LOWRANCE

Elite FS®

Operator manual

English

Software version: 26.1



www.lowrance.com

What's new

This document contains the following changes:

Page	Feature
126	Correction to Trolling motor autopilot chapter

Preface

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More information

This document was prepared using software version .

Features described and illustrated in this document may vary from your unit due to continuous development of the software.

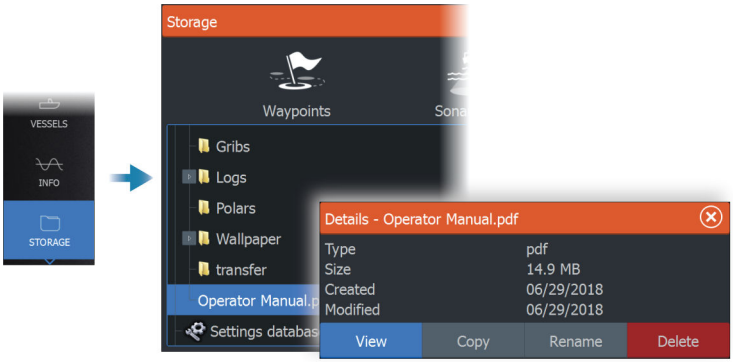
For the latest version of this document in supported languages, and other related documentation, visit www.lowrance.com.

Viewing the manual on the screen

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

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 vary depending on the unit.



Contact us

For product support and service information, visit www.lowrance.com/contact-us.

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1 Basic operation

Removing the suncover

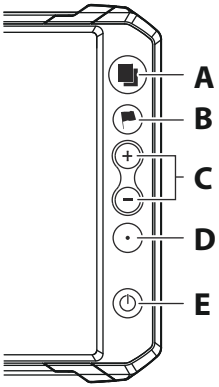
The protective suncover of your MFD is designed to have a tight fit and must be carefully removed to avoid damaging the MFD or the cover.

To remove the suncover, hold the edges from the slots located on the sides of the cover, and use your thumbs to gently press the center of the cover before lifting the cover.

→ ***Note:*** It is recommended that you always fit the protective suncover when the unit is not in use.

> ⚠ Warning: The suncover is not intended to be used when the vessel is in motion or in tow. It may become detached at high speeds. Always remove the suncover before traveling.

Control keys



A Pages key

- Press once to activate the home page, repeat short presses to cycle the favorite pages.

B Waypoint key

- Press to open the new waypoint dialog.
- Press twice to save a waypoint.
- Press and hold to access the find dialog.

C Zoom in/out keys

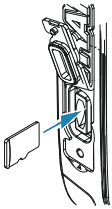
- Press to zoom the image.
- Simultaneous press both keys to save a Man Overboard (MOB) waypoint at the current vessel position.

D Quick access

- Use the Quick access option in the system settings dialog to configure the key.

E Power key

- Press to turn the unit ON.
- Press and hold to turn the unit OFF.
- When ON press once to display the System Controls dialog, repeat short presses to cycle the backlight brightness.



Card reader

A memory card can be used for:

- Chart data
- Software updates
- Transfer of user data
- Logging user data
- System backup

→ ***Note:*** Do not download, transfer or copy files to a chart card. Doing so can damage chart information on the chart card.

→ ***Note:*** Maximum 32 GB memory cards should be used. Some higher capacity cards can also be used but require NTFS formatting.

The protective door should always be securely shut immediately after inserting or removing a card, in order to prevent possible water ingress.

Turning the system on and off

The system is turned on by pressing the Power key.

Press and hold the Power key to turn the unit off.

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

You can also turn the unit off from the System Controls dialog.

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.

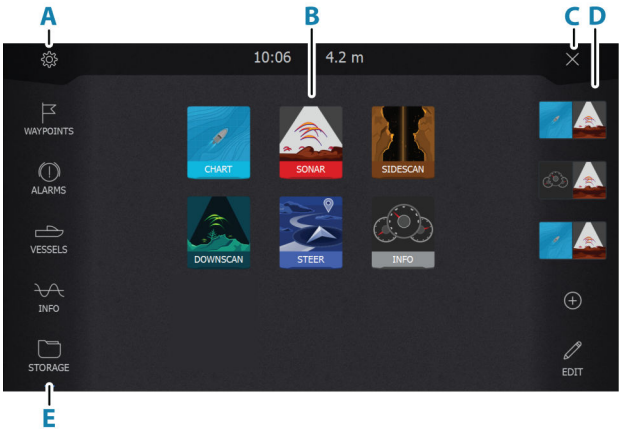
Standby mode

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

You select Standby mode from the System Controls dialog.

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

The Home page



The Home page is accessed from any operation by a short press on the pages key.

A **Settings**
Opens the settings dialog. Use it to configure the system.

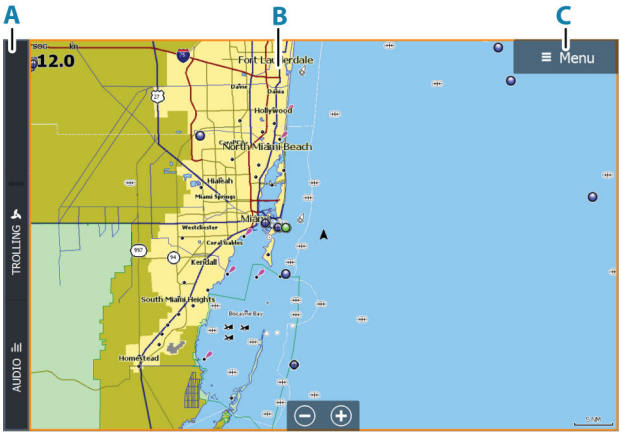
B **Applications**
Select a button to display the application as a full page panel.
Press and hold a button to display pre-defined quick split pages for the application.

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

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

E **Toolbar**
Select a button to access dialogs used for carrying out a task, or for browsing stored information.

Application pages



A Control bar

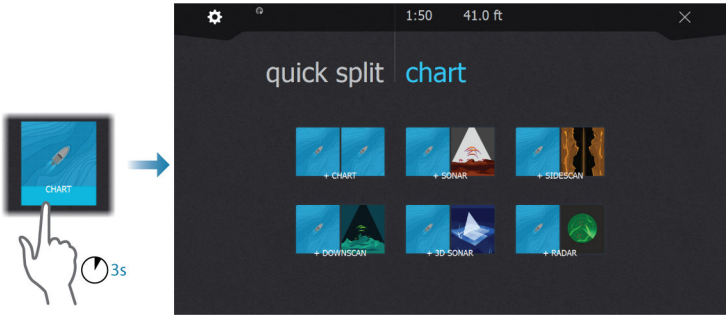
B Application panel

C Menu button

Predefined split pages

A predefined split page shows more than one application panel on a page.

You can adjust the split on a predefined split page. Refer to *"Adjusting the split on multiple panel pages"* on page 24.



→ ***Note:*** The operation of live sonar in split screen mode is only supported on 7" and 9" Elite FS units.

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 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 25.

Multiple panel pages

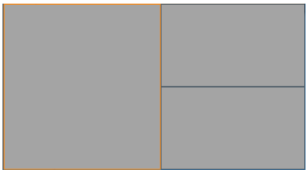
Panel sizes in a multiple panel page can be adjusted from the System Controls dialog. Refer to *"Adjusting the split on multiple panel pages"* on page 24.

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

→ ***Note:*** The operation of live sonar in split screen mode is only supported on 7" and 9" Elite FS units.

Menus

To display a panel menu:

- Select the menu button

To return to previous menu level:

- Select the back menu option

To hide a panel menu:

- Swipe the menu to the right

System controls dialog

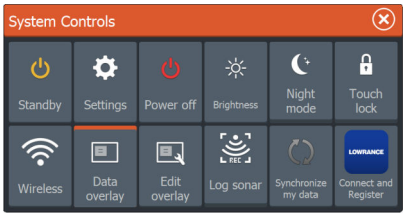
The System Controls dialog provides quick access to basic system settings.

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

For those functions that toggle on and off, an orange bar across the top of the button indicates the function is activated.

Display the dialog by:

- pressing the power key



Display illumination

Brightness

You can cycle the preset backlight levels by short presses on the Power key.

The display backlighting can also 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.

Locking the touchscreen

You can temporarily lock the touchscreen to prevent accidental operation of the system.

You lock the touchscreen from the System Controls dialog.

You remove the lock function by pressing and holding the power key.

Screen capture

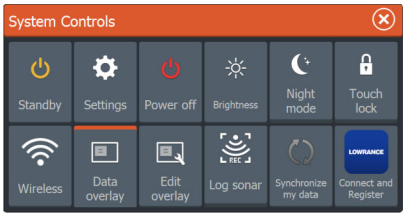
To take a screen capture:

- Simultaneously press the pages key and the power key

Screen captures are saved to internal memory.

Device registration

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



Lowrance mobile app

You can download the **Lowrance: Fishing & Navigation** app from the Apple® App Store® and Google Play® stores.

→ ***Note:*** The mobile app is an optional offering and will not affect the normal operation of your display unit. Refer to the app store description to check the app's compatibility with your mobile device.

Once connected, you can use the app to:

- Register your display unit.
- View and download product documentation.
- Create and synchronize waypoints, routes, and tracks.
- Explore points of interest (POI).
- Monitor marine traffic and weather.
- Subscribe to Premium charts.
- Download and apply software updates to the display unit.

→ ***Note:*** An internet connection is required to synchronize your data with cloud services from the display unit or mobile device.

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 Lowrance account** page.

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

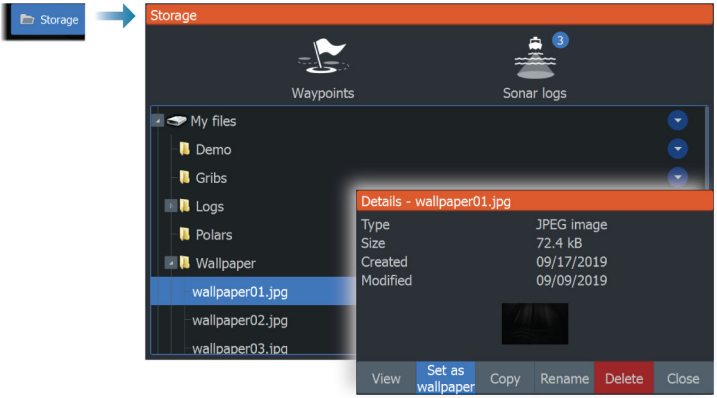
You can also access **Synchronize my data** from the **System controls** dialog.

2 Customizing your system

Customizing the Home page wallpaper

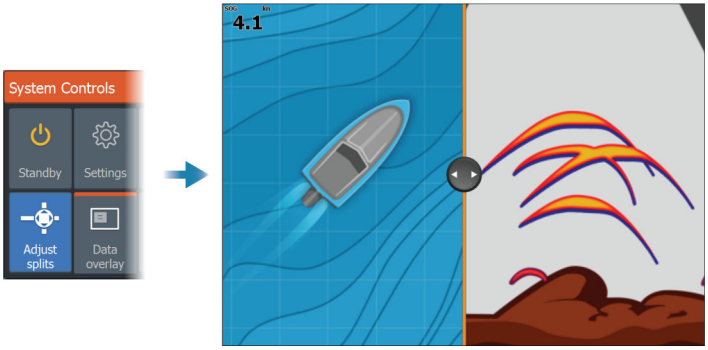
The Home page's wallpaper can be customized. You can select one of the pictures included with the system, or you can use your own picture in .jpg or .png format.

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



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.



Data overlay

You can have data information as overlay on chart and sonar pages. The data overlay is set individually for each default page, favorite pages and for the predefined split pages.

The information can be any data available on the network.

You turn overlay data on or off from the system controls dialog.



Edit overlay data

Use the edit overlay button on the system controls dialog to edit the overlay data.

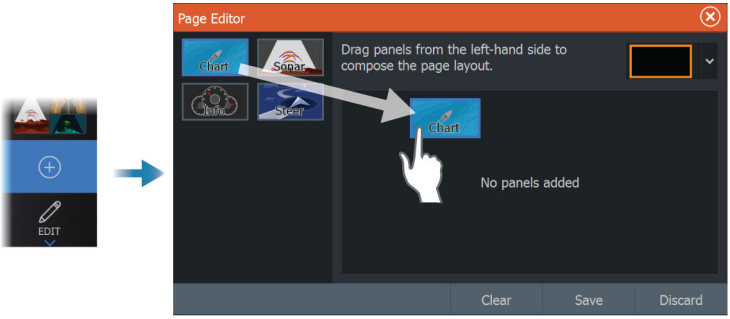
When in edit mode, select the data overlay to be edited, then:

- use the menu option to change or configure the data
- drag the overlay data box to reposition the overlay

Customizing favorite pages

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.

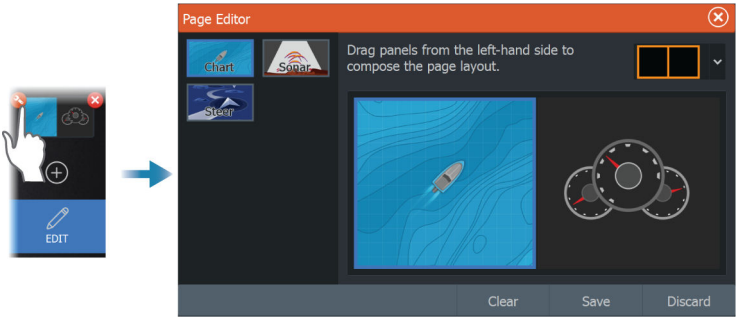


Note: The operation of live sonar in split screen mode is only supported on 7" and 9" Elite FS units.

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



→ ***Note:*** The operation of live sonar in split screen mode is only supported on 7" and 9" Elite FS units.

Configuring the quick access key

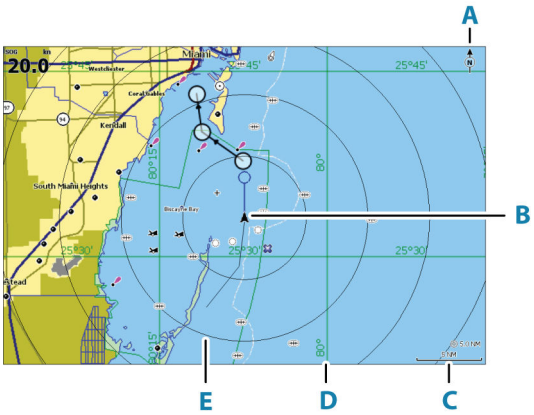
The key presses for the quick access key can be configured. Refer to *"System settings"* on page 244.

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. Refer to *"Advanced"* on page 247.

3 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.

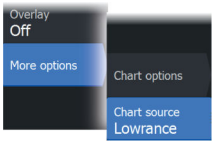
→ ***Note:*** Chart menu options vary depending on the chart you are using.

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.

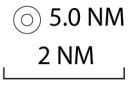
Vessel symbol



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



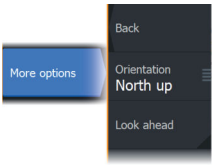
The chart range scale and range rings interval (when turned on) are shown on the chart panel. You change the scale by zooming the chart in or out.

Panning the chart

You can move the chart in any direction by:

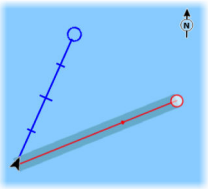
- Dragging the screen

Chart orientation



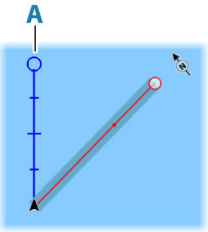
You can specify how the chart is rotated in the panel.

North up



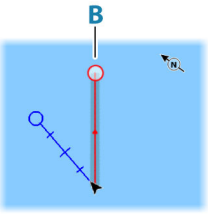
Displays the chart with north upward.

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.

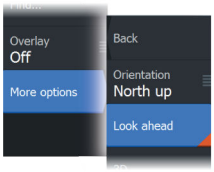
Course up



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



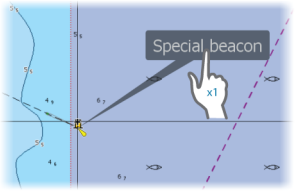
Moves the vessel icon on the panel to maximize your view ahead of the vessel.

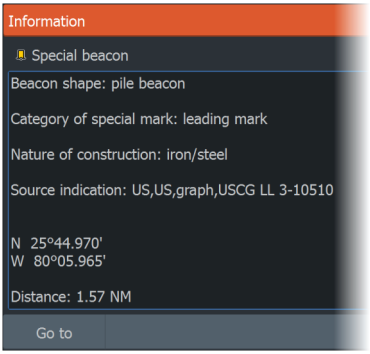
Displaying information about chart items

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.

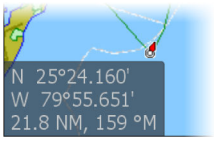
→ ***Note:*** If you are viewing applicable C-MAP charts on your system, you can select marine objects to display information about services and available multimedia (photos) associated with the location or object.

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





Using the cursor on the panel



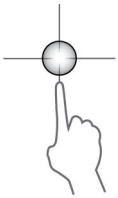
By default, the cursor is not shown on the panel.

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.

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



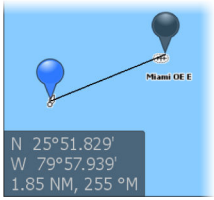
The cursor assist function allows for fine tuning and precision placement of the cursor without covering details with your finger.

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.

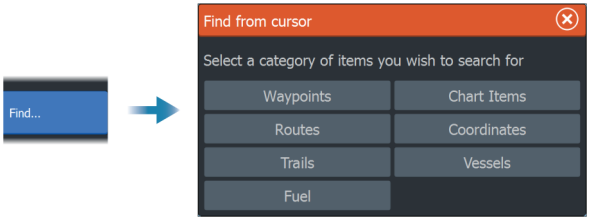
The start measuring function can also be started without an active cursor. Both measuring icons are then initially located at the vessel position. The grey icon follows the vessel as the vessel moves, while the blue icon remains at the position given when you activated the function. The measuring points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

Terminate the measuring function by selecting the finish measuring option.

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.

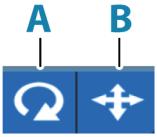


→ ***Note:*** You must have a SiriusXM® Marine subscription to search for fueling stations.

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

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.

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

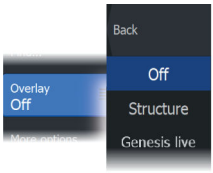
→ ***Note:*** When centered on the vessel position, only the tilt angle can be adjusted. The view direction is controlled by the chart orientation setting. Refer to *"Chart orientation"* on page 30.

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 option.

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.

Weather overlay

When the Navico WM-4 receiver is connected to your system and with the appropriate SiriusXM® marine weather subscription, the Weather overlay option is available.

When Weather is selected as the chart overlay, the chart menu expands to provide weather options. For more information, refer to the SiriusXM® chapter in this document.

Structure overlay

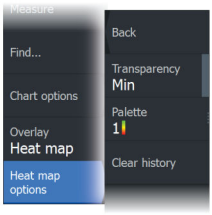
The StructureMap feature overlays SideScan images from a SideScan source on the map. This makes it easier to visualize the underwater environment in relation to your position, and aids in interpreting SideScan images.

When Structure is selected as the chart overlay, the chart menu expands to provide structure options. For more information, refer to the StructureMap chapter in this document.

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.

Genesis live overlay

→ ***Note:*** Only available when viewing Lowrance or C-MAP chart source.

→ ***Note:*** A microSD™ memory card with available space must be inserted into the unit before data can be recorded.

Genesis live is a real-time feature where the unit creates an overlay of depth contour mapping based on live sonar soundings. The Genesis live sonar soundings are recorded onto and viewed from the unit's memory card.

If at any time the memory card is removed or runs out of space, the feature will turn itself off and the option is disabled in the menu.

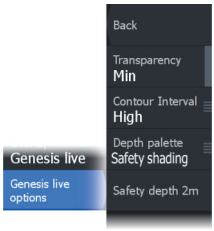
- The more passes of an area included in the live sonar soundings log, results in better Genesis live maps.
- Genesis live is accurate up to 20 knots.
- Genesis live can record from a networked transducer.
- The data logging and display is for the unit with the memory card. Genesis live maps are not shared over the network.

→ ***Note:*** Genesis Live data is not adjusted for tidal offset.

Requirement
A blank memory card or a memory card with free space on it is required to record and overlay Genesis Live.

➔ ***Note:*** You should not use chart cards to record Genesis Live data.

Genesis live menu options



Transparency

Adjusts the transparency of the overlay.

Contour interval

Defines the density of live depth contours shown.

Depth palette

Controls the color palette used to color the depth areas.

- Chart sync – syncs the Genesis live layer to the same palette as the chart depth palette defined in the chart menu (under Chart options, View, Depth palette). This option also allows custom palettes to be defined in the chart menu and applied to the Genesis layer.
- Navigation – uses the navigation palette.
- Depth shading – uses the depth shading palette.
- Paper chart – uses the paper chart palette.
- Safety shading – uses the safety depth setting to shade the color lower than the set safety depth. Also enables the Safety depth option on the Genesis live menu.

Safety depth

Sets the safety depth. Areas that are shallower than the safe minimum depth are shaded. This option is only available if the Safety shading palette is selected.

Radar overlay

The radar image can be overlayed 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. For information about the radar menu options, refer to *"Radar"* on page 155.

Selecting radar overlay source on chart panels

To select the radar source of the radar overlay displayed on the chart panel, use source menu option. This option is available under Radar options when radar is selected as the overlay.

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.

Scout overlay

If you are operating

- an ActiveTarget, ActiveTarget 2, or ActiveTarget 2 XL transducer in Scout mode,

you can overlay the live sonar data onto your chart by selecting **Scout** as the chart overlay. The Chart menu expands to provide sonar options. For more information, refer to *"ActiveTarget" on page 106*.

360 Scan overlay

If you have an Active Imaging 3-in-1 nose cone attached to your Lowrance or Simrad® trolling motor and you've enabled the 360 Scan feature, you can overlay 360-degree underwater images on your chart.

When **360 Scan** is selected as the chart overlay, the chart menu expands to provide sonar options. For more information, refer to the section *"360 Scan" on page 95*.

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.

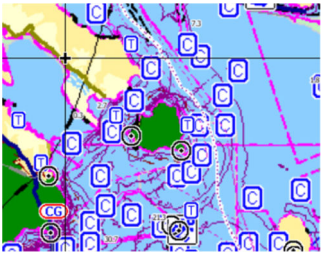
C-MAP tides and currents

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.

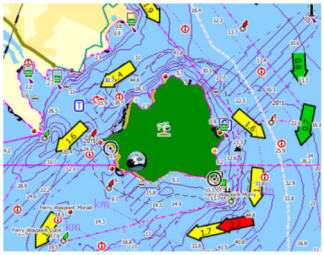
In large zoom ranges the tides and currents are displayed as a square icon including the letter **T** (Tides) or **C** (Current). When you select one of the icons, tidal or current information for that location are displayed.

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

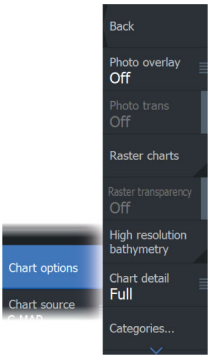
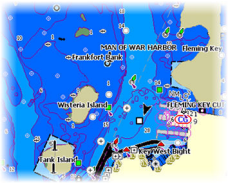


Photo overlay

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



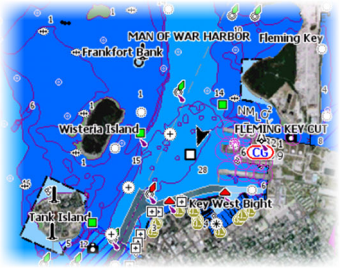
Photo overlay, land only



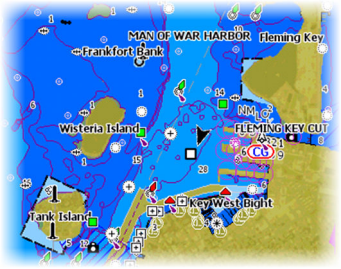
Full Photo overlay

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.

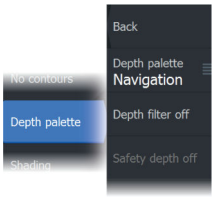
Chart categories
Several categories and sub-categories are included. You can turn on/off individually depending on which information you want to see.

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.

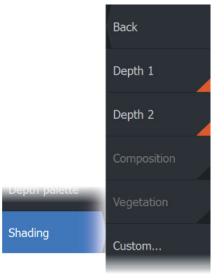
Depth palette
Controls the Depth palette used on the map.



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.

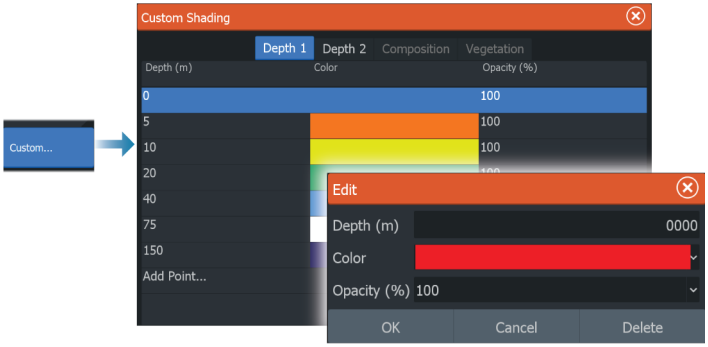
→ ***Note:*** Composition and Vegetation shading are not applicable to C-MAP charts.

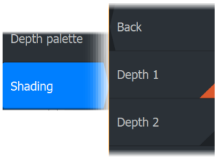
Depth 1 and Depth 2

Depth presets that shade different depths in different colors.

Custom

Select a row in the Custom shading dialog or the add point option to open the Edit dialog. In the Edit dialog, select a field (Depth, color or opacity field) to specify the depth threshold, color or opacity (transparency) of color shading for the depth.





In the following example water depth from 5 meters to 10 meters will be shaded yellow in the chart when Depth 1 is the selected shading in the menu.



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

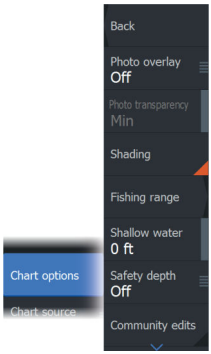
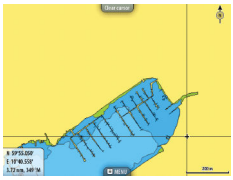


Photo overlay

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.

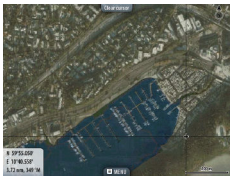
You can view photo overlays in either 2D or 3D modes.



No Photo overlay



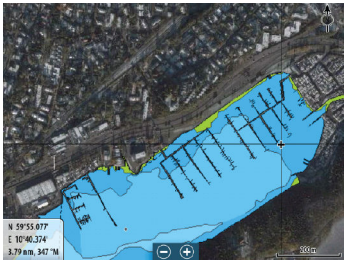
Photo overlay, land only



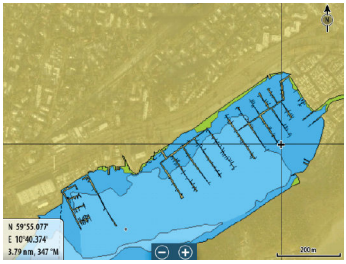
Full Photo overlay

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

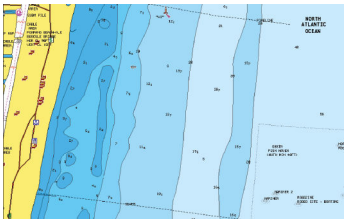
Chart shading

Shading adds terrain information to the chart.

