SIMRAD

GO7
Operator Manual

ENGLISH

simrad-yachting.com

Preface

Disclaimer

As Navico is continuously improving this product, we retain the right to make changes to the product at any time which may not be reflected in this version of the manual. Please contact your nearest distributor if you require any further assistance.

It is the owner's sole responsibility to install and use the equipment in a manner that will not cause accidents, personal injury or property damage. The user of this product is solely responsible for observing safe boating practices.

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Navico product references

This manual can refer to the following Navico products:

- Broadband Sounder™ (Broadband Sounder)
- DownScan Imaging™ (DownScan)
- DownScan Overlay™ (Overlay)
- GoFree™ (GoFree)
- SonicHub® (SonicHub)

Copyright

Warranty

The warranty card is supplied as a separate document.

In case of any queries, refer to the brand website of your display or system: simrad-yachting.com.

Regulatory statements

This equipment is intended for use in international waters as well as coastal sea areas administered by countries of the E.U. and E.E.A.

The GO7 complies with:

- CE under R&TTE directive 1999/5/EC
- The requirements of level 2 devices of the Radiocommunications (Electromagnetic Compatibility) standard 2008

The relevant Declaration of conformity is available in the GO7 section on the following website: simrad-yachting.com.

About this manual

This manual is a reference guide for operating the GO7. It assumes that all equipment is installed and configured, and that the system is ready to use.

The manual assumes that the user has basic knowledge of navigation, nautical terminology and practices.

Important text that requires special attention from the reader is emphasized as follows:

→ ***Note:*** Used to draw the reader's attention to a comment or some important information.

⚠ Warning: Used when it is necessary to warn personnel that they should proceed carefully to prevent risk of injury and/or damage to equipment/ personnel.

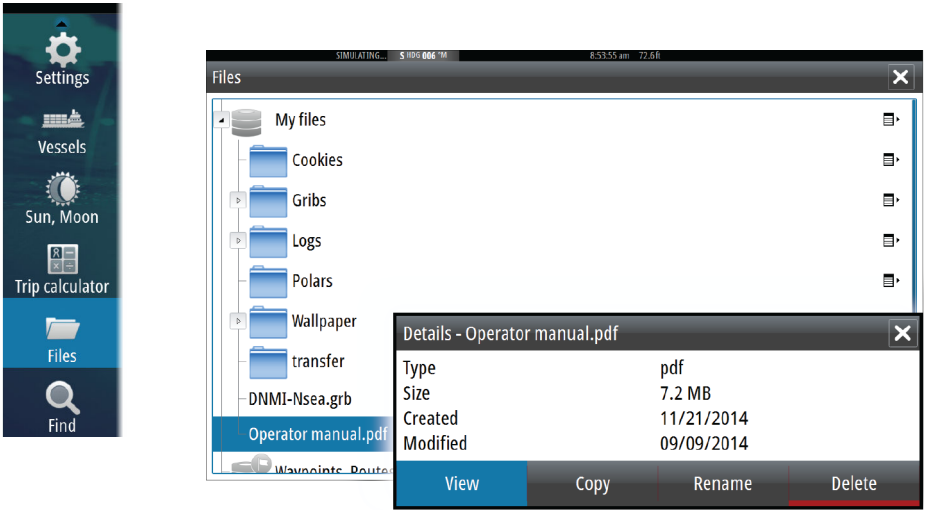
Manual version

This manual is written for the GO7 software version 1.0. The manual is continuously updated to match new software releases. The latest available manual version can be downloaded from simrad-yachting.com.

Viewing the manual on the screen

The pdf viewer included in the GO7 makes it possible to read the manuals and other pdf files on the screen. Manuals can be downloaded from simrad-yachting.com.

The manuals can be read from a card inserted in the card reader or copied to the unit's internal memory.



Use the menu options and on-screen buttons to maneuver in the pdf file as described below:

- Search, Goto page, Page Up and Down
  Select the relevant panel button.
- Scroll pages
  Drag finger on the screen in any direction.
- Panning on the page
  Drag finger on the screen in any direction.
- Zoom In/Out
  Select the relevant panel button.
  Touch operation: Use pinch or spread gestures.
- Exit the pdf viewer
  Select the **X** in the upper right corner of the panel.

The Software version

The software version currently on this unit can be found in the About dialog. The About dialog is available in the System Settings.

For information regarding upgrading your software, refer to *"Software upgrades"* on page 110.

Contents

1 Introduction

HOME

The Home page

The **Home** page is accessed from any operation by selecting the **Home** button in the upper left corner of a panel.

1 Tools
Select a button to access dialogs used for carrying out a task, or for browsing stored information.

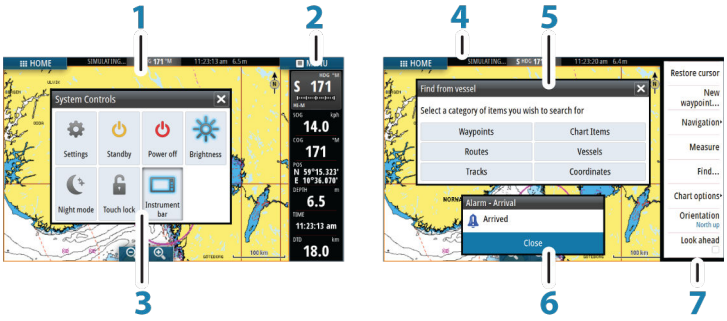
2 Applications
Select a button to display the application as a full page panel. Press and hold a button to display pre-configured split page options for the application.

3 Close button
Select to exit the Home page and return to the previous active page.

4 Favorites
Select a button to display the panel combination.
Press and hold a favorite button to enter edit mode for the Favorites panel.

5 Man Over Board (MOB) button
Select to save a Man Over Board (MOB) waypoint at the current vessel position.

Application pages



Each application connected to the system is presented on panels. The application can be presented as a full page, or in combination with other panels in a multiple panel page.

All application pages are accessed from the **Home** page.

1 Application panel

2 Instrument bar
Navigation and sensor information. The bar can be turned off and it can be configured by the user.

3 System controls dialog
Quick access to basic system settings.
Display the dialog by a short press on the **Power** key or by swiping down from top of the screen.

4 Status bar

5 Dialog
Information to or input from the user.

6 Alarm message
Displayed if dangerous situations or system faults occur.

7 **Menu**
Panel specific menu.
Display the menu by selecting the **MENU** panel button.

Split pages

You can have up to 4 panels on each page.

2 panels page

3 panels page

4 panels page

Panel sizes in a split page can be adjusted from the **System Controls** dialog.

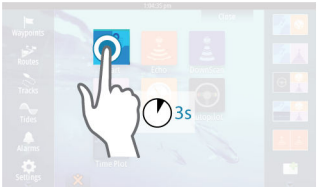
→ ***Note:*** Mercury features, if enabled, do not allow split pages.

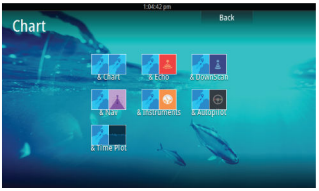
Pre-configured split pages

Each full screen application has several pre-configured split pages, featuring the selected application combined with each of the other panels.

→ ***Note:*** The number of pre-configured split pages cannot be changed, and the pages cannot be customized or deleted.

Access a pre-configured split page by pressing and holding the main panel button.





Favorite pages

All preconfigured favorite pages can be modified and deleted, and you can create your own. You can have a total of 12 favorite pages.

For more information, refer to *"Adding new favorite pages"* on page 25.

Integration of 3rd party devices

Several 3rd party devices can be connected to the GO7. The applications are displayed on separate panels or integrated with other panels.

A device connected to the NMEA 2000 network should automatically be identified by the system. If not, enable the feature from the advanced option in the System settings dialog.

The 3rd party device is operated by using menus and dialogs as on other panels.

This manual does not include specific operation instructions for any 3rd party device. For features and functionality, refer to the documentation included with the 3rd party device.

Mercury VesselView integration

Mercury VesselView SmartCraft data display and interaction are enabled through the GO7 when a VesselView 7 or VesselView 4 gateway device is present on the NMEA 2000 network.

A Mercury icon appears on the **Home** page when the device is available.

FUSION-Link integration

FUSION-Link devices connected to the NMEA 2000 network can be controlled from the GO7 system.

The FUSION-Link devices appear as additional sources when using the audio function. No additional icons are available.

Refer to *"Audio"* on page 97 for more information.

BEP CZone integration

The GO7 integrates with BEP's CZone system used for controlling and monitoring a distributed power system on your vessel.

The CZone icon is available in the Tools panel on the **Home** page when a CZone system is available on the network.

A separate manual is provided with your CZone system. Refer to this documentation and to the GO7 Installation manual for how to install and configure the CZone system.

CZone dashboard

When the CZone is installed and configured, an additional CZone dashboard is added to the Instruments panels.

You switch between a panel's dashboards by selecting the left and right arrow symbols or by selecting the dashboard from the menu.

Editing a CZone dashboard

You can customize a CZone dashboard by changing the data for each of the gauges. Available editing options depend on the type of gauge and which data sources that are connected to your system.

For more information, refer to *"Instrument panels"* on page 95.

GoFree wireless

The GO7 includes built-in wireless functionality that lets you use a wireless device to remotely view (phone and tablet) and control the system (tablet only). The system is controlled from the wireless device by Apps downloaded from their relevant Application store.

Configuration and setup are described in the GO7 Installation manual.

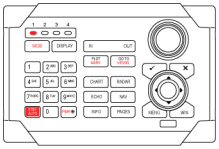
→ ***Note:*** For safety reasons, Autopilot and CZone functions cannot be controlled from a wireless device.

Operating the system with a wireless device

When remote control is accepted, the active page is mirrored to the wireless device.

The image on the wireless device includes softkeys used for operating the GO7 system.

Remote controllers



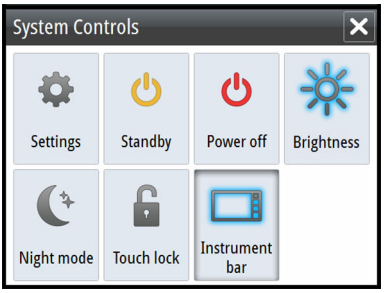
You can connect an OP40 to the network and remotely control the GO7.

A separate manual is included with the remote controller.

2 Basic operation

System Controls dialog

The System Controls dialog provides quick access to basic system settings. You display the dialog by making a short press on the **Power** key. The icons displayed on the dialog can vary. For example, the adjust splits option is only available if you are viewing a split page when you open the **System Controls** dialog.



Activating functions

Select the icon of the function you want to set or toggle on or off. For those functions that toggle on and off, a highlighted icon indicates the function is activated, as shown in the Instrument bar icon above.

Turning the system on and off

You turn the system on and off by pressing and holding the **Power** key. You can also turn the unit off from the **System Controls** dialog.

If the **Power** key is released before the shut-down is completed, the power off process is cancelled.

First time startup

The first time the unit is started and after a master reset, the system runs through an automatic start-up sequence, including language setup and automatic data source selection.

You can select to interrupt this sequence and later configure the system yourself.

Standby mode

In Standby mode, the Sonar and the backlight for screen and keys are turned off to save power. The system continues to run in the background.

You select Standby mode from the **System Controls** dialog.

Switch from Standby mode to normal operation by a short press on the **Power** key.

Display illumination

Brightness

The display backlighting can be adjusted at any time from the **System Controls** dialog. You can also cycle the preset backlight levels by short presses on the **Power** key.

Night mode

The night mode option optimizes the color palette and backlight for low light conditions.

→ ***Note:*** Details on the chart may be less visible when the Night mode is selected!

Locking the touchscreen

You can temporarily lock a touchscreen to prevent accidental operation of the system. Lock the touchscreen when large amounts of water are on the screen, for example, in heavy seas and weather. This feature is also useful when cleaning the screen while the unit is turned on.

You lock the touchscreen from the **System Controls** dialog.

You remove the lock function by a short press on the **Power** key.

Using menus and dialogs

Menus

You display a page menu by selecting the **MENU** button in the upper right corner of the page.

- Activate a menu item and toggle on/off an option by selecting it
- Adjust a slide bar value by either:
  - dragging the slide bar
  - selecting the **+** or **-** icons

Select the **Back** menu option to return to the previous menu level, and then exit.

You can make the menu slide away by tapping the screen outside the menu area, or by pressing the **MENU** button. When you re-press the **MENU** button, the menu opens in the same status it had before it closed.

The status of the cursor (active vs. inactive) changes the menu options.

Selecting pages and panels

Selecting a page

- Select a full page panel by selecting the relevant application button on the **Home** page
- Select a favorite page by selecting the relevant favorite button
- Select a predefined split panel by pressing and holding the relevant application icon

Select active panel

In a multiple panel page, only one panel can be active at a time. The active panel is outlined with a border.

You can only access the page menu of an active panel.

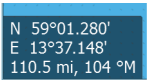
You activate a panel by tapping it.

Using the cursor on the panel

The cursor can be used to measure a distance, to mark a position, and to select items.

By default, the cursor is not shown on the panel.

Position the cursor by tapping the desired location on the screen.



When the cursor is active, the cursor position window is displayed.

To remove the cursor and cursor elements from the panel, select the **Clear cursor** option.

GoTo cursor

You can navigate to a selected position on the image by positioning the cursor on the panel, then using the **Goto Cursor** option in the menu.

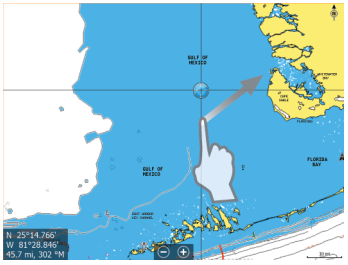
The Cursor assist function

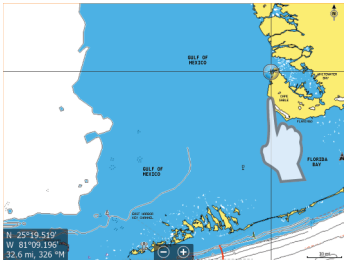
The cursor assist function allows for fine tuning and precision placement of the cursor without covering details with your finger.

Press and hold your finger on the screen to switch the cursor symbol to a selection circle, appearing above your finger.

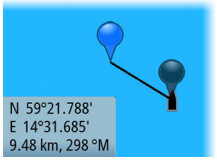
Without removing your finger from the screen, drag the selection circle over the desired item to display item information.

When you remove your finger from the screen the cursor reverts to normal cursor operation.





Measuring distance



The cursor can be used to measure the distance between your vessel and a selected position, or between 2 points on the chart panel.

1. Position the cursor on the point from where you want to measure the distance.
2. Start the measure function from the menu.
   - The measuring icons appear with a line drawn from the vessel center to the cursor position, and the distance is listed in the cursor information window.
3. You can reposition the measuring points by dragging either icon as long as the measuring function is active.

→ ***Note:*** The bearing is always measured from the grey icon to the blue icon.

You can also start the measuring function without an active cursor. Both measuring icons are then initially located at the vessel position. The grey icon follows the vessel as the vessel moves, while the blue icon remains at the position given when you activated the function.

You terminate the measuring function by selecting the **Finish measuring** menu option.

Creating a Man Overboard waypoint

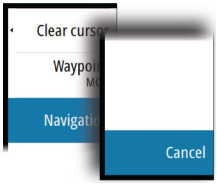
If an emergency situation should occur, you can position a Man Overboard (MOB) waypoint at the vessel's current position by selecting the **MOB** button on the **Home** page.

When you activate the MOB function the following actions are automatically performed:

- a MOB waypoint is positioned at the vessel's position
- the display switches to a zoomed chart panel, centered on the vessel's position
- the system displays navigation information back to the MOB waypoint

Multiple MOB waypoints are saved by repeatedly pressing the **MOB** buttons. The vessel continues to show navigation information to the initial MOB waypoint. Navigation to subsequent MOB waypoints needs to be done manually.

Cancel navigation to MOB



The system continues to display navigational information towards the MOB waypoint until you cancel the navigation from the menu.

Delete a MOB waypoint

1. Select the MOB waypoint to activate it
2. Select the MOB waypoint's pop-up to display the MOB waypoint dialog
3. Select the delete option in the dialog.

A MOB waypoint can also be deleted from the menu when it is activated.

Screen capture

You need to turn on the Screen capture option in the System Settings dialog to be able to take a screenshot on a touch screen. When the function is activated, you can take a screenshot on a touch screen by double-selecting the title bar of an open dialog, or by double-selecting the status bar if no dialog is open.

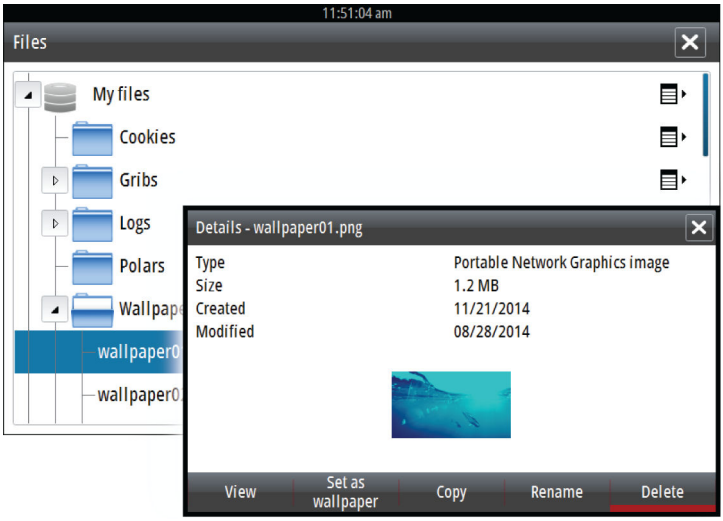
Refer to *"Tools"* on page 106 for how to view files.

3 Customizing your system

Customizing the Home page wallpaper

The Home page's wallpaper can be customized. You can select one of the pictures included with the system, or you can use your own picture in .jpg or .png format.

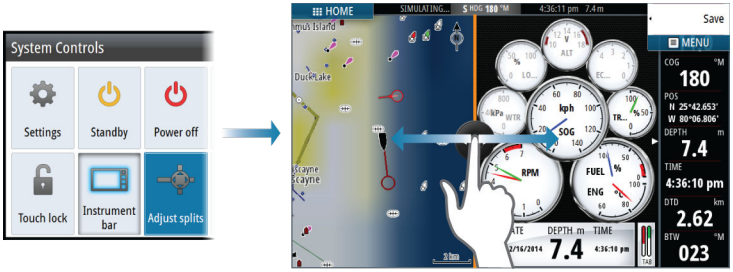
The images can be available on any location that can be seen in the files browser. When a picture is chosen as the wallpaper, it is automatically copied to the Wallpaper folder.



Adjusting panel size

You can change the panel size for an active split page. The panel size can be adjusted for both favorite pages and for predefined split pages.

1. Activate the **System Controls** dialog
2. Select the adjust splits option in the dialog
3. Adjust the panel size by dragging the adjustment icon
4. Confirm your changes by tapping one of the panels or selecting the save option in the menu.



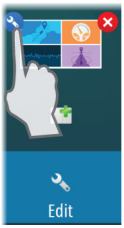
The changes are saved to the active favorite or split page.

Adding new favorite pages

1. Select the **New** icon in the favorite panel on the **Home** page to open the page editor dialog
2. Drag and drop page icons to set up a new page
3. Change the panel arrangement (only possible for 2 or 3 panels), if required.
4. Save the page layout

The system displays the new favorite page, and the new page is included in the list of favorite pages on the **Home** page.

Edit favorite pages



1. Select the edit icon for a favorite icon to enter edit mode
   - Select the X icon to remove the page
   - Select the tool icon to display the page editor dialog
2. Add or remove panels in the page editor dialog.
3. Save or discard your changes to leave the favorite edit mode.

Setting the appearance of the Instrument bar

Data sources connected to the system can be viewed in the Instrument bar.

You can configure the Instrument bar to display either one or two bars, or set it to alternate the bars automatically.

You can turn the Instrument bar off from the **System controls** dialog.

→ ***Note:*** This only turns the Instrument bar off for the current page.

Turning the Instrument bar on/off

1. Activate the **System controls** dialog
2. Deactivate/activate the instrument bar icon to toggle the bar on and off.

Edit the content of the Instrument bar

1. Select the **MENU** button to edit the content
2. Select the content you want to display

→ ***Note:*** You can configure Bar 1 for active page or for all pages except those that have a local configuration. Bar 2 can only be configured for active page.

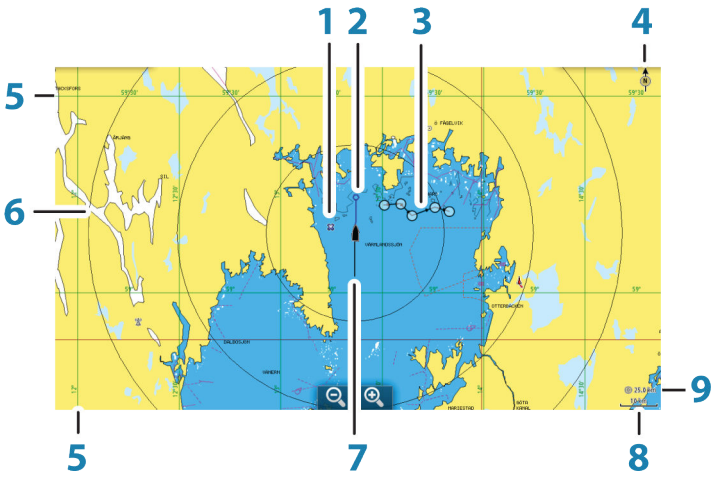
3. Define the time period if you want the two bars to alternate automatically
4. Select the edit option to change any of the instrument fields, followed by the field you want to change
5. Save your changes by selecting the finish edit option in the menu.

4

Charts

The chart function displays your vessel's position relative to land and other chart objects. On the chart panel you can plan and navigate routes, place waypoints, and display AIS targets.

The Chart panel



1 Waypoint*

2 Vessel with extension line (extension line is optional)

3 Route*

4 North indicator

5 Grid lines*

6 Range rings*

7 Track*

8 Chart range scale

9 Range rings interval (only displayed when Range rings are turned on)

* Optional chart items. You turn the optional images on/off individually from the Chart settings dialog.

Chart data

The system is delivered with different embedded cartography depending on region.

All units support Insight charts from Navico including Insight Genesis. The system also supports Navionics Gold, Platinum+ and Navionics+, C-MAP MAX-N/MAX-N+ by Jeppesen as well as content created by variety of third party mapping providers in the AT5 format. For a full selection of available charts please visit insightstore.navico.com, c-map.jeppesen.com or navionics.com.

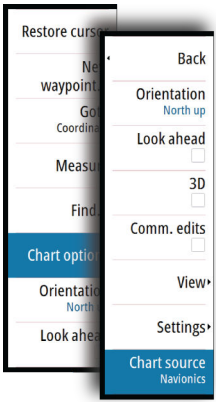
→ ***Note:*** The system does not automatically switch to embedded cartography if the chart card is removed. A low-resolution chart will be displayed until you re-insert the card or manually switch back to the embedded cartography.

Showing dual chart types

If you have different chart types available - embedded or in the card slot - you can show two different chart types simultaneously on a page with two chart panels.

You can select a dual chart panel by pressing and holding the Chart application button on the **Home** page, or by creating a favorite page with two chart panels.

Selecting chart type



You specify the chart type in the Chart panel by selecting one of the available chart types in the chart source menu option. If you have a multiple Chart panel, the chart type is set individually for each chart panel. Activate one of the chart panels, and then select one of the available chart types in the chart source menu option. Repeat the process for the second chart panel, and select an alternative chart type for this panel.

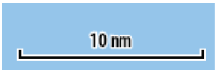
→ ***Note:*** To show charts other than Navionics, Insight chart type must be selected.

If you have identical charts available - built in or in the card slot - the system automatically selects the chart with most chart details for your displayed region.

Vessel symbol

When the GO7 has a valid GPS position lock, the vessel symbol indicates vessel position. If no GPS position is available, the vessel symbol includes a question mark.

Chart scale



You zoom in and out on the chart by using the zoom panel icons, or by using fingers to pinch (zoom out) or spread (zoom in).

Chart range scale and range rings interval (when turned on) are shown in the lower right corner of the chart panel.

Panning the chart

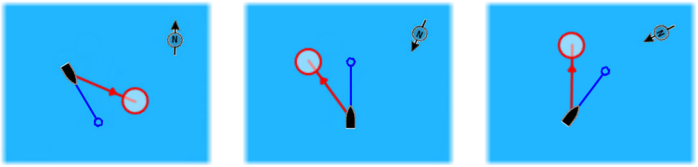
You can move the chart in any direction by dragging your finger on the screen.

Select the **Clear cursor** menu option to remove the cursor and cursor window from the panel. This also centers the chart to the vessel position.

Positioning the vessel on the chart panel

Chart orientation

Several options are available for how the chart is rotated in the panel. The chart orientation symbol in the panel's upper right corner indicates the north direction.



North up *Heading up* *Course up*

North up
Displays the chart with north upward.

Heading up

Displays the chart with the vessel's heading directed upward. Heading information is received from a compass. If heading is not available, then the COG from the GPS is used.

Course up

Rotates the chart in the direction of the next waypoint when navigating a route or navigating to a waypoint. If not navigating the heading up orientation is used until navigation is started.

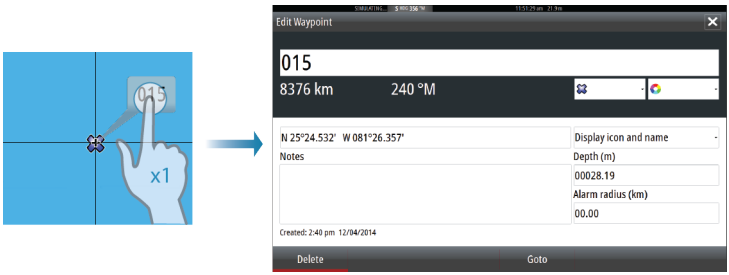
Look ahead

Moves the vessel icon closer to the bottom of the screen so that you can maximize your view ahead.

Displaying information about chart items

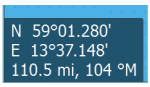
When you select a chart item, a waypoint, a route, or a target, basic information for the selected item is displayed. Select the chart item's pop-up to display all available information for that item. You can also activate the detailed information dialog from the menu.

→ ***Note:*** Pop-up information has to be enabled in chart settings to see basic item information.



Using the cursor on the chart panel

By default, the cursor is not shown on the chart panel.



When you activate the cursor, the cursor position window is displayed. When the cursor is active, the chart does not pan or rotate to follow the vessel.

Select the **Clear cursor** menu option to remove the cursor and the cursor window from the panel. This also centers the chart to the vessel position.

Select the **Restore cursor** menu option to display the cursor in its previous location. The **Clear cursor** and **Restore cursor** options are useful features for toggling between the vessel's current location and the cursor position.

Creating routes

You can create routes as follows on the chart panel.

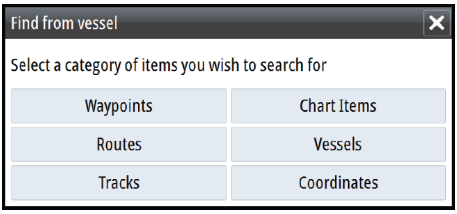
1. Position the cursor on the chart panel.
2. Select **New** followed by **New route** in the menu.
3. Tap the chart panel to position the first routepoint.
4. Continue positioning the remaining routepoints.
5. Save the route by selecting the save option in the menu.

→ ***Note:*** For more information, refer to *"Waypoints, Routes, and Tracks"* on page 50.

Find objects on chart panels

You can search for other vessels or various chart items from a chart panel.

Activate the cursor on the panel to search from the cursor position. If the cursor is not active, the system searches for items from the vessel's position.



→ ***Note:*** You must have a SIRIUS data package subscription to search for fueling stations and an AIS receiver connected to search for vessels.

3D charts

The 3D option provides a three dimensional graphical view of land and sea contours.

→ ***Note:*** All chart types work in 3D mode, but without 3D cartography for the appropriate area the chart appears flat.

When 3D chart option is selected, the Pan and the Rotate icons appear on the right side of the chart panel.

Panning the 3D chart

You can move the chart in any direction by selecting the Pan icon and then panning in the desired direction.

Select the **Return to vessel** menu option to stop panning, and to center the chart to vessel position.

Controlling the view angle

You can control the view angle by selecting the Rotate icon and then panning the chart panel.

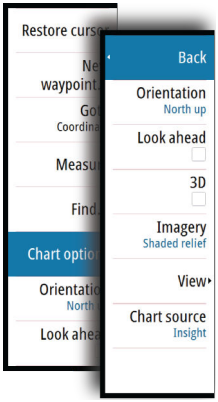
- To change the direction you are viewing, pan horizontally
- To change the tilt angle of the view, pan vertically

→ ***Note:*** When centered on the vessel position, only the tilt angle can be adjusted. The view direction is controlled by the chart orientation setting. See *"Positioning the vessel on the chart panel"* on page 29.

Zooming a 3D chart

You zoom in and out on a 3D chart by using the zoom (+ or -) buttons, or the touch method of pinching and spreading your fingers.

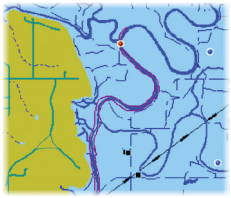
Insight specific chart options



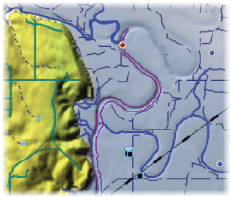
Orientation, Look ahead, 3D, and change Chart source (previously described in this section) are common for all chart types.

Chart imagery style

The charts can be displayed in three imagery styles.



2D mapping style



Shaded relief

No contours

Insight view options

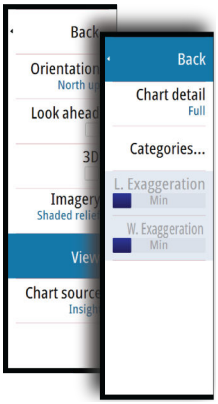
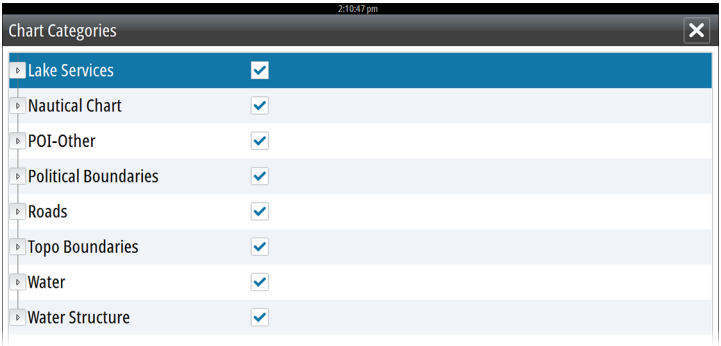


Chart detail

- **Full**
  All available information for the chart in use.
- **Medium**
  Minimum information sufficient for navigation.
- **Low**
  Basic level of information that cannot be removed, and includes information that is required in all geographic areas. It is not intended to be sufficient for safe navigation.

Insight chart categories

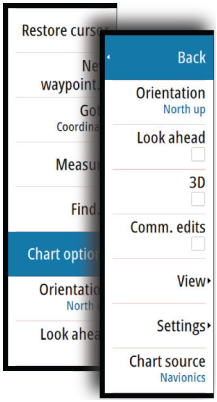
Insight charts include several categories and sub-categories that you can turn on/off individually depending on which information you want to see.



Land Exaggeration and Water Exaggeration

Graphical settings available in 3D mode only. Exaggeration is a multiplier applied to the drawn height of hills on land, and troughs in water to make them look taller or deeper.

Navionics specific chart options



Orientation, Look ahead, 3D and change Chart source (previously described in this section) are common for all chart types.

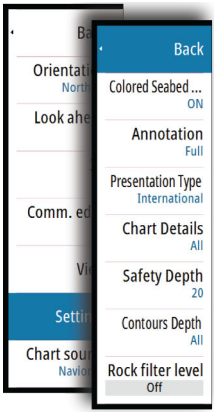
Community edits

Toggles on the chart layer including Navionics edits. These are user information or edits uploaded to Navionics Community by users, and made available in Navionics charts.

For more information, refer to Navionics information included with your chart, or to Navionics website: www.navionics.com.

Navionics chart settings

Colored seabed areas



Used for displaying different depth areas in different shades of blue.

Annotation

Determines what area information, such as names of locations and notes of areas, is available to display.

Presentation type

Provides marine charting information such as symbols, colors of the navigation chart and wording for either International or U.S. presentation types.

Chart details

Provides you with different levels of geographical layer information.

Safety depth

The Navionics charts use different shades of blue to distinguish between shallow and deep water.

Safety depth, based on a selected limit, is drawn without blue shading.

→ ***Note:*** The built in Navionics database features data down to 20 m, after which it is all white.

Contours depth

Determines which contours you see on the chart down to the selected safety depth value.

Rock filter level

Hides rock identification on the chart beneath a given depth.

This helps you to declutter charts in areas where there are many rocks located at depths well below your vessel's draught.

Navionics view options

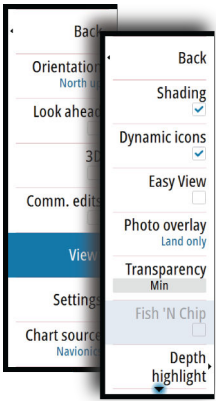


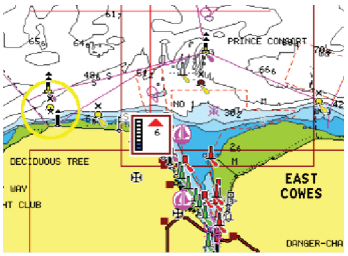
Chart shading

Shading adds terrain information to the chart.

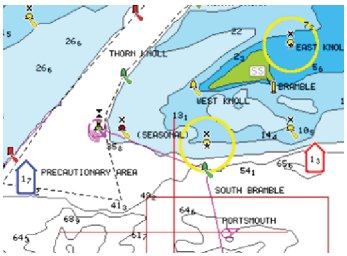
Navionics dynamic tide and current icons

Shows tides and currents with a gauge and an arrow instead of the diamond icons used for static tides and current information.

The tide and current data available in Navionics charts are related to a specific date and time. The system animates the arrows and/or gauges to show the tides and currents evolution over time.



Dynamic tide information



Dynamic current information

The following icons and symbology are used:

Current speed

The arrow length depends on the rate, and the symbol is rotated according to flow direction. Flow rate is shown inside the arrow symbol. The red symbol is used when current speed is increasing, and the blue symbol is used when current speed is decreasing.

