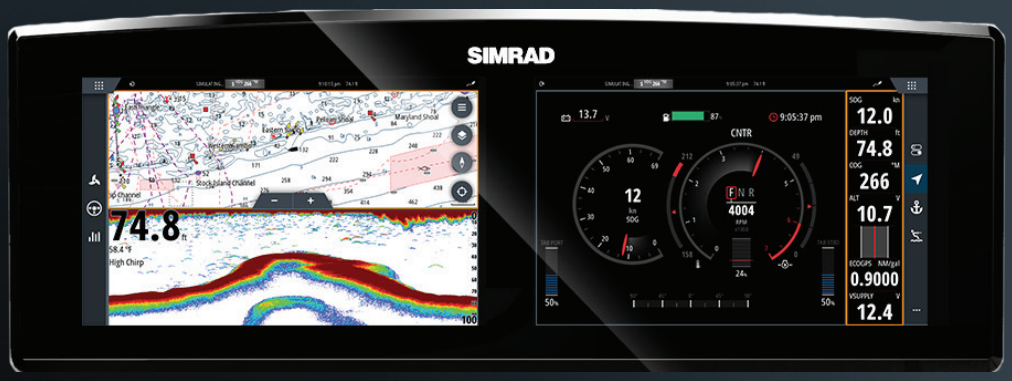
SIMRAD

IDS EXPERIENCE-BASED INTERFACE

User Manual

ENGLISH

Software version: 22.3



www.simrad-yachting.com

Preface

Disclaimer

⚠ Warning: Refer to important safety information in the product documentation and review all warnings, limitations, and disclaimers before using this product.

This product is not a substitute for proper training and prudent seamanship. 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 maritime safety practices.

Navigational features that appear in this document are not a substitute for proper training and prudent seamanship. They do not replace a human navigator and SHOULD NOT be relied on as a sole or primary source of navigation. It is the operator's sole responsibility to use more than one navigational methods to ensure the route suggested by the system is safe.

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Governing language

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Warranty

The warranty card is supplied as a separate document. In case of any queries, refer to the brand website of your unit or system:

www.simrad-yachting.com

Compliance statements

Europe

Hereby, Navico Group declares that the radio equipment complies with CE under RED Directive 2014/53/EU. The relevant Declaration of conformity is available in the product's section at the following website:

- www.simrad-yachting.com

United Kingdom

Hereby, Navico Group declares that the radio equipment complies with UKCA under The Radio Equipment Regulations 2017. The relevant Declaration of conformity is available in the product's section at the following website:

- www.simrad-yachting.com

United States of America

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠ Warning: The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

➔ ***Note:*** This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that of the receiver is connected
- Consult the dealer or an experienced technician for help

Canada

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Australia

This product complies with ACMA according to Radiocommunications Equipment (General) Rules 2021, Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2017, and Radiocommunications (Compliance Labelling - Devices) Notice 2014.

New Zealand

This product complies with RSM according to Radiocommunications (EMC Standards) Notice 2019 and Radiocommunications (Radio Standards) Notice 2020.

About this manual

Images used in this manual might not exactly match the screen on your unit.

Important text conventions

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 software version 22.3. The manual is continually updated to match new software releases. The latest available manual version can be downloaded from the following website:

- www.simrad-yachting.com

Translated manuals

Available translated versions of this manual can be found on the following website:

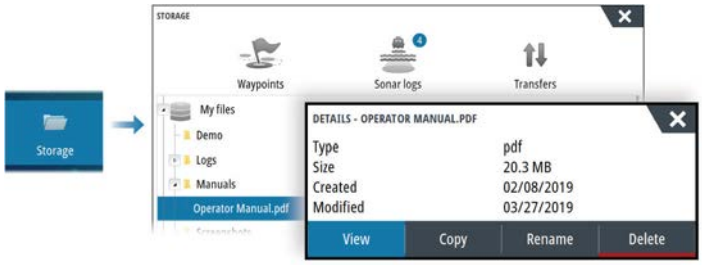
- www.simrad-yachting.com

Viewing the manual on the screen

The PDF viewer included in the unit makes it possible to read the manuals and other PDF files on the screen.

The manuals can be read from a storage device connected to the unit or copied to the unit's internal memory.

The following shows an example of a manual file name. Manual file names can vary depending on the unit.



Device registration

You are prompted to register your device during startup. You can also register it by following the instructions when selecting the registration option in the system settings dialog or system controls dialog.

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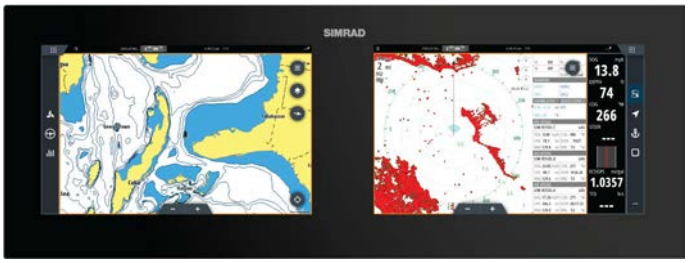
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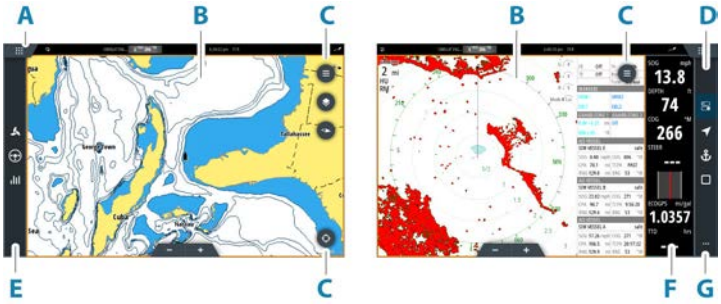
1 Introduction

System overview



System can consist of one to four displays working together and bonded to a single glass.

Display overview



- **A** Home/pages button
- **B** Application panel
- **C** Panel buttons
- **D** Activity bar
- **E** Control bar
- **F** Instrument bar
- **G** Edit activities button

Home page

The Home page is accessed from any operation by selecting the Home button.



- **A** Settings button
- **B** Toolbar
- **C** Application buttons
- **D** Status bar
- **E** Close button, closes the current panel.

F System Controls button

G Favorites bar

H Man Over Board (MOB) button

Settings button

Select to access application and feature settings dialogs. These dialogs are used to configure the feature during installation and for making user settings. The settings dialogs are explained toward the end of each application chapter.

The toolbar

This chapter includes descriptions for toolbar tools.

The toolbar is displayed in the home page. Press the Pages/Home key to display the home page. You can scroll the toolbar to view its options.



Waypoints

Includes waypoints, routes, and trails dialogs used for managing these user defined items.

Alarms

Dialogs for active and historical alarms. Also including the alarm settings dialog, listing options for all available system alarms.

Vessels

The status list displays status and available information for the following vessel types:

- AIS
- DSC

The messages tab shows messages received from other vessels. Select a message in the list to view details.

See details in *"AIS"* on page 68.

TripIntel

TripIntel lets you store and recall information on trips. Refer to *"TripIntel"* on page 46.

Storage

Access to the file management system. Use to browse and manage the contents of the unit's internal memory and storage devices connected to the unit.

Find

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

Phone

Used for connecting a phone to the MFD. See *"Using your phone with the MFD"* on page 129.

Store

Connects to the Navico internet store. At the store you can browse, purchase, acquire feature unlock keys, download compatible charts/maps for your system and much more.

➔ ***Note:*** The unit must be connected to the internet to use this feature. Refer to *"Internet usage"* on page 126.

Application buttons

Select an application button to open it. The application buttons that appear on the home page depend on what applications are setup in your system.

Press and hold an application button to display predefined split pages for the application. Select a predefined split page button to open the split page.

Status bar

Shows the status of the system. For definitions of status bar icons, refer to *"Status bar icon definitions"* on page 174.

System Controls button

Opens the System Controls dialog. The System Controls dialog provides quick access to basic system settings. Refer to *"System controls dialog"* on page 16.

Favorites bar

The favorites bar lists preconfigured pages and favorite pages you have made. Select a favorite page button to open the page.

Favorite pages can be single or multiple-panel pages. The unit display size determines the number of application panels that can be included on a favorite page.

The favorites bar also provides favorite page editing tools. All favorite pages can be modified. For information how to add and modify favorite pages, refer to *"Customizing favorite pages"* on page 18.

MOB waypoint

If an emergency situation should occur, you can save a crew overboard (MOB) waypoint at the vessel's current position.

Create a MOB

To create a crew overboard (MOB) waypoint:

- Select the MOB button on the Home page
- Press the MOB key on a remote controller

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

- A MOB waypoint is created 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 can be created. The vessel continues to show navigation information to the initial MOB waypoint. Navigation to subsequent MOB waypoints needs to be done manually.

Delete a MOB

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

Stop navigating to MOB



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

Application panels

An application panel shows the application and provides a menu with customize options. The application panels and the menu options are further explained in each application chapter in this manual.

Panel buttons

Panel buttons appear when you activate the application panel. They time-out and disappear when no panel interaction occurs over time.



Activity bar

Activity mode pages are shown on the screen(s) when an activity page icon is selected on the activity bar. An activity page displays relative application panels based on an activity. Activity icons on the activity bar vary depending on your setup.

The activity bar also provides an edit option. Use it to create and manage your own activity mode pages. Refer to *"Customizing activities"* on page 18.

Pre-defined activity pages

Pre-defined activity pages are provided. Pre-defined activity pages cannot be changed or deleted.

Control bar

The control bar contains buttons for launching controllers or features enabled in your system. The different controllers are described in applicable chapters later in the manual.

Instrument bar

The instrument bar displays information from sensors connected to the system.

You can select the predefined bar to be shown and you can change the information displayed in the predefined bar. Refer to *"Customizing the instrument bar"* on page 20.

You cannot hide the bar.

2 Basic operation

Turning the unit ON

The unit does not have a power key. How to turn ON the unit depends on your wiring setup, refer to the boat builder's manual.

First time startup

When the unit is started for the first time, or after a reset, the unit displays a series of dialogs. Respond to the dialog prompts to make fundamental settings.

You can perform further setup and later change settings using the system settings dialogs.

Standby mode

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

You select Standby mode from the System Controls dialog.

Touchscreen

The system is controlled by multiple touchscreen displays. For more information about using the touchscreen, refer to *"Touchscreen operation"* on page 173.

Remote controllers

You can connect a remote controller to the network and remotely control the unit. A separate manual is included with the remote controller.

To find out which remote controllers can be used, refer to the product web page at:

www.simrad-yachting.com

Smart devices can also be connected to the unit and remotely control the unit. For information about how to connect smart devices to remotely control the unit, refer to *"Remote control of the MFD"* on page 127.

System controls dialog

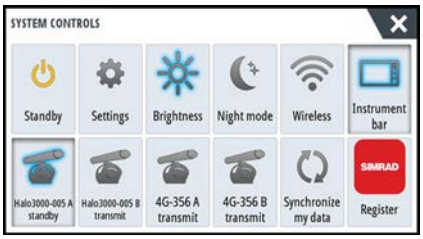
The System Controls dialog provides quick access to basic system settings.

The buttons displayed on the dialog vary with operational mode and connected equipment.

For those functions that toggle on and off, a highlighted button indicates the function is activated.

Display the dialog by:

- selecting the system controls button on the home page
- swiping down from the top of the screen on application pages



Accessing the menu

To display a page menu select the menu panel button.

To hide a page menu tap the screen outside the menu area.

In 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 menu of an active panel.

Display illumination

Brightness

The display backlighting can be adjusted from the System Controls dialog.

Night mode

The night mode can be activated from the System Controls dialog.

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

Single Sign-On

Use the Single Sign-On (SSO) authentication method to log on to your app account and automatically gain secure access without having to enter your login credentials via the multi-function display (MFD). This authentication method simplifies the process of accessing your account via the MFD keyboard, while eliminating the need to keep a record of login credentials.

Single Sign-On login

Note: An internet connection is required to sign into your app account.

You can log in using SSO using a QR code® on your MFD, or via web browser.

To log in using SSO:

1. On your MFD, go to **Settings > Services** and select **Synchronize my data**.
2. Use your mobile device to scan the QR code® which displays on the login page, or open a web browser on your mobile device and manually enter the web address listed on the MFD.
3. When prompted, enter your email address.

Note: If you do not have an account, you will be redirected to the sign-up page. Add your information to create an account.

4. Verify code:

- When logging on via web browser, enter the code which displays on the MFD.
- When logging on via QR code®, verify that the code on your mobile device matches the code on the MFD, and select **Yes, Allow connection**. If the codes do not match, you can choose to enter the code manually, or reject the connection request.

When connected, a success message displays on both your mobile device and the MFD, and your user ID is displayed on the **My Simrad account** page.

To log out, go to **Settings > Services > My Simrad account**, and select **Log out**.

You can also access **Synchronize my data** from the **System controls** dialog.

Screen capture

You enable/disable the screen capture option in the system settings dialog.

To take a screen capture:

- Tap the status bar or the dialog title

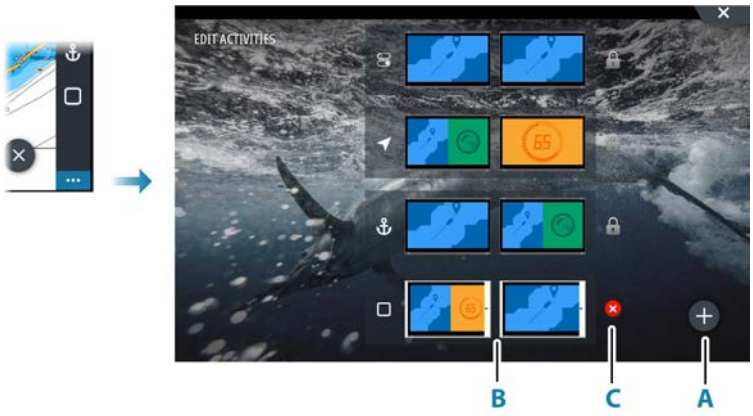
Screen captures are saved to internal memory.

3 Customizing your system

Customizing activities

You can create **A**, change **B** and delete **C** your own activities.

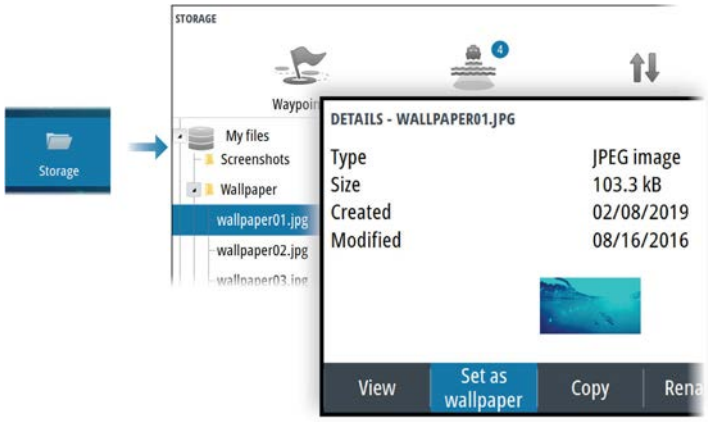
→ ***Note:*** You cannot change or remove pre-defined activities.



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 storage browser. When a picture is chosen as the wallpaper, it is automatically copied to the Wallpaper folder.



Customizing favorite pages

Multiple panel pages

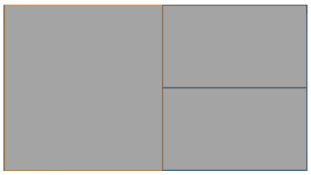
Panel sizes in a multiple panel page can be adjusted from the System Controls dialog. Refer to *"Adjusting the split on multiple panel pages"* on page 19.

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 menu of an active panel.



2 panels page



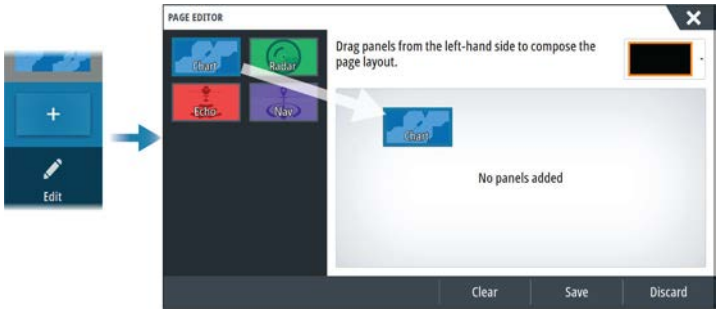
3 panels page

The shadow cursor on a multiple panel page

When using the cursor on a sonar (sonar, DownScan, or SideScan) image on a multiple panel page, the cursor is shadowed on the other sonar (sonar, DownScan, and SideScan), chart and radar panels.

Adding new favorite pages

Use the add icon in the home page panel to add a favorite page. In the Page Editor dialog, drag-and-drop the panels you want included in the favorite page.



Edit favorite pages

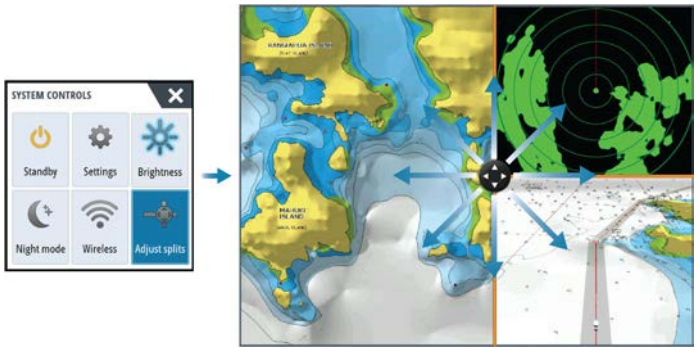
Select the edit button in the favorite panel and then:

- Select the X icon on a favorite button to remove the page
- Select the tool icon on a favorite button to display the page editor dialog



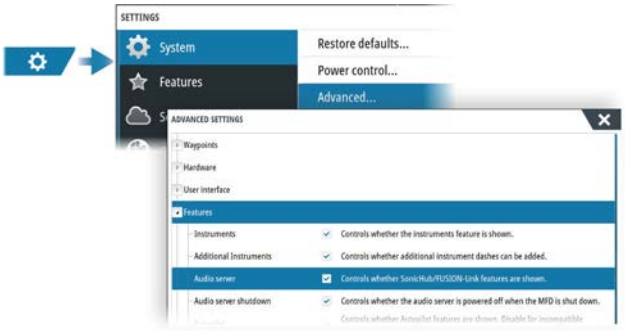
Adjusting the split on multiple panel pages

1. Open the multiple panel page
2. Open the System Controls dialog
3. Select the adjust splits option. The adjustment icon appears on the multiple panel page.
4. Select the adjustment icon and move the split to the desired position
5. Use menu options to save or discard your changes.



Enabling or disabling features

A compatible device connected to the unit should automatically be identified by the system. If not, enable the feature from the advanced settings dialog.



Activating/deactivating the Instrument app

Use the system settings features option to activate/deactivate the instrument app.

When the app is uninstalled, the icon is removed from the home page. The feature/application can be installed again from this same dialog.



Manage features and applications

You can manage and install/uninstall the features and apps. When a feature/app is uninstalled, the icon is removed from the home page. The feature/application can be installed again.

Feature unlock

Some additional features can be sold separately. These features can be unlocked by entering an unlock code.

Select the feature you want to unlock. Follow the instructions to purchase and enter the feature unlock code.

After a feature unlock code is entered in the unit, the feature is available for use.

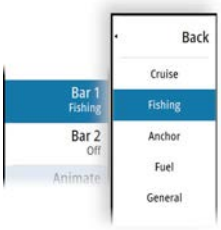
→ ***Note:*** The feature unlock option is only available if your unit supports a locked feature.

Customizing the instrument bar

→ ***Note:*** You must activate the instrument bar in the application to access the instrument bar menu.

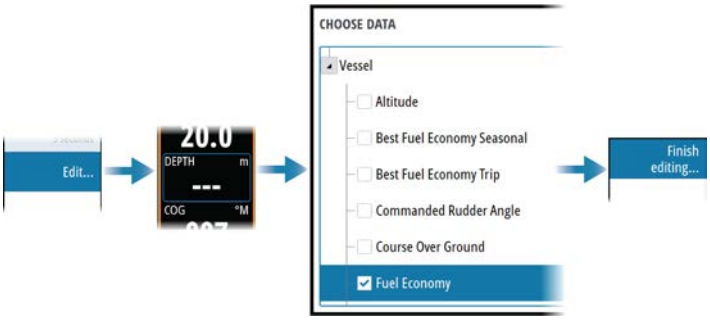
Select a predefined instrument bar

Use the menu to select a predefined activity based instrument bar.



Changing data

You can change data from the menu.

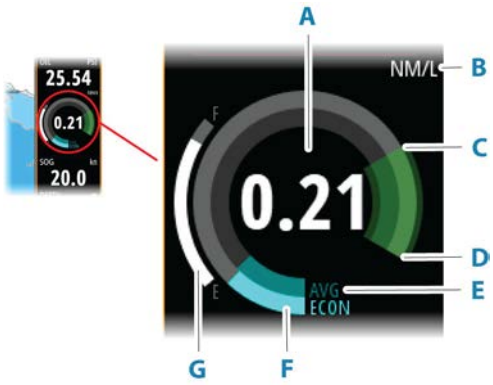


Reset the instrument bar

You can reset the instrument bar from the edit menu option to show the predefined default gauges.

Fuel economy gauge

You can display a fuel economy gauge in the instrument bar on application pages. Select the predefined Fuel bar or change a gauge source to the Fuel Economy option found in the Vessel category of the choose data dialog.



- **A** Digital readout of current economy
- **B** Fuel economy measurement units
- **C** 100% efficiency, this equates to the 'nominal consumption'
- **D** 120% efficiency
- **E** Average fuel economy
- **F** Instantaneous economy
- **G** Current fuel level

The fuel economy gauge displays the instantaneous versus historical average fuel efficiency. The start of the green zone represents 'Nominal Fuel Economy', and it displays an additional 20% area to allow your fuel efficiency to be displayed above the nominal fuel economy.

The more efficient you consume fuel, the more the outer blue dial creeps up towards the green portion of the scale. If you achieve the nominal efficiency of your vessel you will be at the green zone. If you manage to achieve an efficiency better than your nominal efficiency, you will be somewhere in the upper green zone.

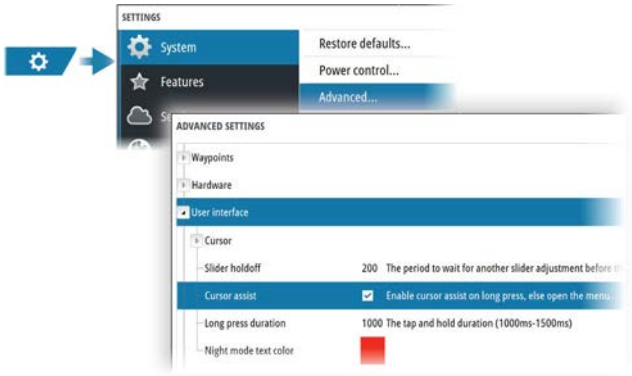
Nominal fuel economy can be entered in the Vessel Setup dialog displayed from the Fuel settings dialog.

You can reset your average fuel economy from the Reset Fuel Economy button on the Fuel settings dialog. When you reset it, the system starts calculating the new average.

Set the measurement units for the fuel economy gauge in the Economy field in the Units settings dialog.

Customizing the long press feature

You can specify if the long press on the panel opens the menu or displays the cursor assist feature on the panel.


SETTINGS
System
Features
Restore defaults...
Power control...
Advanced...
ADVANCED SETTINGS
Waypoints
Hardware
User interface
Cursor
Slider holdoff
200 The period to wait for another slider adjustment before
Cursor assist
Enable cursor assist on long press, else open the menu
Long press duration
1000 The tap and hold duration (1000ms-1500ms)
Night mode text color

4

Charts

The Chart panel



A North indicator

B Vessel

C Chart range scale

D Grid lines*

E Range rings*

* Optional chart items. Optional chart items can be turned on/off individually from the chart settings dialog.

Chart data

The system can be delivered with preloaded cartography.

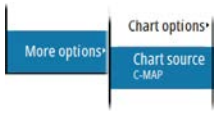
For a full selection of supported charts, visit the product web site.

→ ***Note:*** Chart menu options vary depending on the chart you are using.

Charts on chart cards are shared over the Ethernet network, so only one chart card per vessel is required.

→ ***Note:*** The system does not automatically switch to preloaded 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 preloaded cartography.

Selecting chart source



Available chart sources are listed in the menu.

If you have identical chart sources available, the system automatically selects the chart with most chart details for your displayed region.

Showing dual chart sources

If you have different chart sources available, you can show two different chart sources simultaneously on a page that has two chart panels.

Activate each chart page and select its source in the menu.

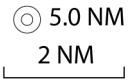
Vessel symbol



When the system 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.

If heading information is not available, the vessel icon orientates itself using COG (Course over Ground).

Zooming the chart



The chart range scale and range rings interval (when turned on) are shown on the chart panel. You change the scale by zooming the chart in or out.

Panning the chart

You can move the chart in any direction by:

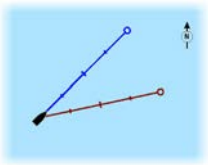
- Dragging the screen

Chart orientation



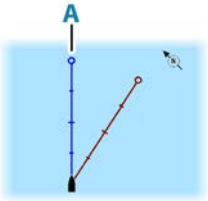
The chart orientation button in the panel's upper right corner toggles between different orientations.

North up



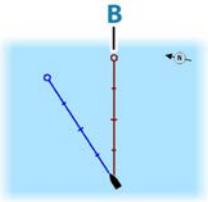
Displays the chart with north upward.

Heading up



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

Course up



The chart direction is depending on if navigating or not:

- When navigating: the desired course line (**B**) is oriented up
- When not navigating: the direction the vessel is actually traveling (COG) is oriented up

Look ahead

Moves the vessel icon on the panel to maximize your view ahead of the vessel.

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:*** If you are viewing applicable C-MAP charts on your system, you can select marine objects to display information about services and available multimedia (photos) associated with the location or object.

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



Using the cursor on the panel

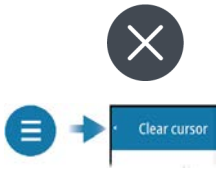
By default, the cursor is not shown on the panel.



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

Removing the cursor

You can remove the cursor and the cursor window from the panel by:



- selecting the clear cursor button
- selecting the clear cursor menu option

Restoring the cursor

You can restore the cursor to its last position by:

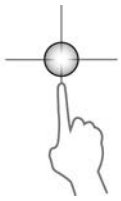


- selecting the restore cursor button
- selecting the restore cursor menu option

Go to cursor

You can navigate to a selected position on the image by positioning the cursor on the panel, and then using the go to cursor menu option.

The cursor assist function



→ ***Note:*** The cursor assist function is available if it is enabled. Refer to *"Customizing the long press feature"* on page 21.

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

Activate the cursor on the panel, then 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 to the desired position.

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 where you want to measure the distance to. 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.
2. The measuring points can be repositioned by dragging either icon while the measuring function is active.

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

The start measuring function can also be started 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. The measuring points can then be repositioned by dragging either icon.

Terminate the measuring function by selecting the finish measuring option.

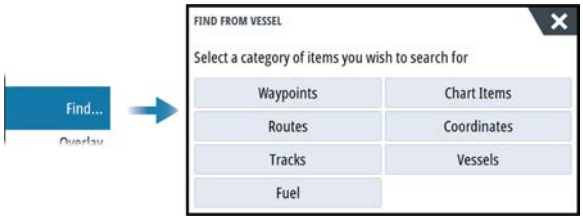
Creating routes on the chart panel

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 the remaining routepoints
5. Save the route by selecting the save option in the menu.

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.



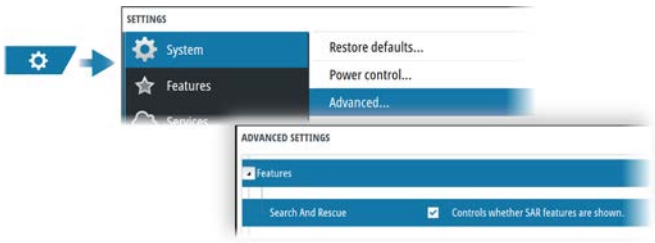
→ ***Note:*** You must have a SiriusXM® Marine subscription to search for fueling stations.

→ ***Note:*** You must have an AIS receiver connected to search for vessels.

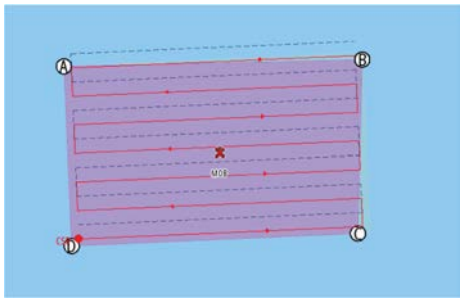
Marine Search and Rescue (SAR) feature

The marine SAR feature creates a search pattern route in the form of a parallel or creeping line search pattern on the chart.

To use the feature it must be enabled in the advanced features dialog.



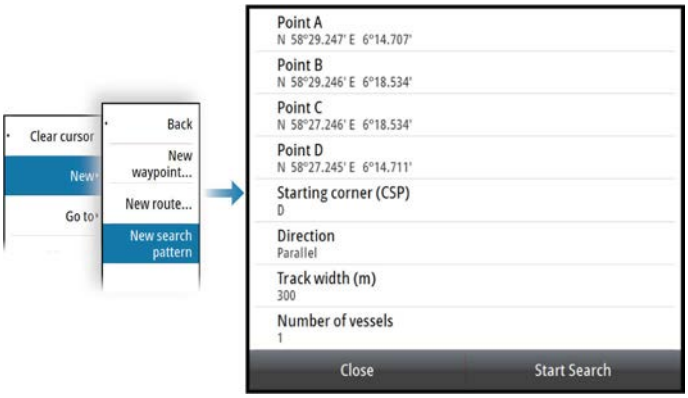
The following is an example of an SAR area on the chart.



The purple area is the area that is defined by you. The light orange shading is the area that is calculated by the system.

Setting up the search area

Place the cursor on the chart in the location of Point A. Then use the New search pattern menu option to set up the search area. This option opens the SAR Edit dialog.



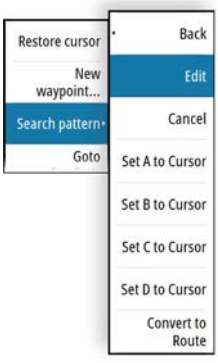
Define the four corners of the search area, by entering corner coordinates.

The following settings must be defined:

- Track width - controls how much space is in between parallel legs (the legs with the longest length).
- Number of vessels - controls how many SAR routes are generated. An SAR route is created for each vessel. The first vessel will have a red route and the others will have a dashed black route. The space between each vessel is the track spacing distance.
- Direction - can be either Parallel or Creeping. Parallel direction makes the route move along the side with the longest length. Creeping is the opposite as it moves along the shortest side.
- Starting corner (CSP) - determines which corner you want to start from.

The system will calculate the number of legs and leg distances. It also calculates the Commence Start Position (CSP) as half the track spacing from the starting corner. The start heading is calculated as the heading parallel to the longest side of the search rectangle from the start position.

Editing the search parameters



Use the Edit SAR dialog to alter search pattern parameters.

You can also change the 4 corners of the search area using the set to cursor menu options. Position the cursor on the chart and then select the appropriate set to cursor menu option.

→ ***Note:*** The Close option on the Edit SAR dialog saves changes and closes the dialog. It does not terminate the SAR.

Detect participating vessels not on the search pattern

Turn on AIS targets and Radar overlay to see participating vessels that are not on their search pattern. Once identified, you can direct them back to the track.

Terminating the SAR session

Use the Cancel Search pattern menu option to stop the search.

Convert a SAR to a route

The Convert to route option allows you to name, edit, and save it to your route library.

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 the 3D chart option is selected, the rotate (**A**) and the pan (**B**) icons appear on 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.

To return the chart to vessel position use the return to vessel menu option or the clear cursor panel button.

Controlling the view angle

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

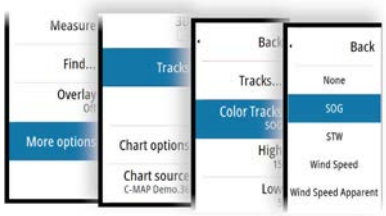
- To change the direction you are viewing, pan horizontally
- To change the tilt angle of the view, pan vertically

→ ***Note:*** When centered on the vessel position, only the tilt angle can be adjusted. The view direction is controlled by the chart orientation setting. Refer to *"Chart orientation"* on page 24.

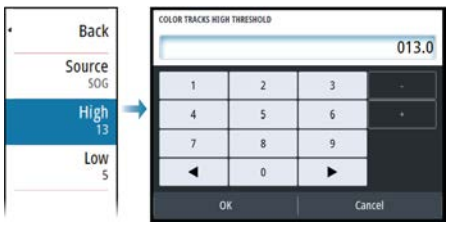
Color tracks based on data

A track can be colored based on what source data and the high/low limits you set:

- You can specify the source (data type) to be colored. To turn off coloring, select source **None**.



- Select the high and low options to set high and low values.



The colors can be shades of green, yellow, and red. Green is for the high limit you set. Yellow is the value that is the average of the high and low. Red is for the low limit. If the value is between the high and the middle values, it appears as a greenish-yellow color. If the value is between the middle and the low, it appears as an orange color.

→ ***Note:*** By default, tracks are colored according to the color setting in the Edit Track dialog. Coloring tracks based on source data overrides the coloring specified in the Edit Track dialog.

If two or more charts are displayed in a split panel, changing the color source or high/low values on one chart does not change the other charts.

Chart overlay



You can add overlays on the chart panel.

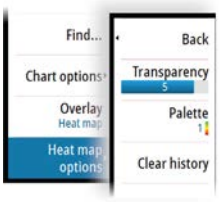
When an overlay is selected, the chart menu expands to include basic menu options for the selected overlay.

Information about the overlay menu options are described in more detail below or in their separate sections in this manual.

Heat map overlay

The Heat map overlay feature shows a history of water temperature coloring on the chart. A water temperature source is needed to provide the temperature data for the overlay.

The color range is adjusted automatically based on the minimum and maximum temperatures recorded.



Transparency

Adjusts the transparency of the overlay. With a minimum transparency setting, the panel details are almost hidden by the overlay.

Palette

Specifies the colors used to show water temperatures. A legend is shown on the panel that identifies the colors associated with the recorded temperatures.

Clear history

Deletes all heat map data gathered up to the moment it is selected. Heat map data is automatically deleted when the unit is turned off.

C-MAP charts

All possible menu options for C-MAP charts are described below. The features and menu options available can vary depending on the charts you use. This section shows menus from a C-MAP chart.

→ ***Note:*** A menu option is greyed out if the feature is not available on the chart displayed.

C-MAP tides and currents

The system can display C-MAP 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

C-MAP specific chart options

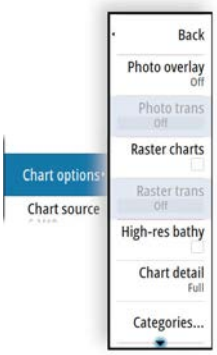


Photo overlay

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



Transparency at 80

Raster charts

Changes the view to that of a traditional paper chart.

Raster transparency

Controls the transparency of raster imagery.

High resolution bathymetry

Enables and disables higher concentration of contour lines.

Chart detail

- Full - displays all available information for the chart in use.
- Medium - displays minimum information sufficient for navigation.

- Low - displays 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.

Chart categories

Several categories and sub-categories are included. You can turn on/off individually depending on which information you want to see.

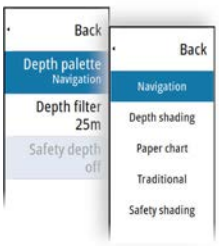
The categories listed in the dialog are dependent on the charts used.

Shaded relief

Shades seabed terrain.

No contours

Removes contour lines from the chart.



Depth palette

Controls the Depth palette used on the map.

Navigation

Color shades depth areas based on depth range values set by the system. If the depth is within a certain range the system will select the exact color of that range. It colors darker shades of blue in shallower water and whiter in deeper water.

Depth shading

Color shades depth areas based on the depth value of the depth range shade. The system will interpolate a color based on the depth within the range. It colors darker shades of blue in deeper water and whiter in shallower water.

Paper chart

Color shades the depths similar to the National Oceanic and Atmospheric Administration (NOAA) colors present in the paper charts.

Traditional

Color shades depth areas based on the data defined by the chart data. Charts have their own color palette that is defined in the chart data.

Safety shading

Color shades depth areas based on the safety depth limit. The limit determines which depths will be drawn without blue shading.

Depth filter

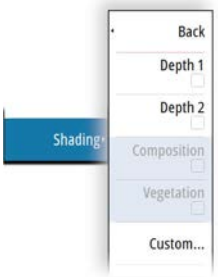
Filters out depth values shallower than the selected depth filter limit.

Safety depth

Charts use different shades of colors to distinguish between shallow and deep water. After enabling the safety shading depth palette, specify the desired safety depth limit and the color/shading for different depths.

Shading

Shades different areas of the seabed, depending on the selected Shading category.



→ ***Note:*** Composition and Vegetation shading are not applicable to C-MAP charts.

Depth 1 and Depth 2

Depth presets that shade different depths in different colors.

Custom

You can adjust the depth threshold, color and opacity (transparency) of color shading for Depth 1 and Depth 2.



3D exaggeration

Graphical settings that are 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.

→ ***Note:*** This option is grayed out if the data is not available in the map card inserted.

Genesis Layer

The Genesis Layer displays high-resolution contours contributed by Genesis users that have passed a quality check.

