (suffix: *.gpx*). <u>GPX</u> is a standard format for transferring geolocation data. Many marine charting applications support GPX format. Google Earth supports GPX (though KML is preferred -- see below). SEA*iq* supports both import and export of data in GPX format. GPX is recommended when transferring from SEA*iq* to SEA*iq* since SEA*iq* uses GPX "extensions" to convey all the information stored in routes; other formats may not include some of this information.
- KML data (suffix: *.kml*). <u>KML</u> is a format created for Google Earth. The name stands for "Keyhole Markup Language". *For KML data, SEAiq only supports exporting (not import).*

- Transas routes (*.rt3*). This is a format for exchanging individual routes. SEA*iq* supports both import and export of files in this format. Note that not all route information may be included.
- Mona Lisa 2.0 (*.rtz*). This is a format for exchanging individual routes. SEA*iq* supports both import and export of files in this format. Note that not all route information may be included.
- SevenCs Lisy (*.rte*). This is a format for exchanging individual routes. SEA*iq* supports import in this format. Note that not all route information may be included.
- NACOS Platinum (suffix: *.nacos*). This is a format for exchanging individual routes. SEA*iq* supports both import and export of files in this format. Note that not all route information may be included. Files in this format normally use the generic *.xml* suffix and may need to be renamed with *.nacos* in order to be imported in SEA*iq*.
- Maris (suffix: *.rtu*). This is a format for exchanging individual routes. SEA*iq* supports only import in this format. Note that not all route information may be included.
- SAM Electronics ECDIS (suffix: *.sam* or *.dat*). This is a format for exchanging individual routes. SEA*iq* supports only import in this format. Note that not all route information may be included.
- JRC ECDIS (suffix: *.rta* or *.rtn*). This is a format for exchanging individual routes. SEA*iq* supports only import in this format. Note that not all route information may be included during the import.
- Trelleborg Safe Pilot (suffix: *.spx*). This is a format for exchanging individual routes based on GPX. SEA*iq* supports only import in this format. Note that not all route information may be included during the import.
- Comma Separated Value (suffix: *.csv*). This is a format for exchanging individual routes. SEA*iq* supports only export in this format. Note that not all route information may be included. Options are included for exporting "human readable" (includes formatting and units) and "machine readable" (simple numbers with no special characters or units) variants.

Below is a summary of supported formats:

Name	Suffix	Import	Export	Information
GPX	.gpx	Y	Y	Waypoints, Routes, and Tracks
KML	.kml	N	Y	Waypoints, Routes, and Tracks
Transas	.rt3	Y	Y	Single Route with Waypoints
Mona Lisa 2.0	.rtz	Y	Y	Single Route with Waypoints
SevenCs Lisy	.rte	Y	N	Single Route with Waypoints
NACOS Platinum	.nacos	Y	Y	Single Route with Waypoints
Maris	.rtu	Y	N	Single Route with Waypoints
SAM Electronics	.sam or .dat	Y	N	Single Route with Waypoints
JRC	.rta or .rtn	Y	N	Single Route with Waypoints
Trelleborg Safe Pilot	.spx	Y	N	Single Route with Waypoints
Comma Separated Value	.csv	N	Y	Single Route with Waypoints

The following data transfer methods are supported:

- Email. This method allows you to email the data to someone else (or even to yourself). Email normally requires internet access.
- iTunes File Sharing. This method allows you to transfer the data between your iPad/iPhone and your laptop. This method does not require internet access.
- *Copy To* This method allows you share the data with another app on the same iPad/iPhone (including apps that can save the data data or transfer it to another device, such as DropBox and FileApp).

Exporting

The following objects can be exported:

- Tracks
- All Routes and Waypoints
- Individual Route
- Individual Waypoint

To export tracks, go to the Settings tab and find the *Export Tracks* item. Pressing the *Export* button will present you with a choice of how to export the tracks.

To export all waypoints and routes, go to the Route tab and press the "forwarding arrow" button on the top bar.

To export a route or waypoint, go to the Route tab, select object and press the "forwarding arrow" button on the top bar.