Tide height

The gauge has 8 labels and is set according to absolute max/min value of the evaluated day. The red arrow is used when tide is rising, and the blue arrow is used when tide is falling.

→ ***Note:*** All numeric values are shown in the relevant system units (unit of measurement) set by user.

Easy View

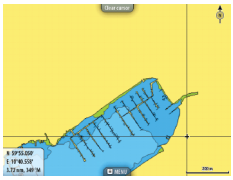
Magnifying feature that increases the size of chart items and text.

→ ***Note:*** There is no indication on the chart showing that this feature is active.

Photo overlay

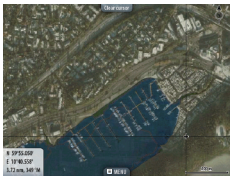
Photo overlay enables you to view satellite photo images of an area as an overlay on the chart. The availability of such photos is limited to certain regions, and cartography versions.

You can view photo overlays in either 2D or 3D modes.



No Photo overlay

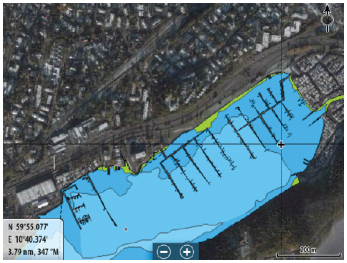
Photo overlay, land only



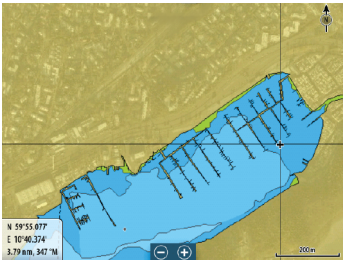
Full Photo overlay

Photo transparency

The Photo transparency sets the opaqueness of the photo overlay. With minimum transparency settings the chart details are almost hidden by the photo.



Minimum transparency



Maximum transparency

Navionics Fish N' Chip

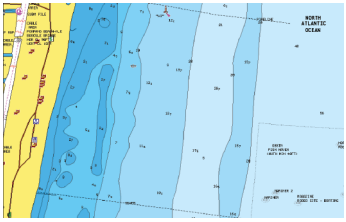
The system supports Navionics Fish N' Chip (U.S. only) chart feature.

For more information, see www.navionics.com.

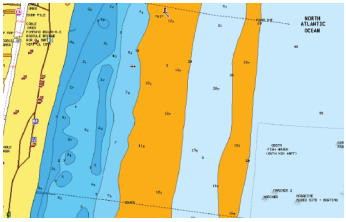
Depth highlight range

Select a range of depths between which Navionics fills with a different color.

This allows you to highlight a specific range of depths for fishing purposes. The range is only as accurate as the underlying chart data, meaning that if the chart only contains 5 meter intervals for contour lines, the shading is rounded to the nearest available contour line.



No Depth highlight range

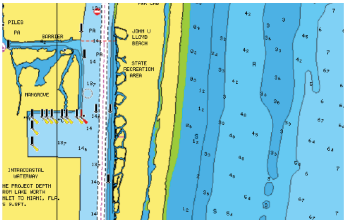


Depth highlight range: 6 m - 12 m

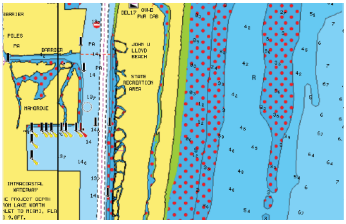
Shallow water highlight

Highlights areas of shallow water.

This allows you to highlight areas of water between 0 and the selected depth (up to 10 meters/30 feet).



No shallow water highlighted



Shallow water highlight: 0 m - 3 m

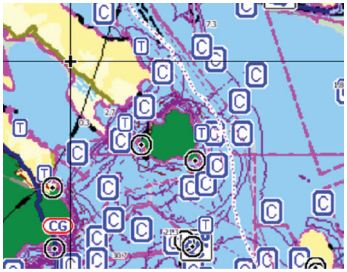
Jeppesen tides and currents

The system can display Jeppesen tides and currents. With this information it is possible to predict the time, level, direction and strength of currents and tides. This is an important tool when considering planning and navigation of a trip.

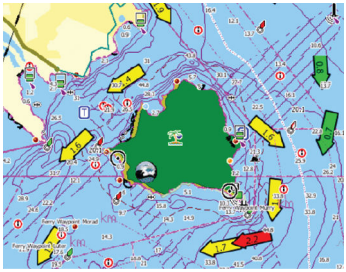
In large zoom ranges the tides and currents are displayed as a square icon including the letter **T** (Tides) or **C** (Current). When you select one of the icons, tidal or current information for that location are displayed.

Dynamic current data can be viewed by zooming inside a 1-nautical mile zoom range. At that range, the Current icon changes to an animated dynamic icon that shows the speed and direction of the current. Dynamic icons are colored in black (greater than 6 knots), red (greater than 2 knots and less than or equal to 6 knots), yellow (greater than 1 knot and less than or equal to 2 knots) or green (equal to or less than 1 knot), depending on the current in that location.

If there is no current (0 knots) this will be shown as a white, square icon.

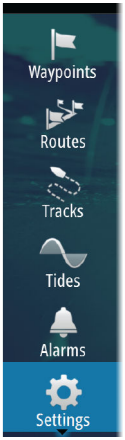


Static Current and Tide icons

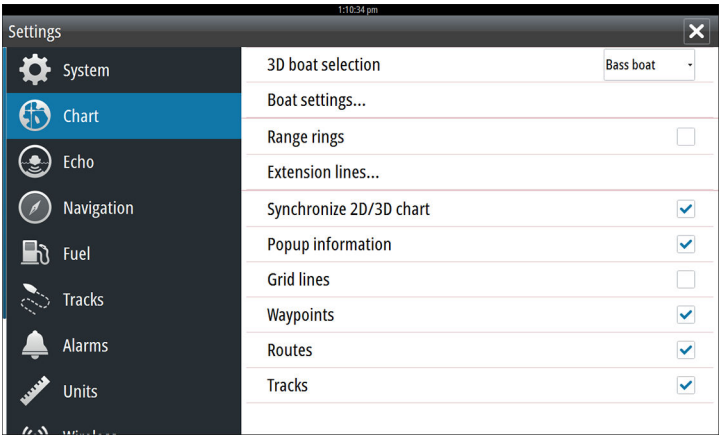


Dynamic Current icons

Chart settings



Settings and display options made in the Chart settings page are common for all chart panels.



3D boat selection

Determines which icon to use on 3D charts.

Boat settings

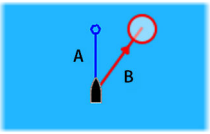
The boat settings are used when calculating an automatic route. The boat's draught, width and height must be input to use the autorouting and easy routing features.

Range Rings

The range rings can be used to present the distance from your vessel to other chart objects.

The range scale is set automatically by the system to suit the chart scale.

Extension lines

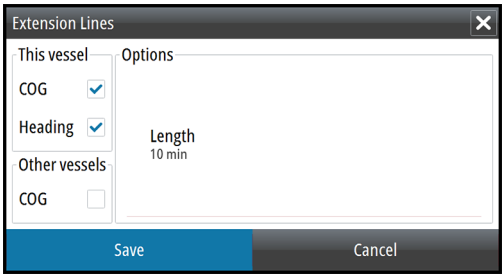


A: Heading

B: Course Over Ground (COG)

The lengths of the extension lines are either set as a fixed distance, or to indicate the distance the vessel moves in the selected time period. If no options are turned on for the vessel then no extension lines are shown for your vessel.

Your vessel heading is based on information from the active heading sensor and the COG is based on information from the active GPS sensor.



Synchronize 2D/3D chart

Links the position shown on one chart with the position shown on the other chart when a 2D and a 3D chart are shown side by side.

Pop-up information

Selects whether basic information for chart items is displayed when you select the item.

Grid lines

Turns on/off viewing of longitude and latitude grid lines on the chart.

Waypoints, Routes, Tracks

Turns on/off displaying of these items on chart panels. Also opens the Waypoints, Routes and Tracks dialogs you can use to manage them.

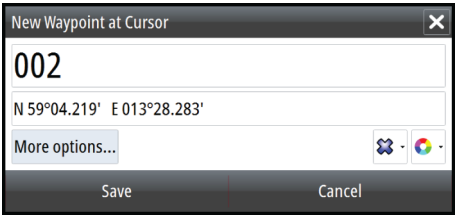
5 Waypoints, Routes, and Tracks

Waypoints

A waypoint is a user generated mark positioned on a chart, or on the Echosounder image. Each waypoint has an exact position with latitude and longitude coordinates. A waypoint positioned on the Echosounder image has a depth value, in addition to position information. A waypoint is used to mark a position you later may want to return to. Two or more waypoints can also be combined to create a route.

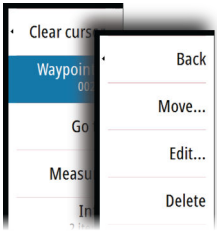
Saving waypoints

You can save a waypoint at a selected location by positioning the cursor on the panel, and then selecting the new waypoint option in the menu.



In the Chart and Nav panels, you can save a waypoint at the vessel position, when the cursor is not active, by selecting the new waypoint option in the menu.

Moving a waypoint



1. Select the waypoint you want to move
   - The waypoint icon expands to indicate that it is active
2. Activate the menu and select the waypoint in the menu
3. Select the move option
4. Select the new waypoint position
5. Select Finish in the menu

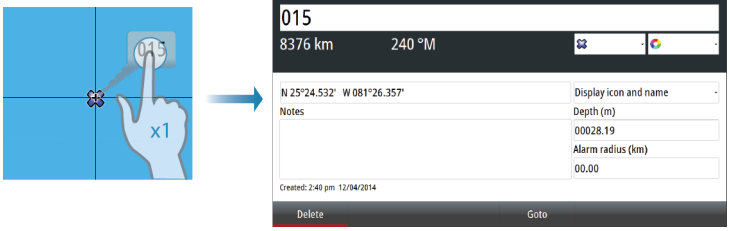
The waypoint is now automatically saved at the new position.

Edit a waypoint

You can edit all information about a waypoint from the **Edit Waypoint** dialog.

This dialog is activated by selecting the waypoint's pop-up, or from the menu when the waypoint is activated.

The dialog can also be accessed from the Waypoints tool on the **Home** page.



Delete a waypoint

You can delete a waypoint from the **Edit Waypoint** dialog or by selecting the **Delete** menu option when the waypoint is activated.

You can also delete waypoints from the Waypoints tool on the **Home** page.

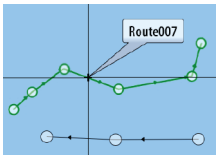
You can delete MOB waypoints the same way.

Waypoint alarm settings

You can set an alarm radius for each individual waypoint you create. The alarm is set in the **Edit Waypoint** dialog.

→ ***Note:*** The waypoint radius alarm must be toggled ON in the alarm dialog to activate an alarm when your vessel comes within the defined radius. For more information, refer to *"Alarms dialog"* on page 104.

Routes



A route consists of a series of routepoints entered in the order that you want to navigate them.

When you select a route on the chart panel it turns green, and the route name is displayed.

The system includes support for Navionics Autorouting and Jeppesen Easy Routing. This feature automatically suggests routepoints between the first and last routepoint of a route, or between selected routepoints in a complex route. You can use the feature when you create a new route, or you can use it to edit already saved routes.

Creating a new route on the chart panel

1. Activate the cursor on the chart panel.
2. Select the new route option from the menu.
3. Position the first waypoint on the chart panel.
4. Continue positioning new routepoints on the chart panel until the route is completed.
5. Save the route by selecting the save option in the menu.

Edit a route from the chart panel

1. Select the route to make it active.
2. Select the route edit option in the menu.
3. Position the new routepoint on the chart panel:
   - If you set the new routepoint on a leg, a new point is added between existing routepoints.
   - If you set the new routepoint outside the route, the new routepoint is added after the last point in the route.
4. Drag a routepoint to move it to a new position.
5. Save the route by selecting the save option in the menu.

→ ***Note:*** The menu changes depending on the selected edit option. All edits are confirmed or cancelled from the menu.

Delete a route

You can delete a route by selecting the **Delete** menu option when the route is activated. You can also delete routes from the Routes tool on the **Home** page.

Autorouting and Easy Routing

The Autorouting and Easy Routing suggest new routepoint positions based on information in the map and on your boat's size. Before you can start using this feature the boat draught, width and height must be entered into the system. The boat settings dialog is automatically displayed if the information is missing when you start the feature.

→ ***Note:*** GO7 units designed for sale in the U.S. region do not have Autorouting or Easy Routing capabilities. Autorouting or Easy Routing features are disabled on all non-U.S. units when they are used in U.S. territorial waters.

→ ***Note:*** It is not possible to start the Autorouting or Easy Routing if one of the selected routepoints is located in an unsafe area. A warning dialog is displayed, and you have to move the relevant routepoint(s) to a safe area to proceed.

→ ***Note:*** If no compatible cartography is available, the Autorouting or Easy Routing menu option is not available. Compatible cartography includes Jeppesen CMAP MAX-N +, Navionics+ and Navionics Platinum. For a full selection of available charts please visit insightstore.navico.com, c-map.jeppesen.com or navionics.com.

1. Position at least two routepoints on a new route, or open an existing route for editing.
2. Select **Autorouting**, followed by:
   - **Entire Route** if you want the system to add new routepoints between the first and the last routepoint of the open route.
   - **Selection** if you want to manually select the routepoints that define the limits for the autorouting, then select the relevant routepoints. Selected routepoints are colored red. Only two routepoints can be selected, and the system discards any routepoints between your selected start and end points.
3. Select **Accept** to start the automatic routing.

- When the automatic routing is completed the route appears in preview mode, and the legs are color coded to indicate safe or unsafe areas. Navionics uses red (unsafe) and green (safe), while C-MAP uses red (unsafe), yellow (dangerous) and green (safe).

4. Move any routepoints if required when the route is in preview mode.
5. Select **Keep** to accept the routepoints positions.
6. Eventually repeat step 2 (**Selection**) and step 3 if you want the system to automatically position routepoints for other parts of the route.
7. Select **Save** to complete the automatic routing and save the route.

Autorouting and Easy Routing examples

- **Entire route** option used when first and last route points are selected.

First and last routepoint

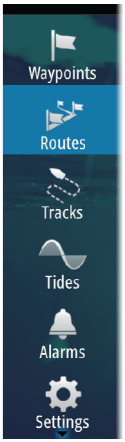
Result after automatic routing

- **Selection** option used for autorouting part of a route.

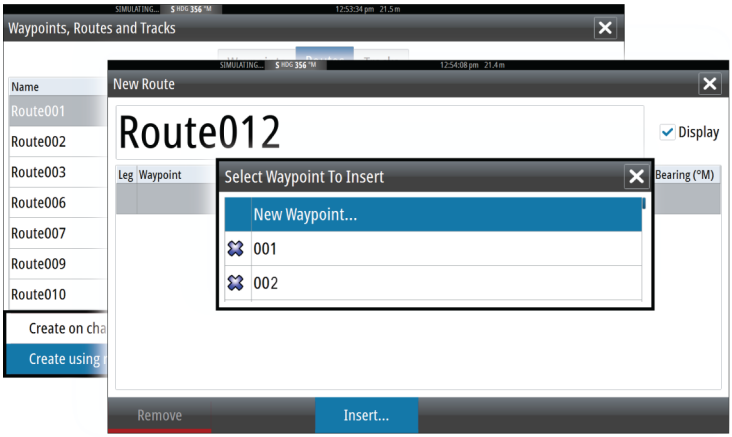
Two routepoints selected

Result after automatic routing

Creating routes using existing waypoints



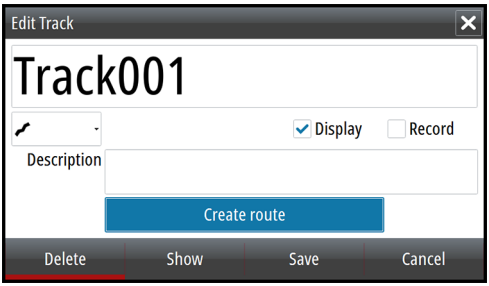
You can create a new route by combining existing waypoints from the **Routes** dialog. The dialog is activated by using the **Routes** tool on the **Home** page.



Converting Tracks to Routes

You can convert a track to a route from the Edit Track dialog. The dialog is activated by activating the track, then selecting the track's pop-up, or by selecting the info option from the menu.

The Edit Tracks dialog can also be accessed by selecting the Tracks tool on the **Home** page.

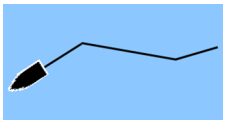


The Edit Route dialog

You can add and remove routepoints from the **Edit Route** dialog. This dialog is activated by selecting an active route's pop-up or from the menu.

The dialog can also be accessed by using the **Routes** tool on the **Home** page.

Tracks



Tracks are a graphical presentation of the historical path of the vessel, allowing you to retrace where you have travelled. Tracks can be converted to routes from the **Edit** dialog.

From the factory, the system is set to automatically track and draw the vessel's movement on the chart panel. The system continues to record the Tracks until the length reaches the maximum points, and then automatically begins overwriting the oldest points.

The automatic tracking function can be turned off from the Tracks dialog.

Creating new Tracks

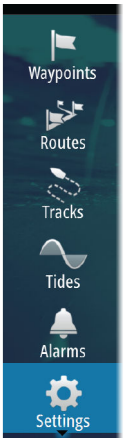
You can start a new track from the **Tracks** dialog, activated by using the **Tracks** tool on the Home page.

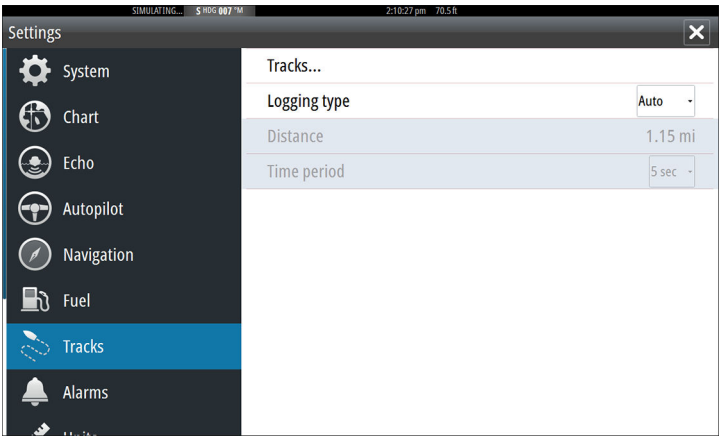
Tracks settings

Tracks are made up of a series of points connected by line segments whose length depends on the frequency of the recording.

You can select to position track points based on time settings, distance, or by letting the system position a waypoint automatically when a course change is registered.

→ ***Note:*** The Tracks option must also be turned ON in the chart settings to be visible.

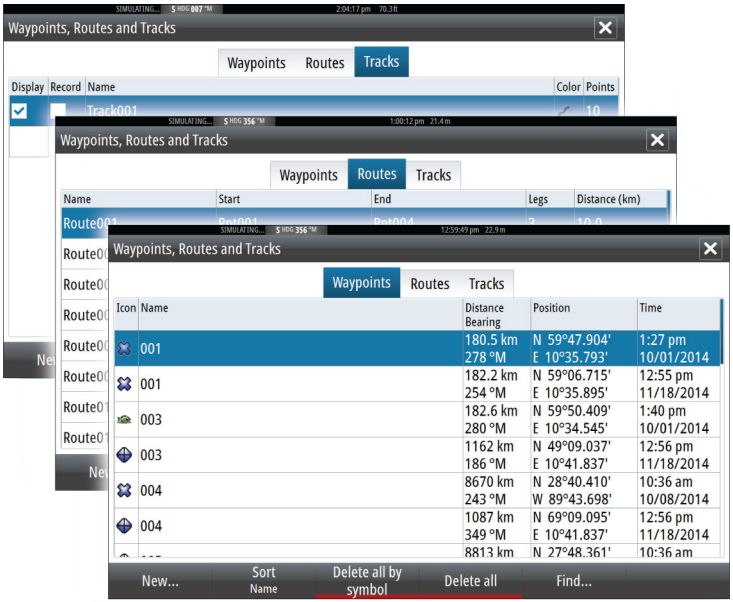




Waypoints, Routes, and Tracks dialogs

The Waypoints, Routes, and Tracks dialogs give access to advanced edit functions and settings for these items.

The dialogs are accessed from the **Tools panel** on the **Home** page.



6 Navigating

The navigation function included in the system allows you to navigate to the cursor position, to a waypoint, or along a predefined route.

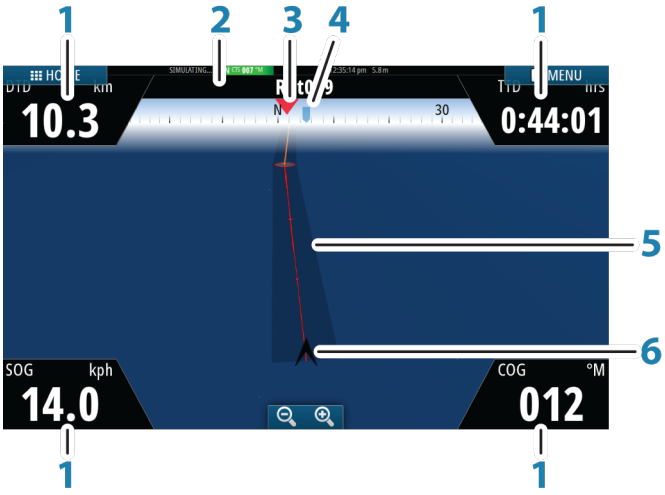
If autopilot functionality is included in your system, the autopilot can be set to automatically navigate the vessel.

For information about positioning waypoints and creating routes, refer to *"Waypoints, Routes, and Tracks"* on page 42.

Navigation panels

The Nav panels can be used to display information when you are navigating.

The Nav panel



The Nav panel is activated from the Home page, either as a full page panel or as part of a multiple panel page.

1 **Data fields**

2 **Route information**

3 **Vessel heading**

4 **Bearing to next routepoint**

5 **Bearing line with allowed off course limit**
When travelling on a route the bearing line shows the intended course from one waypoint towards the next. When navigating towards a waypoint (cursor position, MOB or an entered lat/lon position), the bearing line shows the intended course from the point at which navigation was started towards the waypoint.

6 **Vessel symbol**
Indicates distance and bearing relative to the intended course.
If the XTE (Cross Track Error) exceeds the defined XTE limit, this is indicated with a red arrow including the distance from the track line. Refer to *"XTE limit"* on page 55.

Data Fields

The Nav panel offers the following information:

DTD	Distance to destination
SOG	Speed over ground
COG	Course over ground
TTD	Time to destination

Navigate to cursor position

You can start navigating to a cursor position on any chart, or Echosounder panel.

Position the cursor at the selected destination on the panel, and then select the **Goto Cursor** option in the menu.

→ ***Note:*** The **Goto Cursor** menu option is not available if you are already navigating.

Navigate a route

You can start navigating a route from the chart panel or from the **Route** dialog.

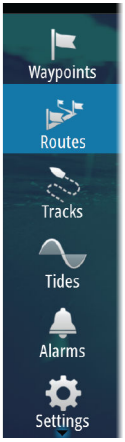
When route navigation is started, the menu expands and shows options for canceling the navigation, for skipping a waypoint, and for restarting the route from current vessel position.

Starting a route from the chart panel

Activate a route on the panel, and then select the route navigation option from the menu.

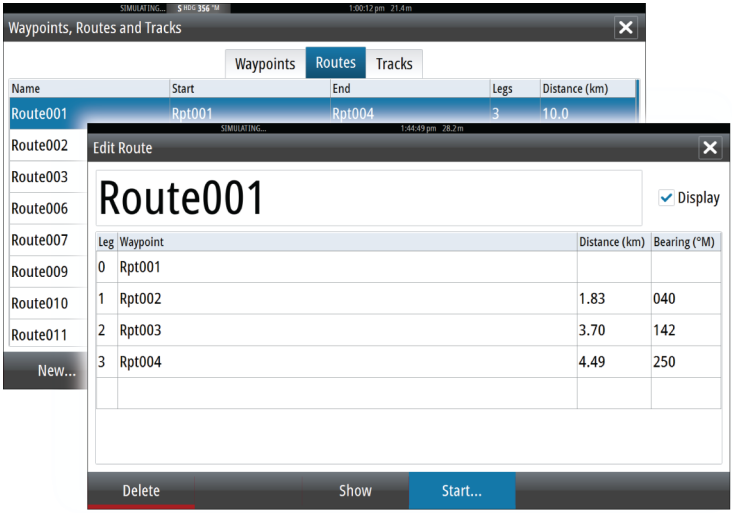
You can select a routepoint to start navigating from a selected position.

Start navigating a route from the Route dialog

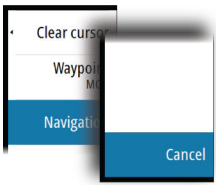


You can start navigating from the **Route** dialog, activated by:

- Selecting the **Route** tool from the **Home** page
- Selecting the route details from the menu



Cancel navigation



When you are navigating, the menu includes an option for cancelling the navigation.

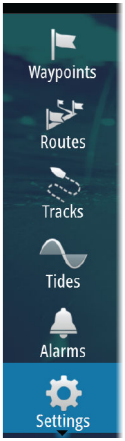
Navigating with the autopilot

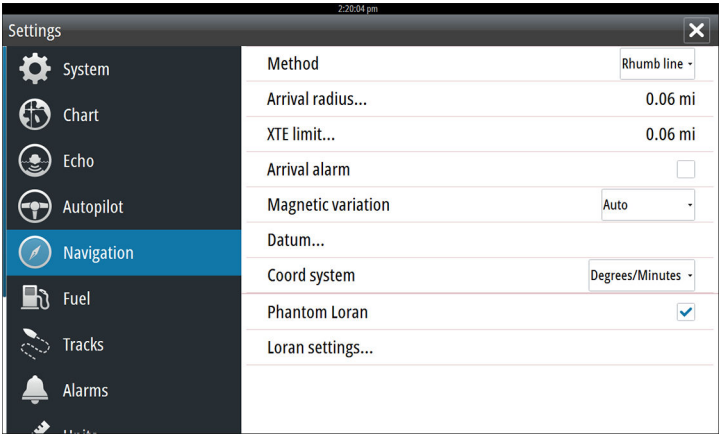
When you start navigation on a system with autopilot functionality, you are prompted to set the autopilot to navigation mode.

If you choose not to engage the autopilot, the autopilot can be set to navigation mode from the Autopilot Controller later on.

For more information about autopilot functionality, refer to *"Autopilot"* on page 57.

Navigation settings





Navigation method

Different methods are available for calculating the distance and bearing between any two points on a chart.

The Great circle route is the shortest path between two points. However, if you are to travel along such a route, it would be difficult to steer manually as the heading would constantly be changing (except in the case of due north, south, or along the equator).

Rhumb lines are tracks of constant bearing. It is possible to travel between two locations using Rhumb line computation, but the distance would usually be greater than if Great circle is used.

Arrival radius

Sets an invisible circle around the destination waypoint.

The vessel is considered arrived at the waypoint when it is within this radius.

XTE limit

This setting defines how far the vessel can deviate from the selected route, if the vessel goes beyond this limit, an alarm is activated.

Arrival alarm

When the arrival alarm is enabled, an alarm is activated when the vessel reaches the waypoint or when it is within the specified arrival radius.

Magnetic variation

Magnetic variation is the difference between true bearings and magnetic bearings, caused by different locations of the Geographic and the Magnetic north poles. Any local anomalies such as iron deposits might also affect the magnetic bearings.

When set to Auto, the system automatically converts magnetic north to true north. Select manual mode if you need to enter your own local magnetic variation.

Datum

Most paper charts are made in the WGS84 format, which also is used by the GO7.

If your paper charts are in a different format, you can change the datum settings accordingly to match your paper charts.

Coordinate system

Several coordinate systems can be used to control the format for latitude and longitude coordinates displayed on the chart panel.

Phantom Loran

Enables use of Phantom Loran positioning system.

Loran settings

Defines Loran chains (GRI) and preferred station for waypoint entry, cursor position and position panel.

The graphic example shows a cursor position window with Loran position information.

For more information refer to your Loran system documentation.

7 Autopilot

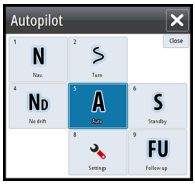
If an AC12N, AC42N or SG05 autopilot computer is connected to the system, autopilot functionality is available in the system.

An Autopilot is designed to maintain an accurate course in various sea conditions with minimal helm movements.

Safe operation with the autopilot

> ⚠ Warning: An autopilot is a useful navigational aid, but DOES NOT replace a human navigator.

Activating the autopilot



You activate the autopilot from any panel by selecting the autopilot tile in the Instrument bar, followed by selecting a mode in the **Autopilot Controller**.

Switching from automatic mode to manual steering

You switch the autopilot to STBY mode from any automatic operation mode from the autopilot pop-up.

Autopilot indication on the pages

1 Autopilot indication in Status bar

2 Autopilot pop-up

3 Autopilot tile in Instrument bar

Autopilot mode indication in the Status bar

S HDG 007 °M

The Status bar shows autopilot information as long as an autopilot computer is connected to the network.

Icons are included if the autopilot is passive or locked by another autopilot control unit.

Autopilot pop up

You control the autopilot from the autopilot pop-up.

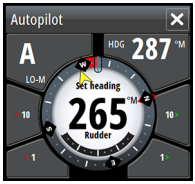
The pop-up has a fixed position on the page, and it is available for all pages except when an Autopilot panel is active.

As long as the autopilot pop-up is active, you cannot operate the background panel or its menu.

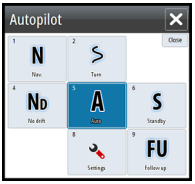
You remove the pop-up from a page by selecting the **X** in the upper right corner. You turn it on again by selecting the autopilot tile in the instrument bar.

The following pop-ups are available:

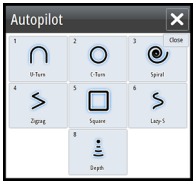
- **Autopilot controller**, showing active mode, heading, rudder and various steering information depending on active autopilot mode. Manual adjustments to the set heading can only be made when the port and starboard arrow indicators are illuminated red and green.
- **Mode selection**, includes access to turn pattern selection.
- **Turn pattern selection**



Autopilot controller



Mode selection



Turn pattern selection

Autopilot tile in Instrument bar

You can select to show the autopilot tile in the Instrument bar.

If the autopilot pop-up is turned off you can turn it on by selecting the tile in the Instrument bar.

The Autopilot panel

The autopilot panel is used to display navigation data. It can be shown as a full screen panel, or in a multi-panel page.

The number of data fields included in the autopilot panel is dependent on available panel size.

Data fields

The following abbreviations are used in the autopilot panel:

CTS	Course to steer
DTD	Distance to destination
DTW	Distance to next waypoint
SOG	Speed over ground
COG	Course over ground
XTE	Cross track error (L: left or R: right)

Mode overview

The autopilot has several steering modes. The number of modes and features within the mode depend on boat type and available inputs, as shown in the following list:

- **Standby**
  Standby mode used when manually steering at the helm. Compass and rudder angle is shown on the display.
- **NFU**
  Non-Follow Up steering where the rudder movement is controlled by using the Port and Starboard keys in the Pilot pop-up, or by another NFU unit.
- **FU**
  Follow-up steering where the rudder angle is set by another FU unit.
- **AUTO**
  Automatic steering where the set heading is maintained.
  - **Heading capture**
    Aborts the turn and uses the instantaneous compass reading as set heading.
  - **Turn patterns**
    Moves the vessel automatically in pre-defined turn steering patterns.
  - **Tacking**
    Only available if the boat type is set to Sail in the Autopilot Commissioning dialog. Tacking with a fixed angle.
- **NoDrift**

Automatic steering, keeping the vessel on a straight bearing line by compensating for drift.

  - **Dodging**
    Returns to NoDrift mode after a heading change.
- **NAV**
  Navigation steering. Steers the vessel to a specific waypoint or through a route.
- **WIND**
  Only available if the boat type is set to Sail in the Autopilot Commissioning dialog. Automatic steering where the vessel heading is changed to maintain a set wind angle.
  - **Tacking/Gybing**
    Only available if the boat type is set to Sail in the Autopilot Commissioning dialog. Tacking/Gybing with apparent or true wing angle as reference.
- **WIND Nav**
  Automatic steering, using both wind and GPS data to steer the vessel to a specific waypoint or through a route.

Standby mode

Standby (STBY) mode is used when you steer the boat at the helm.

Non-Follow Up (NFU, Power steering)

In NFU mode you use the port and starboard arrow buttons in the autopilot pop-up to control the rudder. The rudder will move as long as the button is pressed.

- Activate NFU mode by selecting the port or starboard arrow button in the pop-up when the autopilot is in STBY or FU mode.

You return to STBY mode by selecting the STBY mode button in the autopilot pop-up.

Follow-up steering (FU)

→ ***Note:*** FU mode is only available if you have an OP40 or similar included in the system. The GO7 does not have a rotary knob.

In FU mode you use the rotary knob to control the rudder angle. Press the rotary knob, then turn the knob to set the rudder angle. The rudder moves to the commanded angle and then stop.

- You select FU mode from the autopilot pop-up

➔ ***Note:*** If the autopilot pop-up is closed or if an alarm dialog is activated on the unit controlling the autopilot in FU mode, the autopilot automatically changes to STBY mode.

⚠ Warning: While in FU mode you cannot take manual control of the wheel.

AUTO mode (auto compass)

In AUTO mode the autopilot issues rudder commands required to steer the vessel automatically on a set heading.

- You select AUTO mode from the autopilot pop-up. When the mode is activated, the autopilot selects the current boat heading as the set heading.

Changing set heading in AUTO mode

You adjust the set heading by using the Port and Starboard arrow buttons in the autopilot pop-up, or by selecting the Heading tile in the autopilot pop-up and then entering the desired heading value.

An immediate heading change takes place. The new heading is maintained until a new heading is set.

Heading capture

When the vessel is turning in AUTO mode, an instant reset of the mode activates the heading capture function. This automatically cancels the turn, and the vessel continues on the heading read from the compass the very moment you re-activated the mode.

Tacking in AUTO mode

➔ ***Note:*** The tack function is only available when the system is set up for boat type SAIL in the Autopilot Commissioning dialog.