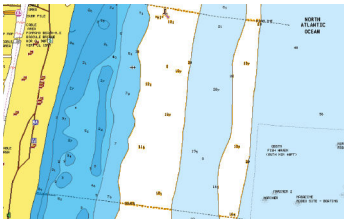
Fishing range

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.



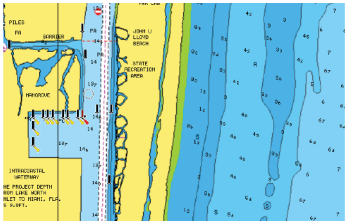
No Depth highlight range



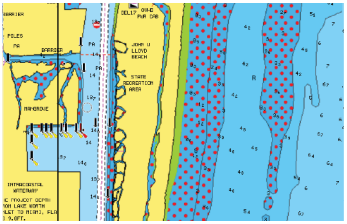
Depth highlight range: 6 m - 12 m

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.

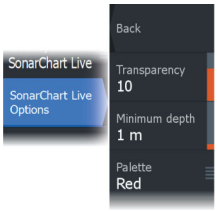
For more information, refer to Navionics® information included with your chart, or to Navionics® website: www.navionics.com.

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

Use 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.

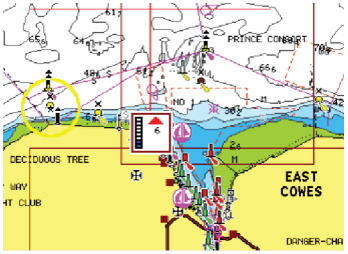
Colored seabed areas

Turns ON/OFF coloring seabed areas red.

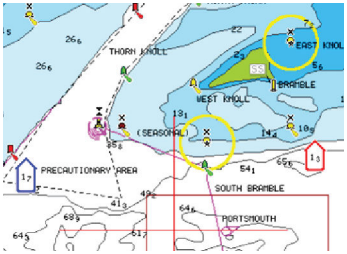
Navionics® Dynamic tides and current icons

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.

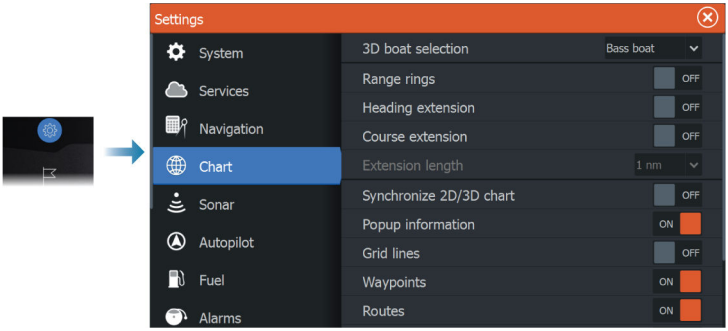
Chart details
Provides you with different levels of geographical layer information.

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.

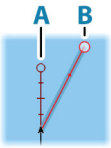
The range scale is set automatically by the system to suit the panel scale.

Extension lines

Heading extension and Course extension

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

Extension length



Sets the lengths of the heading and course extension lines for your vessel. For setting extension line lengths on other vessels shown as AIS targets, refer to AIS *"Course extension"* on page 191.

A: Heading

B: Course Over Ground (COG)

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.

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

Turns on/off displaying waypoints on charts.

Routes

Turns on/off displaying routes on charts.

Trails

Turns on/off displaying trails on charts.

→ ***Note:*** To display trails on the chart panel, the Display option in the Trails dialog and the trails option in the chart settings dialog both have to be enabled. Refer to *"Editing or deleting trails"* on page 59.

Hide chart

→ ***Note:*** This option is only available when Lowrance charts are displayed.

If the option is set to ON, the chart (background) is not displayed in the chart panel. Instead, the vessel, vessel extensions, waypoints, and routes are displayed on a white background.

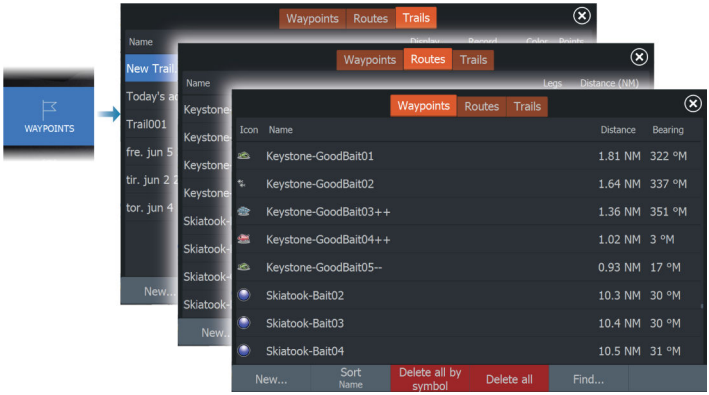
Waypoints, Routes, Trails

Opens the Waypoints, Routes, and Trails dialog where these items can be created, edited, deleted, and searched.

4 Waypoints, routes, and trails

Waypoints, Routes, and Trails dialogs

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



Using the synchronize feature

You can use a browser to sign-in at https://appchart.lowrance.com or you can sign-in to your LOWRANCE® app account from your mobile device or tablet to manage (create new, change, move, and delete):

- Waypoints
- Routes
- Trails

Use the MFD's Synchronize my data option to synchronize between the MFD and your LOWRANCE® app account.

Requirements

- An account with the Lowrance mobile app

→ ***Note:*** Your C-MAP Embark or C-MAP app account credentials can be used to sign-in to the mobile app. You do not need to create a separate mobile app account.

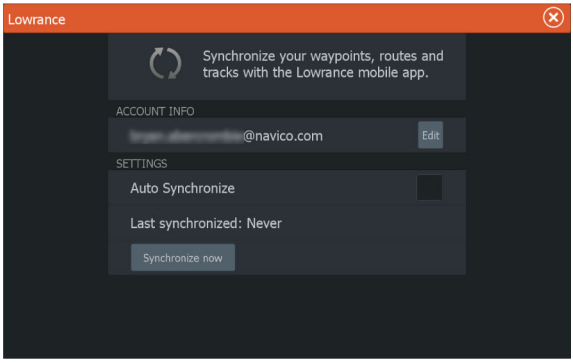
- To synchronize, the unit must be connected to the internet. To connect the unit to the internet, refer to *"Internet connection"* on page 203.

Synchronizing

To synchronize the MFD data and your LOWRANCE® app account data (includes your data at https://appchart.lowrance.com), open the **Synchronize my data** feature from the System Controls dialog or the Services settings dialog.

After sign-in, the system advises the last time synchronizing occurred and the following options are available:

- Edit - use to change sign-in credentials
- Auto Synchronize - synchronizing occurs periodically in the background when connected to the internet
- Synchronize now - synchronizing occurs immediately



Waypoints

About waypoints

A waypoint is a user generated mark positioned on the:

- chart
- sonar image
- radar image
- steer panel

Each waypoint has an exact position with latitude and longitude coordinates.

A waypoint positioned on the sonar image has a depth value, in addition to position information.

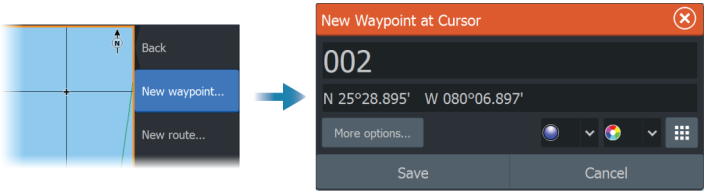
A waypoint is used to mark a position you later may want to return to. Two or more waypoints can also be combined to create a route.

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:

- Press the Waypoint key. Press once to display the New Waypoint dialog. Press twice to quickly save a waypoint.
- Select the new waypoint option in the menu





New Waypoint icon

When selected, the dialog with waypoint symbol alternatives is displayed. Selecting a waypoint symbol creates the waypoint at cursor or vessel position with the selected symbol. This mode is persistent, the next time you create a new waypoint the same dialog opens and if you select a symbol a waypoint is created with the symbol.

Instead of selecting a symbol, select the menu button in the bottom-right corner to return to the previous New Waypoint dialog. This selection becomes the persistent mode, the next time you create a new waypoint the New Waypoint dialog is displayed.

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 211.

Man Overboard waypoint

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

Create a MOB

To create a Man Overboard (MOB) waypoint:

- Simultaneously press the Zoom In (+) and Zoom out (-) keys

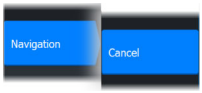
When you activate the MOB function, the following actions are automatically performed:

- 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.

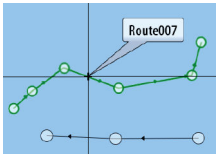
Waypoint alarm settings

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 202.

Routes

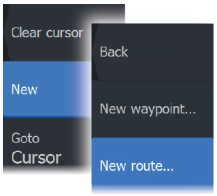
About routes



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.

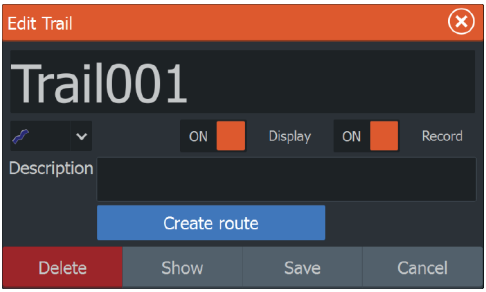
Creating routes using existing waypoints

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.

Converting trails to routes

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

The Edit Trail dialog can also be accessed by selecting the Waypoints tool on the Home page, then the trail tab and then selecting the trail in the Trail dialog.



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 244.

⚠ 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

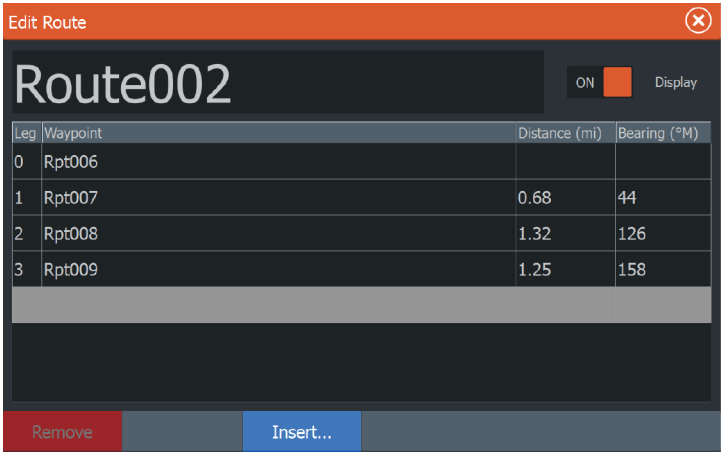
The edit route dialog

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.

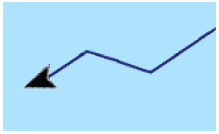
You can also delete a route by selecting it in the routes dialog and then deleting it in the edit route dialog.

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 211.

Trails

About trails



Trails are a graphical presentation of the historical path of the vessel. They allow for retracing where your boat has travelled. Trails can be converted to routes from the edit dialog.

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

The automatic trail function can be turned off from the trails dialog.

Creating a new trail

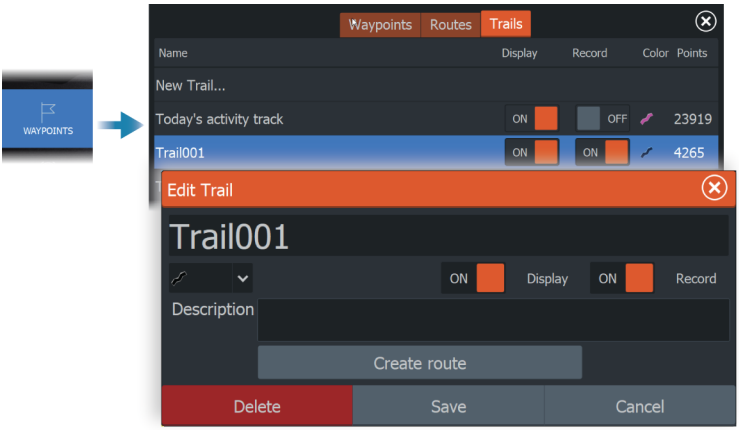
You can start a new trail from the Trails dialog. The dialog is activated by using the Waypoints tool on the Home page and selecting the Trails tab.

Editing or deleting trails

Use the edit trail dialog to edit or delete a trail.

Open the edit trail dialog by:

- selecting the trail on the chart and then the trail's pop-up
- selecting the trail on the chart and then the trail in the menu
- selecting the trail in the trails dialog

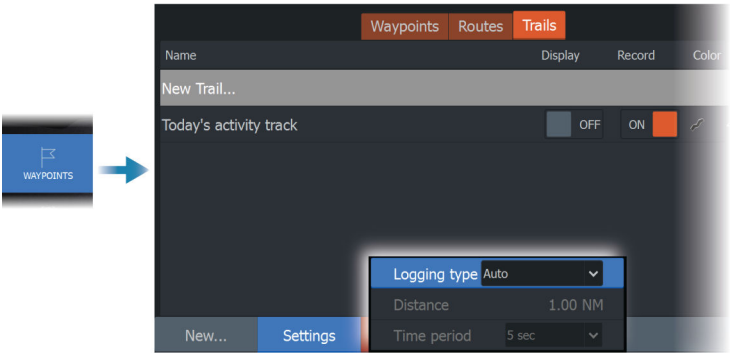


Trails settings

Trails 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 trail points based on time settings, distance, or by letting the system position a trail point automatically when a course change is registered.

→ ***Note:*** The Trails option must also be turned ON in the panel settings dialog to be visible.


WAYPOINTS
Waypoints
Routes
Trails
Name
Display
Record
Color
New Trail...
Today's activity track
OFF
ON
Logging type
Auto
Distance
1.00 NM
Time period
5 sec
New...
Settings

5 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 trails"* on page 50.

Steer panel

The Steer panel can be used to display information when you are navigating.



A Data fields

B Vessel heading

C Bearing to waypoint

D Destination point

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 latitude and longitude position), the bearing line shows the intended course from the point at which navigation was started towards the waypoint.

F Vessel symbol
Indicates distance and bearing relative to the intended course. If the XTE (Cross Track Error) exceeds the defined XTE limit, this is indicated with a red arrow including the distance from the track line.
Refer to *"XTE limit"* on page 65.

Navigate to cursor position

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

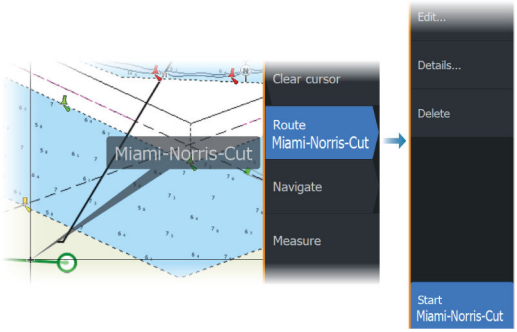
Position the cursor at the selected destination on the panel, and then select the go to cursor menu option.

→ ***Note:*** The go to cursor menu option is not available if you are already navigating.

Navigating a route

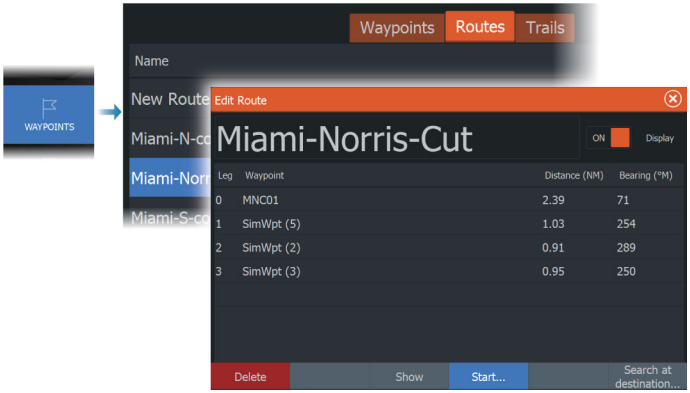
You can start navigating a route from:

- the chart panel



- the steer panel

- the route dialog



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

Starting a route from the chart panel

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

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

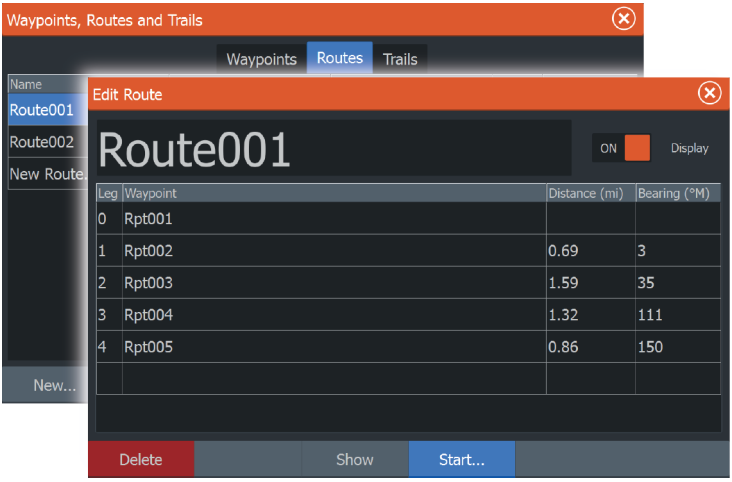
Starting a route from the steer panel

Select the start route option in the menu, and then select the route you want to navigate from the select route dialog.

Start navigating a route from the edit route dialog

You can start navigating from the edit route dialog. Activate the dialog by:

- Selecting the waypoint tool from the home page and then selecting the routes tab
- Selecting the route details option from the menu



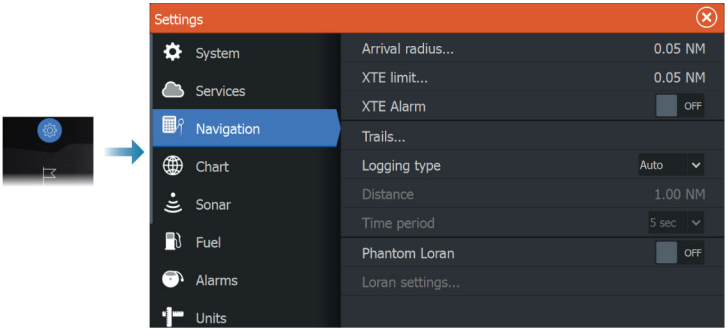
Navigating with the autopilot

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

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

For more information about autopilot functionality, refer to *"Trolling motor autopilot"* on page 126.

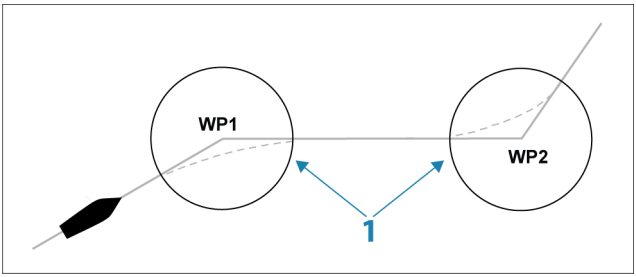
Navigation settings



Arrival radius

Sets an invisible circle around the destination waypoint. The vessel is considered arrived at the waypoint when it is within this radius.

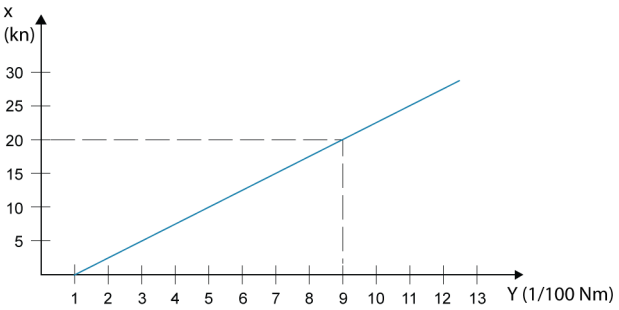
When you are navigating a route, the arrival radius defines the point at which a turn is initiated.



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.

XTE alarm (Cross track error)

Turns on/off the XTE alarm.

Trails

Opens the Trails dialog where trails settings can be adjusted and trails can be converted into routes for navigation. Refer to *"About trails"* on page 58.

Logging type

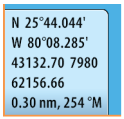
You can select to record trail points based on time, distance, or by letting the unit position a point automatically when a course change is registered.

Specify one of the following logging types in the Navigating Settings dialog:

- Auto - the unit positions a point automatically when a course change is registered.
- Distance - select the Distance field and enter the distance you want to record.
- Time - select the Time field and enter the time you want to record.

Phantom Loran

Enables use of Phantom Loran positioning system.



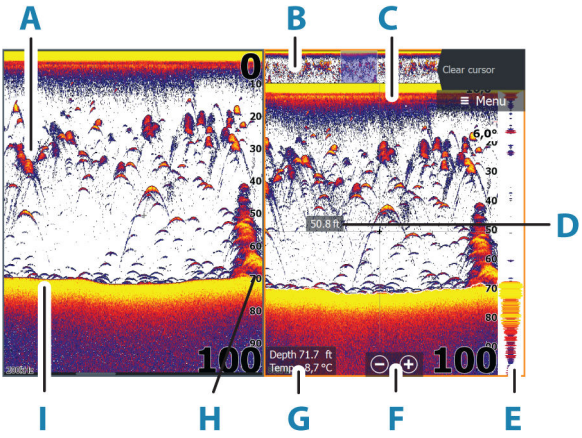
Defines Loran chains (GRI) and preferred station for waypoint entry, cursor position and position panel.

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

For more information refer to your Loran system documentation.

6 Sonar

The image



A Fish arches
B History preview*
C Temperature graph*
D Depth at cursor
E Amplitude scope*
F Zoom (range) buttons
G Water depth and Water temperature at cursor location
H Range scale
I Bottom

* Optional items that you can turn on/off individually. Refer to *"More options"* on page 74.

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 72.

Zooming the image

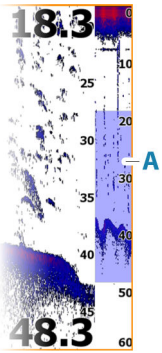
To zoom the image:

- Press the +/- keys.
- Select the range (+/-) buttons.
- Use the range menu setting.

When zooming in, the sea floor is kept near the bottom of the screen.

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.

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

Using the cursor on the image

When you position the cursor on the image the screen pauses, the depth at the cursor position is shown, and the information window and the history bar are activated.

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.

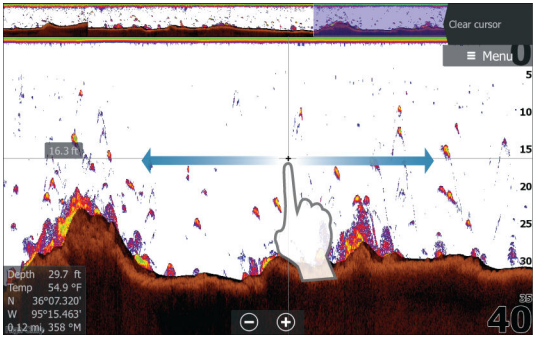
3. Position the cursor on the second measuring point
   - A line is drawn between the measuring points, and the distance listed in the Cursor Information window
4. Continue selecting new measuring points if required

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.

Viewing history

Use the preview feature to view and pan history, refer to *"Preview"* on page 76.



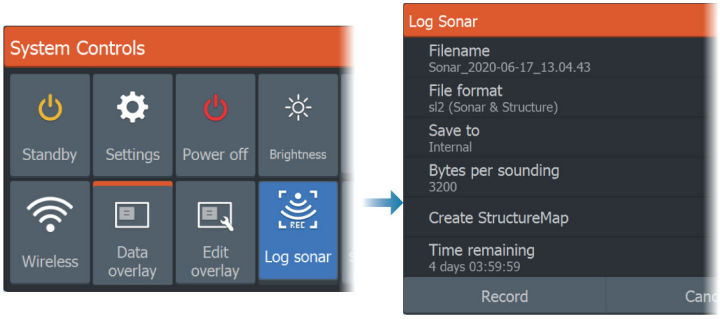
Recording log data

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.

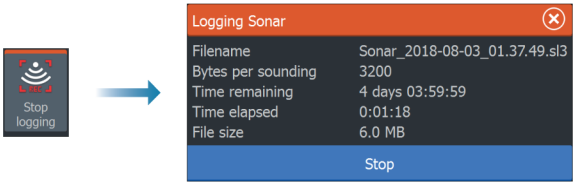
When the data is being recorded, there is a flashing red symbol in the top left corner and a message appears periodically at the bottom of the screen.

Specify recording settings in the recording dialog.



Stop recording log data

Use the stop logging option to stop recording log data.



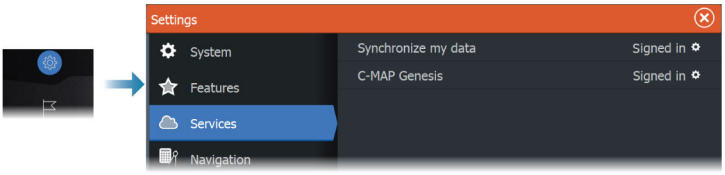
Viewing recorded data

Both internally and externally stored sounder records can be reviewed when the view sonar log option is selected in the sonar settings dialog. Refer to *"Sonar settings"* on page 249.

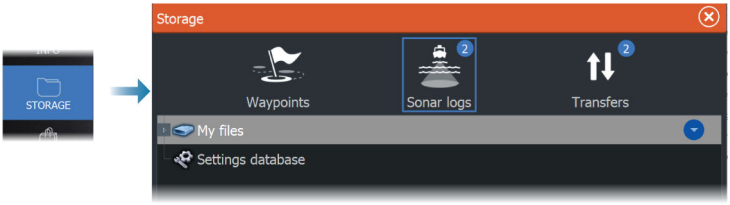
Upload sonar logs to C-MAP Genesis

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.

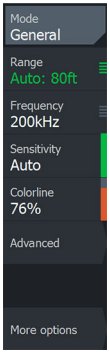


- Use the Storage dialog. Select the sonar logs icon and the logs you want to transfer. If you are already signed in to C-MAP Genesis the files are transferred. If you are not signed in, select the transfers icon and follow the prompts to sign in and transfer the log files to C-MAP Genesis. You can sign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



Setting up the image

Use menu options to set up the image.



Fishing mode

This feature consists of preset packages of sonar settings designed for specific fishing conditions.

→ ***Note:*** Selecting the proper fishing mode is critical to optimal sonar performance.

Fishing mode	Depth	Palette
General Use	≤ 1,000 ft	White background
Shallow Water	≤ 60 ft	White background
Fresh Water	≤ 400 ft	White background
Deep Water	≤ 5,000 ft	Deep Blue
Slow Trolling	≤ 400 ft	White background
Fast Trolling	≤ 400 ft	White background
Clear Water	≤ 400 ft	White background
Ice Fishing	≤ 400 ft	White background

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.

Custom range

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

Set a custom range by selecting the range menu option and then the custom option.

→ ***Note:*** Setting a custom range puts the system in manual range mode.