When exporting objects you will be presented with a dialog listing choices of methods you can use:

- *Export with Email*
- *Save File*
- *Export with Copy To*

Note that for the Email and Save to iTunes, SEA*iq* always exports the data in both GPX and KML formats.

Export with Email

Email export allows you to send the data to anyone (including yourself) as email attachments. You will be presented with a standard email display. All you have to do is fill in the email addresses you want to send the data to and press *Send*.

Note that you will normally need internet access to send or receive email.

Save File

The Save to iTunes method allows you to transfer the objects directly to your laptop using <u>iTunes File Sharing</u>.

These are the steps:

- Attach your iPad/iPhone to your laptop with the connector cable.
- On your iPad:
    - ♦ Select *Save to iTunes* choice when exporting.
    - ♦ SEA*iq* will confirm the GPX and KML files were saved and tell you the file names that were used.
- On your laptop:
    - ♦ Run Apple iTunes.
    - ♦ Select your iPad/iPhone on the left side of the iTunes window.
    - ♦ Select the *Apps* item in the upper bar.

♦ Scroll to the bottom of the window until you see the *File Sharing* section. **In iTunes on MacOS, the apps listed under *Sync Apps* scroll separately from the window frame they are in. This can sometimes be confusing. If only the list of apps is scrolling, then you may need to click on the area outside the apps list.**

♦ Select a SEA*iq* app in the *Apps* section.

♦ You should see the file that you exported listed on the iTunes window.

♦ Press the *Save...* button

♦ Choose where to save the file, optionally renaming it.

♦ The file is now on your laptop. If you now want to open the file in another program you can follow the instructions for the other program.

Export with Copy To

This method allows you to transfer an object in the chosen directly to any other app (on the same iPad/iPhone) that understands that format. After selecting this choice, you will be presented with a list of apps that support the format. Select one of them and that app will load the data you are exporting.

Importing

SEA*iq* supports importing Routes, Waypoints, and Tracks in the GPX (*.gpx*) format. Routes can also be imported in the the Transas (*.rt3*), Maris (*.rtu*), Mona Lisa 2.0 (*.rtz*), SevenCs Lisy (*.rte*), NACOS Platinum (*.nacos*), and Sam Electronics ECDIS (*.sam* or *.dat*) formats. Data in KML (*.kml*) format cannot be imported.

There are two methods for importing data: *Copy To* and *iTunes File Sharing*. Importing from an email uses the *Copy To* method.

Copy To

This method is used when any other app has route data that you want to share with SEA*iq*, including general purpose data sharing apps such as DropBox and FileApp. When you export route data from another app, you should see SEA*iq* listed. If you select SEA*iq*, then it will start SEA*iq* and immediately import the routes and waypoints.

Note that this method is used when route data has been emailed to you. Open the email. Long-press the route attachment. , then select SEA*iq* as the app to open the data with. **Note that when using *Copy To* from Mail, you should do a long tap on the attachment to open it (if Mail appears to become confused and gives you a white or black screen see Troubleshooting section below).**

The last step is to actually import the objects into SEA*iq*.

- For Waypoints and Routes:
    ♦ Go to the *Settings* tab in SEA*iq* and then select *Routes and Waypoints*.
    ♦ Select *Import*.
    ♦ You will see a list of possible files to import (.gpx, .rt3, .rtu, .rtz, .rte, .nacos, .sam, and .dat).
    ♦ Select the file you want to import.
- For Tracks:
    ♦ Go to the *Settings* tab in SEA*iq* and then select *Tracks*.
    ♦ Select *Imported Files*.
    ♦ You will see a list of possible GPX files to import.
    ♦ Select the file you want to import.

IOS File Transfer

The other way to import data is through <u>iTunes File Sharing</u>. This method is useful when you have the GPX data on your laptop. The advantage of this method is that it does not require an internet connection to transfer the data from you laptop to your iPad/iPhone.

Note that using the free FileApp app is another way to transfer data to/from your laptop without having a full internet connection.