This option toggles the Genesis layer on/off on the chart image.

Available only if the C-MAP chart contains Genesis Layer data.

Navionics® charts

Some Navionics® features require the most current data from Navionics®. For those features, a message is displayed stating that the feature is unavailable if you do not have the appropriate Navionics® charts or chart card inserted. For more information on what is required for these features, refer to www.navionics.com.

You can also get a message if you try to use a restricted feature when the Navionics® chart card is not activated. To activate the card, contact Navionics®.

Navionics® specific chart options

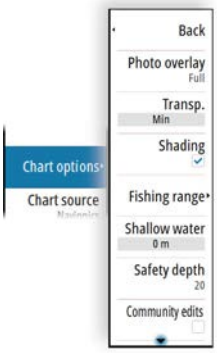


Photo overlay

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

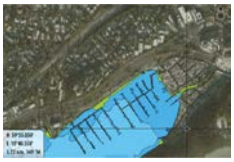


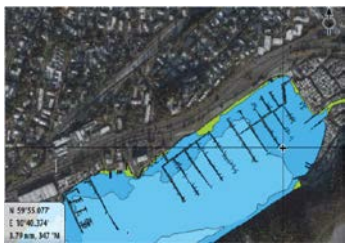
Photo overlay, land only



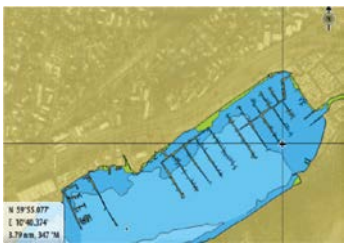
Full Photo overlay

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

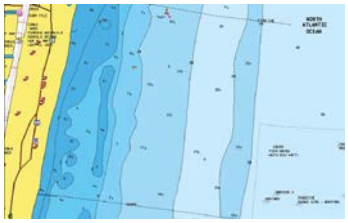
Chart shading

Shading adds terrain information to the chart.

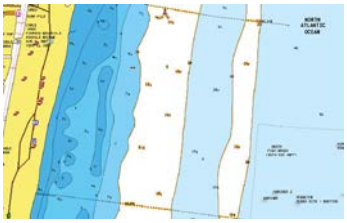
Fishing range

Select a range of depths between which Navionics® fills with a white 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.



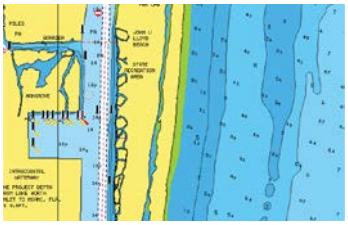
No Depth highlight range



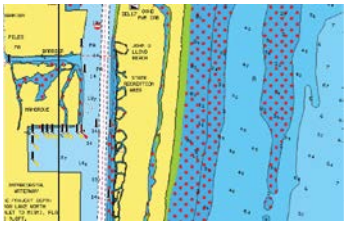
Depth highlight range: 6 m - 12 m

Shallow water highlight

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



No shallow water highlighted



Shallow water highlight: 0 m - 3 m

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.

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.

SonarChart

The system supports the Navionics® SonarChart feature.

SonarChart displays a bathymetry map showing high resolution contour detail and standard navigational data. For more information, refer to www.navionics.com.

SonarChart Live



SonarChart Live is a real-time feature where the device creates an overlay of depth contours based on your own live sonar soundings.

When you select SonarChart Live overlay the menu expands to display SonarChart Live options.

Transparency

The SonarChart Live overlay is drawn on top of other chart data. The chart data is completely covered at minimum transparency. Adjust the transparency to allow the chart details to be seen.

Minimum depth

Adjusts what SonarChart Live rendering treats as the safety depth. This affects the coloring of the SonarChart Live area. As the vessel approaches the safety depth, the SonarChart Live area will gradually change from a simple grey/white to red.

Palettes

Used for selecting the image's color palette.

SCL History

Select to display previously recorded data on the chart overlay.

→ ***Note:*** SonarChart live does not record while SCL history files are being viewed.

SC Density

Controls the density of the SonarChart and SonarChart Live contours.

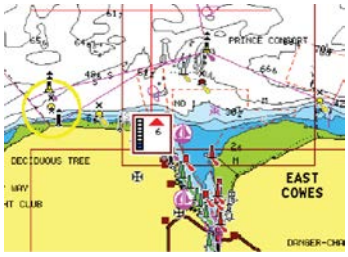
Colored seabed areas

Turns ON/OFF coloring seabed areas red.

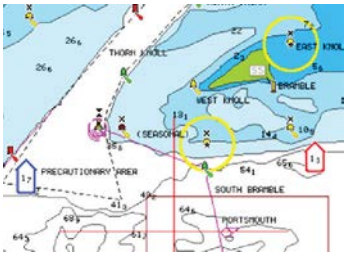
Navionics® Dynamic tides and current icons

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

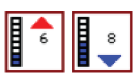
The following icons and symbology are used:

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.

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.

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

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

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

Chart details
Provides you with different levels of geographical layer information.

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.

Chart settings

The options in the chart settings dialog depends on which chart source is selected in the system.



3D boat selection

Determines which icon to use on 3D charts.

Range rings

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

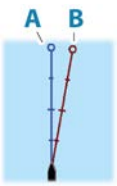
The range scale is set automatically by the system to suit the panel scale.

Extension lines

Sets the lengths of the extension lines for your vessel and for other vessels shown as AIS targets.

Select to show or hide the heading and course extension lines for your vessel.

Extension length



A: Heading

B: Course Over Ground (COG)

→ ***Note:*** When a compas source is available in the system, the heading line is displayed in blue. If no compass source is available, the COG line is displayed in blue.

The length of the extension line is 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.

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

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

ForwardScan

If you have ForwardScan and this option is selected, the ForwardScan heading extension is shown on the chart. Refer to *"Heading extension"* on page 96.

SonarChart Live tide correction

When selected, the tide correction feature uses information from nearby tide stations (if available) to adjust the depth values used by SonarChart Live as the sonar is recorded.

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

Determines whether basic information for panel items is displayed when you select the item.

Grid lines

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

Waypoints, Routes, and Tracks

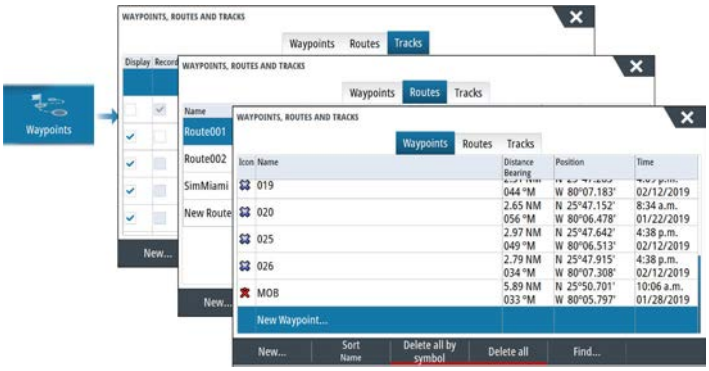
Turns on/off displaying of these items on chart panels.

→ ***Note:*** To display tracks on the chart panel, the Display option in the Tracks dialog and the tracks option in the chart settings dialog both have to be enabled.

5 Waypoints, routes, and tracks

Waypoints, Routes, and Tracks dialogs

These dialogs give access to advanced edit functions and settings for these items.



Waypoints

About waypoints

A waypoint is a user generated mark positioned on the:

- chart
- echosounder image
- radar image
- navigation panel

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.

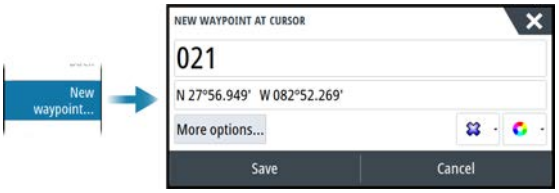
A waypoint is used to mark a position you later may want to return to. Two or more waypoints can also be combined to create a route.

Saving waypoints

Save a waypoint at the cursor position if active or at the vessel's position if the cursor is not active.

To save a waypoint:

- Select the new waypoint option in the menu



Moving a waypoint

A waypoint can be moved from the position if active and if the waypoint is selected in the menu.

To move a waypoint to a new position, select the move waypoint menu option and then select the new waypoint location on the image.

To save the waypoint at the new position, select the finish moving menu option

Edit a waypoint

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

The dialog is activated by selecting the waypoint, and then selecting edit from the menu.

The dialog can also be accessed from the waypoints tool on the home page.

Deleting waypoints

You can delete a waypoint by selecting the delete menu option when the waypoint is activated on the panel.

You can also delete a waypoint by selecting it in the routes dialog and then deleting it in the edit waypoint dialog.

You can delete all waypoints or waypoints by symbols from the system using the waypoints dialog.

You can delete MOB waypoints the same way.

You can back-up your waypoints, routes and tracks before deleting them, refer to *"Maintenance"* on page 154.

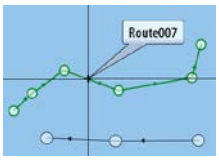
Waypoint alarm settings

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 *"Alarm dialogs"* on page 132.

Routes

About 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.

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 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.

Creating routes using existing waypoints

A new route can be created by combining existing waypoints from the Routes dialog. The dialog is activated by using the Waypoints tool on the Home page and then selecting the Routes tab.

Creating a route based on a trip

You can create a route based on a historical trip. Select a trip in the TripIntel history dialog and then the create route option.

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, and then:

- Selecting the track's pop-up
- Selecting the track in the menu

The edit track dialog can also be accessed by selecting the waypoints tool on the home page.

Dock-to-dock Autorouting and Easy Routing

The Dock-to-dock Autorouting and Easy Routing features suggest new routepoint positions based on information in the map and on your boat's size. Before you can start using these features 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. To enter boat settings, refer to *"System settings"* on page 135.

> ⚠ Warning: Autorouting is for general planning only and must be used in conjunction with conventional navigational practices. It DOES NOT replace a human navigator and should never be used as the only reference source. It is the operator's sole responsibility to review the suggested route against official publications and situational awareness.

➔ ***Note:*** It is not possible to start the Dock-to-dock 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 Dock-to-dock Autorouting or Easy Routing menu option is not available. Compatible cartography includes C-MAP MAX-N+, C-MAP Discover, C-MAP Reveal, Navionics+, and Navionics Platinum. For a full selection of available charts, visit www.c-map.com or www.navionics.com.

1. Position at least two routepoints on a new route, or open an existing route for editing.
2. Select the Dock-to-dock Autorouting menu option, 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 the accept option to start the automatic routing.
4. 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).
5. Move any routepoints if required when the route is in preview mode.
6. Select the keep option to accept the routepoints positions.
7. Repeat step 2 (selection) and step 3 if you want the system to automatically position routepoints for other parts of the route.

Dock-to-dock 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

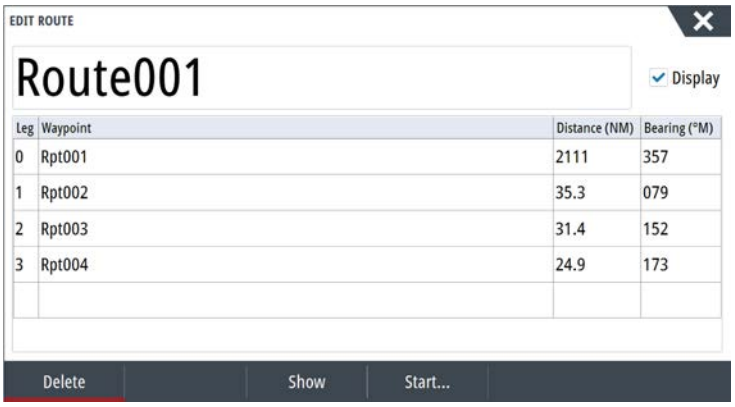
The edit route dialog

You can manage routes and routepoints, and change route properties using the Edit Route dialog. This dialog is activated by selecting an active route's pop-up or from the menu by selecting the route then the details option.

The dialog can also be accessed by using the Waypoints tool on the Home page and then selecting a route in the dialog.

Select a routepoint in the edit dialog to insert a new routepoint after it or remove the routepoint.

Select the display option to show the route on the chart.



Deleting routes

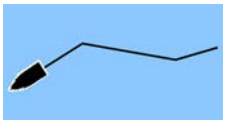
You can delete a route by selecting the delete menu option when the route is activated on the panel.

You can also delete a route by selecting it in the routes dialog and then deleting it in the edit route dialog.

You can delete all routes from the system using the routes dialog.

You can back-up your waypoints, routes and tracks before deleting them, refer to *"Maintenance"* on page 154.

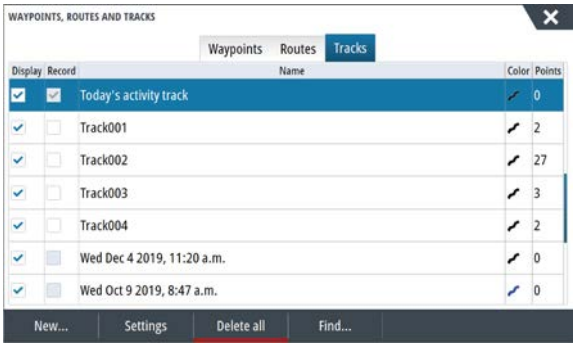
Tracks



About tracks

Tracks are a graphical presentation of the historical path of the vessel. They allow for retracing where your boat has travelled.

Example of the Tracks dialog:



Creating a new track

You can start a new track from the **Tracks** dialog. The dialog is activated by:

- Using the **Waypoints** tool on the Home page and selecting the **Tracks** tab.

A new track starts automatically if **Automatic trip detection** is enabled in the **Tracks and Trips** settings dialog.

Track logging 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.

The logging settings can be made from the Tracks and Trips settings dialog or by selecting the Settings button in the Tracks dialog.

6 Navigating

About navigating

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

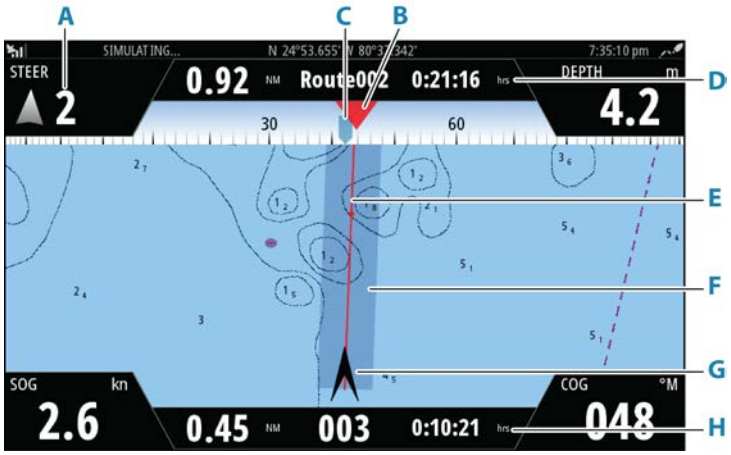
If autopilot functionality is included in your system, the autopilot can be set to automatically navigate the vessel.

For information about positioning waypoints and creating routes, refer to *"Waypoints, routes, and tracks"* on page 37.

Navigation panels

The Nav panel

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



A **Data fields**

B **Vessel heading**

C **Bearing to next routepoint**

D **Route information**
Indicates the distance of the route, the route name, and the estimated time to reach the end of the route.

E **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.

F **XTE limit**
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 44.

G **Vessel symbol**
Indicates boat position and heading.

H **Routepoint information**
Indicates the distance to the routepoint, the routepoint name, and the estimated time to reach the routepoint.

The Position panels

You can switch between displaying the Navigation panel or the Position panel. The Position panel is activated from the menu.

By default, there is one position panel available showing GPS position.

If Loran is enabled in the Navigation settings dialog, there are two position panels. This is indicated with arrow symbols on left and right side of the panel.

You toggle between the panels by:

- selecting the left or right arrow symbols



GPS position info



Loran position info

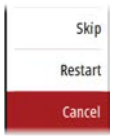
Menu options

You can use menu options to:



- navigate to cursor
- navigate to a waypoint
- navigate a route

While navigating, the menu expands to provide options to:



- skip waypoints when navigating a route
- restart navigating to cursor, a waypoint or a route
- cancel navigating to cursor, a waypoint or a route

Navigating with the autopilot

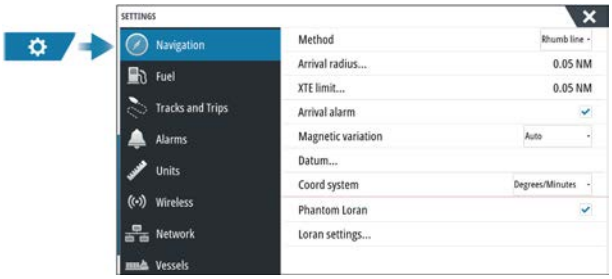
When you start navigation on a system with autopilot functionality, you are prompted to set the autopilot to navigation mode.

➔ ***Note:*** The prompt to set the autopilot to navigation mode is disabled if the boat type is set to SAIL in the Autopilot Commissioning dialog.

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 the autopilot chapter of the autopilot being used.

Navigation settings



Navigation method

Different methods are available for calculating the distance and bearing between any two geographical points.

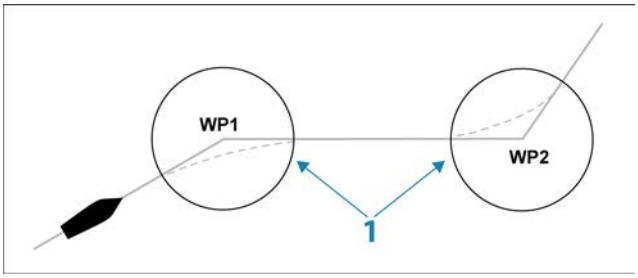
The Great circle route is the shortest path between two points. However, if you are to travel along such a route, it would be difficult to steer manually as the heading would constantly be changing (except in the case of due north, south, or along the equator).

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.

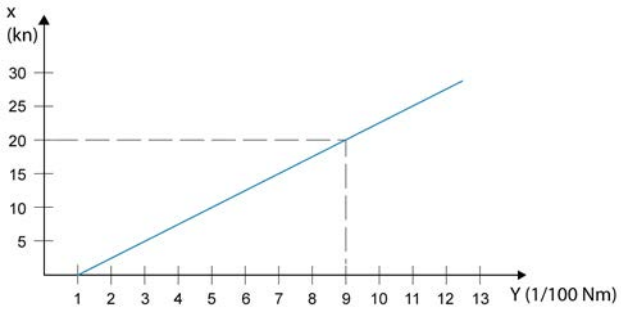
When you are navigating a route, the arrival radius defines the point at which a turn is initiated.



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.



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

XTE limit

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

This system uses the WGS datum format, which is a standard for use in cartography and satellite navigation (including GPS).

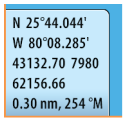
You can change the datum format to match other systems.

Coordinate system

Used to set the geographic coordinate system used on your system.

Phantom Loran

Enables use of Phantom Loran positioning system.



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

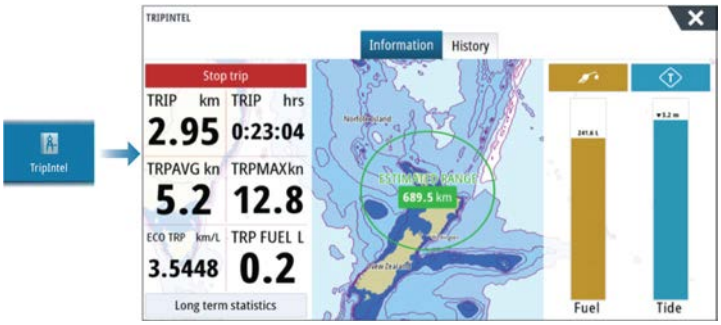
The graphic example shows a cursor position window with Loran position information.

For more information refer to your Loran system documentation.

7 TripIntel

About TripIntel

TripIntel lets you store and recall information on trips. You can use the information to make informed decisions prior to commencing a trip, or when a trip is underway.



Current trip statistics

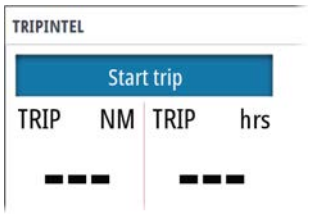
The Information tab on the TripIntel page shows current trip statistics:

- Distance traveled
- Time traveled
- Average speed
- Maximum speed
- Fuel economy
- Fuel used

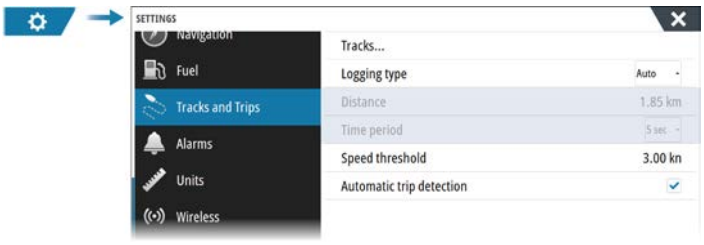
Automatic trip recording

There is an automatic trip detection feature. When you start navigating you are prompted to start recording the trip if no trip is currently underway and your vessel speed exceeds the Speed threshold setting in the Tracks and Trips settings dialog. You will be prompted to continue a trip or start a new trip if the trip was not explicitly saved before a power off.

You can manually start the recording later from the TripIntel page.



You can turn off the automatic trip detection feature from the Tracks and Trip settings dialog.



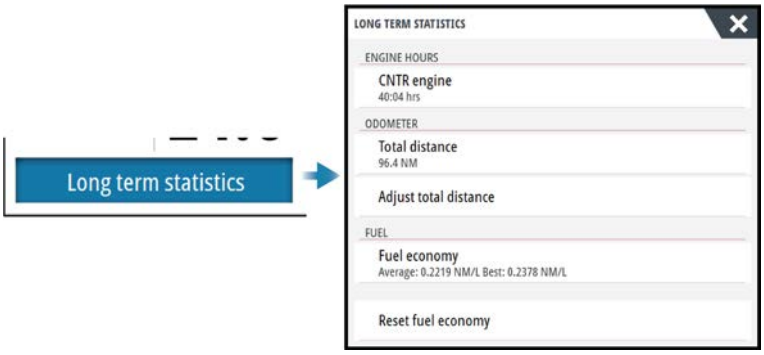
Start and stop trip recordings

If you have selected to not start recording a trip from the automatic trip detection prompt, you can manually start a recording from the TripIntel page.

The **Start** and **Stop** trip options let you specify a trip recording. You can use them to segment a single passage into multiple trips providing a finer level of control of the information that is logged for a journey.

Long-term statistics

Select Long Term Statistics to view seasonal trip information.



Adjust total distance

Select the Adjust total distance button to change the Total distance. Use this option if you have not recorded a trip or part of a trip that you have taken and want to include the distance in the Total distance statistic.

Reset fuel economy

Select **Reset fuel economy** to reset the fuel economy in the Fuel economy gauge on the Instrument bar.

Estimated fuel range ring

The Estimated fuel range ring on the TripIntel page represents the estimated total distance that the boat can travel based on historical consumption, and the amount of fuel left in the tanks.

→ ***Note:*** The Estimated fuel range ring represents fuel consumption on a one way trip only, it does not include fuel estimates for the return trip to your current location. It represents the distance in which your boat will completely run out of fuel.

→ ***Note:*** The Estimated fuel range ring is calculated from the Vessel Fuel Remaining only, not level sensors. When recording your refueling, you must 'Set to full' or 'Add fuel' for the range ring to be accurate.

Fuel gauge

The Fuel Gauge on the TripIntel page, and on the economy gauge is displayed based on the setting in the Vessel Setup page. You must select the Fuel Remaining measurement type.

- Fuel consumed by engine(s)
- Fuel tank level sensor(s)

→ ***Note:*** This is only for the TripIntel page and the economy graph.

Record your refueling



Select the Fuel button to record the amount of your refuel. The refuel information is used for calculating the Vessel Fuel Remaining amount.

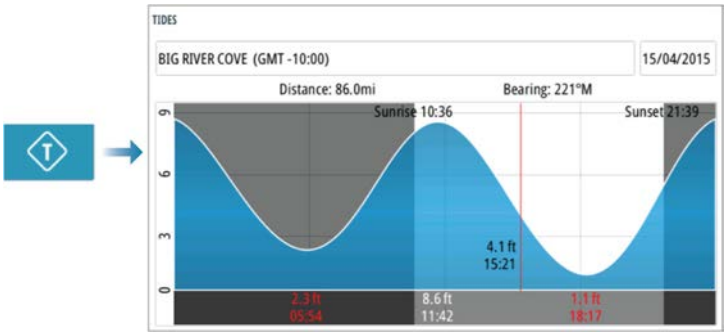
Tide gauge

The Tide gauge on the TripIntel page shows the tide height at the selected tide station.

The Tide gauge can also be shown on the instrument bar. Refer to *"Customizing the instrument bar"* on page 20.

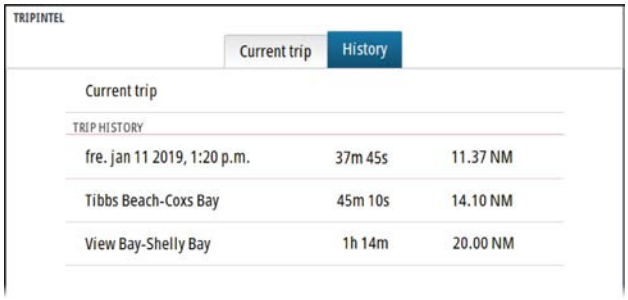
Tide graphs and stations

Tide stations on chart cards provide tide information displayed in TripIntel.



View trip recordings

Recorded trips are listed in the history tab on the TripIntel page. To view detailed trip information select a trip in the list.



Change trip recording names

Trips are given generic names when they are created. You can change the trip name to a more meaningful one by selecting it on the History list and then select the name in the Trip History details dialog.

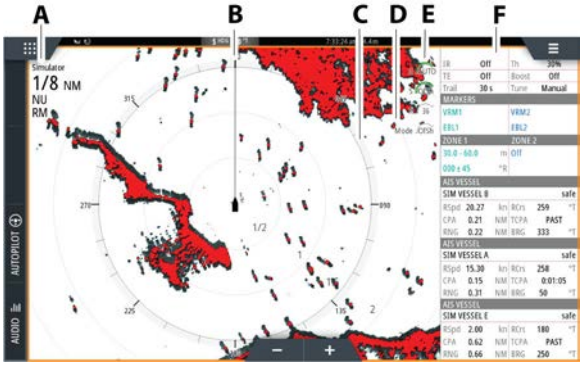
8 Radar

About radar

Several radar sensors are supported.

This chapter describes features and options for a variety of supported radars. The features and options available to you are dependent on the radar antenna(s) connected to your system.

The Radar panel



A Radar information window

B Heading line*

C Compass*

D Range rings *

E Quick image controls

F Data bar**

* Optional radar symbology. Radar symbology can be turned ON/OFF collectively from the radar menu, or individually as described in radar settings dialog.

** You can show or hide the data bar using the data bar option in the radar settings dialog.

Dual radar

You can connect to any combination of two supported radars and see both radar images at the same time.

→ ***Note:*** Interference will be seen on the Broadband Radar on most ranges when a pulse or Halo radar, and a Broadband radar are transmitting at the same time on the same boat. We recommend to only transmit on one radar at a time. For example, transmit Broadband radar for typical navigational usage, or pulse or Halo radar to locate weather cells, defined coastlines at a distance and to trigger Racons.

You can select a dual radar panel by pressing and holding the Radar application button on the home page, or by creating a favorite page with two radar panels.

Selecting the radar source

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

→ ***Note:*** The 3-digit radar source number is the last 3 digits of the radar's serial number.

Radar overlay

You can overlay the Radar image on the Chart. This can help you to easily interpret the radar image by correlating the radar targets with charted objects.

→ ***Note:*** A heading sensor must be present in the system for radar overlay.

When the radar overlay is selected, basic radar operational functions are available from the Chart panel's menu.

Selecting radar overlay source on chart panels

To select the radar source of the radar overlay displayed on the chart panel, use the **Radar options** and then **Source** chart panel menu options to select the radar source.

For chart pages with more than one chart with radar overlay, it is possible to set up different radars sources for each chart panel. Activate one of the chart panels and then select one of the available radars in the radar source menu option. Repeat the process for the second chart panel with radar overlay, and select an alternative radar for this panel.

Radar operational modes

The radar's operational modes are controlled from the Radar panel menu. The modes available are dependent on your radar's capability.

Power off



The power to the radar scanner is turned off. The power off option is only available when the radar is in standby mode.

Note: Not all radars can be powered off using the Power off menu option. For alternative power ON/OFF options refer to the radar installation manual.

Standby

The power to the radar scanner is on, but the radar is not transmitting.

→ ***Note:*** You can also put the radar in standby mode from the System Controls dialog.

Transmit

The scanner is on and transmitting. Detected targets are drawn on the radar PPI (Plan Position Indicator).

→ ***Note:*** You can also put the radar in transmit mode from the system controls dialog.

Adjusting the radar range



The radar range is shown in the system information area on the radar image.

Use the zoom buttons to increase or decrease the range.

Dual range

→ ***Note:*** Halo20 does not support dual range.

→ ***Note:*** Dual range is not supported by Halo 3000 radars in Bird+ mode.

When connected to a Broadband 4G or Halo radar (other than Halo20), it is possible to run the radar in Dual Range mode.

The radar appears in the radar sources menu as two virtual radar sources A and B. Range and radar controls for each virtual radar source are fully independent and the source can be selected for a particular chart or radar panel in the same manner as dual radar described in *"Selecting the radar source"* on page 50.

➔ ***Note:*** Some controls that are related to physical properties of the radar itself are not independent of source. These are Fast Scan, Antenna Height, Sector Blanking and Bearing alignment.

The number of targets that can be tracked for each virtual radar source depends on your radar source.

Up to two independent target tracking zones may be defined for each virtual radar source.

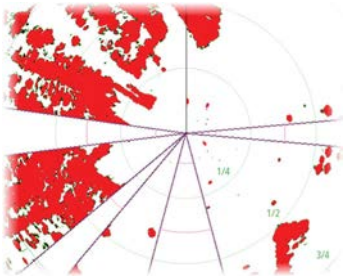
Sector blanking

➔ ***Note:*** This feature is only supported by Halo radars.

Radar installed in close proximity to a mast or structure could cause unwanted reflections or interference to appear on the radar image. Use the sector blanking feature to stop the radar from transmitting on up to four sectors in the image.

➔ ***Note:*** Sectors are setup relative to the heading line of the radar. The bearing of the sector is measured from the center line of the sector.

➔ ***Note:*** Sector blanking should be applied very carefully to avoid reducing the radar's usefulness in identifying valid and potentially dangerous targets.



Main radar PPI



Radar overlay on a chart

Adjusting the radar image

The radar image can be improved by adjusting the gain, by filtering out unwanted echoes due to sea clutter, rain or other weather conditions, and by tuning the sensitivity of the radar receiver.



You can adjust the gain, sea clutter, and rain clutter by selecting the relevant icon in the top right corner of the radar panel or from the radar panel main menu.

➔ ***Note:*** The radar image settings do not affect the AIS targets.

Sea and rain clutter can be present at the same time, and further degradation in detection performance will be experienced. As sea clutter is related to short range and rain clutter is usually present in a longer range, rain clutter settings can be adjusted without affecting the echoes in the sea clutter area.

The radar image can be adjusted as described in the next sections.



Radar modes

Use modes are available with preset control settings for different environments. Not all modes are available for all radar models.

Custom mode

All radar controls can be adjusted and settings will be retained after a mode change or radar power cycle. Radar defaults are set for general purpose use.

Harbor mode

The radar settings are optimized for areas such as busy waterways and large man-made structures where good target discrimination and rapid image updates are needed.
Harbor mode settings

Interference rejection	Noise rejection	Target expansion	Fast scan mode	Scan to Scan
All settings available to operator	Always High	Always Low	Always Off	Always SC/SC-3

Offshore mode

The radar settings are optimized for offshore sea conditions and making isolated targets larger and easy to see.
Offshore mode settings

Interference rejection	Noise rejection	Target expansion	Fast scan mode	Scan to Scan
All settings available to operator	Always High	Always Medium	Always Off	Always SC/SC-2

Weather mode

The radar settings are optimized for best detection and presentation of rain clutter. Image update rate is slowed and color depth is increased.

Bird mode

The radar settings are optimized for best detection of birds near shore and offshore. The radar is set up for high sensitivity.

> ⚠ Warning: This mode is not recommended for use in congested harbor environments.

Bird+ mode

Bird+ mode works with Halo 3000 Series radars, offering enhanced, long-range offshore bird detection capabilities.

→ ***Note:*** Dual range is not supported by Halo 3000 radars in Bird+ mode, but either range A or range B will operate. If Bird+ mode is activated while the other range is already transmitting, the other range will automatically be put into Standby. Once Bird+ mode is exited, the other range will automatically resume transmission.

The maximum range is 24 NM.

> ⚠ Warning: This mode is not recommended for use in congested harbor environments.

Available controls for the various use modes

Not all controls are adjustable in each mode. The following table shows preset controls and adjust-ability for each control.

	Custom	Harbor	Offshore	Weather	Bird/Bird+
Noise rejection	Adj.	Medium	High	Medium	High
Threshold	Adj.	30%	30%	0%	0%
Target expansion	Adj.	Low	Medium	Off	Off
Interf. reject	Adj.	Adj.	Adj.	Adj.	Adj.
Target separation	Adj.	Medium	Off	Off	Off
Fast scan	Adj.	High	Medium	Off	Off

Modes in dual ranges

When connected to a radar with dual range capability, it is possible to run the radar in Dual Range mode.

→ ***Note:*** Dual range is not supported by Halo 3000 radars in Bird+ mode.

Modes can be set independently for each range. For example, you can have Offshore mode for range A and Weather mode for range B. However, interaction between ranges occurs in some cases:

- When using Bird mode for both ranges, maximum range is restricted to 24 NM and range resolution is reduced.
- Fast scan - The antenna rotation speed is set to the slower of the two modes selected. For example, Fast Scan is disabled when using Harbor and Weather modes because Fast Scan is Off in Weather mode.
- The Interference reject setting can affect the interference seen or removed on both ranges.

Gain

The gain controls the sensitivity of the radar receiver.

A higher gain makes the radar more sensitive to radar returns, allowing it to display weaker targets. If the gain is set too high, the image might be cluttered with background noise.

Gain has a manual and an automatic mode. You toggle between automatic and manual mode in the slide bar.

Sea clutter

Filters the effect of random echo returns from waves or rough water near the vessel.

When you increase the value, the sensitivity of the near field clutter caused by waves is reduced. If the value is increased too much, both sea clutter and targets will disappear from the display. Targets around own ship may then not be shown as potentially dangerous targets.

The system includes predefined sea clutter settings for harbor and offshore conditions, in addition to the manual mode where you can adjust the settings.

→ ***Note:*** At increasing levels of sea clutter, some targets cannot be detected even by means of sea clutter filtering, since buoys or other small objects are producing echoes of a level lower than the ones coming from waves.

Auto Sea Offset

To allow fine tuning of the Sea control while in Auto mode (Auto uses directional adaptive clutter rejection), the Auto setting may be offset.

Directional clutter rejection

This mode is active when Sea clutter is set to Auto or Harbor/Offshore (options are dependent on the radar model). The gain of the radar receiver is adjusted dynamically during the 360 deg. sweep according to the sea clutter level, for increased target sensitivity to leeward and in heavier sea states. For Halo radars it is also possible to fine tune the directional clutter rejection with Auto offset adjustments.

→ ***Note:*** This mode is not selectable in the menu and you cannot see that it is activated in the panel or menu.

When Sea clutter is set to Manual, the Directional Clutter Rejection mode will be OFF (non-directional).

Sea state settings of Calm, Moderate or Rough are available in the menu to better optimize the radar image to your liking.

Rain clutter

Rain clutter is used to reduce the effect of rain, snow or other weather conditions on the radar image. When you increase the value, the sensitivity of the long distance field clutter caused by rain is reduced. The value should not be increased too much as this may filter out real targets.

If the precipitation is located over the ship's position, the adjustment of rain clutter will affect the presentation of near echoes.

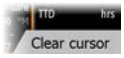
Using the cursor on a radar panel

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

When you position the cursor on the radar panel, the cursor position window is activated.

Removing the cursor

You can remove the cursor and the cursor window from the panel by:



- selecting the **Clear cursor** option from the bottom right of the radar panel

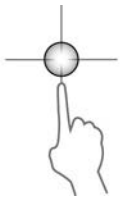


- selecting the **Clear cursor** option from the radar menu

Go to cursor

You can navigate to a selected position on the image by positioning the cursor on the panel, and then using the go to cursor menu option.

The cursor assist function



→ ***Note:*** The cursor assist function is available if it is enabled. Refer to *"Customizing the long press feature"* on page 21.

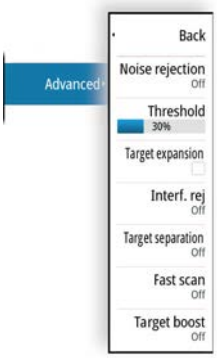
The cursor assist function allows for fine tuning and precision placement of the cursor without covering details with your finger.

Activate the cursor on the panel, then 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 to the desired position.

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

Advanced radar options



Menu options can vary depending on your radar's capability and the selected operation mode.

Noise Rejection

Sets the amount of noise filtering applied by the radar. Target sensitivity is increased at longer ranges when this control is set to High, but does cause some loss of target discrimination.

This option can only be adjusted when using the **Custom** radar mode.

