SIMRAD

GO™ XSE™/XSR Series

OPERATOR MANUAL
ENGLISH

www.simrad-yachting.com

Preface

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

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Declarations

The relevant declarations of conformity are available at:

www.simrad-yachting.com

Europe

Navico declare under our sole responsibility that the product conforms with the requirements of:

- CE under RED 2014/53/EU

United States of America

Navico declare under our sole responsibility that the product conforms with the requirements of:

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

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

¼ Note: This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio

communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

ISED Canada

This device complies with ISED (Innovation, Science and Economic Development) Canada€s license-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

La traduction fran…aise de ce document est disponible sur le site Web du produit.

Australia and New Zealand

Navico declare under our sole responsibility that the product conforms with the requirements of:

- Level 2 devices of the Radiocommunications (Electromagnetic Compatibility) standard 2017
- Radiocommunications (Short Range Devices) Standards 2021

Internet usage

Some features in this product use an internet connection to perform data downloads and uploads. Internet usage via a connected mobile/cell phone internet connection or a pay-per-MB type internet connection may require large data usage. Your service provider may charge you based on the amount of data you transfer. If you are unsure, contact your service provider to confirm rates and restrictions.

About this manual

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

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

Important text conventions

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

¼ Note: Used to draw the reader€s attention to a comment or some important information.

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

Manual version

This manual is written for software version 20.2. The manual is continually updated to match new software releases. The latest available manual version can be downloaded from the following website:

ƒ www.simrad-yachting.com

Translated manuals

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

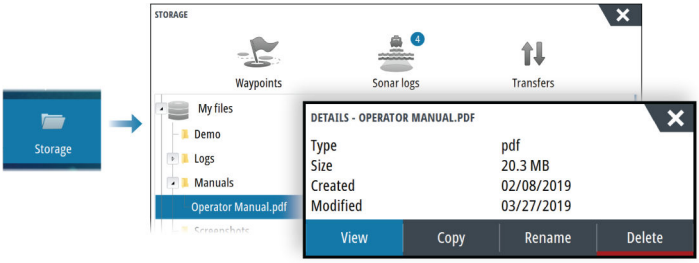
ƒ www.simrad-yachting.com

Viewing the manual on the screen

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

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

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



Device registration

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

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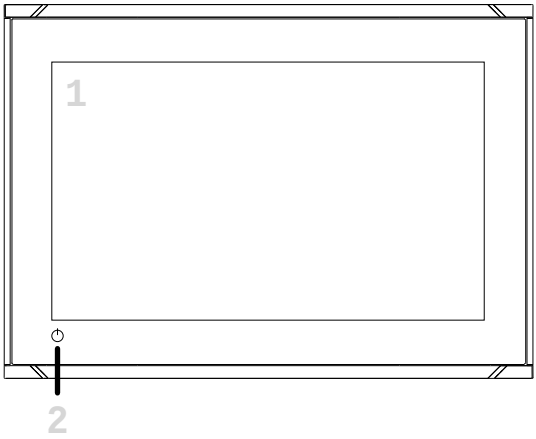
1 Introduction

Front controls



1 Touch screen

2 Power key
Press and hold to turn the unit ON/OFF.
Press once to display the System Controls dialog.

Card reader

Used for inserting a microSD memory card. The memory card can be used for detailed chart data, software updates, transfer of user data, and system backup.

¼ Note: Do not download, transfer or copy files to a chart card. Doing so can damage chart information on the chart card.

The card reader door is opened by pulling the rubber cover open.

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

B Toolbar

C Application buttons

D Status bar

E Close button, closes the current panel.

F System Controls button

G Favorites bar

H Man Over Board (MOB) button

Settings button

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

Toolbar buttons

Provide access to options and tools that are not specific to any panel. For toolbar button explanations, refer to "Tools and settings" page 212.

Application buttons

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

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

Status bar

Shows the status of the system. For definitions of status bar icons, refer to "Status bar icon definitions" on page 237.

System Controls button

Opens the System Controls dialog. The System Controls dialog provides quick access to basic system settings. Refer to "System co dialog" on page 23.

Favorites bar

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

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

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

Favorite bar as pop-up on a page

The favorite bar can be displayed on any application page by:

- Pressing and holding the Home button
- Pressing and holding the Pages key on a remote controller

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:

- Select the MOB button on the Home page

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

- A MOB waypoint is created at the vessel€s position
- The display switches to a zoomed chart panel, centered on the vessel†s position
- The system displays navigation information back to the MOB waypoint