Tacking should only be performed into the wind and must be tried out in calm sea conditions with light wind to find out how it works on your boat. Due to a wide range of boat characteristics (from cruising to racing boats) the performance of the tack function may vary from boat to boat.

Tacking in AUTO mode is different from tacking in WIND mode. In AUTO mode the tack angle is fixed and as defined by the user. For more details, see *"Tacking - WIND mode"* on page 66.

You initiate the tack function from AUTO mode.

When tacking direction is selected the autopilot changes the current set course according to the set fixed tacking angle.

You can interrupt the tack operation as long as the tack dialog is open by selecting the opposite tacking direction. When interrupted the boat returns to the previous set heading.

NoDrift mode

NoDrift mode combines the autopilot and the positioning information from the GPS.

In NoDrift mode the vessel is steered along a calculated track line in a direction set by the user. If the vessel's heading is drifting away from the original heading due to current and/or wind, the vessel follows the line with a crab angle.

1. Turn the vessel to the desired heading
2. Activate the NoDrift mode. The autopilot draws an invisible bearing line based on current heading from the boat's position

Unlike in AUTO (compass) mode, the autopilot now uses the position information to calculate the cross track error, and automatically keeps your track straight.

You use the port/starboard arrow panel buttons in the autopilot pop-up to reset the bearing line while in NoDrift mode.

Dodging

If you need to avoid an obstacle when using NoDrift mode, you can set the autopilot to STBY and power steer or use the helm until the obstacle is passed.

If you return to NoDrift mode within 60 seconds you can select to continue on previous set bearing line.

If you do not respond, the dialog disappears and the autopilot goes to NoDrift mode with current heading as set bearing line.

NAV mode

> ⚠ Warning: **NAV** mode should only be used in open waters.

You can use the autopilot to automatically steer the boat to a specific waypoint location, or along a pre-defined route. The position information from the GPS is used to change the course to steer to keep the boat on the track line and to the destination waypoint.

→ ***Note:*** To obtain satisfactory navigation steering, the GO7 must have valid position input. Autosteering must be tested and determined satisfactory prior to entering the NAV mode.

Start automatic navigating

When you start navigating a route or to a waypoint from the chart panel, you are prompted to set the autopilot to NAV mode. If you reject this request, you can start NAV mode from the autopilot mode menu.

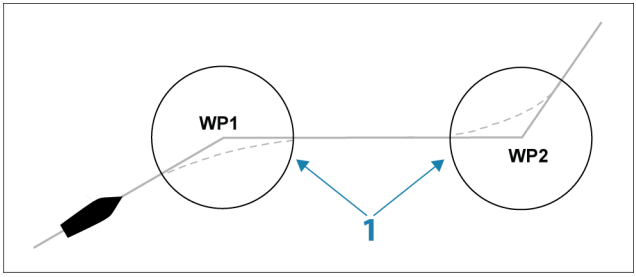
When NAV mode is initiated, the autopilot automatically keeps the vessel on the leg.

When the vessel reaches the arrival circle for a routepoint, the autopilot gives an audible warning and displays a dialog with the new course information. If the required course change to the next waypoint is less than the Navigation change limit, the autopilot automatically changes the course. If the required course change to next waypoint in a route is more than the set limit, you are prompted to verify that the upcoming course change is acceptable.

→ ***Note:*** For information about navigation settings, refer to *"Navigation settings"* on page 54.

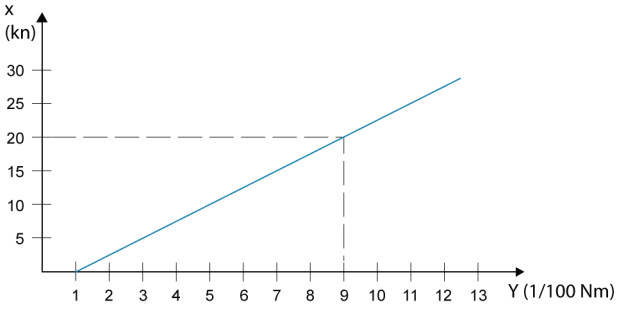
Waypoint arrival circle

The Arrival radius defines the point at which a turn is initiated when you are navigating a route.



The arrival circle (**1**) should be adjusted according to boat speed. The higher the speed, the wider the circle. The intention is to make the autopilot start the heading change in due time to make a smooth turn onto the next leg.

The figure below may be used to select the appropriate waypoint circle when creating the route.



X axis = Boat speed in knots
Y axis = Arrival circle, radius in 1/100 Nm

Example: With the speed of 20 knots you should use a waypoint circle with radius 0.09 Nm.

→ ***Note:*** The distance between any waypoints in a route must not be smaller than the radius of the waypoint arrival circle.

WIND mode

→ ***Note:*** The WIND mode is only available if the system has been set up for sailboat in the Autopilot Commissioning dialog.

Before the WIND mode is started it must be verified that valid input from wind transducer is available.

Initiate wind steering as follows;

1. Switch the Autopilot to AUTO mode
2. Adjust the boat heading until wind angle is according to the angle you want to maintain
3. Select the mode indication in the autopilot controller to activate the autopilot menu, and select WIND mode

The set course to steer (CTS) and set wind angle are entered from the compass heading and the wind transducer at the moment the WIND mode is selected. From that point the autopilot changes the course to maintain the wind angle as the wind direction may change.

Tacking in WIND mode

→ ***Note:*** The tack function is only available when the system is set up for boat type SAIL in the Autopilot Commissioning dialog.

Tacking should only be performed into the wind and must be tried out in calm sea conditions with light wind to find out how it works on your boat. Due to a wide range of boat characteristics (from cruising to racing boats) the performance of the tack function may vary from boat to boat.

Tacking in WIND mode as compared to AUTO mode is performed when sailing with apparent or true wind as the reference. The true wind angle should be less than 90 degrees.

The rate of turn during the tack will be given by the Tack time defined in the sailing parameter setup. The tack time is also controlled by the speed of the boat to prevent loss of speed during a tack.

You can initiate the tack function from WIND mode.

When you initiate the tacking, the autopilot immediately mirrors the set wind angle to the opposite side of the bow.

You can interrupt the tack operation as long as the tack dialog is open by selecting the opposite tacking direction. When interrupted, the boat returns to the previous set heading.

Gybing

Gybing is possible when the true wind angle is larger than 120°.

The time to make a gybe is determined by the speed of the boat to make it as quick as possible within control.

Tack and gybe prevent

You should use the autopilot with care when beating and running.

If the sails are unbalanced when beating, yaw forces from the sails can drive the boat into the wind. If the boat is driven beyond the set minimum wind angle, the thrust from the sails suddenly disappears and reduces the boat speed. The boat becomes more difficult to steer as the rudder becomes less effective.

The tack prevent function in WIND mode has been implemented to avoid such situations. It reacts immediately when the apparent wind angle becomes 5° less than the set minimum wind angle, and more rudder is commanded.

When running, it is difficult to steer the boat with waves coming sideways or from behind. The waves can yaw the boat into an unwanted gybe; this can be hazardous for both the crew and the mast.

The gybe prevent function is activated when the actual apparent wind angle becomes greater than 175° or gets opposite to the set wind angle. More rudder is commanded to prevent an unwanted gybe.

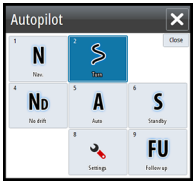
The tack and gybe prevent functions are not a guarantee against getting into a hazardous situation. If the effect of the rudder and/or drive unit is not adequate, a dangerous situation may occur. Pay particular attention in such situations.

WIND Nav mode

In WIND Nav mode the autopilot steers the boat given both wind and position data.

In this mode the autopilot calculates the initial course change needed to navigate towards the active waypoint, but the pilot also utilizes the current wind direction in the calculation.

Turn pattern steering



The autopilot includes a number of automatic turn steering features for power boats when the pilot is in AUTO mode.

→ ***Note:*** The turn steering option is not be available if the boat type is set to SAIL in the Autopilot Commissioning dialog, instead the tack/gybe feature is implemented.

Initiating a turn

You start the turn by selecting the relevant turn icon, followed by selecting the port or starboard options in the turn dialog to select the turn direction.

Stopping the turn

You can stop the turn from within the turn dialog.

At any time during a turn you can select STBY in the autopilot pop-up to return to STBY mode and manual steering.

Turn variables

The turn steering options, except the C-turn, have settings that you can adjust before you start a turn and at any time when the boat is in a turn.

U-turn

U-Turn changes the current set heading to be 180° in the opposite direction.

The turn rate is identical to Rate limit settings. This cannot be changed during the turn.

→ ***Note:*** Refer to the separate GO7 Installation manual for information about Rate limit settings.

C-turn

Steers the vessel in a circle.

You can adjust the Rate of turn from the turn dialog before the turn is initiated and during the turn. Increasing the turn rate makes the vessel turn a smaller circle.

Spiral turn

Spiral-turn makes the vessel turn in a spiral with a decreasing or increasing radius. You set the initial radius before the turn is initiated, and the change per turn during the turn. If the change per turn is set to zero, the vessel turns in a circle. Negative values indicate decreasing radius while positive values indicate increasing radius.

Zigzag turns

Steers the vessel in a zigzag pattern.

For navigating in a zigzag pattern, you set the initial heading change before the turn is started.

During the turn you can alter the main heading, the heading change, and the leg distance.

Square turn

Makes the vessel automatically turn 90° after having travelled a defined leg distance.

At any time during the turn you can change the main heading and the distance of the leg until the vessel makes a new 90° turn.

Lazy S-turn

Makes the vessel yaw around the main heading.

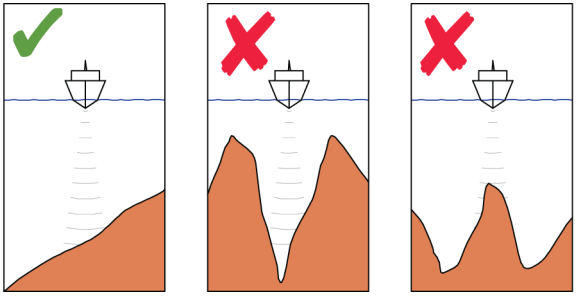
You set the selected heading change before the turn is started.

During the turn you can alter the main heading, the heading change and the turn radius from within the turn dialog.

Depth contour tracking, DCT™

If the system has Echosounder input, the autopilot can be set to follow a depth contour.

> ⚠ Warning: Do not use this feature unless the seabed is suitable. Do not use it in rocky waters where the depth is varying significantly over a small area.



Use the following process to initiate DCT steering:

1. Ensure that you have depth reading on the panel or on a separate depth instrument.
2. Steer the boat to the depth you want to track, and in the direction of the depth contour.
3. Activate **AUTO** mode, select depth contour steering and monitor the depth reading.
4. Select the port or starboard option in the turn dialog to initiate the depth contour steering to follow the bottom sloping to starboard or to port:

The following parameters are available for depth contour tracking:

Depth gain

This parameter determines the ratio between commanded rudder and the deviation from the selected depth contour. The higher depth gain value the more rudder is applied.

If the value is too small, it takes a long time to compensate for drifting off the set depth contour, and the autopilot fails to keep the boat on the selected depth.

If the value is set too high, the overshoot increases and the steering is unstable.

Contour Cross Angle (CCA)

The CCA is an angle that is added to or subtracted from the set course.

With this parameter you can make the boat yaw around the reference depth with lazy-s movements.

The larger the CCA, the bigger yawing is allowed. If you the CCA set to zero there are no lazy-s movements.

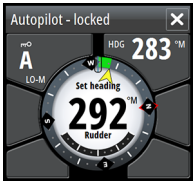
Using the GO7 in an AP24/AP28 system

Command transfer

If your GO7 is connected to an autopilot system including an AP24 or AP28 control unit, only one control unit can be active at the same time. An inactive control unit is indicated with a square with a cross symbol in autopilot controller pop-up.

You take command from an inactive control unit by selecting the mode in the autopilot pop-up, and then confirming active mode.

Locking remote stations

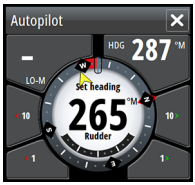


The AP24/AP28 includes a Remote Lock function that disables autopilot control from other units. A locked control unit is indicated with a key symbol in autopilot controller pop-up.

When the remote lock function is enabled on an AP24/AP28 control unit, only the active control unit stays in command. No transfer of command to GO7 or other autopilot control units on the system can take place.

You can only unlock the remote stations from the AP24/AP28 unit in command.

Using the autopilot in an EVC system

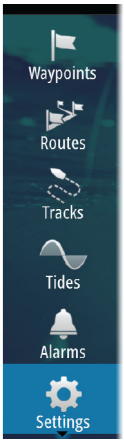


When the GO7 is connected to an EVC system via the SG05, you can take manual control of the steering regardless of the autopilot mode.

The mode indicator on the pilot pop-up is replaced by a dash to indicate EVC override.

The system returns to GO7 control in standby mode if no rudder command is given from the EVC system within a predefined period.

Autopilot settings



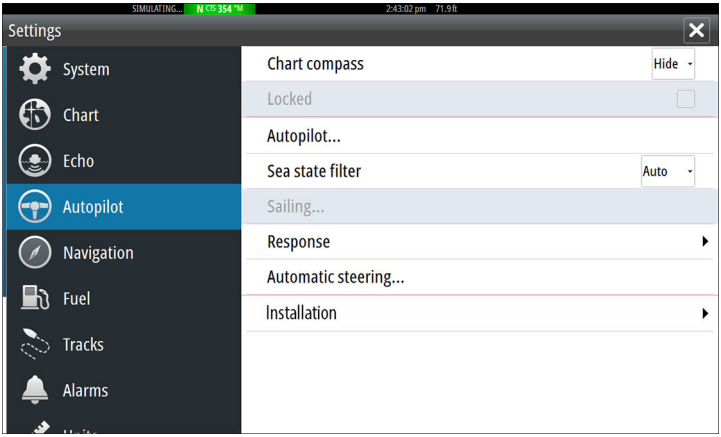
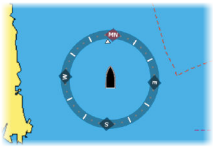


Chart compass



You can select to show a compass symbol around your boat on the chart panel. The compass symbol is off when the cursor is active on the panel.

Locking autopilot operation from a unit

You can lock a GO7 unit to prevent unauthorized operation of the autopilot. When the unit is locked this is indicated with a lock symbol and with text in the pop-up. No automatic modes can be selected from a locked unit.

→ ***Note:*** The lock function is not available on a unit which has autopilot control!

If the GO7 is part of an AP24/AP28 system, all other autopilot control units can be locked for autopilot control from the AP24/ AP28 control unit.

Sea state filter

The Seastate filter is used to reduce rudder activity and autopilot sensitivity in rough weather. Setting options are:

- **OFF**
  Seastate filter is disabled. This is the default setting.
- **AUTO**
  Reduces rudder activity and autopilot sensitivity in rough weather by an adaptive process. The AUTO setting is recommended if you want to use the seastate filter.
- **MANUAL**
  Linked to the steering response control settings described previously. It may be used to manually find the optimum combination of course keeping and low rudder activity in rough but steady sea conditions.

Sailing parameters

→ ***Note:*** Sailing parameter settings are only available if the boat type is set to Sail in the Autopilot Commissioning dialog.

Tack time

When performing a tack in WIND mode, the rate of turn (tack time) can be adjusted. This gives single-handed sailors time to handle the boat and the sails during a tack.

A turn performed without shifting wind side, is also made at a controlled turn rate.

Tack angle

This value is used to preset the course change used when tacking in AUTO mode. By pressing the port and starboard indicators in the autopilot pop-up the course changes as much as this value.

Wind function

With wind function set to AUTO, the autopilot automatically selects between apparent and true wind steering. AUTO is default and recommended for cruising.

When the boat is running, it is also surfing on the waves. This may lead to significant changes in boat speed, and thereby also changes in apparent wind angle. True wind steering is therefore used when running, while steering to apparent wind is used when beating or reaching.

Apparent wind steering is preferred when you want to achieve maximum boat speed. The autopilot tries to maintain a constant apparent wind angle to get maximum thrust from a given trim of the sails.

When sailing in closed waters, the apparent wind angle may change temporarily due to wind gusts. It may then be preferred to sail to the true wind.

VMG optimizing
You can optimize the VMG to wind. When selected, the function is active for 5–10 minutes after a new wind angle has been set and only when beating.

Layline steering
Layline steering is useful when navigating. Cross Track Error (XTE) from the navigator keeps the boat on the track line. If the XTE from the navigator exceeds 0.15 NM, the autopilot calculates the layline and track towards the waypoint.

Response

By default the system switches between HI/LO parameter set based on speed (motor boats) or speed and wind (sail boats). You can however manually select which parameter set that shall be used.

HI or LO must be selected if no speed input is available.

You can manually fine tune each of the two (HI/LO) parameter sets. Level 4 is default with parameter values as set by the autotune function. If no autotune is made (not recommended) the level 4 values are the factory default values.

A low response level reduces the rudder activity and provides a more "loose" steering.

A high response level increases the rudder activity and provides a more "tight" steering. A too high response level causes the boat to start lazy-s movements.

Automatic steering

This option displays an overview of all autopilot steering parameters, and you can adjust parameters if required.

For more details, refer to the separate GO7 Installation manual.

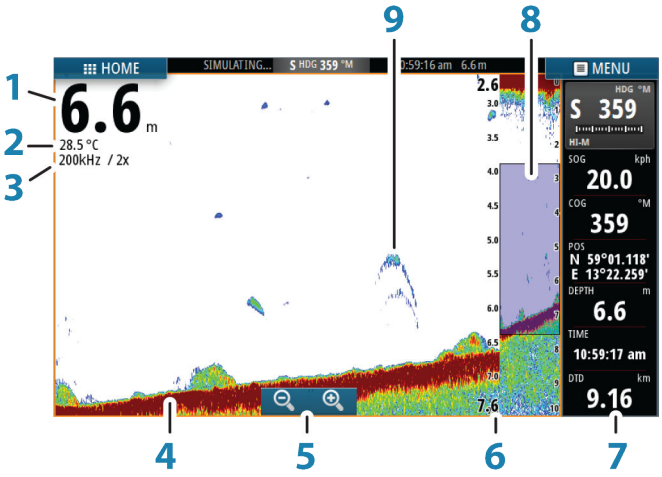
Installation

Used for autopilot installation and commissioning. See the separate GO7 Installation manual.

8 Echosounder

The Echosounder function provides a view of the water and bottom beneath your vessel, allowing you to detect fish and examine the structure of the sea floor.

The Echosounder image



1. Depth
2. Temperature
3. Frequency and Zoom scale
4. Bottom
5. Zoom buttons
6. Depth Range scale
7. Instrument panel
8. Zoom column
9. Fish arches

Using the cursor on the Echosounder panel

The cursor can be used to measure a distance to a target, to mark a position, and to select targets.

By default, the cursor is not shown on the Echosounder image.

When you position the cursor on the Echosounder image; the screen pauses, the depth at the cursor position is shown, and the information window is activated.

To remove the cursor and cursor elements from the panel, select the **Clear cursor** menu option.

GoTo cursor

You can navigate to a selected position on the image by positioning the cursor on the panel, then using the **Goto Cursor** option in the menu.

The Cursor assist function

The cursor assist function allows for fine tuning and precision placement of the cursor without covering details with your finger.

Press and hold your finger on the screen to switch the cursor symbol to a selection circle, appearing above your finger.

Without removing your finger from the screen, drag the selection circle over the desired item to display item information.

When you remove your finger from the screen the cursor reverts to normal cursor operation.

Measuring distance

The cursor can be used to measure the distance between the position of two observations on the image.

It is easier to use the measuring function when the image is paused.

1. Position the cursor on the point from where you want to measure the distance
2. Start the measuring function from the menu
3. Position the cursor on the second measuring point
   - A line is drawn between the measuring points, and the distance is listed in the Information window
4. Continue selecting new measuring points if required

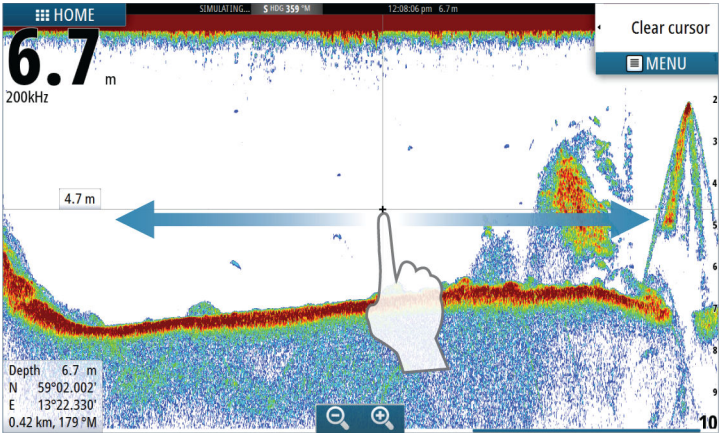
You can use the menu to re-position the start point and the end point as long as the measuring function is active.

When you select **Finish measuring**, the image resumes to normal scrolling.

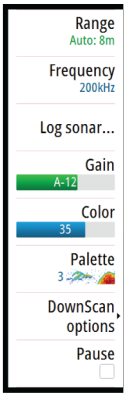
Viewing Echosounder history

You can view echosounder history by panning the image.

To resume normal scrolling, select the **Clear cursor** menu option.



Setting up the Echosounder image



Use the Echosounder menu options to set up the image. When the cursor is active, some options on the Echosounder menu are replaced with cursor mode features. Select **Clear cursor** to return to the normal Echosounder menu.

The range

The range setting determines the water depth that is visible on the screen.

Auto range

By default, the range is set to Auto. With Auto, the system automatically displays the whole range from the water surface to

the bottom. Auto is the preferred setting for most fish finding sonar use.

Preset range levels
Allows for the selection of a specific depth range that is not tied to the depth of the water.

Custom range
This option allows you to manually set both upper and lower range limits.

→ ***Note:*** Setting a custom range puts the sonar in manual mode. If the bottom is well beyond the lower range set, you may lose digital depth.

Echosounder frequency

The GO7 unit supports several transducer frequencies. Available frequencies depend on the transducer model that is connected.

You can view two frequencies at the same time by selecting dual Echosounder panels from the **Home** page.

Log sonar

Select to start and stop recording of Echosounder data. For more information, refer to *"Recording log data"* on page 79.

Gain

The gain controls the sensitivity of the Echosounder. The more you increase the gain, the more details are shown on the image. However, a higher gain setting may introduce more background clutter on the image. If the gain is set too low, weak echoes might not be displayed.

Auto gain

The Auto gain option keeps the sensitivity at a level that works well under most conditions. With the gain in auto mode, you can set a positive or negative offset that gets applied to the auto gain.

Color

Strong and weak Echosounder signals have different colors to indicate the different signal strengths. The colors used depend on which palette you select. The more you increase the Color setting,

the more echoes is displayed in the color at the strong return end of the scale.

Palettes

You can select between several display palettes optimized for a variety of fishing conditions.

DownScan options

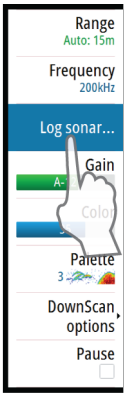
Provides options for specifying the DownScan image. This menu option is available when Overlay downscan is selected in Echo settings dialog. For more information see *"Echosounder settings"* on page 81.

Pausing the Echosounder

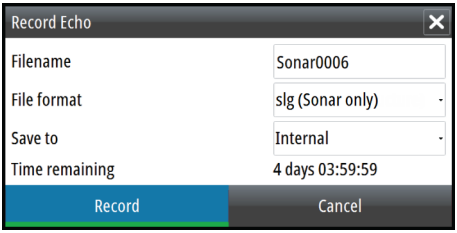
You can pause the Echosounder, allowing you to examine the Echosounder echoes.

This function is useful when you need to position a waypoint exactly on the Echosounder panel, and if you are using the cursor to measure a distance between 2 elements on the image.

Recording log data



You can record data and save the file internally in the unit, or save it onto a card inserted into the unit's card reader. Select the Log sonar menu option, and then Record in the Record Echo dialog.



When the Echosounder data is being recorded, there is a flashing red symbol in the top left corner and a message appears periodically at the bottom of the screen.

Filename

Specify the name of the recording (log).

File format

Select a file format from the drop-down, slg (Echosounder only), xtf (DownScan only*), or sl2 (Echosounder and DownScan).

→ ***Note:*** XTF format is for use only with select 3rd party Echosounder viewing tools.

Save to

Select whether the recording is to be saved internally or to a memory card in the card reader.

Time remaining

Shows the remaining allocated space available for recordings.

Viewing the recorded sounder data

Both internally and externally stored sounder records may be reviewed when selected.

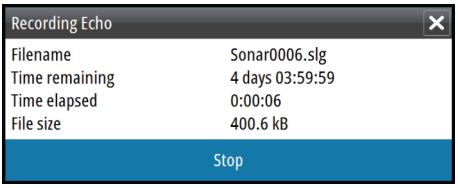
The log file is displayed as a paused image, and you control the scrolling and display from the replay menu option.

You can use the cursor on the replay image, and pan the image as on a normal echo image.

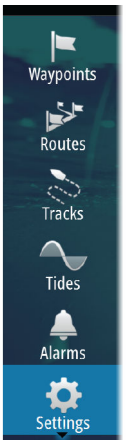
If more than one channel was recorded in the selected echo file, you can select which channel to display.

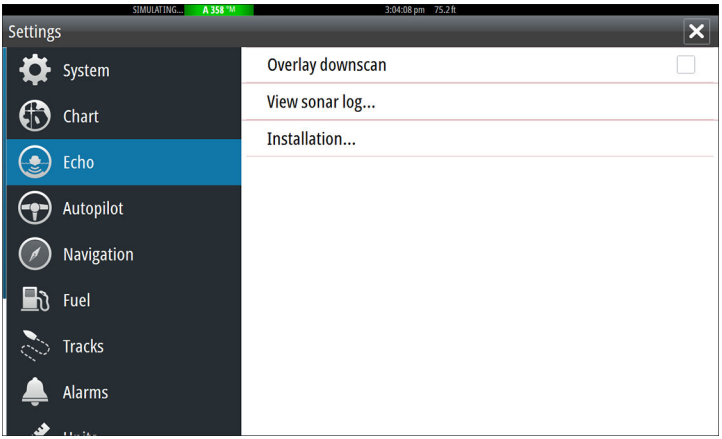
Stop recording log data

Select the Log sonar menu option, and then Stop in the Recording Echo dialog to stop the recording of Echosounder data.



Echosounder settings





Overlay downscan

When a HDI transducer with DownScan is connected to your system, you can overlay DownScan images on the regular Echosounder image.

When activated, the Echosounder menu expands to include basic DownScan options.

View Echosounder log

Used to view Echosounder recordings. The log file is displayed as a paused image, and you control the scrolling and display from the menu.

You can use the cursor on the image, measure distance, and set view options as on a live Echosounder image. If more than one channel was recorded in the selected Echosounder file, you can select which channel to display.

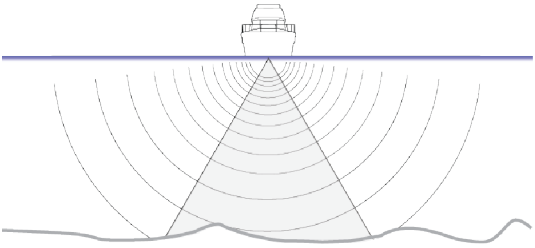
You exit the view function by selecting the **X** in the upper right corner.

Installation

Used for installation and setup. See the separate GO7 Installation manual.

9 DownScan

DownScan provides detailed images of structure directly below your boat, down to 92 m (300 ft). The DownScan page is accessed from the Home page when the DownScan transducer is connected.



The DownScan image

1 Depth
2 Temperature
3 Frequency
4 Zoom buttons
5 Range scale

Zooming the DownScan image

You can zoom a DownScan image by using the panel zoom icons.

Using the cursor on the DownScan panel

By default, the cursor is not shown on the DownScan image.

When you tap the screen the cursor appears, the information window is activated, the depth is shown at the cursor position, and the image stops scrolling.

To remove the cursor and cursor elements from the panel, select the **Clear cursor** option.

GoTo cursor

You can navigate to a selected position on the image by positioning the cursor on the panel, then using the **Goto Cursor** option in the menu.

Measuring distance

The cursor can be used to measure the distance between the position of two observations on the image.

It is easier to use the measuring function when the image is paused.

1. Position the cursor on the point from where you want to measure the distance
2. Start the measuring function from the menu
3. Position the cursor on the second measuring point
   - A line is drawn between the measuring points, and the distance is listed in the Information window
4. Continue selecting new measuring points if required

You can use the menu to re-position the start point and the end point as long as the measuring function is active.

When you select **Finish measuring**, the image resumes to normal scrolling.

Viewing DownScan history

You can pan the image history by dragging the image to the left and right.

To resume normal DownScan scrolling, select the **Clear cursor** option.

Setting up the DownScan image

Use the DownScan menu to set up the image. When the cursor is active, some options in the menu are replaced with cursor mode features. Select **Clear cursor** to return to the normal menu.

Range

The range setting determines the water depth that is visible on the image.

Auto range

By default, the range is set to Auto. With Auto, the system automatically displays the whole range from the water surface to the bottom.

Preset range levels

Allows for the selection of a specific depth range that is not tied to the depth of the water.

Frequency

DownScan can be used at 800 kHz or 455 kHz. 800 kHz provides the highest resolution with less range. 455 kHz has the best range, but with lower resolution.

Contrast

The contrast determines the brightness ratio between light and dark areas of the screen. This makes it easier to distinguish object from the background.

Drag the bar up or down to get the desired contrast setting or select Auto contrast.

Palettes

You can select between several display palettes optimized for a variety of fishing conditions.

Record DownScan data

You can record DownScan data and save the file internally in the unit, or onto a memory card in the card reader slot as described in *"Recording log data"* on page 79.

Pausing the DownScan image

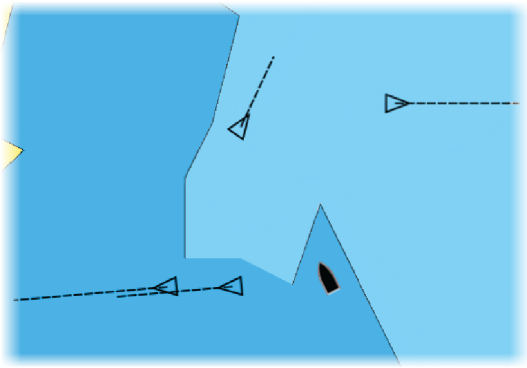
You can pause the DownScan image, allowing you to examine the structures and other images in more detail.

This function is useful when you need to position a waypoint precisely on the DownScan image, and if you are using the cursor to measure a distance between 2 elements on the image.

10 AIS

If an NAIS400, an AI50 or an NMEA 2000 VHF that can do AIS (Automatic Identification System) is connected to the network, then any targets detected by these devices can be displayed and tracked. You can also see messages and position for DSC transmitting devices within range.

AIS targets can be displayed as overlay on chart images, making this feature an important tool for safe travelling and collision avoidance. You can set alarms to notify you if an AIS target gets too close or if the target is lost.



AIS target symbols

The system uses the AIS target symbols shown below:

Symbol	Description
	Sleeping AIS target (not moving or at anchor).
	Moving and safe AIS target with course extension line.
	Dangerous AIS target, illustrated with bold line. A target is defined as dangerous based on the CPA and TCPA settings. Refer to *"Defining dangerous vessels"* on page 94.

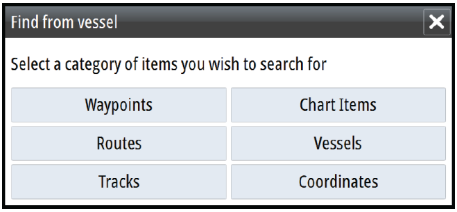
Symbol	Description
	Lost AIS target. When no signals have been received within a time limit, a target is defined as lost. The target symbol represents the last valid position of the target before the reception of data was lost.
	Selected AIS target, activated by selecting a target symbol. The target returns to the default target symbol when the cursor is removed from the symbol.

Viewing information about AIS targets

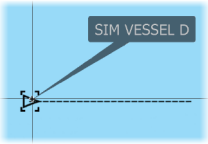
Searching for AIS items

You can search for AIS targets by using the **Find** option in the Tools panel.

From a chart panel you can search for AIS targets by using the **Find** option in the menu. If the cursor is active, the system searches for vessels around the cursor position. Without an active cursor, the system searches for vessels around your vessel's position.

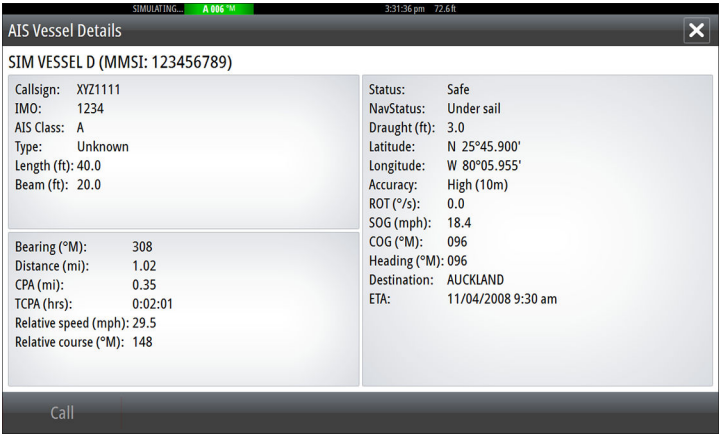


Viewing information about single AIS targets



When you select an AIS icon on the chart panel the symbol changes to Selected target symbol, and the vessel's name is displayed.

You can display detailed information for a target by selecting the AIS pop-up, or from the menu when the target is selected.

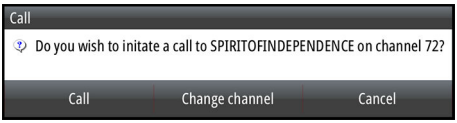


Calling an AIS vessel

If the system includes a VHF radio supporting DSC (Digital Select Calling) calls over NMEA 2000, you can initiate a DSC call to other vessels from the GO7.

The call option is available in the **AIS Vessel Details** dialog, and in the **Vessel** status dialog activated from the **Tools** panel.

From the **Call** dialog you can change channel or cancel the call. The **Call** dialog is closed when the connection is established.



AIS SART

When an AIS SART (Search and Rescue beacon) is activated, it starts transmitting its position and identification data. This data is received by your AIS device.