→ ***Note:*** To get maximum range performance from the radar, transmit on one range only, set the Noise Reject control to High and the threshold as low as possible. The default is 30% for less clutter on the screen. In some areas where extreme high interference may exist, try OFF for best radar image.

Threshold

The threshold sets required signal strength for the lowest radar signals. Radar returns below this limit are filtered and are not displayed.

This option can only be adjusted when using the **Custom** radar mode.

Target expansion

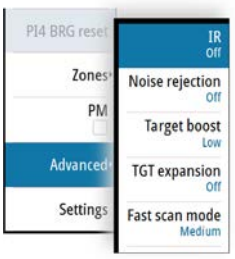
Target expansion increases the length of targets in range, making them easier to see. This option can only be adjusted when using the **Custom** radar mode.

Rejecting radar interference

The Interference rejection (IR or Interf. rej.) option is used to eliminate second trace echoes from far distance targets, and the interference from radar units operating in the same frequency band.

When the IR is ON, transceiver pulse staggering is enabled. When enabled, the transceiver PRF is changed slightly for each sweep. By doing this, spiral interferences and second trace echoes are split in range from sweep to sweep. The IR processing clears all the echoes found at the same range if they are not present in each sweep.

The IR must be chosen according to the environment around own ship:



- IR off when the maximum signal from the receiver is needed

- IR on when the interference or second trace echoes disturb the radar image

To avoid missing weak targets, the interference rejection should be set to OFF when no interference exists.

Target separation

Controls the target discrimination of the radar (separation between objects is more prominent). This option can only be adjusted when using the **Custom** radar mode.

Fast scan

Sets the speed of the radar antenna rotation. This option gives faster target updates.

You can adjust the settings only when using the **Custom** radar mode.

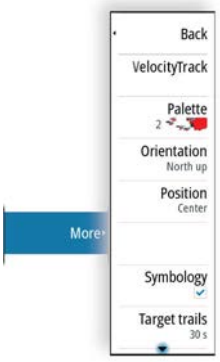
➔ ***Note:*** Maximum speed may not be achieved depending on the radar Settings, Mode, and Range selected. The radar will only rotate as fast as the current control settings allow.

Sea State

Set the Sea State control according to current sea conditions for best sea clutter rejection. This option can only be adjusted when using the **Custom** radar mode.

More options

Menu options can vary depending on your radar's capability.



VelocityTrack

➔ ***Note:*** When VelocityTrack is enabled antenna rotation speed may be reduced.

➔ ***Note:*** When operating the radar in Dual range mode with one of the ranges set to 36 nm or more, increased VelocityTrack coloring noise over land areas may be seen.

Doppler coloring is a navigation aid to distinguish moving targets approaching or diverging from your vessel. The radar indicates if a target is approaching or diverging from your vessel when both these conditions are true:

- The target's relative speed is greater than the VelocityTrack speed threshold.
- The target is not geo-stationary (e.g. land or a marker buoy).

The following options are available:

- Off - turns off Doppler coloring
- Normal - approaching targets and diverging targets are colored.
- Approaching targets - only approaching targets are colored

The color of approaching and diverging targets depends on the palette used:

Radar image palettes

- Diverging targets are blue colored on all radar image palettes.
- Approaching target colors on radar image palettes:
  - Black/Red palette - Yellow
  - White/Red palette - Yellow

- Black/Green palette - Red
- Black/Yellow palette - Red

Radar overlay palettes on charts

- Diverging targets are dark grey.
- Approaching targets are yellow.

VelocityTrack settings

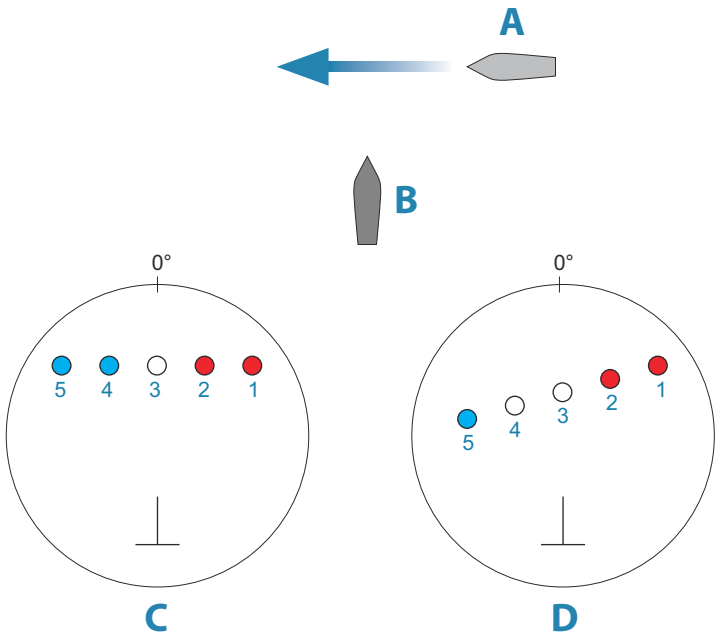
Use this dialog to set speed thresholds of targets to be colored.

The speed threshold can be defined to apply for the radar source of the selected radar panel only, or to all radar sources connected to the system. The setting is only applied to those radars powered and connected at the time the setting is made. If the all radar sources option is selected, newly connected radars will use the specified values automatically.

VelocityTrack examples

Approaching and diverging moving targets can be indicated as neutral (not colored) in some circumstances. The navigator should be aware of these situations to safely use the VelocityTrack feature as an aid for collision avoidance.

Examples of how VelocityTrack behaves in 2 navigation scenarios is illustrated below. The illustrations show a target (**A**) crossing own vessel's (**B**) path.



The examples show the target movement (1-5) over 5 radar scans with the radar in relative motion mode.

In example **C**, own vessel COG is 0°, and speed is 0 knots.

In example **D**, own vessel COG is 0°, and speed is 10 knots.

In both examples, the target COG is 270°, and the speed is 20 knots.

The colors in the examples are according to the colors used for black/green and black/yellow radar palettes:

- Red (**C1**/**C2** and **D1**/**D2**), indicating the target is on an approaching path to own vessel. Its relative speed at that point is greater than the VelocityTrack speed threshold.
- Not colored (**C3** and **D3**/**D4**), indicating it is temporarily neutral because its relative speed at that point is less than the VelocityTrack speed threshold.
- Blue (**C4**/**C5** and **D5**), indicating the target is diverging away from own vessel and its relative speed at that point is greater than the VelocityTrack speed threshold.

The radar palette

Different colors (palettes) can be used to represent detail on your radar panel.

Orientation

Radar orientation is indicated on the upper left corner of the radar panel as either HU (Heading UP), NU (North Up) or CU (Course up).

Head-up

In head-up mode, the heading line on the PPI is oriented on the 0° on the bearing scale and towards the top of the screen. The radar image is displayed relative to own ship, and when the ship turns the radar image rotates.

→ ***Note:*** Head-up is only available in relative motion mode, and it is the only orientation mode available if the radar is not connected to a heading source.

North up

In North up mode the 0° indication on the PPI represents north. The heading line on the PPI is oriented according to own ship heading obtained from the compass. When the ship turns the heading line changes its direction according to the ship's heading, while the radar image remains stabilized.

The North up orientation is not available if no heading source is connected to the radar. If heading data is lost, the system will automatically switch to Head-up orientation.

Course up

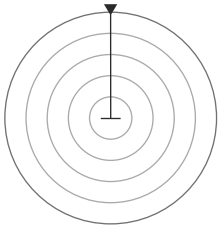
In Course up mode, the top of the bearing scale indicates the ship's true course measured from north at the time Course up was activated. When the ship turns the bearing scale remains fixed, while the heading line rotates with the ship's yawing and course change.

The Course up orientation is reset by re-selecting the Course up mode.

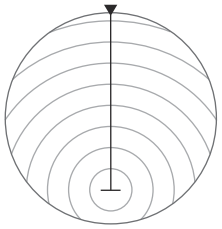
Offsetting the PPI center



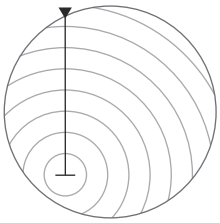
You can set the antenna position origin to a different location on the radar PPI. The options described in the next sections are available.



PPI center: Center



PPI center: Look Ahead



PPI Center: Offset

Center

The Center option resets the antenna position to the center of the PPI.

Look ahead

The Look ahead option is used to maximize the view ahead of the vessel. When selected the PPI center is placed at 70% of the radius of the PPI, 180° opposite the top of the display.

→ ***Note:*** Look ahead is only available for Heading Up radar orientation.

Offset

This option allows you to use the cursor for selecting the PPI center.

Move the cursor to the preferred offset position, and confirm your selection.

Radar symbology

Use this menu option to collectively turn on/off radar symbology which are selected to show in the Radar Settings panel (refer to *"Radar settings"* on page 66).

Target trails

A target trail indicates the target movement by leaving an afterglow, gradually reducing the intensity over time.

Target trails show where a target used to be, and the function is useful for quickly assessing the movement of targets relative to your own vessel.

You can set the length of the trails. The length represents the time it takes for the trails to fade out. You can also turn OFF target trails.

Note: North Up and True motion are the modes recommended when using Target trails.

Clear trails

The clear trails option clears target trails from your radar panel temporarily. The trails start to build up again unless you switch the function off.

Radar motion mode

Radar motion is indicated on the upper left corner of the radar panel as either TM (True motion) or RM (Relative motion).

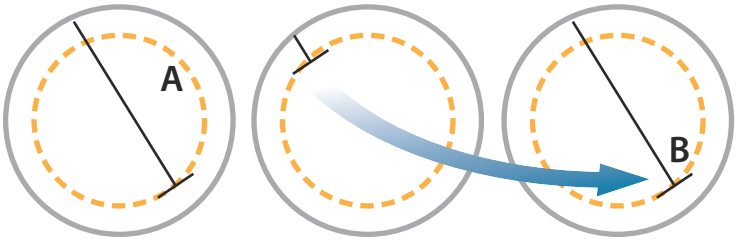
Relative motion

In relative motion your vessel remains in a fixed location on the Radar PPI, and all other objects move relative to your position.

You select the position of the fixed location as described in *"Offsetting the PPI center"* on page 58.

True motion

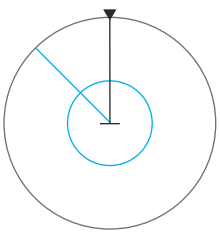
In true motion your vessel and all moving targets move across the Radar PPI as you travel. All stationary objects remain in a fixed position. When the vessel's symbol reaches 75% of the PPI radius (**A**), the radar image is redrawn with the vessel symbol re-positioned (**B**) 180° opposite the current heading bearing.



When true motion is selected, the true motion reset option is available from the menu. This allows for manually resetting the radar image and vessel symbol to its starting position.

→ ***Note:*** True motion is only available when the PPI is in either north up or course up orientation mode. To set to true motion in the MFD, select the Position option in the More menu and then select the True motion option.

EBL/VRM markers

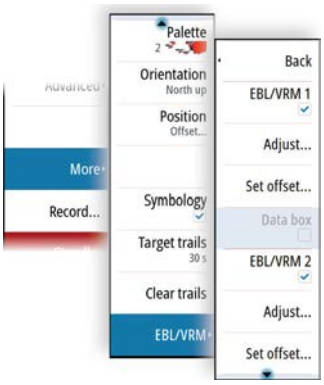


The electronic bearing line (EBL) and variable range marker (VRM) allows quick measurements of range and bearing to vessels and landmasses within radar range. Two different EBL/VRMs can be placed on the radar image.

The EBL/VRMs are by default positioned from the center of the vessel. It is, however, possible to offset the reference point to any selected position on the radar image.

Defining an EBL/VRM marker

1. Ensure that the cursor is not active.
2. Activate the More menu, select EBL/VRM, and then select EBL/VRM 1 or EBL/VRM 2.



The EBL/VRM is now positioned on the radar image.

3. Select the adjustment option from the menu if you need to reposition the marker.
4. Adjust the marker by dragging it into position.
5. Save your settings.

Placing EBL/VRM markers by using the cursor

1. Position the cursor on the radar image
2. Activate the menu
3. Select one of the EBL/VRM markers
   - The EBL line and the VRM circle are positioned according to the cursor position.

Offsetting an EBLVRM marker

1. Ensure that the cursor is not active.
2. Activate the menu and select EBL/VRM, then select the marker you wish to offset.
3. Select the set offset option.
4. Position the cursor on the radar panel to set the offset position.
5. Select the save option to save your settings.

You can reset the EBL/VRM center to vessel position from the menu.

Tracking targets

→ ***Note:*** This manual describes a variety of tracking options for different radar systems. The available tracking options in your system are dependent on your radar system's capabilities.

→ ***Note:*** Tracking targets requires a good heading source and a valid GPS position fix.

Any radar target within a preset range can be acquired and tracked. The system displays targets in the radar panel based on the settings you make in the menu and the vessels and tracked targets dialog.

You can set up tracking zones (max range 42 NM). Refer to *"Target tracking zones"* on page 60. The system will track targets that enter the zones, which meet the settings you make in the vessels and tracked targets dialog.

An alert is triggered if the number of tracked targets exceeds maximum system limitations and capacity. When the number of targets exceed limits or capacity, only the targets closest to own vessel will be displayed.

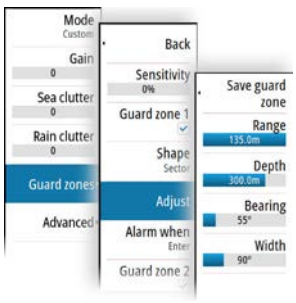
Target tracking zones

The target tracking zone function allows for automatic acquisition of radar targets when they enter a user defined zone.

The guard zone function does not track targets automatically when they enter the guard zone. The function only raises an alarm specified for it when it enters the guard zone.

To specify which targets are displayed in the radar panel, use the vessels and tracked targets dialog to define dangerous targets, targets of interest and create target filters. Refer to *"Vessels and tracked targets"* on page 66.

The guard zone option or target tracking zone option depends on the radar source capability. Setting up the zones is similar.



Guard zones



Target tracking zones

Two zones can be defined, each with individual settings.

When a target enters a zone, it will automatically be considered as safe or dangerous based on the CPA/TCPA settings.

ZoneTrack

When selected, you can setup tracking zones or reactivate tracking zones which were already setup. Alarms can be received when the radar acquires a target inside a zone.

Unselect to disable all zones. The zones will be removed from the radar image. The radar stops acquiring targets inside the zones and no alarms will be sent.

→ ***Note:*** The ZoneTrack target limit is 50 targets per zone. The target limit cannot be changed.

Setting a guard zone around your vessel

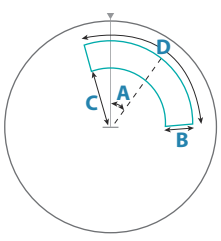
A guard zone is an area (either circular or a sector) that you can define on the radar image. When activated, an alarm alerts you when a radar target enters or exits the zone.

Creating guard zones or target tracking zones

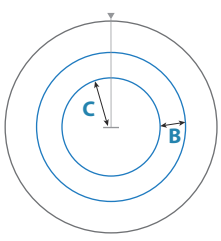
A guard zone or target tracking zone is an area (either circular or a sector) that you can define on the radar image. When activated, an alarm alerts you when a radar target enters or exits the zone.

Defining a guard zone or a target tracking zone

1. Ensure that the cursor is not active.
2. Activate the menu, select guard zone or target tracking, then select one of the zones.
3. Select the shape for the zone.
   The adjustment options depend on the zone shape.
4. Select Adjust to define the settings for the zone. The values can be set from the menu or by dragging on the radar panel.
   A: Bearing, relative to the vessel heading
   B: Depth
   C: Range, relative to vessel center
   D: Width



Shape: Sector



Shape: Circle

5. Select the save option to save your settings.

Guard zone or target tracking zone alarm settings

An alarm can be set to activate when a radar target breaches the zone limits.

Guard zones, select the **Alarm when** option to toggle between activating the alarm when the target enters or exits the guard zone.

Target tracking zones, select Raise alarm and select the **Alarm if** option to toggle between activating the alarm while the target is in or when the target exits the target tracking zone.

Sensitivity

The guard zone sensitivity can be adjusted to eliminate alarms for small targets.

Watching targets



Use this option to help you follow specific targets on the radar image.

Select a target, then select the Watch target option. The target becomes highlighted. Repeat the process to watch another target. Multiple targets can be watched.

Stop watching targets



You can stop watching targets which no longer need special attention.

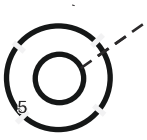
To stop watching specific targets, select a watched target on the radar image, then the Stop watching option. The stop watching option is available in the menu while a watched target is selected.



Select the stop watching all option to stop watching all the watched targets. The stop watching all option is available when targets are being watched and while the cursor is cleared from the radar image.

Radar target symbols

The system uses the target symbols shown below.

	Radar target, not moving.
	Tracked radar target, not moving. Tracked radar targets have a ring around them. They also show the target ID number.
	Tracked radar moving target with trail when target history is enabled. Shows the tracked target ring and the target ID number.
	Tracked moving radar target with no course extension (short line indicating the direction where the target moves). Shows the tracked target ring and the target ID number.
	Tracked moving radar target with course extension. Shows the tracked target ring and the target ID number.

	Tracked dangerous radar moving target (yellow), with trail when target history is enabled. The yellow color is shown when the radar palette is black/red or black/green. Shows the tracked target ring and the target ID number.
	Tracked dangerous radar moving target (purple), with trail when the target history is enabled. The purple color is shown when the radar palette is white/red. Shows the tracked target ring and the target ID number.
	Tracked dangerous radar moving target (red), with trail when target history is enabled. The red color is shown when the radar palette is black/yellow. Shows the tracked target ring and the target ID number.
	Tracked associated target. Shows the tracked target ring and the target ID number. When the radar and the AIS signal acquire the same target for tracking, the system will display the target with one symbol. This reduces the number of AIS symbols and radar targets on the PPI. The association function also compensates for a possible failure in one of the two targets, e.g., if the radar tracked target is positioned behind an island, the system keeps tracking and visualizing the AIS target. ➔ ***Note:*** The tracked radar target continues to be analyzed by the system when the target association is active.
	Selected radar target.
	Lost radar target.

Possible target tracking errors

Some factors can generate tracking errors or make the radar image difficult to read, and therefore reduce target detection capability:

- Sea, rain, snow and low clouds returns
- Radar Interference
- Sidelobe echoes
- Blind sectors
- Low signal to noise ratio and signal to clutter ratio

⚠ Warning: The speed and course of a radar target are obtained by consecutive measurements of the echo position. The data is then filtered to reach the required precision. This means, that every abrupt change of speed and direction will be recognized with a certain delay to reach absolute certainty that the target is moving in a different way. The confirmation delay is about five scans and after that some additional time is needed to reach the same data precision as from before the maneuver.

Sea, rain, snow and low clouds returns

Radar echoes in sea, rain or weather clutter areas may be masked by the clutter. The effects of such errors appear as continuous big changes of the target course and speed vectors. Sometimes the symbol of a target that has been acquired at high speed can slip away from the real target position after a certain time, and this might generate the lost target alarm.

These errors can be avoided or at least minimized by proper manual adjustments of sea and rain controls, or by selecting the automatic control option. For more details, see *"Adjusting the radar image"* on page 51.

Radar interference

Other radars operating in the same frequency band can generate interference. Normally this is seen on the radar screen as a series of spirals. When the interference falls on the tracked target, it can cause a deformation of the size of the echo, and consequently a small error in the target's course and speed values.

Adjustment option is available in the advanced menu. See *"Rejecting radar interference"* on page 55.

Second trace echo

A second trace echo is an echo received from a distant target, received after the following pulse has been transmitted.

Second trace echoes are present only under abnormal atmospheric conditions, or in condition of super-refraction.

These echoes will be displayed at their correct bearing, but at a wrong range.

Second trace echoes can be recognized by their irregular shape. Since the period between two subsequent transmitted pulses is subject to small variations, the second trace echo appears undefined and hazy.

Second trace echoes are automatically suppressed by the radar when the interference rejection is turned on. Refer *"Rejecting radar interference"* on page 55.

Sidelobe echoes

Radar antennas have a radiation pattern consisting of a main lobe and several very small sidelobes. Most of the energy transmitted by the radar is radiated and received back on the main lobe, and a very small part on the sidelobes. This has no effect in case of distant or small targets, but the returns from a large target at short range (less than 3 NM) can generate, on both sides of the main echo and at the same range, arcs or series of small echoes. These effects, when they are an extension of the main echo, can cause momentary errors for the tracking, and course and speed values given by the tracking can become unstable.

The problem can usually be eliminated or strongly reduced by an accurate adjustment of the Sea clutter control. Refer to *"Sea clutter"* on page 53.

Blind sectors

Funnels, masts or other obstructions (when located near the radar antenna) may cause blind or shadow sectors, where the target visibility may be completely lost or strongly reduced. Targets remaining in these sectors for a long time (more than 10 antenna revolutions) will be considered lost, and the lost target alert will be triggered.

Use the sector blanking feature to stop the radar from transmitting on up to four sectors in the image. Refer to *"Sector blanking"* on page 51.

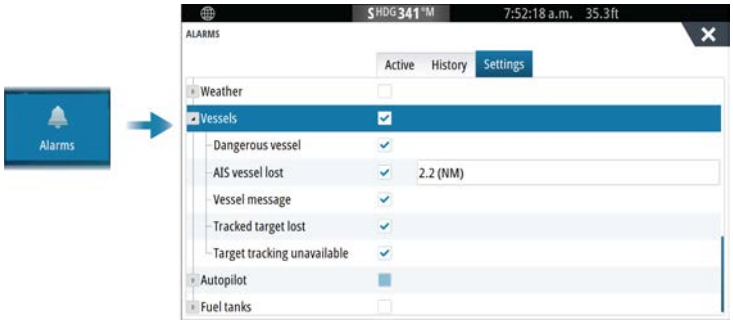
Low signal to noise ratio and signal to clutter ratio

In situations where the signal to noise or the signal to clutter ratio of the radar echoes is low (small vessels in heavy sea or rain clutter, or big vessels close to the radar horizon), target detection is poor and the tracking will not detect the target at each antenna revolution. This will cause errors in the tracking, and it can range from missed information and up to complete loss of the target when it is missed for 10 consecutive antenna revolutions.

Dangerous targets

Radar targets are defined as dangerous targets in the Vessels and tracked targets dialog (TCPA/CPA settings), refer to *"Vessels and tracked targets"* on page 66.

For the system to display dangerous target alert messages when dangerous targets are detected, the Dangerous vessel option must be enabled in the Vessels section of the Alarms settings dialog.



Dangerous target alert messages

When a vessel meets the dangerous target criteria set in the Vessels and tracked targets dialog (TCPA/CPA settings) and if the Dangerous target alert option in the Alarms settings dialog is enabled, a dangerous target alert message dialog is displayed. The following options are available in the message dialog:

- **Disable**, closes the message dialog and cancels the dangerous target alert for all vessels. You can re-enable the dangerous vessel alert in the Vessels section of the Alarms settings dialog.

➔ ***Note:*** When Disable is selected, the Dangerous target alert option in the Alarms settings dialog is turned off. When the Dangerous target alert option is turned off (disabled), dangerous target alert messages are not generated for either radar or AIS dangerous targets.

- **Ignore**, closes the message dialog and disables the alert for that vessel. The alert for that vessel will reappear if the status of that vessel changes, i.e. that vessel becomes safe and then dangerous again.
- **View**, closes the message dialog and opens the Radar panel with the dangerous vessel's pop-up activated. You can select the vessel's pop-up in the radar panel to see the vessel details.

Recording radar data

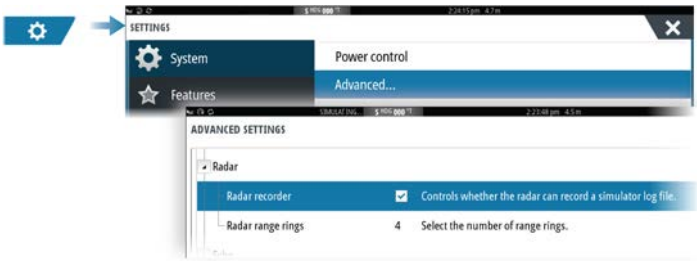


You can record radar data and save the file internally in the unit, or save it onto a storage device connected to the unit.

A recorded radar file can be used for documenting an event or an operational error. A logged radar file can also be used by the simulator.

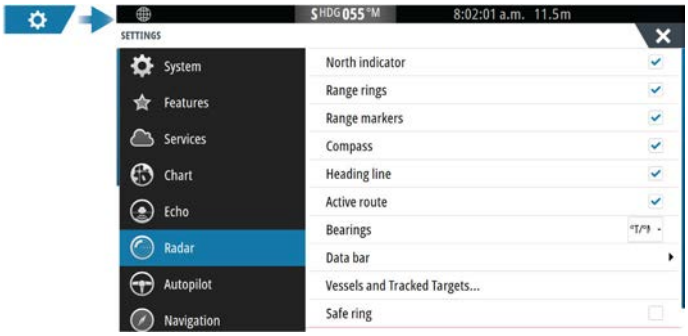
➔ ***Note:*** The record menu option is available if recording is turned on in the Advanced system settings.

Note: It is recommended to record radar data directly to a microSD® card as the data will quickly use the unit's internal memory.



Radar settings

This section only lists user settings, for installation settings refer to *"System setup"* on page 135.



Radar symbology

You can select which optional radar items that should be turned on/off collectively from the menu. Refer to the Radar panel illustration.

Bearings

Used for selecting whether the bearing should be measured in relation to True/Magnetic North (°T/°M), or relative to own vessel (°R).

➔ ***Note:*** True/Magnetic bearing can only be selected when a compass is available.

Data bar

Turns on/off the radar data bar. Refer to the radar panel illustration.

By default, the data shows targets arranged with the most dangerous targets on top. You can select to show radar targets on top and before any AIS targets, even if the AIS targets are considered more dangerous.

Vessels and tracked targets

This dialog contains settings for both AIS and radar targets. AIS specific settings are only available if you have a capable AIS device connected to your system.

Use this option to specify:

- Dangerous targets
  - **Time to closest point of approach** - specify the time of approach in which a vessel is to be considered dangerous.
  - **Closest point of approach** - specify the closest point of approach in which a vessel is to be considered dangerous. This setting determines the size of the safe ring if safe ring is enabled, refer to *"Safe ring"* on page 67.
- Targets of interest - targets further away than the following distance will be hidden:
  - **Range of interest** - specify to show targets in all ranges (based on radar range) or targets within a specific distance of own vessel.
- Filtering - define which and how many AIS targets will be shown. If the amount of targets exceeds the set number, only the most interesting targets will be shown. For radars that support tracking targets, the following target filter settings will also apply to tracked targets.
  Filter options are:
  - **Show** - specify to show all targets, dangerous targets, or no targets.
  - **Max AIS targets** - specify to show all AIS targets or specify a maximum number of AIS targets to be shown.
  - **Hide slower than** - specify to hide targets slower than a specific speed or all targets regardless of speed.
  - **Hide lost targets after** – specify to hide targets that are lost after a certain amount of time or do not hide any lost targets.

Safe ring

A safe ring can be added around your vessel to present the danger zone. The radius of the ring is the same as the closest point of approach as set in the Vessels and Tracked Targets dialog. Refer to *"Vessels and tracked targets"* on page 66.

History length

Tracked targets and AIS targets can display trails to visualize the previous positions of these targets. For AIS specific settings, refer to *"Vessels and tracked targets"* on page 72.

Installation

The Installation option is used for making radar installation settings. Installation settings must be made before using the radar feature. For more information, refer to *"Radar installation"* on page 137.

Antenna setup

Used for setting the position, height and span of the antenna.



The approximate position of the antenna on the vessel must be set in order to correctly position the vessel outline when viewing close range settings. The PPI will be centered on the icon representing the position of the antenna. Enter the antenna distance from the common reference point.

The antenna height is the height of the antenna above the water line, when vessel is carrying a typical load. It is very important to set the antenna height correctly as this will affect the sea clutter function. Enter the antenna height above the waterline.

The antenna span is the total length of the antenna. Choose 4, 6, 9, or 12 ft antenna length.

9 AIS

About AIS

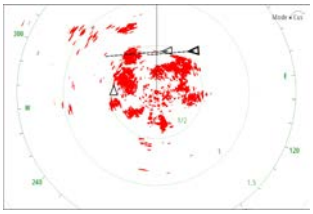
If a compatible AIS (Automatic Identification System) is connected to the system, AIS targets can be displayed and tracked. You can also see messages and position for DSC transmitting devices within range.

AIS targets can be displayed as overlay on chart and radar images.

The AIS is 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.

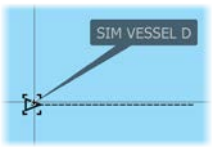


AIS vessels on a chart panel



AIS vessels on a radar panel

Selecting an AIS target



When you select an AIS icon, the symbol changes to selected target symbol. Only one target can be selected at a time.

→ ***Note:*** Pop-up information must be enabled to see the vessel's name. Refer to *"Chart settings"* on page 35.

Searching for AIS vessels

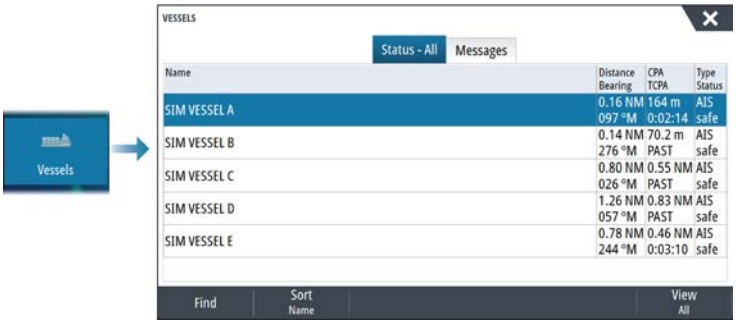
You can search for AIS targets by using the find option in the menu. If the cursor is active, the system searches for vessels around the cursor position. Without an active cursor, the system searches for vessels around your vessel's position.

Displaying target information

The vessels dialog

The vessels dialog displays a list of all AIS and TT targets.

By default, the dialog lists targets, arranged by distance to own vessel. You can select to change the sort order, and to display only a selected target type.

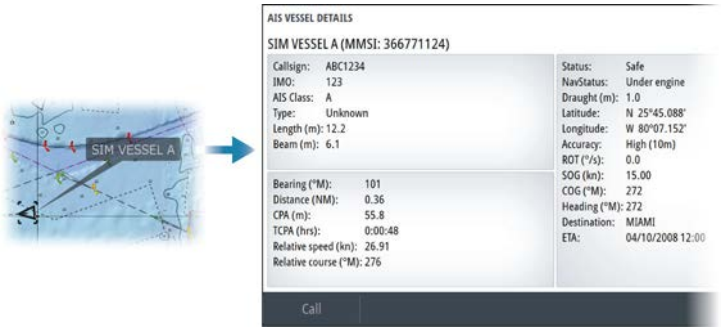


AIS vessel details

Detailed information about an AIS target is available from the AIS vessels details dialog.

To display the dialog:

- select the AIS pop-up
- select the info option in the menu



AIS information on radar panels



The radar data bar includes information about targets.

The targets are listed with the closest target on top, and are color coded to indicate target status.

Calling an AIS vessel

If the system includes a VHF radio supporting DSC (Digital Select Calling) calls over NMEA 2000® or NMEA 0183®, a DSC call can be initiated to other vessels from the unit.

The call option is available in the AIS vessel details dialog, and in the vessel status dialog. Refer to *"Displaying target information"* on page 68.

AIS SART



When an AIS SART (Search and Rescue Transponder) 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. The AIS SART icon is red when in 'Active' state. It is green when in 'Test' state.
- 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 the following options:

- Ignore the alarm
  - The alarm is muted and the message closed. The alarm does not reappear.

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

- 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.

- 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.

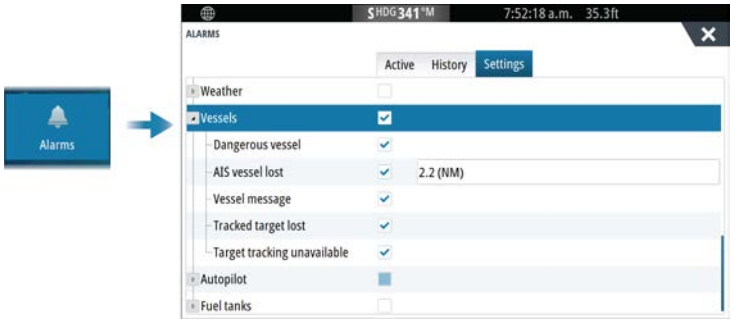
➔ ***Note:*** If the MOB function is already active, this will be terminated and replaced by the new route towards the AIS SART position.

➔ ***Note:*** If 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.

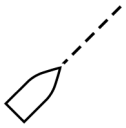
Vessel alarms

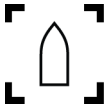
You can define several alarms to alert you if a target shows up within predefined range limits, or if a previously identified target is lost.

➔ ***Note:*** For the system to display dangerous target alert messages when dangerous targets are detected, the Dangerous vessel option must be enabled.

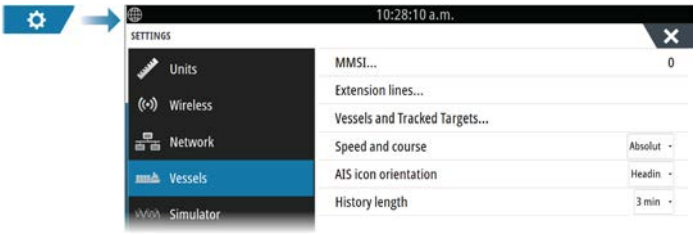


AIS target symbols and icons

Symbol	Description
	AIS target, stationary or moving if no extension lines enabled
	AIS dangerous target (yellow). The yellow color is shown when the radar palette is black/red or black/green.
	AIS dangerous target (purple). The purple color is shown when the radar palette is white/red.
	AIS dangerous target (red). The red color is shown when the radar palette is black/yellow.
	AIS scaled target. The symbol is scaled according to physical size of the vessel as obtained from AIS info, if available.
	AIS moving target with predicted course extension (dashed line). Will show as a straight line if going straight or if no rate-of-turn AIS data is available.

Symbol	Description
	AIS moving target with trail.
	AIS moving target with predicted turn extension (based on rate-of-turn AIS data.)
	AIS moving target with predicted turn extension (based on rate-of-turn AIS data) and turn trail.
	Associated target. When the radar and the AIS signal acquire the same target, the system will display the target with one symbol. This reduces the number of AIS symbols and radar targets on the PPI. The association function also compensates for a possible failure in one of the two targets, e.g., if the radar target is positioned behind an island, the system keeps tracking and visualizing the AIS target. → ***Note:*** The radar target continues to be analyzed by the system when the target association is active.
	Selected AIS target, indicated with square corners around the target symbol.
	Lost AIS target, indicated with a line on the target symbol. The symbol is located at the last received position from the target
	AIS AtoN (Aids To Navigation) target symbol.
	AIS AtoN (Aids To Navigation) target symbol.
	AIS AtoN (Aids To Navigation) dangerous target. The yellow color is shown when the radar palette is black/red or black/green.
	AIS AtoN (Aids To Navigation) dangerous target. The purple color is shown when the radar palette is white/red.
	AIS AtoN (Aids To Navigation) dangerous target. The red color is shown when the radar palette is black/yellow.
	AIS SART 'active' icons are red.
	AIS SART 'tests' icons are green.

Vessel settings



MMSI

Used for entering your own MMSI (Maritime Mobile Service Identity) number into the system. You need to have this number entered to receive addressed messages from AIS and DSC vessels. You also need to have your MMSI number entered to avoid seeing your own vessel as an AIS target.

Extension lines

Defines the length of course over ground and heading extension lines for your own vessel and for other vessels.

The length of the extension lines is set to indicate the distance the vessel will move in the selected time period.

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.

Vessels and tracked targets

This dialog contains settings for both AIS and radar targets. Radar specific settings are only available if you have a capable radar connected to your system.

→ ***Note:*** For radar specific settings, refer to *"Vessels and tracked targets"* on page 66.

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 using this option.

Use this option to specify:

- Dangerous targets
  - **Time to closest point of approach** - specify the time of approach in which a vessel is to be considered dangerous.
  - **Closest point of approach** - specify the closest point of approach in which a vessel is to be considered dangerous.
- Targets of interest - targets further away than the following distance will be hidden:
  - **Range of interest** - options are Auto (based on radar range if radar is available) or within a specific distance of own vessel.
- Filtering - define which and how many AIS targets will be shown. If the amount of targets exceeds the set number, only the most interesting targets will be shown. For radars that support target tracking, the following target filter settings will also apply to tracked targets.
  Filter options are:
  - **Show** - all targets, dangerous targets, or no targets.
  - **Max AIS targets** - show all or only a maximum number of AIS targets.
  - **Hide slower targets** - show targets slower than a specific speed or all targets regardless of speed.
  - **Hide lost targets** - hide lost targets that are lost for the specified amount of time.

Speed and course

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

AIS icon orientation

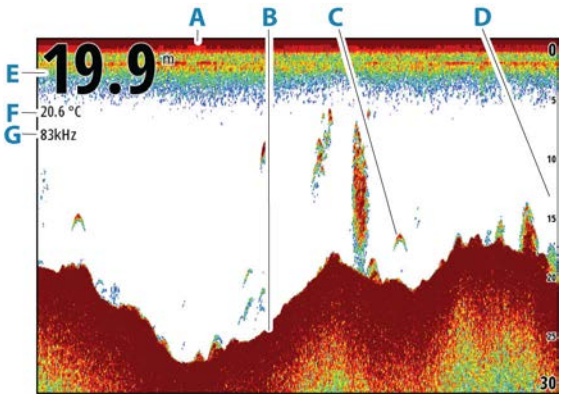
Sets the orientation of the AIS icon, either based on heading or COG information.