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.

Contrast

Increasing contrast shows more detail on the screen. Decreasing contrast displays less. Too much detail clutters the screen. Conversely, desired targets may not be displayed if contrast is set too low.

Colorline

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

Source

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

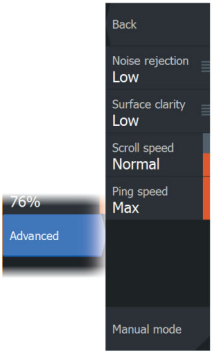
Used to specify the source for the image in the active panel.

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.

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.

Surface clarity

Wave action, boat wakes and temperature inversions can cause onscreen clutter near the surface. This option reduces surface clutter of FishReveal data 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

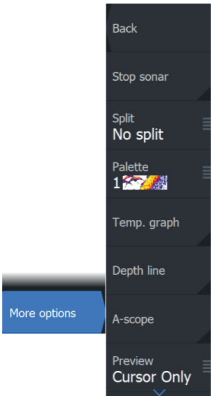
Ping speed controls the rate the transducer transmits the signal into the water. By default, the ping speed is set to max. It may be necessary to adjust the ping speed to limit interference.

Manual mode

Manual mode is an advanced user mode that restricts digital depth capability, so the unit only processes sonar signals in the selected range. This allows the display to continue smooth scrolling if the bottom depth is out of transducer range. When the unit is in

manual mode, you might not receive any depth readings, or you might receive incorrect depth information.

More options

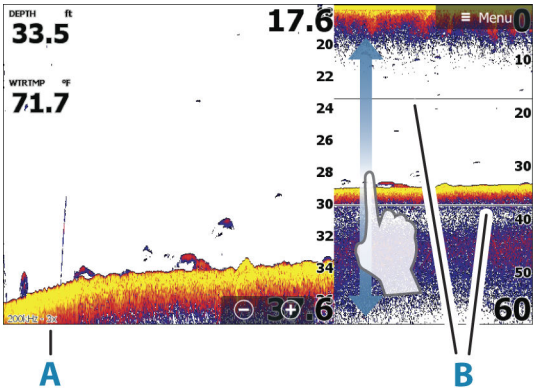


Stop sonar

When selected, stops the sonar from pinging. Use the option anytime you want to disable the sonar but not power off the unit.

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.

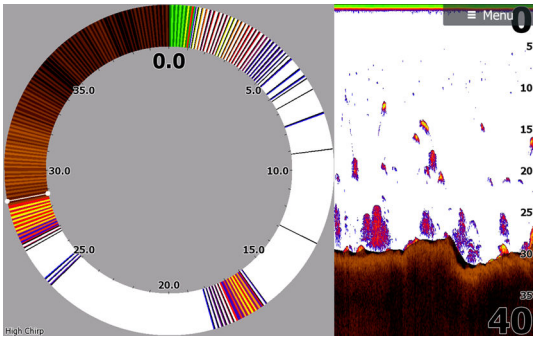
Move the zoom bars up/down on the image to view different depths of the water column.

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.

Flasher

The Flasher mode shows a flasher-style sonar view in the left panel and a normal sonar view in the right panel.



Palettes

Use 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.

Preview

You can have all available sonar history shown at the top of the sonar screen. The Preview bar is a snapshot of available sonar history. You can scroll through sonar history by dragging the preview slider horizontally. By default, Preview is turned on when the cursor is active.

Off

When selected, turns off the preview feature. Placing the cursor on the image does not display the preview bar.

Cursor-only

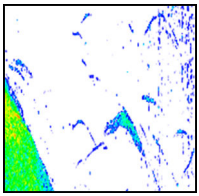
When selected, the preview bar is displayed when the cursor is active on the panel.

Always

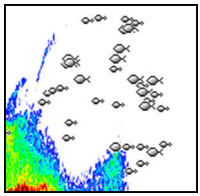
When selected, the preview bar is always displayed on the panel.

Fish ID

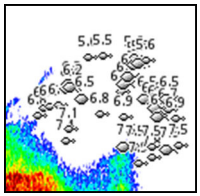
You can select how you want the fish targets to appear on the screen. You can also select if you want to be notified by a beep when a fish ID appears on the panel.



Traditional fish arches



Fish symbols



Fish symbols and depth indication

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

Sonar settings

This section only lists user settings, for other installation settings refer to *"System setup"* on page 244.

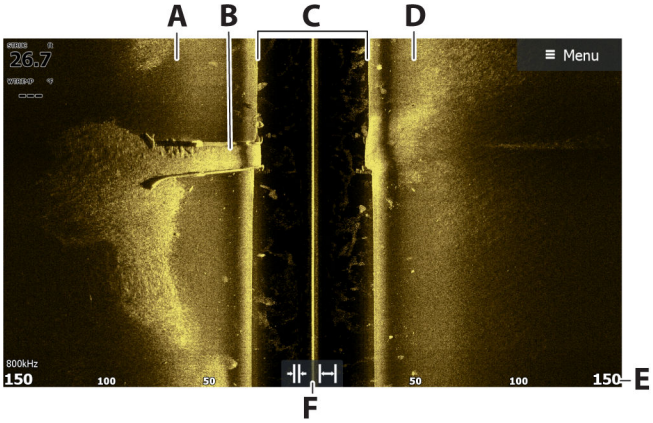
7 SideScan

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:

- Press the +/- keys.
- Select the range buttons.
- Use the range menu setting.

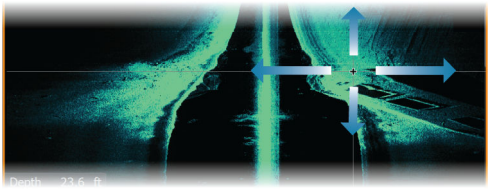
Using the cursor on the panel

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.

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.

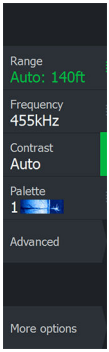


Recording SideScan data

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 69.

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

Higher frequencies provide the sharpest image without sacrificing range, while lower frequencies can be used in deeper waters, or for expanded range capabilities.

SideScan frequency options depend on the type of connected SideScan transducer:

- 455 kHz and 800 kHz, or
- CHIRP: 455 kHz and 1075 kHz (requires an Active Imaging™ HD transducer connected to your display unit through an S3100 sonar module).

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

Contrast

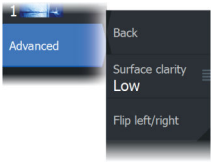
Determines the brightness ratio between light and dark areas of the screen.

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

Palettes

Use for selecting the image's color palette.

Advanced options



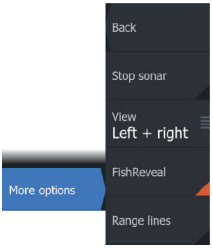
Surface clarity

Wave action, boat wakes and temperature inversions can cause onscreen clutter near the surface. This option reduces surface clutter of SideScan data 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



Stop sonar

When selected, stops the sonar from pinging. Use the option anytime you want to disable the sonar but not power off the unit.

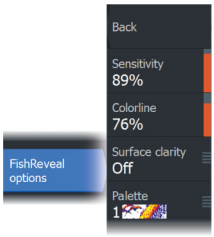
View

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.

FishReveal

If you have an Active Imaging HD 3-in-1 FishReveal transducer connected to your display unit through an S3100 sonar module, you can use the SideScan FishReveal menu option to see fish arches on your SideScan imaging.

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



Sensitivity

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

Colorline

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

Surface clarity

Wave action, boat wakes and temperature inversions can cause onscreen clutter near the surface. This option reduces surface clutter of FishReveal data 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.

Range lines

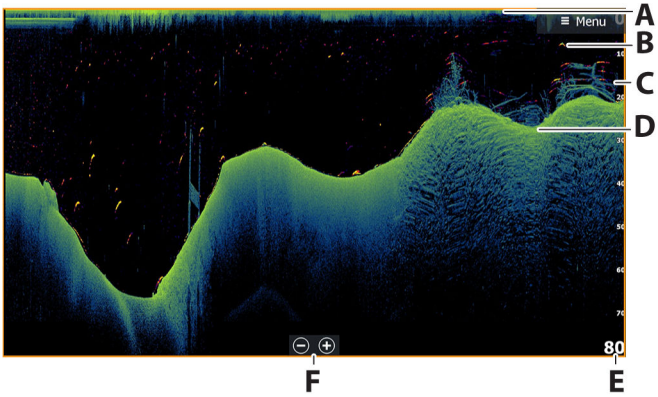
Range lines can be added to the image to make it easier to estimate distance.

8 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. The fish arches come from the FishReveal feature. The FishReveal feature is enabled by default, but if it is turned off then the fish arches are not shown on the DownScan image.

C Under water brush pile

D Bottom

E Depth scale

F Depth range (zoom) buttons

Zooming the image

In the DownScan image, zooming changes the depth range displayed on the screen.

When zooming in, the sea floor is kept near the bottom of the screen.

To zoom the image (change the range):

- Press the +/- keys.
- 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 depth of the cursor is shown at the cursor position.

Viewing DownScan history

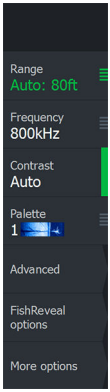
You can pan the image history by dragging the image to the left and right.

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 69.

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

Higher frequencies provide the sharpest image without sacrificing range, while lower frequencies can be used in deeper waters, or for expanded range capabilities.

DownScan frequency options depend on the type of connected DownScan transducer:

- 455 kHz and 800 kHz, or
- CHIRP: 700 kHz and 1200 kHz (requires an Active Imaging™ HD transducer connected to your display unit through an S3100 sonar module).

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

Contrast

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

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

Palettes

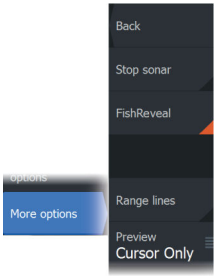
Use for selecting the image's color palette.

Advanced options

Surface clarity

Wave action, boat wakes and temperature inversions can cause onscreen clutter near the surface. This option reduces surface clutter of DownScan data by decreasing the sensitivity of the receiver near the surface.

More options



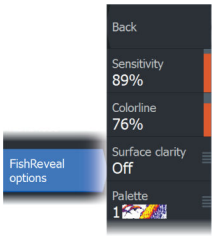
Stop sonar

When selected, stops the sonar from pinging. Use the option anytime you want to disable the sonar but not power off the unit.

FishReveal

Select FishReveal to display fish arches in the image.

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



Sensitivity

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

Colorline

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

Surface clarity

Wave action, boat wakes and temperature inversions can cause onscreen clutter near the surface. This option reduces surface clutter

of FishReveal data 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.

Range lines

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

Preview

You can have all available sonar history shown at the top of the sonar screen. The Preview bar is a snapshot of available sonar history. You can scroll through sonar history by dragging the preview slider horizontally. By default, Preview is turned on when the cursor is active.

Off

When selected, turns off the preview feature. Placing the cursor on the image does not display the preview bar.

Cursor-only

When selected, the preview bar is displayed when the cursor is active on the panel.

Always

When selected, the preview bar is always displayed on the panel.

9 3D Sonar

About 3D Sonar

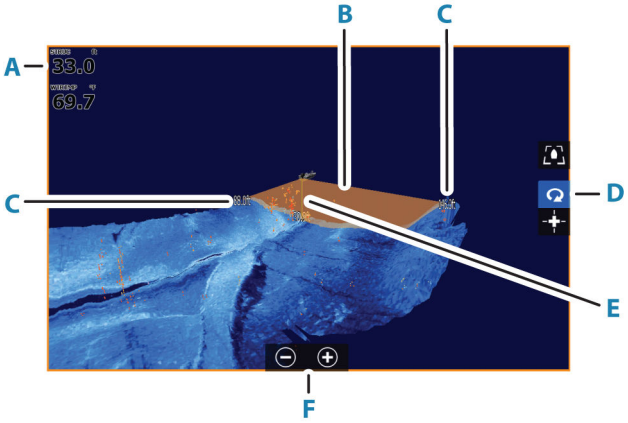
3D Sonar is a multi-beam sonar technology that allows anglers to see fish, underwater structures and bottom contours in customizable, three-dimensional views.

Requirements

The 3D Sonar page is available when a 3D Sonar capable transducer is connected to the system via a 3D sonar module.

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 by using the display specific zoom options.

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.



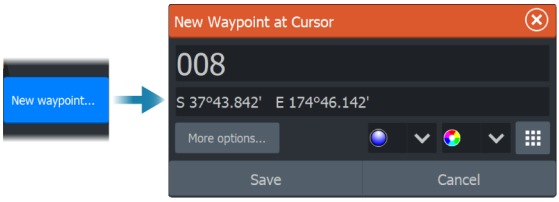
The cursor information window shows available data at the cursor position, including the distance and range from the vessel to the cursor position.

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 91.

→ ***Note:*** The history bar can be turned off. Refer to *"Clear live history"* on page 93.

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

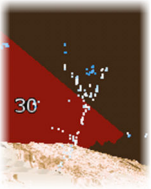


When you activate cursor mode, the camera position is the same as when cursor mode was enabled.

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 89.

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.

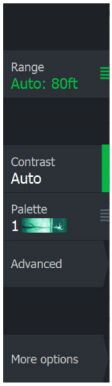
The history bar appears by default when the cursor is active. You can turn off the history bar, have it always shown at the top of the screen, or have it appear only when the cursor is active. Refer to *"Clear live history"* on page 93.

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.

Contrast

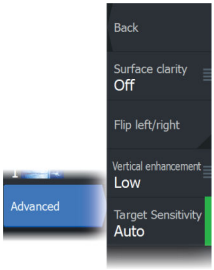
Determines the brightness ratio between light and dark areas of the screen.

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

Palettes

Use for selecting the image's color palette.

Advanced options



Surface clarity

Wave action, boat wakes and temperature inversions can cause onscreen clutter near the surface. This option reduces surface clutter of FishReveal data 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

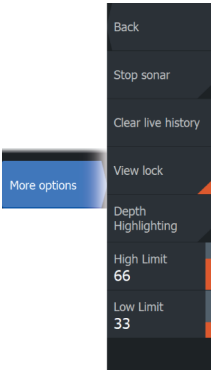
This option stretches the data so that the differences between depths are greater on the panel, which help you to see the changes in depth in relatively shallow areas.

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



Stop sonar

Use this option to pause the image.

When activated, the transducer continues pinging, and the system continues collecting data.

Clear live history

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

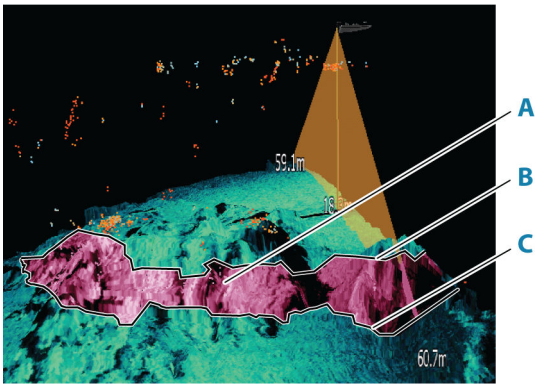
View lock

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.



Sonar settings

Use the sonar settings dialog to make settings to your sonar system. Refer to *"Sonar settings"* on page 249.

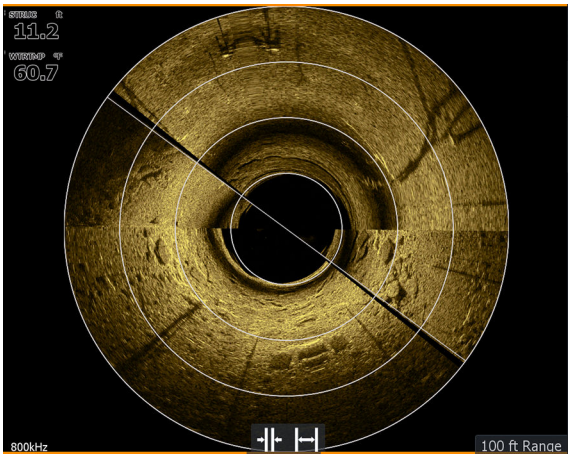
10 360 Scan

About 360 Scan

Use the 360 Scan feature to get up to a 360 degree view of the underwater environment in relation to your boat's position.

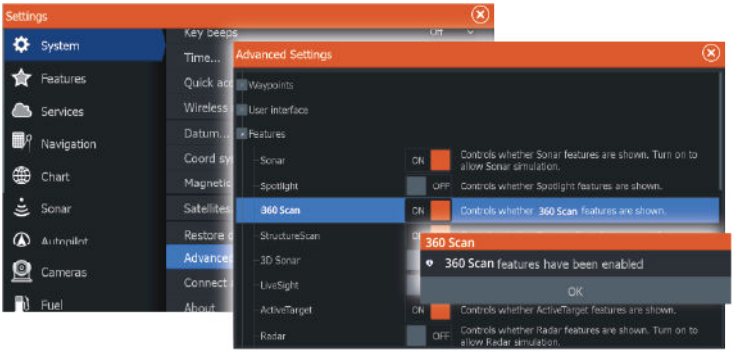
This feature is available when an Active Imaging 3-in-1 nose cone transducer is attached to your trolling motor, allowing you to pinpoint key underwater elements such as fish, standing structures, and resting structures on the bottom.

Note: 360 Scan is not a networkable feature. It can only be viewed on the multifunction display (MFD) that the 3-in-1 nose cone is connected to.



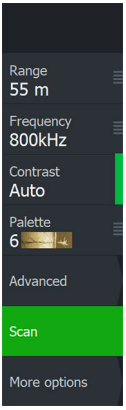
Activating/deactivating 360 Scan

To activate/deactivate the 360 Scan feature on your display, go to **Settings > System > Advanced... > Features** and activate/deactivate the **360 Scan** feature. When active, the 360 Scan icon displays on the Home page of your display unit.



Setting up the image

Use the 360 Scan settings 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 default menu.



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.

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

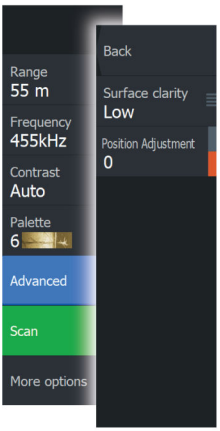
Determines the brightness ratio between light and dark areas of the screen.

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

Palettes

Use for selecting the image's color palette.

Advanced options

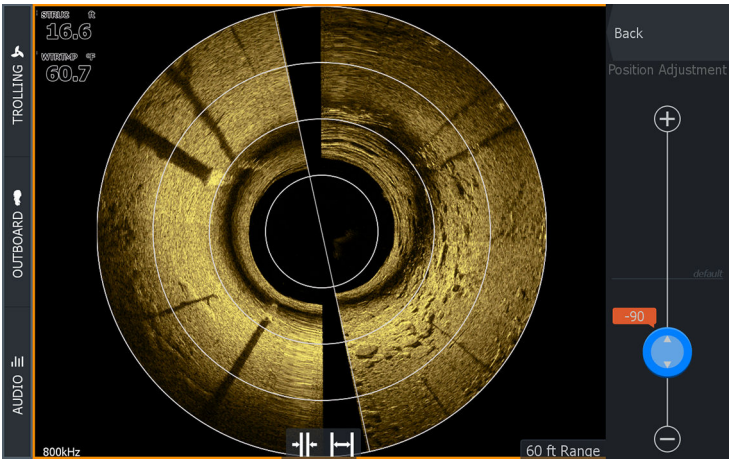


Surface clarity

Wave action, boat wakes and temperature inversions can cause onscreen clutter near the surface. This option reduces surface clutter of FishReveal data by decreasing the sensitivity of the receiver near the surface.

Position Adjustment

Use this option to align the image with the direction of your vessel to have an accurate view of the structure and targets in relation to the vessel's position.



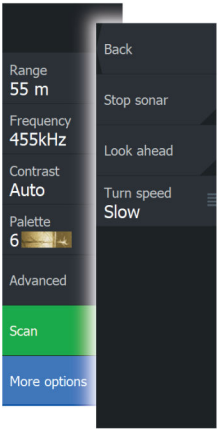
Scan/Stop scan

Use the **Scan** option to start the transducer scanning process.

To stop the scanning, select the **Stop scan** option.

Note: The **Stop scan** option stops the 360 scanning and pauses the image while the transducer continues pinging.

More options



Stop sonar

Use this option to stop the transducer pinging.

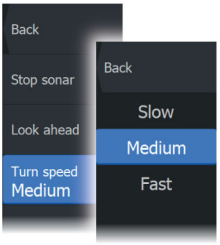
When enabled during an active 360 scan, the motor continues to sweep and the image is paused.

When enabled before a new scan is started, the motor doesn't sweep and the image is paused.

Look ahead

Select to make the top half of the image predominant on the display, for a better view of what is in front of you.

Turn speed



Use this option to set the rotation speed of the transducer. Select one of the following turn speeds:

- Low - for best clarity
- Medium - for the best balance of clarity and speed
- High - for fastest turn rate

11 LiveSight

Requirements

A LiveSight transducer connected to the unit through a performance sonar interface (PSI) module is required.

About

The LiveSight transducer can be used in forward or down looking mode. The mounting of the transducer determines the mode.

When a LiveSight transducer is installed and configured, a LiveSight button is added to the home page.

Multiple LiveSight sources operate independent of one another, and each source can be assigned to a panel on the display.

Note: The operation of live sonar in split screen mode is only supported on 7" and 9" Elite FS units.

A LiveSight source can be shared over the Ethernet network. For information about how to set up the system for sonar data sharing, refer to *"System setup"* on page 244.

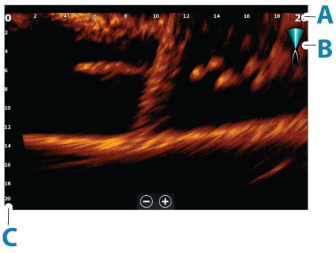
Start-up wizard

At start-up or after a reset, the display will recognize an un-configured LiveSight transducer. The start-up wizard will then automatically be started.

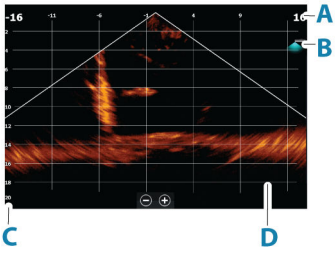
The wizard can also be manually started from the installation dialog. See *"Restart config wizard"* on page 253.

The mode (forward or down) must be defined in the wizard to display the LiveSight icon on the home page.

LiveSight panels



LiveSight forward view



LiveSight down view

- **A** LiveSight forward: distance range scale
  LiveSight down: width range scale
- **B** LiveSight icon, indicating beam direction
- **C** Depth range scale
- **D** Range grid - the range grid can be turned on/off from the More menu.

If a heading sensor is included in the system, the sonar beam icon on forward view is positioned relative to the vessel. The icon rotates according to the trolling motor rotation.

Zooming the image

You can zoom the image by using the display specific zoom options.

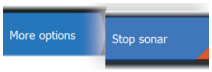
If the cursor is active, the system zooms in where the cursor is positioned.

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.

Stopping the Sonar



When selected, stops the sonar from pinging. Use this option anytime you want to disable the sonar but not power off the unit. Unselect this option to resume pinging.

→ ***Note:*** The transducer should not be pinging when the transducer is not submerged in water. If the transducer is mounted on the trolling motor and the trolling motor is stowed out of the water, then use this option to stop the transducer from pinging.

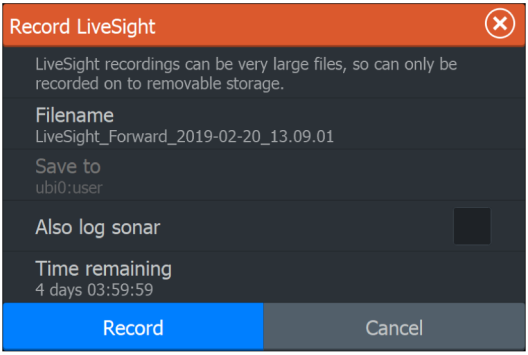
Recording LiveSight video



You can record LiveSight video to a memory card.

All LiveSight recordings are done in a standard .mp4 format, making them ideal for playback on a computer or sharing via the internet.

→ ***Note:*** This option is only available when a memory card is inserted.



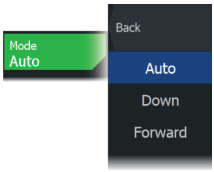
Stop recording video



When recording a video, the menu changes to show the stop record option.

Customizing the image settings

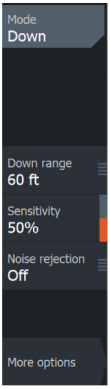
The unit comes with different predefined customization modes, used to control the image settings.



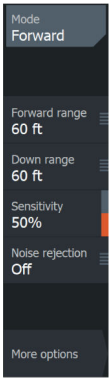
Changing modes

Select the mode button and then the mode you want to use.

When the Down or Forward mode is selected the menu expands with options for that mode. All modes have More options which provides additional image settings.

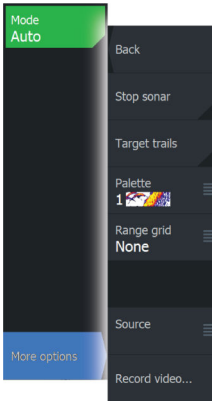


Down menu



Forward menu

More options



Target trails

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

The function is useful for quickly assessing the movement of targets relative to your vessel.

Palettes

Use for selecting the image's color palette.

Range grid lines

The range grid can be added to the image. The grid lines are useful for determining the distance to targets. When you select the menu option you can choose from no grid, straight line grid or arc line grid.

Note: The Arc line grid option is only available in Down and Scout modes.

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.

LiveSight settings

To see the description of the LiveSight settings options, refer to *"System setup"* on page 244.

12 ActiveTarget

About ActiveTarget

ActiveTarget is an app for live sonar. When an ActiveTarget, ActiveTarget 2, or ActiveTarget 2 XL transducer and its sonar module are connected to the Ethernet network, the **ActiveTarget** button is available on the Home page.

ActiveTarget series transducers can be used in Forward, Down, or Scout (horizontal) modes. The mounting of the transducer determines the mode. Refer to the Lowrance website for the most up-to-date information on supported mounting configurations.

Multiple ActiveTarget sources operate independently from one another. Their outputs can be viewed on separate displays, or in a split panel configuration on a single display.

Note: The operation of live sonar in split screen mode is only supported on 7" and 9" Elite FS units.

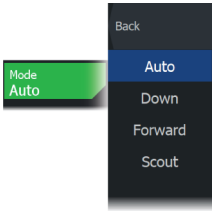
An ActiveTarget source can be shared over the Ethernet network. For information about how to set up the system for sonar data sharing, refer to *"System setup"* on page 244.

Note: ActiveTarget 2 and ActiveTarget 2 XL transducers both require the ActiveTarget 2 sonar module for operation. ActiveTarget transducers require the ActiveTarget sonar module for operation.

Modes and image settings

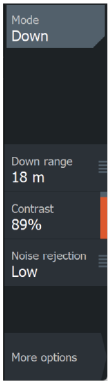
The unit comes with predefined modes and you can adjust image settings within the modes.

Changing modes

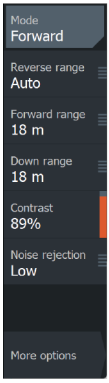


Select the **Mode** button and then the mode you want to use.