- Attach your iPad/iPhone to your computer.
- On your laptop:
  - ◆ Open Finder.
  - ◆ Select your iPad/iPhone on the left side of the Finder window.
  - ◆ Choose *Files* in the horizontal tab bar. You may need to scroll to the right if your finder window is small.
  - ◆ Look for the SEA*iq* app listed on the left.
  - ◆ Drag/drop files on to this app to transfer into SEA*iq*.
- On your iPad/iPhone:
  - ◆ For Waypoints and Routes:
    - ◊ Go to *Settings* tab in SEA*iq* and select *Routes and Waypoints*.
    - ◊ Select *Import*.
    - ◊ You will see a list of possible files to import (.gpx, .rt3, .rtu, .rtz, .nacos, .sam, and .dat).
    - ◊ Select the file you want to import.
  - ◆ For Tracks:
    - ◊ Go to *Settings* tab in SEA*iq* and select *Tracks*.
    - ◊ Select *Imported File*.
    - ◊ You will see a list of possible GPX files to import.
    - ◊ Select the file you want to import.

Importing Duplicate Waypoints and Routes

When importing waypoints and routes, if an exact duplicate already exists then SEA*iq* will use the version it already has and not create another copy. Thus, if you export all your waypoints and route and then re-import them immediately, no new waypoints or routes will be imported -- since they are all duplicates.

If an object with the same name already exists but is not an exact duplicate, SEA*iq* will choose a new name for the object being imported.

Example: Transferring Between SEA*iq* on Different iPads

A common use of this feature is to transfer waypoints/routes from one SEA*iq* app to another SEA*iq* app on a different iPad. We recommend two ways to do this.

The simplest is to export via email and send them to yourself. On the other iPad select the attachment to import it (remember to use a long-tap -- press and hold -- to open the attachment). Email will normally only work if you have a connection to the internet, which may not be the case if you are underway.

The other approach, which does not require an internet connection, is a two step process. The first step is to export to your laptop using the *Save to iTunes* (aka *iTunes File Sharing*) method. The second step is to import

to your other iPad using *iTunes File Sharing*.

Troubleshooting

- *When I import waypoints/routes from the Mail app, I get a black screen?!?* When importing from Mail it is easiest if you long-tap on the attachment. Otherwise, Mail can become confused and appear to lock up with a white or black screen. Nothing serious has happened: Mail is just trying to display the data but does not know how to. Here is what you do to get out of this:
  - ◆ Single tap on the center of the screen.
  - ◆ A bar will appear on the top of the display, with a *Done* button and a forwarding button in the top-left and top-right, respectively.
  - ◆ Press the forwarding button to open the GPX data in SEA*iq*.
- If you have any other problem, please let us know.

Dual Cell and WiFi Connection

Overview

In many situations, users want their iPad to connect to sensors via WiFi while also accessing the internet via a cellular connection. This document describes various techniques that may be used to accomplish this.

A typical use scenario is the following. You are a professional pilot and use a WiFi based Pilot Plug or PPU to acquire AIS data and sensor information. However, you would also like to be able to access the internet while still connected to your plug.

There are several benefits to having an internet connection. First, you want to be able to use *SEAiq AIS Sharing* to access a global feed for AIS data. This allows you to view AIS targets that might be out of range of the AIS system on your current vessel. Second, you may wish to be online to access email or other internet resources such as web pages for tidal gauges, checking on your schedule, etc.

Problem Statement

The reason it is challenging to connect to both WiFi and cellular internet on an Apple iPad is that the iPad typically expect to only be connected to one network at a time, either via a WiFi or cellular connection. Because WiFi is typically faster, does not incur usage charges, and may use less power, it is usually preferred by the iPad over cellular connections. The normal behavior when an iPad has a cellular connection and it detects a WiFi connection, is to turn off the cellular connection and power down that part of the device. It will do this *even if the WiFi connection does not connect to the general internet.*

Please note that the reason why this can be difficult to set up has nothing to do with SEAiq. In fact, the security built-in to your iPad makes it so that SEAiq cannot make the configuration changes described in this document.

Manufacturers Supported Solutions

Below are manufacturers with documented solutions to this issue:

- Digital Yacht. Refer to this <u>technical note</u>.