History length

Trails can be used to visualize the previous positions of a target.
The history length defines the time presentation of the trail.

10 Echosounder

The image



A Surface
B Bottom
C Fish arches
D Range scale
E Depth
F Temperature
G Frequency

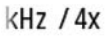
Multiple sources

You can specify the source for the image in the active panel. You can display different sources simultaneously using a multi-panel page configuration.

For more information on how to select the source for a panel, refer to *"Source"* on page 76.

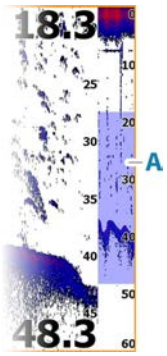
Zooming the image

You can zoom the image.



The zoom level is shown on the image. If the cursor is active, the system zooms in where the cursor is positioned.

Zoom bar



The zoom bar (**A**) is displayed when you zoom the image.

→ ***Note:*** The zoom bar is displayed if the zoom bar menu option is selected.

Drag the zoom bar up or down to view different parts of the water column.

Using the cursor on the panel

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

When you position the cursor on the panel, the image pauses and the cursor information window is activated. The depth and range of the cursor is shown at the cursor position.

Removing the cursor

You can remove the cursor and the cursor window from the panel by:



- selecting the clear cursor button



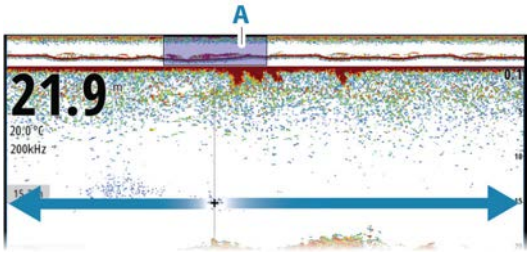
- selecting the clear cursor menu option

Viewing history

Whenever the cursor is shown on the panel, the history bar (**A**) is shown at the top of the panel. The history bar shows the image you are currently viewing in relation to the total image history stored.

You can view history by panning the image.

To resume normal scrolling, clear the cursor.



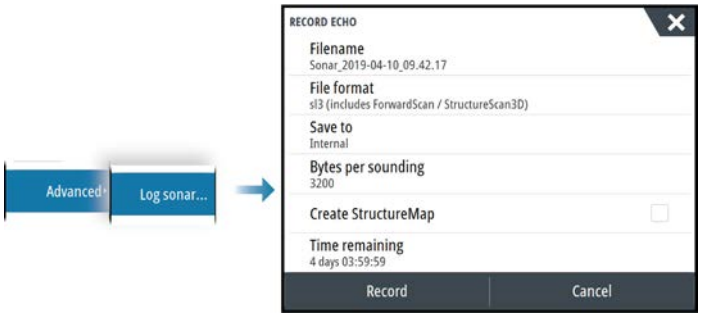
Recording log data

Start recording log data

You can start recording log data and save the file internally in the unit, or save it onto a storage device connected to the unit.

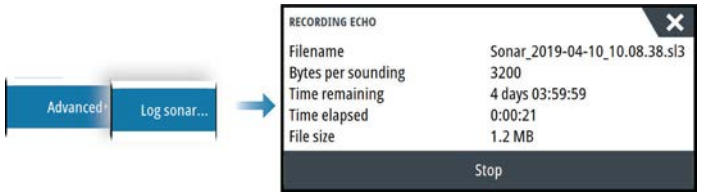
When the data is being recorded, there is a flashing red symbol in the top left corner and a message appears periodically at the bottom of the screen.

Specify recording settings in the recording dialog.



Stop recording log data

Use the stop logging option to stop recording log data.



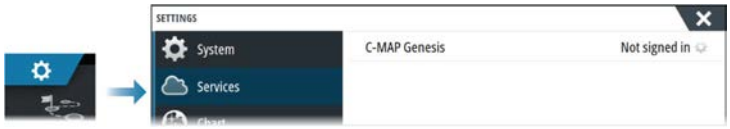
Viewing recorded data

Both internally and externally stored sounder records can be reviewed when the view sonar log option is selected in the echo settings dialog. Refer to *"Echosounder settings"* on page 141.

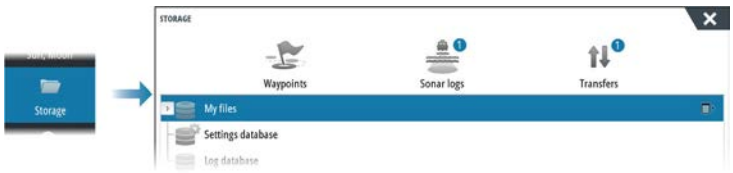
Upload sonar logs to C-MAP Genesis

To upload sonar logs to C-MAP Genesis do one of the following:

- Use the services option. Follow the prompts to sign in and transfer the log files to C-MAP Genesis.



- Use the Storage dialog. Select the sonar logs icon and the logs you want to transfer. If you are already signed in to C-MAP Genesis the files are transferred. If you are not signed in, select the transfers icon and follow the prompts to sign in and transfer the log files to C-MAP Genesis. You can sign in and transfer files at a later time when the unit is connected to the internet.



Customizing the image

Use the menu to customize the image. When the cursor is active, some options in the menu are replaced with cursor mode features. Select the clear cursor option to return to the normal menu.



Range

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

→ ***Note:*** Setting a deep range in shallow water may cause the system to lose track of the depth.

Frequency

The unit supports several transducer frequencies. Available frequencies depend on the transducer model that is configured for use.

- A low frequency, for example 50 kHz, will go deep. It generates a wide cone but is more sensitive to noise. It is good for bottom discrimination and wide area search.
- A high frequency, for example 200 kHz, offers higher discrimination and is less sensitive to noise. It is good for separating targets and for higher speed vessels.

Gain

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

A manual and an automatic gain mode are available. By default, the gain is set to Auto.

Color

Strong and weak echo 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 are displayed in the color at the strong return end of the scale.

Source

→ ***Note:*** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ ***Note:*** Using transducers at the same frequency can cause interference.

Measuring distance

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

1. Position the cursor on the point from where you want to measure the distance
2. Select the measure menu option

→ ***Note:*** The measure option is not available unless the cursor is placed on the image.

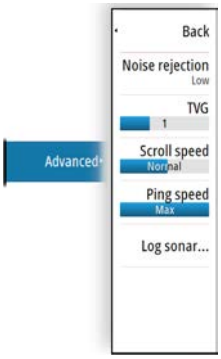
3. Position the cursor on the second measuring point
   - A line is drawn between the measuring points, and the distance listed in the Cursor Information window
4. Continue selecting new measuring points if required

Use menu options to re-position the start point and the end point as long as the measuring function is active.

Select the finish measuring menu option to resume normal image scrolling.

Advanced options

The Advanced menu option is only available when the cursor is not active.



Noise rejection

Filters out signal interference and reduces on-screen clutter.

TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Scroll speed

You can select the scrolling speed of the image on the screen. A high scroll speed updates the image quicker, while a low scroll speed presents a longer history.

→ ***Note:*** In certain conditions it may be necessary to adjust the scroll speed to get a more useful image. Such as adjusting the image to a faster speed when vertically fishing without moving.

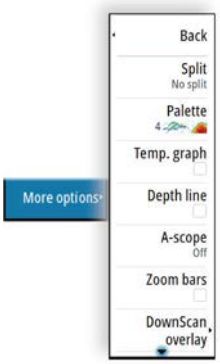
Ping Speed

Ping speed controls the rate the transducer transmits the signal into the water. By default, the ping speed is set to max. It may be necessary to adjust the ping speed to limit interference.

Log sonar

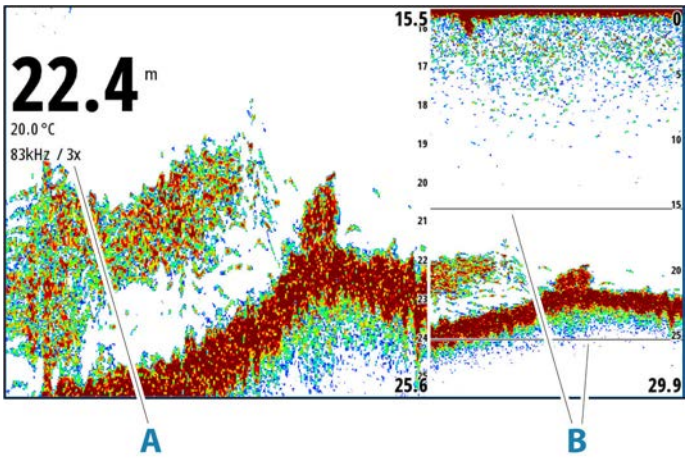
Select to start and stop recording of echosounder log data. For more information, refer to *"Recording log data"* on page 75.

More options



Split screens

Zoom



A Zoom level

B Zoom bars

The Zoom mode presents a magnified view of the sounder image on the left side of the panel.

By default, the zoom level is set to 2x. You can select up to 8x zoom.

The range zoom bars on the right side of the display shows the range that is magnified. If you increase the zooming factor the range is reduced. You see this as reduced distance between the zoom bars.

Move the zoom bars up/down on the image to view different depths of the water column.

Bottom lock

The bottom lock mode is useful when you want to view targets close to the bottom. In this mode, the left side of the panel shows an image where the bottom is flattened. The range scale is changed to measure from the seabed (0) and upwards. The bottom and the zero line are always shown on the left image, independent of the range scale. The scaling factor for the image on the left side of the panel is adjusted as described for the Zoom option.

Palettes

Used for selecting the image's color palette.

Temperature graph

The temperature graph is used to illustrate changes in water temperature.

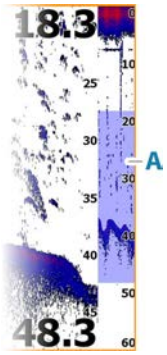
When toggled on, a colored line and temperature digits are shown on the image.

Depth line

When toggled on, a line is shown on the bottom surface. The depth line makes it easier to distinguish the bottom from fish and structures.

Amplitude scope

The amplitude scope is a display of an echo sounding on the panel. The strength of the actual echoes are indicated by both width and color intensity.



Zoom bar

The zoom bar (**A**) is displayed when you zoom the image.

→ ***Note:*** The zoom bar is displayed if the zoom bar menu option is selected.

Drag the zoom bar up or down to view different parts of the water column.

Overlay DownScan

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

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

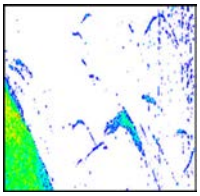
Pause

Pauses the image, allowing you to examine the image in detail.

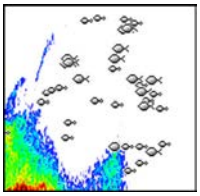
The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

Fish ID

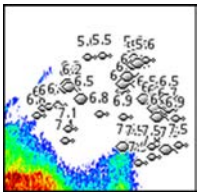
You can select how you want the fish targets to appear on the screen. You can also select if you want to be notified by a beep when a fish ID appears on the panel.



Traditional fish arches



Fish symbols



Fish symbols and depth indication

→ ***Note:*** Not all fish symbols are actual fish.

Color marker

This option allows you to change certain colors on the image.

→ ***Note:*** Only the colors above the sea floor are changed in the image.

Changing colors

→ ***Note:*** Use carefully, some color changes can hide obstructions and other objects.



1. Select the color marker menu option
2. Select one or more colors you want to change
3. Select the marker color menu option to display replacement colors
4. Select the replacement color
5. Select the back menu option to save your changes.

When color changes are applied, the color marker menu option changes from off to showing a color bar.



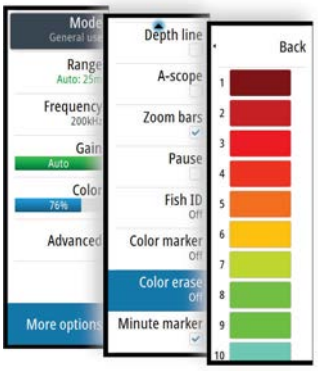
If the palette is changed, the color changes are applied to it. However, if white is selected for a dark background palette, then changing to a palette with a light background will automatically turn the replacement color to black. If a dark color is selected on a light background image, it will change to white if the palette is changed to a dark color background.

Removing color changes

To remove color changes, select the color marker menu option and then de-select the color. Remove all color changes to turn the color marker feature off.

Color erase

Erases specific colors on the image so the palette background color is shown in their place. This effectively hides the selected colors on the image.



→ ***Note:*** Use carefully, some color changes can hide obstructions and other objects.

1. Select the color erase menu option
2. Select one or more colors you want to erase. The color selected will change to white in the menu. The color selected will be removed from the image and the palette background color shown instead.
3. Select the back menu option to save your changes.

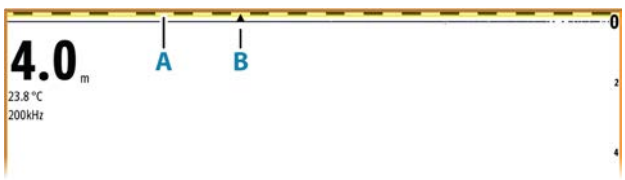
When color erase is applied, the color erase menu option changes from off to showing a color bar.



Remove all color changes to turn the color erase feature off.

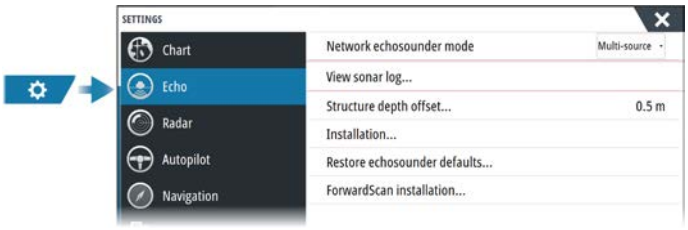
Minute marker

Determines if the minute marker line (**A**) is shown on the image. Each black and each white stripe in the line represents 1 minute. If there is a discontinuity in the signal, this is indicated with a triangle (**B**).



Echosounder settings

This section only lists user settings, for other installation settings refer to *"System setup"* on page 135.



View sonar log

Used to view 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 image. If more than one channel was recorded in the selected log file, you can select which channel to display.

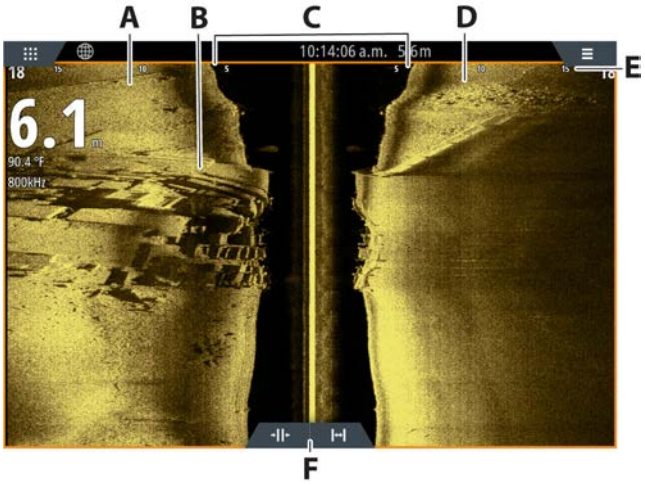
11 SideScan

About SideScan

SideScan provides a wide coverage in high detail of the seabed to the sides of your boat.

The SideScan panel is available when a SideScan capable transducer is connected to the system.

The SideScan panel



A Left-side bottom

B Structure on bottom

C Center water column

D Right-side bottom

E Range scale

F Range (zoom) buttons

Zooming the image

A change in the range causes a zoom in or out of the image.

The range represents the distance out to the left and right of the center.

To change the range:

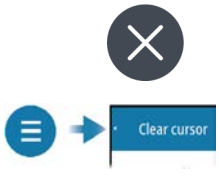
- Select the range buttons.
- Use the range menu setting.

Using the cursor on the panel

When you position the cursor on the panel, the image pauses and the cursor information window is activated. The left/right distance from the vessel to the cursor are shown at the cursor position.

Removing the cursor

You can remove the cursor and the cursor window from the panel by:

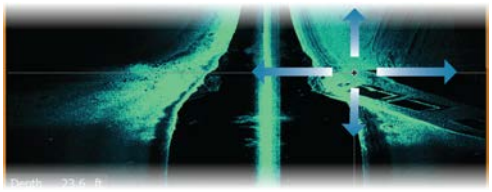


- selecting the clear cursor button
- selecting the clear cursor menu option

Viewing history

In a SideScan view, pan the image to see sides and history by maneuvering the image left, right, and up.

To resume normal SideScan scrolling, select the clear cursor option.



Recording SideScan data

Displays the record log dialog. SideScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to *"Recording log data"* on page 75.

Setting up the image

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



Source

→ ***Note:*** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ ***Note:*** Using transducers at the same frequency can cause interference.

Range

The range setting determines the distance out to the left and right of the center.

Preset range levels

Select a preset range level manually from the menu.

Auto range

In auto range, the system automatically displays the whole range from the water surface to the bottom.

Auto is the preferred setting for fish finding.

Select the range option and then the auto option in the menu.

Frequency

Two frequencies are supported. 800 kHz provides the sharpest image without sacrificing range, while 455 kHz can be used in deeper waters, or for expanded range capabilities.

→ ***Note:*** If your SideScan transducer supports just one frequency, the **Frequency** option won't show in the SideScan panel.

Contrast

Determines the brightness ratio between light and dark areas of the screen.

→ ***Note:*** We recommend you use the auto contrast option.

Palettes

Used for selecting the image's color palette.

View

Specifies if the SideScan page displays the left side of the image only, right side only, or left and right side at the same time.

Advanced options



TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Flip left/right

If required, flips the left/right side of the image to match the direction of the transducer installation.

More options



Pause

Pauses the image, allowing you to examine the image in detail.

The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

Range lines

Range lines can be added to the image to make it easier to estimate distance.

Recording SideScan data

Displays the record log dialog. SideScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to *"Recording log data"* on page 75.

Echosounder settings

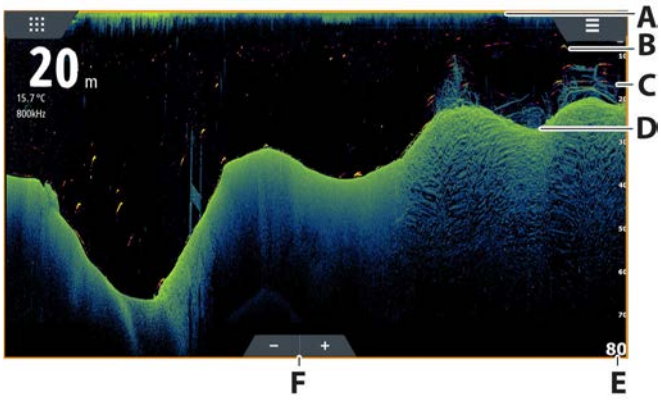
Use the echosounder settings dialog to make settings to your echosounder system. Refer to *"Echosounder settings"* on page 141.

12 DownScan

About DownScan

DownScan provides detailed images of structure and fish directly below your boat. The DownScan panel is available when a DownScan capable transducer is connected to the system.

The DownScan panel



- **A** Surface
- **B** Fish arch
- **C** Under water brush pile
- **D** Bottom
- **E** Depth scale
- **F** Depth range (zoom) buttons

Zooming the image

You can zoom the image.

kHz / 4x

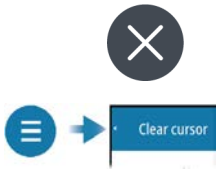
The zoom level is shown on the image. If the cursor is active, the system zooms in where the cursor is positioned.

Using the cursor on the panel

When you position the cursor on the panel, the image pauses and the cursor information window is activated. The depth of the cursor is shown at the cursor position.

Removing the cursor

You can remove the cursor and the cursor window from the panel by:



- selecting the clear cursor button
- selecting the clear cursor menu option

Viewing DownScan history

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

To resume normal DownScan scrolling, clear the cursor from the image.

Recording DownScan data

Displays the record log dialog. DownScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to *"Recording log data"* on page 75.

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 the clear cursor menu option to return to the normal menu.

Source

→ ***Note:*** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ ***Note:*** Using transducers at the same frequency can cause interference.

Range

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

→ ***Note:*** Setting a deep range in shallow water may cause the system to lose track of the depth.

Preset range levels

Select a preset range level manually from the menu.

Auto range

In auto range, the system automatically displays the whole range from the water surface to the bottom.

Auto is the preferred setting for fish finding.

Select the range option and then the auto option in the menu.

Frequency

Two frequencies are supported. 800 kHz provides the sharpest image without sacrificing range, while 455 kHz can be used in deeper waters, or for expanded range capabilities.

→ ***Note:*** If your SideScan transducer supports just one frequency, the **Frequency** option won't show in the SideScan panel.

Contrast

Determines the brightness ratio between light and dark areas of the screen.

→ ***Note:*** We recommend you use the auto contrast option.

Palettes

Used for selecting the image's color palette.

FishReveal

Select FishReveal to display fish arches in the image.

When FishReveal is enabled, the menu expands to include FishReveal options.

Gain

Controls the sensitivity of the FishReveal data on the DownScan image. Increasing gain shows more detail on the screen. Decreasing gain displays less. Too much detail clutters the screen. If the gain is set too low, weak fish arch data might not be displayed.

Color

Adjusts the colors of the fish arch data to help differentiate them from other targets. Adjusting the color can help separate fish and important structures on or near the bottom from the actual bottom.

TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Palette

Select between several display palettes optimized for a variety of fishing conditions.

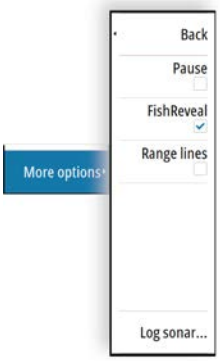
→ ***Note:*** Palette choice is often a user preference, and may vary depending on the fishing conditions. It is best to select a palette that provides good contrast between the image details and FishReveal arches.

Advanced options

TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

More options



Pause

Pauses the image, allowing you to examine the image in detail.

The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

FishReveal option

When FishReveal is enabled, displays fish arches in the image. Refer to *"FishReveal"* on page 86.

Range lines

Range lines can be added to the image to make it easier to estimate depth.

Recording DownScan data

Displays the record log dialog. DownScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to *"Recording log data"* on page 75.

Echosounder settings

Use the echosounder settings dialog to make settings to your echosounder system. Refer to *"Echosounder settings"* on page 141.

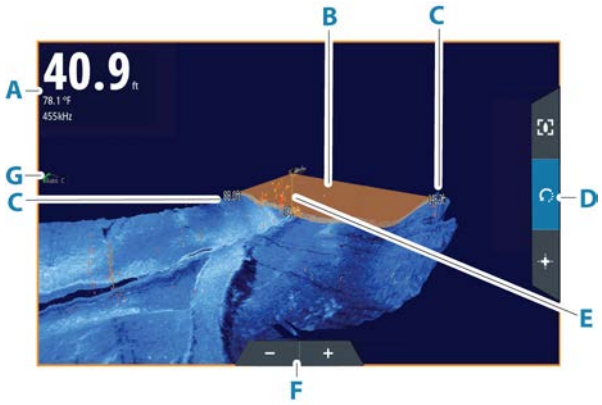
13 3D Sonar

About 3D Sonar

3D Sonar is a multi-beam sonar technology that allows anglers to see fish, underwater structures and bottom contours in customizable, three-dimensional views.

The 3D panel

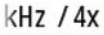
In 3D view, the sea floor image is built up in real-time directly under the vessel as the boat moves. If you are not moving the image will remain stagnant. You can also see other underwater objects and clusters of fish. The 3D view shows both the left and right channels of data.



- **A** Depth, temperature, and frequency
- **B** Transducer beam
- **C** Range
- **D** 3D panel buttons
- **E** Depth indication line
- **F** Zoom panel buttons
- **G** Contrast

Zooming the image

You can zoom the image.



The zoom level is shown on the image. If the cursor is active, the system zooms in where the cursor is positioned.

Using the cursor on a 3D image

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

On a 3D image, select the Cursor Enable panel button to use the cursor.



When the cursor is positioned on an image, the cursor information window and the history bar are activated.



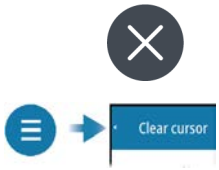
The cursor information window shows available data at the cursor position, including the distance and range from the vessel to the cursor position.

The history bar is used to pan back in the stored data. The highlighted part of the History bar shows the image you are currently viewing in relation to the total image history stored. Refer to *"Viewing image history"* on page 89.

→ ***Note:*** The history bar can be turned off. Refer to *"Clear live history"* on page 91.

Removing the cursor

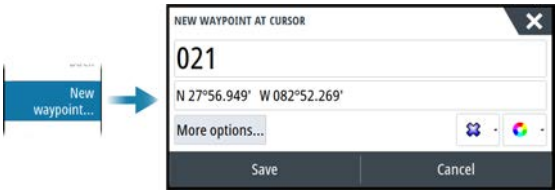
You can remove the cursor and the cursor window from the panel by:



- selecting the clear cursor button
- selecting the clear cursor menu option

Saving waypoints

To save a waypoint, position the cursor on the panel and then select the new waypoint menu option.





If the cursor is positioned on a 3D image, no depth information is included for the waypoint. The waypoint on a 3D image is drawn with a line beneath it to indicate its point on the sea floor.

3D mode options

There are two modes for the 3D panel:

- Vessel mode
- Cursor mode

Switch between vessel mode and cursor mode by selecting the 3D panel buttons. You can also return from cursor mode to vessel mode by selecting the clear cursor menu option.

3D vessel mode



In this mode, the view is locked to the vessel, and the image moves with the vessel.

The camera can be rotated around the vessel, and the camera elevation changed to look down or look more sideways from the vessel:

- To change the camera rotation, drag horizontally on the screen
- To change the camera elevation and tilt, drag vertically on the screen

3D cursor mode

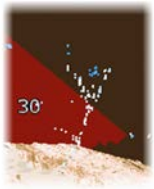


When you activate cursor mode, the camera position is the same as when cursor mode was enabled.

In cursor mode, the image does not move with the vessel. The image can be zoomed, and the camera can be rotated in any direction by dragging on the screen.

Cursor mode includes the cursor functions described in *"Using the cursor on a 3D image"* on page 88.

Fish renderings



When objects are identified in the water column, they are shown as clusters of dots. The point color corresponds to the target intensity, and the point colors are automatically adjusted to complement the chosen palette.

Viewing image history

The highlighted part of the history bar shows the image you are currently viewing in relation to the total image history stored.

The history bar appears by default when the cursor is active. You can turn off the history bar, have it always shown at the top of the screen, or have it appear only when the cursor is active. Refer to *"Clear live history"* on page 91.

The history bar is at the top of the screen on 3D images.

You pan the image history by dragging on the image, or by dragging the highlighted region of the history bar.

To resume scrolling showing current data, clear the cursor.

Setting up the image



Source

→ ***Note:*** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ ***Note:*** Using transducers at the same frequency can cause interference.

Range

The range setting determines the distance out to the left and right of the center.

Preset range levels

Select a preset range level manually from the menu.

Auto range

In auto range, the system automatically displays the whole range from the water surface to the bottom.

Auto is the preferred setting for fish finding.

Select the range option and then the auto option in the menu.

Frequency

Two frequencies are supported. 800 kHz provides the sharpest image without sacrificing range, while 455 kHz can be used in deeper waters, or for expanded range capabilities.

→ ***Note:*** If your SideScan transducer supports just one frequency, the **Frequency** option won't show in the SideScan panel.

Contrast

Determines the brightness ratio between light and dark areas of the screen.

→ ***Note:*** We recommend you use the auto contrast option.

Palettes

Used for selecting the image's color palette.

Advanced options



TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Flip left/right

If required, flips the left/right side of the image to match the direction of the transducer installation.

Vertical enhancement

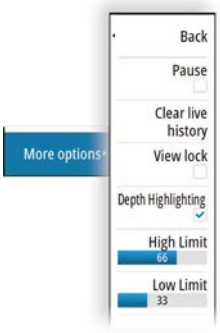
This option stretches the data so that the differences between depths are greater on the panel, which help you to see the changes in depth in relatively shallow areas.

Target sensitivity

This setting adjusts how many and what intensity points are included in the water column. Turn it down to see less noise or things you don't want to see, and turn it up to see more information.

The Auto option automatically adjusts the settings to the optimal levels. Auto sensitivity can be adjusted (+/-) to your preference while still maintaining the auto sensitivity functionality.

More options



Pause

Pauses the image, allowing you to examine the image in detail.

The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

Clear live history

Clears existing live history data from the screen and begins showing only the most current data.

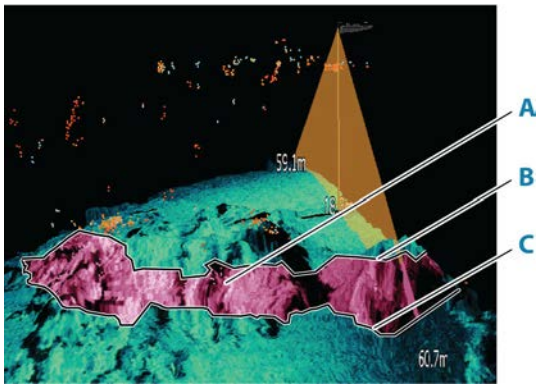
View lock

When enabled, the camera will maintain the set relative rotation from the vessel. For example, if you rotate to face the starboard side of the vessel, the camera will rotate to maintain the starboard view when the vessel rotates.

Depth highlighting

Highlights (**A**) the specified depth range. The low limit sets the shallowest depth of the range to be highlighted (**B**). The high limit sets the deepest depth of the range to be highlighted (**C**).

The highlight color depends on the color of the selected palette.



Echosounder settings

Use the echosounder settings dialog to make settings to your echosounder system. Refer to *"Echosounder settings"* on page 141.

14 StructureMap

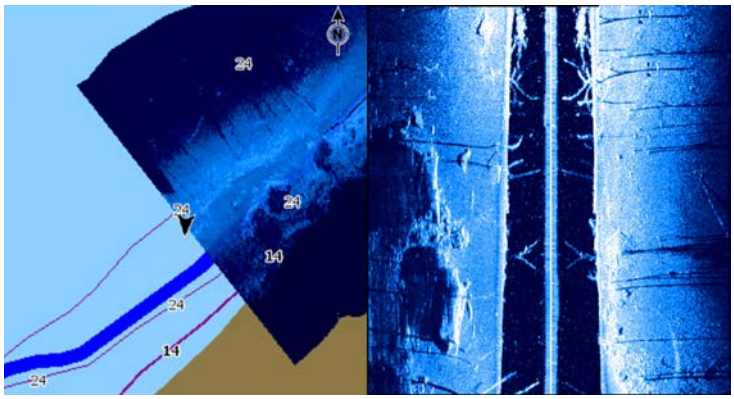
About StructureMap

The StructureMap feature overlays SideScan images from a SideScan source on the map. This makes it easier to visualize the underwater environment in relation to your position, and aids in interpreting SideScan images.

The StructureMap image

StructureMap can be displayed as an overlay on your chart panel. When the Structure overlay is selected, the chart menu increases to show the Structure options.

The example below is a two-panel page. It shows a chart with Structure overlay on the left-side panel and a traditional SideScan image on the right-side panel.



StructureMap sources



Two sources can be used to overlay Structure logs on the charts, but only one can be viewed at a time:

- Live data - Used when SideScan data is available
- Saved files - recorded SideScan data that are converted to StructureMap (*.smf) format

Live data

When live data is selected, the SideScan imaging history is displayed as a trail behind the vessel icon. The length of this trail varies depending on available memory in the unit and range settings. As the memory fills up, the oldest data is automatically deleted as new data is added. When increasing the search range, the ping speed of the SideScan transducer is reduced, but the width and the length of the image history is increased.

→ ***Note:*** Live mode does not save any data. If the unit is turned off, all recent data is lost.

Saved files

Saved mode is used to review and examine StructureMap files, and to position the vessel on specific points of interest on a previous scanned area. Saved files can be used as source if no SideScan sources are available.

With this mode selected, the StructureMap file is overlaid on the map based on position information in the file.

If the chart scale is large, the StructureMap area is indicated with a boundary box until the scale is large enough to show Structure details.

→ ***Note:*** When saved files are used as the source, all StructureMap files found on the storage device and in the system's internal memory are displayed. If there is more than one StructureMap of the same area, the images overlap and clutter the chart. If several logs of the same area are required, the maps should be put on separate storage devices.

StructureMap tips

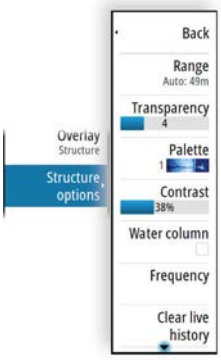
- To get a picture of taller structures (a wreck, etc.) — do not drive over it, instead, steer the boat so the structure is on the left or right side of your vessel.
- Do not overlap history trails when conducting a side-by-side scan of an area.

Using StructureMap with mapping cards

StructureMap allows you to maintain full chart capability and can be used with preloaded cartography as well as C-MAP, Navionics®, and other third-party charting cards compatible with the system.

When using StructureMap with mapping cards, copy the StructureMap (.smf) files to the unit's internal memory. We recommend keeping copies of StructureMap files on external mapping cards.

Structure options



You adjust the StructureMap settings from the Structure options menu. The menu is available when Structure overlay is enabled.

Not all options are available when saved StructureMap files are used as the source. Unavailable options are greyed.

Range

Sets the search range.

Transparency

Sets the opaqueness of the Structure overlay. With minimum transparency settings, the chart details are almost hidden by the StructureMap overlay.

Palettes

Used for selecting the image's color palette.

Contrast

Determines the brightness ratio between light and dark areas of the screen.

Water column

Shows/hides the water column in Live mode.

If turned OFF schools of bait fish might not be seen on the SideScan image.

If turned ON the accuracy of the SideScan image on the map might be affected by the water depth.

Frequency

Two frequencies are supported. 800 kHz provides the sharpest image without sacrificing range, while 455 kHz can be used in deeper waters, or for expanded range capabilities.

→ ***Note:*** If your SideScan transducer supports just one frequency, the **Frequency** option won't show in the SideScan panel.

Clear live history

Clears existing live history data from the screen and begins showing only the most current data.

Log sonar data

Displays the log sonar dialog. Refer to *"Recording log data"* on page 75.

Source

Determines the StructureMap source displayed on the chart overlay. Refer to *"StructureMap sources"* on page 92.

15 ForwardScan

About ForwardScan

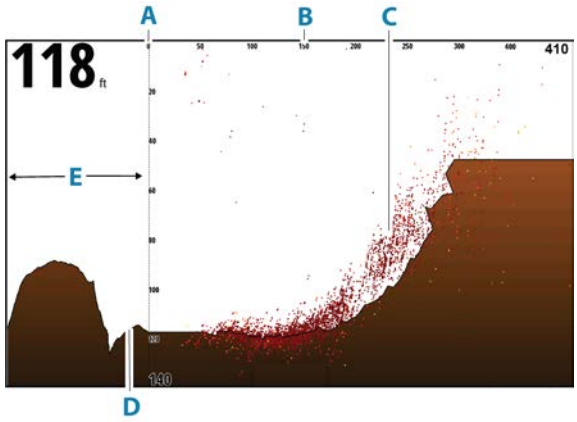
ForwardScan sonar is a navigational aid that helps you monitor the underwater environment in front of your vessel while carrying out slow speed maneuvers.

To use the ForwardScan feature you must have a ForwardScan transducer mounted on your vessel.

⚠ Warning: Do not rely on this equipment as your principle source of navigation or hazard detection.

⚠ Warning: Do not use this equipment to gauge depth or other conditions for swimming or diving.

The ForwardScan image



A	Depth range scale and vessel position
B	Forward range scale
C	Point data
D	Bottom
E	Depth history

Setting up the ForwardScan image



Source

→ ***Note:*** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ ***Note:*** Using transducers at the same frequency can cause interference.

Depth

Controls depth range. Depth range is set to auto mode by default.

Forward range

Controls the forward looking search range. Maximum Forward range is 91 meters (300 feet).

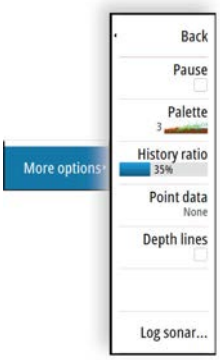
Noise rejection

Filters out signal interference and reduces on-screen clutter.

Show zones

Displays warning zones (yellow) and critical zones (red) on the screen. Refer to *"Critical forward range and Critical depth"* on page 97.

More options



Pause

Pauses the image, allowing you to examine the image in detail.

The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

Palettes

Used for selecting the image's color palette.

History ratio

Controls how much sounder history is shown behind the boat. The higher the ratio, the more history will be shown.

Point data

By default, ForwardScan only shows the bottom. Select this option to specify to view no sounder data points, all data points, or only points (objects) in the water column.

Depth lines

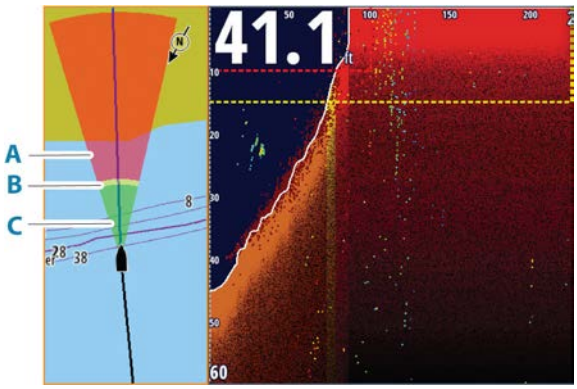
Displays lines on the screen that make it easier to quickly estimate depth and the underwater objects.