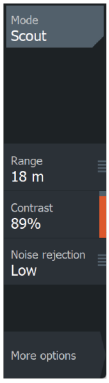
When the **Down**, **Forward**, or **Scout** mode is selected the menu expands with options for that mode.



Down mode menu



Forward mode menu



Scout mode menu

Auto mode

In Auto mode, the display automatically assigns the mode to match the orientation of the transducer. If you adjust the physical position of the transducer for a different view, the mode updates on the display.

→ ***Note:*** The ActiveTarget 2 XL transducer has the same physical orientation for its Forward and Down views, which allows you to switch between Forward and Down modes on-screen (without moving the transducer). When the ActiveTarget 2 XL transducer is in its Forward/Down position, selecting **Auto** on-screen assigns Forward mode by default. Select **Down** from the menu if you want Down mode.

Down range

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

Forward range

The Forward range setting determines the distance in front of the transducer that is visible on the image.

→ ***Note:*** This option is only available in Forward mode.

Reverse range

The Reverse range setting lets you shift the transducer view to show more in front or behind it, depending on your preference. Refer to *"ActiveTarget Reverse range"* on page 114 for more information.

Note: This option is only available in Forward mode.

Range

The Range setting determines the distance shown in front of the transducer.

Note: This option is only available in Scout mode.

Contrast

Increasing contrast shows more detail on the screen. Decreasing contrast displays less. Too much detail clutters the screen. Conversely, desired targets may not be displayed if contrast is set too low.

Auto contrast

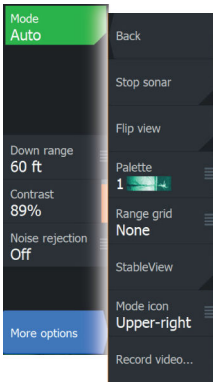
Auto sensitivity automatically adjusts the sonar return to the optimal levels. Auto sensitivity can be adjusted (+/-) to your preference while still maintaining the auto sensitivity functionality.

→ ***Note:*** Auto contrast is the preferred mode for most conditions.

Noise rejection

Filters out signal interference and reduces on-screen clutter.

More options



Palettes

Use for selecting the image's color palette.

Range grid lines

The range grid can be added to the image. The grid lines are useful for determining the distance to targets. When you select the menu option you can choose from no grid, straight line grid or arc line grid.

Note: The Arc line grid option is only available in Down and Scout modes.

StableView

When selected, the transducer will offset the motion of the boat and transducer to help provide a more stable image on the panel.

Mode-icon

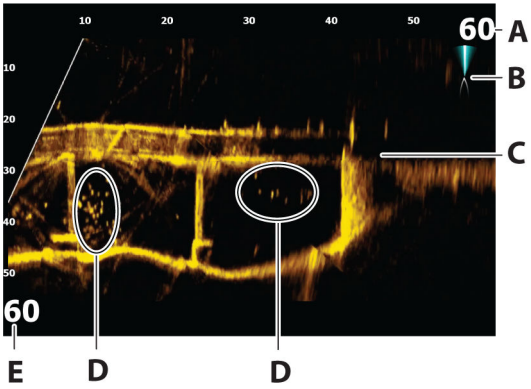
Use to select the position of the beam direction icon as an overlay on the image or turn it off.

Source

→ ***Note:*** Available under **Mode > More options** only if multiple sources with the same capability are connected.

Used to specify the source for the image in the active panel when displaying different sources simultaneously.

ActiveTarget Forward panel



A Forward range scale (distance in front of the transducer)

B ActiveTarget icon, indicating beam direction

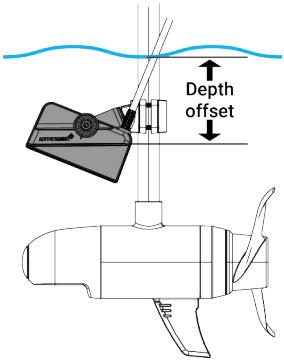
C Structure (a bridge) on bottom

D Fish

E Down range scale (distance below the transducer)

ActiveTarget Depth offset

Depth offset allows you to compensate your ActiveTarget for the installation depth below the water surface.



When installed properly, your ActiveTarget transducer will be below the water surface. In Forward mode, setting the depth offset

distance properly allows you to see your bait splash on the water surface without having to tilt up your ActiveTarget transducer. This setting allows visibility up to the water surface.

The image moves down on the screen by the depth offset value showing returns above the transducer to the water surface. The range ruler does not change. The displayed digital depth will be from the water surface and not the transducer location.

To turn on Depth offset, navigate to **Settings > Sonar > ActiveTarget installation > Depth offset** to set the depth offset value.

Positive and Negative Offsets

Set the appropriate value based on the transducer's distance from the waterline or keel.

- Positive offset values are used to measure the distance from the transducer to the waterline (most common).
- Negative offset values measure the distance from the transducer to the keel.

Depth offset optimization in Forward mode

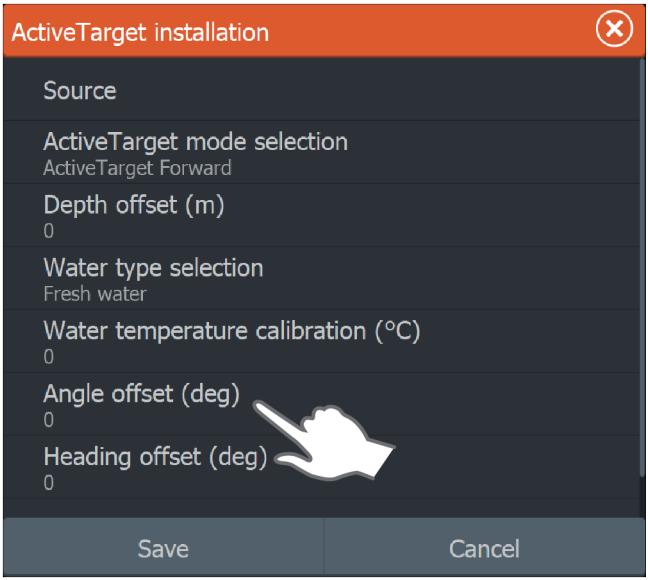
To get the best results from the depth offset improvements, follow these steps:

- Make sure your **ActiveTarget** transducer is set to the correct **Forward** mode orientation.
- Restore Global settings to defaults, go to **Global Settings > Restore Defaults** to reset the **Angle Offset** to **"0"**, providing a clean baseline for further adjustments.

Fine-tuning with Angle Offset (if needed)

If your transducer is mounted on a shaft or pole that's slightly angled, you may need to apply an angle offset to correct the sonar image.

1. Find a reference object, a flat bottom or a vertical structure like a dock pole or bridge pylon works best.
2. Navigate to **Settings > Sonar > ActiveTarget installation > Angle offset**
3. Make small adjustments to the **Angle offset** until the object appears visually correct on your display.

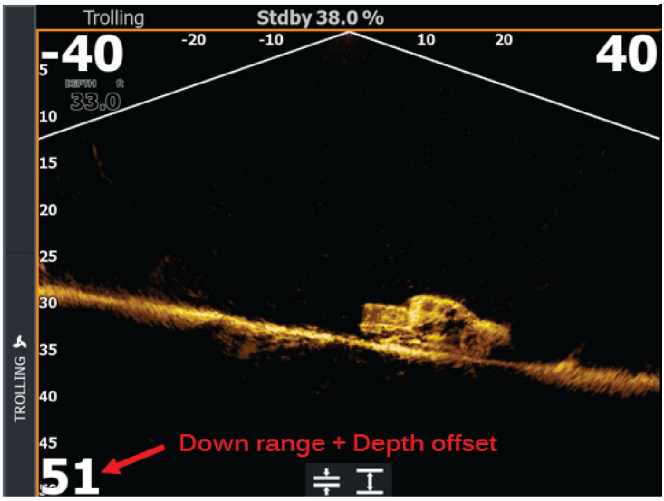


- When StableView is enabled, angle offset compensates for sensor calibration differences.
- When StableView is disabled, it only adjusts for shaft/pole angle.
- The ideal Angle offset value may differ depending on whether StableView is on or off.

Depth offset: Forward vs. Down mode

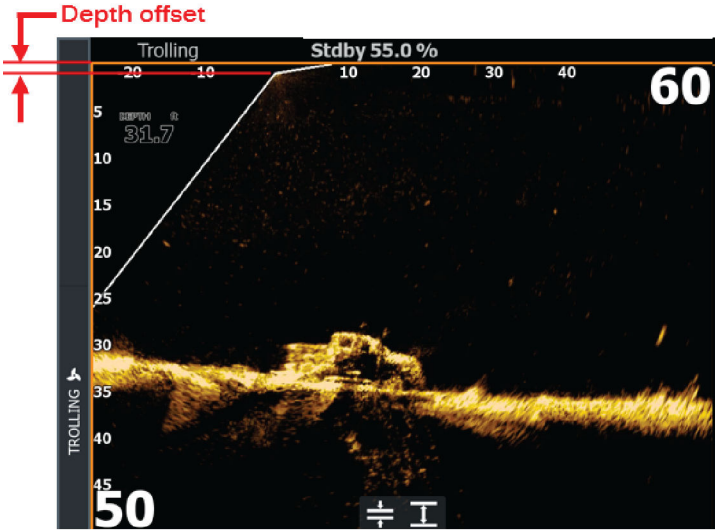
In Down mode:

- The image does not move on the screen.
- The range ruler on the left side of the screen is adjusted for the Down range + Depth offset.
- The displayed digital depth will be from the water surface and not the transducer location.



In Forward mode:

- The image moves down on the screen by the Depth offset value showing returns above the transducer to the water surface.
- The range ruler does not change.
- The displayed digital depth will be from the water surface and not the transducer location.

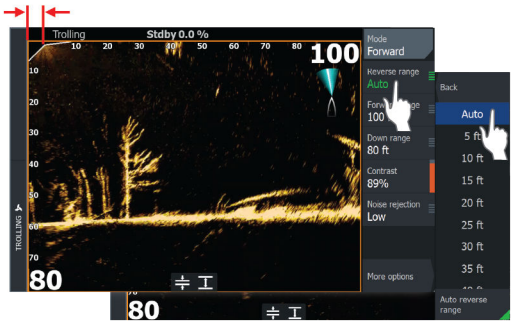


ActiveTarget Reverse Range

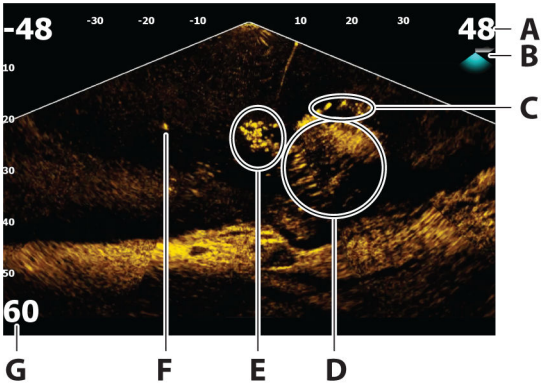
ActiveTarget Reverse Range allows you to adjust the relative position of the transducer on the screen to either maximize the view in front of the transducer or show more behind the transducer.

Ensure the transducer is in **Forward** mode, then select **Reverse range** to set the value as desired.

➔ ***Note:*** By default, Reverse range is set to **Auto**. In **Auto**, the reverse range is ~50% of the Forward range.



ActiveTarget Down panel



A Distance range scale (distance in front of the transducer; auto-adjusts in Down mode)

B ActiveTarget icon, indicating beam direction

C School of fish

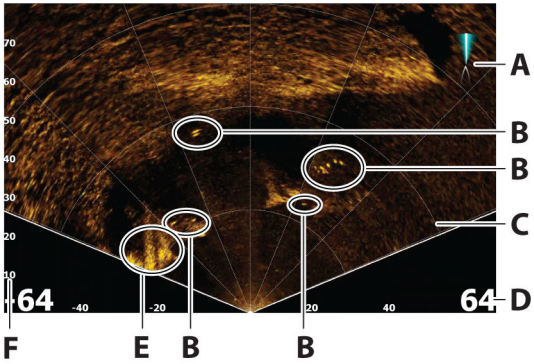
D Underwater brush with schooling fish in and around it

E School of fish

F Single larger fish

G Down range scale (distance below the transducer)

ActiveTarget Scout panel



A ActiveTarget icon, indicating beam direction

B Fish

C Range grid lines, the range grid lines can be turned off/on, and set to straight or arc from the More menu.

D Distance range scale (distance to the left/right of the transducer, auto-adjusts in Scout mode)

E Underwater structure (rock edge)

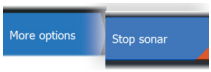
F Range scale (distance in front of the transducer)

Zooming the image

You can zoom the image by using the display specific zoom options.

If the cursor is active, the system zooms in where the cursor is positioned.

Stopping the Sonar



When selected, stops the sonar from pinging. Use this option anytime you want to disable the sonar but not power off the unit. Unselect this option to resume pinging.

→ ***Note:*** The transducer should not be pinging when the transducer is not submerged in water. If the transducer is mounted on the trolling motor and the trolling motor is stowed out of the water, then use this option to stop the transducer from pinging.

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.

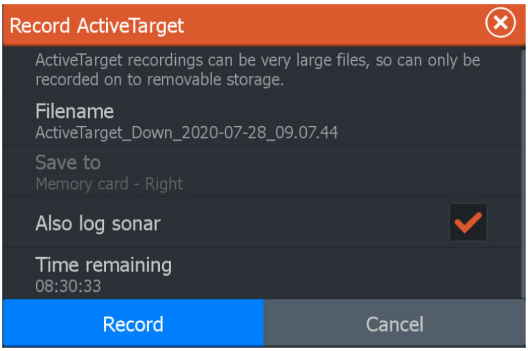
Recording ActiveTarget video



You can record ActiveTarget video to a memory card.

All ActiveTarget recordings are done in a standard .mp4 format, making them ideal for playback on a computer or sharing over the internet.

→ ***Note:*** This option is only available when a memory card is inserted.



Stop recording video



When recording a video, the menu changes to show the stop record option.

Dual views

If you install two ActiveTarget systems (two sonar modules and two transducers) on your vessel, you can monitor dual live sonar views. They can be displayed as full screens on separate displays, or on a single display using a multi-panel page configuration.

Note: The operation of live sonar in split screen mode is only supported on 7" and 9" Elite FS units.

Note: The ActiveTarget platform supports a maximum of two ActiveTarget transducers on a single network.

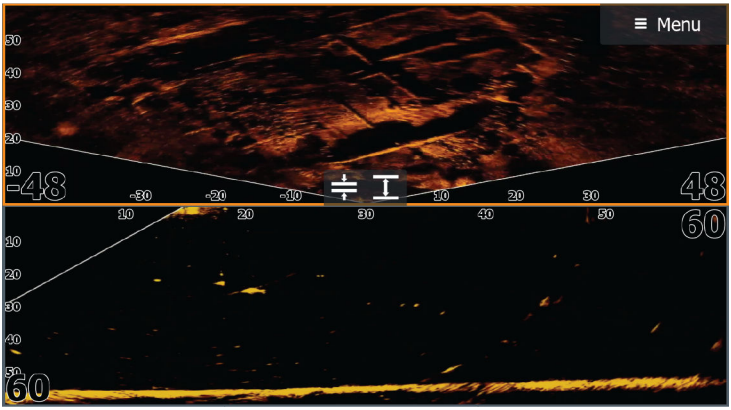
Two independent views

Two ActiveTarget 2 or ActiveTarget 2 XL transducers (with sonar modules) must be correctly mounted for the views you want to use. They can be configured in any combination of viewing modes (Down, Forward, or Scout) permitted by their mounting systems. For example, one transducer could be set to Forward, and the other to Scout.

ActiveTarget 2 sonar modules have a ping synchronization feature that limits interference between two transducers operating on similar frequencies. Refer to your sonar modules' installation documentation for how to physically connect the two modules for ping synchronization.

1. Select the **New** icon in the favorite panel of the Home page to create a custom page.
2. Drag and drop two instances of the **ActiveTarget** app onto the custom page.
3. Assign the source and mode for each panel to match the mounting orientation of each transducer.

Note: The menu and display options for each panel are independent.



ActiveTarget settings

To see the description of the ActiveTarget settings options, refer to *"System setup"* on page 244.

Overlaying live sonar onto a chart

When your system is configured in Scout mode, you can superimpose the live sonar view onto your navigation chart. Refer to *"Scout overlay"* on page 37 in the Chart overlay section of this manual.

13 StructureMap

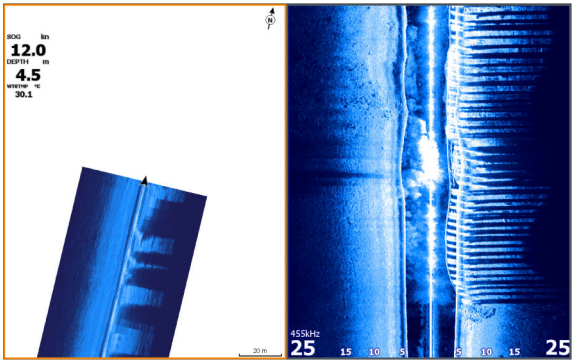
About StructureMap

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.

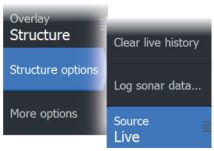
The StructureMap image

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

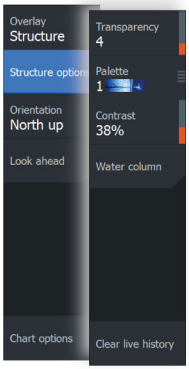
- To get a picture of taller structures (a wreck, etc.) — do not drive over it, instead, steer the boat so the structure is on the left or right side of your vessel.
- Do not overlap history trails when conducting a side-by-side scan of an area.

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

Use 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

Sets the transducer frequency used by the unit. 800 kHz offers the best resolution, while 455 kHz has greater depth and range coverage.

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 69.

Source

Determines the StructureMap source displayed on the chart overlay. Refer to *"StructureMap sources"* on page 119.

14 Instruments

About Instrument panels

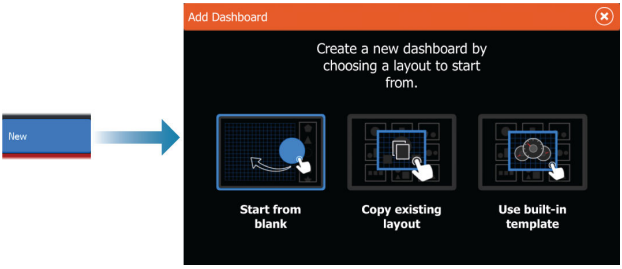
The panels consist of multiple gauges that can be arranged on dashboards. The panels can be created with analog, digital, and bar gauges. Pre-defined dashboards and templates are included.

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

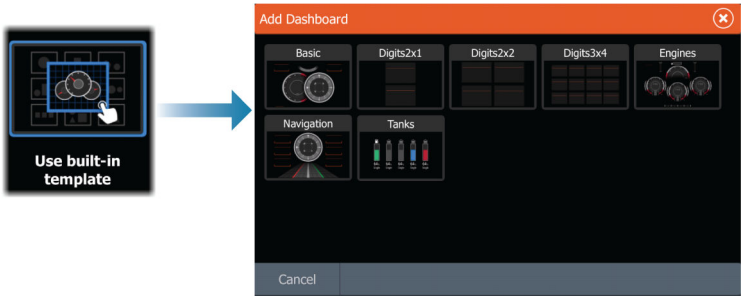
Select to copy an existing layout that you have made.

Use menu options to name the dashboard and manage gauges on the dashboard.

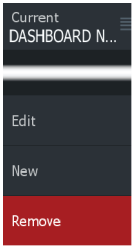
Using a built-in template

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



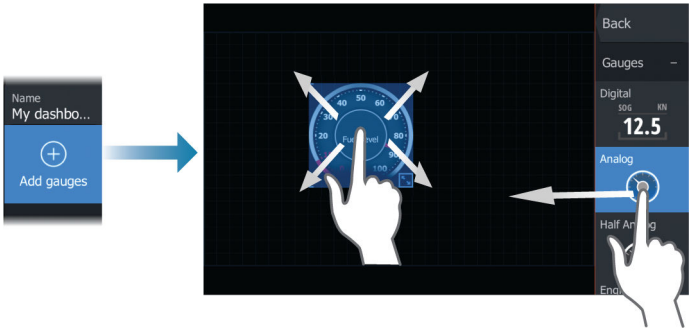
You can use edit menu options to:

- 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.

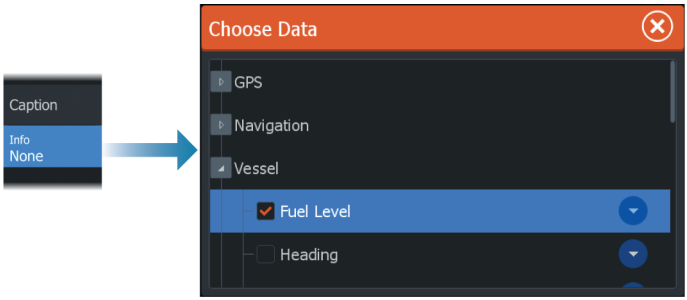


Key operation

Use arrow keys to select the item you want to add, and press the enter key.

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

15 Trolling motor autopilot

Safe operation with the autopilot

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

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 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 sufficient 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 201.

Selecting active autopilot

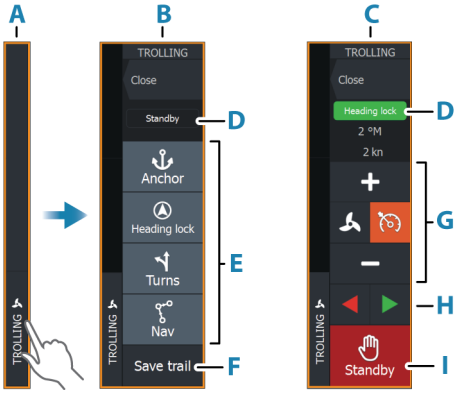


If both an autopilot computer and a trolling motor are configured for MFD control, only one of them can be active at a time.

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 autopilot** button in the autopilot controller.

The autopilot controller for trolling motor



A Control bar

B Autopilot controller, disengaged

C Autopilot controller, engaged

D Mode indication

E List of available modes

F Record/Save button

G Mode dependent information

H Mode dependent buttons

I Engage/Standby button

When the autopilot controller is the active panel, it is outlined with a border.

→ ***Note:*** The autopilot controller can also be activated from the system controls dialog.

Engaging and disengaging the autopilot

To engage the autopilot:

- Select the preferred mode button



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 from a separate device.

Autopilot indication



The bar is present on all pages if the autopilot is in an active mode. The trolling motor battery level, current status, heading and propeller thrust levels are displayed.

In the autopilot settings, you can hide the bar when not in anchor, nav or an autopilot mode.

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 the cursor position, and then maintains the vessel at that position.

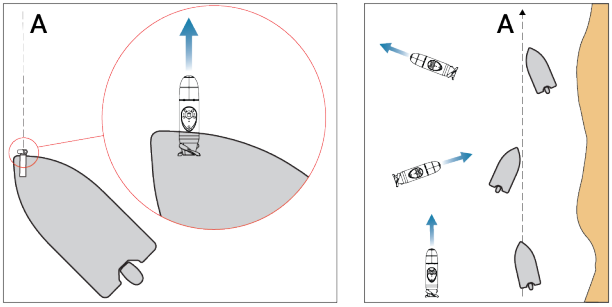
Waypoint
Navigates to the selected waypoint, and then maintains the vessel at that position.

Here
Maintains the vessel at the current position.

Change the anchor position (Anchor Jog)
Use the arrow buttons to reposition the vessel when in anchor mode. Each press on a button will jog the anchor position 1.5 m (5 ft) in the selected direction.

Course lock mode

Course lock mode maintains the heading/course, based on the direction of the lower unit. When you start Course lock mode, the trolling motor will draw an invisible track (**A**) based on the direction of the lower unit.



→ ***Note:*** In Course lock mode, wind and/or current may cause the vessel to follow the course at a crab angle.

Heading lock mode

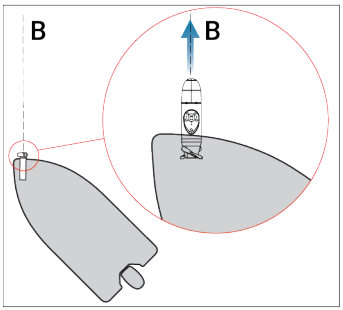
When **Heading lock** is selected as the default autopilot mode on the trolling motor, **Heading lock** will show on the top status bar.

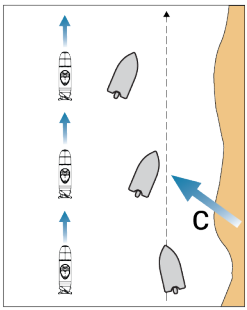
Heading lock mode maintains the heading of the vessel, based on the direction of the lower unit.

Press the Port **<** or Starboard **>** key to adjust desired heading.

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

.





→ ***Note:*** In Heading lock mode, the trolling motor doesn't compensate for drift caused by current and/or wind (**C**).

NAV mode

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

To enter NAV mode, you must first initiate a command to navigate a route, Go-To a waypoint, or Go-To cursor location.

In NAV mode the autopilot automatically steers the vessel to a specific waypoint, cursor location, or along a pre-defined route. GPS Position information is used to change the course, to steer to keep the vessel on the track line, and to the destination point(s).

When arriving at the destination or end of a route, 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 135.



NAV mode options

While in NAV mode the following buttons are available in the autopilot controller:

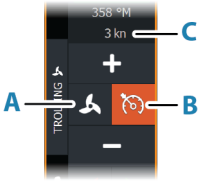
Restart

Restarts the navigation from the vessel's current position.

Skip

Skips the active route point and steers towards the next route point. This option is only available when navigating a route with more than one point between the vessel position and the end of the route.

Trolling motor speed control



In Course lock mode, NAV mode and 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**).

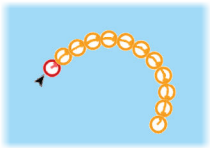
Turn pattern steering



The system includes a number of automatic turn steering features.

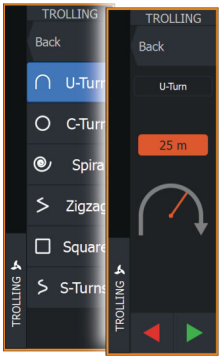
When a turn pattern is activated, the system creates temporary waypoints on the turn.

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 135.



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

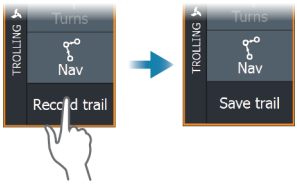
Makes the vessel yaw around the main heading.

Turn variables:

- Turn radius
- Course change
- Number of legs

Recording and saving a trail

A trail can be saved as a route from the autopilot controller. If trail recording is disabled, the function can be enabled from the autopilot controller.