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

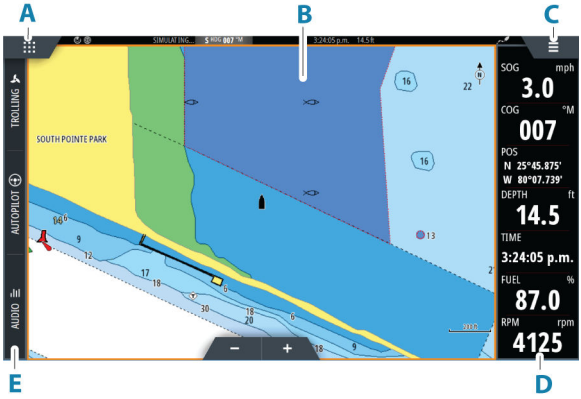
Delete a MOB

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

Stop navigating to MOB

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

Application pages



A Home/pages button

B Application panel

C Menu button

D Instrument bar

E Control bar

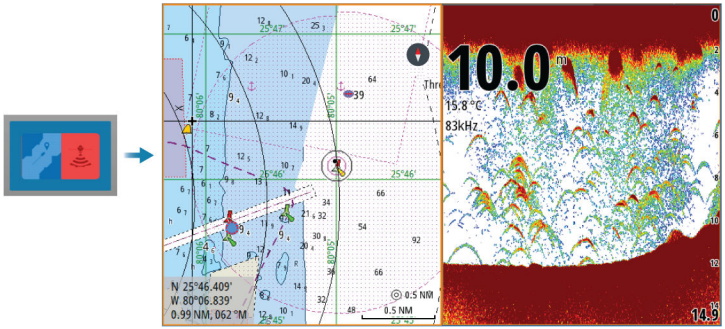
Application panels

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

Predefined split pages

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

You can adjust the split on a predefined split page. Refer to "Adjusti the split on multiple panel pages" on page 31.



Menu button

Displays the menu of the active panel. Use menu options to customize the image. The panel menu options are further explained later in this manual in each application chapter.

Instrument bar

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

By default, the instrument bar is shown on the panel. You can turn the instrument bar off.

You can select the predefined bar to be shown and you can change the information displayed in the predefined bar. Refer to "Customizi the instrument bar" on page 28.

Control bar

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

2 Basic operation

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.

Remote controllers

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

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

www.simrad-yachting.com

Smart devices can also be connected to the unit and remotely control the unit. For information about how to connect smart devices to remotely control the unit, refer to "Remote control of the on page 205.

System controls dialog

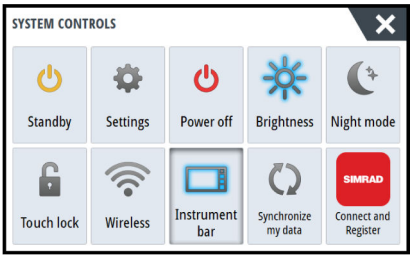
The System Controls dialog provides quick access to basic system settings.

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

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

Display the dialog by:

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



Activating functions

Select the button of the function you want to open, set or toggle on or off. For those functions that toggle on and off, a highlighted button indicates the function is activated.

Standby mode

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

You select Standby mode from the System Controls dialog.

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

Display illumination

Brightness

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.

Instrument bar

Toggles the Instrument bar on/off for the current page only.

Connect and register

Guides you how to connect your mobile device (phone or tablet) to the unit and register your device.

Screen capture

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

To take a screen capture:

ƒ Tap the status bar or the dialog title

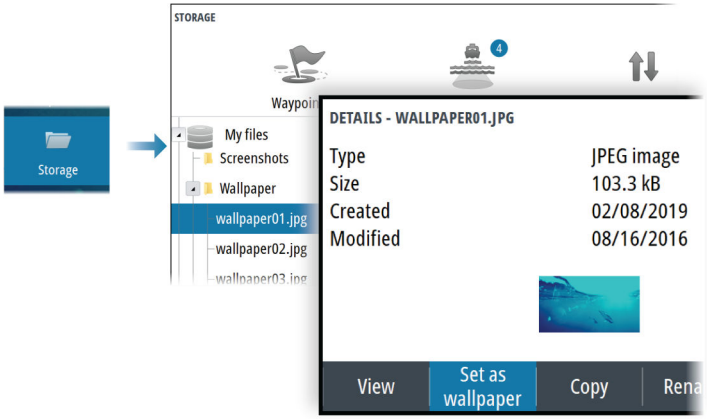
Screen captures are saved to internal memory.

3 Customizing your system

Customizing the Home page wallpaper

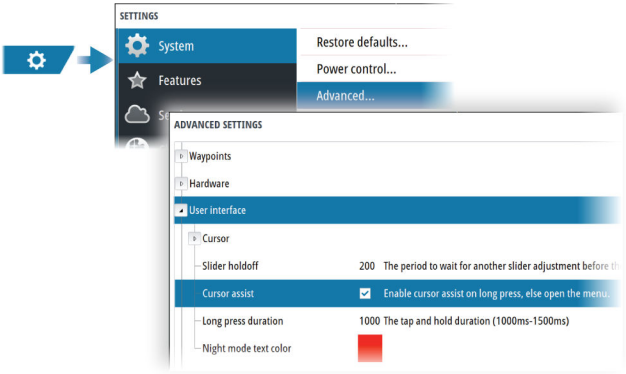
The Home page†s wallpaper can be customized. You can select on of the pictures included with the system, or you can use your own picture in .jpg or .png format.