Recording ForwardScan data

Displays the record dialog. ForwardScan log data can be recorded by selecting the correct file format (sl3) in the record dialog. For more information, refer to *"Recording log data"* on page 75.

Heading extension

Heading extension line colors change dynamically based on the detected depth ahead, and the colors shown depend on the ForwardScan critical and warning depth values set in the installation dialog.



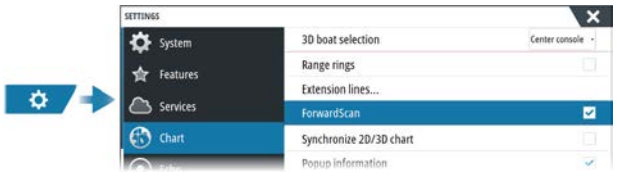
A Red - Critical

B Yellow - Warning

C Green - Safe

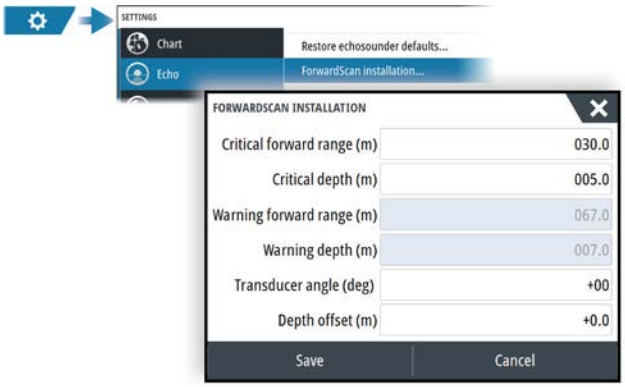
Setting up ForwardScan extensions

Select ForwardScan in the chart settings dialog to view the ForwardScan heading extension on the chart panel.



ForwardScan installation settings

Specify the setup in the ForwardScan installation dialog.



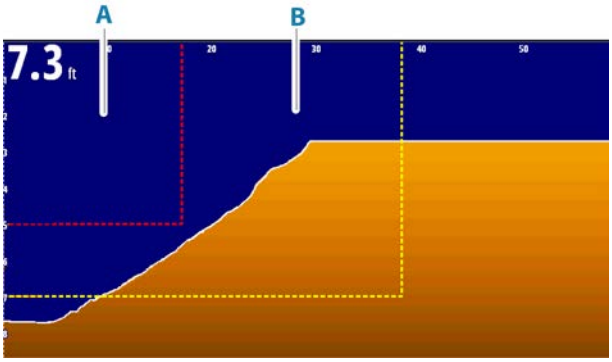
Critical forward range and Critical depth

Critical Forward Range and Critical Depth are user-selected thresholds that define a critical zone forward of your vessel.

If the alarm is turned ON and you travel into water shallow enough to cross into the critical zone, the Critical Zone alarm is activated.

To receive Critical Zone alarms, enable the Forward range alarm in the Alarm settings dialog. For more information about enabling alarms, refer to *"Alarms"* on page 132.

You can show the critical warning zones on the image by activating the Show zones menu option.



A Critical zone

B Warning zone

Warning forward range and warning depth

Set the warning forward range and warning depth thresholds that define the warning zone lines shown on the ForwardScan image.

Transducer angle

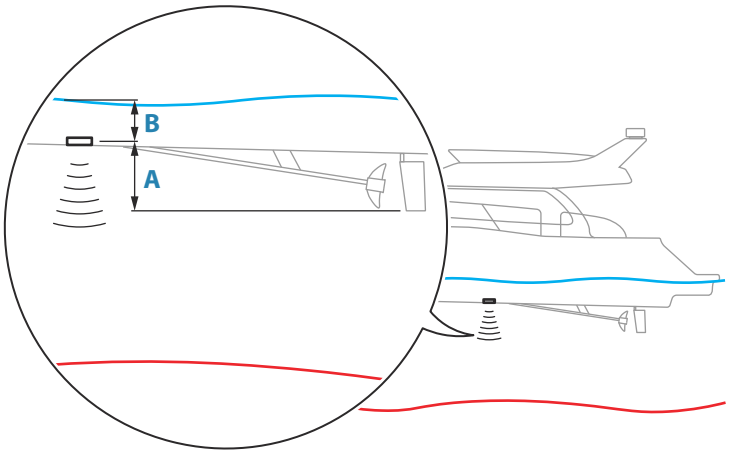
It is recommended the transducer is installed vertical to the waterline. In cases where that is not possible, the transducer angle setting helps offset the difference between the transducer angle and the waterline.

If the transducer is angled toward the front of the vessel, a positive value (0 to +15°) is entered in the Transducer angle dialog. If the transducer is angled toward the rear of the vessel, a negative value (0 to -15°) is entered in the Transducer angle dialog.

> ⚠ Warning: Adjustments to the angle value should be done with caution. Large variations in the angle value can distort depth data, increasing the risk of striking underwater obstructions.

Depth offset

All transducers measure water depth from the transducer to the bottom. As a result, water depth readings do not account for the distance from the transducer to the lowest point of the boat in the water or from the transducer to the water surface.



- To show the depth from the lowest point of the vessel to the bottom, set the offset equal to the vertical distance between the transducer and the lowest part of the vessel, **A** (negative value).
- To show the depth from the water surface to the bottom, set the offset equal to the vertical distance between the transducer and the water surface, **B** (positive value)
- For depth below transducer, set the offset to 0.

16 Autopilot

Safe operation with the autopilot

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

⚠ Warning: Ensure the autopilot has been installed correctly, commissioned and calibrated before use.

➔ ***Note:*** For safety reasons a physical standby key should be available.

Do not use automatic steering when:

- In heavy traffic areas or in narrow waters
- In poor visibility or extreme sea conditions
- When in areas where use of an autopilot is prohibited by law

When using an autopilot:

- Do not leave the helm unattended
- Do not place any magnetic material or equipment near the heading sensor used by the autopilot system
- Verify at regular intervals the course and position of the vessel
- Always switch the autopilot to standby and reduce speed in due time to avoid hazardous situations

Autopilot alarms

For safety reasons it is recommended to turn on all autopilot alarms when operating the autopilot.

For more information, refer to *"Alarms"* on page 132.

Selecting active autopilot

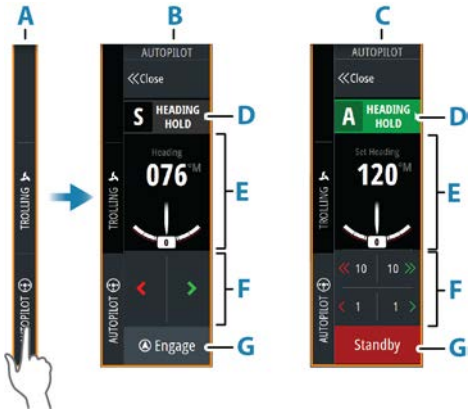


If both an autopilot computer and a trolling motor are configured for MFD control, only one of them can be active at a time.

Buttons for both autopilots are shown in the control bar.

Activate an autopilot by selecting the relevant button in the control bar, then select the switch button in the autopilot controller.

The autopilot controller



A Control bar

B Autopilot controller, disengaged

C Autopilot controller, engaged

D Mode button

E Mode dependent information

F Mode dependent buttons

G Engage/Standby button

Engaging and disengaging the autopilot

To engage the autopilot:

- Select the engage button to activate last active mode
- Select the mode button to display the list of available modes, then select the preferred mode



The autopilot will engage in the selected mode, and the autopilot controller will change to show active mode options.

To disengage the autopilot:

- Select the standby button

When the autopilot is in standby, the boat must be steered manually.

Autopilot indication



The status bar shows autopilot information as long as an autopilot computer is connected.

Autopilot modes

The autopilot has several steering modes. The number of modes and features within the mode depend on the autopilot computer, the boat type and available inputs.

Non-Follow Up mode (NFU)

In this mode the port and starboard buttons are used to control the rudder.

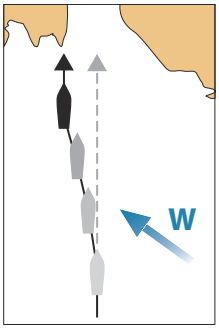
Activate this mode by selecting the port or starboard button when the autopilot is in standby.

Follow-Up mode (FU)

In this mode the rudder moves to a set rudder angle. The rudder position is maintained at the set angle.

To change the set rudder angle

- Select the port or starboard button



Heading hold mode (A)

In this mode the autopilot steers the vessel on the set heading.

When the mode is activated, the autopilot selects the current compass heading as the set heading.

→ ***Note:*** In this mode the autopilot does not compensate for any drifting caused by current and/or wind (**W**).

To change the set heading

- Select a port or starboard button

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

Tacking in Heading hold mode

→ ***Note:*** Only available when the boat type is set to sail (autopilot configuration).

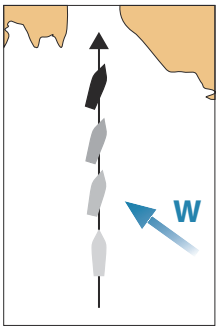
→ ***Note:*** Tacking should only be performed into the wind and must be tried out in calm sea conditions with light wind to find out how it works on your vessel.

Tacking in heading hold mode changes the heading by a fixed tack angle, either to port or starboard.

The rate of turn during the tack/gybe is set by the tack time in the autopilot settings dialog. Refer to *"Autopilot settings"* on page 106.

To initiate a tack:

- Selecting the tack button in the mode list, then selecting the tack direction.



NoDrift mode

In NoDrift mode the vessel is steered along a calculated track line, from present position and in a direction set by the user.

When the mode is activated, the autopilot will draw an invisible track line based on current heading from the vessel's position. The autopilot will now use the position information to calculate the cross track distance, and automatically steer along the calculated track.

→ ***Note:*** If the vessel is drifting away from the track line due to current and/or wind (**W**), the vessel will follow the line with a crab angle.

To change the set track line

- Select a port or starboard button

NAV mode

> ⚠ Warning: NAV mode should only be used in open waters. Navigation mode must not be used while sailing, as course changes may result in unexpected tacks or gybes.

Prior to entering NAV mode you must be navigating a route or towards a waypoint.

In NAV mode the autopilot automatically steers the vessel to a specific waypoint location, or along a pre-defined route. Position information is used to change the course to steer to keep the vessel on the track line to the destination waypoint.

→ ***Note:*** For information about navigation, refer to *"Navigating"* on page 42.

NAV mode options



While in NAV mode the following buttons are available in the autopilot controller:

Restart

Restarts the navigation from the vessel's current position.

Skip

Skips the active waypoint and steers towards the next waypoint. This option is only available when navigating a route with more than one waypoint between the vessel position and the end of the route.

Cancel

Cancels active navigation and deselects the current route or waypoint navigation. The autopilot is switched to heading hold mode, steering the vessel on the heading that was active when the cancel button was selected.

➔ ***Note:*** This is different from selecting standby which does not stop current navigation.

Turning in NAV mode

When the vessel reaches a waypoint, the autopilot will display a dialog with the new course information.

There is a limit for the allowed automatic course change to next waypoint in a route:

- If the required course change to the next waypoint is less than the course change limit, the autopilot will automatically change the course
- If the required course change to next waypoint is more than the set limit, you are prompted to verify that the upcoming course change is acceptable. If the turn is not accepted, the vessel will continue with the current set heading.

The course change limit setting depends on the autopilot computer. Refer to the autopilot computer documentation.

Wind mode

➔ ***Note:*** Wind mode is only available when the boat type is set to Sail. It is not possible to activate wind mode if wind information is missing.

In wind mode the autopilot captures the current wind angle as steering reference, and adjusts the heading of the boat to maintain this wind angle.

The autopilot will keep the boat on the set wind angle until a new wind angle is set.

⚠ Warning: In wind mode the autopilot steers to the apparent or true wind angle and not to a compass heading. Any wind shift could result in the vessel steering on an undesired course.

To change the set wind reference angle

- Select a port or starboard button
- With the autopilot controller active, turn the rotary knob

An immediate change of wind reference angle takes place.

Tacking and gybing in wind mode

The tack/gybe option in wind mode mirrors the set wind angle on the opposite tack.

Tacking and gybing in wind mode can be performed when sailing with apparent or true wind as the reference. In either case the true wind angle must be less than 90° (tacking) and more than 120° (gybing).

The rate of turn during the tack/gybe is set by the tack time in the autopilot settings dialog. Refer to *"Autopilot settings"* on page 106.

To initiate a tack or gybe:

- Select the Tack/Gybe option in the mode list

Turn patterns

The system includes a number of turn patterns.

Turn patterns are available when the autopilot is in auto mode. The number of turn patterns depend on autopilot computer.

➔ ***Note:*** Turn patterns are not available if the boat type is set to sail.

To start a turn
Select the port or starboard options in the turn dialog.

Turn variables
All turn patterns, except the U-turn, have settings that you can adjust before you start a turn, or at any time when the boat is in a turn.

U-turn
Changes the current set heading by 180°. When activated, the autopilot is switched to Auto mode.

The turn rate is identical to Turn rate setting.

C-turn
Steers the vessel in a circle.

Turn variable:

- Rate of turn. Increasing the value makes the vessel turn a smaller circle.

Spiral
Makes the vessel turn in a spiral with a decreasing or increasing radius.

Turn variables:

- Initial radius
- Change/turn. If this value is set to zero, the boat will turn in a circle. Negative values indicate decreasing radius while positive values indicate increasing radius

Zigzag
Steers the vessel in a zigzag pattern.

Turn variables:

- Course change
- Leg distance

Square
Steers the vessel in a square pattern, doing 90° course changes.

Turn variable:

- Leg distance

S-turn
Makes the vessel yaw around the main heading. When activated, the autopilot is switched to S-turns mode.

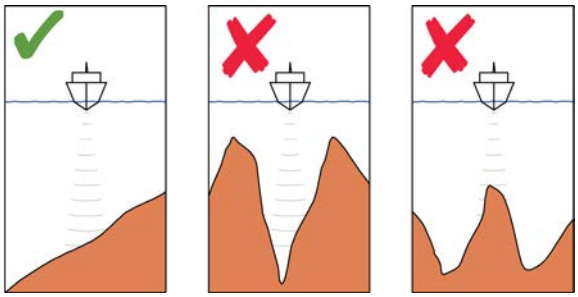
Turn variables:

- Course change
- Turn radius

Depth contour tracking
Makes the autopilot follow a depth contour.

➔ ***Note:*** DCT turn pattern is only available if the system has a valid depth input.

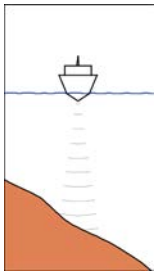
⚠ Warning: Do not use the DCT turn pattern unless the seabed is suitable. Do not use it in rocky waters where the depth is varying significantly over a small area.



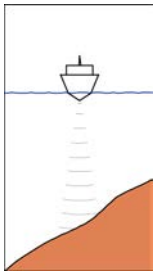
➔ ***Note:*** If depth data is lost during DCT the autopilot will automatically switch to auto mode.
It is recommended to turn on the AP Depth Data Missing alarm when using DCT. When this alarm is activated an alarm will be raised if the depth data is lost during DCT.

To initiate a DCT turn

- Steer the boat to the depth you want to track, and in the direction of the depth contour
- Activate auto mode, then select depth contour tracking while monitoring the depth reading
- Select the port or starboard button to initiate the depth contour steering to follow the bottom sloping to starboard or to port



Port option
(depth decreases to port)



Starboard option
(depth decreases to starboard)

Turn variables

- Ref. depth: this is the reference depth for the DCT function. When DCT is initiated the autopilot reads the current depth and set this as the reference depth. The reference depth can be changed when the function is running
- 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 will take a long time to compensate for drifting off the set depth contour, and the autopilot will fail to keep the boat on the selected depth. If the value is set too high the overshoot will increase and the steering will be unstable.
- 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 s movements. The larger the CCA the bigger yawing will be allowed. If the CCA is set to zero there is no S-ing.

Operating a professional autopilot system

If the MFD system is connected to a professional autopilot system, the MFD can be used to operate the autopilot.

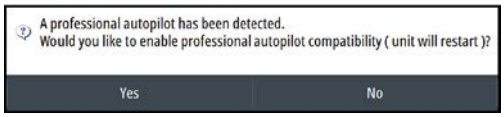
➔ ***Note:*** The MFD cannot be used to configure or commission a professional autopilot system.

For more information about the autopilot system, refer to the separate documentation following the autopilot system.

Autopilot sources

A professional autopilot system has its own source groups. If the MFD is going to be used to operate the professional autopilot system, the MFD must use the same source groups as the autopilot system.

The MFD will detect a connected professional autopilot system, and a prompt will be displayed asking if the MFD should enable professional autopilot compatibility.

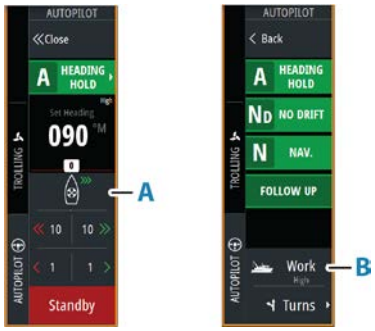


- Yes: the MFD restarts using the same source groups as the professional autopilot, and the MFD can be used to operate the autopilot
- No: the MFD remains with its own source groups. The MFD cannot be used to operate the autopilot

If No is selected the question is not asked again. The setting can be changed by selecting Professional autopilot compatibility in the Advanced settings dialog.

The autopilot controller for professional autopilots

The controller for professional autopilot has additional buttons and fields available.



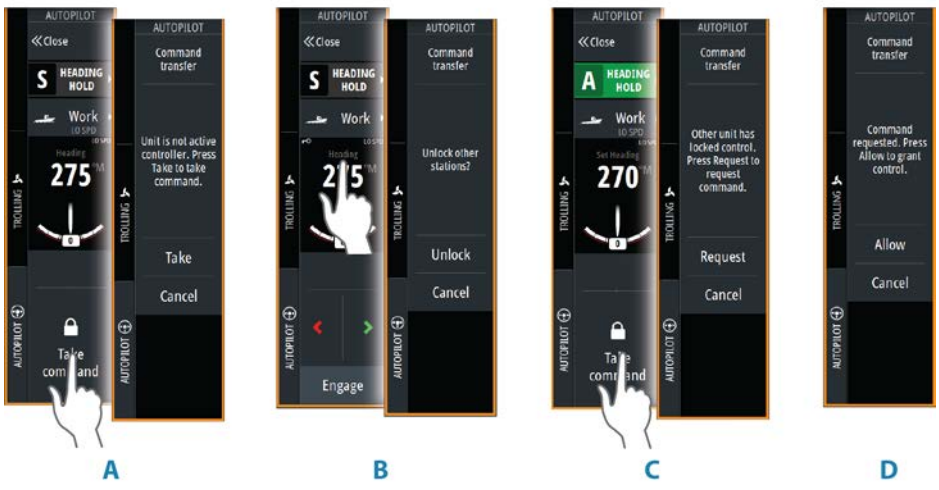
A Thruster indication

B Work profile button

Command transfer

The AP70/80 system can be set up as a Master system or as an Open system. These options control the command transfer between control units in the autopilot system. For details, refer to the AP70/80 Operator manual.

The command transfer action and request depends on system setup and status of the autopilot controller as illustrated below.



A Passive unit – open system: request command by selecting the Take command button
- The command is immediately transferred

B Unlocked unit: lock/unlock other units by selecting the information field

C Locked unit: request command by selecting the Take command button
- A request is sent to the unit in control

D Unit in control: confirm request for command transfer
- The command is transferred when the requestor confirms take-over

Enabling/disabling thrusters

If a thruster is available for autopilot control, the Thruster button is shown in the autopilot control bar. The button has the following indications and function:



Thruster available, but turned off.
- Select to enable the thruster



Thruster in use. Red and green arrows indicate thrust direction.
- Select to disable the thruster



Thruster available, but currently inhibited due to high speed.
- Reduce vessel speed to enable the thruster

Selecting a work profile

The AP70/AP80 supports multiple work profiles with different autopilot settings. On the MFD, the active work profile is shown on in the autopilot controller.

The Work profile button is available in the autopilot controller or in the autopilot controller's mode panel depending on MFD screen size.

To select the work profile:

- Select the work profile button to display the list of available work profiles, then select the preferred work profile

Autopilot settings

The Autopilot settings dialog depends on which autopilot computer is connected to the system. If more than one autopilot is connected, the Autopilot settings dialog shows options for the active autopilot.

The settings are made during commissioning of the autopilot. Be careful of changing settings after commissioning is completed.

Common user settings

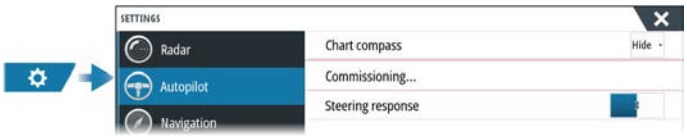
The following user settings are common to all autopilots.

Chart compass



Select to display a compass symbol around your boat on the chart panel. The compass symbol is off when the cursor is active on the panel.

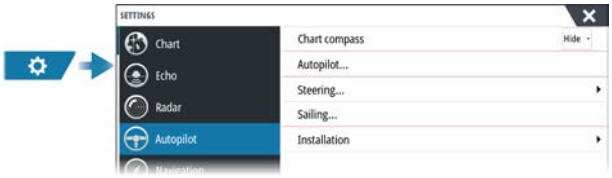
NAC-1 specific user settings



Steering response

Used to increase or decrease the steering sensitivity. A low response level reduces the rudder activity and provides a looser steering. A high response level increases the rudder activity and provides tighter steering. A too high response level will cause the boat to make S movements.

NAC-2/NAC-3 specific user settings



Autopilot

Switches the view to the last active page with the autopilot controller open.

Steering

These options allow for manually changing low speed and high speed parameters that were set during the commissioning of the autopilot computer. For more details, refer to the separate documentation for the autopilot computer.

Selecting the low speed option or the high speed option opens dialogs the following parameters can be changed.

- Turn rate: Preferred turn rate used while turning in degrees per minute.
- Rudder gain: This parameter determines the ratio between commanded rudder and the heading error. The higher rudder value the more rudder is applied. If the value is too small it will take a long time to compensate for a heading error, and the autopilot will fail to keep a steady course. If the value is set too high the overshoot will increase and the steering will be unstable.
- Counter rudder: Relation between change in heading error and applied rudder. Higher counter rudder will reduce applied rudder faster when approaching the set heading.
- Auto trim: Controls how aggressively the autopilot will apply rudder to compensate for a constant heading offset, e.g. when external forces such as wind or current affects the heading. Lower auto trim will give faster, limitation of a constant heading offset.

→ ***Note:*** In VRF mode this parameter controls the time constant of the rudder estimate. A lower value makes the rudder estimate faster, i.e. that it will more quickly catch up with the boat's movements.

- Init rudder: Defines how the system moves the rudder when switching from manual steering to an automatic mode.
  - Rudder limit: Determines the maximum rudder movement in degrees from midship position that the autopilot can command the rudder in the automatic modes. The Rudder limit setting is only active during autosteering on straight courses, not during course changes. Rudder limit does not affect Follow-up or Non-Follow-up steering.
  - Off heading limit: Sets the limit for the off heading alarm. An alarm occurs when the actual heading deviates from the set heading more than the selected limit.
- Rudder limit: Determines the maximum rudder movement in degrees from midship position that the autopilot can command the rudder in the automatic modes. The Rudder limit setting is only active during autosteering on straight courses, not during course changes. Rudder limit does not affect Follow-up or Non-Follow-up steering.
- Off heading limit: Sets the limit for the off heading alarm. An alarm occurs when the actual heading deviates from the set heading more than the selected limit.
- Track response: Defines how fast the autopilot shall respond after having registered a cross track distance.
- Track approach angle: Defines the angle used when the vessel is approaching a leg. This setting is used both when you start navigating and when you use track offset.

- Course change confirm angle: Defines the limits for course change to next waypoint in a route. If the course change is more than this set limit, you are prompted to verify that the upcoming course change is acceptable.

Sailing

➔ ***Note:*** Sailing parameters are only available when the boat type is set to Sail.

This option allows for manually changing parameters that were set during the commissioning of the autopilot computer. For more details of the settings, refer to the separate documentation for the autopilot computer.

- Tack time: Controls the rate of turn (tack time) when performing a tack in wind mode.
- Tack angle: Controls the angle that the boat will tack to between 50º - 150º in Heading hold mode.
- Wind function: Select what wind function the autopilot will use when in wind mode.
  - Auto:
    If TWA is <70º, Wind mode will use AWA.
    If TWA is ≥70º, Wind mode will use TWA.
  - Apparent
  - True
- Manual speed: If neither boat speed or SOG data is available and or deemed reliable a manual value for speed source can be entered and used by the autopilot to aid steering calculations.

AC70/AC80 Specific user settings

The AC70/AC80 computers do not have any specific user settings available in the MFD.

➔ ***Note:*** The MFD cannot be used to configure or commission an AP70/AP80 system. For more information, refer to the documentation included with the autopilot system.

17 Trolling motor autopilot

Safe operation with the autopilot

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

⚠ Warning: Ensure the autopilot has been installed correctly, commissioned and calibrated before use.

➔ ***Note:*** For safety reasons a physical standby key should be available.

Do not use automatic steering when:

- In heavy traffic areas or in narrow waters
- In poor visibility or extreme sea conditions
- When in areas where use of an autopilot is prohibited by law

When using an autopilot:

- Do not leave the helm unattended
- Do not place any magnetic material or equipment near the heading sensor used by the autopilot system
- Verify at regular intervals the course and position of the vessel
- Always switch the autopilot to standby and reduce speed in due time to avoid hazardous situations

Autopilot alarms

For safety reasons it is recommended to turn on all autopilot alarms when operating the autopilot.

For more information, refer to *"Alarms"* on page 132.

Selecting active autopilot

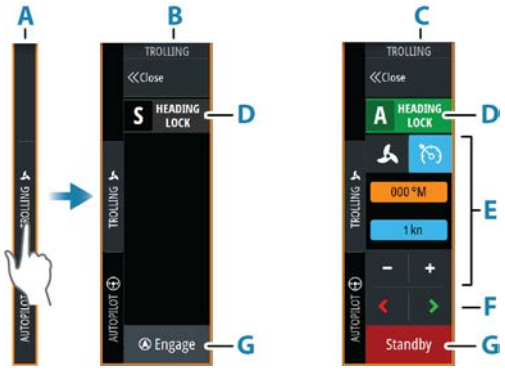


If both an autopilot computer and a trolling motor are configured for MFD control, only one of them can be active at a time.

Buttons for both autopilots are shown in the control bar.

Activate an autopilot by selecting the relevant button in the control bar, then select the switch button in the autopilot controller.

The autopilot controller for trolling motor



A Control bar

B Autopilot controller, disengaged

C Autopilot controller, engaged

D Mode button

E Mode dependent information

F Mode dependent buttons

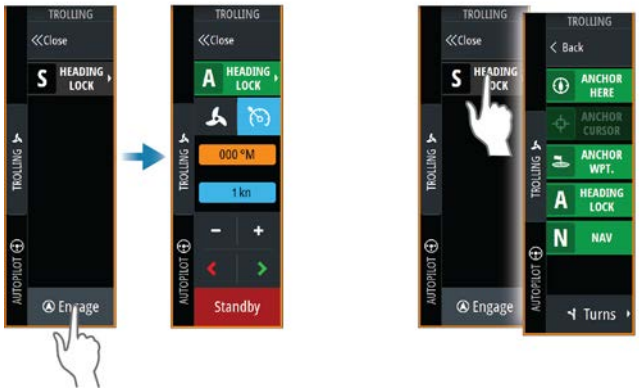
G Engage/Standby button

When the autopilot controller is the active panel, it is outlined with a border.

Engaging and disengaging the autopilot

To engage the autopilot:

- Select the engage button to activate last active mode
- Select the mode button to display the list of available modes, then select the preferred mode



The autopilot will engage in the selected mode, and the autopilot controller will change to show active mode options.

To disengage the autopilot:

- Select the standby button

When the autopilot is in standby, the boat must be steered manually.

Autopilot indication



The status bar shows autopilot information as long as an autopilot computer is connected.

Autopilot modes

The autopilot has several steering modes.

Anchor modes

In these modes the trolling motor maintains the vessel position at a selected location.

→ ***Note:*** When in anchor mode, the vessel heading can be affected by wind or current.

The following anchor options are available:

Cursor

Navigates to cursor position, and then maintains the vessel at that position.

Waypoint

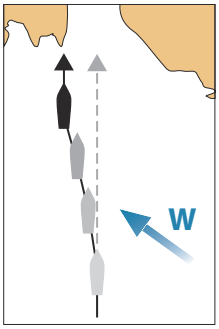
Navigates to the selected waypoint, and then maintains the vessel at that position.

Here

Maintains the vessel at the current position.

Change the position in anchor mode

Use the arrow buttons to reposition the vessel when in anchor mode. Each press on a button will move the anchor position 1.5 m (5 ft) in the selected direction.



Heading lock mode

In this mode the autopilot steers the vessel on the set heading.

When the mode is activated, the autopilot selects the current compass heading as the set heading.

→ ***Note:*** In this mode the autopilot does not compensate for any drifting caused by current and/or wind (**W**).

To change the set heading

- Select a port or starboard button

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

NAV mode

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

Prior to entering NAV mode you must be navigating a route or towards a waypoint.

In NAV mode the autopilot automatically steers the vessel to a specific waypoint location, or along a pre-defined route. Position information is used to change the course to steer to keep the vessel on the track line and to the destination waypoint.

When arriving at the destination, the autopilot switches to the selected arrival mode. It is important to select an arrival mode that fits your navigation needs before NAV mode is activated. Refer to *"Arrival mode"* on page 113.

NAV mode options



While in NAV mode the following buttons are available in the autopilot controller:

Restart

Restarts the navigation from the vessel's current position.

Skip

Skips the active waypoint and steers towards the next waypoint. This option is only available when navigating a route with more than one waypoint between the vessel position and the end of the route.

Turn pattern steering



The system includes a number of automatic turn steering features.

When a turn pattern is activated, the system creates temporary waypoints on the turn.

The last waypoint on the turn is the final waypoint. When the vessel reaches the final waypoint, the vessel goes into arrival mode. Refer to *"Arrival mode"* on page 113.



Starting a turn

- Select the port or starboard button



Turn variables

All turn patters have settings that you can adjust before you start a turn, or at any time when the boat is in a turn.

U-turn

Changes the current set heading by 180°.

Turn variable:

- Turn radius

C-turn

Steers the vessel in a circle.

Turn variable:

- Turn radius
- Degrees to turn

Spiral

Makes the vessel turn in a spiral with a decreasing or increasing radius.

Turn variables:

- Initial radius
- Radius change per loop
- Number of loops

Zigzag-turn

Steers the vessel in a zigzag pattern.

Turn variables:

- Course change per leg
- Leg distance
- Number of legs

Square

Steers the vessel in a square pattern, doing 90° course changes.

Turn variable:

- Leg distance
- Number of legs

S-turn

Makes the vessel yaw around the main heading.

Turn variables:

- Turn radius
- Course change
- Number of legs



Trolling motor speed control

In Heading lock mode, Nav. mode and in Turn pattern steering the autopilot system can control the trolling motor speed.

The set target speed is displayed in the autopilot controller.

There are two ways to control the target speed of the trolling motor:

- Propeller rate, set as a percentage of power (**A**)
- Cruise control speed (**B**)

Switch between the speed options by selecting the speed icon.

The speed is increased/decreased in preset steps by selecting the plus and minus buttons. The speed can also be set manually by selecting the speed field (**C**).

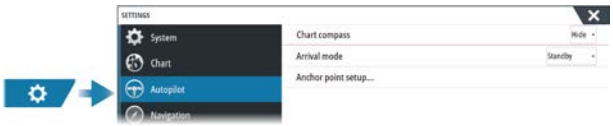
Recording and saving a track

A track can be saved as a route from the autopilot controller. If track recording is disabled, the function can be enabled from the autopilot controller.

For more information, refer to *"Waypoints, routes, and tracks"* on page 37.

Autopilot settings

The options in the Autopilot settings dialog can vary.



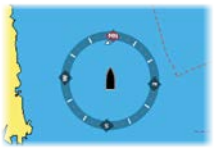


Chart compass

Select to display a compass symbol around your boat on the chart panel. The compass symbol is off when the cursor is active on the panel.

Select active autopilot

Selects if the autopilot controls the trolling motor or the outboard motor(s).

Auto hide autopilot bar

Controls whether the autopilot information bar is shown when the autopilot is in standby.

Arrival mode

The autopilot switches from navigation mode to the selected arrival mode when the vessel reaches the destination point.

Standby

Disengages the autopilot. The trolling motor is controlled by hand-held remote or by foot pedal.

Heading lock

Locks and maintains the last vessel heading.

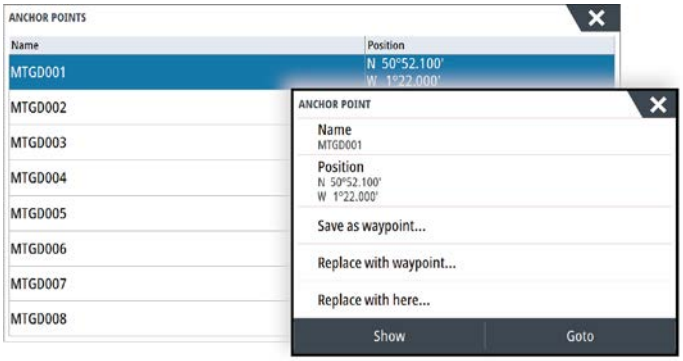
Anchor

Anchors the vessel at the destination point.

Anchor point setup

The trolling motor can store a number of anchor points, labelled with MTG prefix. Anchor points in the trolling motor are displayed in the Anchor point dialog.

These MTG anchor points can be saved as a waypoint in the MFD system. The position of an MTG anchor point can be redefined to be identical to an existing waypoint, or to the current vessel position.


ANCHOR POINTS
Name
Position
MTGD001
N 50°52.100'
W 1°22.000'
MTGD002
MTGD003
MTGD004
MTGD005
MTGD006
MTGD007
MTGD008
ANCHOR POINT
Name
MTGD001
Position
N 50°52.100'
W 1°22.000'
Save as waypoint...
Replace with waypoint...
Replace with here...
Show
Goto

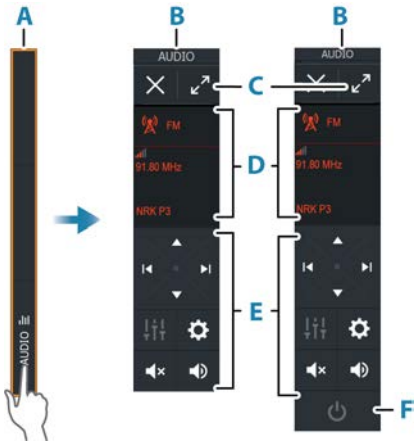
18 Audio

About the audio function

If a compatible audio server is properly installed/connected and setup with your system, you can use the unit to control and customize the audio system on your vessel.

The Audio controller

The control buttons, tools and options vary from one audio source to another.



A Control bar

B Audio controller, small and large displays

C Maximize button, expands the audio controller

D Source and source information

E Control buttons

F ON/OFF button
The OFF button is located in the source list on small displays.

Setting up the audio system

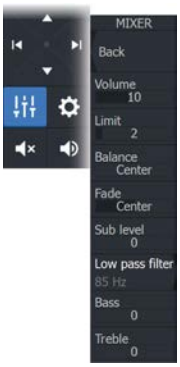
Audio server



If multiple audio sources are connected to the same network, one of the devices must be selected as the audio server. If only one device is present, it is the selected audio server by default.

Setting up the speakers

→ ***Note:*** The number of mixer options depends on active audio server.



Speaker zones

This device 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 adjust each speaker zone individually. You can also define which zones that shall be altered when you adjust the volume.

Selecting audio source



Use the source button to display the list of audio source. The number of sources depends on the active audio server.

Bluetooth® devices

If your audio server supports Bluetooth®, Bluetooth® will be listed as a source.

Use the Bluetooth® icon in the audio controller to pair the audio server with a Bluetooth® enabled device such as a smartphone or tablet.

Using an AM/FM radio

Selecting the tuner region



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

Radio channels

To tune in to an AM/FM radio channel:

- press and hold the left or right audio control button

To save a channel as a favorite:

- select the favorite menu option

To page through favorite channels:

- select the up or down audio control button

List of favorite channels

The favorite list can be used for selecting a channel, and for deleting the saved channels from the list.



Sirius radio

→ ***Note:*** SiriusXM® radio is available in North America only.

If you have a compatible SiriusXM® receiver connected to your system, you can control the receiver from the Audio control bar.

Sirius service covers inland U.S. waters and coastal areas into the Atlantic and Pacific oceans, Gulf of Mexico, and the Caribbean Sea. The SiriusXM® products received vary depending on your selected subscription package. For more information, refer to www.siriusXM.com and the server documentation.

Lists of Sirius channels

Several options are available for displaying the Sirius channels.



Sirius favorite channels

You can create your favorite channels from within the list of all channels and the list of subscribed channels.