If your AIS receiver is not compliant with AIS SART, it interprets the received AIS SART data as a signal from a standard AIS transmitter. An icon is positioned on the chart, but this icon is an AIS vessel icon.

If your AIS receiver is compliant with AIS SART, the following takes place when AIS SART data is received:

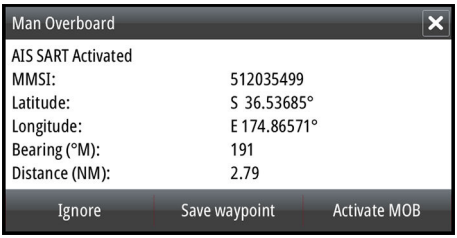
- An AIS SART icon is located on the chart in the position received from the AIS SART
- An alarm message is displayed

If you have enabled the siren, the alarm message is followed by an audible alarm.

→ ***Note:*** The icon is green if the received AIS SART data is a test and not an active message.

AIS SART alarm message

When data is received from an AIS SART, an alarm message is displayed. This message includes the AIS SART's unique MMSI number, and its position, distance, and bearing from your vessel.



You have three options:

1. Ignore the alarm
   - The alarm is muted and the message closed. The alarm does not reappear
2. Save the waypoint
   - The waypoint is saved to your waypoint list. This waypoint name is prefixed with MOB AIS SART - followed by the unique MMSI number of the SART. For example, MOB AIS SART - 12345678.
3. Activate the MOB function
   - The display switches to a zoomed chart panel, centered on the AIS SART position
   - The system creates an active route to the AIS SART position

When data is received from an AIS SART, an alarm message is displayed. This message includes the AIS SART's unique MMSI number, its position and its distance and bearing from your vessels.

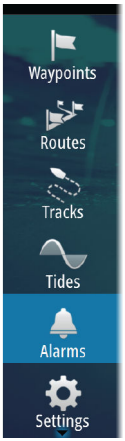
If you select the AIS SART icon on the chart panel, then you can see the AIS MOB details.

→ ***Note:*** If the MOB function is already active, this will be terminated and replaced by the new route towards the AIS SART position!

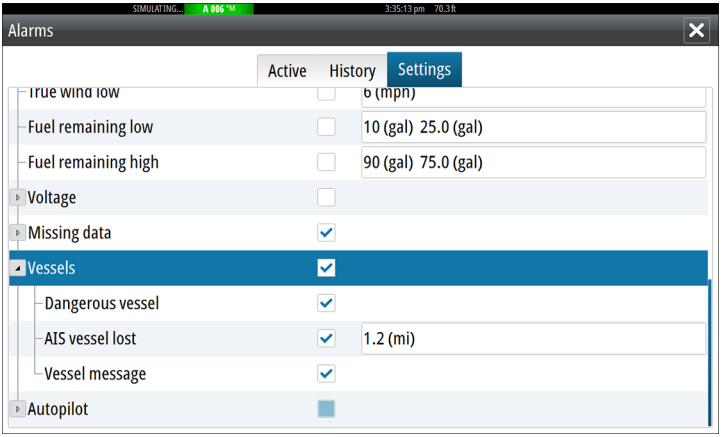
→ ***Note:*** If you ignore the alarm, the AIS SART icon remains visible on your chart, and the AIS SART remains in the Vessels list.

→ ***Note:*** If the AIS stops receiving the AIS SART message, the AIS SART remains in the Vessels list for 10 minutes after it receives the last signal.

Vessel alarms



You can define several alarms to alert you if a target shows up within predefined range limits, or if a previously identified target is lost.



Dangerous vessel

Controls whether an alarm will be activated when a vessel comes within the predefined CPA or TCPA. Refer to *"Defining dangerous vessels"* on page 94.

AIS vessel lost

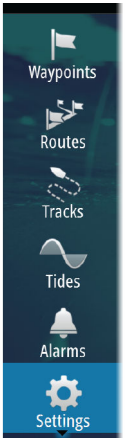
Sets the range for lost vessels. If a vessel is lost within the set range, an alarm occurs.

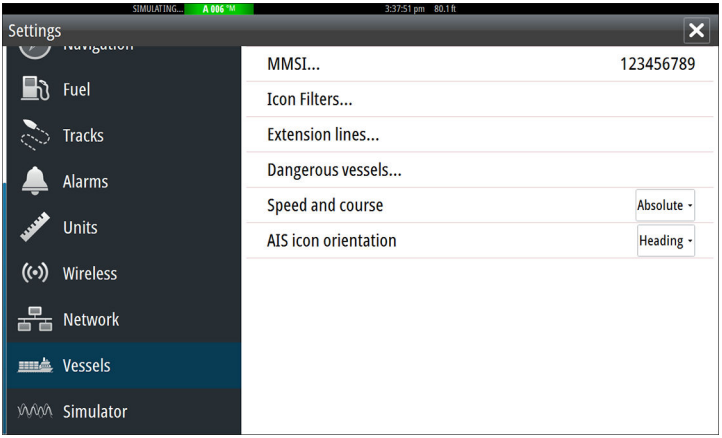
→ ***Note:*** The check box controls whether the alarm pop-up box is displayed and if the siren goes on. The CPA and TCPA define when a vessel is dangerous regardless of the enabled or disabled state.

Vessel message

Controls whether an alarm will be activated when a message is received from an AIS target.

Vessel settings





Your vessel's MMSI number

You need to have your own MMSI (Maritime Mobile Service Identity) number entered in the system to receive addressed messages from AIS and DSC vessels.

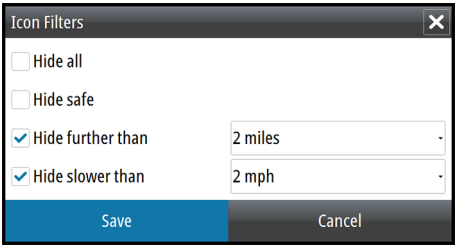
It is also important to have the MMSI number entered to avoid seeing your own vessel as an AIS target on the chart.

→ ***Note:*** The Vessel message option in the alarm settings must be toggled on for any MMSI message to be displayed.

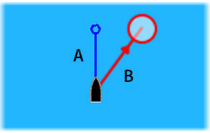
Icon filters

By default, all targets are shown on the panel if an AIS device is connected to the system.

You can select not to show any targets, or to filter the icons based on security settings, distance, and vessel speed.



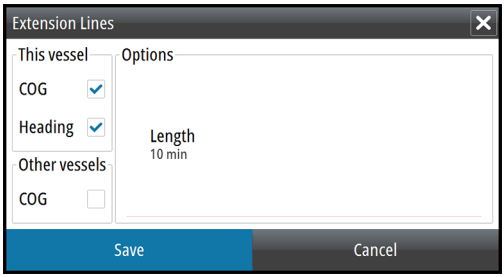
Extension lines



The length of the extension lines for your vessel and for other vessels can be set by the user.

- A: Heading
- B: Course Over Ground (COG)

The length of the extension lines is either set as a fixed distance, or to indicate the distance the vessel will move in the selected time period. If no options are turned on for **This vessel** then no extension lines are shown for your vessel.

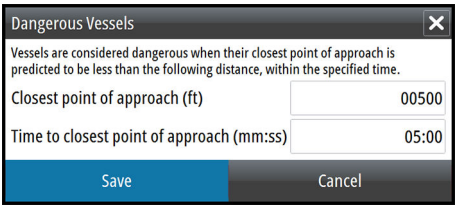


Your own vessel heading information is read from the active heading sensor, and COG information is received from the active GPS.

For other vessels COG data is included in the message received from the AIS system.

Defining dangerous vessels

You can define an invisible guard zone around your vessel. When a target comes within this distance, the symbol changes to the "dangerous" target symbol. An alarm is triggered if activated in the Alarm settings panel.

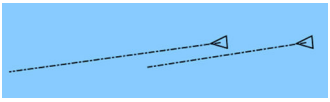


Speed and course indication

The extension line can be used to indicate speed and course for targets, either as absolute (true) motion in the chart or relative to your vessel.

A different line style is used on the extension lines to indicate motion, as shown below.

AIS vessels shown with Absolute motion



AIS vessels shown with Relative motion

AIS icon orientation

Sets the orientation of the AIS icon, either based on heading or COG information.

11 Instrument panels

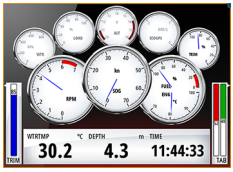
The Instruments panels consist of multiple gauges - analog, digital and bar - that can be customized to display selected data. The Instruments panel displays data on dashboards, and you can define up to ten dashboards within the Instruments panel.

→ ***Note:*** To include fuel/engine information, engine and tank information has to be configured from the Settings panel.

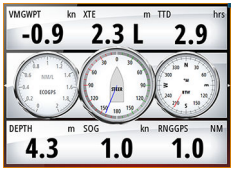
Dashboards

A set of dashboard styles are predefined to display vessel, navigation, and angler information.

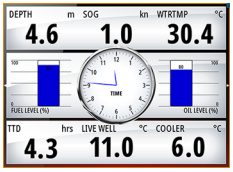
You switch between the panel's dashboards by selecting the left and right arrow buttons on the panel. You can also select the dashboard from the menu.



Vessel dashboard



Navigation dashboard



Angler dashboard

→ ***Note:*** Additional dashboards can be activated from the menu if other systems (e.g. CZone) are present on the network.

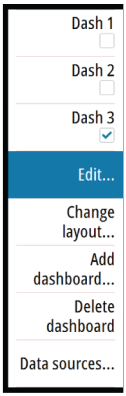
Customizing the Instruments panel

You can customize the Instruments panel by changing the data for each of the gauges in the dashboard, by changing the dashboard layout, and by adding new dashboards. You can also set limits for analog gauges.

All edit options are available from the Instruments panel menu.

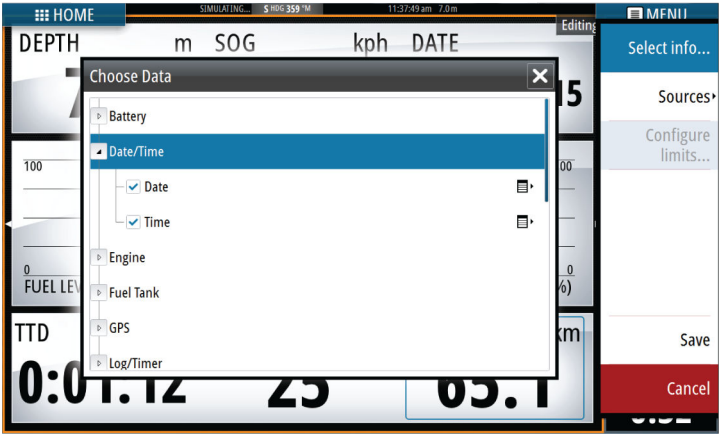
Available editing options depends on which data sources are connected to your system.

Edit a dashboard



Activate the dashboard you want to edit, then:

1. Activate the menu.
2. Select the edit option.
3. Select the gauge you want to change. Selected gauge is indicated with a blue background.
4. Select information to be displayed, configure limits, and eventually change the source for the information.
5. Save your changes by selecting the save option in the menu.



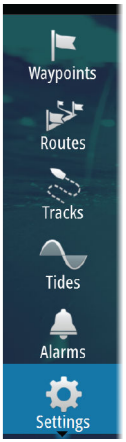
12 Audio

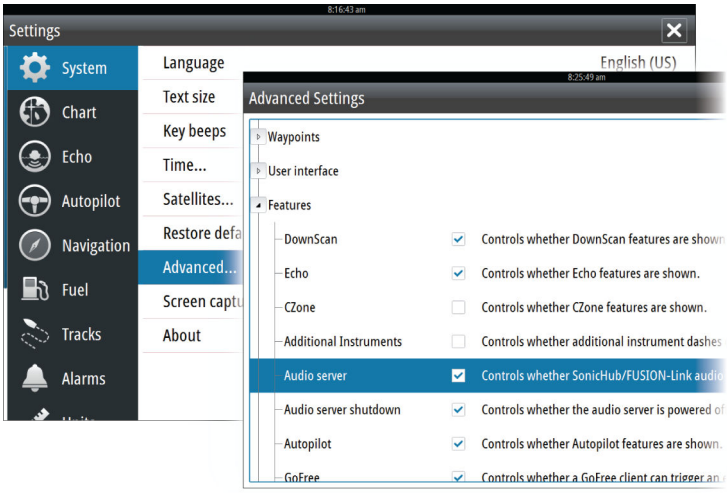
If a SonicHub server or a FUSION marine entertainment system is connected to the NMEA 2000 network, you can use the GO7 to control and customize the audio system on your vessel.

Before you can start using your audio equipment, it must be installed according to the GO7 Installation manual and to the documentation included with the audio device.

Enabling audio

A compatible audio device connected to the NMEA 2000 network should automatically be identified by the system. If not, enable the feature from the **Advanced Settings** dialog.

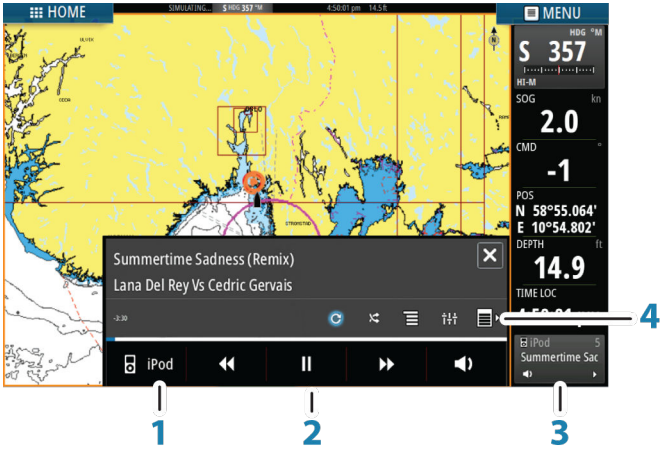




The Audio panel

You activate the audio panel by activating the audio tile in the Instrument bar.

The control buttons, tools and options vary from one audio source to another as described later in this chapter.



1 Audio source

2 Audio control buttons

3 Audio tile

4 Audio tools

Audio control buttons

Icon	Tuner	VHF	DVD	Playback
iPod	Select to display the list of available sources			
⏮	Select to select previous/ next frequency Press and hold to tune in a channel		Select to rewind/play fast forward	Select to select previous/ next track
▲ ▼	Select to select next/ previous favorite channel		N/A	N/A
▶	N/A	N/A	Select to start	
⏸	N/A	N/A	Select to pause playback	

Icon	Tuner	VHF	DVD	Playback
	Select to display the volume slider			

Audio tools

Icon	Tuner	VHF	Playback
	Signal strength	N/A	N/A
	N/A	N/A	Select to toggle on/off repeat function. The icon is colored when the function is active.
	N/A	N/A	Select to toggle on/off shuffle mode. The icon is colored when the function is active.
	Select to display menus used for setting up zones and master control		
	Select to display the favorite stations for the tuner	Select to display the favorite channels for the VHF	Select to display the native menu for active source
	Select to display optional settings for active source		

Setting up the audio system

The speakers

Speaker zones

The GO7 can be set up to control different audio zones. The number of zones depends on the audio server connected to your system.

You can adjust balance, volume and volume limit settings individually for each zone. Adjustments to the bass and tremble settings will alter all zones.

Master volume control

By default the volume for all speaker zones are adjusted when you adjust the volume. You can define which zones will be altered when you increase/decrease the volume.

Selecting tuner region

Before playing FM or AM radio, and using a VHF radio, you must select the appropriate region for your location.

Detaching Sirius from the AUX source

If a Sirius radio is connected to the FUSION radio/server, the AUX source is automatically attached to the Sirius feed. **Sirius** then appears in the source list when the FUSION server is active.

To use the AUX source for a different device, the Sirius must be detached from the AUX source.

→ ***Note:*** To use SiriusXM, an optional SiriusXM tuner must be connected to the FUSION server.

Operating the audio system

1. Select the Audio tile in the Instrument bar to activate the Audio overlay
2. Select the options icon and then select the audio server
3. Select the source icon and then select the audio source
   - Number of sources depends on the active audio server
4. Use the panel buttons to control your audio system

For an overview of audio control buttons and tools, refer to *"Audio control buttons"* on page 98 and *"Audio Tools"* on page 99.

For available options, refer to the documentation following your audio equipment.

Favorite channels

When a tuner or VHF channel is tuned in, you can add the channel to your favorite list. The favorite channels can be viewed, selected and deleted from within the Favorite list.

You page through favorite channels by using the up/down audio panel buttons.

Sirius radio (North America only)

Channels list
The channels list displays all available Sirius channels, whether or not you have a subscription for the channel.

Favorites list
You can create a list of your favorite Sirius channels from within the channels list. You cannot add unsubscribed channels.

Locking channels
You can lock selected Sirius channels from being broadcasted. A 4-digit-code must be entered to lock channels and the same code entered to unlock the channels.

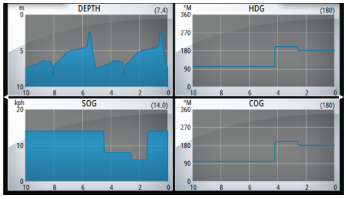
13 Time plots

The GO7 can present data history in different plots. The plots can be displayed in full page, or combined with other panels.

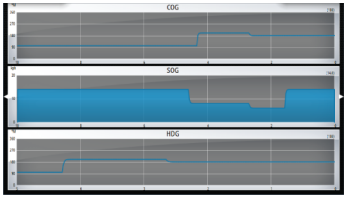
The Time plot panel

The Time plot panel consists of two predefined layouts. You switch between the layouts by selecting the left and right panel arrows. You can also select the layout from the menu.

You can select which data to present on a time plot panel, and you can define the time range for each plot.



Layout 1



Layout 2

Missing data

If the data is unavailable, the relevant plot turns into a dashed line and flattens out at the point the data was lost. When the data becomes available again, a dashed line joins up the two points showing an average trend line bridging the missing data.

Selecting data

Each data field can be changed to show the preferred data type and the time range.

1. Select the edit option from the menu
2. Activate the field you want to edit
3. Change the information type and eventually the range
4. Save your changes

The data available for the Time plots are by default the sources used by the system. If more than one data source is available for a data type you can select to show alternative data source in the Time plot. You change the data type by using the data source option in the menu.

14 Alarms

Alarm system

The system continuously checks for dangerous situations and system faults while the system is running. When an alarm situation occurs, an alarm message pops up on the screen.

If you have enabled the siren, the alarm message is followed by an audible alarm, and the switch for external alarm becomes active.

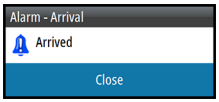
The alarm is recorded in the alarm listing so that you can see the details and take the appropriate corrective action.

Type of messages

The messages are classified according to how the reported situation affects your vessel. The following color codes are used:

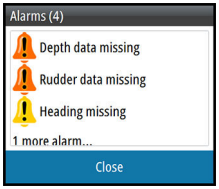
Color	Importance
Red	Critical
Orange	Important
Yellow	Standard
Blue	Warning
Green	Light warning

Single alarms



A single alarm is displayed with the name of the alarm as the title, and with details for the alarm.

Multiple alarms



If more than one alarm is activated simultaneously, then the alarm message displays a list of up to 3 alarms. The alarms are listed in the order they occur with the alarm activated first at the top. The remaining alarms are available in the Alarms dialog.

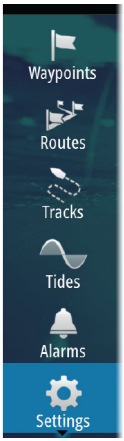
Acknowledging a message

The following options are available in the alarm dialog for acknowledging a message:

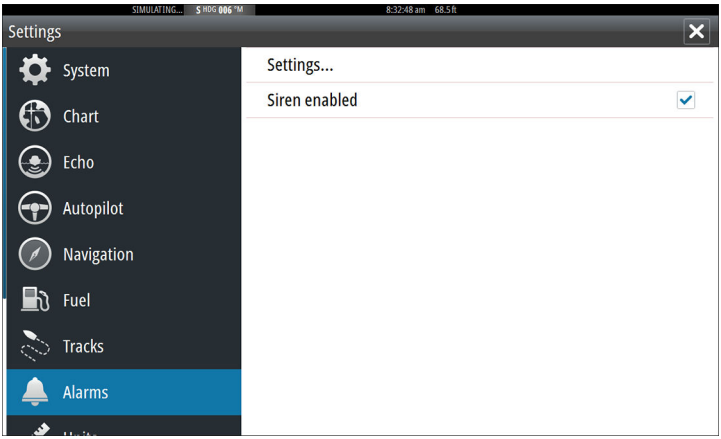
- **Close**
  Sets the alarm state to acknowledged, meaning that you are aware of the alarm condition. The siren / buzzer stops and the alarm dialog is removed.
  However, the alarm remains active in the alarm listing until the reason for the alarm has been removed.
- **Disable**
  Disables the current alarm setting. The alarm does not show again unless you turn it back on in the Alarms dialog.

There is no time-out on the alarm message or siren. They remain until you acknowledge the alarm or until the reason for the alarm is removed.

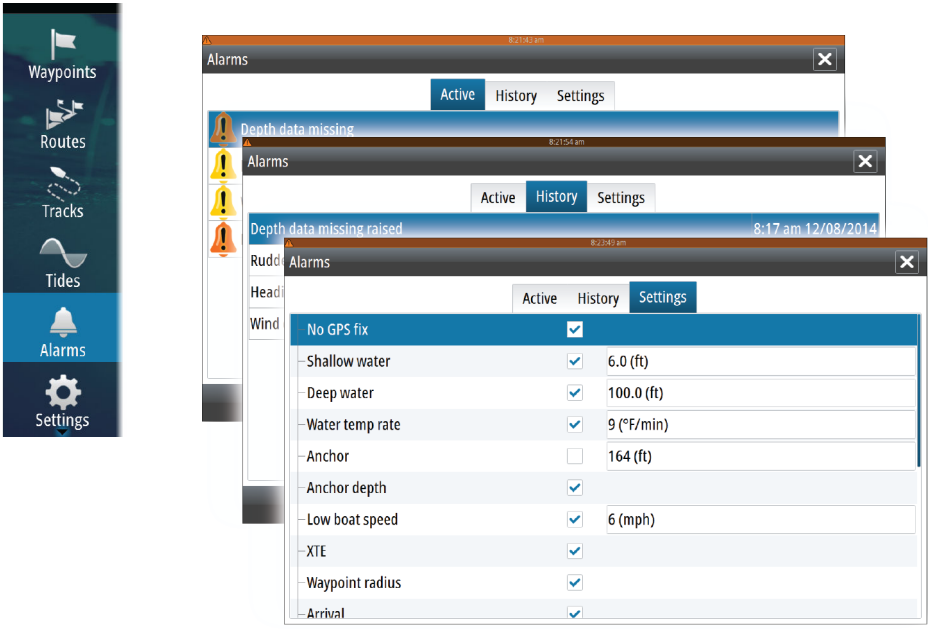
Alarms dialog



All alarms are setup in the Alarms Settings dialog.



The alarm dialogs can also be activated from the Tools panel. The alarm dialogs include information about active alarms and alarm history.

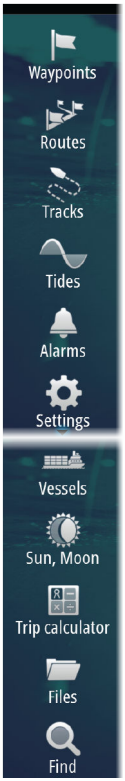

Waypoints
Routes
Tracks
Tides
Alarms
Settings
Alarms
Active
History
Settings
Depth data missing
Alarms
Active
History
Settings
Depth data missing raised
8:17 am 12/08/2014
Alarms
Active
History
Settings
No GPS fix
Shallow water
6.0 (ft)
Deep water
100.0 (ft)
Water temp rate
9 (°F/min)
Anchor
164 (ft)
Anchor depth
Low boat speed
6 (mph)
XTE
Waypoint radius
Arrival

15 Tools

By default, the Tools panel includes icons used for accessing options and tools that are not specific to any panel.

When external equipment is integrated to the GO7, new icons might be added to the Tools panel. These icons are used for accessing the external equipment's features.

Waypoints/routes/tracks



List of waypoints, routes, and tracks with details.

Select the waypoint, route, or track you wish to edit or delete.

Tides

Displays tide information for the tide station nearest to your vessel.

Select the arrow panel buttons to change the date, or select the date field to access the calendar function.

Available tide stations can be selected from the menu.

Alarms

Active alarms
List of active alarms.

Alarm history
List of all alarms with time stamp.

Alarm settings
List of all available alarm options in the system, with current settings.

Settings

Provides access to application and system settings.

Vessels

Status listing
List of all AIS and DSC vessels with available information.

Message listing
List of all messages received from other AIS vessels with time stamp.

Sun, Moon

Displays sunrise, sunset, moonrise and moonset for a position based on entered date and the position's latitude/longitude.

Trip calculator

Trip 1 / Trip 2
Displays voyage and engine information, with reset option for all data fields.

Today
Displays voyage and engine information for current date. All data fields are automatically reset when the date changes.

Files

File management system for Files, Waypoints, Routes, Tracks, and Settings.

Copying files to a card in the card reader

You can copy screen captures and logs to a card in the card reader. You can also export System Settings, Waypoints, Routes, and Tracks to a card. Exporting files is covered in the section *"Maintenance"* on page 110.

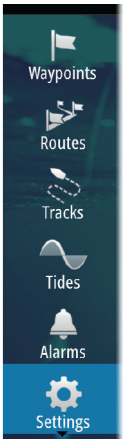
Find

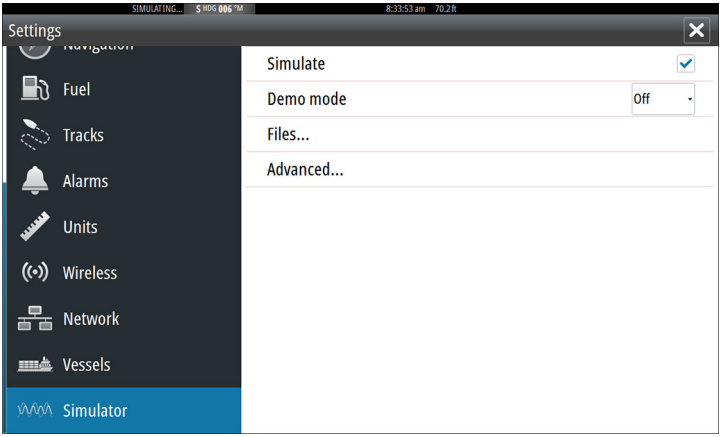
Search function for chart items (waypoints, routes, tracks, etc.).

16 Simulator

The simulation feature lets you see how the unit works in a stationary position and without being connected to the Echosounder, GPS, etc.

Use the simulator to become familiar with your unit before using it on the water.





The status bar indicates if the simulator is toggled on.

Demo mode

In this mode the unit automatically runs through the main features of the product; it changes pages automatically, adjusts settings, opens menus, and so on.

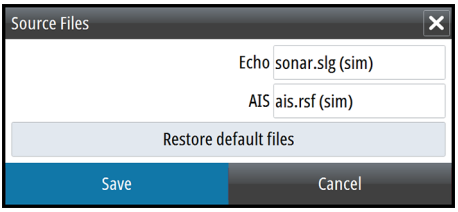
If you tap on the touchscreen when demo mode is running, the demonstration pauses. After a time-out period, demo mode resumes and any changed settings are restored to default.

→ ***Note:*** Demo mode is designed for retail/showroom demonstrations.

Simulator source files

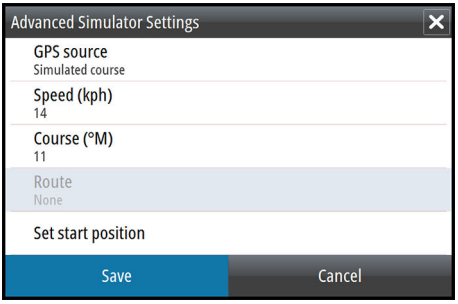
You can select which data files are used by the simulator. A set of source files is included in your system, and you can import files by

using a card inserted into the card reader. You can also use your own recorded files in the simulator.



Advanced simulator settings

The Advanced simulator settings allows for manually controlling the simulator.



GPS source

Selects where the GPS data is generated from.

Speed, Course and Route

Used for manually entering values when GPS source is set to Simulated course or Simulated route. Otherwise, GPS data including speed and course come from the selected source file.

Set start position

Moves your vessel to the current cursor position.

→ ***Note:*** This option is only available when the GPS source is set to Simulated course.

17 Maintenance

Preventive maintenance

The GO7 does not contain any field serviceable components, therefore the operator is required to perform only a very limited amount of preventative maintenance.

Cleaning the display unit

A proper cleaning cloth should be used to clean the screen, where possible. Use plenty of water to dissolve and take away salt remains. Crystalized salt may scratch the coating if using a damp cloth. Apply minimal pressure to the screen.

Where marks on the screen cannot be removed by the cloth alone, use a 50/50 mixture of warm water and isopropyl alcohol to clean the screen. Avoid any contact with solvents (acetone, mineral turpentine, etc.), or ammonia based cleaning products, as they may damage the anti-glare layer or plastic bezel.

To prevent UV damage to the plastic bezel, it is recommended that the sun cover be fitted when the unit is not in use for an extended period.

Cleaning the media port door

Clean the media port door regularly to avoid salt crystallization on the surface, causing water to leak into the card slot.

Checking the connectors

The connectors should be checked by visual inspection only.

Push the connector plugs into the connector. If the connector plugs are equipped with a lock, ensure that it is in the correct position.

Software upgrades

The latest software for the GO7 is available for download from our website, simrad-yachting.com.

Detailed instructions for how to install the software are included in the upgrade files.

Backing up your system data

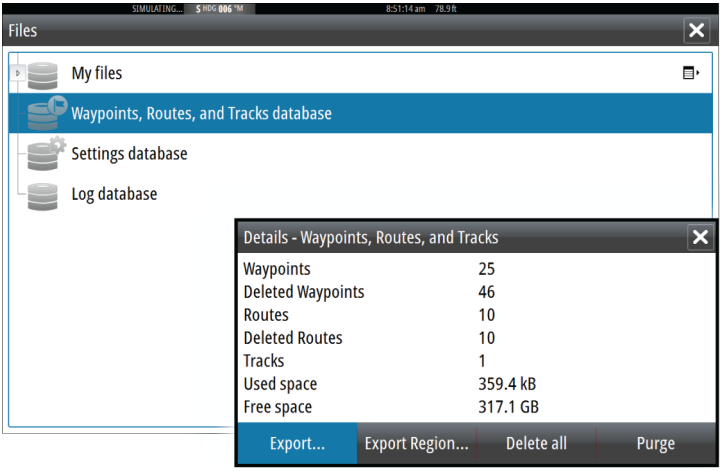
Waypoints, Routes, and Tracks that you create are filed in your system. It is recommended to regularly copy these files and your system settings files as part of your back-up routine. The files can be copied to a card inserted in the card reader.

There are no export file format options for the system settings file. The following output formats are available for exporting Waypoints, Routes, and Tracks files:

- **User Data File version 5**
  This is used to import and export waypoints and routes with a standardized universally unique identifier (UUID), which is very reliable and easy to use. The data includes such information as the time and date when a route was created, and so on.
- **User Data File version 4**
  This is best used when transferring data from one system to another, since it contains all the extra bits of information these systems store about items.
- **User Data file version 3 (w/depth)**
  Should be used when transferring user data from one system to a legacy product (Lowrance LMS, LCX, and so on.)
- **User data file version 2 (no depth)**
  Can be used when transferring user data from one system to a legacy product (Lowrance LMS, LCX, and so on.)
- **GPX (GPS Exchange, no depth)**
  This is the format most used on the web that shares among most GPS systems in the world. Use this format if you are taking data to a competitors unit.
- **Northstar.dat (no Tracks)**
  Used to transfer data to a legacy Northstar device.

Export all Waypoints, Routes and Tracks

Use the export option if you want to backup all Waypoints, Routes, and Tracks on your system.



Export region

The export region option allows you to select the area from where you want to export data.

1. Drag the boundary box to define the desired region
2. Select the export option from the menu
3. Select the appropriate file format
4. Select Export to start the export

Purging Waypoints, Routes and Tracks

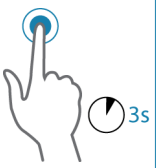
Deleted Waypoints, Routes and Tracks are stored in the GO7 memory until the data is purged. If you have numerous deleted, unpurged Waypoints, purging may improve the performance of your system.

→ ***Note:*** When user data is purged from the memory, it cannot be recovered.

18 Touchscreen operation

Basic touchscreen operation on the different panels is shown in the table below.

The panel sections in this manual have more information about panel specific touchscreen operation.

Icon	Description
	Tap to: • Activate a panel on a multi-panel page • Position the cursor on a panel • Select a menu and a dialog item • Toggle a checkbox option on or off • Show basic information for a selected item
	Press and hold: • On any panel with a cursor to activate the cursor assist feature • On a panel button to see available split screen options • On a favorite button to enter edit mode
	Scroll through a list of available options without activating any option.
	Flick to quickly scroll through e.g. the waypoint list. Tap the screen to stop the scrolling.
	Pan to position a chart or Echosounder image on the panel.

Icon	Description
	Pinch to zoom out on the chart or on an image.
	Spread to zoom in on the chart or on an image.