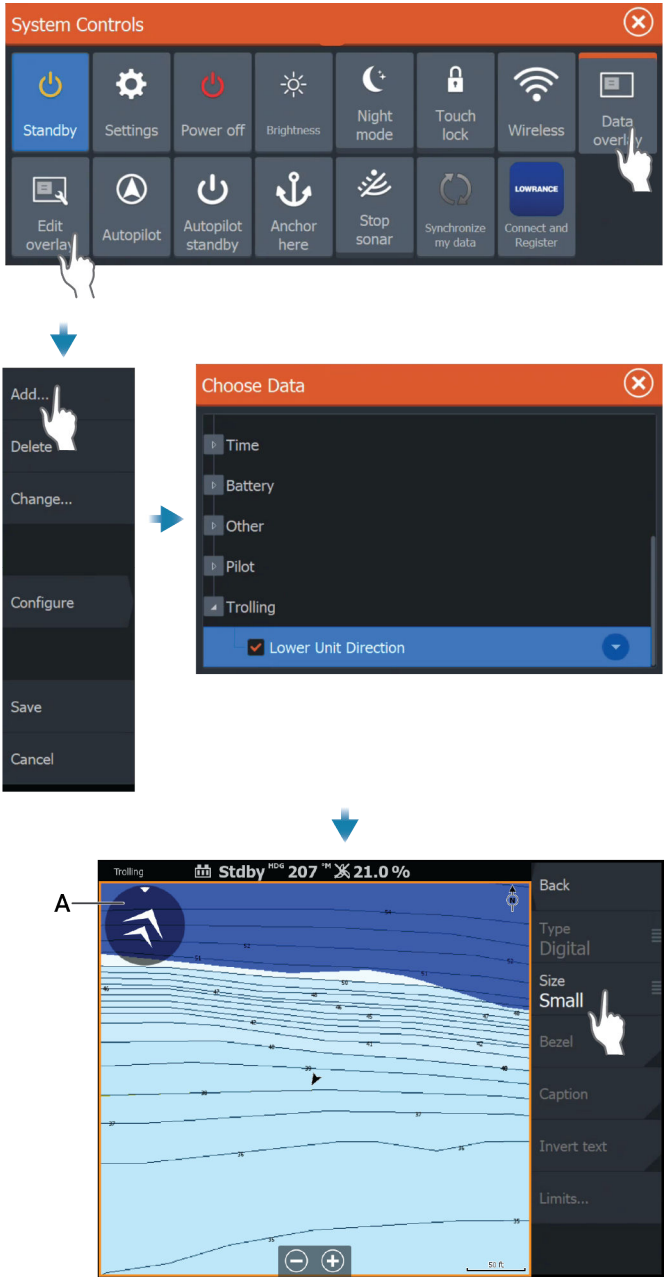


For more information, refer to *"Waypoints, routes, and trails"* on page 50.

Lower unit direction

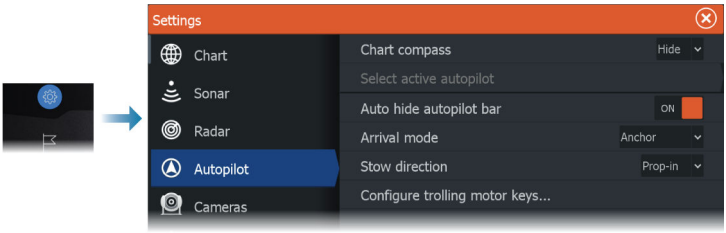
You can view the direction of the trolling motor's lower unit as a dynamic overlay on your chart (**A**).

To place the lower unit direction overlay, press **Power key > Data overlay > Edit overlay > Add > Trolling > Lower unit direction**. On the sidebar, you can also adjust the size of the overlay.


System Controls
Standby
Settings
Power off
Brightness
Night mode
Touch lock
Wireless
Data overlay
Edit overlay
Autopilot
Autopilot standby
Anchor here
Stop sonar
Synchronize my data
Connect and Register
Add...
Delete
Change...
Configure
Save
Cancel
Choose Data
Time
Battery
Other
Pilot
Trolling
Lower Unit Direction
A
Trolling
Stdby
207
21.0 %
Back
Type
Digital
Size
Small
Bezel
Caption
Invert text
Limits...

Autopilot settings

The options in the Autopilot settings dialog can vary.



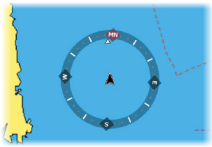


Chart compass

Select to display a compass symbol around your boat on the chart panel. The compass symbol is not displayed 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 foot pedal.

Course lock

Locks the course and automatically steers the vessel along the course line.

Heading lock

Locks and maintains the last vessel heading.

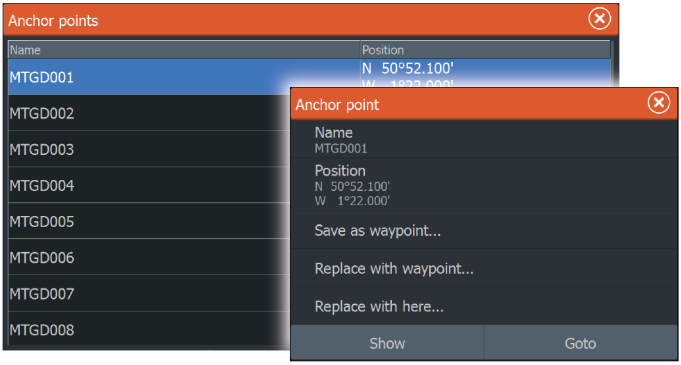
Anchor

Anchors the vessel at the destination point.

Anchor point setup

The trolling motor can store a number of anchor points, labelled with an MTG prefix for MotorGuide trolling motors. 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.



Stow direction

Sets the direction of the lower unit when stowing the trolling motor.

By default, the stow direction is set to **Auto** on Ghost trolling motors and **Prop-out** on Recon trolling motors.

→ ***Note:*** This feature is only available with Lowrance/Simrad® GPS trolling motors.

⚠ Warning: If accessories, such as transducers, are installed, set the stow direction so accessories are protected from hitting the trolling motor mount.

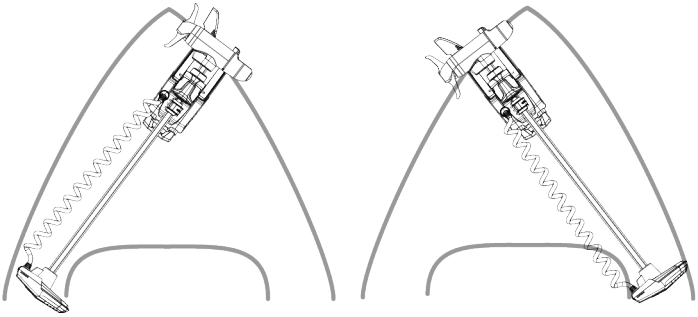
Auto / Off

For the Ghost trolling motor, in **Auto**, the unit automatically turns the lower unit towards the closest stowing position when stowing.

For the Recon trolling motor, in **Off**, the lower unit must be manually stowed in the correct position to avoid damage i.e. stow flat against the mount cradle, with either the propeller out or propeller in.

Prop-out

The propeller is on the port side of the mount when the trolling motor is stowed.



Prop-in

The propeller is on the the starboard side of the mount when the trolling motor is stowed.

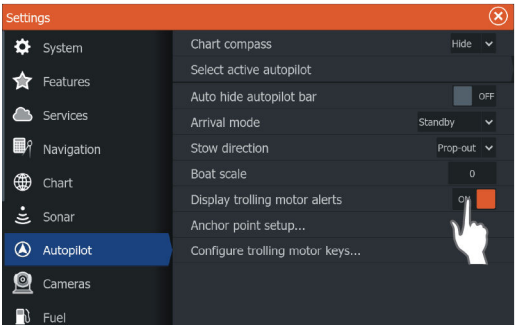
Boat scale

Use the boat scale to adjust the responsiveness of the trolling motor. Select a higher number for a large boat and a lower number for a smaller boat.

Alerts and diagnostics

Your MFD can display trolling motor alerts and diagnostic information. To turn on alert notifications, go to **Settings > Autopilot > Display trolling motor alerts**.

→ ***Note:*** This feature is only available with Lowrance/Simrad® GPS trolling motors.



Notification types

- Check notifications are yellow (**A**)
- Service notifications are red (**B**)

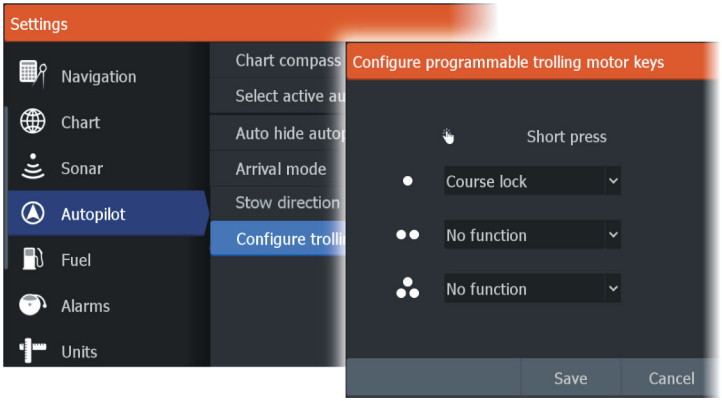
Select **More info** to view a QR code®, then scan it with your Lowrance or Simrad® mobile app to see more details.

Select **Acknowledge** to acknowledge the alert.



Configure Ghost trolling motor foot pedal keys

Use to configure the three action keys on the Ghost series trolling motor foot pedal. Select an action from the drop-down list for each of the keys you want to configure.



Configure Advanced Wireless Foot Pedal keys

Use to configure up to six action keys on the Advanced Wireless Foot Pedal. First select the foot pedal you want to configure, then select an action from the drop-down list for each of the keys you want to configure.

Select **Save** when you have finished the configuration changes.

→ ***Note:*** Up to eight devices can be paired and five devices can be connected simultaneously to the trolling motor. Follow pairing/unpairing instructions in the trolling motor operator manual.



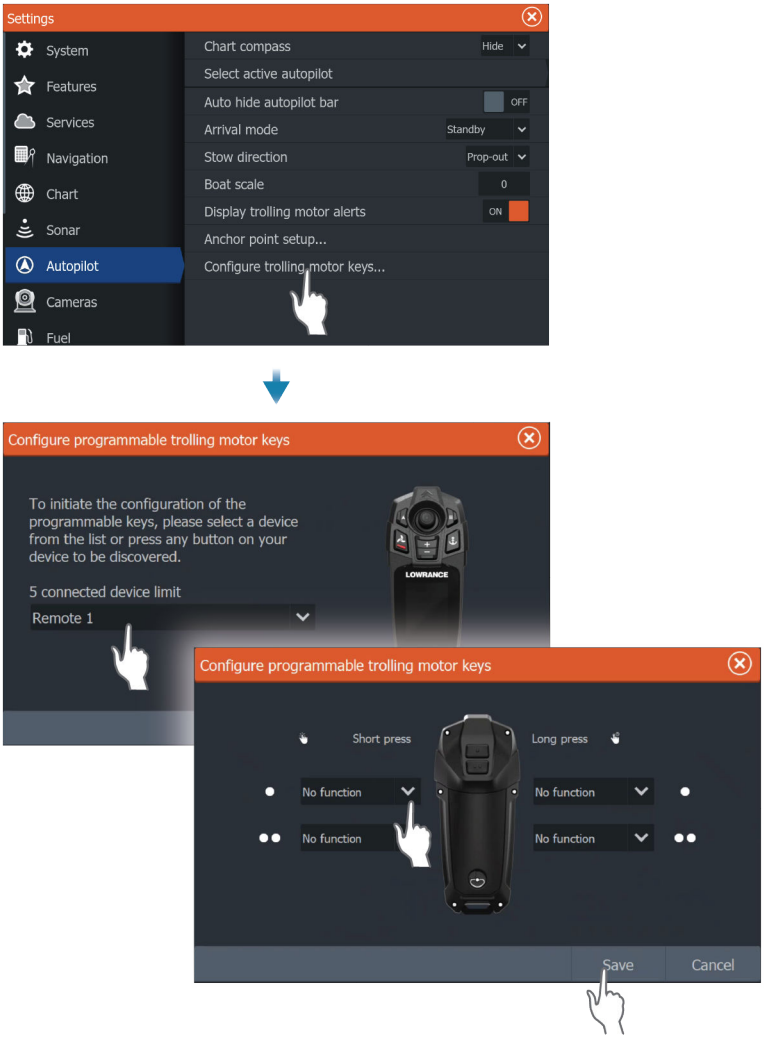
Configure FreeSteer Joystick remote keys

Use to configure two of the action keys on the FreeSteer Joystick remote.

First select the remote you want to configure, then select an action from the drop-down list for each of the keys you want to configure. Note that each key has two functions, one for short press and one for long press.

Select **Save** when you have finished the configuration.

➔ ***Note:*** Up to eight devices can be paired and five devices can be connected simultaneously to the trolling motor. Follow pairing/unpairing instructions in the trolling motor operator manual.



16 Outboard autopilot

Safe operation with the autopilot

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

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 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 sufficient 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 201.

Selecting active autopilot

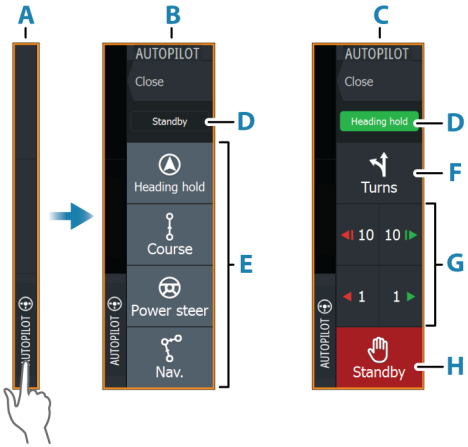


If both an autopilot computer and a trolling motor are configured for MFD control, only one of them can be active at a time.

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 autopilot** button in the autopilot controller.

Outboard motors autopilot (NAC-1) controller



- **A** Control bar
- **B** Autopilot controller, disengaged
- **C** Autopilot controller, engaged
- **D** Mode indication
- **E** Mode buttons
- **F** Turns button
- **G** Mode dependent buttons
- **H** Standby button

Engaging and disengaging the autopilot

To engage the autopilot:

- Select the preferred mode button



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 from a separate device.

Autopilot indication



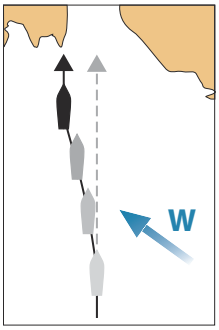
The bar is present on all pages if the autopilot is in an active mode. The trolling motor battery level, current status, heading and propeller thrust levels are displayed.

In the autopilot settings, you can hide the bar when not in anchor, nav or an autopilot mode.

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.

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.

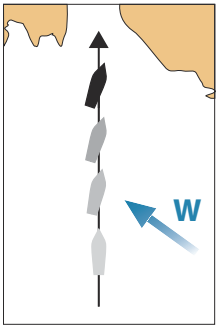
→ ***Note:*** In this mode the autopilot does not compensate for any drifting caused by current and/or wind (**W**).

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.

Course mode



In Course 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, the vessel will follow the line with a crab angle.

Power Steer mode

To activate this mode, select Standby and then the Power Steer mode button.

In this mode the port and starboard buttons are used to turn the motor/rudder.

Use the starboard or port arrow buttons to turn the motor/rudder. The motor/rudder turns as long as a button is pressed and remains at the set angle when you stop pressing the button.

NAV mode

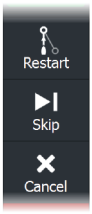
> ⚠ Warning: NAV mode should only be used in open waters.

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 to the destination waypoint.

→ ***Note:*** For information about navigation, refer to *"Navigating"* on page 61.

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 route point and steers towards the next route point. This option is only available when navigating a route with more than one point 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.

Turn patterns



The system includes a number of turn patterns. Turn patterns are available when the autopilot is in Heading hold mode.

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.

To start a turn

- Select the port or starboard button



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:

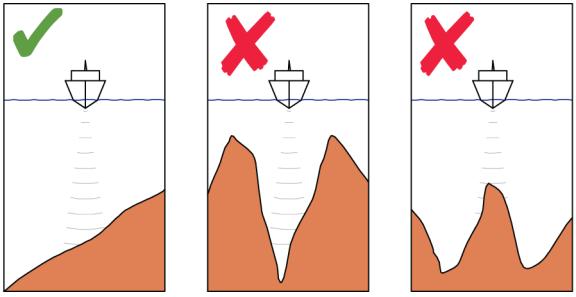
- Course change
- Turn radius

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.

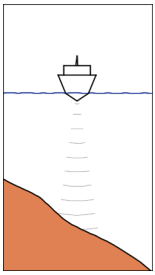
⚠ Warning: Do not use the DCT turn pattern unless the seabed is suitable. Do not use it in rocky waters where the depth is varying significantly over a small area.



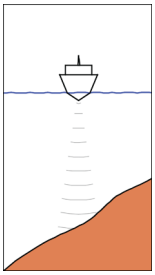
→ ***Note:*** If depth data is lost during DCT the autopilot will automatically switch to auto mode.
It is recommended to turn on the AP Depth Data Missing alarm when using DCT. When this alarm is activated an alarm will be raised if the depth data is lost during DCT.

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)



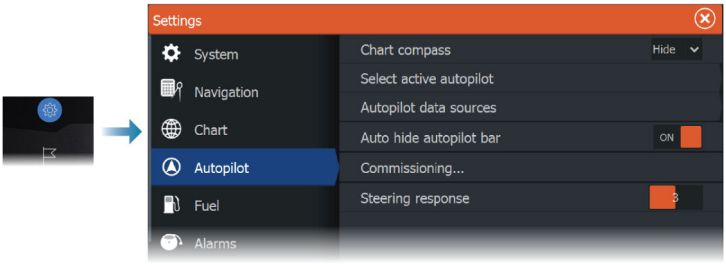
Starboard option
(depth decreases to starboard)

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.

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.



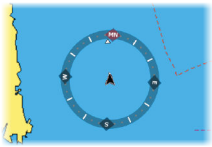


Chart compass

Select to display a compass symbol around your boat on the chart panel. The compass symbol is not displayed when the cursor is active on the panel.

Select active autopilot

Selects if the autopilot controls the trolling motor or the outboard motor(s).

Autopilot data sources

Provides automatic and manual data source selection for the outboard autopilot.

Auto hide autopilot bar

Controls whether the autopilot information bar is shown when the autopilot is in standby.

Commissioning and steering response settings

For commissioning and steering response settings, refer to *"Autopilot settings"* on page 254.

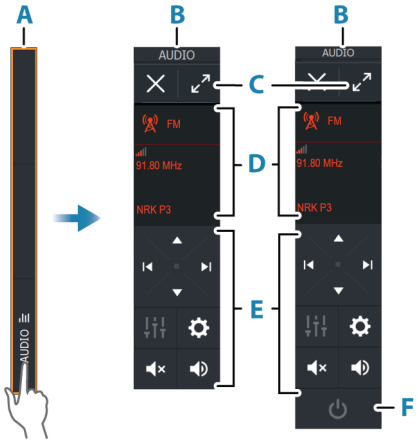
17 Audio

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

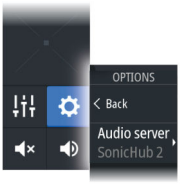
C Source and source information

D Control buttons

E ON/OFF button
The OFF button is located in the source list on small displays.

Setting up the audio system

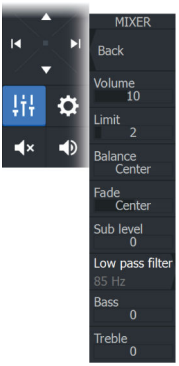
Audio server



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.

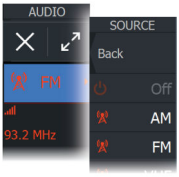
You can adjust balance, volume and volume limit settings individually for each zone. Adjustments to the bass and tremble settings will alter all zones.

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.

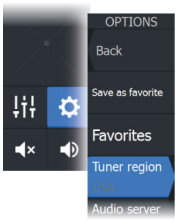
Bluetooth® devices

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:

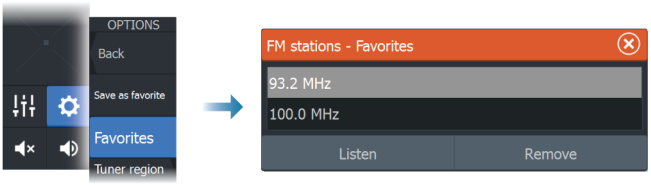
- select the favorite menu option

To page through favorite channels:

- select the up or down audio control button

List of favorite channels

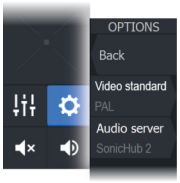
The favorite list can be used for selecting a channel, and for deleting the saved channels from the list.



Viewing DVD video

If your audio server supports DVD playback, you can control the DVD player from the audio controller when the audio source is set to DVD.

Video standard



Select the video format for the Audio server to match the display connected to the Audio server.

18 Radar

About radar

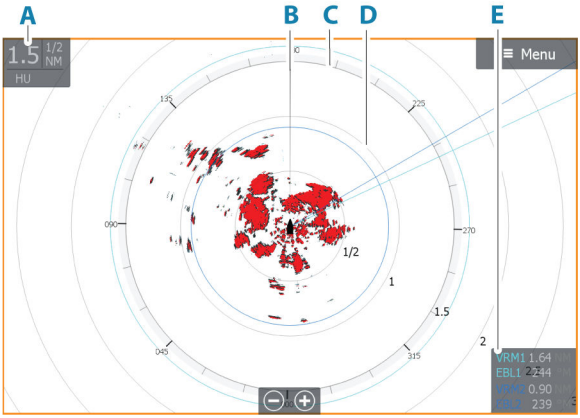
Several radar sensors are supported.

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.

Supported radar

Halo dome radar is supported.

The Radar panel



A Radar information window

B Heading line*

C Compass*

D Range rings*

E EBL/VRM data box*

* Optional radar symbology. Radar symbology can be turned ON/OFF collectively from the radar menu, or individually as described 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, 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 menu. The following modes are available:

Power off

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

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 keys or 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.

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 158.

➔ ***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.

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.

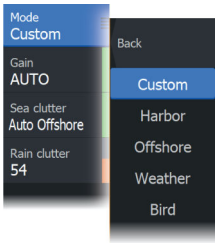
You can adjust the gain, sea clutter, and rain clutter from the radar panel main menu.

➔ ***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.

Offshore mode

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

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	High	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.

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.

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.

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.

Sea State

Set the Sea State control according to current sea conditions for best sea clutter rejection.

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.

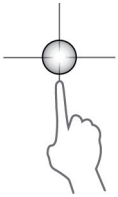
If the precipitation is located over the ship's position, the adjustment of rain clutter will affect the presentation of near echoes.

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.

The cursor assist function



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.

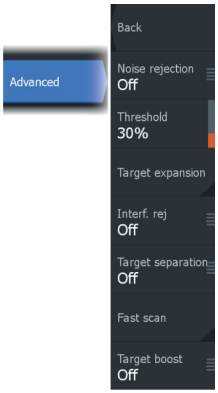
Go to cursor

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.

New waypoint

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

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 Low or High, but does cause some loss of target discrimination.

→ ***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.

Target expansion

Target expansion increases the length of targets in range, making them easier to see.

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).

Fast scan

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

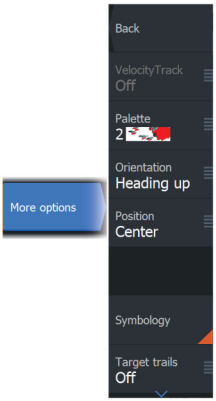
→ ***Note:*** Maximum speed may not be achieved depending on the radar Settings, Mode, and Range selected. The radar will only rotate as fast as the current control settings allow.

Target boost

The target boost control increases pulse length or reduces radar bandwidth to make targets appear larger in range and increase radar sensitivity.

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.

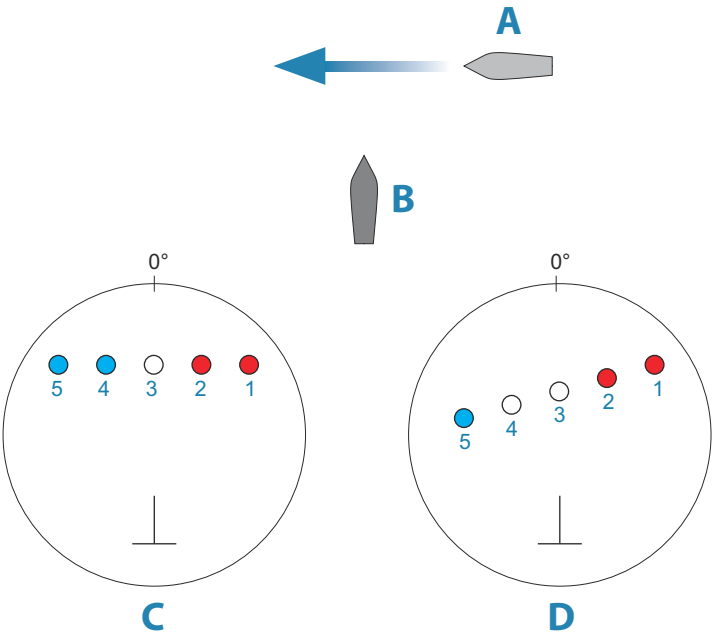
The speed threshold can be defined to apply for the radar source of the selected radar panel only, or to all radar sources connected to the system. The setting is only applied to those radars powered and connected at the time the setting is made. If the all radar sources

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.

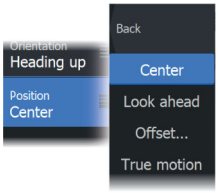
Course up

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

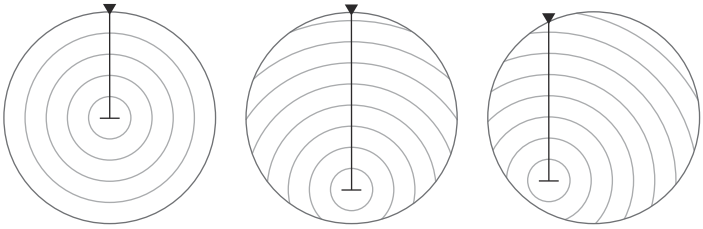
activated. When the ship turns the bearing scale remains fixed, while the heading line rotates with the ship's yawing and course change.

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:*** The look ahead option 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 motion mode

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

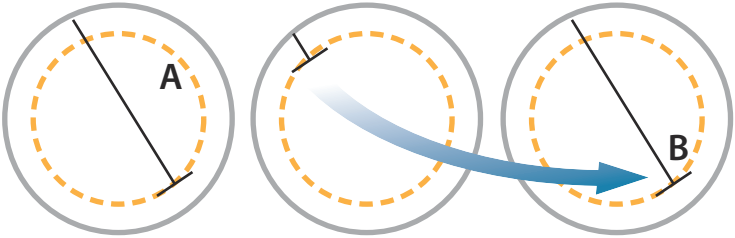
Relative motion

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 168.

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.

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 180).

Target trails

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

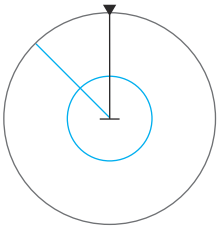
Target trails show where a target used to be, and the function is useful for quickly assessing the movement of targets relative to your own vessel.

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.

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.