Selecting a Sirius channel

To select a channel:

- select the left or right audio control button

To page through favorite channels:

- select the up or down audio control button

Locking channels

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

19 Instruments

About Instrument panels

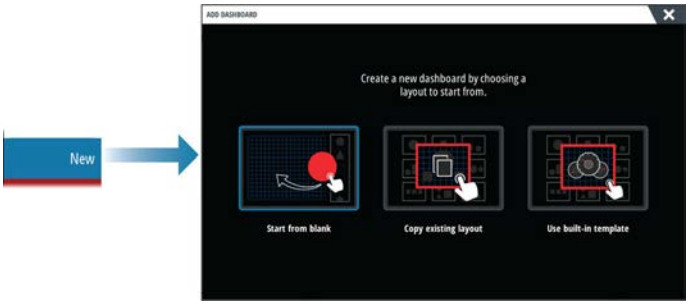
The panels consist of multiple gauges that can be arranged on dashboards. The panels can be created with analog, digital, and bar gauges. Pre-defined dashboards and templates are included.

Example:



Creating a dashboard

Use the new menu option to create your own dashboard.



Starting from blank

Select to create your own dashboard from scratch.

Use menu options to name the dashboard and manage gauges on the dashboard.

Copying an existing layout

Select to copy an existing layout that you have made.

Use menu options to name the dashboard and manage gauges on the dashboard.

Using a built-in template

Select a pre-defined template to create a dashboard. The template dashboards reflect your vessel configuration.

Use menu options to name the dashboard and manage gauges on the dashboard.





Customizing the dashboard

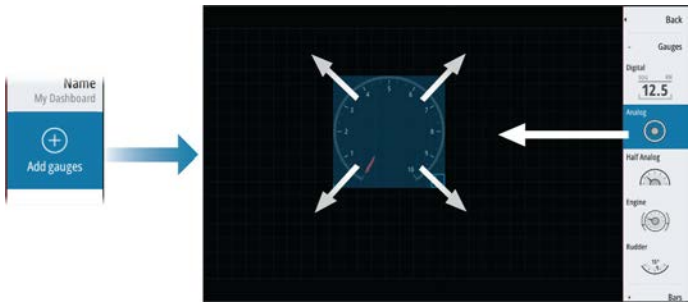
You can use edit menu options to:

- change the data for each of the gauges in any dashboard
- set limits for analog gauges
- change the dashboard layout

➔ ***Note:*** You cannot change the layout of pre-defined dashboards or dashboards you have created using built-in templates.

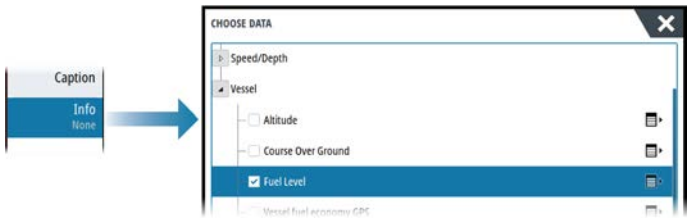
Adding gauges

Select a gauge in the menu and then position it on the dashboard.



Choosing gauge data

Select the gauge in the dashboard and then the info menu option to choose the data to be shown on the gauge.



Selecting a dashboard

You switch between the dashboards by:

- swiping left or right on the panel
- selecting the dashboard from the menu

20 Weather

About the weather feature

The system includes weather functionality that allows the user to view forecast data overlaid on the chart. This helps gaining a clear understanding of the weather conditions that are likely to appear.

The system supports weather data in GRIB format, available for download from various weather service suppliers.

The system also supports weather data from SIRIUS Marine Weather Service. This service is available only in North America.

Wind barbs

The rotation of the wind barbs indicate the relative wind direction, with the tail showing the direction the wind is coming from. In the graphics below, the wind comes from the northwest.

Wind speed is indicated by a combination of small and large barbs at the end of the wind tail.

	Zero knots / Indeterminate wind direction
	Small barb = 5 knots
	Large barb = 10 knots
	Arrow barb = 50 knots

If a combination of 5 and 10 knot barbs are shown on a tail, then add them together to give you the total wind speed. The example below shows 3 x large barb + 1 x small barb = 35 knots, and 60 knots indicated with 1 x arrow barb + 1 x large barb.

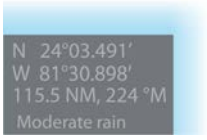


Wind speed: 35 knots

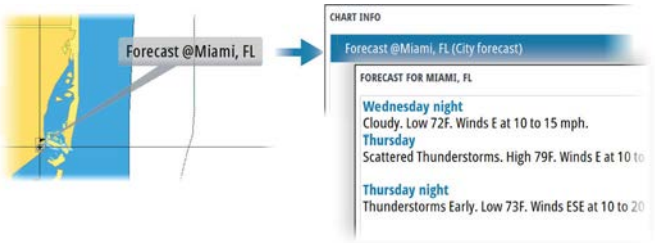


Wind speed: 60 knots

Showing weather details



If pop-up is enabled, you can select a weather icon to display the identity of the observation. If you select the pop-up, detailed information about the observation is displayed. You can also display the detailed information from the menu when the weather icon is selected.



GRIB weather

A GRIB file contains forecast information for a set number of days. It is possible to animate the weather data, which shows how weather systems are developing.

Importing GRIB data

GRIB data imported into memory can be displayed as chart overlay. Refer to *"Displaying GRIB weather as overlay"* on page 121. The file can be imported from any location that can be seen in the file manager.

➔ ***Note:*** GRIB data that is imported overwrites the GRIB data in memory.

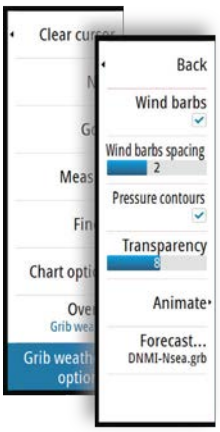
You can import the weather file using the File manager from the Tools panel or the Forecast menu option on the Chart panel:

- When you select a GRIB file with the File manager, the import option is available. Use it to import a GRIB file into memory.

Select the GRIB file to import the data.

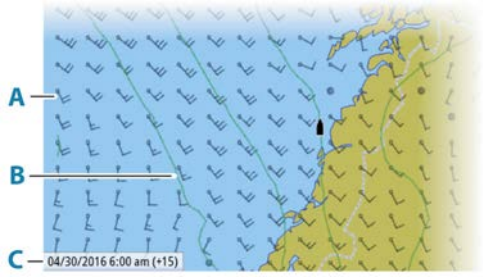
- Selecting the Forecast menu option on the Chart panel displays the GRIB weather dialog. Use the import file option in this dialog to open the File manager and import a GRIB file into memory.
  Using this dialog you can also select an available GRIB file. Selecting an available GRIB file is the same as importing the file into memory. Available GRIB files are files downloaded from a weather service supplier to the Gribs directory (in the Files manager).

Displaying GRIB weather as overlay



Imported GRIB weather data can be displayed as an overlay on your chart panel.

When the GRIB weather overlay option is selected, the chart menu increases to show GRIB weather options. From this menu you can select which weather symbols you want to display, set the distance between the barbs, and adjust the opaqueness of the weather symbols.



A Wind barbs

B Pressure contours

C GRIB information window

GRIB information window

The GRIB information window shows the date and time for the GRIB weather forecast, and the selected forecast time in brackets. A negative value in the brackets indicates historic weather data.

If you select a position on the chart, the information window expands to include weather details for the selected position.

Animating GRIB weather forecast

The GRIB data contains forecast information for a set number of days. It is possible to animate the weather data and to show the predicted forecast for a specific time and date. The time scales vary depending on the file you are using.

The time shift is shown in brackets in the GRIB information window. The time is relative to the current time as provided by a GPS device connected to the system.

Select time and animation speed from the menu.

SiriusXM® weather

About SiriusXM® weather

➔ ***Note:*** SiriusXM® weather is available for North America only.

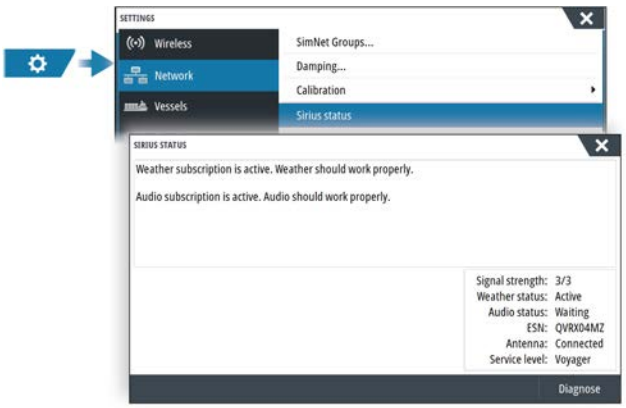
When a supported Navico satellite weather receiver module is connected to your system and with the appropriate subscription, SiriusXM® marine weather information is available.

The options available depend on the satellite weather receiver module connected to your system and your subscription.

SiriusXM® weather service covers a variety of North American inland waters and coastal areas. For more information refer to www.SiriusXM.com/sxmmarine.

Sirius status panel

When the weather module is connected to the system, you get access to the Sirius status panel.

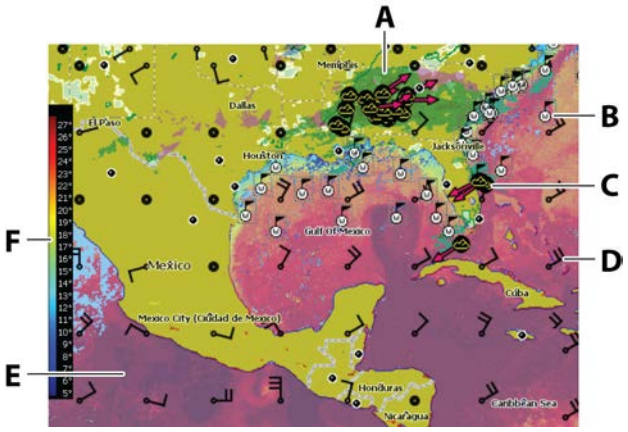


The status panel shows signal strength is indicated as 1/3 (weak), 2/3 (good) or 3/3 (preferred). It also includes antenna status, service level, and the electronic serial number for the weather module.

Sirius weather panel

Sirius weather can be displayed as an overlay on your chart panel.

When weather overlay is selected, the chart menu increases to show the available weather options.



A Precipitation color shading

B Surface observations

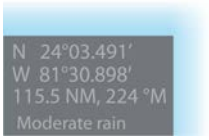
C Storm icon

D Wind barb

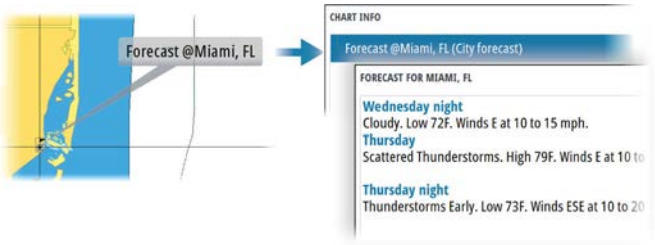
E Sea Surface Temperature (SST) color shading

F SST color bar

Showing weather details



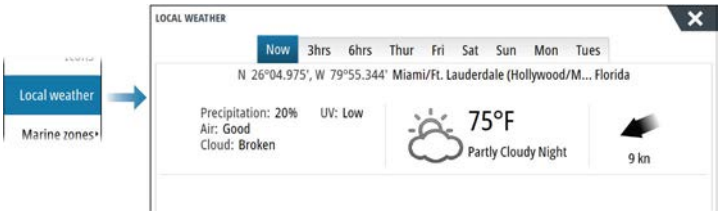
If pop-up is enabled, you can select a weather icon to display the identity of the observation. If you select the pop-up, more information about the observation is displayed.



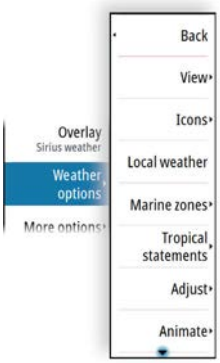
You can also display weather information from the menu when the weather icon is selected and the 'Info - Weather item' menu option is selected.

Local weather

The local weather dialog shows current weather and weather forecast for your current location.



Weather options



View options

Precipitation

Shades of color are used to show precipitation type and intensity. The darkest color indicates the highest intensity.

Rain	From light green (light rain) - yellow - orange - to dark red (heavy rain)
Snow	Blue
Mixed	Pink

Sea Surface Temperature (SST)

You can show the SST as color shading or as text.

When color coding is selected, the SST color bar is shown on the left side of the display.

You define how the color codes are used to identify SST. Refer to *"Adjusting color codes"* on page 125.

Forecast wave indication

Colors can be used to indicate forecast wave height. The highest waves are dark red, while the lowest are blue.

You can define how the color codes are used to identify the wave height. Refer to *"Adjusting color codes"* on page 125.

Forecast wind barbs

Forecast wind barbs can be shown or hidden on the weather panel.

Surface features

Turns surface features on/off. Surface features include fronts, isobars, and pressure points. Surface features cannot be shown at the same time as Wind.

Cloud tops

Turn Cloud tops on/off. Cloud tops indicate the height of the top of the clouds. The color palette used is grey with darker greys indicating lower clouds. Cloud tops cannot be shown at the same time as Precipitation or Echo Tops.

→ ***Note:*** This feature is only available for certain SiriusXM® subscriptions.

Echo tops

Turns Echo tops on/off. Echo tops indicate the tops of storms. The color palette used is the same as for Precipitation. Echo tops cannot be shown at the same time as Precipitation or Cloud Tops.

→ ***Note:*** This feature is only available for certain SiriusXM® subscriptions.

Weather icons

Several weather icons are available to show current or predicted weather conditions.

Select an icon to display detailed weather information.

	Surface observation
	Tropical storm tracking; past (grey) - present (red) - future (yellow)
	Hurricane (category 1-5) tracking; past (grey) - present (red) - future (yellow)
	Tropical disturbance/depression tracking; past (grey) - present (red) - future (yellow)
	Storm attributes
	Lightning
	Watch box location and warning
	Marine zone location

Marine zone

Depending on your selected subscription, SiriusXM® services includes access to weather reports for U.S. and Canadian marine zones, with the exception of the high seas zones.

You can select a marine zone and view its forecast. You can also select a marine zone as your current zone of interest to be notified of any weather warnings in that zone.



Tropical statements

You can read tropical statements including information about tropical weather conditions. These statements are available for the entire Atlantic and the Eastern Pacific.

Adjusting color codes



You can define the Sea Surface Temperature (SST) range and wave height color coding.

The temperature above warm and below cool values is displayed as progressively darker red and darker blue.

Waves higher than the maximum value are indicated with progressively darker red. Waves lower than the minimum value are not color coded.

Animating weather graphics

The weather information you have turned on is recorded. This information can be used to animate past or future weather conditions. The amount of information available in the system depends on the amount of weather activity; the more complex it is, the less time is available for animation.

You can animate the past or the future, depending on which weather view you have turned on:

- with precipitation overlay, you can animate for the past and only assume weather conditions in the immediate future.
- with colored wave height overlay, you can animate the future (the predictions).

When activated, the time for the current graphic animation is displayed in the panel.



Transparency

Adjusts the transparency of the overlay.

Weather alarms

You can setup lightning or storm alarms to occur when the conditions are within a certain range of your vessel.

You can also set up an alarm as a severe weather forecast alarm issued for your chosen marine zone.

A watchbox is defined by the National weather service. When the alarm for watchbox is turned on, an alarm occurs when your vessel is entering or inside a watchbox.



21 Internet connection

Internet usage

Some features in this product use an internet connection to perform data downloads and uploads.

Internet usage via a connected mobile/cell phone internet connection or a pay-per-MB type internet connection may require large data usage. Your service provider may charge you based on the amount of data you transfer. If you are unsure, contact your service provider to confirm rates and restrictions.

Ethernet connection

The unit is automatically connected to the internet when connected to an Ethernet network with internet access.

Wi-Fi® connection

Use the Wi-Fi® functionality to:

- Connect the unit to the internet. For more information, refer to *"Wireless settings"* on page 146.

22 Remote control of the MFD

Remote control options

The following options are available for remotely controlling your MFD:

- a smartphone or a tablet, connected to the same Wi-Fi® hotspot as the MFD(s).
- a smartphone or a tablet, connected to an MFD acting as a Wi-Fi® access point.
- a compatible remote control unit connected to the same NMEA® network as the MFD. The documentation included with the remote control unit provides connection and usage information.

→ ***Note:*** For safety reasons, some functions cannot be controlled from a remote unit.

Smartphones and tablets

The Link app

The Link app must be used to connect a phone or tablet to the MFD.

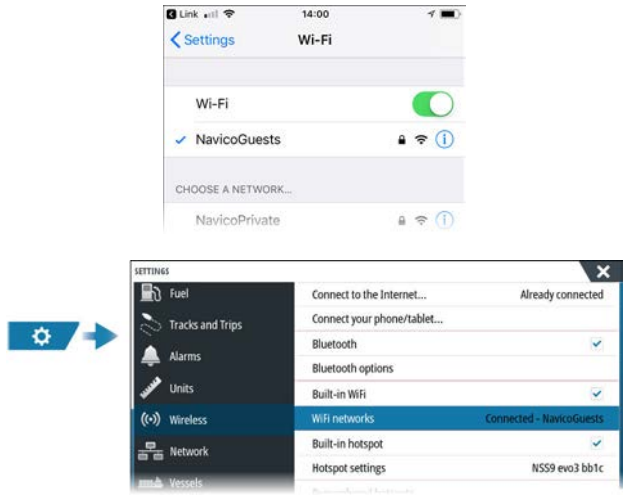
When connected, the Link app on the phone or tablet can be used to:

- Remotely view and control the system
- Back-up and restore settings
- Back-up and restore waypoints, routes and tracks

The Link app can be downloaded from the relevant phone/tablet application store.

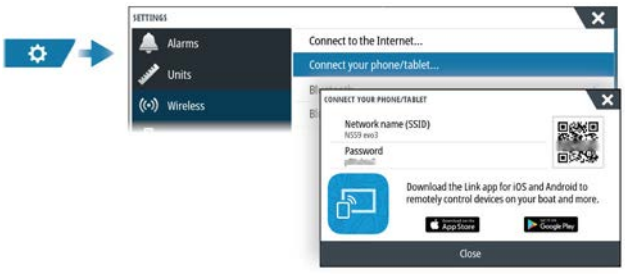
Connecting via a hotspot

If you connect a phone/tablet and the MFD(s) to the same hotspot, you can use your phone/tablet to control all MFDs on the same network.



Connecting to an MFD acting as an access point

If you do not have access to a Wi-Fi® network, you can connect your phone/tablet directly to the MFD.

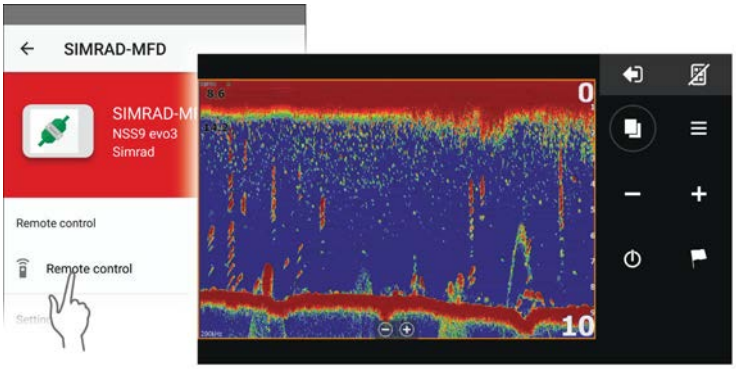


The MFD network name (SSID) will be displayed as an available network in the phone/tablet.

Using the Link app

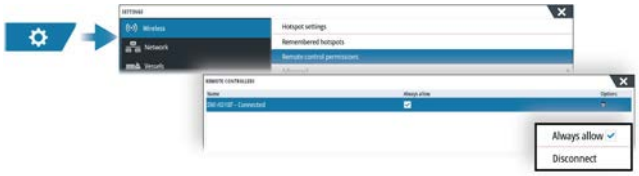
Start the Link app to display MFD(s) available for remote control. The list includes both connected and not connected MFDs.

Select the MFD you want to control. If the MFD is not connected, follow the instructions on the MFD and on the table/phone to connect.



Managing Wi-Fi® connected remotes

You can change the access level and remove the Wi-Fi® connected remote controllers.



23 Using your phone with the MFD

About phone integration

The following functions are available when connecting a phone to the unit:

- read and send text messages
- view caller ID for incoming calls

iPhone® limitations:

- only incoming calls and messages received while the phone is connected to the MFD are available
- messages cannot be sent from the MFD. iPhone® does not support sending messages from connected Bluetooth® devices.

Connecting and pairing a phone

→ ***Note:*** Bluetooth® must be enabled on your phone before you can connect to the MFD.

→ ***Note:*** If you want to pair a phone while another phone is connected to the MFD, see *"Managing Bluetooth® devices"* on page 131.

→ ***Note:*** You must always connect to a phone from the MFD, not the other way around.

Use the phone icon in the toolbar to connect your phone to the MFD. When the icon is selected the following happens:

- Bluetooth® is turned ON in the MFD
- the Bluetooth® dialog opens, listing all Bluetooth® enabled devices within range



To pair a phone listed as **other devices** in the dialog:

- select the phone you want to pair, and follow the instructions on the phone and on the MFD

When paired, the phone is moved to the **paired device** section in the dialog.

To connect a paired phone:

- select the phone you want to connect to

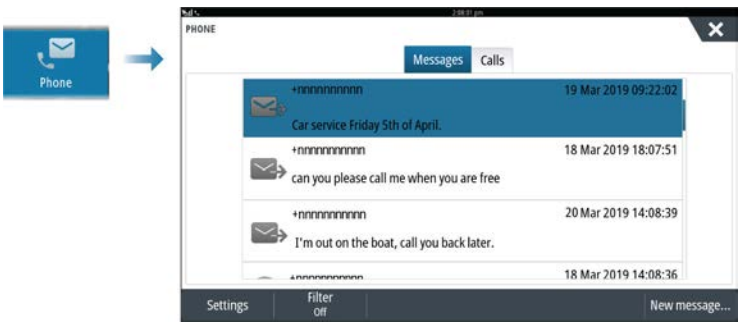


When the phone and the unit are connected, a phone icon is shown on the status bar.

Incoming messages and phone notifications will now pop-up on the MFD.

Phone notifications

After the phone and unit are paired and connected, use the phone icon to display the list of messages and the call history.



By default, the message list shows all messages. The list can be filtered to show only sent or received messages.

Creating a text message

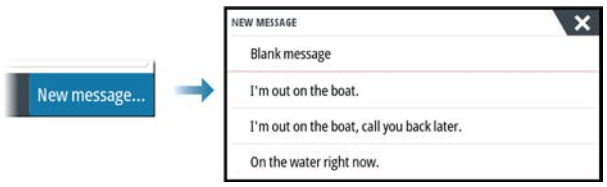
➔ ***Note:*** This option is not available for iPhone®.

To create a new text message:

- select the new message option in the message dialog

To respond to a text message or to a phone call:

- select the message or call you want to respond to



Responding to an incoming call

A call must be answered or rejected from the phone.

You can respond to an incoming call by a text message (not available for iPhone®).

Message settings

You can define message templates and set how you want the alert to appear in the settings dialog.



Phone troubleshooting

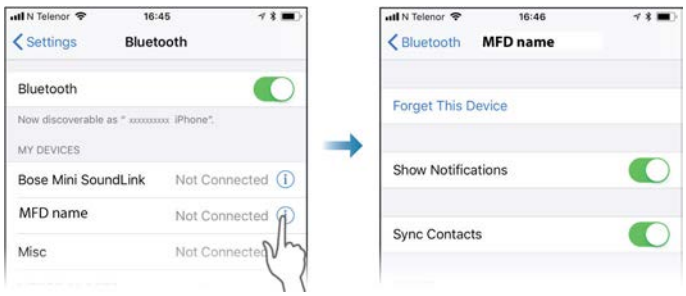
Not possible to connect an iPhone®

The first time an MFD attempts to connect to an iPhone®, the following errors might appear:

- connection failing, giving a message saying that the phone is not available for connection
- the phone does not list the correct name for the MFD

If this happens, try the following:

- reboot the MFD and restart the phone
- check that the phone is not connected to any other Bluetooth® devices
- manually set the iPhone® to allow notifications from the MFD:

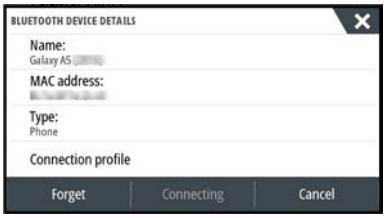


Missing notifications

By default, the connection profile for the phone is set to **auto**.

The connection profile should be changed to **alternative** if one of the following issues occurs:

- the phone is connected and the alert type is set to pop-up or notification, but there is either no alert or the alert is very delayed
- the phone is connected and there is no sound on the phone when talking



See details for how to display the device details in *"Managing Bluetooth® devices"* on page 131.

To change the alert setting for the phone notifications, see *"Message settings"* on page 130.

Text messages appearing on the iPhone®, but not on the MFD

Check that the text app is not open and active on the iPhone®.

Managing Bluetooth® devices

Bluetooth® enabled devices within range are shown in the Bluetooth® devices dialog. Refer to *"Bluetooth® options"* on page 147.

24 Alarms

About the alarm system

The system continuously checks for dangerous situations and system faults while the system is running.

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 alarm
Orange	Important alarm
Yellow	Standard alarm
Blue	Warning
Green	Lite warning

Alarm indication

An alarm situation is indicated with:

- an alarm pop up message
- an alarm icon in the status bar, and with the status bar pulsing with the color of the alarm

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



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

If more than one alarm is active at the same time, the alarm pop-up can display 3 alarms. The alarms are listed in the order they occur with the last activated alarm at the top. The remaining alarms are available in the alarms dialog.

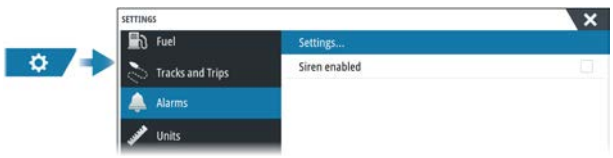
Acknowledging a message

The alarm dialog options for acknowledging a message vary depending on the alarm:

- **Close**. Sets the alarm state to acknowledged. 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 alarm settings dialog.

There is no time-out on a message or the siren. They remain active until they are acknowledged or until the reason for the message is rectified.

Alarms

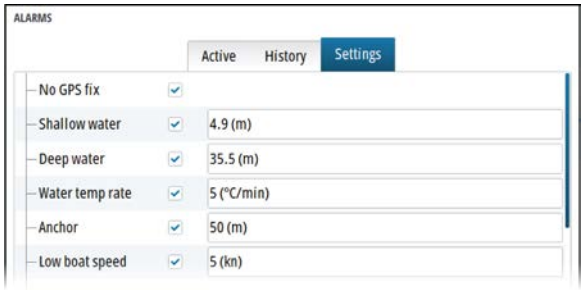


Siren enabled

Enables/disables the siren.

Alarm dialogs

The alarm dialogs are activated from the Alarm settings dialog or by selecting the Alarm button on the toolbar.



Active alarms

Lists all active alarms with details. Alarms remain active until the alarm is acknowledged or the reason for the alarm is removed.

Alarms history

Lists the alarm history with time stamp. The alarms remain in the list until they are manually cleared.

Settings

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

From this list you can activate, deactivate and change alarm limits.

25 Simulator

About

The simulation feature lets you see how the unit works without being connected to sensors or other devices.

The status bar indicates if the simulator is toggled on.



Retail mode

In this mode a retail demonstration for the selected region is shown.

If you operate the unit when retail mode is running, the demonstration pauses.

After a time-out period, retail mode resumes.

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

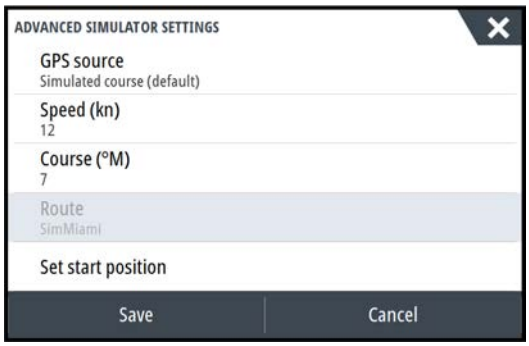
Simulator source files

You can select which data files that are used by the simulator. It can be either pre-recorded data files included in your device, your own recorded log files, or log files on a mass storage device connected to the unit.



Advanced simulator settings

The advanced simulator settings allows for manually controlling the simulator.



26 System setup

About software setup

The devices, sensors and features connected to this unit are already installed and configured. This software setup chapter can be used to setup devices, sensors, and features when equipment changes are made. It can also be used if equipment or system setup changes are needed.

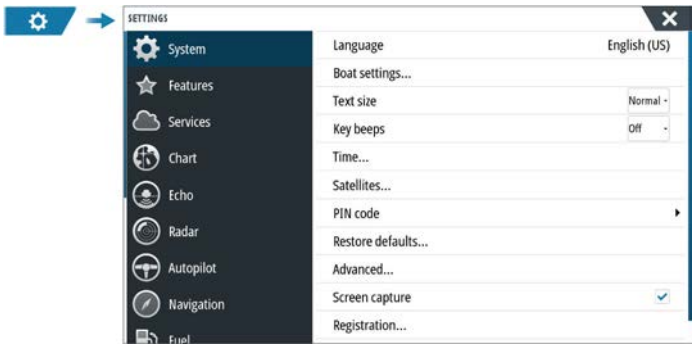
User settings are described in the application feature chapters.

> ⚠ Warning: Before you make any software setup changes described in this chapter, refer to your boat vender to find out if any warranties or similar can be nullified if you make setup changes.

System settings

Basic system setup is done from the settings dialog.

All the options available in the dialog are described below. Some should be done during initial setup based on where and how the boat will be primarily used. All the settings can be changed as needed later.



Language

Controls the language used on this unit.

Boat settings

Used to specify the physical attributes of the boat.

Text size

Used for setting the text size in menus and dialogs.

Key beeps

Controls the loudness of the beep sound that occurs when physical interaction is made with the unit.

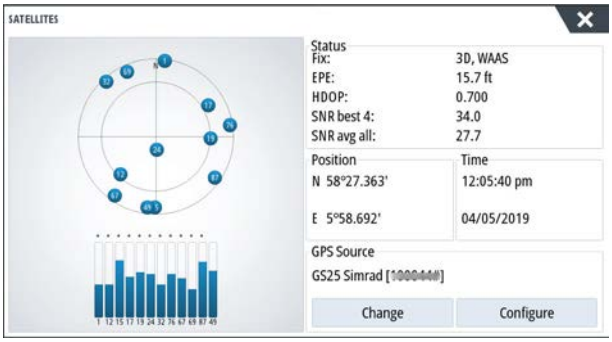
Time

Configure time settings to suit vessel location, along with time and date formats.

Satellites

The Satellites option displays a graphical view and numeric values for available satellites.

→ ***Note:*** The content in the Satellites dialogs varies with connected antenna.



From within this dialog you can select and configure the active GPS sensor.

PIN code

Sets a PIN code to prevent unauthorized access to your system's settings.

→ ***Note:*** Record the PIN code and store it in a safe place.

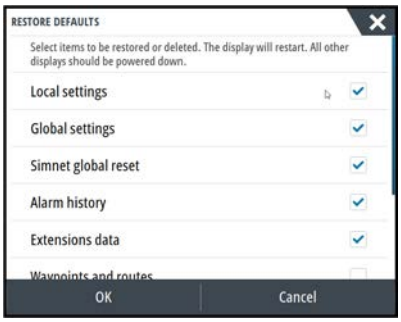
When you establish password protection, the PIN code must be entered when any of the following are selected. After the correct PIN code is entered, all of them can be accessed without re-entering the PIN code.

- Settings, activated from the home page or system controls dialog.
- Alarms, activated from the toolbar.
- Storage, activated from the toolbar.
- Store, activated from the toolbar.

Restore defaults

Restores selected settings to default factory values.

→ ***Note:*** If waypoints, routes, or tracks and trips are selected, they are permanently deleted.



Advanced

Used for configuration of advanced settings and how your system displays various user interface information.

Screen capture

Enables/disables screen capture. For more information, refer to *"Screen capture"* on page 17.

Registration

Guides you how to register your device.

About

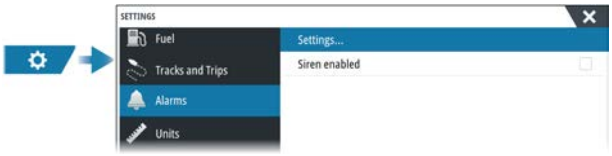
Displays copyright information, software version, and technical information for this unit.

The Support option accesses the built-in service assistant, refer to *"Service report"* on page 155.

Services

Used for accessing web sites that provide feature services.

Alarms

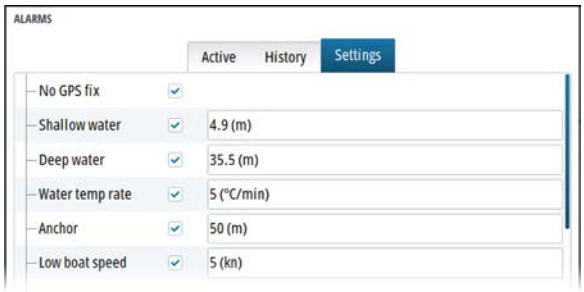


Siren enabled

Enables/disables the siren.

Alarm dialogs

The alarm dialogs are activated from the Alarm settings dialog or by selecting the Alarm button on the toolbar.



Active alarms

Lists all active alarms with details. Alarms remain active until the alarm is acknowledged or the reason for the alarm is removed.

Alarms history

Lists the alarm history with time stamp. The alarms remain in the list until they are manually cleared.

Settings

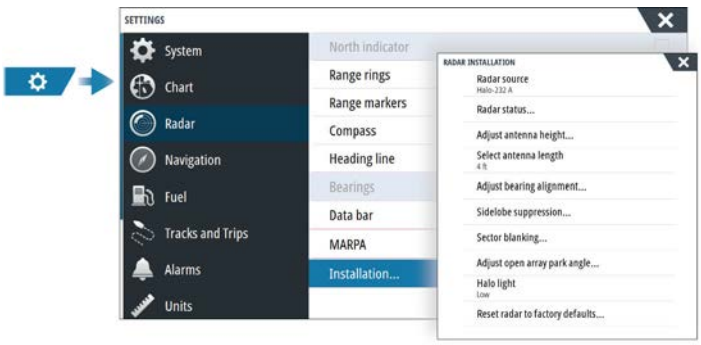
List of all available alarm options in the system, with current settings.

From this list you can activate, deactivate and change alarm limits.

Radar installation

The radar system requires radar sensor specific settings in order to adjust for a number of variables found in different installations.

→ ***Note:*** The installation settings available depends on the radar type and model.



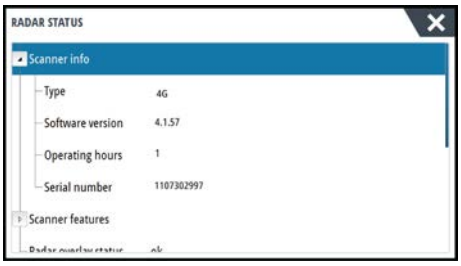
Radar source

In a system with more than one radar sensor, the device to configure is selected from this menu.

➔ ***Note:*** Radars that support dual radar mode are represented twice in the source list, with an A and B suffix.

Radar status

Displays scanner information and scanner features, primarily used for information and to assist with fault finding.



Scanner type

Identifies the model of scanner connected to the network.

Software version

Check to make sure you have the latest software. Check the latest software version available at:

- www.simrad-yachting.com

Serial number

This number should be recorded for support and insurance purposes.

MARPA status

The MARPA status can identify if a heading sensor is on the network and that the radar is receiving heading information essential for MARPA calculations.

Reset device ID

Should a radar be connected to the network that has been connected to a dual radar network in the past, it might not be detected by the system because it might have an invalid Device ID. With the radar connected and powered up, select the Reset Device ID button to resolve this problem.

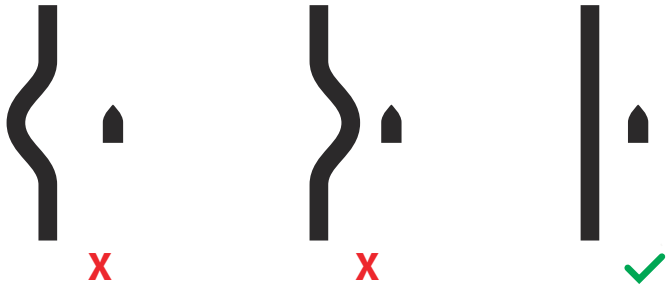
➔ ***Note:*** This procedure must be performed with only one radar on the network, and only applies where a network combines an older MFD with other MFDs.

Adjust range offset

The radar sweep should commence at your vessel (a radar range of zero). You may need to adjust the radar range offset to achieve this. If this is set incorrectly, a large dark circle in the center of the sweep might occur. You might notice straight objects such as straight sea walls or piers having curves or an indentation. Objects close to your vessel may appear pulled in or pushed out.

Adjust the range offset as below when the vessel is about 45 to 90 m (50 to 100 yards) from a straight-walled jetty or similar feature that produces a straight line echo on the display.

1. Position the vessel in relation to the jetty.
2. Adjust the range offset to make the jetty echo appear as a straight line on the display.



Adjust antenna height

Set the radar scanner height relative to the water surface. The Radar uses this value to calculate the correct STC settings.

Adjust bearing alignment

This option is used to align the heading marker on the screen with the center line of the vessel. This will compensate for any slight misalignment of the scanner during installation.

Misalignment that is not corrected for will compromise target tracking and can result in dangerous misinterpretation of potential navigation hazards.