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988-10853-001

SIMRAD

CE 0980

SIMRAD

RS35 VHF
HS35 Handset
User Guide

ENGLISH

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Important safety information **Please read carefully before installation and use.**	
DANGER	This is the safety alert symbol. It is used to alert you to potential personal injury hazards, Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠ **WARNING**	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
⚠ **CAUTION**	CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
CAUTION	CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Section 1 - General information

1-1 Features

Congratulations on your purchase of this Simrad RS35 marine band VHF radio. Your RS35 provides you with the following useful features:

- Access to all currently available Marine VHF Channel Banks (USA, Canada, International) including weather channels where available (model dependant)
- DSC (Digital Select Calling) capability that meets Class D standards
- Separate CH70 DSC receiver built in
- ATIS facility for inland waterways (EU models)
- 10 weather channels (where available)
- NOAA and SAME weather alert capability (US models)
- Dual channel AIS receiver built in - receive AIS transmissions (receive only)
- Choice of High or Low (25 W or 1 W) transmission power
- Special CH16 or CH16/9 key for quick access to the priority (International Distress) channel
- DISTRESS call button to automatically transmit the MMSI and position until an acknowledgement is received
- Special 3CH key for quick selection of your three favorite channels
- Memory channel scan and All channel priority scan
- Dual/Tri Watch capability
- Call log for the 20 most recent incoming DSC calls
- Distress call log for the 20 most recent distress calls
- Easy access to a buddy list of up to 20 favorite people
- MMSI storage for 20 favorite groups
- GROUP CALL and ALL SHIPS CALL facility
- LL position polling and Track Your Buddy feature
- Automatic position and time update when connected to a GPS receiver
- Adjustable keypad backlighting for easy night-time use
- Adjustable contrast settings for the LCD
- Waterproof and submersible to comply with JIS-7
- Rotary channel selector knob with Push To Select function
- Speaker microphone with large PTT key and 6 keys for easy channel and mode selection
- 30 W Hailer with listen back capability
- Foghorn (manual and automatic)
- Great Circle GPS navigation calculations to a waypoint (stores up to 200 waypoints)
- NMEA 2000 & NMEA 0183 connectivity
- Local/Distance sensitivity to eliminate noise in high traffic urban areas
- Ability to communicate with up to two optional wireless handsets (HS35).

1-2 Customizing your Simrad VHF radio

You can customize the radio to suit your individual preferences. Some preferences can be set directly through the keys as explained in this section.

Other preferences are set up through the built-in menus and these are explained in the other sections.

1-3 How to display and navigate menus

1. Press MENU (or CALL) key.
2. Some line items may show an ▲ or ▼ indicator. This means there is more information available to show. Scroll (rotate the Rotary knob, or use + / - keys on the handset mic) to scroll up and down the menu until the cursor is positioned at the desired option. Press ENT (press the Push To Select) to display that option.
3. Make any entries or changes as explained in the following section.
4. Press ENT to confirm changes. Otherwise, press EXIT to keep the original entry.
5. Press EXIT to backup one screen (this key is equivalent to an ESC function on a PC).

1-4 How to enter alphanumeric data

If your radio does not have the optional alphanumeric microphone, you can rotate the rotary knob, or use +/- keys on the handset mic to enter alphanumeric data.

- Press - to count through numbers, or hold down to scroll rapidly to the desired number
- Press + to step through the alphabet, or hold down to scroll rapidly to the desired character
- If you make an error, press - until < is displayed, then press ENT to backup and correct the entry.

1-5 LCD symbols and meanings

A typical operational display is shown here:

The bottom line is blank when a waypoint is not selected. This operational display shows:

- the channel that you are receiving (**16**) and Tx power is set to high (**Hi**)
- the International channel bank selected (**INT**) and DSC is enabled (**DSC**)
- the channel name tag (**DISTRESS**)

- your current course (**128°**) and speed (**5.0Kt**)
- your latitude (**55°33.122N**) and longitude (**012°42.408E**) and UTC time displayed in 24 hour format (**14:43** - 2:43pm)
- the name of the destination waypoint (**FISH**), its bearing (**275°**), your distance in nautical miles, mile, or kilometres (depending on your choice of units) - in this case, **800nm**, and the cross track error (XTE - **0.00**) are shown.

All the symbols that may appear on the LCD are explained here:

Symbol	Meaning
TX	Transmitting.
BUSY	Receiver busy with an incoming signal.
SCAN	Scanning for the broadcasting channel. Press PTT to stop scanning. When the broadcasting channel is found, scanning stops at that channel.
DW	Dual watch mode.
TRI	Tri watch mode.
DSC	DSC function is enabled.
ATIS	ATIS is enabled for use in European inland waterways. Otherwise, blank.
AIS	AIS function is enabled.
	Incoming DSC call, or blinks to notify you of any unread call log messages.
DISTRESS	Channel name tag.
55°33.122N	Your latitude.
012°42.408E	Your longitude.
14:43 UTC	Time (UTC). Local time has suffix LOC (for example; 12:30pm LOC).
16	Channel selected.
LOCAL	Local calling is selected. Otherwise, blank for distance calling.
SKIP	Channel is temporarily deleted 'skipped' from the SCAN operation.
A	Channel suffix, if applicable - **A** or **B** - otherwise blank.
CH1	Shows which of the 3 favorite channels, if any, are selected. **CH1**, **CH2**, **CH3** - otherwise blank.
Hi	Transmission power. High (**Hi**) 25 W or Low (**Lo**) 1 W.
INT	Selected channel bank for VHF radio operations and regulations. **INT**=International; **USA**=USA; **CAN**=CANADA.
Wx	Weather channel.
	Weather alert. *US only.*
SAME	Specific Area Message Encoding. *US only.*

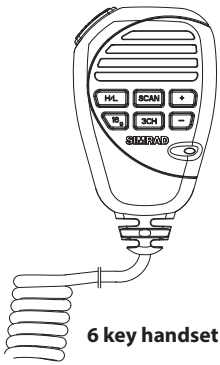
D	Duplex operation. Otherwise, blank for Simplex operation.
PRI	Priority channel is selected.
ACK	Your DSC call has been received.
	Low Battery warning (activates at 10.5 V).
FISH 275°	Waypoint name and bearing.
800nm	Distance to waypoint.
0.00	XTE (Cross track error).
NO GPS	GPS data is not available.
X	AUTO SWITCH is disabled.

1-6 Beep tones & call alerts

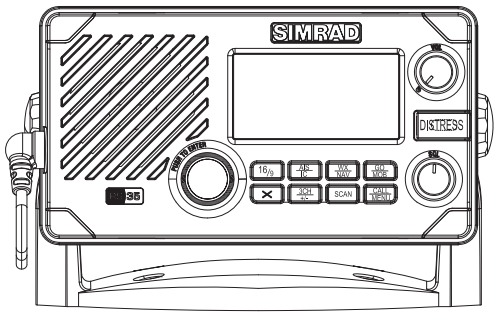
• Error	2 short beeps
• Acknowledge	1 long beep
• Alarm	Two-tone ring (repeated for 2 minutes or until any key is pressed)
• LL position call alert	Friendly 5-tone ring sequence (press any key to cancel)
• WX alert/SAME alert	Ear-catching multi-tone sequence
• ROUTINE call alert	Friendly 5-tone ring sequence (press any key to cancel)
• URGENCY call alert	Two-tone ring (repeated for 2 minutes or until any key is pressed)
• SAFETY call alert	Two-tone ring (repeated for 2 minutes or until any key is pressed)
• DISTRESS call alert	Two-tone ring (repeated for 2 minutes or until any key is pressed)

Section 2 - Basic operation and key functions

All possible keys and their functions are listed here. Note that some of the keys may not be available, depending on your Simrad VHF radio model.



6 key handset mic



RS35 base station radio

Key:	Function:
VOL / ⏻	**Volume and Power** Turn clockwise to power on. Continue to turn until a comfortable volume is reached. VOL / ⏻ will also adjust the settings of an external speaker, if connected.
SQL	**Squelch or Threshold Level** Sets the threshold level for the minimum receiver signal. Turn fully counterclockwise until random noise is heard, then turn slowly clockwise until the random noise disappears. Make another 1/4 turn clockwise for best reception in open sea conditions. In areas of high noise (eg. close to large cities) reception may improve if sensitivity is reduced. Either turn SQL slowly clockwise or use the LOCAL setting. See section 3-4.
16 / 9	**Priority channel** Also on the handset mic. Press to cancel all other modes and to tune into the priority channel. Press again to return to your original channel. The default Priority Channel is CH16. **For US models:** To make Channel 09 the priority channel, hold down 16/9 until a beep sounds and 09 is displayed.
DISTRESS	**Send a DSC Distress Call** DSC must be active and an MMSI must be programmed. See Section 8. Lift the red cover door then press and release DISTRESS to show the DISTRESS menu. Select the category you want to transmit. Hold down DISTRESS for about 3 seconds to transmit. The DISTRESS key can also be held down continuously to transmit an "undefined" category Distress call. See Section 9 for more information about distress calls.

PTT

Press To Talk

(Located on the handset mic). Press PTT to transmit at any time on an allowable channel. This automatically exits you from menu mode and stops scanning. You must release PTT to receive a signal.

If PTT sticks, a built-in timer will automatically shut down a transmission after five minutes and sound a short error beep.

PUSH TO SELECT

Enter (ENT)

When you are in MENU mode, push the center of the Channel Select knob to enter your choice or setting. This is referred to throughout the manual as "press ENT".

Rotary knob

Channel select

Turn to select a channel. The current channel is shown on the LCD in BIG digits and an A or B designator suffix (if applicable) in small letters below the channel number.
See Appendix C for a complete listing of channel charts.

Push to activate the **ENT** function.

Alphanumeric entry

You can also use the rotary knob for alphanumeric entry. Turn to step through alphanumeric characters one at a time, then push to confirm each selection. If you make an error, select the < character then push to backup.

+ / -

Channel select

(Located on the handset mic). The current channel is shown on the screen in BIG digits with an appropriate designator suffix A or B in small letters below the channel number.

Press + or - to step through the available channels one at a time, or hold down to scroll rapidly through all the available channels.
See Appendix C for a complete listing of channel charts.

Alphanumeric entry

This key can be used for both menu selection and for alphanumeric entry. Press + or - to scroll the cursor up or down to menu options when navigating menus.
When editing an item containing only numbers, press **-** to count through the numbers or hold down to scroll rapidly.
To enter a character, press **+** to step through the alphabet or hold down to scroll rapidly.

X

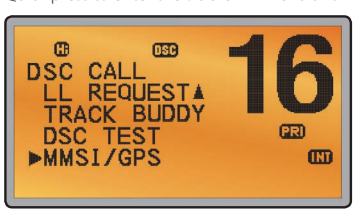
Exit

Use EXIT (X) key when navigating menus, to clear incorrect entries, to exit from a menu without saving changes, and to back up to the previous screen.

CALL/MENU

DSC CALL menu

Quick press to enter the DSC CALL menu and make DSC calls. See Section 5.



Radio and DSC setup MENU mode

Hold down for about 1 second to show the radio MENU so that you can customize your radio. See section 4.

WX/NAV

Weather channel

For US models: In USA and Canadian waters, press to hear the most recently selected weather station. The WX symbol Wx is displayed on the LCD. Rotate the dial or + / - on the handset mic to change to a different weather channel. Press WX again to return to the most recent channel. If the weather alert mode (ALT) is ON and an alert tone of 1050 Hz is broadcast from the weather station, it is picked up automatically and the alarm sounds. Press any key to hear the weather alert voice message.

Note: If SAME is activated and the 6 digit County IDs you want to monitor are entered, the radio will sound the weather alarm when it detects a weather alert or weather hazard alert on the selected weather channel.

For all other models: The Wx key can be programmed to a weather channel of your choice. See section 4-11 to program your favourite channel.

NAV (Show waypoint)

Hold down for about 1 second to enter the Navigation mode.
If a waypoint is already selected, the bearing and distance to the waypoint and the cross track error are shown on the bottom line of the LCD.

If you are in Navigation mode and want to scan all the VHF channels while staying in Navigation mode, just hold down SCAN.

Press SCAN to quit scanning.

3CH

Three favourite channels

Also on the handset mic. Press to toggle between your favourite channels. The CH1, CH2, or CH3 symbol appears on the LCD to show which favourite channel is selected.

To scan only one of your favourite channels, press 3CH then immediately press and release SCAN. If you want to scan all three favourite channels, press 3CH then immediately press and hold SCAN.

To add a favourite channel for the first time, select that channel then hold 3CH to store it in the CH1 location. Repeat the procedure to store two more favourite channels in the CH2 and CH3 locations respectively.

If you try and add another favourite channel it will overwrite the existing CH3. CH1 and CH2 remain unless you delete them.

To delete a favourite channel, select that channel then hold down 3CH until the CH1, CH2 or CH3 symbol disappears off the LCD.

SCAN

Scan *(ALL SCAN & 3CH SCAN)*

There are two SCAN modes you can use to find the broadcast channel:

- ALL SCAN mode scans ALL channels in sequence, and checks the priority channel every 2 seconds.
- 3CH SCAN mode scans the favorite channels and CH16.

When a signal is received, scanning stops at that channel and BUSY appears on the LCD. If the signal ceases for more than 5 seconds, the scan restarts.
Press SCAN or PTT to stop at the current channel.
If you are in NAVIGATION mode and want to scan the DSC channels while staying in that mode, just hold down SCAN.

Note: SCAN functionality is limited in some European countries and, if ATIS mode is enabled, the 3CH SCAN mode will be disabled and an error beep will sound.

Note: The weather channel is also scanned if TONE ALERT or SAME is ON (US only).

ALL SCAN mode:
Hold down SCAN for about 3 seconds to start an ALL SCAN. ALL SCAN appears on the LCD.
Press ENT to temporarily skip over (lock out) an "always busy" channel when in ALL SCAN mode. SKIP is shown on the top line of the LCD to designate a skipped channel. SKIP will disappear when the radio is powered OFF/ON. With scanning OFF and the SKIP channel selected, press ENT to cancel the skipped channel.

Note: It is not possible to skip over the priority channel.

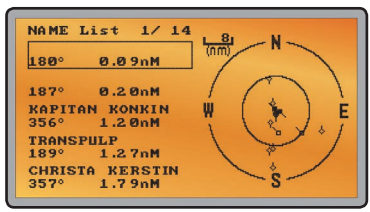
Press SCAN to stop at the current channel.
Press EXIT to cancel scan mode and return to normal operation.

3CH SCAN mode
With any of your three favorite channels selected (by pressing the 3CH key) hold down SCAN to start all 3CH scanning. Press SCAN again to stop at the broadcast channel, or press EXIT to quit 3CH SCAN and return automatically to the previous broadcast channel.

AIS / IC

AIS (Automatic Identification System)

Quick press to enter the AIS menu.
See section 6 for AIS setup or Section 9 for AIS functionality.



IC (FOG HORN mode)

Hold down for about 1 second to enter HAILER mode. Select FOG HORN. The FOG HORN will sound certain international standard fog horn tones through the hailer speaker depending on the mode selected.
See section 11 for HAILER functionality.

IC (PA HAILER mode)

Hold down for about 1 second to enter HAILER mode. Select PA (Public Address). The PA allows you to make an announcement at high volume to people or vessels using the RS35 hand mic.
See section 11 for HAILER functionality.

GO / MOB

GO (Reset the Cross Track Error)

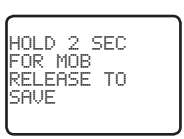
Note: A valid GPS signal must be received to see this selection.
Press GO if you are navigating to a waypoint and want to reset the cross track error. This is a **very** useful single keystroke feature to use if you wander a little off-course but want to continue to your active waypoint.

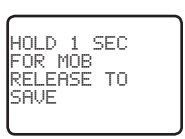
The bearing and distance to the waypoint and any cross track error are shown on the bottom line of the LCD.

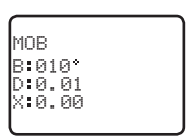
MOB (Man Over Board)

Hold down MOB until the radio automatically enters Navigation mode, saves your current latitude and longitude as the MOB waypoint and immediately sets this position as the destination waypoint.

You will see the following sequence of LCDs:







The bearing and distance to the Man Overboard position, and any cross track error (XTE), are shown on the bottom line of the LCD.

To cancel MOB, select another waypoint.

MOB (Temporary waypoint)

To mark your current position as a temporary waypoint, hold down MOB and release the key before the 3 second countdown ends.

You will see the following sequence of LCDs:

The new temporary waypoint is shown in your waypoints list. Hold down MENU, press ENT, then press ENT again to display the waypoints list (TEMP1, WP001, WP002).

You cannot store more than three temporary waypoints. If you store another temporary waypoint, TEMP1 is overwritten with the new information.

H/L **Transmission power**
(Located on the handset mic). High (HI) 25 W or Low (LO) 1 W. Press to toggle between high or low transmission power for the entire channel bank. The HI or LO selection is shown on the LCD.

Some channels allow only low power transmissions. Error beeps will sound if the power transmission setting is incorrect.

Some channels allow only low power transmissions initially, but can be changed to high power by holding down H/L and PTT at the same time.
See Appendix C for a complete listing of channel charts.

Softkeys: This radio uses virtual softkeys during certain functions. A softkey is defined by a name that appears at the bottom of the LCD that positioned immediately above an actual key on the radio. A softkey provides you with the additional function or choice when the softkey appears during certain functions:

ACK **Able key (WX/NAV key)**
Press to ACK (acknowledge) a DSC call.

ACCEPT **Accept key (AIS/IC key)**
Press to ACCEPT a channel request. The radio will immediately change to the requested channel.

NEW-CH **New channel request key (AIS/IC key)**
Press to request a new channel.

PAUSE **PAUSE key (WX/NAV key)**
Press to pause a call when in repeat mode.

RESEND **Resend key (AIS/IC key)**
Press to resend the DSC call.

SILENC **Silence key (AIS/IC key)**
Provided as an option to silence an audible alarm.

Section 3 - Radio MENU SELECT options

Hold down CALL MENU for about 1 second to access any of the following radio MENU SELECT options.

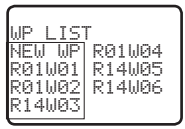
Menu options shown inside the gray boxes are explained in this section.

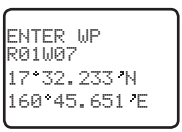
WAYPOINT			**Section 3-1**
BACKLIGHT			**Section 3-2**
BUDDY LIST			**Section 3-3**
LOCAL/DIST			**Section 3-4**
CONTRAST			**Section 3-5**
GPS/DATA	**MANUAL**		**Section 3-6-1**
	SETTING	**TIME OFFSET**	**Section 3-6-2**
		TIME FORMAT	**Section 3-6-3**
		TIME DISPLY	**Section 3-6-4**
		LL DISPLY	**Section 3-6-5**
		COG/SOG	**Section 3-6-6**
		GPS ALERT	**Section 3-6-7**
RADIO SETUP	UIC (US and AUS only)		Section 4-1
	CH NAME		Section 4-2
	RING VOLUME		Section 4-3
	KEY BEEP		Section 4-4
	UNITS		Section 4-5
	INT SPEAKER		Section 4-6
	WATCH MODE (US only)		Section 4-7
	WX ALERT (US only)	TONE ALERT	Section 4-8-1
		SAME ALERT	Section 4-8-2
		SAME CODE	Section 4-8-5
	COM PORT		Section 4-9
	GPS SOURCE		Section 4-10
	FAV CH SETU (EU and AUS only)		Section 4-11
DSC SETUP	USER MMSI		Section 5-1
	GROUP SETUP		Section 5-2
	ATIS MMSI (EU only)		Section 5-3
	ATIS SELECT (EU only)		Section 5-4
	INDIV REPLY		Section 5-5
	DSC FUNC		Section 5-6
	LL REPLY		Section 5-7
	AUTO SWITC		Section 5-8
	TEST REPLY		Section 5-9
	TIMEOUT		Section 5-10
AIS SETUP	AIS FUNC		Section 6-1
	AIS DISPLAY		Section 6-2
	BAUD RATE		Section 6-3
	GPS REDIR		Section 6-4
	CPA ALARM		Section 6-5
	CPA		Section 6-6
	TCPA		Section 6-7
GPS SIM			**Section 3-7**
HS SETTING	SUBSCRIBE		Section 7-1
	REGISTERED HS		Section 7-2
RESET			**Section 3-8**

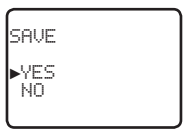
3-1 Manage your waypoints list (WAYPOINT)

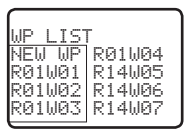
- You can store a maximum of 200 waypoints with their LL positions. When your waypoint list is full, you cannot make a new entry until you have deleted an existing entry
- Each waypoint name can have a maximum of 6 alphanumeric characters
- Waypoints are stored in order of entry, with the most recent entry shown first
- The waypoints are displayed in columns of 6 with a box. Rotate the Channel Select knob to scroll through the columns to easily locate your desired waypoint. Then press ENT and use the Channel Select knob to select a waypoint within the column.

3-1-1 Add a new waypoint





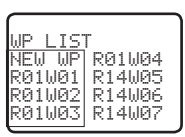


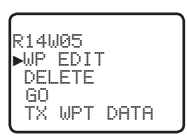


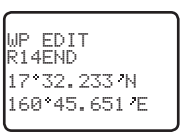
1. Select WAYPOINT then WP LIST.
2. Your waypoint list is displayed. Press ENT.
3. NEW WP starts to flash. Press ENT to add a new waypoint.
4. Enter a waypoint name (maximum 6 characters), then the latitude, then the longitude.
5. Press ENT when all the information is correct then select YES.

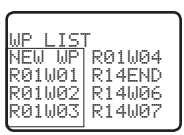
   The new waypoint is saved and your waypoint list is displayed again.

3-1-2 Edit or delete a waypoint







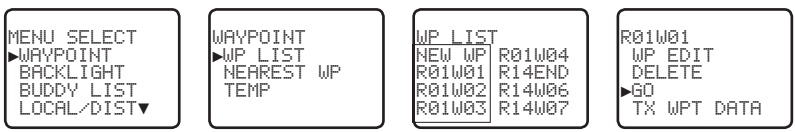


1. Select WAYPOINT then WP LIST.

Note: A valid GPS signal must be received to see parts of this selection.

2. Your waypoint list is displayed. Press ENT.
3. NEW WP starts to flash. Scroll down to the incorrect entry. The selected waypoint flashes. Press ENT again.
4. To delete the waypoint, select DELETE then YES. The waypoint is deleted immediately and the waypoint list is refreshed and displayed again.
5. To edit the waypoint, select WP EDIT. The cursor is at the first character of the name. Edit the waypoint name ***or*** to edit only the latitude or longitude, press ENT repeatedly until the cursor moves to the required line.
6. When you are finished, press ENT (repeatedly if necessary) until an updated page appears.
7. Press ENT to store the changes. The waypoint list is displayed again. If more changes are required, repeat steps 2 through 6. Otherwise, press EXIT to cancel any edits.

3-1-3 Go to a new waypoint

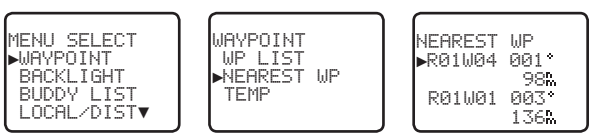


1. Select WAYPOINT then WP LIST.
2. Your waypoint list is displayed. Press ENT.
3. NEW WP starts to flash. Scroll down to the waypoint you want to go to. The selected waypoint flashes. Press ENT again.
4. Select GO.
5. Select Yes. The waypoint is set immediately as the destination waypoint.

Tip: If you are in the NAV big number screen, just turn the Channel Select knob to immediately access the Waypoint List. Select the new waypoint and press ENT.

3-1-4 Go to nearest waypoint (NEAREST WP)

Note: A valid GPS signal must be received to see this selection.



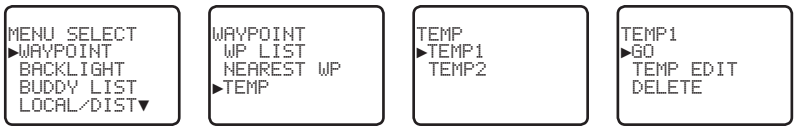
1. Select WAYPOINT then NEAREST WP.
2. Press ENT to display the nearest waypoint with distance and bearing from your current position.

   Other waypoints are listed in increasing distance from your current position.

3. Press ENT to set the nearest waypoint as the active waypoint OR move the cursor to another waypoint and then press ENT.

   The chosen waypoint is shown on the bottom line of the LCD.

3-1-5 Go to temporary waypoint

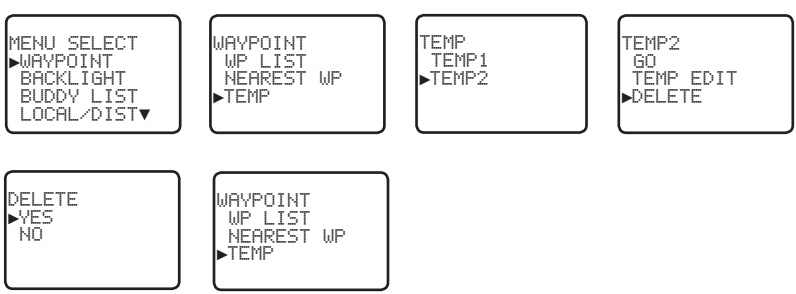


1. Select WAYPOINT then TEMP.
2. Your temporary waypoint list is displayed. There are 3 choices for quick access.
3. Select the temporary waypoint to go to. Press ENT.
4. Press ENT to set the temporary waypoint as the destination waypoint. It is immediately shown on the bottom line of the LCD.

Tip: Hold down MOB and release before the 3 second countdown completes. Your current LL position is stored in TEMP1 to TEMP3 in the waypoint list.

If the list is full, a message appears. See following section to delete a TEMP WP.

3-1-6 Edit or delete a temporary waypoint



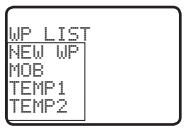
1. Select WAYPOINT then TEMP. Your temporary waypoint list is displayed.
2. Select the temporary waypoint to edit then select TEMP EDIT.

Note: To delete the temporary waypoint, select DELETE then YES. The temporary waypoint is deleted immediately and the temporary waypoint list is displayed again.

3. The waypoint details are displayed. The cursor is at the first character of the name.
4. Edit the temporary waypoint name ***or*** to edit only the latitude or longitude, press ENT repeatedly until the cursor moves to the required line.
5. When you are finished, press ENT (repeatedly if necessary) until a new LCD appears.
6. Press ENT to store the changes. The waypoint list is displayed again. If more changes are required, repeat steps 2 through 6. Otherwise, press EXIT.

3-1-7 Send waypoint data to a chartplotter

You can send waypoint data over NMEA 2000 to a compatible chartplotter.



1. Select WAYPOINT then WP LIST. Your waypoint list is displayed. Press ENT. NEW WP starts to flash.
2. Scroll down to the waypoint whose data you want to send to the chartplotter then press ENT. In the example scroll to TEMP2 then press ENT.
3. Scroll down and select TX WPT DATA and press ENT to send the data.

3-2 Set the backlighting level (BACKLIGHT)

There are 8 levels of backlight. Level 8 is the brightest, Level 0 is OFF. The backlight function affects the base station (LCD and Keypad) and the microphone keypad backlight.

1. Select BACKLIGHT.
2. Select a comfortable level using the Channel Select knob or + or – on the microphone to change the setting.
3. Press ENT to enable the setting and return to the menu.

Note: The DISTRESS key backlight cannot be switched off.

Note: If the backlight setting is set to level 0 (OFF), the backlight will automatically turn ON at level 1 if the radio detects any DSC activity, or any buttons are pressed. The backlight will return to level 0 (OFF) after 10 seconds of inactivity.

3-3 Maintain your buddy list (BUDDY LIST)

Use the buddy list to store the names and associated MMSIs of 20 favorite people. Names are stored in the order of entry, with the most recent entry shown first.

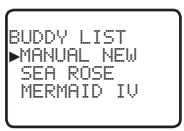
The following sections show how to add, edit and delete entries on your BUDDY LIST.

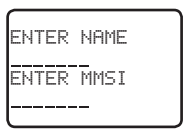
Section 7-3 explains how to call a buddy.

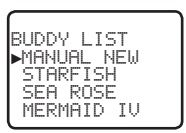
3-3-1 Add an entry

You can enter a maximum of 20 buddy names. When your BUDDY LIST is full, you cannot make a new entry until you have deleted an existing entry.

Each buddy name can have a maximum of 11 alphanumeric characters.







1. Select BUDDY LIST. The cursor is at MANUAL NEW. Press ENT.
2. Enter the buddy name, one character at a time (this may be alphanumeric) then press ENT repeatedly until the cursor moves to the MMSI entry line.
3. Enter the MMSI associated with that buddy name (this must be numeric) then press ENT.
4. The new buddy name and MMSI are displayed. Press ENT to store the new entry, which is displayed at the top of your buddy list.

Note: When the BUDDY LIST is full (20 entries), you can make a new entry and the buddy at the end of the list is automatically erased.

3-3-2 Edit or delete an entry

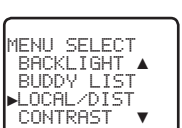
1. Select BUDDY LIST. The cursor is at MANUAL NEW.
2. Scroll down to the incorrect entry and press ENT.
3. To delete the buddy, select DELETE then YES. The buddy is deleted immediately and the buddy list is displayed again.
4. To edit the buddy, select EDIT. The cursor is at the first character of the name. Edit the buddy name ***or*** to edit only the MMSI, press ENT repeatedly until the cursor moves to the MMSI line.
5. When you are finished, press ENT (repeatedly if necessary) until an updated screen appears.
6. Press ENT to store the changes. The buddy list is displayed again. If more changes are required, repeat steps 2 through 6. Otherwise, press EXIT to ESC.

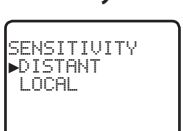
3-4 Local or distance sensitivity (LOCAL/DIST)

Use LOCAL/DIST to improve the sensitivity of the receiver either locally (LOCAL) or over distances (DIST). LOCAL is not recommended for use in open sea conditions. It is designed for use in areas of high radio noise; for example, close to cities.

See also SQL (Squelch Control) in section 2.

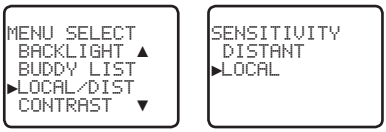
3-4-1 Set distance sensitivity





1. Select LOCAL/DIST then select DISTANT.
2. Press ENT to activate the DIST setting. This disables local sensitivity and the menu is displayed again.

3-4-2 Set local sensitivity

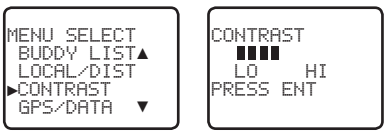


1. Select LOCAL/DIST then scroll to LOCAL.
2. Press ENT to activate the LOCAL setting. This disables distance sensitivity and the menu is displayed again.

   LOCAL is displayed on the LCD as a reminder that sensitivity is reduced.

3-5 Set the contrast level (CONTRAST)

There are 8 levels of contrast.



1. Select CONTRAST.
2. Select a comfortable contrast level using the Channel Select knob or + or – on the microphone to change the setting.
3. Press ENT to enable the setting and return to the menu.

3-6 GPS data and time (GPS/DATA)

If the boat has an operational GPS navigation receiver and is connected by NMEA port, the VHF radio automatically detects and updates the vessel position and the local time.

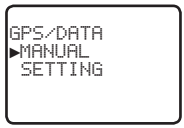
However, if the GPS navigation receiver is disconnected or absent, you can specify the vessel position and the local time manually, using the GPS/DATA option.

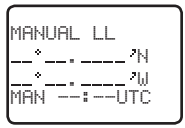
This information is important because it will be used if a DSC distress call is transmitted.

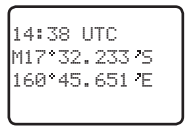
- If GPS data is NOT available for some reason, the NO GPS alert will sound for 5 seconds (or until you press any key) and the radio requests you to enter the position data manually
- This request is repeated every 4 hours if you do not enter the position data manually. After you have entered the position data manually, you must update it within 23.5 hours otherwise the NO GPS alert sequence repeats
- The NO GPS warning will be shown whenever GPS data is not available from an operational GPS navigation receiver.

3-6-1 Manually enter position and UTC time (MANUAL)

Note: this function is available only if an operational GPS receiver is ***not*** connected.







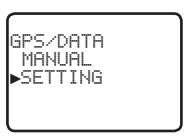
1. Select GPS/DATA then MANUAL.
2. Enter the latitude, then the longitude, then the UTC.
3. Press ENT when all the information is correct.

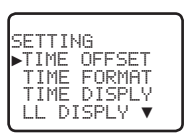
   The vessel's latitude and longitude are shown on the screen, with the UTC time. The prefix M indicates a manual entry. The manual entries are cancelled if a real GPS position is received.

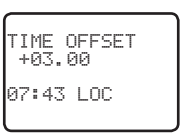
Note: a warning will be displayed after 4 hours to remind you that the current position information is manually entered.

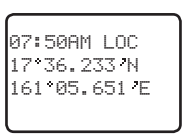
3-6-2 Local time (TIME OFFSET)

If your position and time data are being updated through a GPS navigation receiver, you can enter the time difference between UTC and local time and display your local time on the LCD.



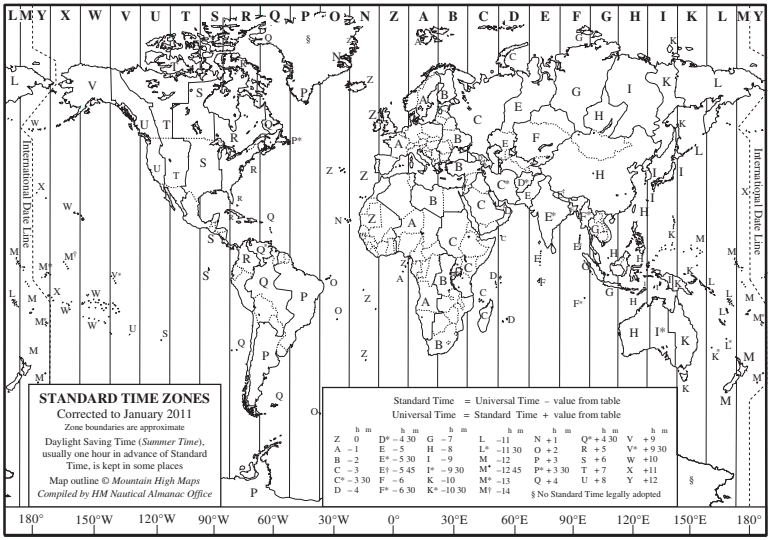






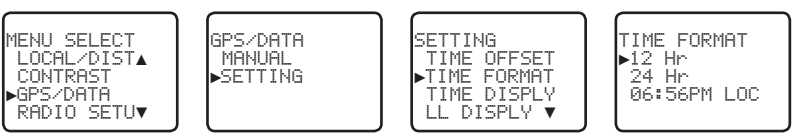
1. Work out the time difference between UTC and your local time (from the following graphic).
2. Select GPS/DATA then SETTING.
3. Select TIME OFFSET to enter the difference between UTC and local time. Use the Channel Select knob ***or*** + or – to change the time. Half hour increments can be used with a maximum offset of ±13 hours.
4. Press ENT when the local time is correct.

   LOC is displayed after the time on the LCD as a reminder that local time is selected.