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



Customizing the long press feature

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



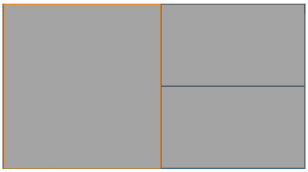
Multiple panel pages

Panel sizes in a multiple panel page can be adjusted from the System Controls dialog. Refer to "Adjusting the split on multiple pan on page 31.

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

You can only access the menu of an active panel.

2 panels page



3 panels page

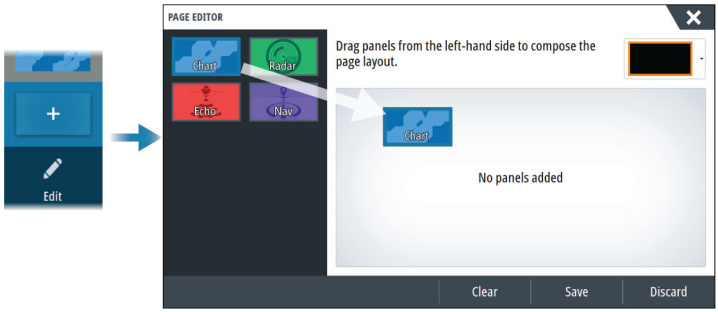
The shadow cursor on a multiple panel page

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

Customizing favorite pages

Adding new favorite pages

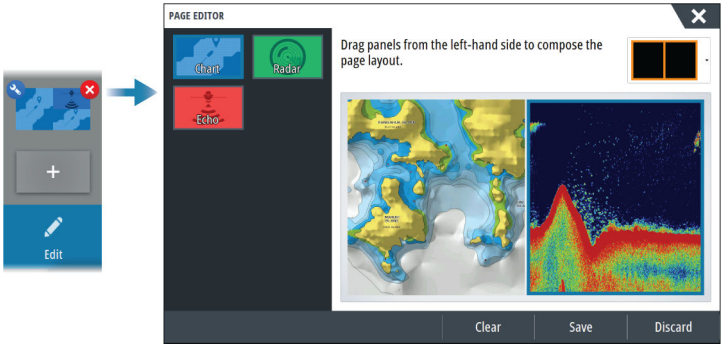
Use the add icon in the home page panel to add a favorite page. In the Page Editor dialog, drag-and-drop the panels you want included in the favorite page.



Edit favorite pages

Select the edit button in the favorite panel and then:

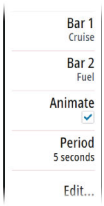
- Select the X icon on a favorite button to remove the page
- Select the tool icon on a favorite button to display the page editor dialog



Customizing the instrument bar

¼ Note: You must activate the instrument bar in the application to access the instrument bar menu.

Setting the appearance of the instrument bar



The instrument bar includes Bar 1 and Bar 2.

- Bar 1 can be global for all pages, or customized for each page
- Bar 2 is customized for each page

By default, bar 1 is shown on the panel.

If a predefined instrument bar is selected for both Bar 1 and Bar 2 and the Animate menu option not selected, then both bars are shown at the same time on the page.

You can turn bar 2 ON/OFF by selecting the Bar 2 menu option and then the OFF sub-menu option.

Animating the instrument bar

If you selected a predefined instrument bar for both Bar 1 and Bar 2 on a page, then you can specify that the instrument bar switch periodically between showing Bar 1 and Bar 2.

Select the Animate option and set the time period which the instrument bar will switch showing Bar 1 and Bar 2 on the page.

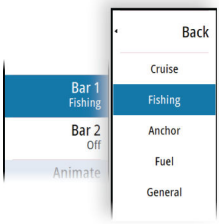
Turning the instrument bar ON or OFF

By default, the Instrument bar is shown on the panel.

You can turn the instrument bar ON/OFF from the System Controls dialog.

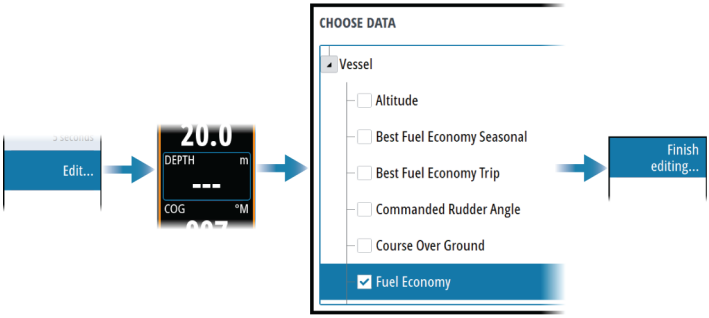
Select a predefined instrument bar

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



Changing data

You can change data from the menu.