Warning

Please note that some of the settings here involve advanced network configuration. There is the possibility for your iPad, phone, and/or WiFi system to become misconfigured so they do not work normally. We will try to document how to fix such issues, but please be aware that by following these instructions you may have problems getting the settings back to work "normally."

Also, some of these settings may work in certain situations but not in others. They may be affected by the specific products being used, such as software versions, cellular internet carrier, etc.

Please send us an email to tell about your experiences with various approaches so that we can integrate your experience back into these instructions.

How You Can Help

When following these instructions and using the different approaches, please make a note of what you did and how things work. Please send us an email (SEA*iq* Settings / Send Us an Email) with any notes you have. In particular, we are interested in the following:

- Which approaches worked and which did not work.
- Any comments you have from real-world use.
- Any specific settings or deviations from instructions required for particular devices or device combinations.
- Suggestions on how to improve these instructions.
- Suggestions on how to improve support in SEA*iq* for dual connections.
- Example screen shots.
- What ranges do the Bluetooth and WiFi connections appear to have?

Typical Scenario

For the purposes of this document, we assume you are using a WiFi based Pilot Plug (such as those from *PilotsTech*) or a WiFi based PPU (such as those from *Navicom Dynamics*). We will refer to this as your *Plug*.

We also assume you have an cellular internet connection of some sort. This may be a direct one from your iPad. Or possibly indirectly via your cell phone which your iPad will access via *tethering*.

We also assume you have some familiarity with basic network configuration and know how to set up a simple WiFi connection to your Plug.

What is *Tethering* and What is a *Personal Hotspot*?

Tethering is a generic term for sharing a cellular internet connection from one device to another device that does not have a cellular connection. Apple iPads and iPhones use the term *Personal Hotspot* instead of tethering. The terms Personal Hotspot and tethering are used interchangeably in these instructions.

Tethering can be done using a cable or other wireless protocol such as Bluetooth or WiFi. In these instructions, we only use tethering via Bluetooth and WiFi.

In order to use tethering, you first need a device that has a cellular connection. In many cases that is enough. *However, some cellular carriers do not enable the Personal Hotspot feature in the base data plans and require you to purchase an add-on plan.* If you cannot find Personal Hotspot listed in your iPhone or iPad settings or if it is grayed out, you may need to talk to your provider about enabling that feature (if you want to use an option that requires it).

Option 1: Tethering From Your Phone

The first option we present involves accessing the internet by tethering via Blue-Tooth to your phone, which in this case we assume is an iPhone.

The advantage of this approach is that it may not involve as much complex configuration as other options, making it easier to set up. It also means you can use a WiFi-only iPad (without cellular data support) and you do not have to purchase a separate data plan for the iPad.

The disadvantage is that it requires you have a smart phone that supports Bluetooth tethering. For the purposes of these instructions, we assume you have an iPhone. You also must have a cellular data plan that allows you to tether an iPad to your phone. Not all cellular plans support this; some require purchasing a separate add-on capability to support this. A further disadvantage is that you have an additional device that you have to keep charged.

Note that on an iPhone, the tethering feature is called *Personal Hotspot*.

Requirements

- iPad with SEA*iq* installed
- WiFi based Pilot Plug
- iPhone with cellular data connection that supports Bluetooth tethering aka Personal Hotspot