3-6-3 Time format options (TIME FORMAT)

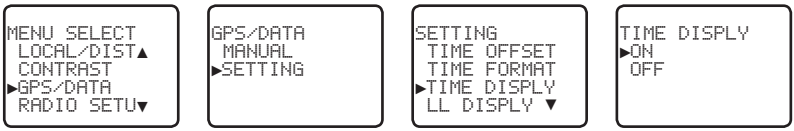
Time can be shown in 12 or 24 hour format.



1. Select GPS/DATA then SETTING.
2. Select TIME FORMAT.
3. Select 12 or 24 hr as desired. In this example, 12 hour format has been selected and so the LCD shows the AM or PM suffix.

3-6-4 Time display options (TIME DISPLY)

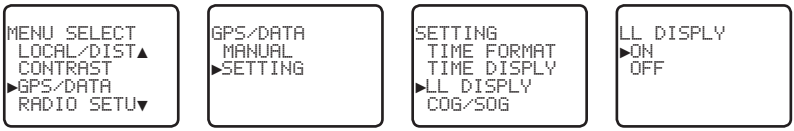
If your vessel position and time data are being updated through a GPS navigation receiver, you can show or hide the time on the LCD.



1. Select GPS/DATA then SETTING.
2. Select TIME DISPLY.
3. Select ON (on) or OFF (off) as desired. In this example, OFF has been selected and the LCD no longer shows the time.

3-6-5 Position display options (LL DISPLY)

If your vessel position and time data are being updated through a GPS navigation receiver, you can show or hide your vessel position on the LCD.



1. Select GPS/DATA then SETTING.
2. Select LL DISPLY.
3. Select ON (on) or OFF (off) as desired. In this example, OFF has been selected and the LCD no longer shows the vessel position.

3-6-6 Course & speed display options (COG/SOG)

If your vessel position and time data are being updated through a GPS navigation receiver, you can show or hide your course over ground (COG) and speed over ground (SOG) data on the LCD.

1. Select GPS/DATA then SETTING.
2. Select COG/SOG.
3. Select ON (on) or OFF (off) as desired. In this example, ON has been selected and so the LCD shows the bearing and speed.

3-6-7 GPS alert (GPS ALERT)

If the GPS Alert is ON and the GPS navigation receiver is disconnected, the alarm sounds.

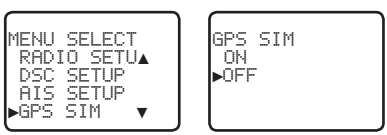
Note: The default setting is ON for the RS35 EU and OFF for the RS35 US.

1. Select GPS/DATA then SETTING.
2. Select GPS ALERT.
3. Select ON (on) or OFF (off) as desired.

3-7 GPS simulator (GPS SIM)

The GPS simulator is set to OFF whenever the radio is turned ON or whenever real GPS data is available through the COM port. (The GPS simulator will not operate if a GPS signal is received).

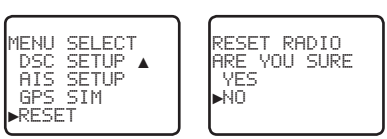
However, if you want to test it, turn it ON. Note that DSC transmissions will be blocked while the GPS simulator is ON.



1. Select GPS SIM.
2. Select ON (on) or OFF (off) as desired.

3-8 Reset to factory defaults (RESET)

Use this to return every setting to the factory defaults except all MMSI settings and the entries in your buddy list.



1. Select RESET. The radio asks for confirmation.
2. Select YES then press ENT to confirm and reset the radio. The menu is displayed again.

Section 4 - Radio setup menu (RADIO SETUP)

Hold down CALL/MENU key for about 1 second to access the following RADIO SETUP options.
The following menu options are explained in this section.

RADIO SETUP	**UIC ***		**Section 4-1**
	CH NAME		**Section 4-2**
	RING VOLUME		**Section 4-3**
	KEY BEEP		**Section 4-4**
	UNITS		**Section 4-5**
	INT SPEAKER		**Section 4-6**
	WATCH MODE *		**Section 4-7**
	WX ALERT *	**TONE ALERT**	**Section 4-8-1**
		SAME ALERT	**Section 4-8-2**
		SAME CODE	**Section 4-8-5**
	COM PORT		**Section 4-9**
	GPS SOURCE		**Section 4-10**
	FAV CH SETUP *		**Section 4-11**

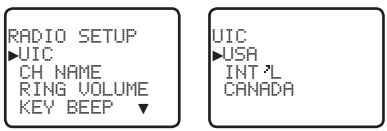
**** Model dependant***

See sections 1-3 and 1-4 if you want to know how to move around the menu and enter, save and change data.

4-1 Channel (UIC)

US and AUS models only.

Toggle between USA, International, or Canadian channel banks. The selected channel bank is displayed on the LCD along with the last used channel. All the channel charts are shown in Appendix C.

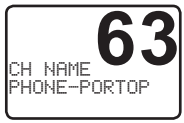


1. Select RADIO SETUP then UIC.
2. Select the desired channel bank then press ENT.

4-2 Channel names (CH NAME)

The channel charts are listed in Appendix C with their default name tags. CH NAME gives you the option to edit or delete the channel name tags displayed on the LCD.

In this example, the channel name tag PHONE-PORTOP associated with channel 87 is being changed to CALL PORT OP.



1. Select RADIO SETUP then CH NAME. Use the Channel Select knob ***or*** + or - to step through the channel name tags until you see the one you want to change then press ENT.
2. To delete the channel name, select DELETE and press ENT.
3. To edit the channel name, select EDIT to edit the existing name tag.
4. Input the new name over the existing name. It can be a maximum of 12 characters.
5. Press ENT (repeatedly is necessary) to display the YES/NO confirmation.
6. Press ENT to confirm the new channel name tag (or the deletion).
7. Press EXIT to return to the CH NAME screen.

4-3 Ring volume (RING VOLUME)

The radio sounds the friendly two-tone alert when it detects an incoming DSC call. You can change the volume level.

1. Select RADIO SETUP then RING VOLUME.
2. Select HIGH (loud) or LOW (soft) then press ENT.

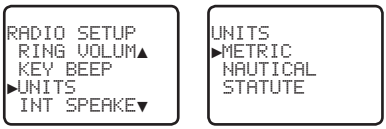
4-4 Key beep volume (KEY BEEP)

You can change the key beep volume or turn the key beeps off completely.

1. Select RADIO SETUP then KEY BEEP.
2. Select the desired setting then press ENT.

4-5 Select units (UNITS)

You can select your preferred measurement units for distance and cross track error (for waypoint navigation).

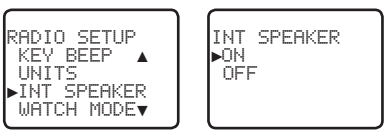


1. Select RADIO SETUP then UNITS.
2. Select your preferred measurement units then press ENT.

Note: Nautical Miles is the only unit used in AIS mode.

4-6 Internal speaker connections (INT SPEAKER)

You can switch the radio's internal speaker ON or OFF. The external speaker is always ON if a speaker is plugged into the external speaker jack.

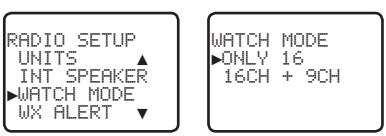


1. Select RADIO SETUP then INT SPEAKER.
2. Select ON (on) or OFF (off) then press ENT to enable the setting and return to the menu.

4-7 Set the priority channel (WATCH MODE)

US model only.

If you are operating on the USA or Canadian channel banks, you can set the priority channel to cover both CH16 and CH09 as well as the working channel, similar to a TRI WATCH.



1. Select RADIO SETUP then WATCH MODE.
2. Select the desired setting then press ENT.

4-8 Weather alerts (WX ALERT)

US model only.

Use WX ALERT to set your preferences for weather alert information.

The NOAA provides several weather forecast channels on USA and Canadian channel banks. If severe weather such as storms or hurricanes are forecast, the NOAA broadcasts a weather alert on 1050 Hz.

The NOAA All Hazards Weather Radio Service (NWR) works in conjunction with the Emergency Alert System (EAS) to issue weather alerts for specific geographic areas or specific weather conditions. It uses a digital encoding system known as SAME (Specific Area Message Encoding) to broadcast these alerts.

Each transmitter in the NOAA All Hazards Weather Radio Service (NWR) network is identified with a unique 6-digit SAME code. Each transmitter operates on one of 7 frequencies.

Note: To activate a SAME alert, a SAME CODE (county ID) must be selected and turned ON (see section 4-8-2).

4-8-1 TONE ALERT

If TONE ALERT is ON and an alert tone of 1050 Hz is broadcast from the NOAA weather station, the weather alert is picked up automatically and the alarm sounds. Press any key to cancel the alarm and to hear the weather alert message.

1. Select RADIO SETUP then WX ALERT.
2. Select TONE ALERT.
3. Select ON to hear any weather alerts on 1050 Hz - the TONE ALERT symbol will be displayed on the LCD ***or***, to ignore these weather alerts, select OFF.

4-8-2 SAME ALERT

Note: SAME ALERT works only after you have entered and selected a SAME code for your geographic area (see Section 4-8-5 and 4-8-6).

Note: SCAN mode will operate up to 50% more slowly when SAME ALERT is ON to allow time to decode the special warning code transmissions.

1. Select RADIO SETUP then WX ALERT.
2. Select SAME ALERT.
3. Select ON to receive any local NWR or EAS alerts - the SAME ALERT symbol SAME will be displayed on the LCD ***or***, to ignore these weather alerts, select OFF.

4-8-3 Receiving a SAME ALERT

If SAME ALERT alert is ON and an NWR or EAS alert for your geographic area is broadcast by the NOAA NWR transmitters, the alert is picked up automatically and the alarm sounds. Press any key to cancel the alarm.

If the alert is being sent by NOAA NWR, the radio automatically tunes to the designated frequency so that you can listen to the alert.

If the alert is being sent by the EAS, the nature of the alert is shown on the LCD as WARNING, WATCH, ADVISORY, or TEST.
Press any key to show the nature of the alert. (The list of alerts is shown in Appendix C.)

4-8-4 Receiving SAME TEST messages

In addition to the WARNING, WATCH and ADVISORY alerts, the EAS also send out TEST messages so that you can check your WX ALERT setup is working correctly. The TEST message is usually transmitted between 1000 and 1200 (10.00AM and noon) every Wednesday.

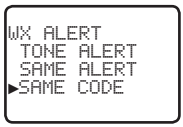
Note: If there is a threat of severe weather, the test is postponed until the next good weather day.

If your WX ALERT setup is working correctly, the alert sounds and TEST is displayed on the LCD, followed by a broadcast message from the National Weather Service.

4-8-5 Enter a SAME CODE (County ID)

If you want to receive SAME weather alerts, you must enter and then Select a SAME code for your geographic area into your radio. You can enter a maximum of 4 SAME codes (4 counties) in your geographic area.

Telephone 1-888-NWR-SAME (1-888-697-7263) or visit www.nws.noaa.gov/nwr/indexnw.htm to find the SAME codes for your geographic area (you must be within the United States of America, Puerto Rico, the U.S. Virgin Islands and U.S. Pacific Territories).

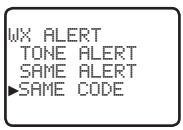


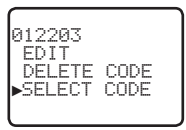
1. Select RADIO SETUP then WX ALERT.
2. Select SAME CODE. If you have already entered any SAME codes, they are listed on the LCD.
3. Select NEW CODE. Enter the new SAME code along the dashed line, one number at a time. Press ENT to confirm each correct entry and to move to the next digit.

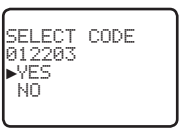
   If you make an error, press – until < appears, then press ENT to backup and correct the entry.
4. Press ENT to store the SAME code.
5. Repeat if necessary to enter a maximum of 10 SAME codes.

4-8-6 Select a working SAME code

You must select a SAME code for your geographic working area that you have previously entered into the radio in order to receive SAME weather alerts:



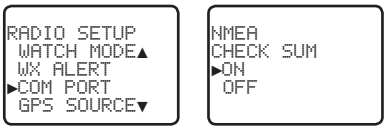




1. Select RADIO SETUP then WX ALERT.
2. Select SAME CODE. If you have already entered any SAME codes, they are listed on the LCD.
3. Select the SAME# for your geographic area (0122003 in the above example) and press ENT.
4. Choose SELECT CODE. Then select YES.

4-9 NMEA protocol (COM PORT)

The COM PORT must be configured correctly before use. The radio can be added to a group of instruments using NMEA protocol.



1. Select RADIO SETUP then COM PORT.
2. Select the desired setting then press ENT.

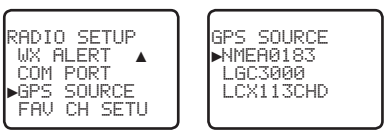
   CHECK SUM ON (on) is the usual setting.

   The COM PORT uses 4800 baud rate and can receive the following GPS data sentences: RMC, GGA, GLL, GNS. Additionally, the radio will output the following NMEA DSC data: DSC (for DSC call), DSE (for enhanced position).

4-10 Select the GPS source (GPS SOURCE)

This radio can use either NMEA 0183 or NMEA 2000 protocol to receive GPS data from a compatible GPS unit.

Note: NMEA 2000 SOURCE options will appear (up to 4 sources showing the actual source name) only if an NMEA 2000 network is connected to the radio and is operational.



1. Select RADIO SETUP then GPS SOURCE. (If there is only one NMEA protocol available on your vessel, only that will be shown).
2. Select the desired NMEA source then press ENT.

4-11 Favorite channel setup - Wx key (FAV CH SETU)

EU and AUS models only.

The Wx key can be programmed to a weather channel of your choice so that you have quick access to that channel.

1. Select RADIO SETUP then FAV CH SETU.
2. Rotate the CH knob or press UP/DOWN key to select a channel that you want to save as your WX favorite channel. Press ENT to save the selection. The WX icon Wx will indicate each time your favorite channel is selected.

Section 5 - DSC setup menu (DSC SETUP)

⚠ WARNING

A valid USER MMSI must be entered into the radio before these DSC functions can be used. See Section 5-1 for instructions on entering your USER MMSI.

Hold down CALL/MENU key for about 1 second to access the following DSC SETUP options. The following menu options are explained in this section.

DSC SETUP	**USER MMSI**		**Section 5-1**
	GROUP SETUP		**Section 5-2**
	ATIS MMSI (EU only)		**Section 5-3**
	ATIS SELECT (EU only)		**Section 5-4**
	INDIV REPLY		**Section 5-5**
	DSC FUNC		**Section 5-6**
	LL REPLY		**Section 5-7**
	AUTO SWITC		**Section 5-8**
	TEST REPLY		**Section 5-9**
	TIMEOUT		**Section 5-10**

See sections 1-3 and 1-4 if you want to know how to move around the menu and enter, save and change data.

5-1 Enter or view your USER MMSI (USER MMSI)

This is a **once-only** operation. You must enter your user MMSI before you can access the DSC functions.

You can display and read your user MMSI at any time, but you get only one opportunity to enter your user MMSI.

The user MMSI (Marine Mobile Service Identity) is a unique 9 digit number, similar to a personal telephone number. It is used on marine transceivers that are capable of using DSC (Digital Select Calling).

Contact the appropriate authorities in your country to obtain your user MMSI. If you are unsure who to contact, consult your Simrad dealer.

1. Select DSC SETUP, then USER MMSI.

   If you have already entered your MMSI, it is shown on the LCD.
2. If this is the **first time** that you are entering your MMSI, a dashed line appears.

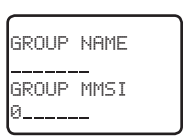
   Enter your MMSI along the dashed line, one number at a time. Press ENT to confirm each correct entry and to move to the next digit.

   If you make an error, press – until < appears, then press ENT to backup and correct the entry.
3. Press ENT to store your user MMSI.
4. Enter your user MMSI again as a password check, then press ENT to permanently store the user MMSI and return to the menu.
5. You can view your stored user MMSI at anytime by selecting USER MMSI in the main menu.

5-2 Maintain your groups

Use GROUP SETUP to create, edit, or delete 1, 2, or up to 20 groups of frequently called people stored in alphanumeric order. A group MMSI always starts with 0.

5-2-1 Create a group (GROUP SETUP)



1. Select DSC SETUP then GROUP SETUP.
2. Select MANUAL NEW.
3. If this is the **first time** that you are entering a group name, a dashed line appears
4. Enter the group name along the dashed line. It can be a maximum of 12 alphanumeric characters. Press ENT to confirm each correct entry and to move to the next position.

   If you make an error, press – until < appears, then press ENT to backup and correct the entry.
5. Enter the group MMSI. (Note that the first number is always a 0.) Press ENT.
6. The group name and group MMSI are shown in a confirmation screen. Press ENT to store the details and return to the GROUP SETUP screen.

5-2-2 Edit or delete a group name or group MMSI (GROUP SETUP)

You can edit a group name or group MMSI at any time.

1. Select DSC SETUP then GROUP SETUP. The existing group names are displayed.
2. Select the group you want to edit. Press ENT.
3. To delete the group, select DELETE then YES. The group is deleted immediately and the group list is displayed again.
4. To edit the group, select EDIT.
5. Edit the group name OR to edit only the MMSI, press ENT repeatedly until the cursor moves to the MMSI line.
6. When you are finished, press ENT (repeatedly if necessary) until a new LCD appears.
7. Press ENT to store the changes and return to the GROUP SETUP screen.

5-3 Enter or check your ATIS MMSI (ATIS MMSI)

EU models only.

You must enter your ATIS MMSI to access ATIS functionality if you are navigating inland waterways within Europe.

- ATIS sends a digital message any time that you release the PTT key. Inland waterways rules require 1 W Tx power on Channels 06, 08, 10, 11, 12, 13, 14, 15, 17, 71, 72, 74, and 77.
- An ATIS MMSI always starts with the number 9
- This is a **once-only** operation. You must enter your ATIS MMSI before you can access the ATIS functions
- You can display and read your ATIS MMSI at any time, but you get only one opportunity to enter your ATIS MMSI.

1. Select DSC SETUP then ATIS MMSI.

   If you have already entered your ATIS MMSI, it is shown on the LCD.

2. If this is the **first time** that you are entering your ATIS MMSI, a dashed line appears. Enter your ATIS MMSI along the dashed line. The first number is always 9. Press ENT to confirm each correct entry and to move to the next digit.

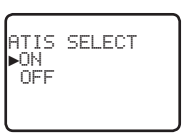
   If you make an error, press – until < appears then press ENT to backup and correct the entry.
3. Press ENT to store the ATIS MMS.
4. Enter your ATIS MMSI again as a password check, then press ENT to permanently store the ATIS MMSI and return to the menu.
5. You can view your stored ATIS MMSI at any time by selecting ATIS MMSI in the main menu.

5-4 Enable ATIS functionality (ATIS SELECT)

EU models only.

ATIS functionality will operate only after the ATIS MMSI has been entered (see previous section).

When ATIS functionality is enabled, the ATIS symbol ATIS is shown on the LCD.



1. Select DSC SETUP then ATIS SELECT.
2. Select OFF to disable ATIS functionality or select ON to enable the ATIS functionality - DSC must be turned off first.
3. Press ENT to confirm.

Note: It is not possible to have both ATIS ON (on) and DSC ON (on) simultaneously. If you want to activate ATIS, you must first switch DSC off. A warning will remind you if DSC is already ON.

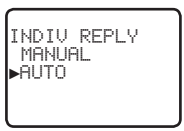
5-5 Response to individual calls (INDIV REPLY)

You can respond to incoming individual calls with an automatic response or with a manual response.

An automatic response sends an acknowledgement and then sets the request link channel, ready for a conversation.

A manual response asks if you want to acknowledge the call, and then asks if you want to converse with the caller.

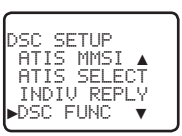
1. Select DSC SETUP, then INDIV REPLY.
2. Select AUTO for an automatic response, or MANUAL for a manual response.
3. Press ENT to confirm your choice and return to the menu.

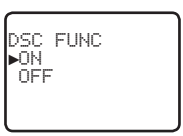


5-6 Enable DSC functionality (DSC FUNC)

DSC functionality will operate only after a valid USER MMSI has been entered - see 5-1.

When DSC functionality is selected, the DSC symbol DSC is shown on the LCD.





1. Select DSC SETUP then DSC FUNC.
2. Select OFF to disable DSC functionality or select ON to enable the DSC functionality - ATIS (if applicable) must be turned off first.

Note: Disabling DSC functionality is not recommended.

3. Press ENT to confirm.

Note: It is not possible to have both ATIS ON (on) and DSC ON (on) simultaneously. If you want to activate DSC, you must first switch ATIS off. A warning will remind you if ATIS is already ON.

5-7 Response type to LL polling calls (LL REPLY)

You can set up the radio to respond to an LL polling request in one of three ways:

- **MANUAL** reply manually to any incoming LL polling requests from your buddies.
- **AUTO** automatically replies to any incoming LL polling requests from any of your buddies.
- **OFF** ignores all incoming buddy LL polling requests.

1. Select DSC SETUP then LL REPLY.
2. Select your response and press ENT to confirm and return to the menu.

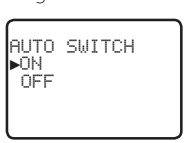
5-8 Automatic channel switching (AUTO SWITCH)

When a DSC call is received, it may include a request to change to a specific channel for subsequent communications. If a channel switch request is included, your options are:

- allow the radio to switch to the requested channel immediately by pressing the ENT button, or
- do nothing to allow the radio to automatically switch to the requested channel after a delay of 10 seconds, or
- cancel the automatic switch and remain on the current channel by pressing the EXIT button.

However, automatic switching to a subsequent communications channel on receipt of a DSC call might in some cases disrupt important ongoing communications if the working channel changes without the operator knowing.
You can prevent the radio from automatically switching from the current working channel by setting the AUTO SWITCH feature to OFF.

If the AUTO SWITCH feature is set to OFF, an **X** will be displayed on the LCD to remind you that this feature is set to off. Additionally, the text "AUTO SW OFF" will be included in an All Ships or Group call replacing the text "AUTO CHxx"



1. Select DSC SETUP, then AUTO SWITCH.
2. Select ON (on) to enable automatic channel switching.
3. Select OFF (off) to disable automatic channel switching.

5-9 DSC Test Reply (TEST REPLY)

You can respond to incoming DSC TEST calls with an automatic response or with a manual response.

- **MANUAL** manual response is required, press ENT to confirm or press EXIT to cancel.
- **AUTO** automatically replies after a 10 second delay with an ACK to any incoming DSC TEST call.

5-10 Set the inactivity timer (TIMEOUT)

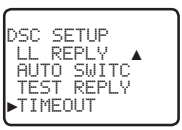
You can set the inactivity timer with the following options:

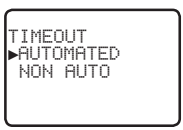
- **AUTOMATED** you can set the inactivity timer to automatically timeout after a period of inactivity for the following two categories: NON-DISTRESS or DISTRESS.
  Timeout options are:
  DISTRESS: NO TIMEOUT; 5 MINS; 10 MINS (default is NO TIMEOUT)
  NON-DISTR: NO TIMEOUT; 10 MINS; 15 MINS (default is 15 MINS)
- **NON AUTO** you can set the inactivity timer to exit any non-automated procedure activity.
  Timeout options are:
  NO TIMEOUT; 10 MINS; 15 MINS (default is 10 MINS)

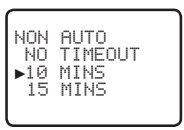
Note: If NO TIMEOUT is selected, then you must press the EXIT key to exit the procedure.

Example: to set a 10 minute TIMEOUT for non-automated functions:

1. Select TIMEOUT, then select NON AUTO
2. Select desired timeout period: NO TIMEOUT, 10 MINS or 15 MINS







In this example, 10 MINS has been selected, meaning the radio will exit any non-automated procedure after a period of 10 minutes of non-activity.

Section 6 - AIS setup menu (AIS SETUP)

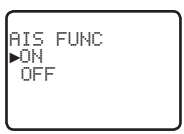
Hold down CALL/MENU key for about 1 second to access the following AIS SETUP options. The following menu options are explained in this section.

AIS SETUP	AIS FUNC		Section 6-1
	AIS DISPLAY		Section 6-2
	BAUD RATE		Section 6-3
	GPS REDIR		Section 6-4
	CPA ALARM		Section 6-5
	CPA		Section 6-6
	TCPA		Section 6-7

See sections 1-3 and 1-4 if you want to know how to move around the menu and enter, save and change data.

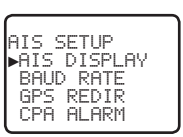
6-1 Enable AIS functionality (AIS FUNC)

The AIS function can be turned ON or OFF. When AIS functionality is selected, the AIS symbol AIS is shown on the LCD.



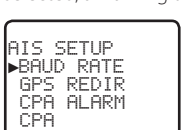
6-2 AIS data display format (AIS DISPLAY)

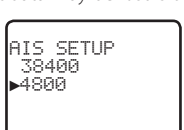
When viewing the AIS plotter screen, AIS targets can be displayed with the vessels name or the vessels MMSI.

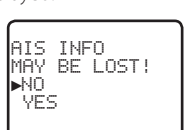


6-3 AIS baud rate (BAUD RATE)

AIS data can be output to a compatible chart-plotter / MFD or PC via the NMEA port. The NMEA port baud rate can be set to 4800 or 38400. The default setting is 38400. If 4800 is selected, a warning that data may be lost is displayed.



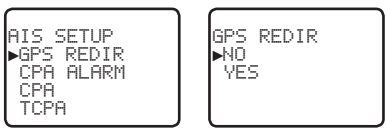




6-4 GPS redirection (GPS REDIR)

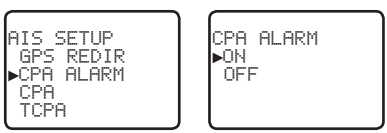
GPS redirection option set to output the GPS information to the chartplotter eliminating the need for an additional multiplexer.
If "yes" is selected, the string $RMC will be redirected to the chartplotter once it is received.

Note: The REDIR function will only redirect RMC and GLL messages from NMEA 0183 input port to the AIS output port.



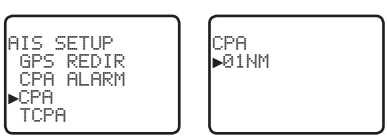
6-5 Closest point of approach alarm (CPA ALARM)

Enables the CPA alarm. If set to OFF, there will be no T/CPA alarms regardless of the settings.



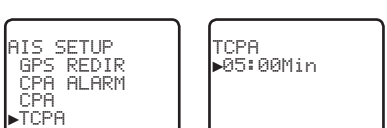
6-6 Closest point of approach settings (CPA)

CPA is the minimum distance between you and a target vessel based on the current speed and course. You can set the minimum distance for CPA alarm to sound (1 NM to 30 NM). Rotate the dial to set the CPA distance in 1 NM increments. Press ENT when done.



6-7 Time to closest point of approach (TCPA)

TCPA is the minimum time of intercept between you and a target vessel based on the current speed and course. Set the minimum time for the TCPA alarm to sound (5 Min to 30 Min). Rotate the dial to set the TCPA time in 30 sec increments. Press ENT when done.



Section 7 - Wireless handset setup menu (HS SETTING)

Hold down CALL/MENU key for about 1 second to access the following HS SETTING options. The following menu options are explained in this section.

HS SETTING	SUBSCRIBE		Section 7-1
	REGISTERED HS		Section 7-2

See sections 1-3 and 1-4 if you want to know how to move around the menu and enter, save and change data.

7-1 Register a wireless handset (SUBSCRIBE)

Before a HS35 wireless handset can be used with the RS35 radio, it must be registered (paired) with the radio through the subscription process.

1. Ensure the HS35, that you want to subscribe, is charged and turned OFF.

Note: If you have another HS35 that is already subscribed to the RS35, **ensure it remains off** during this proceedure.

On the RS35 base station radio:

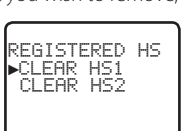
2. Select HS SETTING, then SUBSCRIBE.
3. Select YES. The radio will display WAITING.

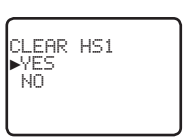
On the HS35 wireless handset:

4. Turn ON the HS35 that you want to subscribe to the RS35, the display will show SEARCHING.
5. Press SCAN key until the display shows REGISTER.
6. The display will soon show CONNECTING, and then the HS35 will be paired to the RS35.

7-2 Delete a registered wireless handset (REGISTERED HS)

1. To delete an already registered handset, select REGISTERED HS.
2. Select the handset you wish to remove, press ENT and then YES.





Section 8 - Sending and receiving DSC calls

⚠ WARNING

A valid USER MMSI must be entered into this radio before these DSC functions can be used. See section 5-1.

8-1 What is DSC?

DSC (Digital Selective Calling) is a semi-automated method of establishing VHF, MF, and HF radio calls. It has been designated as an international standard by the IMO (International Maritime Organization) and is part of the GMDSS (Global Maritime Distress and Safety System).

Currently, you are required to monitor Distress Channel 16, but DSC will eventually replace listening watches on distress frequencies and will be used to broadcast routine and urgent maritime safety information.

DSC enables you to send and receive calls from any vessel or coast station that is equipped with DSC functionality and within geographic range. Calls can be categorized as distress, urgency, safety, or routine, and DSC selects a working channel automatically.

8-2 Sending DSC Calls

You can call any other person that has another DSC equipped radio.

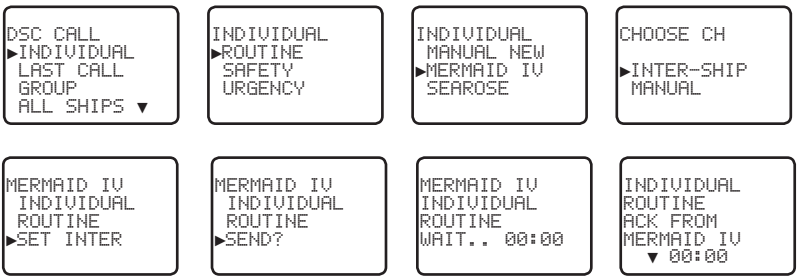
- Quick press the CALL / MENU key to access the following DSC CALL menu options – select LAST CALL to quickly call back the person who called you.
- Note that only four DSC CALL menu options can be shown on the LCD at any one time.
- Press + or – on the microphone ***or*** turn the Channel Select knob on the base station to scroll up or down through the menu until the cursor is positioned at the desired option. Press ENT (the center of the Channel Select knob) to display that option.

The following options are available:

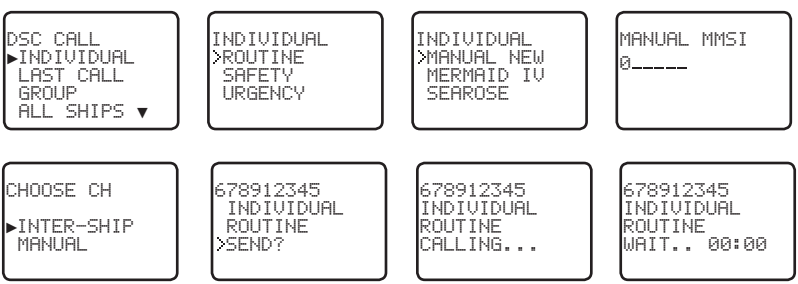
DSC CALL	**INDIVIDUAL**	Make a DSC Call	Section 8-3
	LAST CALL	Repeat the last DSC Call	Section 8-5
	GROUP	Make a Group DSC Call	Section 8-6
	ALL SHIPS	Make an All Ships DSC Call	Section 8-7
	CALL LOG	View DSC Call Log	Section 8-8
	DISTR LOG	View DSC Distress Log	Section 8-9
	SENT CALL	View DSC Sent Call Log	Section 8-10
	LL REQUEST	Request a position report	Section 8-11
	TRACK BUDDY	Automatically track Buddy's	Section 8-12
	DSC TEST	Make a DSC Test Call	Section 8-13
	MMSI/GPS	View MMSI and GPS information	Section 8-14

8-3 Send an individual call (INDIVIDUAL)

8-3-1 Call to a Buddy



8-3-2 Call to others



1. Select DSC CALL then INDIVIDUAL.
2. Select the priority level: ROUTINE, SAFETY, URGENCY.
3. Select the buddy you want to call from your buddy list - ***or*** Select MANUAL NEW then enter the MMSI of the individual you want to call and press ENT.
4. Choose a working channel to talk on. Select the INTER-SHIP and press ENT. The radio automatically lists all Inter-ship (Simplex) channels that can be used. Duplex channels cannot usually be called, however, If you wish to use a Duplex channel, select MANUAL instead, then select your channel of choice. If the call is to a Coast Station (MMSI begins with 00) the radio will recognize this and specify the correct channel to talk on.
5. Press ENT to SEND the call. Channel 70 is selected automatically and the Tx symbol is shown on the LCD while the call is being sent.
6. The radio waits for an acknowledgement (WAIT). If the call is acknowledged (INDIV ACK) press PTT to talk. Rotate the Channel Select knob to view additional options.
7. If there is no reply (UNABLE TO ACKNOWLEDGE) a message asks if you want to retry (SEND AGAIN?). Press ENT to retry the call.

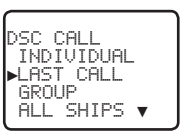
8-4 Acknowledgement of an individual incoming call (INDIV)

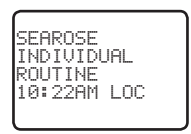
When an incoming call is received, the alarm sounds for 2 minutes and INDIVIDUAL is displayed.

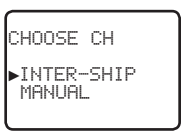
1. Press **SILENC** softkey (AIS/IC key) to silence the alert.
2. Press +/- button or rotate the CH knob to scroll any further information about the call.
3. Press **NEW-CH** softkey (AIS/IC key) to request a different working channel, or press **ABLE** softkey (WX/NAV key) to acknowledge the call.
4. Or press EXIT to return to standby.

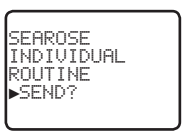
8-5 Reply to the Last Call (LAST CALL)

This facility is useful and used frequently.