Any inaccuracy will be evident when using MARPA or chart overlay.

1. Point the vessel towards a stationary isolated object, or towards a far range AIS target where the AIS icon matches the radar echo.
2. Adjust the coarse and fine bearing alignment so that the heading line touches the end of the selected object, or the radar target matches the AIS target.

Sidelobe suppression

Occasionally false target returns can occur adjacent to strong target returns such as large ships or container ports. This occurs because not all of the transmitted radar energy can be focused into a single beam by the radar antenna, a small amount of energy is transmitted in other directions. This energy is referred to as sidelobe energy and occurs in all radar systems. The returns caused by sidelobes tend to appear as arcs.

→ ***Note:*** This control should only be adjusted by experienced radar users. Target loss in harbor environments may occur if this control is not adjusted correctly.

When the radar is mounted where there are metallic objects near the radar, sidelobe energy increases because the beam focus is degraded. The increased sidelobe returns can be eliminated using the sidelobe suppression control.

By default, this control is set to auto and normally should not need to be adjusted. However, if there is significant metallic clutter around the radar, sidelobe suppression may need to be increased.

To adjust the sidelobe suppression value:

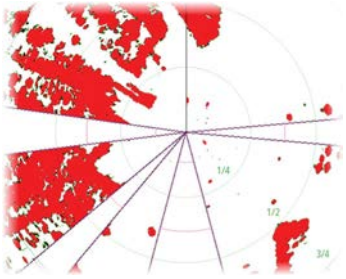
1. Set radar range to between 1/2 nm to 1 nm and the sidelobe suppression to auto
2. Take the vessel to a location where sidelobe returns are likely to be seen. Typically, this would be near a large ship, container port, or metal bridge.
3. Traverse the area until the strongest sidelobe returns are seen.
4. Change auto sidelobe suppression to OFF, then adjust the sidelobe suppression control just enough to eliminate the sidelobe returns. You may need to monitor 5-10 radar sweeps to be sure they have been eliminated.
5. Traverse the area again and readjust if sidelobes returns still occur.

Sector blanking

Radar installed in close proximity to a mast or structure could cause unwanted reflections or interference to appear on the radar image. Use the sector blanking feature to stop the radar from transmitting on up to four sectors in the image.

→ ***Note:*** Sectors are setup relative to the heading line of the radar. The bearing of the sector is measured from the center line of the sector.

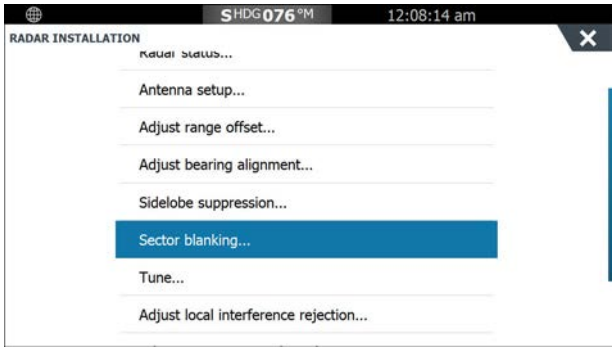
→ ***Note:*** Sector blanking should be applied very carefully to avoid reducing the radar's usefulness in identifying valid and potentially dangerous targets.



Main radar PPI



Radar overlay on a chart



Adjust open array park angle

→ ***Note:*** Reset magnetron timers is only available for SRT LAN radars.

The park angle is the final resting position of the antenna relative to the heading line of the radar when the radar is set to standby. The antenna will stop rotating at the desired offset.

Adjust local interference reject

Interference from some onboard sources can interfere with the Broadband radar. One symptom of this could be a large target on the screen that remains in the same relative bearing even if the vessel changes direction.

Halo light

Controls the levels of the Halo Radar blue accent lighting. The accent lighting can only be adjusted when the radar is in standby mode.

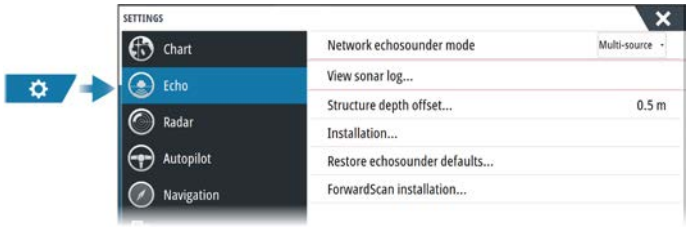
→ ***Note:*** The blue accent pedestal lighting might not be approved for use in your boating location. Check your local boating regulations before turning the blue accent lights ON.

Reset radar to factory defaults

Clears all user and installer settings applied to the selected radar source, and restores factory settings.

→ ***Note:*** Use this option with caution. Take note of current settings first, especially those set by the operator if radar has already been in active service.

Echosounder settings



Network echosounder mode

The network echosounder mode setting selects whether only one or multiple echosounder sources can be selected at the same time.

→ ***Note:*** Single source is automatically selected if there are older legacy echosounders on the network. You cannot change this setting if older legacy echosounders are on the network. Multi-source mode should be selected if no legacy echosounder is connected to the network.

→ ***Note:*** When changing the mode to multi-source you must wait 30 seconds and then power down all sources. Wait 1 minute, then restart all connected sources.

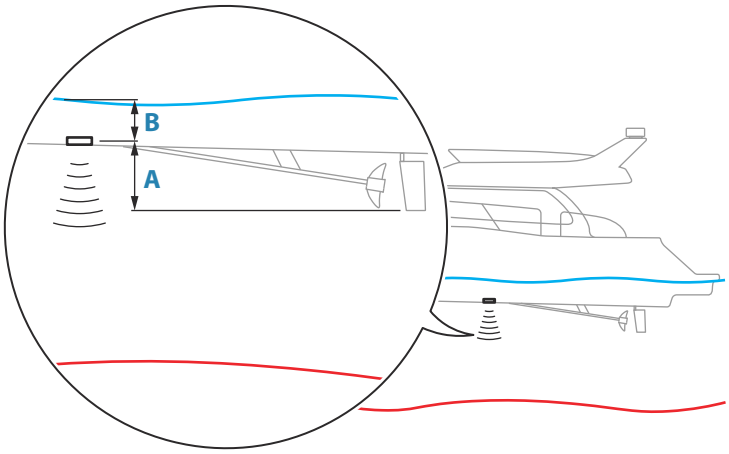
View sonar log

Used to view 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 image. If more than one channel was recorded in the selected log file, you can select which channel to display.

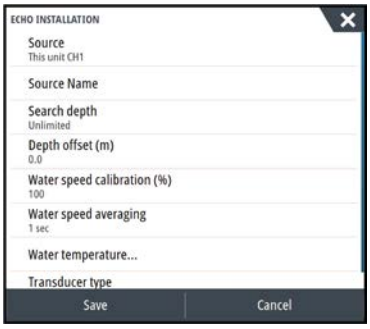
Structure depth offset

All transducers measure water depth from the transducer to the bottom. As a result, water depth readings do not account for the distance from the transducer to the lowest point of the boat in the water or from the transducer to the water surface.



- To show the depth from the lowest point of the vessel to the bottom, set the offset equal to the vertical distance between the transducer and the lowest part of the vessel, **A** (negative value).
- To show the depth from the water surface to the bottom, set the offset equal to the vertical distance between the transducer and the water surface, **B** (positive value)
- For depth below transducer, set the offset to 0.

Installation



Source

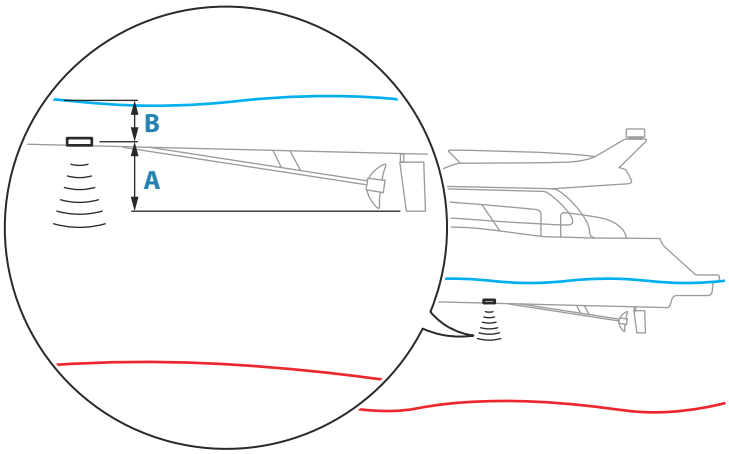
Select this option to display a list of sources available for setup. The settings you make in the rest of the dialog pertain to the source selected.

Search depth

Noise may cause the echosounder to search for unrealistic depths. By setting the search depth manually the system displays echoes received from objects within the set depth range.

Depth offset

All transducers measure water depth from the transducer to the bottom. As a result, water depth readings do not account for the distance from the transducer to the lowest point of the boat in the water or from the transducer to the water surface.



- To show the depth from the lowest point of the vessel to the bottom, set the offset equal to the vertical distance between the transducer and the lowest part of the vessel, **A** (negative value).
- To show the depth from the water surface to the bottom, set the offset equal to the vertical distance between the transducer and the water surface, **B** (positive value)
- For depth below transducer, set the offset to 0.

Water speed calibration

Water speed calibration is used to adjust the speed value from the paddle wheel to match the actual boat speed through the water. Actual speed can be determined from GPS speed over ground (SOG) or by timing the boat over a known distance. Water speed calibration should be performed in calm conditions, with minimal wind and current movement.

Increase this value above 100 % if the paddle wheel is under reading, and decrease this value if it is over reading. For example, if the average water speed reads 8.5 knots (9.8 MPH) and SOG records 10 knots (11.5 MPH) the calibration value needs to be increased to 117 %. To calculate the adjustment, divide the SOG by the paddlewheel speed, and multiply the product by 100.

Calibration range: 50-200 %. Default is 100 %.

Water speed averaging

Averages water speed by measuring your speed at a selected interval of time. Water speed intervals range from one to thirty seconds. For example if you select five seconds, your displayed water speed will be based on averaging over 5 seconds of sampling.

Calibration range: 1-30 seconds. Default is 1 second.

Water temperature calibration

Temperature calibration is used to adjust the water temperature value from the transducer. It may be required to correct for localized influences to the measured temperature.

Calibration range: -9.9° - +9.9°. Default is 0°.

→ ***Note:*** Water temperature calibration only appears if the transducer is temperature capable.

Transducer type

→ ***Note:*** The transducer type is automatically set for transducers that support Transducer ID (XID) and is not user selectable.

Transducer type is used for selecting the transducer model connected to the sonar module. The transducer selected will determine what frequencies the user can select during sonar operation. In some transducers with built-in temperature sensors, the temperature reading may be inaccurate or not available at all if the wrong transducer is selected. Transducer temperature sensors are one of two impedances - 5k or 10k. Where both options are given for the same model transducer, refer to paperwork supplied with transducer to determine impedance.

Restore echosounder defaults

Restore echosounder settings to the factory supplied defaults.

ForwardScan installation

Available when a ForwardScan transducer is connected.

Autopilot settings

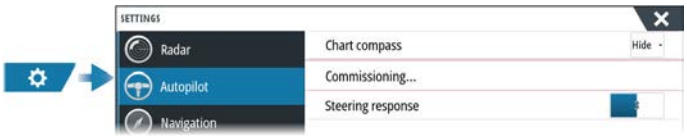
The Autopilot settings dialog depends on which autopilot computer is connected to the system. If more than one autopilot is connected, the Autopilot settings dialog shows options for the active autopilot.

The autopilot settings can be split between settings done by the user, and settings done during installation and commissioning of the autopilot system.

- User settings can be changed for various operational conditions or user preferences.
- Installation settings are defined during commissioning of the autopilot system. No changes should later be done to these settings.

The following sections describe the installation settings per autopilot computer. For user settings, refer to *"Autopilot"* on page 99.

NAC-1 specific installation settings



Commissioning

Used to calibrate your boat's steering (cable steer or hydraulic steering) with the NAC-1.

→ ***Note:*** The autopilot must be commissioned prior to first use and any time after autopilot default settings have been restored.

Cable steer calibration

➔ ***Note:*** The rudder source must be set to rudder feedback to be able to run this calibration

Start the calibration process by selecting the rudder feedback calibration option, and follow the onscreen instructions.

➔ ***Note:*** When centering the motor during the calibration process, ensure that the motor is centered visually when the dialog shows 0 value. If not, center the motor visually before pressing OK to align the physical position with the dialog value.

When the calibration process is completed, select the rudder test option to confirm the calibration.

If the calibration does not pass the rudder test:

- confirm that motor is moving
- confirm that the rudder feedback reading moves according to motor rotation
- check the NAC-1 drive cable
- confirm that the motor can be manually moved smoothly in each direction
- check for other mechanical issues
- check wiring connections
- repeat the rudder calibration.

Hydraulic system calibration

Virtual rudder feedback (VRF) calibration is used for vessels with hydraulic steering when no rudder feedback is available.

➔ ***Note:*** The rudder source must be set to VRF to be able to run this calibration.

Start the calibration process by selecting the VRF calibration option, and follow the onscreen instructions.

➔ ***Note:*** When the autopilot attempts to turn the motor during the calibration process, ensure that the motor movement is noticeable and that the motor is turning in the correct direction before selecting **Yes** on the dialog. When **No** is selected, the NAC-1 reverses direction and increases power the next time it turns the motor during the calibration process.

➔ ***Note:*** You may have to select **No** more than once to ensure the pump provides enough power to turn the motor at high boat speed.

Steering response

Used to increase or decrease the steering sensitivity. A low response level reduces the rudder activity and provides a looser steering. A high response level increases the rudder activity and provides tighter steering. A too high response level will cause the boat to make S movements.

NAC-2/NAC-3 specific installation settings

For setup, commissioning, and user settings of the NAC-2 or NAC-3, refer to the commissioning manual included with the autopilot computer.

AC70/AC80 Specific installation settings

The AC70/AC80 computers do not have any specific installation settings available in the MFD.

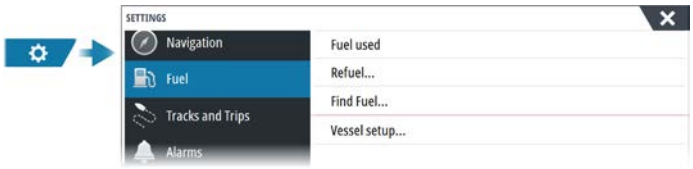
➔ ***Note:*** The MFD cannot be used to configure or commission an AP70/AP80 system. For more information, refer to the documentation included with the autopilot system.

Fuel settings

The fuel utility monitors a vessel's fuel consumption. This information is totaled to indicate trip and seasonal fuel usage, and is used to calculate fuel economy for display on instrument pages and the data bar.

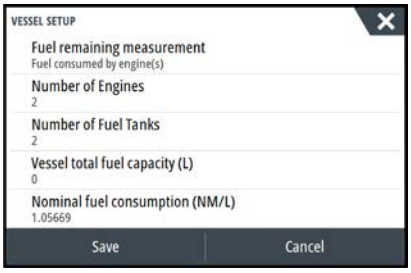
To use the utility, a Navico Fuel Flow sensor, or a NMEA 2000® engine adaptor cable/gateway with Navico Fuel Data Storage device must be fitted to the vessel. The Navico Fuel Flow sensor does not require the use of a separate Fuel Storage device. Refer to the engine manufacturer or dealer for information on whether or not your engine provides a data output, and what adaptor is available to connect to NMEA 2000®.

Once the physical connection is made, ensure source selection is completed. Multiple engine installations using Fuel Flow sensors, or Fuel Data Storage devices, require setup of related engine location in the Device list. For general source selection information, refer to *"Network settings"* on page 148.



Vessel setup

The Vessel setup dialog must be used to select the number of engines, the number of tanks and vessel's total fuel capacity across all tanks.



Fuel remaining measurement

The Fuel remaining measurement can be determined from fuel used by engine(s), or fuel level from tank sensors. Nominal fuel consumption is required to set the scale on the fuel economy gauge. This value should be determined from experience, over time. Alternatively the boat builder or designer may be able to give an approximate value to use.

→ ***Note:*** Fuel remaining measurement taken from level sensors while underway can get inaccurate readings due to vessel movement.

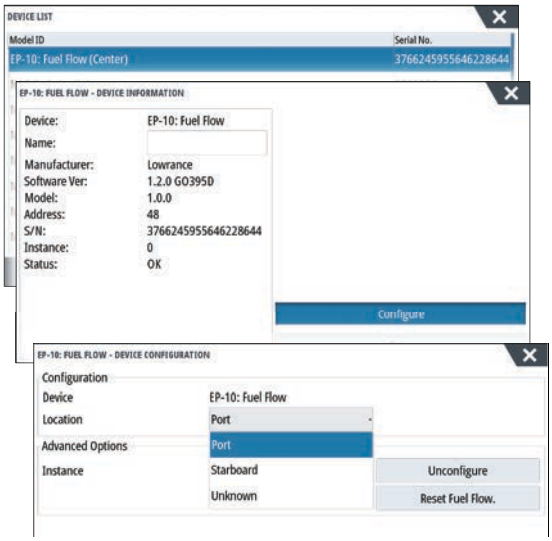
→ ***Note:*** Nominal fuel consumption setting should be determined taking into account typical vessel loads. That is, filled fuel and water tanks, stowed tender, supplies, etc.

Fuel flow configuration

After the number of engines is set, it is required to set which fuel flow sensor is connected to which engine. Under Device list on the Network page, view the Device Configuration dialog for each sensor, and set the Location to match the engine the device is connected to.

Unconfigure - defaults the device which clears all user settings.

Reset Fuel Flow - restores only the Fuel K-Value setting, if set in Calibrate. Only Navico devices can be reset.



Calibrate

Calibration may be required to accurately match measured flow with actual fuel flow. Access calibration from the Refuel dialog. Calibration is only possible on a Navico® Fuel Flow sensor.

1. Start with a full tank and run the engine as it would normally be operated.
2. After at least several liters (a few gallons) have been used, the tank should be fully refilled, and the Set to full option selected.
3. Select the Calibrate option.
4. Set the actual amount used based on amount of fuel added to the tank.
5. Select OK to save settings. The Fuel K-Value should now show a new value.

→ ***Note:*** To calibrate multiple engines repeat the steps above, one engine at a time. Alternatively, run all engines simultaneously, and divide the Actual amount used by the number of engines. This assumes reasonably even fuel consumption on all engines.

→ ***Note:*** The Calibrate option is only available when Set to full is selected, and a Fuel Flow is connected and set up as a source.

→ ***Note:*** A maximum of 8 engines is supported using Fuel Flow sensors.

Fuel Level

With the use of a Navico Fluid Level device connected to a suitable tank level sensor, it is possible to measure the amount of fuel remaining in any equipped tank. The number of tanks must be set in Vessel Setup dialog, initiated from the Fuel setting options page, to allow discrete tank assignment of the Fluid Level devices.

Select Device list on the Network page, and view the Device Configuration dialog for each sensor, and set the Tank location, Fluid type, and Tank size.

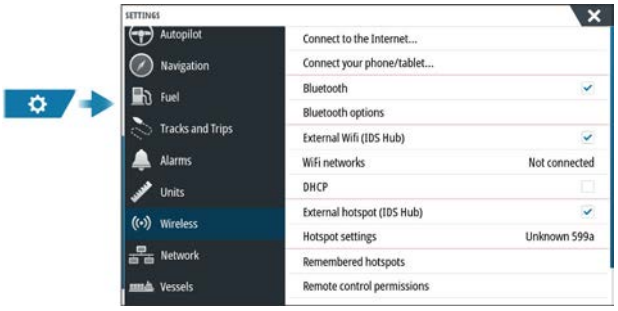
For setting up the Instrument bar or a gauge on the Instrument page with Fluid Level device data, refer to the Operator Manual.

→ ***Note:*** A maximum of 5 tanks is supported using Fluid Level devices.

→ ***Note:*** Tank data that is output by a compatible engine gateway can also be displayed, however tank configuration for such a data source is not possible from this unit.

Wireless settings

Provides configuration and setup options for the wireless functionality.



Connect to the internet

Used for connecting to a hotspot which has internet access.

When connected, the text changes to include Already connected.

Connect your phone/tablet

Used for connecting a phone or tablet to the MFD. Refer to *"Remote control of the MFD"* on page 127.

Bluetooth®

Enables the built-in Bluetooth® functionality.

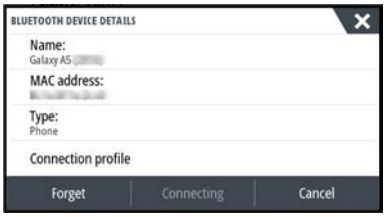
Bluetooth® options

Opens the Bluetooth® dialog. This dialog lists Bluetooth® enabled devices.

➔ ***Note:*** After pairing the device you must connect to it.

Select an item in the Paired Devices list to open the Bluetooth® device details dialog. Use it to:

- display device details
- connect, disconnect or remove (forget) the device from the device list



External Wi-Fi® (IDS Hub)

Activates the Wi-Fi® in the IDS Hub.

Wi-Fi® networks

Shows the Wi-Fi® network connection status. If the MFD is connected to the internet (Wi-Fi® hotspot), the hotspot name (SSID) is shown.

DHCP

Select to enable another device on the network to act as the DHCP server and disable the unit's Wi-Fi® to act as the DHCP server. The DHCP server dynamically assigns IP addresses and other network configuration parameters to each device on the network. This enables the devices to access the internet and communicate with other IP network devices connected to the network.

➔ ***Note:*** Only one device on the network should act as a DHCP server.

External hotspot (IDS Hub)

Enables the External wireless in the IDS-HUB to act as a hotspot. When acting as a hotspot other smart devices can connect to it and access the internet or other smart devices.

Hotspot settings

Select to display the MFD's hotspot network name (SSID) and key. Only available when the MFD built-in hotspot is turned on.

Remembered hotspots

Displays hotspots the unit has been connected to in the past.

Remote control permissions

Lists remote controller connection information. Select to give (one time or always) or remove a remote controller permission to control the unit.

Advanced

Tools are available within the software to assist in fault-finding and setting up the wireless network.

DHCP Probe

The wireless module contains a DHCP server that allocates IP addresses for all the MFDs, and devices in a network. If integrating with other devices, such as a 3G modem or satellite phone, other devices in the network may also be acting as DHCP servers. To make it easy to find all DHCP servers on a network, dhcp_probe may be run from the unit. Only one DHCP device may be operational on the same network at a time. If a second device is found, turn off its DHCP feature if possible. Refer to the device's own instructions for further assistance.

→ ***Note:*** Iperf and DHCP Probe are tools provided for diagnostic purposes by users familiar with network terminology and configuration. Navico is not the original developer of these tools, and cannot provide support related to their use.

Iperf

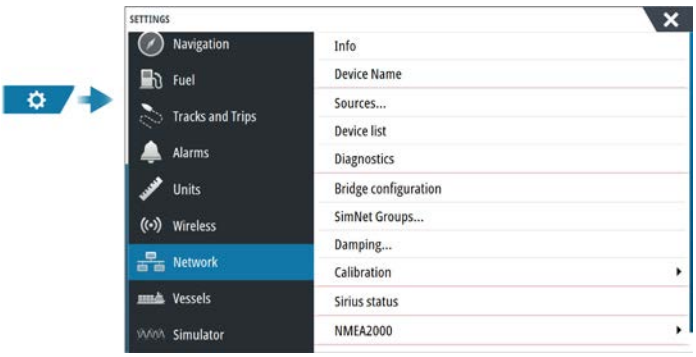
Iperf is a commonly used network performance tool. It is provided for testing wireless network performance around the vessel so weak spots or problem areas can be identified. The application must be installed on and run from a tablet device.

The unit must be running Iperf server before initiating the test from the tablet. On exiting the page, Iperf automatically stops running.

Browser

Select to display a list of items which the internal browser can open.

Network settings



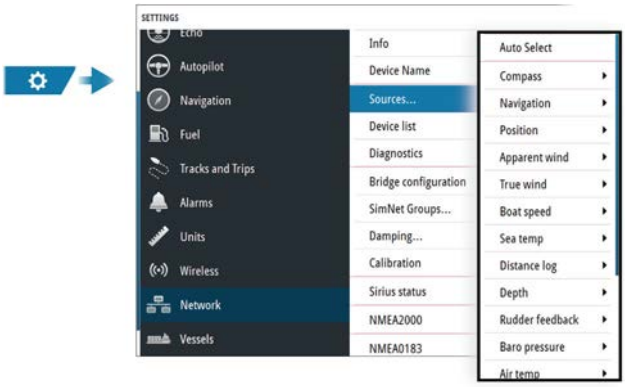
Device name

Assigning a name is useful in systems using more than one device of the same type and size.

Sources

Data sources provide live data to the system.

When a device is connected to more than one source providing the same data, the user can choose the preferred source. Before commencing with source selection make sure all external devices and networks are connected and turned on.

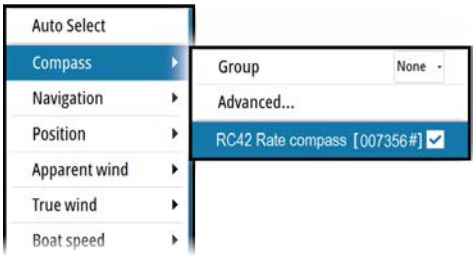


Auto Select

The Auto Select option looks for all sources connected to the device. If more than one source is available for each data type, selection is made from an internal priority list. This option is suitable for the majority of installations.

Manual source selection

Manual selection is generally only required where there is more than one source for the same data, and the automatically selected source is not the one desired.



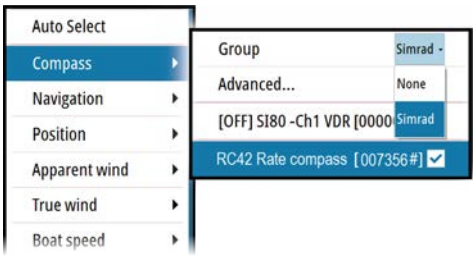
Group source selection

The unit can use the same data sources that all other products on the network use, or alternatively use a data source independently from other units.

If the unit is part of a source group, all source selection changes will affect all units belonging to the same group.

→ ***Note:*** In order to enable group selection, the unit must be set to the Simrad group.

Devices with no selected group can use different sources than the rest of the network devices.



Advanced source selection

This allows the most flexible and precise manual control over which devices provide data.

Occasionally auto select might not assign the desired source, which can be corrected using the advanced source selection.

Device list

Selecting a device in this list will bring up additional details and options for the device.

All devices allow allocation of an instance number in the configure option. Set unique instance numbers on any identical devices on the network to allow the unit to distinguish between them. The data option shows all data being output by the device.

→ ***Note:*** In most cases, setting the instance number on a 3rd party product is not possible.

→ ***Note:*** The device list only shows NMEA 2000® devices, not Ethernet.

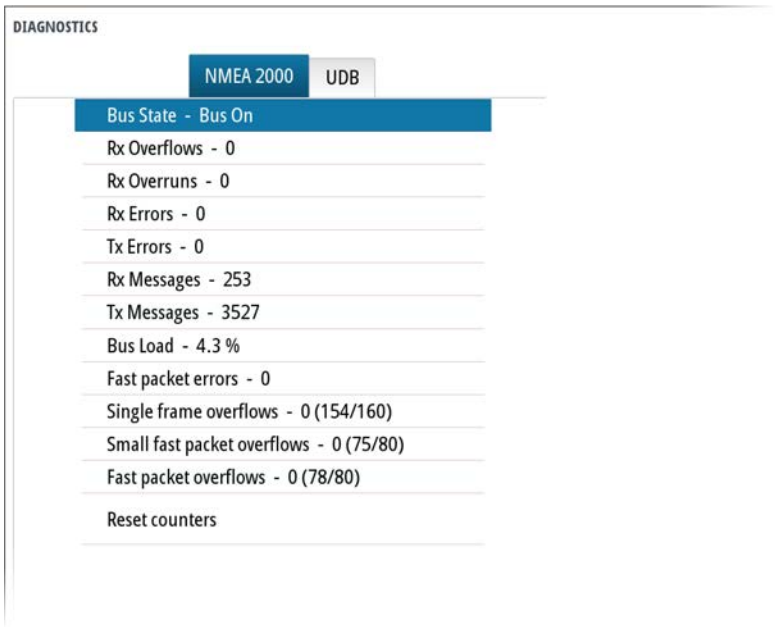
Diagnostics

Provides information useful for identifying an issue with the network.

NMEA 2000®

Provides information on NMEA 2000®-bus activity.

→ ***Note:*** The following information might not always indicate an issue that can be simply resolved with minor adjustment to network layout or connected devices and their activity on the network. However, Rx and Tx errors are most likely indicating issues with the physical network, which can be resolved by correcting termination, reducing backbone or drop lengths, or reducing the number of network nodes (devices).



Bus State

Simply indicates whether the bus is powered, but not necessarily connected to any data sources. However, if bus shows as off, but power is present along with an increasing error count, it is possible that termination or cable topology is incorrect.

Rx Overflows

The unit received too many messages for its buffer before the application could read them.

Rx Overruns

The unit contained too many messages for its buffer before the driver could read them.

Rx/Tx Errors

These two numbers increase when there are error messages, and decrease when messages are received successfully. These (unlike the other values) are not a cumulative count. Under normal operation these should be at 0. Values around 96 upwards indicate a heavily error prone network. If these numbers go too high for a given device, it will automatically drop off the bus.

Fast Packet Errors

Cumulative counter of any fast packet error. This could be a missed frame, or a frame out of sequence etc. NMEA 2000® PGNs are made of up to 32 frames. The entire message will be discarded when a frame is missed.

→ ***Note:*** Rx and Tx Errors often indicate an issue with the physical network, which may be resolved by correcting termination, reducing backbone or drop lengths, or reducing the number of network nodes (devices).

UDB

Provides information on Ethernet activity.



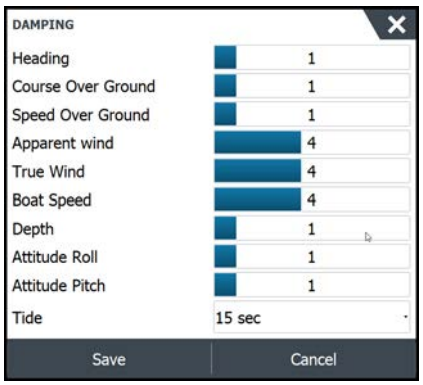
SimNet groups

This function is used to control parameter settings, either globally or in groups of units. The function is used on larger vessels where several units are connected via a network. By assigning several units to the same group, a parameter update on one unit will have the same effect on the rest of the group members.

If any of the settings require discrete control, set the group to None.

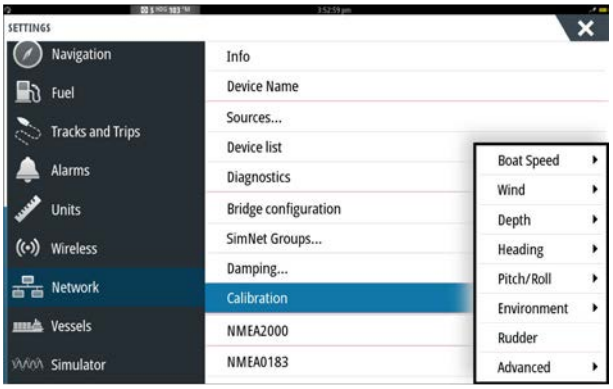
Damping

If data appears erratic or too sensitive, damping may be applied to make the information appear more stable. With damping set to off, the data is presented in raw form with no damping applied.



Calibration

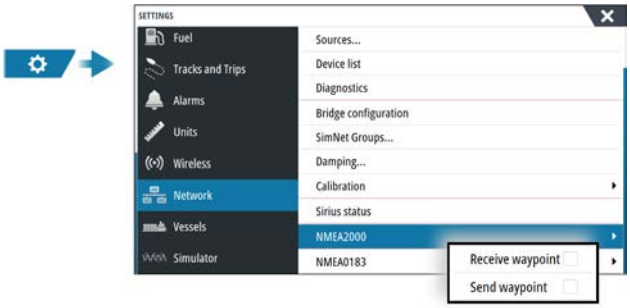
An offset (positive or negative) can be applied to correct data inaccuracies from NMEA 2000® sources. The offset is set on the NMEA 2000® device.



→ ***Note:*** Select the advanced option to adjust local offsets for this display only.

→ ***Note:*** It is typically not possible to calibrate 3rd party sensors. However, a local offset can be applied.

NMEA 2000® setup



Receive waypoint

Allows waypoints to be received from devices that transmit a waypoint over the NMEA 2000®.

A waypoint will be received when the waypoint is created on the other device, if the following settings are in place:

- The receiving device - the receive waypoint option must be set to ON before the waypoint is created in the sending device.
- The sending device - the send waypoint option must be set to ON before the waypoint is created.

Send waypoint

Allows this unit to send a waypoint to other devices over the NMEA 2000® network.

A waypoint will be transmitted when the waypoint is created, if the following settings are in place:

- The sending device - the send waypoint option must be set to ON before the waypoint is created.
- The receiving device - the receive waypoint option must be set to ON before the waypoint is created in the sending device.

→ ***Note:*** The system can only transmit or receive one waypoint at a time over the NMEA 2000® network. For bulk export or import of waypoints, refer to *"Backing up your system data"* on page 156. That section describes how to export and import user settings, e.g. waypoints.

NMEA 0183® setup

The NMEA 0183® port(s) must be set to suit the speed of connected devices, and can be configured to output only the sentences required by listening devices.

Receive waypoint

Select this option to allow a device capable of creating and exporting waypoints via NMEA 0183® to transfer directly to this unit.

Baud rate

This should be set to correspond with devices connected to the NMEA 0183® input and output. The input and output (Tx, Rx) use the same baud rate setting.

→ ***Note:*** AIS transponders typically operate at NMEA 0183®-HS (high speed), and will require the baud rate to be set to 38,400.

Serial output

Selection determines whether the data is output via Tx lines, and will enable editing of the output sentences list.

Selected output sentences

This list allows control over which sentences that are transmitted to other devices from the NMEA 0183® port. Due to the limited bandwidth of NMEA 0183® it is desirable to only enable the data that is required. The less sentences that are selected, the higher the output rate of the enabled sentences.

Ethernet/Wi-Fi®

The NMEA 0183® data stream is output and made available to tablet devices and PCs, via Wi-Fi® or Ethernet connection. The dialog provides IP and port data typically required for configuring the application on the third party device.

→ ***Note:*** Other MFDs cannot decode this information back to NMEA 0183®, to use the data as a source. To share data a physical NMEA 2000® or NMEA 0183® connection is still required.

27 Maintenance

Preventive maintenance

The unit 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

To clean the screen:

- A micro-fiber or a soft cotton cloth should be used to clean the screen. Use plenty of water to dissolve and take away salt remains. Crystallized salt, sand, dirt, etc. can scratch the protective coating if using a damp cloth. Use a light fresh water spray then wipe the unit dry with a micro-fiber or a soft cotton cloth. Do not apply pressure with the cloth.

To clean the housing:

- Use warm water with a dash of liquid dish soap or detergent.

Avoid using abrasive cleaning products or products containing solvents (acetone, mineral turpentine, etc.), acid, ammonia, or alcohol as they can damage the display and plastic housing.

Do not:

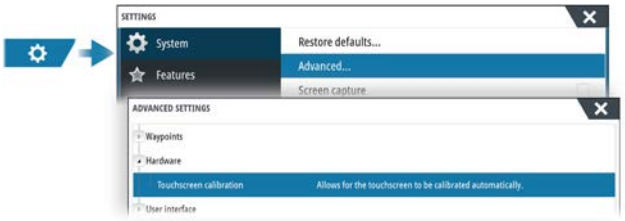
- use a jet or high pressure wash

Checking the connectors

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

Touchscreen calibration

Use the system setting option to calibrate the touchscreen.



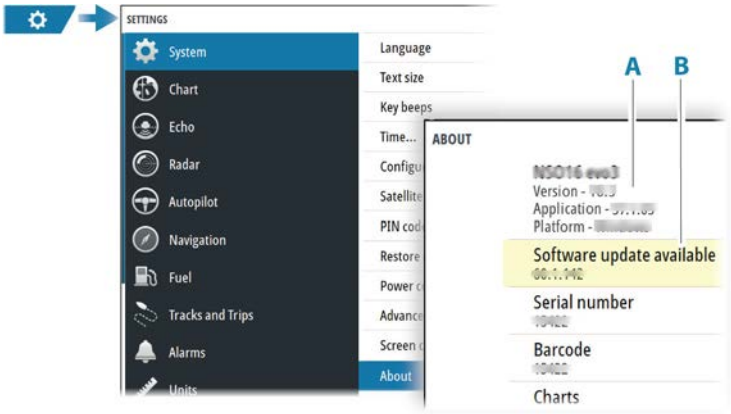
Software updates

Before initiating an update to the unit, be sure to back up any potentially valuable user data.

Installed software and software updates

The about dialog shows the software version currently installed on this unit (**A**).

If the unit is connected to the internet, the dialog also shows available software updates (**B**).



Update the software when connected to internet

If the system is connected to the internet, the system automatically checks for software updates. If an update is available a message appears:



You can download the software, ignore the message, or go to the update list to see available options. Follow the on-screen instructions.

Update the display software from a storage device

You can download the display software update file from www.simrad-yachting.com to a smart device (e.g. a PC). Transfer the update file to a compatible storage device, and then insert the storage device in the IDS Hub.

Select the update file in the Storage dialog's storage device directory, in each display. Follow the on-screen instructions.