Instructions

- Configure iPhone. On your iPhone, do the following.
    - Turn off WiFi on your iPhone (iPhone Settings / WiFi / OFF).
    - Turn on Blue-Tooth (iPhone Settings / Bluetooth / ON).
    - Turn on Personal Hotspot: iPhone Settings / Personal Hotspot / ON. If asked, select *Bluetooth and USB Only*.
    - Return to the iPhone Bluetooth Settings and leave it there.
- Configure iPad to use tethering.
    - Turn off cellular data: iPad Settings / General / Cellular Data / OFF. (It is not always necessary to do this step and the next, but it will help make sure your internet connection is coming from your phone and not something else.)
    - Turn off WiFi on your iPad: iPad Settings / WiFi / OFF.
    - Turn on Bluetooth: iPad Settings / Bluetooth / ON.
    - Look in the list of devices for your iPhone and tap on the line where your iPhone is listed.
- Accept connections. Your iPhone and/or iPad may ask you to confirm before completing the Bluetooth connection. Select *OK*. This may only happen the first time you follow these instructions.
- You should now see a blue bar at the top of your iPhone screen that reads *Personal Hotspot: 1 Connection*. The status bar on your iPad will show two linked circles in the top-left to indicate it is tethered.
- Check that the internet works on your iPad by visiting a web page or checking your email.
- Check that you can access *SEAiq AIS Sharing*.
    - Start SEA*iq*.
    - Turn on AIS Sharing: SEA*iq* Settings / AIS Sharing / ON.
    - If you are viewing an areas covered by SEA*iq* AIS sharing, you will see AIS targets appear.
    - Go to SEA*iq* Settings / AIS Sharing / Status & Diagnostics. Check that *Status* is *Connected* and that *Connection Time* is increasing.
- Connect to your iPad to your Plug.
    - Turn on your Plug.
    - Turn on WiFi on your iPad: iPad Settings / WiFi / ON.
    - Look for your Plug's network and connect to it.
- Validation: Check that WiFi Plug and internet are now working.
    - Go to SEA*iq* Pilot.
    - *Cellular Connection:* Check AIS Sharing Diagnostics: Look at SEA*iq* Settings / AIS Sharing / Status & Diagnostics. See if *Status* is *Connected*. See if *Idle Time* is stays small (if it is growing, it may be mean it has been disconnected).

♦ *WiFi Connection:* Check NMEA & AIS / Status & Diagnostics: Look at SEA*iq* Settings / NMEA & AIS / Status & Diagnostics. See if *Status* is *Connected*. See if *Idle Time* is stays small (if it is growing, it may be mean it has been disconnected).
♦ If both of these appear to be OK, then you are all set up.

Restoring Your Configuration

When you are done, you may want to disable the Personal Hotspot feature on your phone.

Option 2: Tethering Your Plug From Your iPad

In this approach you will have your Plug *tether* to your iPad via WiFi. Your plug will not actually be accessing the internet via your iPad: the goal here is to trick your iPad into having both the WiFi and cellular connection running at the same time. Because it has a Plug tethered to it, it thinks that the cellular connection has to be left on so the Plug to access the internet.

An advantage of this approach is that you do not require a separate iPhone as in option 1. The main disadvantage is that it requires you to change the configuration of your Plug, which may require information from your manufacturer. *If you make the changes to the Plug incorrectly, it may leave the Plug in an inoperable state.*

Before attempting this configuration, check that you have complete documentation from your Plug manufacturer on how to get the Plug to connect to another WiFi network. This is the *opposite* of how Plugs normally work: normally, the Plug creates a WiFi network and the iPad connect to it.

This approach is not recommended for use with products from Navicom Dynamics.

Requirements

- iPad with:
    ♦ Support for cellular data
    ♦ SIM Card
    ♦ Support for Personal Hotspot (may require upgrade to your cellular data plan)
    ♦ SEA*iq* installed
- WiFi based Pilot Plug.
    ♦ Documentation on how to connect to another network.
    ♦ This approach is not recommended for use with products from *Navicom Dynamics*.

Instructions

- *Carefully review your manufacturer's documentation on changing the network configuration.*
- On your iPad:
    ♦ Turn on WiFi (Settings / WiFi / ON), *But do not connect to a network.*
    ♦ Turn on Personal Hotspot: Settings / Personal Hotspot / ON.
    ♦ Write down the name of your WiFi network and the password.
- On your Plug:
    ♦ Configure your Plug to connect to the network you created above.
    ♦ Confirm that the top of your iPad screen has a blue line that reads *Personal Hotspot: 1 Connection*.