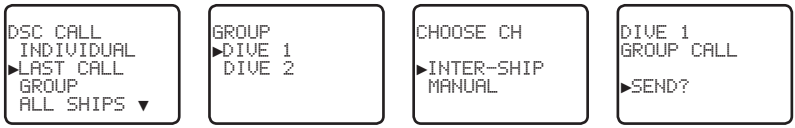




1. Select DSC CALL then LAST CALL.
2. The contact details of the most recent incoming call are displayed. Press ENT.
3. Choose a working channel to talk on. Select the INTER-SHIP and press ENT. The radio automatically lists all Inter-ship (Simplex) channels that can be used. Duplex channels cannot usually be called, however, If you wish to use a Duplex channel, select MANUAL instead, then select your channel of choice. If the call is to a Coast Station (MMSI begins with 00) the radio will recognize this and specify the correct channel to talk on.
4. The call details are shown. Press ENT to send the call. The Tx symbol is displayed on the LCD while the call is being sent.
5. If the call is acknowledged (INDIV ACK) press PTT to talk. If there is no reply a message asks if you want to retry (SEND AGAIN?). Press ENT to retry the call.

8-6 Send a group call (GROUP)

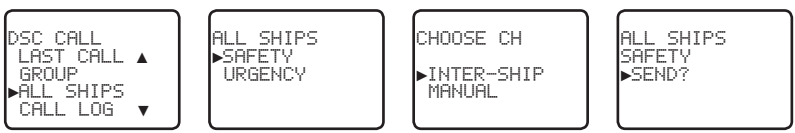
You must already have stored a GROUP MMSI before making the call - see Section 5-2. Group calls are always sent with ROUTINE priority.



1. Select DSC CALL then GROUP.

   The radio displays the names of your pre-programed groups.
2. Select the group that you want to call (the GROUP MMSI must be set before making the call).
3. Choose a working channel to talk on. Select the INTER-SHIP and press ENT. The radio automatically lists all Inter-ship (Simplex) channels that can be used. Duplex channels cannot usually be called, however, If you wish to use a Duplex channel, select MANUAL instead, then select your channel of choice.
4. The call details are shown. Press ENT to send the call. The Tx symbol is displayed on the LCD while the call is being sent.

8-7 Send an all ships call (ALL SHIPS)

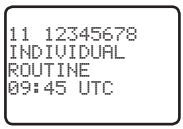


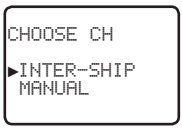
1. Select DSC CALL then ALL SHIPS.
2. Select one of the following call priorities:
   - **SAFETY** To send safety information to all other vessels in range.
   - **URGENCY** For use when a serious situation or problem arises that could lead to a distress situation.
3. Choose a working channel to talk on. Select the INTER-SHIP and press ENT. The radio automatically lists all Inter-ship (Simplex) channels that can be used. Duplex channels cannot usually be called, however, If you wish to use a Duplex channel, select MANUAL instead, then select your channel of choice.
4. The call details are shown. Press ENT to send the call. The Tx symbol is displayed on the LCD while the call is being sent.

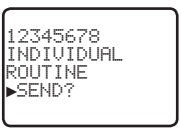
8-8 Send using the call log (CALL LOG)

The Call Log contains the contact details for the 20 most recent incoming calls, so that you can call any of them again quickly.

When the call log is full, the oldest entry is overwritten.

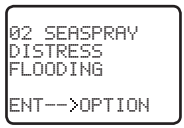


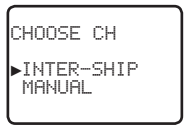


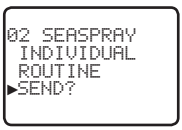


1. Select DSC CALL then CALL LOG.
2. The radio displays the contact details for the most recent incoming call as the first entry (01) in the call log. In the example, the contact details for the 11th most recent call are displayed. Press ENT to move to the next screen.
3. Press ENT again to confirm the call back.
4. Choose a working channel to talk on. Select the INTER-SHIP and press ENT. The radio automatically lists all Inter-ship (Simplex) channels that can be used. Duplex channels cannot usually be called, however, If you wish to use a Duplex channel, select MANUAL instead, then select your channel of choice. If the call is to a Coast Station (MMSI begins with 00) the radio will recognize this and specify the correct channel to talk on.
5. The call details are shown. Press ENT to send the call. The Tx symbol is displayed on the LCD while the call is being sent.

8-9 Send using the distress log (DIST LOG)





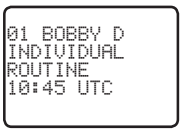


The Distress Log contains the Distress Log data for the 20 most recent received Distress Calls, so that you can call any of them quickly. Always try to make voice contact on CH16 first, as follows:

1. Select DSC CALL then DIST LOG.
2. The most recently received Distress Call is the first entry (01) in the Distress Log. Select the entry that you want to call and press ENT.
3. Select one of the following options:
   - **CALL BACK** To CALL the station.
   - **DELETE** To delete the details from the distress log.
   - **INFO** To view additional information about the station.
4. Select CALL BACK and press ENT.
5. Choose a working channel to talk on. Select the INTER-SHIP and press ENT. The radio automatically lists all Inter-ship (Simplex) channels that can be used. Duplex channels cannot usually be called, however, If you wish to use a Duplex channel, select MANUAL instead, then select your channel of choice. If the call is to a Coast Station (MMSI begins with 00) the radio will recognize this and specify the correct channel to talk on.
6. The call details are shown. Press ENT to send the call. The Tx symbol is displayed on the LCD while the call is being sent.

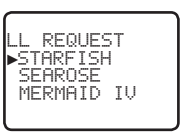
8-10 View sent call log (SENT CALL)

The Sent Call log contains the contact details for the 20 most recent sent calls, so that you review details of the call.



1. Select DSC CALL then SENT CALL. Scroll down to the desired sent call details.
2. The radio displays the details for the most recent sent call as the first entry (01) in the call log. In the example, the contact details for the most recent call are displayed.
3. Press ENT to advance to next screen. You now have the following options:
   - **DELETE** To delete the entry from the sent call log.

8-11 Request the LL position of a Buddy (LL REQUEST)



1. Press CALL to enter DSC mode, then select LL REQUEST.
2. Select the buddy whose LL position you want to request then press ENT to send the request.
3. The radio waits for an acknowledgement from your buddy. If there is no reply after 30 seconds the radio asks if you want to retry. Press ENT to retry the call.
4. If the call is acknowledged, press **SILENC** softkey (AIS/IC key) to silence the alert, press +/- button or rotate the CH knob to scroll any further information about the call.

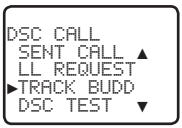
8-12 Track your Buddy (TRACK BUDDY)

You can select a buddy or buddy's to automatically track their positions. You must setup a tracklist first and set their track status to ON before buddy track can begin. You can also start and stop tracking your buddy and add or remove buddies from your buddy tracklist.

8-12-1 Start or stop tracking a Buddy (START TRACK)

Use START TRACK to track the position of a buddy(s) on your TRACKLIST whose status is ON (see the following section). The buddy's position is updated at the interval you select in INTERVAL (15, 30, or 60 minutes).

Note: START TRACK will only track buddy(s) on your TRACKLIST whose status is ON.

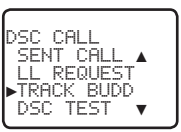


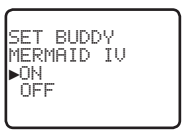
1. Select DSC CALL then TRACK BUDDY.
2. Select START TRACK. The status of each buddy on your tracklist (ON or OFF) is displayed.
3. Check that the status of the buddy (or buddies) that you want to track is ON, then press ENT.
4. Select YES then press ENT to start tracking (in this example, MERMAID IV and SEASPRAY.)

   An LL Request is sent to each buddy on CH70 and your radio waits for your buddy's LL position to be displayed on the LCD. See Section 8-20 for more information.

   (Select NO in the START TRACK page to STOP tracking your buddies.)

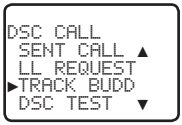
8-12-2 Select a Buddy to Track (SET BUDDY)





1. Select DSC CALL then TRACK BUDDY.
2. Select SET BUDDY to show the status of each buddy on your tracklist (ON or OFF).
3. Select the buddy whose status you want to change, then select the new status and press ENT to confirm.

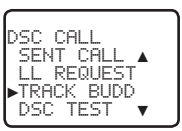
8-12-3 Add or delete a Buddy on your track list (TRACKLIST)



1. Select DSC CALL then TRACK BUDDY.
2. Select TRACKLIST. Any buddies already on the tracklist will be listed.
   Note: To delete a buddy from the tracklist, select that buddy then press ENT. Select YES then press ENT again to delete.
3. Select ADD NEW to show your buddy list. Buddy's must be already setup in your Buddy list - see section 3-3.
4. Select a buddy then press ENT to add that buddy to the tracklist.

8-12-4 Set the track your Buddy update interval (INTERVAL)

Set the interval rate at which the position of your buddy is updated - options are 15, 30 or 60 minutes.



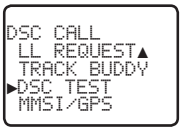
8-13 Make a DSC test call (DSC TEST)

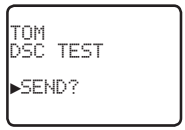
You can test your radio's DSC operation by sending a DSC TEST CALL to a Buddy or other station equipped with a DSC radio.

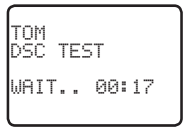
Note: You should not use a routine DSC call to test your radio and you should minimize the use of the safety channel for test purposes.

8-13-1 Send a DSC TEST call

1. Select DSC CALL then DSC TEST.
2. Select the buddy you want to call from your buddy list, or Select MANUAL NEW then enter the MMSI of the individual you want to call.
3. Press ENT to accept the selection.
4. Press ENT again to SEND the call. Channel 70 is selected automatically and the **TX** symbol is shown on the LCD while the call is being sent.
5. The radio waits for an acknowledgement (WAIT). If the call is acknowledged a notification is displayed.







6. If there is no reply after 30 seconds, the radio asks you if you want to retry.

8-13-2 Receiving an incoming DSC TEST call reply (DSC TEST ACK)

1. When you receive notification of a DSC TEST reply, press **SILENC** softkey (AIS/IC key) to silence the alert.
2. If the radio recognizes the user MMSI as one of your buddies, the buddy's name is displayed in place of the user MMSI.

8-13-3 Acknowledging an incoming DSC TEST call

The radio sounds a friendly two-tone alert when it detects an incoming DSC TEST call.

Note: If TEST REPLY is set to AUTO, no sound will be emitted.

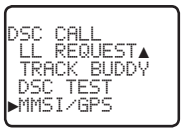
1. If the radio recognizes the MMSI as one of your buddies, your buddy's name is displayed in place of the MMSI.
2. Press **SILENC** softkey (AIS/IC key) to silence the alert.
3. The radio will automatically acknowledge the call if TEST REPLY is set to AUTO *(See section 5-9)* and after a TIMEOUT period set for AUTO REPLY *(See section 5-10)*.

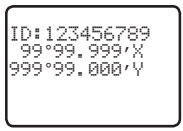
4. Alternatively, if TEST REPLY is set to MANUAL, a manual response is required, press ACK (AIS/IC key) to acknowledge the DSC Test Call.

5. Press +/- button or rotate the CH knob to scroll any further information (if available), or press EXIT to cancel.

8-14 View user MMSI and GPS information

The radio's MMSI can be viewed as well as the current position.





8-15 Receiving DSC calls

Several types of DSC calls can be received from vessels within range at various priority levels:

- **DISTRESS** See Section 9.
- **ALL SHIPS** Urgency or Safety priority (see Section 8-16)
- **INDIVIDUAL** Urgency, Safety, or Routine priority (see Section 8-17)
- **GROUP** Routine priority only (see Section 8-18)
- **GEOGRAPHIC** Routine priority only see Section 8-19)
- **POLLED POSITION** Routine or Safety priority (see Section 8-20)

In addition to the audible alert, the telephone icon will flash on the screen.

This is to remind you that a call is stored in the CALL LOG. Polled position call data is NOT stored.

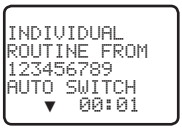
8-16 Receiving an all ships call (ALL SHIPS)

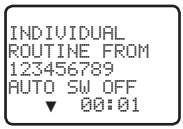
1. When you receive notification of an ALL SHIPS call, press **SILENC** softkey (AIS/IC key) to silence the alert. The priority level and the user MMSI are displayed on the screen. If the radio recognises the user MMSI as one of your buddies, the buddy name is shown in place of the user MMSI.
2. Press **ACCEPT** softkey (AIS/IC key) to switch to the designated channel immediately, Press +/- button or rotate the CH knob to scroll any further information about the call, or press EXIT to return the current DSC receive process.
3. If the display shows "AUTO SWITCH", the radio will automatically switch to the designated channel after 10s if no user intervention. For "AUTO SW OFF", a manual change is required - for "AUTO SWITCH" options, see section 5-8.

4. Press PTT to initiate voice contact on current display channel.

   The call data is stored in your Call Log (see Section 8-8).

8-17 Receiving an individual call (INDIV)

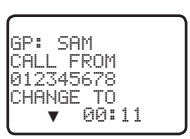




1. When you receive notification of an INDIV call, press **SILENC** softkey (AIS/IC key) to silence the alert. INDIV calls are almost always routine priority. If the radio recognises the user MMSI as one of your buddies, the buddy's name is displayed in place of the user MMSI.
2. Press +/- button or rotate the CH knob to scroll any further information about the call, or press EXIT to return the current DSC receive process.
3. You have the following options to respond the call:
   - **ABLE** softkey (WX/NAV key) respond to the call with requested channel
   - **NEW-CH** softkey (AIS/IC key) respond to the call with but request a different channel
   - **UNABLE** softkey (GO/MOB key) respond to the call with unable to use the requested channel (Note: this option is not available with ROUTINE calls)
4. If the display shows "AUTO SWITCH", the radio will automatically respond to the call after 10s if no user intervention. For "AUTO SW OFF", a manual responce is required - for "INDIV REPLY" options, see section 5-5.
5. The caller should respond to your acknowledgement by making voice contact designated channel. If this does not happen, you can press PTT to initiate voice contact instead.

   The call data is stored in your Call Log (see Section 8-8).

8-18 Receiving a group call (GROUP)



1. When you receive notification of a GROUP call, press **SILENC** softkey (AIS/IC key) to silence the alert. Press +/- button or rotate the CH knob to scroll any further information about the call.

   The priority level is always routine, and the group is identified on the screen. The group will be one of the 20 groups of frequently called people that you set up earlier (see Section 5-2).
2. Press **ACCEPT** softkey (AIS/IC key) to switch to the designated channel immediately, or

press EXIT to return the current DSC receive process.

3. If the display shows "AUTO SWITCH", the radio will automatically switch to the designated channel after 10s if no user intervention. For "AUTO SW OFF", a manual change is required - for "AUTO SWITCH" options , see section 5-8.
4. You do not need to send an acknowledgement. If desired, press PTT to initiate voice contact on the designated channel.

   The call data is stored in your Call Log (see Section 8-8).

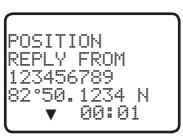
8-19 Receiving a geographic area call (GEOGRAPH)

A geographic call is received by vessels within a specific geographic boundary area.

1. When you receive notification of a GEOGRAPHICAL call, press **SILENC** softkey (AIS/IC key) to silence the alert. Then press **ACCEPT** softkey (AIS/IC key) to manually select the channel designated in the incoming call.

   The user MMSI or name is displayed on the screen. If the radio recognises the user MMSI as one of your buddies, the buddy's name is displayed in place of the user MMSI.
2. Press +/- button or rotate the CH knob to scroll any further information about the call, or press EXIT to return the current DSC receive process.
3. Monitor the working channel for an announcement from the calling vessel.

8-20 Receiving a polled position call (POSITION)



When you receive GPS position data from a buddy in response to your LL request you are recommended to make a written note of the position, especially is it is a good fishing position.

If enhanced LL position information is available from your buddy, press **SILENC** softkey (AIS/IC key) to silence the alert. Press +/- button or rotate the CH knob to scroll any further information about the call, or press EXIT to return the current DSC receive process.

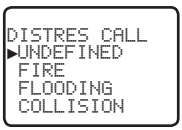
Note: DSC & DSE sentence will be output on the NMEA 0183 port for indication on a connected chartplotter / MFD.

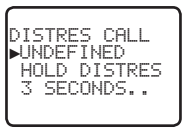
Section 9 - DISTRESS calls

⚠ WARNING

A valid USER MMSI must be entered into this radio before these DSC functions can be used. See section 5-1.

9-1 Sending a Distress Call





1. Open the red cover labelled DISTRESS.

   If time is available to specify the nature of the distress, go to step 2. Otherwise, go directly to step 3.

2. Press and release the DISTRESS key to display the following categories. Press +/- button or rotate the CH knob to select the category that describes your situation then press ENT.
   - **UNDEFINED** (Undefined)
   - **FIRE** (Fire)
   - **FLOODING** (Flooding)
   - **COLLISION** (Collision)
   - **GROUNDING** (Grounding)
   - **LISTING** (Listing)
   - **SINKING** (Sinking)
   - **ADRIFT** (Adrift)
   - **ABANDONING** (Abandoning)
   - **PIRACY** (Piracy)
   - **OVER BOARD** (Overboard)
3. Press and hold down the DISTRESS key for about 3 seconds, until you see the distress call sending message (DISTRESS CALL SENDING) on the screen. The whole display starts to flash and beep loudly.
4. After the Distress Call is sent, the radio waits for an acknowledgment.

   •The Distress call is automatically transmitted every 3.5 to 4.5 minutes, until an acknowledgement is received ("Call repeat" mode).

   •Press ▼ /▲ to display the transmitted Distress call information.

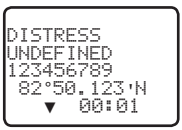
5. You now have the following options: RESEND, PAUSE, CANCEL:
6. To RESEND the call, press **RESEND** softkey (AIS/IC key) to enter "HOLD DISTRESS 3 SECONDS TO SEND" screen. Hold down DISTRESS key for 3s to resend the call or press **EXIT** softkey (AIS/IC key) to return to waiting for an acknowledgement call.
7. To PAUSE the call, press **PAUSE** softkey (WX/NAV key) to pause the "Call repeat" mode, press **EXIT** softkey (AIS/IC key) to resume the same call.
8. To CANCEL the call, press **CANCEL** softkey (GO/MOB key) to enter "DISTRESS CALL SEND CANCEL" screen.

   • Press **NO** softkey (WX/NAV key) to return to waiting for an acknowledgement call.

   • Press **YES** softkey (AIS/IC key) to send the DISTRESS CANCEL call. Then press PTT to report your situation using the handset mic, after the report, press EXIT to return to the normal operating mode.
9. After receiving the acknowledgment, press **SILENC** softkey (AIS/IC key) then reply using the microphone, or press EXIT key to quit the current distress acknowledgment.

Note: Prior to receiving an acknowledgement, the distress alert call cannot immediately be terminated by you, it can only be cancelled by completing the distress call cancel process as described above (step 8).

9-2 Receiving a distress call (DISTRESS!)



An alert sounds when a distress call (DISTRESS!) is received.

1. Press **SILENC** softkey (AIS/IC key) to silence the alert. You do not need to send an acknowledgement.
2. The radio automatically selects CH16 after 10 seconds if no user intervention, or press **ACCEPT** softkey (AIS/IC key) to change to CH16 immediately.
3. Press +/- button or rotate the CH knob to view details of the distress call. Details include the user MMSI and nature of the emergency (if specified), also the time and the location (if specified). If the location and time are not specified, these are replaced with sequences of 9s and 8s respectively.

   • The radio is capable of receiving enhanced LL position data if the vessel transmitting the distress call is sending this. This provides the position of the distressed vessel to within 20 m (60 ft).
4. Press PTT to establish voice contact or press EXIT key to quit the DISTRESS RECEIVE call.

Note: The call data is stored in the Distress Log and location data (DSC & DSE) sentence will be output on the NMEA 0183 port for indication on a connected chartplotter / MFD.

9-3 Distress acknowledgement (DISTRESS ACK) or distress relay all ships (DISTRESS REL)

1. An alert sounds when a Distress ACK or Distress Relay all ship call is received. Press **SILENC** softkey (AIS/IC key) to silence the alert.
2. The radio automatically selects CH16 after 10 seconds if no user intervention, or press **ACCEPT** softkey(AIS/IC key) to change to CH16 immediately.
3. Press +/- button or rotate the CH knob to view details of the distress call. Details include the user MMSI and nature of the emergency (if specified), also the time and the location (if specified). If the location and time are not specified, these are replaced with sequences of 9s and 8s respectively.
4. Press PTT to make voice contact with the calling vessel. Maintain a listening watch on CH16 and standby to lend assistance

- For a Distress Acknowledgement (DISTRESS ACK) sent from the Search and Rescue (SAR) authorities of your country, your radio automatically cancels Distress Mode transmissions and CH16 appears. Press PTT to establish voice contact with the Search and Rescue (SAR) authority.
- The Search and Rescue (SAR) authorities of your country are the only instance allowed to send a Distress Acknowledgement (DISTRESS ACK).

5. Press EXIT key to quit the current DSC receive process.

Note: The call data is stored in the Distress Log and location data (DSC & DSE) sentence is sent on the NMEA 0183 port for indication on a connected chartplotter / MFD.

9-4 Distress relay individual (INDIV DISTR RELAY)

When an incoming Individual Distress Relay call is received, the alarm sounds and INDIV DISTR RELAY is displayed.

1. Press **SILENC** softkey (AIS/IC key) to silence the alarm.
2. Press +/- button or rotate the CH knob to view details of the distress call. Details include the user MMSI and nature of the emergency (if specified), also the time and the location (if specified). If the location and time are not specified, these are replaced with sequences of 9s and 8s respectively.
3. ALL MODELS: Press **ACCEPT** softkey (AIS/IC key) to immediately accept the channel change before the 10s timer expires
4. US MODELS: Press **ACK** softkey (AIS/IC key) to ACK the call after the 10s delay - for "INDIV REPLY" options, see section 5-5.
5. Press EXIT key to quit current receive DSC process..

Note: The call data is stored in the Distress Log and location data (DSC & DSE) sentence is sent on the NMEA 0183 port for indication on a connected chartplotter / MFD.

Section 10 - AIS functionality

⚠ CAUTION

Valid GPS data must be entered into this radio before the AIS functions can be used. The plotter PPI function will not display targets accurately with incorrect GPS data.

10-1 About AIS

The marine Automatic Identification System (AIS) is a location and vessel information reporting system. It allows vessels equipped with AIS to automatically and dynamically share and regularly update their position, speed, course and other information such as vessel identity with similarly equipped vessels. Position is derived from the Global Positioning System (GPS) and communication between vessels is by Very High Frequency (VHF) digital transmissions.

There are a number of types of AIS device as follows:

- Class A transceivers. These are similar to class B transceivers, but they are designed to be fitted on large vessels such as cargo ships and large passenger vessels. Class A transceivers transmit at a higher VHF signal power than class B transceivers and therefore can be received by more distant vessels, and also transmit more frequently. Class A transceivers are mandatory on all vessels over 300 gross tonnes on international voyages and certain types of passenger vessels under the SOLAS regulations.
- Class B transceivers. Similar to class A transceivers in many ways, but are normally lower cost due to the less stringent performance requirements. Class B transceivers transmit at a lower power and at a lower reporting rate than class A transceivers.
- AIS base stations. AIS base stations are used by Vessel Traffic Systems to monitor and control the transmissions of AIS transceivers.
- Aids to Navigation (AtoN) transceivers. AtoNs are transceivers mounted on buoys or other hazards to shipping which transmit details of their location to the surrounding vessels.
- AIS receivers. AIS receivers will generally receive transmissions from class A transceivers, class B transceivers, AtoNs and AIS base stations but do not transmit any information about the vessel on which they are installed.

This radio contains an AIS receiver only function.

10-2 AIS - Static and dynamic information

Defined transmit rates for Class A vessels shown below are provided for reference purposes only. The frequency of messages received will vary due to a number of factors including but not limited to such factors as antenna height, gain and signal interference.

- Static information is either broadcast every 6 minutes, when data has been amended, or upon request.

- Dynamic information is broadcast depending on speed and course alteration based on the following tables:

Ship's dynamic conditions	Normal reporting interval
At anchor or moored	3 Minutes
0-14 knots	10 Seconds
0-14 knots and changing course	3 1/3 Seconds
14-23 knots	6 Seconds
14-23 knots and changing course	2 Seconds
Ship faster than 23 knots	2 Seconds
Ship faster than 23 knots and changing course	2 Seconds

Platform's condition	Normal reporting interval
Class B Shipborne mobile equipment not moving faster than 2 Knots	3 Minutes
Class B Shipbome mobile equipment moving 2-14 Knots	30 Seconds
Class B Shipbome mobile equipment moving 14-23 Knots	15 Seconds
Class B Shipbome mobile equipment moving faster than 23 Knots	5 Seconds
Search and Rescue aircraft (airborne mobile equipment)	10 Seconds
Aids to Navigation	3 Minutes
AIS base station	10 Seconds

Source of information for above tables 1-1, 1-2: (ITU recommendations technical document: ITU-R M.1371-1)

10-3 Using the AIS receiver

Providing that other vessels with AIS transceivers installed are within radio range of your vessel, you should see their details appear on the AIS plotter screen. These details are also repeated on the NMEA ports for display on a compatible chartplotter / MFD.

Specific details of how to configure your chartplotter to make use of the AIS receiver features will be given in your chartplotter manual. If you are using charting software running on a PC, please refer to the instructions provided with your chartplotting software for details of how to configure it to display AIS information.

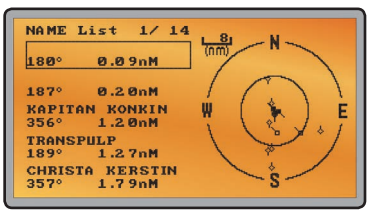
10-4 AIS Information and display

⚠ CAUTION

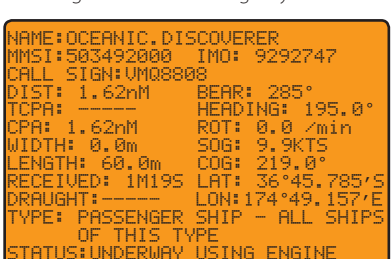
Not all vessels transmit AIS information and therefore not all vessels will be displayed or listed in the following AIS screens.

AIS vessel information can be displayed on the radios LCD screen:

1. Press the AIS/IC button to display the AIS plotter screen
   Note: You must have LAT/LON position information for targets to be displayed on the plotter PPI.



2. AIS target details will be displayed on the left of the screen. Either the vessels name or MMSI will be displayed (if the information is available) depending on the setting you selected in Section "6-2 AIS data display format (AIS DISPLAY)". Also the targets bearing and distance to you are displayed.
   Note: it could take some time before AIS targets are displayed.
3. A simple plotter PPI on the right hand side of the LCD shows the geographical location of the AIS targets with respect to your position which is in the center of the plotter PPI.
4. Press the Zoom In (3CH +/-) or Zoom Out (Scan) keys to change the scale of the plotter. The scale available is 1nm / 2 nm / 4 nm / 8 nm / 16 nm / 32 nm.
5. Press the AIS/IC key again to change the display to T/CPA Approach screen.
6. Rotate the knob to highlight any AIS target shown on the plotter screen. The selected target will have the target symbol filled in.



7. Press ENT to view full details of the highlighted target such as MMSI, Vessel name, distance, bearing, heading, ROT, COG, SOG, status and other vessel information.

10-4-1 T/CPA approach screen

1. When in AIS mode, press the AIS/IC key again to toggle between the standard AIS screen and the T/CPA Approach screen.
2. In TCPA Approach mode, the approaching AIS target's details are listed on the left side along with it's geographical position on the plotter PPI.
3. The zoom range is automatically selected to the best range according to the selected target on the left. You can't change the zoom range in this mode.
4. Press +/- button or rotate the CH knob to select the target, press ENT key to display target information, or press EXIT key to return to the previous display.

Note: If the radio detects a TCPA or CPA breach, the T/CPA Approach screen will automatically popup with an alert tone. Press EXIT to stop the alert. The alert will sound again after 1 minute if the AIS alarm has not been released.

10-4-2 Plotter symbols and meanings

Your vessel is always in the center of the plotter screen. You are represented by a solid circle, along with a small line that indicates your bearing with respect to North.

All other vessels or targets displayed on the plotter screen are represented by a diamond shape. These are targets around your vessel that are within the current zoom distance setting. The small line indicates the targets bearing.

When a target is selected, it is represented by a solid diamond.

Examples:

You and the target vessel are heading ***away*** from each other.

You and the target vessel are heading ***towards*** each other.

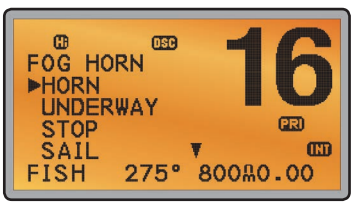
Note: Nautical Miles is the only unit used in AIS mode.

Section 11 - General functionality

11-1 Using the Fog Horn

An appropriate PA speaker must be connected to the Hailer wiring before the FOG HORN function can be used. The FOG HORN will sound certain international standard fog horn tones through the hailer speaker depending on the mode selected.

1. Press and hold the AIS/IC button for about 1 second to enter HAILER mode. Select FOG HORN and press ENT.



2. There are 8 choices of internationally recognized fog horn sounds and timing:

• **HORN**	(Horn)	Manual operation
• **UNDERWAY**	(Underway)	One long tone
• **STOP**	(Stop)	Two long tone
• **SAIL**	(Sail)	One long, two short
• **ANCHOR**	(Anchor)	One long warble
• **TOW**	(Tow)	One long, three short
• **AGROUND**	(Aground)	Warble sequence
• **SIREN**	(Siren)	Manual operation

3. Scroll through the menu to select a fog horn type, then press ENT to start the selected fog horn sounding. All except HORN and SIREN will sound automatically.

4. The fog horn will sound automatically approximately every two minutes until you press EXIT to cancel it. When the fog horn is not sounding, it is in LISTEN mode.

5. To change the volume, turn the Channel Select knob, or press + or – when the fog horn is sounding.

6. To operate HORN or SIREN, once selected, press and hold ENT button. This will sound as long as the ENT button is pressed. You can then also operate PTT to talk through the Hailer.

Note: you cannot change the volume of the HORN or SIREN.

11-2 Using the PA (Public Address) Hailer

An appropriate Hailer speaker must be connected to the Hailer wiring before the PA function can be used. The PA allows you to make an announcement at high volume to people or vessels using the RS35 hand mic. The PA function also features a listen-back mode - this mode uses the Hailer speaker as a microphone to listen for a response.

1. Press and hold the AIS/IC button for about 1 second to enter HAILER mode. Select PA and press ENT.
2. Press PTT to talk through the hailer. Turn the Channel Select knob, or press + or – to change the volume. Volume can only be changed while the PTT is pressed.
3. Release PTT to LISTEN for a response.

4. Press EXIT to return to operational mode.

Section 12 - Wireless handset functionality

This radio can operate with up to two optional HS35 wireless handsets. When an HS35 wireless handset is successfully 'subscribed' to the radio, the button and screens on each device will be mimicked.

Note: The HS35 must be subscribed to the RS35 base station radio before it can be used. See Section 7 on how to subscribe the wireless handset to the RS35.

Note: Maximum of two handsets can be subscribed to the RS35.

12-1 Using the wireless handset

Once the HS35 handset has been paired (subscribed) to the RS35, the screen and button functionality are mimicked on each device.

Most functions that are provided on the RS35 can be accessed by the HS35 with the following differences:

- AIS: There is no AIS PPI on the HS35 screen
- SETUP: Some setup functions are not available on the HS35.

When the HS35 is not in use, it should be placed back into the charger cradle. The HS35 is charged when placed in the cradle via a contact-less inductive charging system.

12-2 Using the intercom / Conference facility

The Intercom mode works ***only*** when one or two optional HS35 handset(s) are installed. Conference mode is only available when 2 handsets are connected and is used to connect all 3 units together. This disables the radio receiver, except for incoming DSC calls.