Update the IDS Hub software from a storage device

You can download the IDS Hub software update from www.simrad-yachting.com to a smart device (e.g. a PC). Transfer the update file to a compatible storage device's main directory. Turn on the system with the storage device inserted in the IDS Hub. The system will update the IDS Hub software during the system startup.

Service report

The system has a built-in service assistant that creates a report about the unit. The service report is used to assist in technical support enquiries.

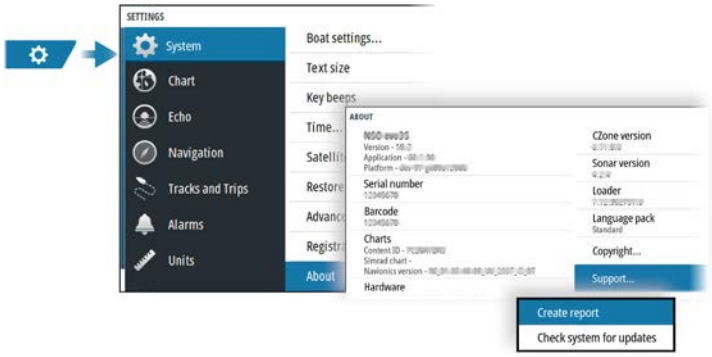
It can also include information about devices connected to the network(s).

The report includes the software version, serial number, and information from the settings file.

If you call technical support before creating the report, you can enter an incident number to assist with tracking. You can attach screenshots and log files to the report.

→ ***Note:*** There is a 20MB limit for the report attachments.

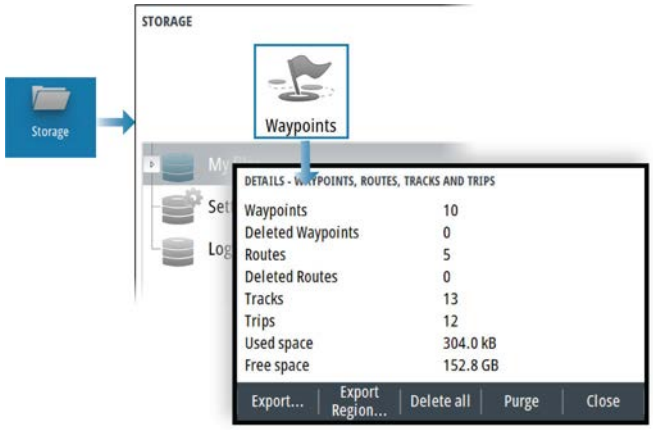
The report can be saved to a storage device and emailed to support.
You can also upload it directly if you have an internet connection.



Backing up your system data

It is recommended to regularly copy user data and your system settings database as part of your back-up routine.

Waypoints



The waypoints option in the storage dialog allows for managing user data.

Export format

The following formats are available for export:

- **User Data File version 6**
  Used to export waypoints, routes and colored tracks/trails.
- **User Data File version 5**
  Used to 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.
- **User Data File version 4**
  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
- **User data file version 2 (no depth)**
  Can be used when transferring user data from one system to a legacy product
- **GPX (GPS Exchange, no depth)**
  This is the format most used on the web that shares among most GPS systems. Use this format if you are taking data to a competitor's unit.

Export all waypoints

The export option is used for exporting all waypoints, routes, tracks and trips.

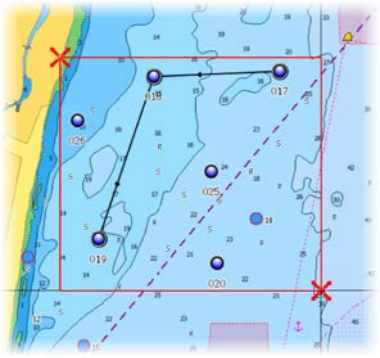
➔ ***Note:*** You can use the storage export feature to export the information to a memory card. Next, insert the card into another unit and select the file on the memory card to import it.

➔ ***Note:*** Do not use chart cards to export/import data.

Export region

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

1. Select the export region option.
2. Drag the boundary box to define the desired region.



3. Select the export option from the menu.
4. Select the appropriate file format.
5. Select the export option to export to the memory card.

➔ ***Note:*** You can use the storage export-region feature to export the information to a memory card. Next, insert the card into another unit and select the file on the memory card to import it.

➔ ***Note:*** Do not use chart cards to export/import data.

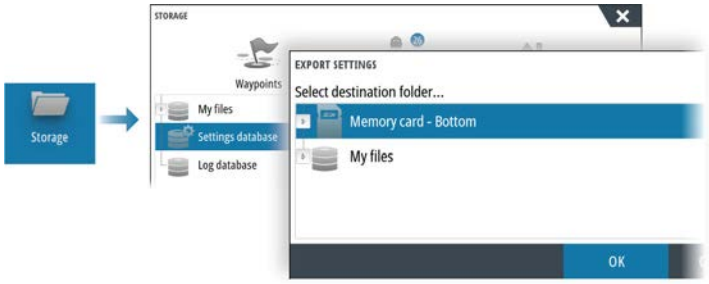
Purging user data

Deleted user data are stored in the unit's memory until the data is purged. If you have numerous deleted, unpurged user data, purging may improve the performance of your system.

➔ ***Note:*** When user data is deleted and/or purged from the memory, it cannot be recovered.

Exporting the settings database

Use the settings database option in the storage dialog to export your user settings.



28 Integration of 3rd party devices

Several 3rd party devices can be connected to the unit. 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.

SmartCraft VesselView integration

When a compatible Mercury Marine VesselView product or VesselView Link is present on the NMEA 2000® network, the engines can be monitored and controlled from the unit.

When the feature is also enabled in the advanced settings features dialog:

- A Mercury icon is added to the home page - select it to display the engine instrument panel.
- A Mercury settings dialog is added - use this dialog to change engine settings.
- Mercury and Vessel Control buttons are added to the control bar:
  - Selecting the Mercury button displays engine and vessel data.
  - Selecting the Vessel button opens the engine controller.

When the features are enabled, the display may prompt the user for some basic configuration information.

For more information, refer to the VesselView manual or engine supplier.

Mercury outboard engine integration

The multi-function displays (MFDs) now support the Mercury Verado 600 hp and SeaPro 500 hp V12 engines. When a compatible outboard engine is present on the NMEA 2000® network, it can be monitored and controlled from the unit.

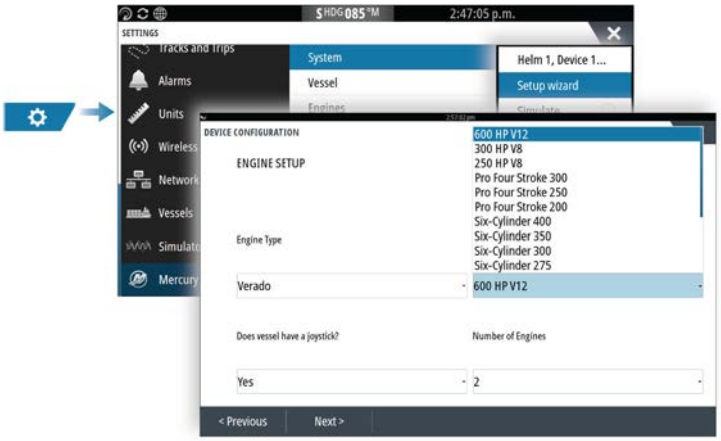
For the new V12 outboard engines, the Mercury control panel displays the following new features in the **More** menu:

- Oil
  - Oil level check
  - Oil pressure
- Transmission fluid
- Maintenance
  - Engine hours
  - Oil life
- Steering angle indicator

The **Vessel control** bar also displays a propeller icon when using RPM based cruise control or Smart Tow. For more information, refer to *"Vessel control"* on page 161.

Setting up the engine

When the unit is started for the first time after the new Mercury V12 outboard engines have been connected to the NMEA 2000®, you must configure the device. Open the Mercury settings dialog and access the system setup wizard. Respond to the setup wizard prompts to select some fundamental outboard engine setup options, then select **Finish**. You can perform further setup using the system settings option and later change the settings made with the setup wizard.



Accessing Mercury control panel

To access the control panel for Mercury, select the Mercury icon from the control bar. The panel displays engine and vessel data.



Mercury More menu



Oil

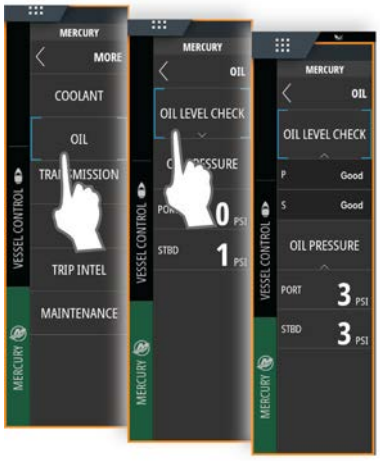
Access to view oil level and oil pressure data.

Oil level check

The new forced oil level check feature enables the user to request an oil level report at any time. Depending on the state, the engine will report the following oil level statuses:

- High
- Good
- Low
- Critical low
- Conditions low
- Checking
- Unavailable

Note: The oil level check can take several minutes depending on engine conditions.



Oil pressure

Displays individual oil pressure data for port and starboard engines.

Transmission fluid

Access to view transmission fluid data. Depending on the state, the engine will report the following transmission fluid statuses:

- OK
- Fault
- Unavailable



Maintenance

The **Maintenance** menu option displays engine maintenance data aimed to help you maintain the engines in optimal condition. When the engines require maintenance, a message displays on the panel to inform you that **Maintenance is due**. Maintenance icons also display to indicate where maintenance must be performed.

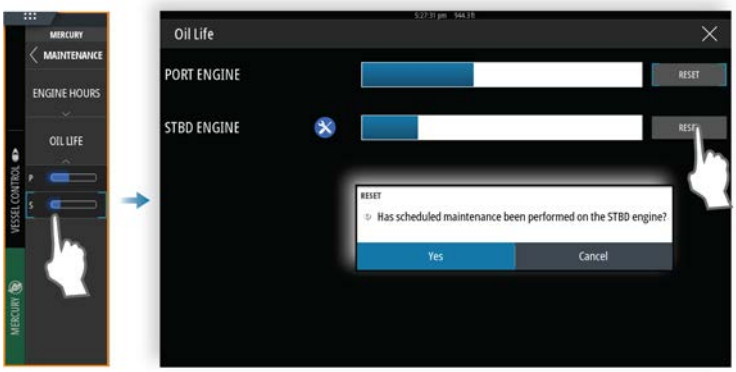
Engine hours

Displays the total running time for port and starboard engines.



Oil life

Displays progress bars for port and starboard, that indicate when you should perform an oil change. You can reset the progress bar from the **Oil Life** dialog.



Steering angle indicator

The new Mercury V12 Verado outboard engines have an independently steerable gearcase. To ensure constant steering awareness, the Mercury Home page panel displays the steering angle indicator by default. The indicator shifts from port to starboard, depending on the boat's movement.



A	Steering angle indicator
B	Center point
C	Steering angle indicator bar

Vessel control

When a compatible Mercury Marine VesselView product or VesselView Link is present on the NMEA 2000® network, the engines can be monitored and controlled from the unit. Selecting the **Vessel Control** button opens the engine controller.

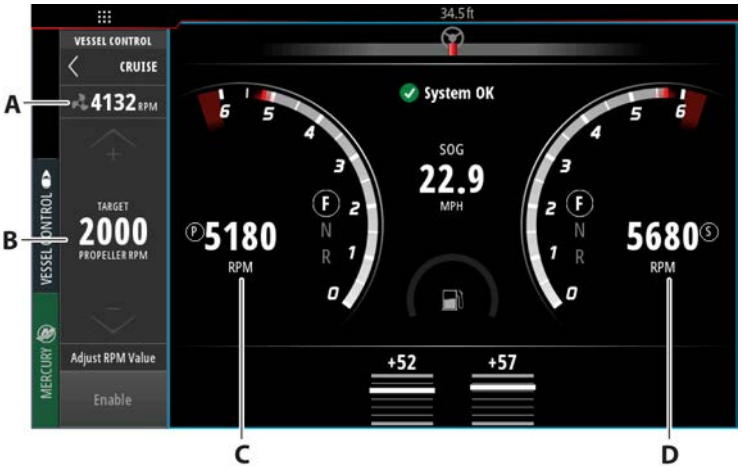
The system allows you to monitor up to six engines at a time.



Cruise control

The new Mercury Verado 600 hp and SeaPro 500 hp V12 outboard engines have a two-speed transmission. When using RPM based cruise control or Smart Tow, the propeller RPM is displayed in the control bar and the selected RPM setpoint may not match the engine RPM. The engine corrects the power to maintain the right propeller RPM.

Cruise control panel for Mercury Verado 600 hp and SeaPro 500 hp V12 outboard engines:



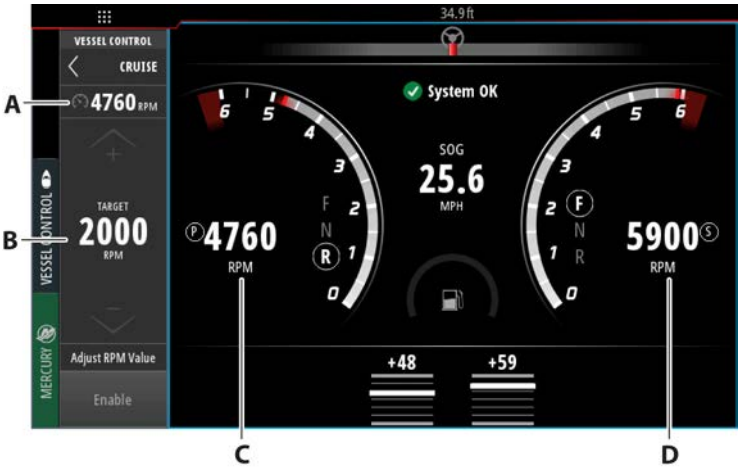
A Propeller RPM

B Target Propeller RPM

C Port engine RPM

D Starboard engine RPM

Cruise control panel for other Mercury outboard engines:



A Engine RPM

B Target RPM (engine)

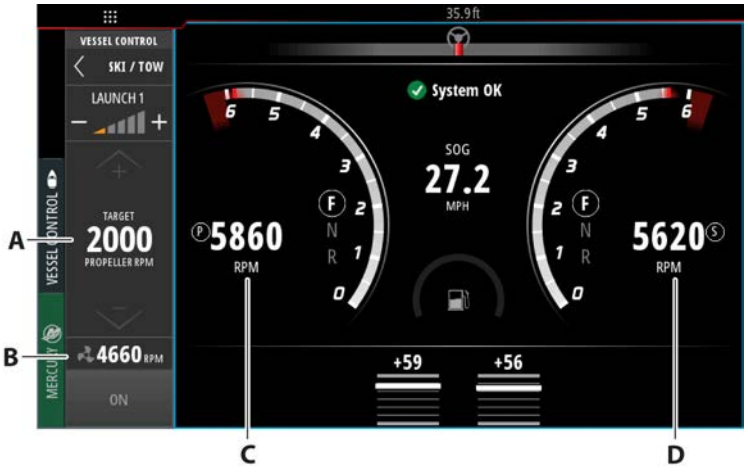
C Port engine RPM

D Starboard engine RPM

Smart Tow

Smart Tow is designed to help provide the optimal launch and cruise speed for pulling skiers, tubers, or wakeboarders. For the new Mercury Verado 600 hp and SeaPro 500 hp V12 engines, which have a two-speed gear transmission, the **Ski/Tow** menu option provides a clear indication of the mode used. When in RPM mode, the propeller RPM is displayed in the control bar and the selected RPM setpoint may not have the same value as the engine RPM. The engine corrects the power to maintain the right propeller RPM.

Smart Tow control panel for Mercury Verado 600 hp and SeaPro 500 hp V12 outboard engines:



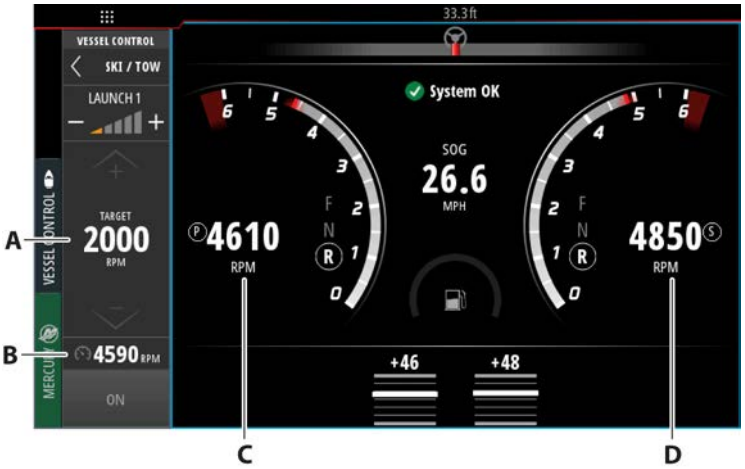
A Target Propeller RPM

B Propeller RPM

C Port engine RPM

D Starboard engine RPM

Smart Tow control panel for other Mercury outboard engines:



A Target RPM (engine)

B Engine RPM

C Port engine RPM

D Starboard engine RPM

Suzuki® engine integration

If a Suzuki® C-10 gauge or a Suzuki® engine interface sensor is available on the NMEA 2000® network, the engines can be monitored from the unit.

When the feature is also enabled in the advanced settings features dialog:

- A Suzuki® icon is added to the home page - select it to display the engine instrument panel.

For more information, refer to the engine manual or engine supplier.

Yamaha® engine integration

If a compatible Yamaha® gateway is connected to the NMEA 2000® network, the engines can be monitored from the unit.

When the feature is also enabled in the advanced settings features dialog:

- A Yamaha® icon is added to the home page - select it to display the engine instrument panel.
- If the Yamaha® system supports Troll Control, a Troll button is added to the control bar. Select this button to enable/disable troll control and control the trolling speed.

For more information refer to the engine manual or the engine supplier.

BRP® engine integration

If a BRP® engine control head is available on the NMEA 2000® network, the BRP® engines can be monitored and controlled from the unit. When the feature is available, a BRP® icon is added to the home page.

A maximum of two control heads and four engines is supported.

When the feature is also enabled in the advanced settings features dialog:

- A BRP® icon is added to the home page - select it to display the engine instrument panel.
- A BRP® settings dialog is added - use this dialog to change engine settings.
- A BRP® button is added to the control bar - selecting this button opens the engine controller. Use the engine controller to control the engines.

For more information, refer to the engine manual or engine supplier.

FUSION-Link™ integration

Compatible FUSION-Link™ devices connected to the system can be controlled from the system.

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

Refer to *"Audio"* on page 115 for more information.

BEP® CZone® integration

The unit integrates with the BEP® CZone® system. It is used for controlling and monitoring a distributed power system on your vessel.

The CZone® icon is available in the toolbar on the Home page when a CZone® system is available on the network.

For information how to use the CZone® feature refer to the separate manual provided with your CZone® system.

A separate manual is provided with your CZone® system.

CZone® dashboard

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

You switch between a panel's dashboards by swiping left or right on the panel 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 *"Instruments"* on page 118.

Power-Pole® anchors

Power-Pole® anchors, which can be controlled by the C-Monster™ Control System installed on your boat, can be controlled from the unit. To control the Power-Pole®, you pair the Power-Pole® with the unit using Bluetooth® wireless technology available in both products.

Power-Pole® controls

When Bluetooth® is enabled, the Power-Pole® button becomes available in the control bar. Select it to display the Power-Pole® controller.

For pairing Bluetooth® devices, refer to *"Bluetooth® options"* on page 147.

If you are pairing a dual Power-Pole®, also review *"Pairing with dual Power-Pole®"* on page 165.

When the Power-Pole® controller is opened, the system connects to paired Power-Pole® anchors. When the connection is confirmed, the control buttons are enabled.

The Power-Pole® controller displays control buttons for each Power-Pole® that is paired to the unit.

Single press the AUTO buttons to raise and lower the Power-Pole® anchors automatically all the way up and down. The manual up and down buttons raise and lower the poles as high or low as you want.



Single Power-Pole® controller



Dual Power-Pole® controller

On a dual controller you can raise and lower the Power-Pole® anchors separately, or press the sync (links) button to allow for control of both with a single press of the auto buttons or the manual up and down buttons.

Stay connected

Select the Settings button on the Power-Pole® controller to open the Power-Pole® Settings dialog where you can select to stay connected to all paired Power-Pole® anchors.

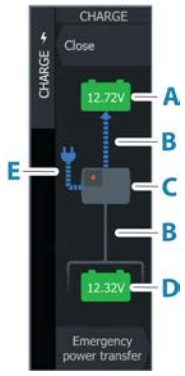
→ ***Note:*** Selecting to Stay connected speeds up access to the controls, but the anchors cannot be controlled from another unit when it is selected. Turn off this option to allow connection from other units.

Pairing with dual Power-Pole®

If two Power-Pole® anchors are installed on your boat, the one that is paired first automatically becomes Port and the second is set to Starboard in the Power-Pole® controls.

To swap them around, unpair the connected Power-Pole® anchors. And then, toggle off and on Bluetooth® in the Wireless settings dialog to reset the Bluetooth® memory. Once Bluetooth® has been toggled back on, proceed in pairing the Power-Pole® anchors in the correct order.

Power-Pole® Charge module



The Power-Pole® battery charge management system displays battery status information.

For installation, wiring and setup information, refer to the Power-Pole® documentation supplied with the charge module.

- **A** Engine battery/batteries
- **B** Battery connections
- **C** Power-Pole® charge module
- **D** Auxiliary battery/batteries
- **E** Charge module AC power source connection

Battery icons

Color	Indicates
Green	Good level
Yellow	Marginal level
Red	Failing/critical level

Battery and AC source connections

Color	Indicates
Blue	Current flow
Grey	No current flow

Emergency power transfer



If your engine battery is low and you want to transfer power from the aux battery to the engine battery, select this option.

> ⚠ Warning: Using a battery at a very low charge level can damage the battery.

NMEA 2000® RGBW lighting

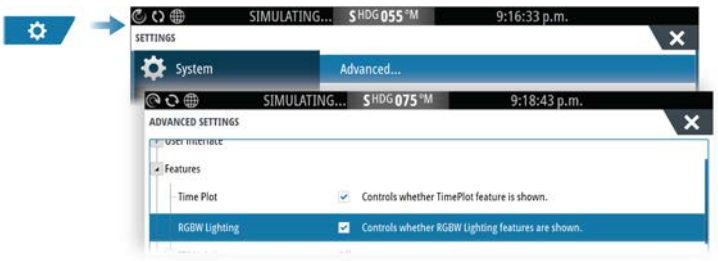
> ⚠ Warning: IT IS THE USER'S RESPONSIBILITY TO OPERATE THIS DEVICE IN COMPLIANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND ORDINANCES. Navico does not assume any responsibility for any fines, penalties, or damages that may be incurred as a result of any state or local law or ordinance relating to the alteration of your vessel's lighting. Refer to local maritime laws and regulations to ensure lighting is compliant.

An RGBW lighting controller can be connected to the NMEA 2000® network and configured to allow control of your vessel's lighting from the control bar in the multi-function display (MFD). The new controls allow the user to customize lighting color, adjust brightness, synchronize lights with music, create various lighting scenes, and independently control and sync multiple zones of lighting on the vessel.

Enabling/disabling the lighting controller

When a lighting controller is connected to the NMEA 2000® network, it appears in the control bar. If it doesn't automatically appear in the control bar, verify the controller supports the NMEA 2000® standard or check if the controller is visible in the device list.

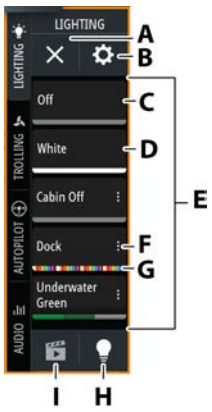
To manually enable/disable the lighting controller, go to **Settings > Advanced settings > Features**, and enable/disable **RGBW Lighting**.



No connection

If a connection problem occurs between the MFD and the lighting controller, a not connected message displays on the control bar.

The NMEA 2000® RGBW Lighting control bar



A **Close button** - hides the control panel.

B **Manage Lights button** - opens the **Manage Lights** dialog.

C **Off** - turns off the scene lights.

D **White** - turns the scene lights white.

E **Scenes/All lights list:**
- Select the **Scenes** button to view available scenes.
- Select the **All lights** button to view available lights.

F **Ellipsis icon** - opens the **Manage Scene** dialog.

G **Color preview** - indicates the color selected for the scene.

H **All lights button** - opens a list of zones followed by the single lighting devices. When selected, the icon is grayed out.

I **Scenes button** - opens a list of scenes. When selected, the icon is grayed out.

All lights menu options

Use the **All lights** button on the NMEA 2000® RGBW lighting control bar to view all lighting zones and individual lights. From this menu, you can turn the lights on/off, configure the lighting color, and apply various effects to zones.

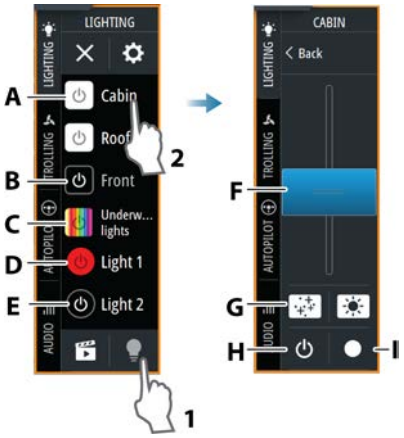
Zone lights are identified using a square and power icon. Individual lights are identified using a circle and power icon.

On the **All lights** list, tap the Power button icon next to the lighting zone/individual light label to turn the light on/off. When turned on, the Power icon displays the color selected for the zone/light. When turned off, the Power icon is black and white.

Tap the label for the lighting zone or the individual light to open the options menu.

Note: To turn a light on individually, it must first be removed from the zone.

Note: Controllers may support different levels of functionality.



A **Lighting zone icon** - On

B **Lighting zone icon** - Off

C **Lighting zone icon** - with color sequence effect started.

D **Individual light icon** - On

E **Individual light icon** - Off

F **Intensity slider** - adjusts the brightness/intensity. If effects are started, the slider controls the intensity of the effects.

G **Effects** - select to apply different effects to lighting zones.

H **Power button** - turns the lights on/off.

I **Color** - opens the color selection sliders.

Note: Options vary depending on the controller/lights connected.

Effects menu options

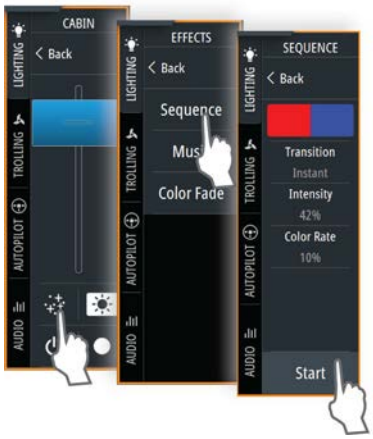
Use the **Effects** button to customize your lighting zones. Apply a color sequence to your lights, set the color rate, intensity, color transition, or synchronize lights with music.

Note: The effects available may vary depending on your controller.



Start/stop an effect program

You can start/stop an effect program from the **Effects** menu. To start an effect, open one of the effects and select **Start**. To stop an effect without turning the zone lighting off, open the running effect and select **Stop**.



Effect program menu options

You can customize the lighting effects from the effect program's menu. The programs and menu options available vary depending on your lighting controler.



Create new color sequence

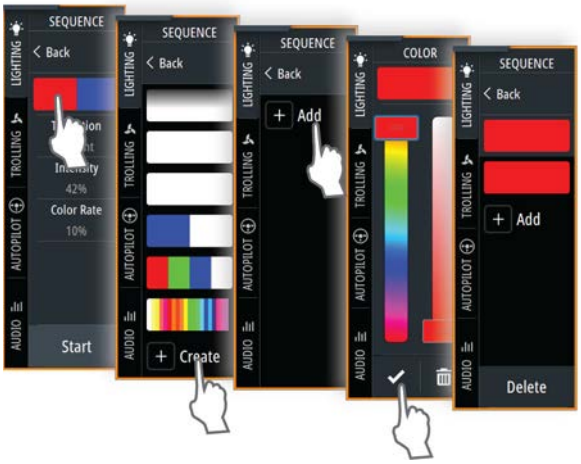
You can create a custom color sequence from the **Effects** menu.

To create a new color sequence:

1. Select the label of a lighting zone.
2. Select the **Effects** button. The Sequence menu opens.
3. Select the color block.
4. From the bottom of the menu, select **Create**.
5. Select **Add**.
6. Use the color and hue sliders to choose the color and select the check mark to add it.
7. Repeat steps 5 and 6 to add more colors to your sequence.
8. When finished, select **Back**. The color sequence created is automatically selected.

To select a sequence, tap on a color block; the selection is marked with a pencil icon.

To delete a sequence, tap it (tap twice if it is not the current selection), and select **Delete**.



Transition

Use this option to select the color transition for the lights. The options available may vary depending on your controller.

Intensity

Select this option to adjust the intensity of the color using the slider.

Rate

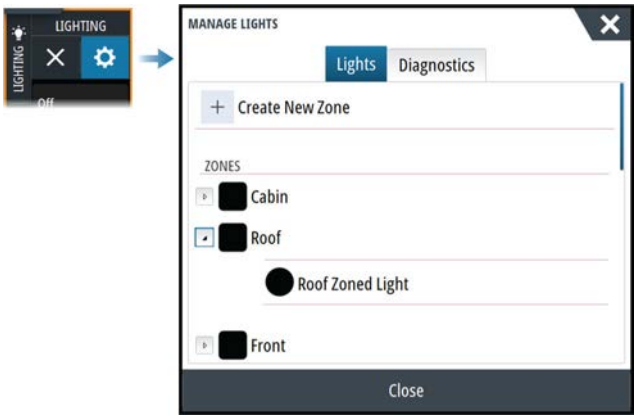
Select this option to adjust the rate at which the program effect changes.

Color rate

Select this option and use the slider to adjust the rate at which the color changes.

The Manage Lights dialog

Use the **Manage Lights** dialog to create a new lighting zone, to delete zones, and access zone and individual lighting information. From the **Diagnostics** tab, you can also verify the details of your lighting controllers and refresh data.



Create new zone

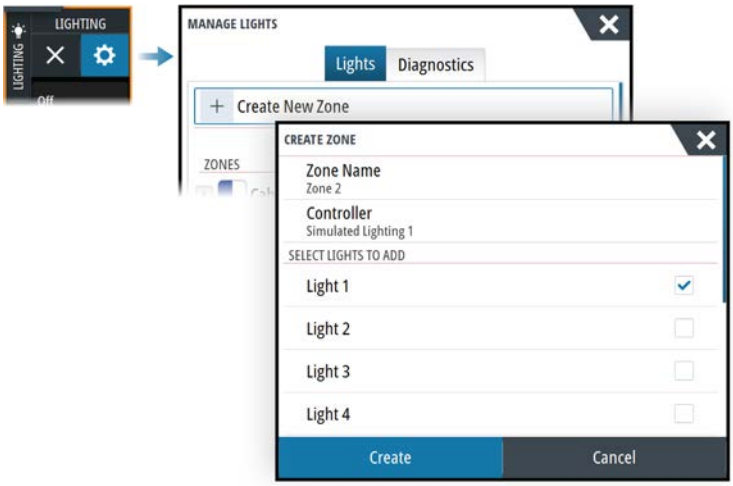
The NMEA 2000® RGBW lighting controller allows you to easily create and manage multiple zones of lighting on your vessel.

To create a new zone:

1. Open the lighting control bar on your MFD.
2. Select the **Manage Lights** button.
3. From the **Lights** tab, select **Create New Zone**.
4. Add a zone name, assign a controller, and select the lights assigned to the zone.
5. Select **Create**.

Note: To delete a zone, select the zone in the **Manage Lights** dialog. In the **Zone Details** dialog, select **Delete This Zone**.

Note: To turn a light on individually, it must first be removed from the zone.



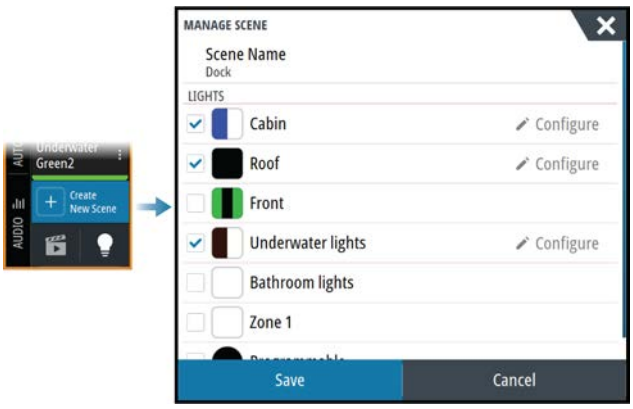
Create new scene

Selecting a scene causes all zones assigned to the scene to change to a specified color, intensity, and effect.

To create a new scene:

1. From the lighting control bar, select the **Scenes** button.
2. Select **Create New Scene**. The **Manage scene** dialog displays.
3. From the **Manage scene** dialog, add a name to the new scene, and select the lights you want to assign to it.
4. When a light is selected, the **Configure** button displays. Select it to open the **Manage effects** dialog and customize the light as desired, then select **Close**.
5. Select **Save**.

The icons display the color selected for the zone/light. If the lights have a color sequence selected, the icons display vertical bars in the selected color sequence.



The Manage effects dialog

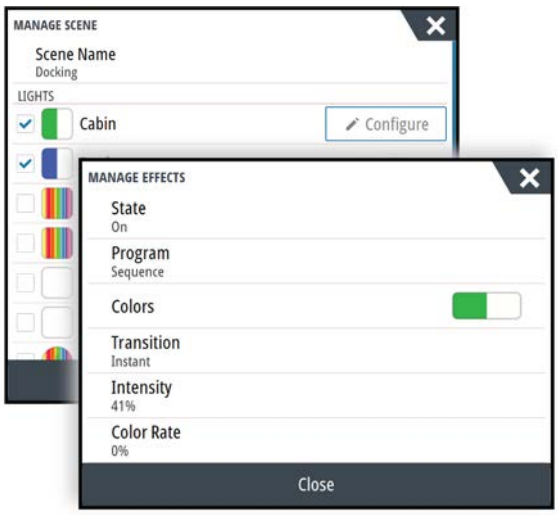
Zone lights and individual lights included in a scene can be customized individually from the **Manage effects** dialog. The dialog is accessed via the **Configure** button.

From the **Manage effects** dialog you can access the following settings:

- **State** - select to turn the program on/off. When off, the effects cannot be edited.
- **Program** - select a program for the lighting effect such as **Sequence**.
- **Colors** - select a color sequence.
- **Transition** - select the color transition. The transition options may vary depending on your controller.
- **Intensity** - select the intensity of the effect.
- **Rate** - select the rate at which the program effect changes.
- **Color rate** - select the rate at which the color changes.

Effects can also be edited from the **Effects** menu.

Note: The options may vary depending on the **Program** selected.



Edit a scene

To edit an existing scene, from the lighting control panel, navigate to the scene and select the ellipsis icon to open the **Manage scene** dialog. Make the desired lighting changes and select **Save**.



29 Appendix

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 either activate the cursor assist feature or open the menu. Refer to *"Customizing the long press feature"* on page 21. • On the Instrument bar to open the Choose data dialog. • On a panel button on the home page to see available split screen options. • On a favorite button on the home page to enter edit mode.
	Scroll through a list of available options without activating any option. On a slide bar, move the slide up or down.
	Flick to quickly scroll through e.g. the waypoint list. Tap the screen to stop the scrolling.
	Pan to position a chart or sonar image on the panel.
	Pinch to zoom out on the chart or on an image. → ***Note:*** Not available for zooming sonar images.
	Spread to zoom in on the chart or on an image. → ***Note:*** Not available for zooming sonar images.

Status bar icon definitions

Depending on your system and set up, the following icons can appear on the status bar:

Icon	Definition
	Alarm - a standard (yellow), important (orange) or critical (red) alarm is sent. To remove the icon in the status bar, acknowledge the alarm in the Alarms dialog. If needed, change the alarm setting or remedy the situation so the same alarm is not resent immediately by the system.
	Autopilot modes: Auto-Heading hold, Follow up, Navigation, No drift, Standby. Use the autopilot controller to select an autopilot mode.
	Autopilot turns - autopilot is turning the vessel in a turn mode: C turn, Depth turn, S turns, Spiral turn, Square turn, ZigZag turns. In most cases, when the turn is completed the turn icon is replaced with an autopilot mode icon. Use the autopilot controller to select an autopilot turn or cancel the turn.
	Downloading files, e.g.: software update file, logs from C-MAP Genesis, GRIB weather files, PredictWind routes, etc.
	The unit is connected to the internet. The unit can be used to download or upload files to the internet.
	GPS signal strength: strong, medium, and weak. The placement of the GPS and obstructions between it and satellites can affect the signal strength. In some cases, a well-placed external GPS antenna might be needed.
	GPS signal strength with the Wide Area Augmentation System (WAAS) is strong, medium, and weak.
	An external keyboard is connected to the unit.
	An external mouse is connected to the unit.
	A mobile (cell) phone is connected to the unit via Bluetooth®.
	The system is simulating. Turn ON/OFF the simulator from the simulator settings dialog.
	Radar is paused. If you want the radar to transmit, select the transmit option in the Radar page menu.
	Radar is transmitting. If you want to pause the radar, select the pause option in the Radar page menu.
	A compatible remote controller is connected to the unit.

Icon	Definition
	The system is synchronizing data during startup.
	File transfer problem, caused by an interruption in the internet communication.
	Trip recording. For more information, open the TripIntel tool option.
	Uploading files, e.g.: service report, C-MAP genesis, route files to PredictWind, etc.



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