EBL/VRM markers

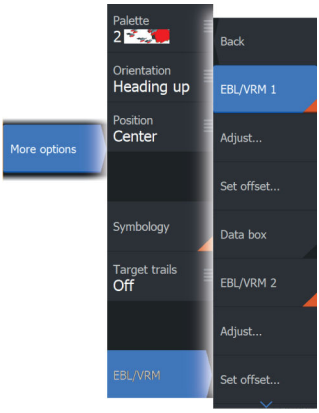


The electronic bearing line (EBL) and variable range marker (VRM) allows quick measurements of range and bearing to vessels and landmasses within radar range. Two different EBL/VRMs can be placed on the radar image.

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 172. 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.

AutoTrack

AutoTrack tracks targets of interest or potentially dangerous targets automatically, with no interaction needed from the user.

Note: AutoTrack is available on compatible radars running software version 8.2 or above.

Note: Halo 20+ and Halo 24 dome radars will require a software update for AutoTrack feature to work.

Note: 3G, 4G, and Halo 20 radars do not have the AutoTrack feature.

Range & targeting capabilities

- Tracks targets up to 24 nautical miles away, while prioritizing the closer-range targets most relevant to your vessel and navigation.
- Monitors up to 50 targets simultaneously, so you benefit from a comprehensive view on surrounding movement.
- Automatically updates priority targets based on speed, bearing, and distance, ensuring the most critical information is always in front of you.

The system selects a target for AutoTrack based on several factors, such as:

- whether the target is dangerous
- its position in relation to your vessel
- how fast it is traveling
- whether it is approaching or diverging

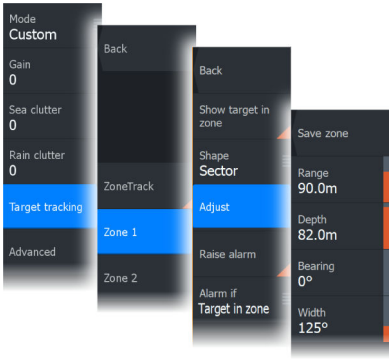
Note: The region of interest for AutoTrack is related to the dangerous target criteria (see *"Dangerous targets"* on page 179). For best results, use smaller CPA and TCPA values near shore and use larger CPA and TCPA values when offshore.

Not all targets are tracked automatically when AutoTrack is enabled. For example, a target behind your vessel and moving away from it may not meet the criteria for automatic tracking. You are still able to select a target on screen manually for tracking if you want the system to track the target (see *"Watching targets"* on page 174).

Note: AutoTrack is an automatic radar target tracking feature. It is not an auto avoidance feature. Users must maintain a safe lookout and avoid obstacles and other vessels in a safe manner.

Target tracking zones

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



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.

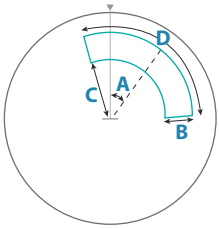
Creating guard zones or target tracking zones

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.

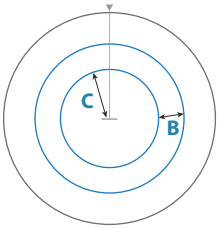
Defining a guard zone or a target tracking zone

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.

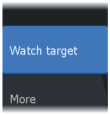
Alarm settings

An alarm is activated when a radar target breaches the guard zone limits. You can select if the alarm is activated when the target enters or exits the zone.

Sensitivity

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

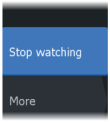
Watching targets



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

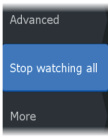
Select a target, then select the Watch target option. The target becomes highlighted. Repeat the process to watch another target. Multiple targets can be watched.

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.

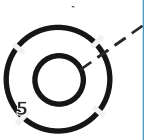


Select the stop watching all option to stop watching all the watched targets. The stop watching all option is available when targets are being watched and while the cursor is cleared from the radar image.

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 158.

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 163.

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 163.

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 161.

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 262.

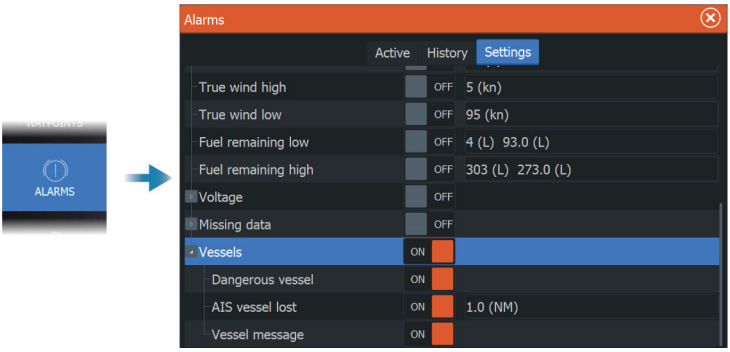
Low signal to noise ratio and signal to clutter ratio

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 181.

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:

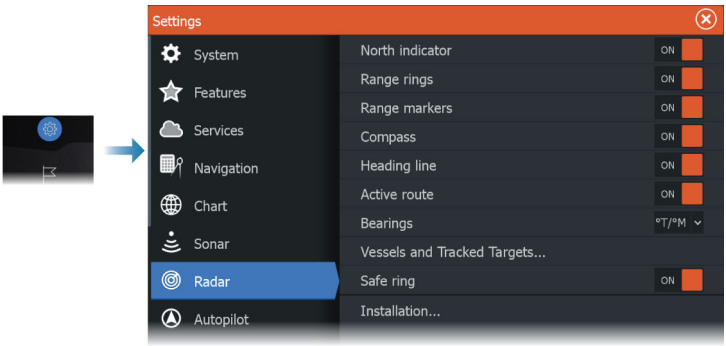
- **Disable**, closes the message dialog and cancels the dangerous target alert for all vessels. You can re-enable the dangerous vessel alert in the Vessels section of the Alarms settings dialog.

→ ***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.

Radar settings

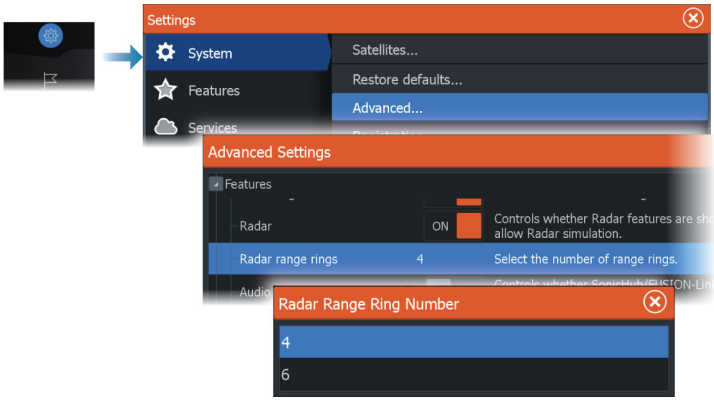
This section only lists user settings, for installation settings refer to *"System setup"* on page 244.



Radar panel symbology

Select to show or deselect to hide symbology on the radar panel:

- North indicator
- Range rings
  You can specify the number of rings to be displayed on the radar panel from the Advanced settings dialog.



- Range markers
- Compass
- Heading line
- Active route

Radar panel symbology can be collectively turned on/off from the Symbology option in the More sub-menu if they are selected to show in the radar settings dialog.

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.

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 182.
- 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 181.

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 259.

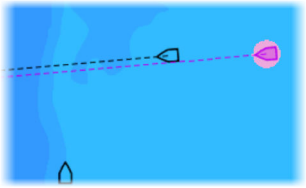
19 AIS

About AIS

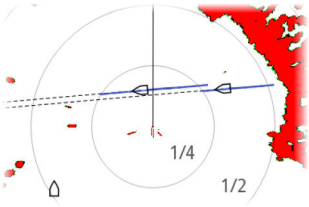
If a compatible AIS (Automatic Identification System) is connected to the system, AIS targets can be displayed and tracked. You can also see messages and position for DSC transmitting devices within range.

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.

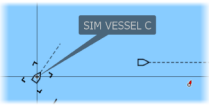


AIS vessels on a chart panel



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 47.

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.

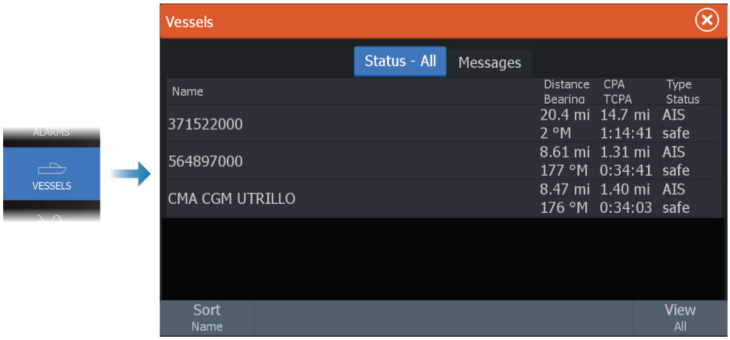
Displaying target information

The vessels dialog

The vessels dialog displays a list of all 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.

The vessels dialog also lists received AIS messages.

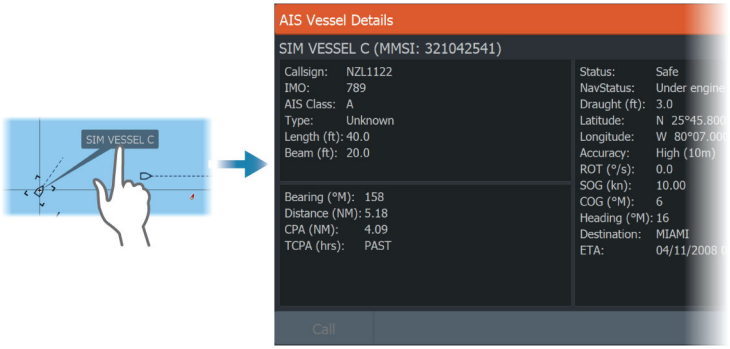


AIS vessel details

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®, 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 183.

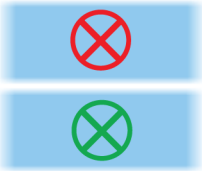
DSC Vessel tracking

DSC (Digital Selective Calling) is a semi-automated method of requesting or receiving position data from a vessel with a DSC VHF radio. For more information on how to use this, refer to your VHF radio manual.

There are various types of DSC position messages, including distress calls. The type of message made determines information sent with the call, and how the radio and MFD respond to the incoming call.

When a DSC message has been received, the MFD will display a DSC vessel icon on the chart panel and radar panel at the received coordinates. In addition, some radios will send COG and SOG with the position data. This allows for correct orientation of the icon.

When receiving a distress message you will see an alarm box informing you that a message has been received. This can be read under the messages tab on the vessels dialog. Select the vessels button in the toolbar to display the vessels dialog.



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:

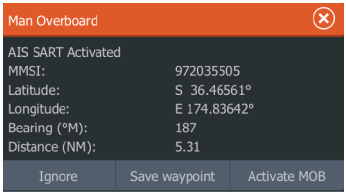
- An AIS SART icon is located on the chart in the position received from the AIS SART.
  The AIS SART icon is red when in 'Active' state. It is green when in 'Test' state.
- An alarm message is displayed.

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.

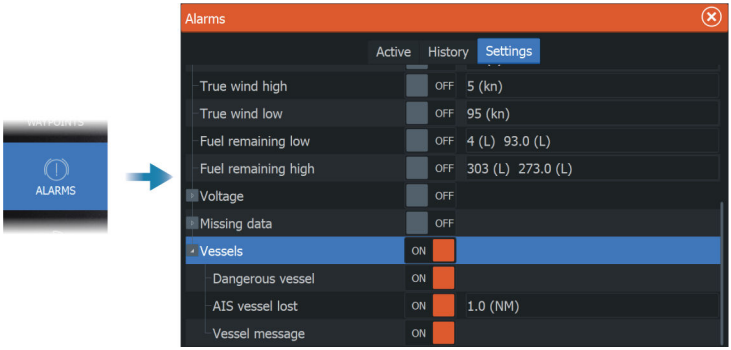
➔ ***Note:*** If the MOB function is already active, this will be terminated and replaced by the new route towards the AIS SART position.

➔ ***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.



Dangerous targets

AIS targets are defined as dangerous targets in the Vessels and tracked targets dialog (TCPA/CPA settings), refer to *"Vessels and tracked targets"* on page 191.

Dangerous target alerts

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:

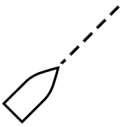
- **Disable**, closes the message dialog and cancels the dangerous target alert for all vessels. You can re-enable the dangerous vessel alert in the Vessels section of the Alarms settings dialog.

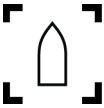
→ ***Note:*** When Disable is selected, the Dangerous target alert option in the Alarms settings dialog is turned off. When the Dangerous target alert option is turned off (disabled), dangerous target alert messages are not generated for either radar or AIS dangerous targets.

- **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 chart panel with the dangerous vessel's pop-up activated. You can select the vessel's pop-up in the chart panel to see the AIS vessel details.

AIS target symbols and icons

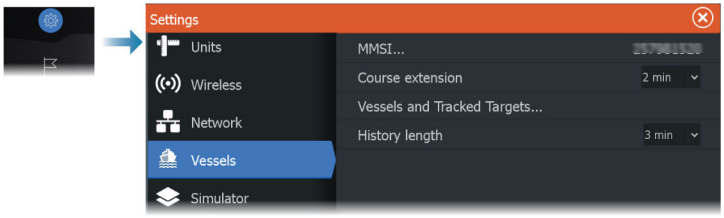
Symbol	Description
	AIS target, stationary or moving if no extension lines enabled
	AIS dangerous target (yellow). The yellow color is shown when the radar palette is black/red or black/green.

Symbol	Description
	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.
	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.

Symbol	Description
	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.

Symbol	Description
	AIS SART 'tests' icons are green.

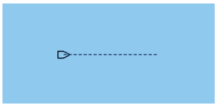
Vessel settings



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.

Course extension



You can set the length of the Course Over Ground (COG) extension line for AIS vessels. The length of the extension line is either set as a fixed distance, or to indicate the distance the vessel will move in a selected time period.

For information about extension lines for your own vessel, refer to *"Extension lines"* on page 47.

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 181.

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.

History length

Trails can be used to visualize the previous positions of a target.

The history length defines the time presentation of the trail.

20 SiriusXM® weather

Requirements

- A WM-4 Navico satellite weather receiver module connected to your system.
- A SiriusXM weather package/subscription. For more information, refer to the website www.siriusxm.com/sxmmarine.

About SiriusXM® weather

→ ***Note:*** SiriusXM® weather is available for North America only.

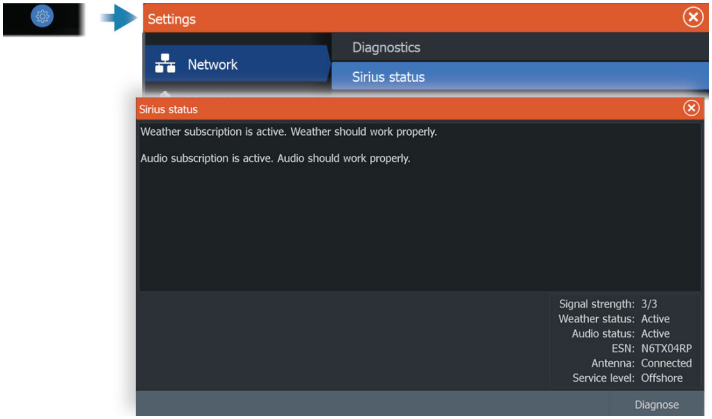
When a supported Navico satellite weather receiver module is connected to your system and with the appropriate subscription, SiriusXM® marine weather information is available.

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.

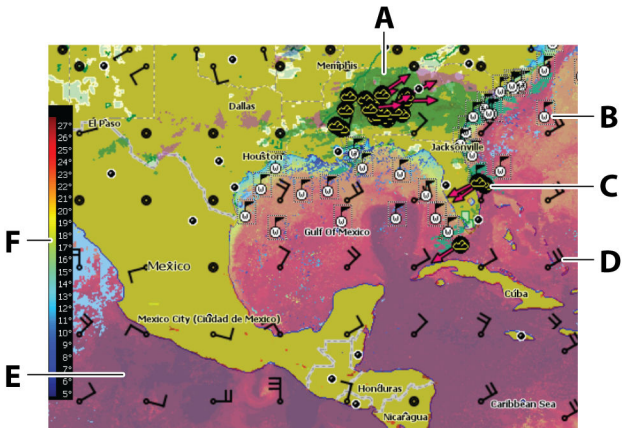


The status panel shows signal strength is indicated as 1/3 (weak), 2/3 (good) or 3/3 (preferred). It also includes antenna status, service level, and the electronic serial number for the weather module.

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

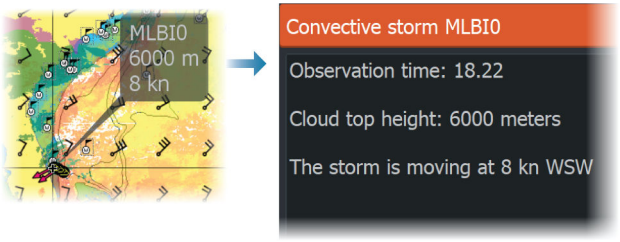
E Sea Surface Temperature (SST) color shading

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.

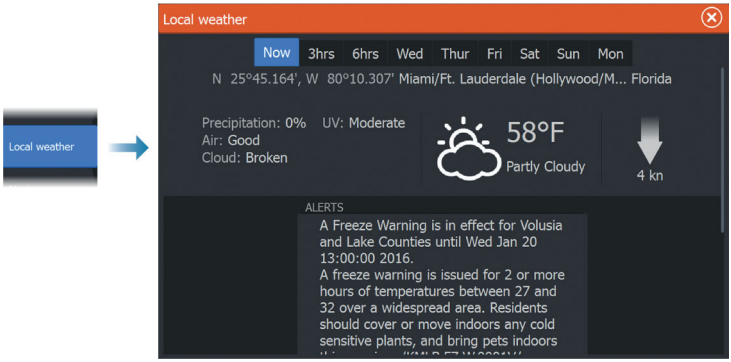
N 24°03.491'
W 81°30.898'
115.5 NM, 224 °M
Moderate rain



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.

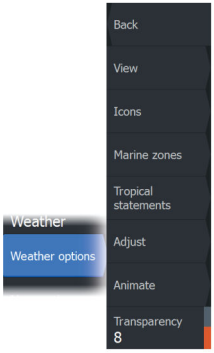


Weather overlay

When the Navico WM-4 receiver is connected to your system and with the appropriate SiriusXM® marine weather subscription, the Weather overlay option is available.

When Weather is selected as the chart overlay, the chart menu expands to provide weather options. For more information, refer to the SiriusXM® chapter in this document.

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 198.

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 198.

Forecast wind barbs

Forecast wind barbs can be shown or hidden on the weather panel.

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

Weather icons

Several weather icons are available to show current or predicted weather conditions.

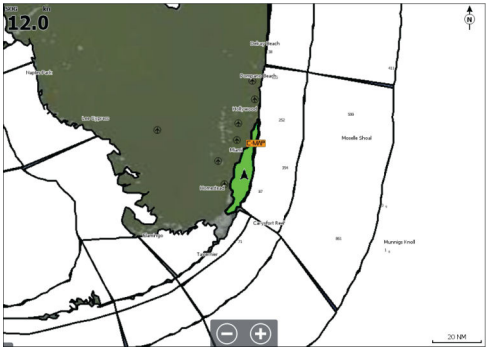
Select an icon to display detailed weather information.

	Surface observation
	Tropical storm tracking; past (grey) - present (red) - future (yellow)
	Hurricane (category 1-5) tracking; past (grey) - present (red) - future (yellow)
LLL	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.

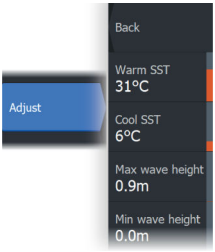
You can select a marine zone and view its forecast. You can also select a marine zone as your current zone of interest to be notified of any weather warnings in that zone.



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.

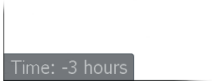
Animating weather graphics

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

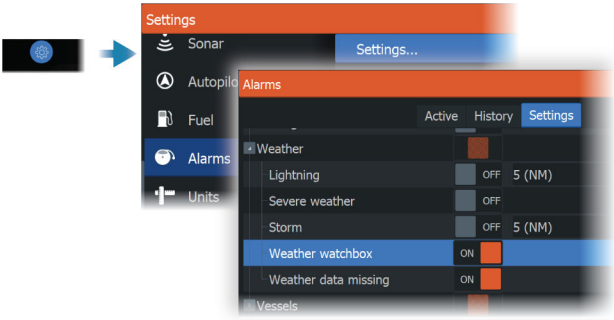
Adjusts the transparency of the overlay.

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.


Settings
Sonar
Settings...
Autopilo
Fuel
Alarms
Units
Alarms
Active
History
Settings
Weather
Lightning
OFF
5 (NM)
Severe weather
OFF
Storm
OFF
5 (NM)
Weather watchbox
ON
Weather data missing
ON
Vessels

21 Alarms

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
- a flashing alarm icon

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:

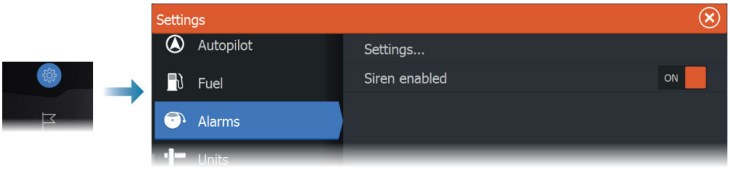
- **Close**. Sets the alarm state to acknowledged. The siren/buzzer stops and the alarm dialog is removed. However, the alarm remains active in the alarm listing until the reason for the alarm has been removed.
- **Disable**. Disables the current alarm setting. The alarm does not show again unless you 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.

Alarm settings

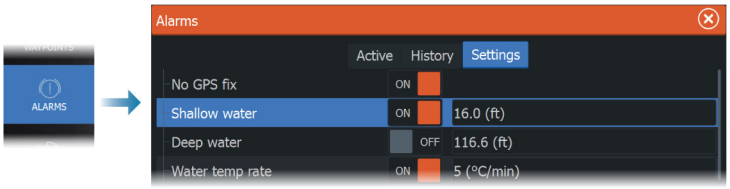
You enable or disable the alarm siren from the alarm settings dialog.

This dialog also give access to the settings dialog from where you enable or disable all system alarms.



Alarm dialogs

The alarm dialogs are activated from the Alarm settings dialog or by selecting the Alarm button on the toolbar.



22 Internet connection

Internet usage

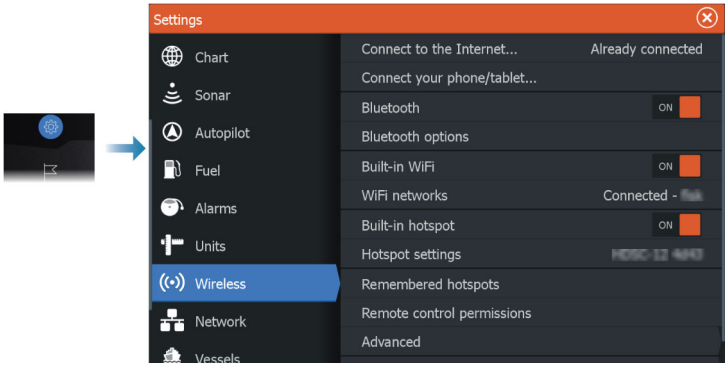
Some features in this product may require an internet connection to download or upload data. If you use a mobile/cellular connection or a pay-per-MB plan, your service provider may charge you based on the amount of data transferred. If you are unsure, contact your internet service provider.

Ethernet connection

The unit is automatically connected to the internet when connected to an Ethernet network with internet access.

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.

Bluetooth®

Enables the built-in Bluetooth® functionality.

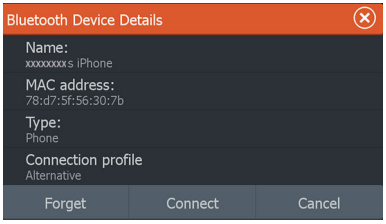
Bluetooth® options

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



Built-in Wi-Fi®

Select this option to enable or disable the internal Wi-Fi®.

Disabling the internal Wi-Fi® reduces the unit's power consumption.

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.

Built-in hotspot

The system turns this on when connecting with another unit.

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.

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 210.

→ ***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

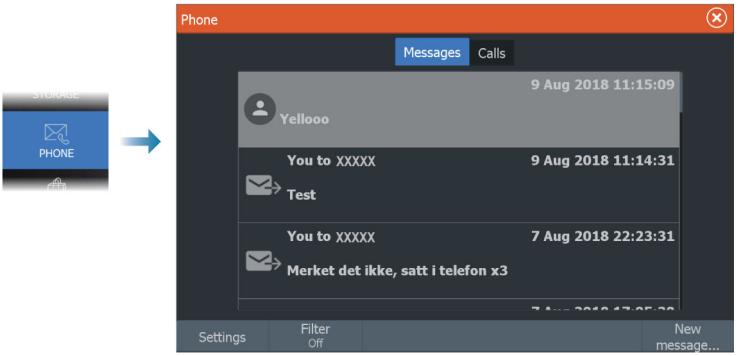


When the phone and the unit are connected, a phone icon is shown on the home page.

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

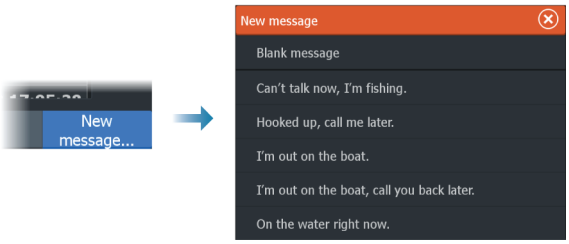
→ ***Note:*** This option is not available for iPhone®.

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



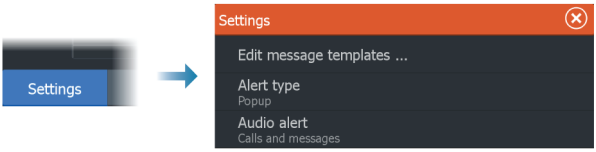
Responding to an incoming call

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

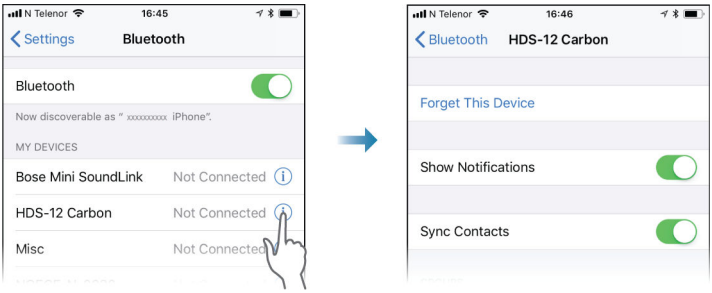
Not possible to connect an iPhone®

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:

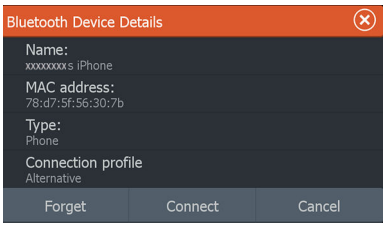


Missing notifications

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 210.

To change the alert setting for the phone notifications, see *"Message settings"* on page 208.

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 204.

24 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.

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.