1. Hold down AIS/IC key to enter INTERCOM or CONFERENCE mode.

2. The intercom calls the other unit.
3. Press PTT when invited.
4. Press EXIT to quit the INTERCOM mode.

12-3 Wireless handset key functions

The following table explains the operation of each key:

Key:	Short press (<1 second)	Long press (>2 seconds)
	**Distress Key:** Enter Distress mode	**Distress Key:** Make a Distress Call (undesignated). Follow on-screen instructions
	**Volume Key:** Adjust volume up (+) and down (-)	**Volume Key:** Rapid adjust volume up (+) and down (-)
	**Priority key:** Select the Priority channel	**Priority key:** Select the Priority channel
	**AIS/IC key:** AIS mode	**AIS/IC key:** Intercom, or PA/Fog Horn mode
	**X/PWR key:** EXIT / Quit (previous menu without saving)	**X/PWR key:** Turn handset ON/OFF
	**SCAN key:** Normal/Stdby mode: Dual / Tri Watch DSC Call mode: 1st softkey	**SCAN key:** Normal/Stdby mode: All scan
	**3CH / +/- key:** Normal/Stdby mode: 3CH mode DSC Call mode: 3rd softkey	**3CH / +/- key:** Add/Delete 3CH channel
	**CALL/MENU key:** Enter DSC menu mode	**CALL/MENU key:** Enter MENU/SETUP mode
	**Up/Down keys:** Normal/Stdby mode: Change Channel Menu mode: Move cursor up/down Data Entry mode: change digits/numbers	**Up/Down Keys:** Normal/Stdby mode: Rapid change channel Menu mode: Move cursor up/down Data Entry mode: Rapid change digits/ numbers
	**Left/Right keys:** Adjust Squelch	**Left/Right keys:** Adjust Squelch

Key:	Normal/Standby mode:	Menu/Data entry mode:	DSC Call mode:
	Change Tx power - Hi or Lo	Accept or Confirm change	2nd softkey

Appendix A - Technical specifications

Simrad RS35

General	Unit	Limit
Standard Operation Temperature	°C	-20ºC to +55ºC (-4ºF to 131ºF)
Normal Working Voltage	V	12 V DC battery system (negative ground)
Low battery detect Voltage	V	10.5
Rx Current Drain at : Max Audio Power	A	≤1.5
: Stand-By	A	≤0.25
: Hailer Power	A	≤3.5
Tx Current Drain at : Hi Power	A	≤6 (@13.6 V DC)
: Lo Power	A	≤1.5 (@13.6 V DC)
Dimensions	mm	180.5 x 96.3 x 171
Weight	kg	1.63
VHF Frequency Range: Transmit	MHz	156.025 To 157.425 (default)
VHF Frequency Range: Receive	MHz	156.025 To 163.275 (default)
Oscillate Mode		PLL
Modulation		FM (16KOG3E) DSC (16K0G2B)
Usable channels		International, USA, Canada, Weather (country specific)
Channel Spacing	KHz	25
Frequency Stability	PPM	±5
Audio power of speaker in mike	dBA	80 dBA @ 1m
Audio power of speaker in base	dBA	94 dBA @ 1m (Ø=57mm)
Digital Selectivity Calling (DSC) CH70)		Class-D (EN301025) with dual receiver (individual
Standards – DSC		ITU-R M.493-13 (US models), EN 300-338-3 (EU models)
Standards – AIS		ITU-R M.1371-4
Standards - Other		EN 60950-1:2006 /A1:2010
LCD display		128 x 256 pixel LCD FSTN – 1.3" x 2.6"
Contrast control		Yes
Dimming control		Yes
Antenna connector		SO-239 (50 ohm)
NMEA 2000 connector		Micro-C (5 pin)
Waterproof		JIS-7
Compass safe distance:		0.5 m (1.5')

Receiver:		**Unit**	**Limit**
Intermediate Frequency	: 1st	MHz	21.4
	: 2nd	KHz	450
Sensitivity	: 12dB SINAD	dBuV	≤-6
Squelch Sensitivity		dBuV	≤6
Spurious Response Rejection Ratio		dB	≥70
Adjacent Channel Selectivity		dB	≥70
Intermodulation Response		dB	≥68
S/N at 3KHz Deviation		dB	≥40
Audio Output Power At THD 10%		W	5W (external speaker output)
Audio Distortion		%	≤5
Audio Response		dB	+1 to -3 dB of 6 dB/octave from 300 Hz to 3 kHZ
Transmitter:			
Frequency error		PPM	±5
RF Power		W	Hi: 23 ± 2 / Lo: 0.8 ± 0.2
Maximum Deviation		KHz	± 5
S/N at 3KHz Deviation		dB	40
Modulation Distortion ±3KHz		%	≤5
Audio Response at 1KHz Deviation		dB	+1 to -3 dB of 6 dB/octave from 300 Hz to 3 kHZ
Spurious/Harmonic Emissions	: Hi/Lo	uW	<0.25
Modulation Sensitivity		mV	≤20
Transmitter Protection			Open/short circuit of antenna

Communications:		
Comm. port - NMEA 0183		NMEA 0183, 4800 baud
Comm. port - NMEA 2000		NMEA 2000
NMEA 0183 input (receive):		RMC, GGA, GLL, GNS
NMEA 0183 output (transmit):		DSC (for DSC call), DSE (for enhanced position). AIVDM (AIS)
Hailer:		
Audio Power Out	W	30W @ 4 Ohms

AIS:		
AIS function		Yes, dual receivers only
Receiver Frequency	MHz	161.975, 162.025
		CH87 - 161.975; CH88 - 162.025 (default channel)
Supported AIS Information:		–Status/Destination/ETA
–Vessel Name		–Type of vessel
–Call sign		–MMSI number
–IMO number		–Draft/Size of vessel
–Vessel position		–SOG/COG/Rate of turn/Heading

HS35 wireless handset:	Unit	Limit
Rx Frequency	MHz	2401~2480
Rx Channel Number		80
Rx Sensitivity @ PER <=1%	dBm	-92
Rx Current	mA	<60
Nominal Transmit Power/Peak Power	dBm	18+/-2
Tx Frequency Error	ppm	<+/-30
Tx Current	mA	<150
Functional range	mtrs	
HS35 cradle voltage	V	12 V DC battery system (negative ground)
HS35 cradle current drain	A	≤0.5

Specifications are subject to change without notice.

RS35 NMEA 2000 PGNS

127250 Vessel Heading
127258 Magnetic Variation
129025 Position, Rapid Update
129026 COG & SOG, Rapid Update
129029 GNSS Position Data
129033 Time & Date
129038 Class A position report (Rx,Tx)
129039 Class B position report (Rx,Tx)
129040 Class B extended position report (Rx, Tx)
129041 AIS Aids to Navigation (AtoN) Report
129283 Cross Track Error
129284 Navigation Data
129285 Navigation Route/WP Information
129792 DGNSS Broadcast binary message (Tx)
129793 UTC and date report (Tx)
129794 Class A static and voyage related data (rx, tx)
129795 Addressed binary message (tx)
129796 Acknowledge (tx)
129797 Binary broadcast message (tx)
129798 SAR Aircraft Position report (tx)
129799 Radio Frequency/Mode/Power
129800 UTC/Date enquiry (tx)
129801 Addressed safety msg (rx,tx)
129802 Broadcast safety msg (rx,tx)
129803 Interrogation (tx)
129804 Assignment Mode Command (tx)
129805 Data Link Management message (tx)
129807 AIS Group Assignment
129808 DSC Call Information
129809 AIS Class B "CS" Static Data Report, Part A
129810 AIS Class B "CS" Static Data Report, Part B
130074 Route and WP Service - WP List - WP Name & Position
130842 AIS and VHF Messages (Simrad Proprietary for AIS Class B 'CS')

Appendix B - Troubleshooting

1. The transceiver will not power up.

A fuse may have blown ***or*** there is no voltage getting to the transceiver.

a) Check the power cable for cuts, breaks, or squashed sections.

b) After checking the wiring, replace the 7 Amp fuse.

c) Check the battery voltage. This must be greater than 10.5V.

2. The transceiver blows the fuse when the power is switched on.

The power wires may have been reversed.

a) Check that the red wire is connected to the positive battery terminal, and the black wire is connected to the negative battery terminal.

3. The speaker makes popping or whining noises when the engine is running.

Electrical noise may be interfering with the transceiver.

a) Re-route the power cables away from the engine.

b) Add a noise suppressor to the power cable.

c) Use resistive spark plug wires and/or use an alternator whine filter.

4. No sound from the external speaker.

a) Check that the external speaker cable is physically connected.

b) Check the soldering of the external speaker cable.

5. Transmissions are always on low power, even when high (Hi) power is selected.

The antenna may be faulty.

a) Test the transceiver with a different antenna.

b) Have the antenna checked out.

6. Battery symbol is displayed.

The power supply is too low.

a) Check the battery voltage. This should be at least 10.5 V ± 0.5 V DC.

b) Check the alternator on the vessel.

7. GPS alarm sounds and LCD shows: Please check GPS link! The NO GPS symbol is shown.

GPS data has been lost. This sequence will repeat every 4 hours until GPS data from an operational GPS receiver is available. The GPS cable may faulty or the GPS setting may be incorrect:

a) Manually enter your position and UTC time data (see Section 3.6.1)

b) Check that the GPS cable is physically connected.

c) Check the polarity of the GPS cable.

d) Check the baud rate setting of the GPS if applicable. The baud rate setting should be 4800. Parity should be set to NONE.

Appendix C - US & ROW VHF marine channel charts

The following channel charts are provided for reference only and may not be correct for all regions. It is the operators responsibility to ensure correct channels and frequencies are used for local regulations.

C-1 International channel chart

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG	REMARK
01	***156.050***	***160.650***	***D***	Public Correspondence	No	Yes	TELEPHONE	
02	***156.100***	***160.700***	***D***	Public Correspondence	No	Yes	TELEPHONE	
03	***156.150***	***160.750***	***D***	Public Correspondence	No	Yes	TELEPHONE	
04	***156.200***	***160.800***	***D***	Port Operations	No	Yes	PORT OPS	
05	***156.250***	***160.850***	***D***	Port Operations	No	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07	***156.350***	***160.950***	***D***	Port Operations	No	Yes	PORT OPS	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Inter-ship	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Port Operations	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge)	Yes	No	BRIDGE COM	
14	156.700	156.700	S	Port Operations	Yes	Yes	PORT OPS/VTS	
15	156.750	156.750	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	① 1W only
18	***156.900***	***161.500***	***D***	Port Operations	No	Yes	PORT OPS	
19	***156.950***	***161.550***	***D***	Ship to Shore	No	Yes	SHIP-SHORE	
20	***157.000***	***161.600***	***D***	Port Operations	No	Yes	PORT OPS	
21	***157.050***	***161.650***	***D***	Port Operations	No	Yes	PORT OPS	
22	***157.100***	***161.700***	***D***	Port Operations	No	Yes	PORT OPS	
23	***157.150***	***161.750***	***D***	Public Correspondence	No	Yes	TELEPHONE	
24	***157.200***	***161.800***	***D***	Public Correspondence	No	Yes	TELEPHONE	
25	***157.250***	***161.850***	***D***	Public Correspondence	No	Yes	TELEPHONE	
26	***157.300***	***161.900***	***D***	Public Correspondence	No	Yes	TELEPHONE	
27	***157.350***	***161.950***	***D***	Public Correspondence	No	Yes	TELEPHONE	
28	***157.400***	***162.000***	***D***	Public Correspondence	No	Yes	TELEPHONE	
60	***156.025***	***160.625***	***D***	Public Correspondence	No	Yes	TELEPHONE	
61	***156.075***	***160.675***	***D***	Port Operations	No	Yes	PORT OPS	

62	***156.125***	***160.725***	***D***	Port Operations	No	Yes	PORT OPS	
63	***156.175***	***160.775***	***D***	Port Operations	No	Yes	PORT OPS	
64	***156.225***	***160.825***	***D***	Public Correspondence	No	Yes	TELEPHONE	
65	***156.275***	***160.875***	***D***	Port Operations	No	Yes	PORT OPS	
66	***156.325***	***160.925***	***D***	Port Operations	No	Yes	PORT OPS	
67	156.375	156.375	S	Commercial, bridge-to-bridge	Yes	No	BRIDGE COM	
68	156.425	156.425	S	Inter-ship	Yes	No	SHIP-SHIP	
69	156.475	156.475	S	Port Operations	Yes	Yes	PORT OPS	
70	156.525	156.525	-	Digital Selective Calling - DSC	------	------	DSC	②
71	156.575	156.575	S	Port Operations	Yes	Yes	PORT OPS	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP-SHIP	
73	156.675	156.675	S	Port Operations	Yes	Yes	PORT OPS	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	
77	156.875	156.875	S	Ship to Shore	Yes	No	SHIP-SHORE	
78	***156.925***	***161.525***	***D***	Ship to Shore	No	Yes	SHIP-SHORE	
79	***156.975***	***161.575***	***D***	Port Operations	No	Yes	PORT OPS	
80	***157.025***	***161.625***	***D***	Port Operations	No	Yes	PORT OPS	
81	***157.075***	***161.675***	***D***	Public Correspondence	No	Yes	TELEPHONE	
82	***157.125***	***161.725***	***D***	Public Correspondence	No	Yes	TELEPHONE	
83	***157.175***	***161.775***	***D***	Public Correspondence	No	Yes	TELEPHONE	
84	***157.225***	***161.825***	***D***	Public Correspondence	No	Yes	TELEPHONE	
85	***157.275***	***161.875***	***D***	Public Correspondence	No	Yes	TELEPHONE	
86	***157.325***	***161.925***	***D***	Public Correspondence	No	Yes	TELEPHONE	
87	***157.375***	***161.975***	***D***	Public Correspondence	No	Yes	TELEPHONE	
88	***157.425***	***162.025***	***D***	Public Correspondence	No	Yes	TELEPHONE	

Special notes on international channel usage

①. LOW POWER (1W) only.

②. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70.
This channel is only available on DSC enabled radios.

Note:

- The INTERNATIONAL channel bank is not legal for use in U.S. or Canada waters.
- Select the INTERNATIONAL channel bank for use in Australia, New Zealand and other Asia Pacific regions, and all other regions where otherwise not specified.

KEY: S = Simplex operating channel; D = Duplex operating channel.

C-2 USA channel chart

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG	REMARK
01A	156.050	156.050	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
03A	156.150	156.150	S	US Government, Coast Guard	Yes	Yes	UNAUTHORIZED	④
05A	156.250	156.250	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07A	156.350	156.350	S	Commercial	Yes	Yes	COMMERCIAL	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Recreational Calling Channel	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Commercial, VTS in Selected Areas	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge), 1W with Power-up	Yes	No	BRIDGE COM	③ 1W
14	156.700	156.700	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
15	---	156.750	S	Environmental	------	------	ENVIRONMEN-TAL	② RX only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	① 1W only
18A	156.900	156.900	S	Commercial	Yes	Yes	COMMERCIAL	
19A	156.950	156.950	S	Commercial	Yes	Yes	COMMERCIAL	
20	***157.000***	***161.600***	***D***	Port Operations, Canadian Coast Guard	No	Yes	PORT OPS	
20A	157.000	157.000	S	Port Operations	Yes	Yes	PORT OPS	
21A	157.050	157.050	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
22A	157.100	157.100	S	Coast Guard Liaison	Yes	Yes	COAST GUARD	
23A	157.150	157.150	S	U.S. Government, Coast Guard	Yes	Yes	UNAUTHORIZED	④
24	***157.200***	***161.800***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
25	***157.250***	***161.850***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
26	***157.300***	***161.900***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
27	***157.350***	***161.950***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
28	***157.400***	***162.000***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
61A	156.075	156.075	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
63A	156.175	156.175	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
64A	156.225	156.225	S	U.S. Government, Canadian Commercial Fishing	Yes	Yes	UNAUTHORIZED	④
65A	156.275	156.275	S	Port Operations	Yes	Yes	PORT OPS	
66A	156.325	156.325	S	Port Operations	Yes	Yes	PORT OPS	
67	156.375	156.375	S	Commercial, bridge-to-bridge, 1W with Power-up	Yes	No	BRIDGE COM	③ 1W

68	156.425	156.425	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
69	156.475	156.475	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
70	156.525	156.525		Digital Selective Calling - DSC	------	------	DSC	⑥
71	156.575	156.575	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
72	156.625	156.625	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
73	156.675	156.675	S	Port Operations	Yes	Yes	PORT OPS	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	
77	156.875	156.875	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
78A	156.925	156.925	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
79A	156.975	156.975	S	Commercial	Yes	Yes	COMMERCIAL	
80A	157.025	157.025	S	Commercial	Yes	Yes	COMMERCIAL	
81A	157.075	157.075	S	U.S. Government, Environmental Protection Agency Operations	Yes	Yes	UNAUTHORIZED	④
82A	157.125	157.125	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
83A	157.175	157.175	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
84	***157.225***	***161.825***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
84A	157.225	157.225	S	Public Correspondence, Marine Operator				
85	***157.275***	***161.875***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
85A	157.275	157.275	S	Public Correspondence, Marine Operator				
86	***157.325***	***161.925***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
86A	157.325	157.325	S	Public Correspondence, Marine Operator				
87	***157.375***	***161.975***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
87A	157.375	157.375	S	Public Correspondence, Marine Operator				
88	***157.425***	***162.025***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
88A	157.425	157.425	S	Commercial, Inter-ship Only	Yes	No	COMMERCIAL	

Special notes on USA channel usage

①. LOW POWER (1 W) only.

②. Receive Only.

③. LOW POWER (1 W) initially. Override to HIGH POWER by holding down H/L key before transmitting. Used normally in bridge-to-bridge communications.

④. Lightly shaded simplex channels 03A, 21A, 23A, 61A, 64A, 81A, 82A, and 83A cannot be lawfully used in U.S. waters unless special authorization is obtained from the U.S. Coast Guard.
Not for use by the general public.

⑤. The letter "A" illuminated by the channel number indicates the USA channel is simplex.

This same channel is always duplex when selecting International. There is no "A" reference for International channels. The letter "B" is only used for some Canadian "Receive only" channels.

⑥. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70.
This channel is only available on DSC enabled radios.

KEY: S = Simplex operating channel; D = Duplex operating channel.

C-3 CANADA channel chart

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG	REMARK
01	***156.050***	***160.650***	***D***	Public Correspondence	No	Yes	TELEPHONE	
02	***156.100***	***160.700***	***D***	Public Correspondence	No	Yes	TELEPHONE	
03	***156.150***	***160.750***	***D***	Public Correspondence	No	Yes	TELEPHONE	
04A	156.200	156.200	S	Canadian Coast Guard, SAR	Yes	Yes	CANADIAN CG	
05A	156.250	156.250	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07A	156.350	156.350	S	Commercial	Yes	Yes	COMMERCIAL	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Recreational Calling Channel	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Commercial, VTS in Selected Areas	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge) 1W with power-up	Yes	No	BRIDGE COM	③ 1W
14	156.700	156.700	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
15	156.750	156.750	S	Commercial	Yes	Yes	COMMERCIAL	① 1W only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	① 1W only
18A	156.900	156.900	S	Commercial	Yes	Yes	COMMERCIAL	
19A	156.950	156.950	S	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
20	***157.000***	***161.600***	***D***	Canadian Coast Guard	No	Yes	CANADIAN CG	① 1W only
21	***157.050***	***161.650***	***D***	Port Operations	No	Yes	PORT OPS	
21A	157.050	157.050	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	
21B	---	161.650	S	Port Operations	------	------	PORT OPS	RX only
22A	157.100	157.100	S	Canadian Coast Guard Liaison	Yes	Yes	CANADIAN CG	
23	***157.150***	***161.750***	***D***	Public Correspondence	No	Yes	TELEPHONE	
24	***157.200***	***161.800***	***D***	Public Correspondence	No	Yes	TELEPHONE	
25	***157.250***	***161.850***	***D***	Public Correspondence	No	Yes	TELEPHONE	
25B	---	161.850	S	Public Correspondence	------	------	TELEPHONE	RX only
26	***157.300***	***161.900***	***D***	Public Correspondence	No	Yes	TELEPHONE	
27	***157.350***	***161.950***	***D***	Public Correspondence	No	Yes	TELEPHONE	
28	***157.400***	***162.000***	***D***	Public Correspondence	No	Yes	TELEPHONE	
28B	---	162.000	S	Public Correspondence	------	------	TELEPHONE	RX only
60	***156.025***	***160.625***	***D***	Public Correspondence	No	Yes	TELEPHONE	
61A	156.075	156.075	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④

62A	156.125	156.125	S	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
64	***156.225***	***160.825***	***D***	Public Correspondence, Duplex	No	Yes	TELEPHONE	
64A	156.225	156.225	S	U.S. Government, Canadian Commercial Fishing	Yes	Yes	UNAUTHORIZED	④
65A	156.275	156.275	S	Port Operations	Yes	Yes	PORT OPS	
66A	156.325	156.325	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
67	156.375	156.375	S	Commercial, SAR	Yes	No	COMMERCIAL	
68	156.425	156.425	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
69	156.475	156.475	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
70	156.525	156.525	S	Digital Selective Calling - DSC	------	------	DSC	⑥
71	156.575	156.575	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP - SHIP	
73	156.675	156.675	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
74	156.725	156.725	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
77	156.875	156.875	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
78A	156.925	156.925	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
79A	156.975	156.975	S	Commercial	Yes	Yes	COMMERCIAL	
80A	157.025	157.025	S	Commercial	Yes	Yes	COMMERCIAL	
81A	157.075	157.075	S	U.S. Government Operations	Yes	Yes	UNAUTHORIZED	④
82A	157.125	157.125	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
83	***157.175***	***161.775***	***D***	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
83A	157.175	157.175	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
83B	---	161.775	S	Canadian Coast Guard, RX Only	------	------	CANADIAN CG	
84	***157.225***	***161.825***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
85	***157.275***	***161.875***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
86	***157.325***	***161.925***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
87	***157.375***	***161.975***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
88	***157.425***	***162.025***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	

Special notes on Canada channel usage

①. LOW POWER (1 W) only.

②. Receive Only.

③. LOW POWER (1 W) initially. Override to HIGH POWER by holding down H/L key before transmitting. Used normally in bridge-to-bridge communications.

④. Lightly shaded simplex channels 21A, 23A, 61A, 64A, 81A, 82A, and 83A cannot be lawfully used in Canada waters unless special authorization is obtained from the Canadian Coast Guard. Not for use by the general public.

⑤. The letter "A" illuminated by the channel number indicates the Canada channel is simplex. This same channel is always duplex when selecting International.
There is no "A" reference for International channels. The letter "B" is only used for some Canadian

"Receive only" channels.

⑥. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70.
This channel is only available on DSC enabled radios.

Note: The CANADA mode is not legal to use in U.S. waters.

KEY: S = Simplex operating channel; D = Duplex operating channel.

C-4 US & Canada WEATHER channels

CH	RX (MHz)	TRAFFIC TYPE	NAME	REMARK
WX01	162.550	NOAA Weather Channel	NOAA WX	RX only
WX02	162.400	NOAA Weather Channel	NOAA WX	RX only
WX03	162.475	NOAA Weather Channel	NOAA WX	RX only
WX04	162.425	NOAA Weather Channel	NOAA WX	RX only
WX05	162.450	NOAA Weather Channel	NOAA WX	RX only
WX06	162.500	NOAA Weather Channel	NOAA WX	RX only
WX07	162.525	NOAA Weather Channel	NOAA WX	RX only
WX08	161.650	CANADIAN Weather Channel	CANADA WX	RX only
WX09	161.775	CANADIAN Weather Channel	CANADA WX	RX only
WX10	163.275	NOAA Weather Channel	NOAA WX	RX only

C-5 EAS (Emergency Alert Systems) alerts

National Codes Nature of Activation	Event Codes	Message
Emergency Action Notification (National only)	EAN	WARNING
	EAT	ADVISORY
National Information Center	NIC	ADVISORY
National Periodic Test	NPT	TEST
Required Monthly Test	RMT	TEST
Required Weekly Test	RWT	TEST

State and Local Codes Nature of Activation	Event Codes	Message
Avalanche Warning	AVW	WARNING
Avalanche Watch	AVA	WATCH
Blizzard Warning	BZW	WARNING
Child Abduction Emergency	CAE	WARNING
Civil Danger Warning	CDW	WARNING
Civil Emergency Message	CEM	WARNING
Coastal Flood Warning	CFW	WARNING
Coastal Flood Watch	CFA	WATCH
Dust Storm Warning	DSW	WARNING
Earthquake Warning	EQW	WARNING
Evacuation Immediate	EVI	WARNING
Fire Warning	FRW	WARNING
Flash Flood Warning	FFW	WARNING
Flash Flood Watch	FFA	WATCH
Flash Flood Statement	FFS	ADVISORY
Flood Warning	FLW	WARNING
Flood Watch	FLA	WATCH
Flood Statement	FLS	ADVISORY
Hazardous Materials Warning	HMW	WARNING
High Wind Warning	HWW	WARNING
High Wind Watch	HWA	WATCH

State and Local Codes Nature of Activation	Event Codes	Message
Hurricane Warning	HUW	WARNING
Hurricane Watch	HUA	WATCH
Hurricane Statement	HLS	ADVISORY
Law Enforcement Warning	LEW	WARNING
Local Area Emergency	LAE	WARNING
911 Telephone Outage Emergency	TOE	WARNING
Nuclear Power Plant Warning	NUW	WARNING
Radiological Hazard Warning	RHW	WARNING
Severe Thunderstorm Warning	SVR	WARNING
Severe Thunderstorm Watch	SVA	WATCH
Severe Weather Statement	SVS	ADVISORY
Shelter in Place Warning	SPW	WARNING
Special Marine Warning	SMW	WARNING
Special Weather Statement	SPS	ADVISORY
Tornado Warning	TOR	WARNING
Tornado Watch	TOA	WATCH
Tropical Storm Warning	TRW	WARNING
Tropical Storm Watch	TRA	WATCH
Tsunami Warning	TSW	WARNING
Tsunami Watch	TSA	WATCH
Volcano Warning	VOW	WARNING
Winter Storm Warning	WSW	WARNING
Winter Storm Watch	WSA	WATCH

For more information about the Emergency Alert System and event codes, visit:

http://www.nws.noaa.gov/os/eas_codes.shtml

Appendix D - EU VHF marine channel charts

The following channel charts are provided for reference only and may not be correct for all regions. It is the operators responsibility to ensure correct channels and frequencies are used for local regulations. For specific channel information for your country, please refer to local authorities.

D-1 EU international channel chart

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG	REMARK
01	***156.050***	***160.650***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
02	***156.100***	***160.700***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
03	***156.150***	***160.750***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
04	***156.200***	***160.800***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
05	***156.250***	***160.850***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07	***156.350***	***160.950***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	SHIP-SHIP	
09	156.450	156.450	S	Inter-ship	Yes	Yes	SHIP-SHIP	
10	156.500	156.500	S	Inter-ship	Yes	Yes	SHIP-SHIP	
11	156.550	156.550	S	Port Operations	Yes	Yes	PORT OPS	
12	156.600	156.600	S	Port Operations	Yes	Yes	PORT OPS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge)	Yes	No	SAFETY COM	
14	156.700	156.700	S	Port Operations	Yes	Yes	PORT OPS	
15	156.750	156.750	S	Inter-ship	Yes	Yes	PORT OPS	① 1W only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	Inter-ship	Yes	Yes	PORT OPS	① 1W only
18	***156.900***	***161.500***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
19	***156.950***	***161.550***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
20	***157.000***	***161.600***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
21	***157.050***	***161.650***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
22	***157.100***	***161.700***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
23	***157.150***	***161.750***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
24	***157.200***	***161.800***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
25	***157.250***	***161.850***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
26	***157.300***	***161.900***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
27	***157.350***	***161.950***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
28	***157.400***	***162.000***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
60	***156.025***	***160.625***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
61	***156.075***	***160.675***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	

62	***156.125***	***160.725***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
63	***156.175***	***160.775***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
64	***156.225***	***160.825***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
65	***156.275***	***160.875***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
66	***156.325***	***160.925***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
67	156.375	156.375	S	Commercial, bridge-to-bridge	Yes	No	SHIP-SHIP	
68	156.425	156.425	S	Port Operations	Yes	No	PORT OPS	
69	156.475	156.475	S	Inter-ship	Yes	Yes	SHIP-SHIP	
70	156.525	156.525	-	Digital Selective Calling - DSC	------	------	DSC	②
71	156.575	156.575	S	Port Operations	Yes	Yes	PORT OPS	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP-SHIP	
73	156.675	156.675	S	Inter-ship	Yes	Yes	SHIP-SHIP	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	
75	156.775	156.775	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
76	156.825	156.825	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
77	156.875	156.875	S	Inter-ship	Yes	No	SHIP-SHIP	
78	***156.925***	***161.525***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
79	***156.975***	***161.575***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
80	***157.025***	***161.625***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
81	***157.075***	***161.675***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
82	***157.125***	***161.725***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
83	***157.175***	***161.775***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
84	***157.225***	***161.825***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
85	***157.275***	***161.875***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
86	***157.325***	***161.925***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
87	157.375	157.375	S	Port Operations	No	Yes	PORT OPS	③
88	157.425	157.425	S	Port Operations	No	Yes	PORT OPS	③

Special notes on EU international channel usage

①. LOW POWER (1W) only.

②. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70.
This channel is only available on DSC enabled radios.

③. Maybe Duplex in some regions

KEY: S = Simplex operating channel; D = Duplex operating channel.

D-2 Inland waterways country specific table - ATIS ON

For specific channel information for your country, please refer to local authorities.

CH	SPECIFIC FOOT-NOTES	TRANSMITTING FREQUENCY (MHZ)		SHIP-TO-SHIP	SHIP-TO PORT	NAUTICAL INFORMATION
		SHIP	LAND			
60	a)	156.025	160.625			x
01	a)	156.05	160.65			x
61	a)	156.075	160.675			x
02	a)	156.1	160.7			x
62	a)	156.125	160.725			x
03	a)	156.15	160.75			x
63	a)	156.175	160.775			x
04	a)	156.2	160.8			x
64	a)	156.225	160.825			x
05	a)	156.25	160.85			x
65	a)	156.275	160.875			x
06	a) b)	156.3	156.3	x		
66	a)	156.325	160.925			x
07	a)	156.35	160.95			x
67	a) c)	156.375	156.375			x
08	a) q)	156.4	156.4	x		
68	a)	156.425	156.425			x
09	a) b) c)	156.45	156.45			x
69	a)	156.475	156.475			x
10	e)	156.5	156.5	x		
70	a)	156.525	156.525	Digital selective calling for distress, safety and calling		
11		156.55	156.55		x	
71		156.575	156.575		x	
12		156.6	156.6		x	
72	a) r)	156.625	156.625	x		
13	f)	156.65	156.65	x		
73	f) g)	156.675	156.675			x
14	q)	156.7	156.7		x	
74	a)	156.725	156.725		x	
15	h)	156.75	156.75			x
75	o)	156.775	156.775		x	
16	i)	156.8	156.8			x
76	j) d) o)	156.825	156.825			x
17	h)	156.85	156.85			x

77	a) k)	156.875	156.875	x		
18		156.9	161.5			x
78		156.925	161.525			x
19		156.95	161.55			x
79	a)	156.975	161.575			x
20		157	161.6			x
80		157.025	161.625			x
21	a)	157.05	161.65			x
81	a)	157.075	161.675			x
22		157.1	161.7			x
82	l) m)	157.125	161.725			x
23	m)	157.15	161.75			x
83	a) m)	157.175	161.775			x
24	m)	157.2	161.8			x
84	m)	157.225	161.825			x
25	m)	157.25	161.85			x
85	a) m)	157.275	161.875			x
26	m)	157.3	161.9			x
86	a) m)	157.325	161.925			x
27	m)	157.35	161.95			x
87	a) d)	157.375	157.375			x
28	m)	157.4	162			x
88	a) p)	157.425	157.425			x
AIS 1	a) n)	161.975	161.975			
AIS 2	a) n)	162.025	162.025			

General remarks to Country Specific table:

1 The channels for service categories ship-to-ship and nautical information may also be used for vessel traffic -systems by traffic centres.

2 In some countries, frequencies certain channels are used for an other service category or other radio services. These countries are Austria, Bulgaria, Croatia, the Federal Republic of Yugoslavia, Hungary, Moldova, Romania, the Russian Federation, the Slovak Republic, the Czech Republic (with exemption of channels 08, 09, 72, 74 and 86), Ukraine and the Federal Republic of Yugoslavia. The Administrations concerned should make any possible attempt to make these frequencies channels as soon as possible available for the radiotelephone service on Inland Waterways and/or the required service category.

Explanation of specific footnotes in Country Specific table:

a. In the countries mentioned under remark 2, it is strictly prohibited to use this channel.

b. This channel is not allowed to be used between Rhine km 150 and km 350.

c. In the Netherlands, this channel is used by for its on-scene communications during safety operations on the North Sea, IJsselmeer, Waddenzee, Ooster- and Westerschelde.

d. This channel may also be used for piloting, mooring, tugging and for other nautical purposes.

e. This channel is the first ship-to-ship channel, unless the competent authority has designated an other channel. In the countries mentioned under remark 2, it is allowed that the output power is set to a value between 6 and 25 W until 1 January 2005.

f. In the countries mentioned under remark 2, this channel is used for service category ship-to-port authorities.

g. In the Netherlands, this channel is used by its national coastguard for communications during oil pollution operations on the North Sea and for safety messages for the North Sea, Waddenzee, IJsselmeer, Ooster- and Westerschelde.

h. This channel may be used only for service category on-board communications.

i. This channel may be used only for communications between seagoing vessels and participating land stations in case of distress and safety communications within the maritime sea-areas. In the countries mentioned under remark 2, this channel may be used only for distress, safety and calling.

j. The output power shall be reduced automatically to a value between 0.5 and 1 W.

k. This channel may be used for communications with a social character.

l. In the Netherlands and Belgium, this channel may be used for transmitting messages concerning bunkering and victualling. The output power has to be reduced manually to a value between 0.5 and 1 W.

m. This channel may also be used for public correspondence.

n. This channel will be used for an automatic ship identification and surveillance system (AIS) capable of providing worldwide operating on seas and Inland Waterways.

o. The availability of this channel is on a voluntary basis. All existing equipment shall be capable to of operating on this channel within a ten-year period after the entry into force of this Arrangement.

p. After permission of the competent authority, this channel may be used only for special events on a temporary basis.

q. In the Czech Republic this channel is used for service category nautical information.

r. In the Czech Republic this channel is used for service category ship-to-port authorities.

D-3 Special channels

Country	Item	Chart	Primary channel
EU Standard, France, Greece, Spain, Portugal	DSC ON	EUR Default	
UK	DSC ON	EUR Default	M, M2
Belgium	DSC ON	EUR Default	31, 37, 96 (1W)
	ATIS ON	EUR Default	31, 96 (1W)
Norway, Finland	DSC ON		L1, L2, L3, F1, F2, F3
Sweden, Denmark	DSC ON		L1, L2, F1, F2, F3
Italy	DSC ON		
Italy (with Coast)	DSC ON		A0, A1, A2, A3, A4, A5, A6, C0, C1, C2, C3, C4, C5, C6, C7, C8, C9
Holland	DSC ON		31 (1W), 37
	ATIS ON	EUR Default	31 (1W)
Germany	DSC ON		
	ATIS ON	EUR Default	
Austria	DSC ON	EUR Default	
	ATIS ON	EUR Default	

Appendix E - MMSI and license information

You must obtain a user MMSI (Marine Mobile Service Identity) and enter it into your RS35 in order to use the DSC functions. Contact the appropriate authorities in your country. If you are unsure who to contact, consult your Simrad dealer.

The user MMSI is a unique nine digit number, similar to a personal telephone number. It is used on marine transceivers that are capable of using DSC (Digital Select Calling).

Depending upon your location, you may need a radio station license for the RS35 . You may also need an individual operator's license.

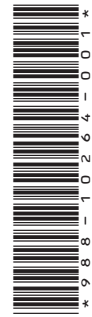
Simrad recommends that you check the requirements of your national radio communications authorities before operating DSC functions.

Countries of intended use in the EU:

AT - Austria	HU - Hungary	PL - Poland
BE - Belgium	IS - Iceland	PT - Portugal
BG - Bulgaria	IE - Ireland	RO - Romania
CY - Cyprus	IT - Italy	SK - Slovakia
CZ - Czech Republic	LI - Liechtenstein	SI - Slovenia
DK - Denmark	LV - Latvia	ES - Spain
EE - Estonia	LT - Lithuania	SE - Sweden
FI - Finland	LU - Luxembourg	CH - Switzerland
FR - France	MT - Malta	TR - Turkey
DE - Germany	NL - Netherlands	UK - United Kingdom
GR - Greece	NO - Norway	

⚠ CAUTION

Under extreme operating conditions, the temperature of the rear heat-sink on this radio may exceed normal surface temperatures.
Caution is advised to prevent possible skin burns.



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