- ♦ Write down the IP address and port number from the Plug configuration.
- On your iPad:
  - ♦ Run SEA*iq*.
  - ♦ Go to SEA*iq* Settings / NMEA & AIS / WiFi Setup.
  - ♦ Set *Host* to the Plug IP address you wrote down above.
  - ♦ Set *Port Number* to the Plug port number address you wrote down above.
  - ♦ Set *Connection Type* to *TCP* (this should normally be correct)
- Validation: Check that WiFi/Pilot Plug and internet are now working.
  - ♦ Go to SEA*iq* Pilot.
  - ♦ *Cellular Connection:* Check AIS Sharing Diagnostics: Look at SEA*iq* Settings / AIS Sharing / Diagnostics. See if *Status* is *Connected*. See if *Idle Time* is stays small (if it is growing, it may be mean it has been disconnected).
  - ♦ *WiFi Connection:* Check NMEA & AIS / Status & Diagnostics: Look at SEA*iq* Settings / NMEA & AIS / Status & Diagnostics. See if *Status* is *Connected*. See if *Idle Time* is stays small (if it is growing, it may be mean it has been disconnected).
  - ♦ If both of these appear to be OK, then you are all set up.

Restoring Your Configuration

If you want to restore your Plug's configuration back to the default from the manufacturer, follow the instructions they (should) have provided you.

Option 3: Manually Configuring Your WiFi

In this approach you will manually configure your iPad WiFi connection so that it realizes the WiFi connection does not go to the internet and will therefore keep the cellular connection open.

We have had some positive and negative reports of this working. Please let us know whether or not you are successful.

This approach has the advantage of not requiring an extra device such as an iPhone or having to do special configuration for your Plug. You do not need a cellular connection that supports *Personal Hotspot*. However, you do need to carefully edit your iPad WiFi configuration. **Note that after editing your WiFi configuration it may not be able to connect to normal networks without first switching it back to *Automatic*.**

Requirements

- iPad with:
  - ♦ Support for cellular data
  - ♦ SIM Card
  - ♦ SEA*iq* installed
- WiFi based Pilot Plug.

Instructions

- Check that cellular data is turned on and working.
- Determine WiFi network configuration
  - ♦ Setup iPad and Plug following your manufacturer's recommendations.
  - ♦ Go to iPad WiFi settings: iPad Settings / WiFi.

- ◆ Look for your Pilot Plug's network.
- ◆ Press the information disclosure button on the right side of the line (a blue *i* inside a blue circle).
- ◆ Write down the following information: IP Address, Subnet Mask, Router.
- Reconfigure the network.
  - ◆ Select *Configure IP* to go to sub-menu.
    - ◊ Select *Manual*.
    - ◊ Fill in the *IP address* using your notes above.
    - ◊ Fill in the *Subnet Mask* using your notes above.
    - ◊ Make sure *Router* is **empty**.
    - ◊ Press *Save* button at the top.
  - ◆ Select *Configure DNS* to go to sub-menu.
    - ◊ Select *Manual*.
    - ◊ Remove all *DNS Servers* listed (using red minus button).
    - ◊ Remove all *Search Domains* listed (using red minus button).
    - ◊ Press *Save* button at the top.
  - ◆ Select *Configure Proxy* to go to sub-menu.
    - ◊ Select *Off*.
    - ◊ Press *Save* button at the top (or back button if there were no change).
- Validation: Check that WiFi/pilot plug and internet are now working.
  - ◆ Go to SEA*iq* Pilot.
  - ◆ *Cellular Connection:* Check AIS Sharing Diagnostics: Look at SEA*iq* Settings / AIS Sharing / Status & Diagnostics. See if *Status* is *Connected*. See if *Idle Time* is stays small (if it is growing, it may be mean it has been disconnected).
  - ◆ *WiFi Connection:* Check NMEA & AIS Diagnostics: Look at SEA*iq* Settings / NMEA & AIS / Status & Diagnostics. See if *Status* is *Connected*. See if *Idle Time* is stays small (if it is growing, it may be mean it has been disconnected).
  - ◆ If both of these appear to be OK, then you are all set up.

Restoring Your Configuration

When you are done using the configuration, go to the WiFi Network configuration and change the *Manual* setting(s) back to *Automatic*.

- Select *Configure IP* to go to sub-menu.
  - ◆ Select *Automatic*.
  - ◆ Press *Save* button at the top.
- Select *Configure DNS* to go to sub-menu.
  - ◆ Select *Automatic*.
  - ◆ Press *Save* button at the top.