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

Touchscreen calibration

→ ***Note:*** Ensure the screen is clean and dry before doing the calibration. Do not touch the screen unless prompted to do so.

In some cases it may be required to re-calibrate the touch screen. To re-calibrate your touchscreen, do the following:

1. Turn the unit off.
2. Press and hold the waypoint key, and turn the unit on.

3. Continue pressing the waypoint key during power on until the calibration utility screen closes.

NMEA Data logging

All serial output sentences sent over the NMEA TCP connection are logged to an internal file. You can export and review this file for service and fault finding purposes.

The maximum file size is predefined. If you have added several other files to the system (file recordings, music, pictures, PDF files), this may reduce the allowed file size for the log file.

The system logs as much data as possible within the file size limitation, and then it starts overwriting the oldest data.

Exporting NMEA log files

The NMEA log file can be exported from the storage dialog.

When you select the log database you are prompted to select a destination folder and filename. Once accepted, the log file is written to the chosen location.

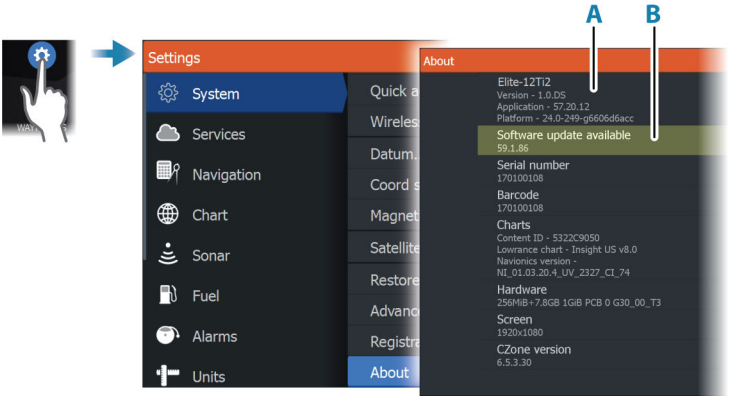
Software updates

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

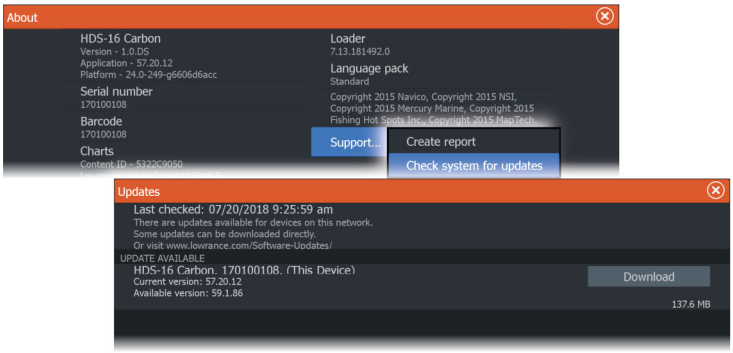
If the unit is connected to the internet, the system will automatically check for software updates for the unit and for connected devices.

→ ***Note:*** Some software files may be larger than the available free space on the unit's internal memory. In this case, you will be prompted to insert a memory card or a USB storage device into the unit.

→ ***Note:*** Do not add software update files to a chart card.

→ ***Note:*** Do not turn off the unit or a remote device until the update is completed, or until you are prompted to restart the unit.

You will be notified if new software updates are available. You can also manually start the update(s) from the Updates dialog.



Update the software from a storage device

You can download the software update from:

www.lowrance.com

Transfer the update file(s) to a compatible storage device, and then insert the storage device in the unit.

→ ***Note:*** Do not add software update files to a chart card.

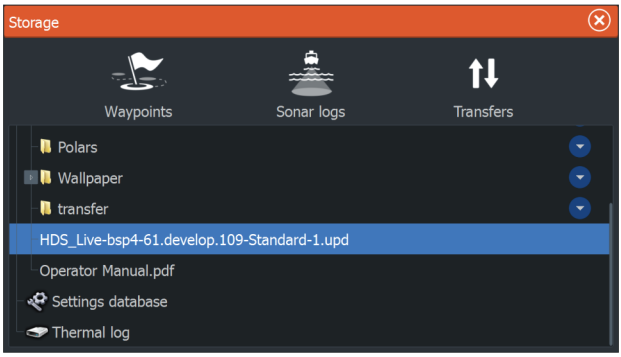
To update this unit only:

- restart the unit to start the update from the storage device

To update this unit or a connected device:

- Select the update file in the dialog

→ ***Note:*** Do not turn off the unit or a connected device until the update is completed, or until you are prompted to restart the unit.



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.

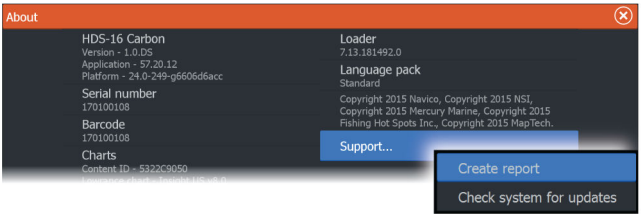
It can also include information about devices connected to the network(s).

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.

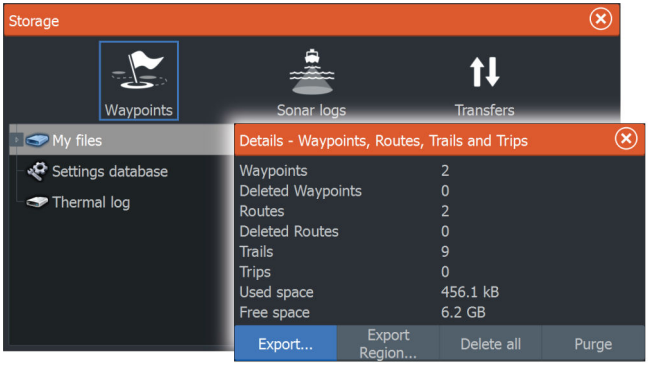
The report can be saved to a storage device and emailed to support. You can also upload it directly if you have an internet connection.



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, trails and trips.

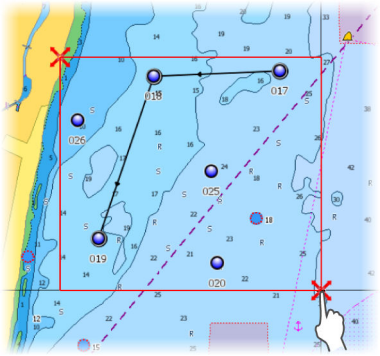
→ ***Note:*** You can use the storage export feature to export the information to a memory card. Next, insert the card into another unit and select the file on the memory card to import it.

→ ***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.

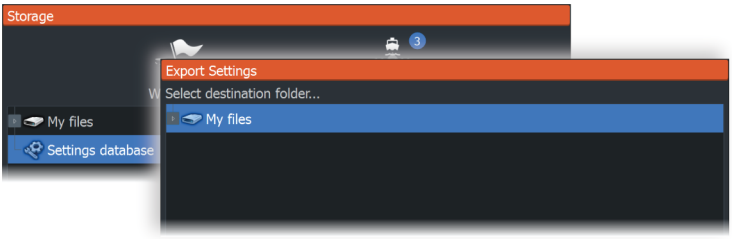
Purging user data

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.

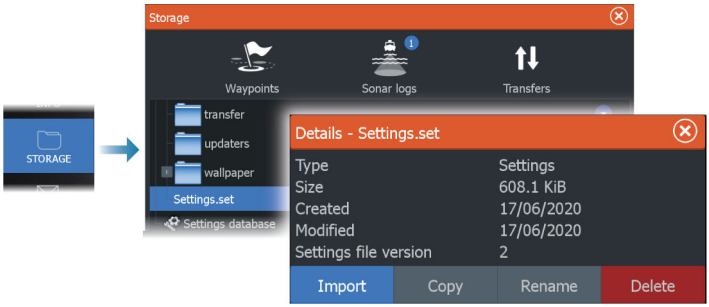
Exporting the settings database

Use the settings database option in the storage dialog to export your user settings.



Import system settings

⚠ Warning: Importing system settings overwrites all existing system settings.

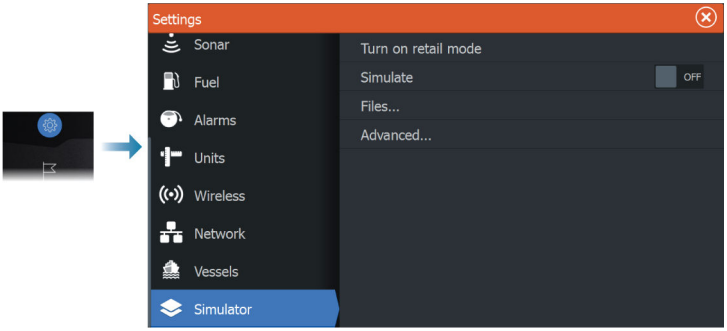


1. Connect a storage device to the unit
2. Browse the memory and select the desired backup file to start the import

25 Simulator

About

The simulation feature lets you see how the unit works without being connected to sensors or other devices.



Retail mode

In this mode a retail demonstration for the selected region is shown.

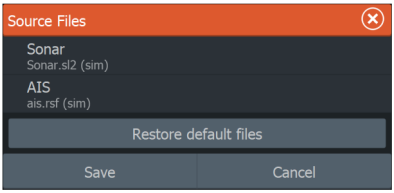
If you operate the unit when retail mode is running, the demonstration pauses.

After a time-out period, retail mode resumes.

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

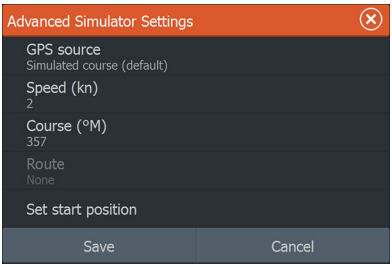
Simulator source files

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.



GPS source

Selects the file for the simulated GPS data.

Speed and Course

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

Set start position

Sets your simulated vessel position to the current cursor position.

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

26 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.

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.

Power-Pole® anchors

You can control your Power-Pole® anchors from the unit using the built-in C-Monster® Control System. You can pair the anchors with the unit via Bluetooth® or via the C-Monster® gateway connected to the NMEA 2000® network.

→ ***Note:*** Power-Pole® One™ pump can only be controlled via the C-Monster® gateway connected to the NMEA 2000® network.

Power-Pole® controls

When a Power-Pole® unit is paired via Bluetooth® or NMEA 2000®, 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 204.

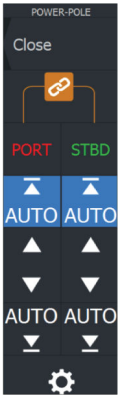
If you are pairing a dual Power-Pole®, also review *"Pairing with dual Power-Pole®"* on page 224.

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

→ ***Note:*** The single controller is displayed when connected to the Power-Pole® One™ pump or a single pump.



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.

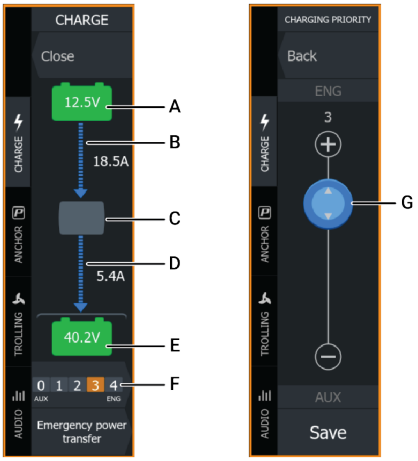
Pairing with dual Power-Pole®

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** Battery connections
- **E** Auxiliary battery/batteries
- **F** Charging priority level. Select to open the battery charging priority adjustment slider.
- **G** Move the slider or press the + / - buttons to adjust the charging priority.

→ ***Note:*** Power-Pole® Charge devices can only be controlled via the C-Monster® gateway connected to the NMEA 2000® network.

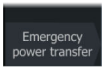
Battery icons

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



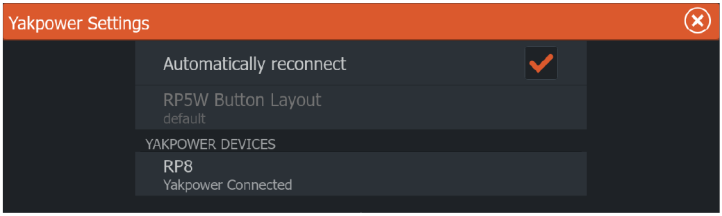
If your engine battery is low and you want to transfer power from the aux battery to the engine battery, select this option.

> ⚠ Warning: Using a battery at a very low charge level can damage the battery.

Yak Power® digital switching

Yak Power® makes digital switching controllers targeting simple configurations.

Bluetooth® wireless connection technology is used to connect Yak Power® switches to your MFD. To display the Yak Power® side bar, connect to a supported Yak Power® device via the standard Bluetooth® selection dialog.



You can then use the side bar to provide commands and status for the switches. This also allows for for switching to another Yak Power® device, setting the RP5W variant layout if applicable, or disabling the automatic reconnect feature.



Yak Power® control bar

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.

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 123.

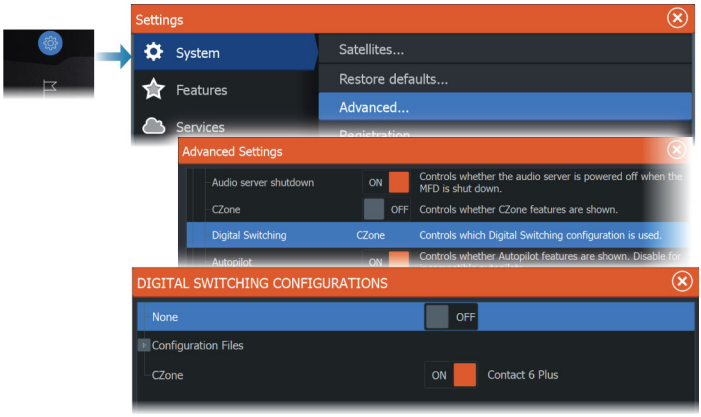
CZone® digital switching control bar

A CZone® digital switching device can be connected to the NMEA 2000® network and configured to allow control from the control bar of the MFD.

The digital switching bar is displayed in the control bar automatically when the CZone® digital switching device is configured to be included in the control bar. For information on how to configure the device to be included in the control bar, refer to the CZone® digital switching device documentation.

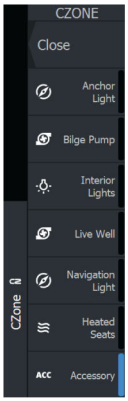
Digital switching configurations dialog

CZone® digital switching devices can be disabled from the digital switching configurations dialog.



- Un-select the devices that are to be removed from the control bar.
- Select None to remove all CZone® devices from the control bar.

Multiple switching devices can be connected to the network. When you select to display more than the maximum of devices allowed at a time, a message informs you the maximum has been reached.

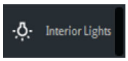


CZone® digital switching control bar

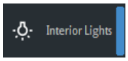
If configured and setup properly, the CZone® digital switching device can be operated from the control bar.

Control bar buttons

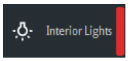
The button indicates the status of the switch.



Off (black)
The switch is OFF.



On (blue)
The switch is ON.



Error (red)
There is a switch or communication error.

Communication error

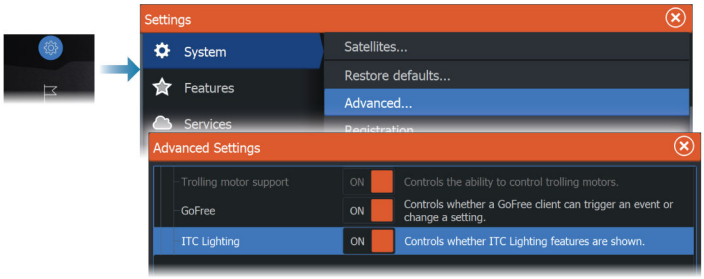
If a communication error occurs between the MFD and the CZone® digital switching device, an error message is shown in the control bar.

ITC lighting

An ITC light 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 MFD.

For information on how to install the controller, refer to the ITC lighting controller documentation.

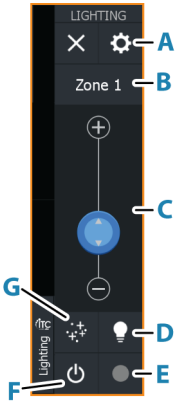
Activating/deactivating the ITC light controller



Once the ITC lighting controller is installed and connected to the NMEA 2000® network, it should appear in the control bar. If it is not appearing in the control bar, you can activate it from the Advanced settings dialog.

You can also use the Advanced settings dialog to deactivate ITC lighting in the control bar.

The ITC lighting control bar



A Zone management button

B Select to toggle zones. The zone displayed is controlled with the buttons below.

C Brightness adjustment of lights in the zone.

D Activates/deactivates Quick White mode. Select to turn all unlocked and active zones immediately white, select again to return all zones back to previous state.

E Color adjustment of lights in the zone.

F Turns on/off the lights in the zone.

G Select to define the mode of the lights in the zone:

- Color fade
- Music sync

No connection

If a connection problem occurs between the MFD and the ITC light controller, a not connected message is shown in the control bar.

NMEA 2000® RGBW lighting

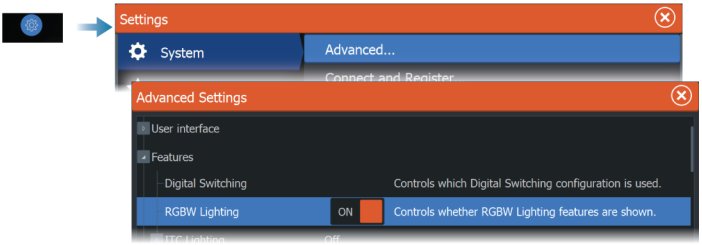
> ⚠ Warning: IT IS THE USER'S RESPONSIBILITY TO OPERATE THIS DEVICE IN COMPLIANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND ORDINANCES. Navico does not assume any responsibility for any fines, penalties, or damages that may be incurred as a result of any state or local law or ordinance relating to the 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.

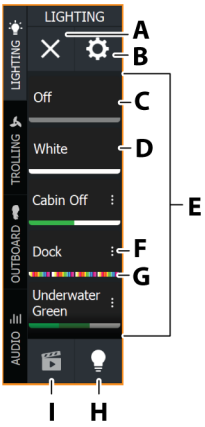
To manually enable/disable the lighting controller, go to **Settings > Advanced settings > Features**, and enable/disable **RGBW Lighting**.



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.

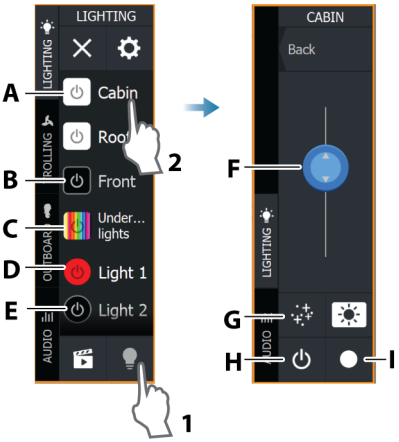
Zone lights are identified using a square and power icon. Individual lights are identified using a circle and power icon.

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.

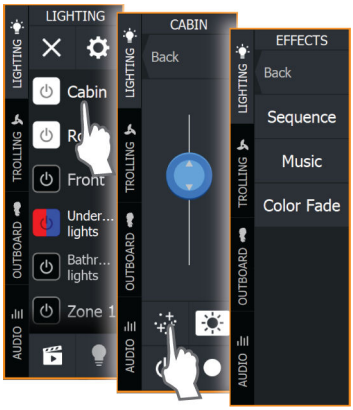
I **Color** - opens the color selection sliders.

Note: Options vary depending on the controller/lights connected.

Effects menu options

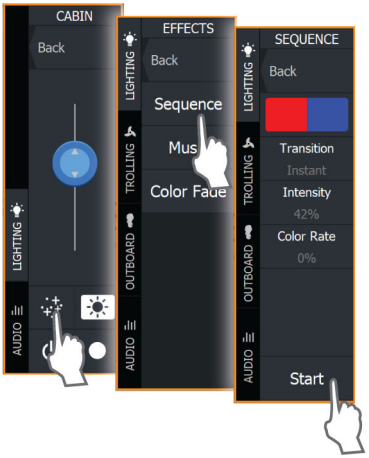
Use the **Effects** button to customize your lighting zones. Apply a color sequence to your lights, set the color rate, intensity, color transition, or synchronize lights with music.

Note: The effects available may vary depending on your controller.



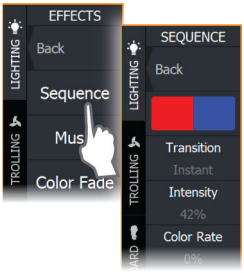
Start/stop an effect program

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.

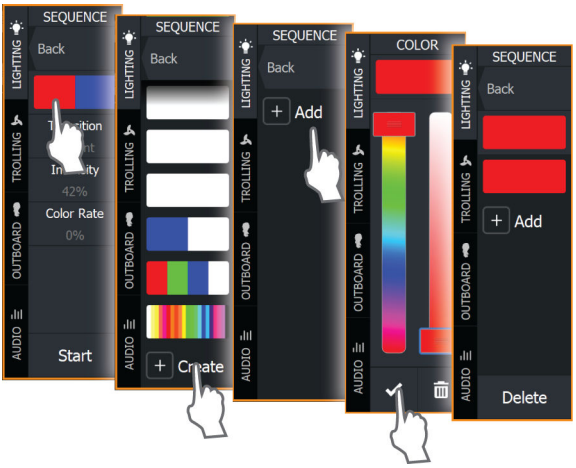
To create a new color sequence:

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.

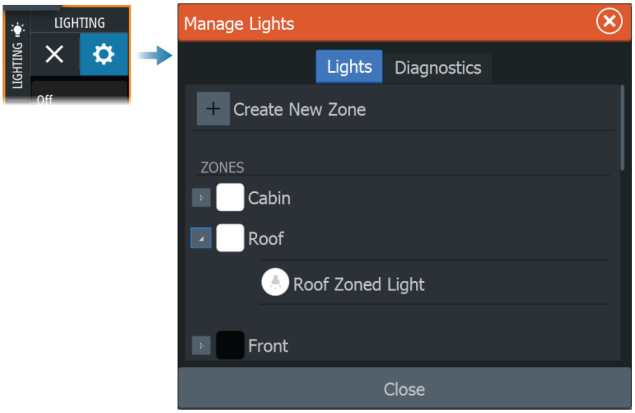
Color rate

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

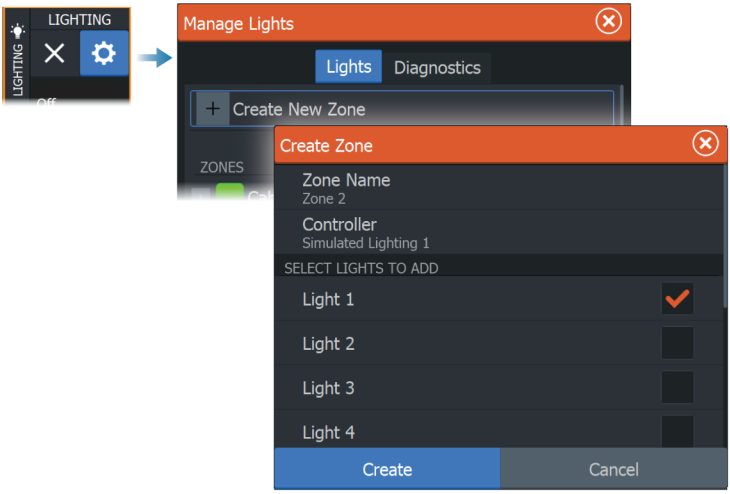
The NMEA 2000® RGBW lighting controller allows you to easily create and manage multiple zones of lighting on your vessel.

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.



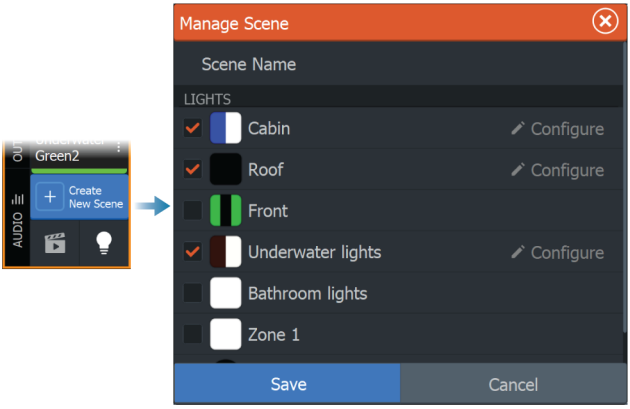
Create new scene

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

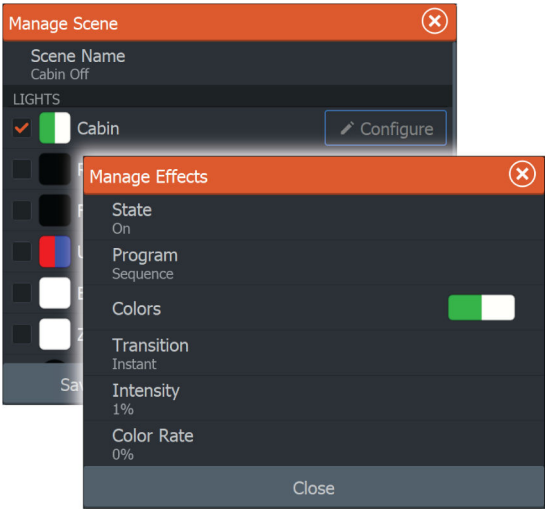
Zone lights and individual lights included in a scene can be customized individually from the **Manage effects** dialog. The dialog is accessed via the **Configure** button.

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.

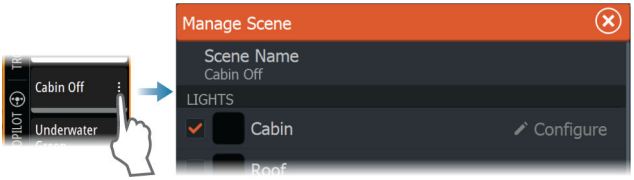
Effects can also be edited from the **Effects** menu.

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**.



27 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 183.

Info

Includes tide information for available tide stations, voyage and engine information on trip dialogs, and a dialog that provides sun and moon information for the selected date and position.

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.

Phone

Used for connecting a phone to the MFD. See *"Using your phone with the MFD"* on page 206.

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 connection"* on page 203.

28 System setup

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.

System setup sequence

1 **General settings** - refer to *"System settings"* on page 244.
- Make general settings as desired.

2 **Advanced settings** - refer to *"Advanced"* on page 247.
- Enable or disable features.
- Review the advanced setting options and make changes as desired.

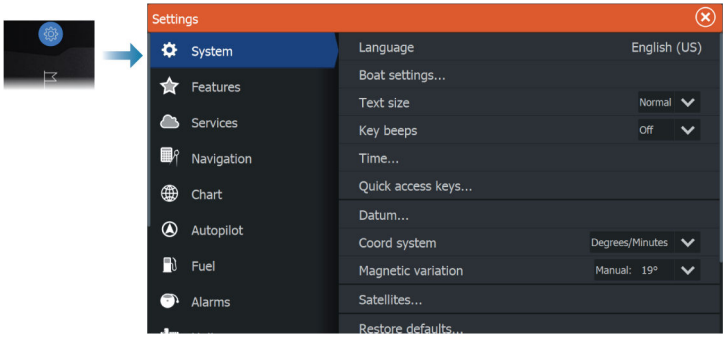
3 **Source selection** - refer to *"Network settings"* on page 268.
- Make sure that the proper external data sources have been selected.

4 **Feature setup**
- Configure specific features as described later in this chapter.

System settings

Basic system setup is done from the settings dialog.

The options available in the dialog are described below. Some are made using the first time startup wizard and 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.

Quick access keys

Select an option from the drop-down list to specify what will happen when the key is pressed. You can change the setting later to meet your preference.

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.

Magnetic variation

Defines how magnetic variation is handled by the system.

- Auto: Receives variation data from a network source
- Manual: Used for manually entering a value for the magnetic variation

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.

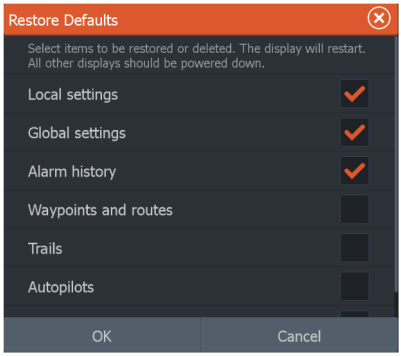


From within this dialog you can select and configure the active GPS sensor.

Restore defaults

Restores selected settings to default factory values.

→ ***Note:*** If waypoints and routes, or trails are selected, they are permanently deleted.



Advanced

Used for configuration of advanced settings and how your system displays various user interface information.

Enabling or disabling features

Use the feature option to enable or disable features that are not automatically enabled or disabled by the system.

→ ***Note:*** Some features can be enabled/disabled or unlocked from the Feature option in the settings dialog. Refer to *"Feature option"* on page 248.



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 214.

Feature option

Use the features option in the settings dialog to activate/deactivate features and unlock features.

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.

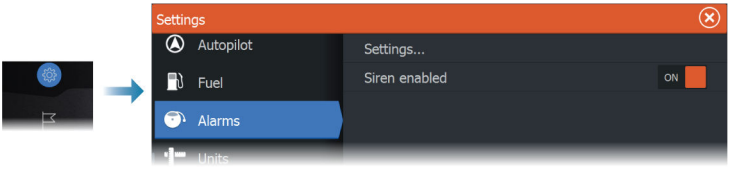
After a feature unlock code is entered in the unit, the feature is available for use.

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

Services

Used for accessing web sites that provide feature services.

Alarms



Settings

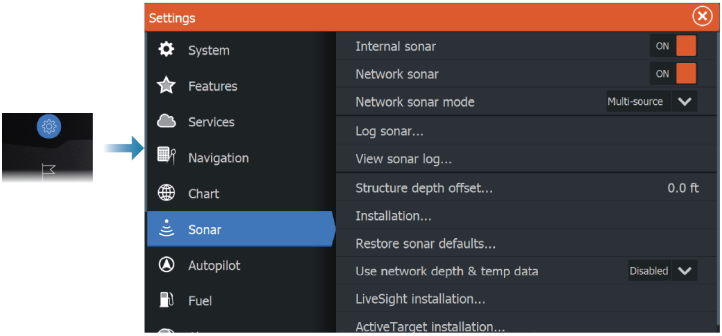
List of all available alarm options in the system, with current settings.

From this list you can activate, deactivate and change alarm limits.

Siren enable

Enables or disables the internal audio alarm when an alarm condition arises.

Sonar settings



Internal sonar

Used for making the internal sonar available for selection in the sonar panel menu.

When de-activated, the internal sonar will not be listed as a sonar source for any unit on the network.

De-activate this option on units which do not have a transducer connected.

Network sonar

Select to see or share sonar data from this unit with other units connected to the Ethernet network.

Network sonar mode

The network sonar mode setting selects whether only one or multiple sonar sources can be selected at the same time.

➔ ***Note:*** Changing the mode requires that all connected sources are restarted.

Structure Depth offset

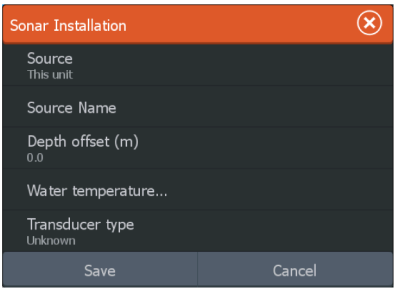
For an explanation of this setting, see *"Depth offset"* on page 250.

Use network depth and temp data

The unit can share depth and temperature data from an Ethernet networked sonar source over the NMEA 2000® network.

Use this option to select from which Ethernet network source the data is shared.

Installation



Source

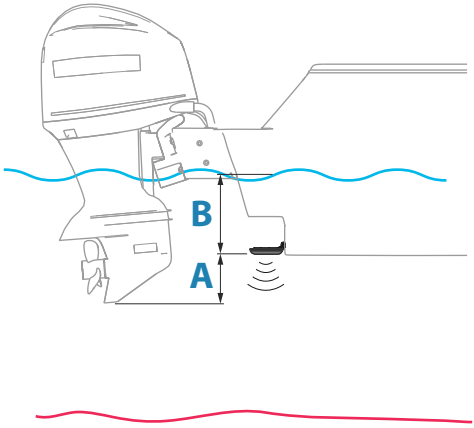
Select this option to display a list of sources available for setup. The settings you make in the rest of the dialog pertain to the source selected.

Source name

Select this option to set a descriptive name for the selected transducer.

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 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.

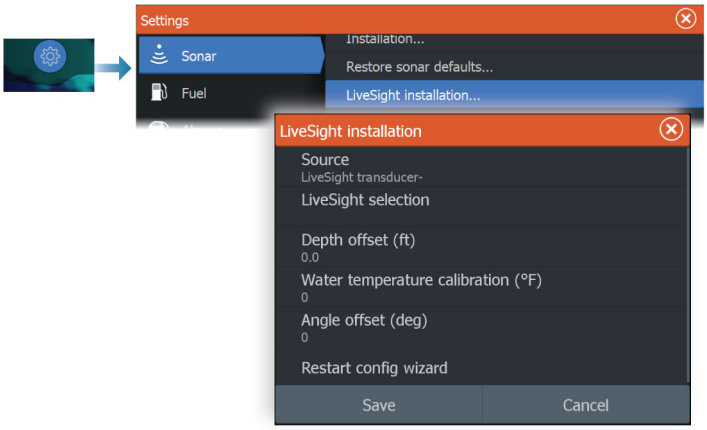
Transducer type is used for selecting the transducer model connected to the sonar module. The transducer selected will determine what frequencies the user can select during sonar operation. In some transducers with built-in temperature sensors, the temperature reading may be inaccurate or not available 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 sonar defaults

Restore sonar settings to the factory supplied defaults.

LiveSight installation settings



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.

LiveSight selection

Used to specify if the LiveSight transducer is to be used in down looking or forward mode.

Depth offset

For explanation of this setting, see *"Depth offset"* on page 250.

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°.

Angle offset (deg)

→ ***Note:*** This option is only available for forward mode.

The brackets only allow the transducer to be mounted at one set angle to the trolling motor arm. The best mounting angle for the transducer is obtained when the trolling motor arm is vertical to the waterline.

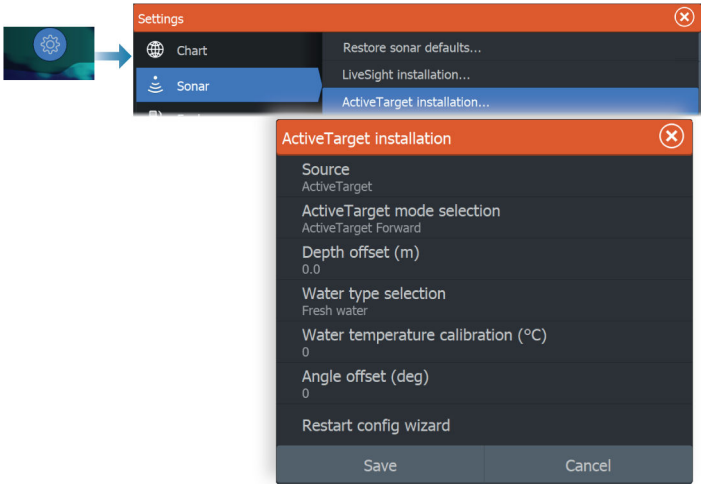
If the trolling motor arm is not vertical to the waterline, the offset angle is used to fine tune the transducer angle.

If the mounting angle of the transducer is off, the image can be misrepresented.

Restart config wizard

Use this option to manually start the setup configuration wizard.

ActiveTarget installation settings



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.

→ ***Note:*** The ActiveTarget platform only allows for a maximum of two ActiveTarget transducers on a network and they must be in different configurations. Possible configurations are down view,

forward view and scout view. For example, one source can be set to the down view and the other set to forward view.

ActiveTarget selection

Use to specify if the ActiveTarget transducer is to be used in down looking, forward or scout mode.

Depth offset

For explanation of this setting, see *"Depth offset"* on page 250.

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°.

Angle offset (deg)

→ ***Note:*** This option is only available for forward mode.

The brackets only allow the transducer to be mounted at one set angle to the trolling motor arm. The best mounting angle for the transducer is obtained when the trolling motor arm is vertical to the waterline.

If the trolling motor arm is not vertical to the waterline, the offset angle is used to fine tune the transducer angle.

If the mounting angle of the transducer is off, the image can be misrepresented.

Restart config wizard

Use this option to manually start the setup configuration wizard.

Autopilot settings

For the trolling motor autopilot, no special setup is required. For trolling motor user settings and how to configure the Ghost trolling motor footpedals, refer to *"Autopilot settings"* on page 135.

The NAC-1 autopilot computer (outboard motor autopilot) requires setup as described in the following sections.

→ ***Note:*** The word rudder is sometimes used in menus and dialogs. In this context, the outboard motor acts as a rudder.

Autopilot data sources

Provides automatic and manual data source selection for the outboard autopilot.

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.

Cablesteer rudder calibration

1. Select **Commissioning**.
2. Select **Rudder feedback calibration**.
3. Follow the onscreen instructions.

→ ***Note:*** When centering the motor during the calibration process, ensure that the motor is centered visually. The rudder feedback calibration dialog may show the motor is centered (00 value) when the motor is not centered. After centering the motor visually, press **OK** and the rudder center calibration setting is set to centered (00 value).

4. Select **Rudder test**.
5. If the calibration does not pass the rudder test:
   - Confirm motor is moving.
   - Confirm rudder feedback reading moves accordingly.
   - Check NAC-1 drive cable.
   - Confirm motor can be manually moved smoothly in each direction.
   - Check for other mechanical issues.
   - Check wiring connections.
   - Repeat rudder calibration steps.

Hydraulic system calibration

Virtual rudder feedback (VRF) calibration is used for vessels with hydraulic steering.

1. Select **Commissioning**.
2. Select **VRF calibration**.
3. Follow the onscreen instructions.

➔ ***Note:*** When the autopilot attempts to turn the motor during the calibration process, ensure motor movement is noticeable and that it is turning in the correct direction before selecting **Yes** on the Virtual Rudder Feedback Calibration dialog. When **No** is selected in the dialog, 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 speeds.

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.

Troubleshooting

The following are possible symptoms or * messages displayed by the MFD. If the problem persists after trying the recommended action, contact support.

No active autopilot control unit

Probable cause: The NAC-1 computer has lost contact with the active control unit.

Recommended action: Check the cable connections from the NAC-1 and MFD to the CAN bus network.

No autopilot computer

Probable cause: The MFD has lost contact with the NAC-1 Computer.

Recommended action:

- Make sure the NAC-1 computer is powered.
- Check connections from the NAC-1 to the CAN bus network.

AP Position data missing*

Probable cause: Missing or invalid position data.

Recommended action:

- Check the GPS cable connections to CAN network.

- Check the GPS antenna location.
- Check that the correct position source is selected. (Run a new source selection.)

AP Speed data missing (SOG)*

Probable cause: Missing or invalid speed data.

Recommended action:

- Check the GPS cable connections to the CAN network.
- Check the GPS antenna location.
- Check that the correct position source is selected. (Run a new source selection.)

AP Depth data missing*

Probable cause: Missing or invalid depth data.

Recommended action:

- Check the depth transducer.
- Check transducer cable connections to the MFD or to the CAN network.
- Check that the correct depth source is selected. (Run a new source selection.)

AP Heading data missing*

Probable cause: Missing or invalid heading data.

Recommended action:

- Check the compass cable connections to the CAN network.
- Check that the correct heading source is selected. (Run a new source selection.)

AP Nav data missing*

Probable cause: Missing or invalid NAV data.

Recommended action:

- Check for valid data on the MFD screen.
- Check the source selection setting.

AP Rudder data missing (For Helm-1/ cable steer only)*

Probable cause:

- Rudder feedback signal missing due to a broken wire or connection.
- Misaligned potentiometer in the Helm-1.

Recommended action:

- Check cable and connector.
- Check the alignment as per the installation instructions.

AP Off course*

Probable cause:

- The boat's heading is outside the fixed off course limit of 20 deg. (Automatic reset when inside limit).
- The boat speed is too low.
- The response setting is too low.

Recommended action:

- Check the steering response setting and increase the steering response setting.
- Increase the boat speed if possible, or steer by hand.

AP clutch overload (For Helm-1/ cable steer only)*

Probable cause: The clutch in Helm-1 is drawing too much current.

Recommended action:

- Disconnect the Helm-1 and verify that the alarm disappears.
- Check resistance of the clutch coil equals 16 ohms (pin 1 and 2 in connector).

No rudder response (For Helm-1/cable steer only)*

Probable cause: No response to rudder commands.

Recommended action:

- Check the cable connections between NAC-1 and Helm-1.
- Check the Rudder FB potentiometer in Helm-1.
- Check the Helm-1 drive motor.

Rudder drive overload*

Probable cause: The drive unit shuts down due to an excessive load or a short circuit.

Recommended action:

- Check the drive unit and drive unit installation.
- Look for mechanical obstructions.
- Check the manual steering.

High drive temp*

Probable cause: The NAC-1 drive output circuit is overheated due to excessive load.

Recommended action:

- Switch the Autopilot to Standby.
- Check the drive unit (see "Rudder drive overload").

Drive inhibit*

Probable cause: There is an internal NAC-1 failure causing the drive output circuit to shut down.

Recommended action: Contact support.

Low CAN bus voltage

Probable cause: The CAN bus voltage is less than 9V.

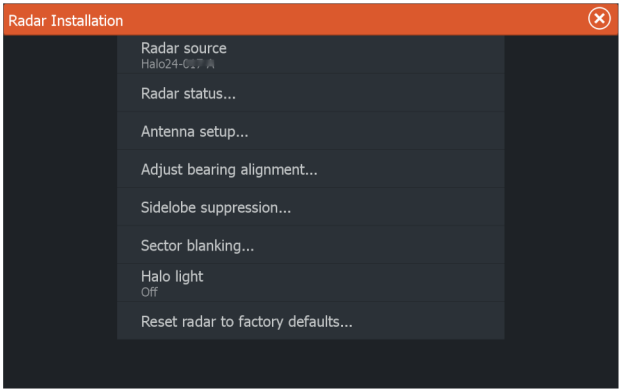
Recommended action:

- Check cabling.
- Check battery condition.
- Check charging voltage.

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.



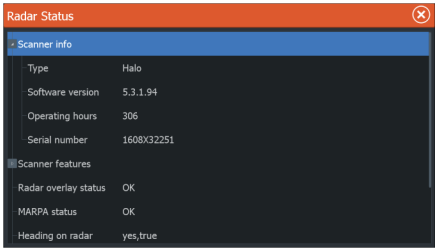
Radar source

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.

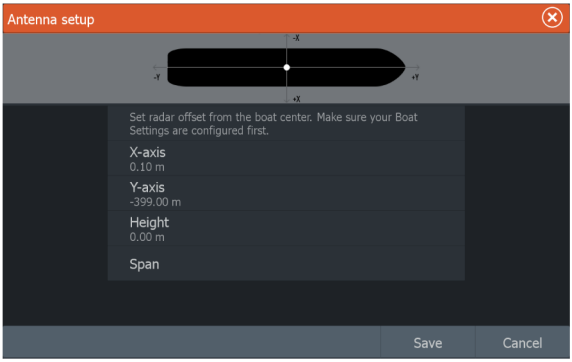
Radar status

Displays scanner information and scanner features, primarily used for information and to assist with fault finding.



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, in meters, 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, in meters, above the waterline.

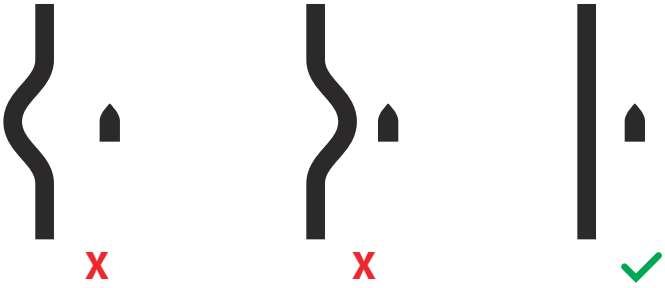
The antenna span is the total length of the antenna. Choose 4, 6, 9, or 12 ft antenna length.

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 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.

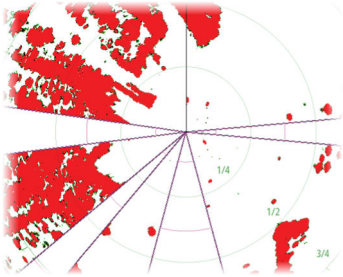
Sector blanking

→ ***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

Adjust open array park angle

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.

Tune

The automatic tuning will work well in most installations. The manual tuning is used if it is required to adjust the result from an automatic tuning.

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.

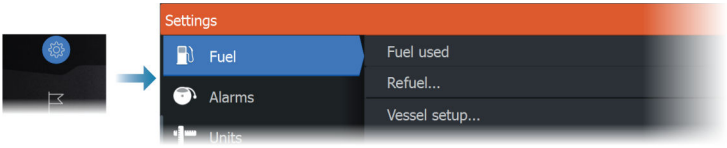
➔ ***Note:*** Use this option with caution. Take note of current settings first, especially those set by the operator if radar has already been in active service.

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.

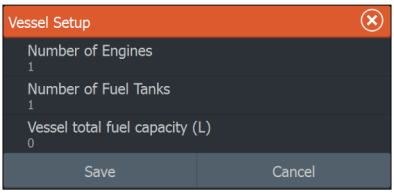
To use the utility, a Navico Fuel Flow sensor, or a NMEA 2000® engine adaptor cable/gateway with Navico Fuel Data Storage device must be fitted to the vessel. The Navico Fuel Flow sensor does not require the use of a separate Fuel Storage device. Refer to the engine manufacturer or dealer for information 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 268.



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.

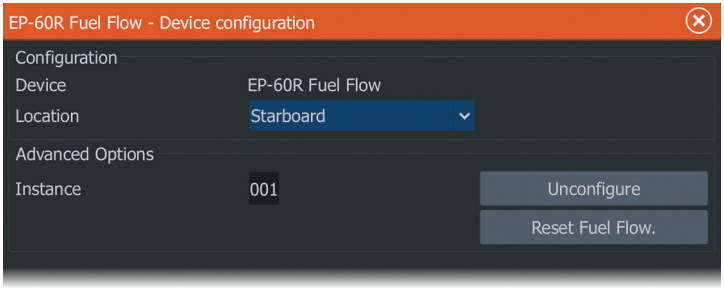
→ ***Note:*** Nominal fuel consumption setting should be determined taking into account typical vessel loads. That is, filled fuel and water tanks, stowed tender, supplies, etc.

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.

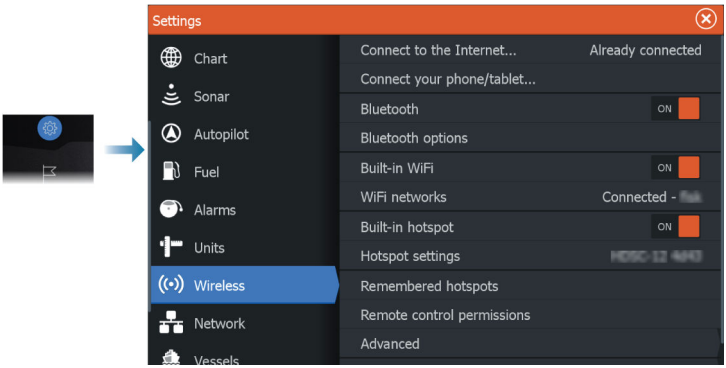
For setting up the Instrument bar or a gauge on the Instrument page with Fluid Level device data, refer to the Operator Manual.

→ ***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.



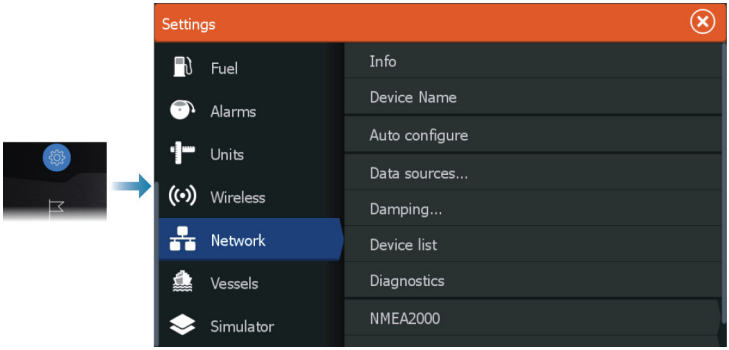
WiFi connectivity

The unit can act both as a WiFi access point and as a WiFi client at the same time. The unit can only act as one access point and one client simultaneously.

The unit acts as an access point when a phone or tablet is connected for remote control of the unit.

The unit acts as a client when connected to a WiFi network.

Network settings



Network info

Lists basic network information.

Device name

Assigning a name is useful in systems using more than one device of the same type and size.

Auto configure

The auto configure 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.

→ ***Note:*** This option provides the best configuration of available data sources for the majority of installations.

Data 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. 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.

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.



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

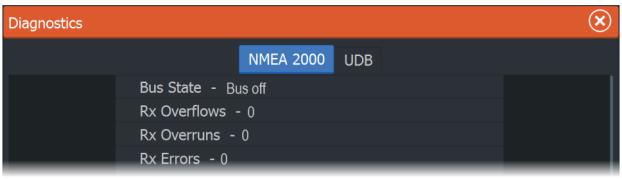
Provides information useful for identifying an issue with the network.

NMEA 2000®

Provides information on NMEA 2000®-bus activity.

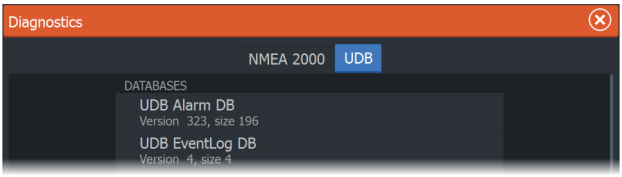
→ ***Note:*** The following information might not always indicate an issue that can be simply resolved with minor adjustment to network layout or connected devices and their activity on the

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).

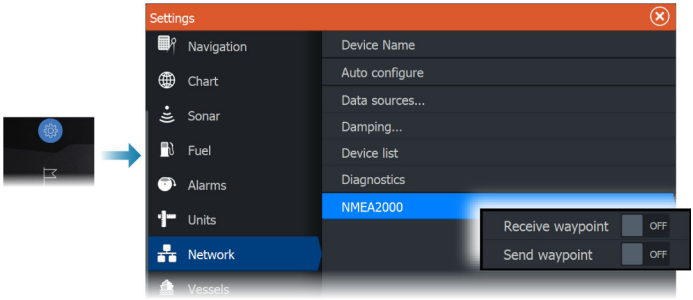


UDB

Provides information on Ethernet activity.



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 215. That section describes how to export and import user settings, e.g. waypoints.

Backlight synchronization

Select this option to allow display brightness synchronization across display units connected to the same network.

29 Supported data

NMEA 2000® compliant PGN List

NMEA 2000 PGN (receive)

59392	ISO Acknowledgement
59904	ISO Request
60160	ISO Transport Protocol, Data Transfer
60416	ISO Transport Protocol, Connection M.
60928	ISO Address Claim
65240	ISO Commanded Address
126208	NMEA Cmd/Req/Ack Group Function
126992	System Time
126996	Product Information
126998	Configuration Information
127237	Heading/Track Control
127245	Rudder
127250	Vessel Heading
127251	Rate of Turn
127257	Attitude
127258	Magnetic Variation
127488	Engine Parameters, Rapid Update
127489	Engine Parameters, Dynamic
127493	Transmission Parameters, Dynamic
127503	AC input status
127505	Fluid Level
127506	DC Detailed Status
127508	Battery Status
127509	Inverter Status
128259	Speed, Water referenced
128267	Water Depth

128275 Distance Log
129025 Position, Rapid Update
129026 COG & SOG, Rapid Update
129029 GNSS Position Data
129033 Time & Date
129038 AIS Class A Position Report
129039 AIS Class B Position Report
129040 AIS Class B Extended Position Report
129041 AIS Aids to Navigation Report
129283 Cross Track Error
129284 Navigation Data
129539 GNSS DOPs
129540 GNSS Sats in View
129545 GNSS RAIM Output
129794 AIS Class A Static and Voyage Related Data
129801 AIS Addressed Safety Related Message
129802 AIS Safety Related Broadcast Message
129808 DSC Call Information
129809 AIS Class B Static Data Report, Part A
129810 AIS Class B Static Data Report, Part B
130074 Route and WP Service - WP List - N&P
130306 Wind Data
130310 Environmental Parameters
130311 Environmental Parameters
130312 Temperature
130313 Humidity
130314 Actual Pressure
130569 Entertainment - Current File and Status
130570 Entertainment - Library Data File
130571 Entertainment - Library Data Group
130572 Entertainment - Library Data Search
130573 Entertainment - Supported Source Data

130574	Entertainment - Supported Zone Data
130576	Small Craft Status
130577	Direction Data
130580	Entertainment - System Configuration Status
130581	Entertainment - Zone Configuration Status
130582	Entertainment - Zone Volume Status
130583	Entertainment - Available Audio EQ Presets
130584	Entertainment - Bluetooth Devices
130585	Entertainment - Bluetooth Source Status

NMEA 2000 PGN (transmit)

59392	ISO Acknowledgement
59904	ISO Request
60160	ISO Transport Protocol, Data Transfer
60416	ISO Transport Protocol, Connection M.
60928	ISO Address Claim
126208	NMEA Cmd/Req/Ack Group Function
126992	System Time
126996	Product Information
130074	Route and WP Service - WP List - N&P
130306	Wind Data
127237	Heading / Track Control
127250	Vessel Heading
127258	Magnetic Variation
128259	Speed, Water Referenced
128267	Water Depth
128275	Distance Log
129025	Position, Rapid Update
129026	COG & SOG, Rapid Update
129029	GNSS Position Data
129283	Cross Track Error

129284 Navigation Data
129285 Navigation - Route/WP Information
129539 GNSS DOPs
129540 GNSS Sats in View
130074 Route and WP Service - WP List - N&P
130306 Wind Data
130310 Environmental Parameters
130311 Environmental Parameters
130312 Temperature
130577 Direction Data



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