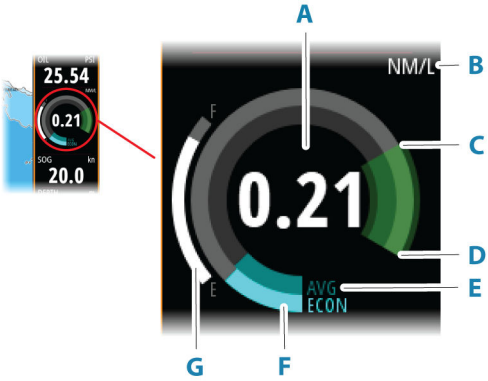


Reset the instrument bar

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

Fuel economy gauge

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



A Digital readout of current economy

B Fuel economy measurement units

C 100% efficiency, this equates to the †nominal consumption†

D 120% efficiency

E Average fuel economy

F Instantaneous economy

G Current fuel level

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

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

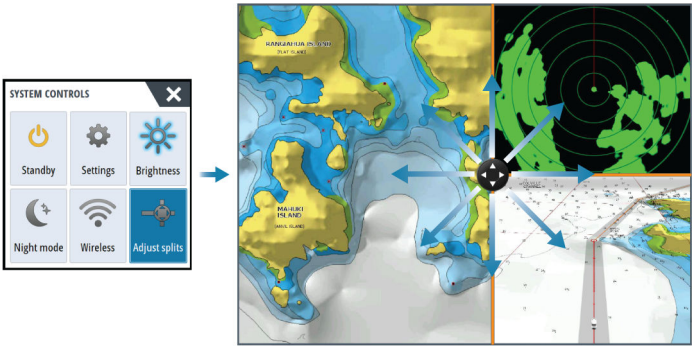
Nominal fuel economy can be entered in the Vessel Setup dialog displayed from the Fuel settings dialog.

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

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

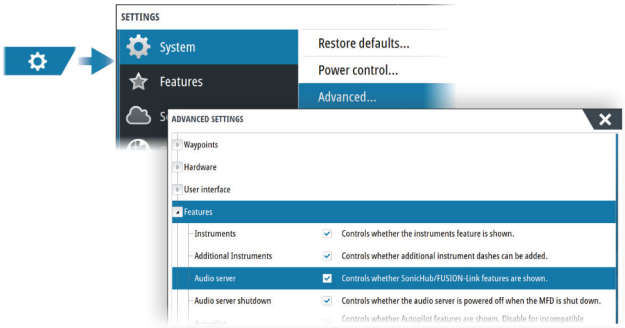
Adjusting the split on multiple panel pages

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



Enabling or disabling features

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



Activating/deactivating features and applications

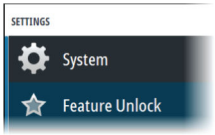
Use the system settings features option to activate/deactivate features and applications.

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 ca 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.

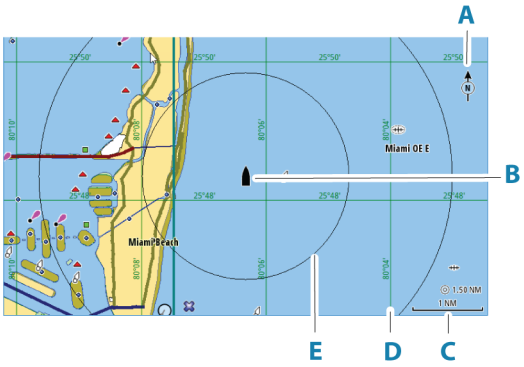
¼ Note: The feature unlock option is only available if your unit supports a locked feature.

Password Protection

You can set a PIN code to prevent unauthorized access to your system†s settings. Refer to "PIN code" on page 215.

4 Charts

The Chart panel



A North indicator
B Vessel
C Chart range scale
D Grid lines*
E Range rings*

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

Chart data

The system can be delivered with preloaded cartography.

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

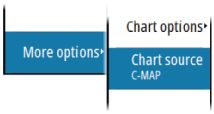
¼ Note: Chart menu options vary depending on the chart you are using.

¼ 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.

Chart sharing

When connected to the Ethernet network, 12 inch GO units can access and display Chart data from a card inserted into other 12 inch units and other display units capable of sharing charts through the network. Charts shared over the network become selectable as a chart source in the menu.

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.

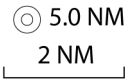
Activate each chart page and select its source in the menu.

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



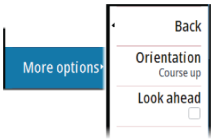
The chart range scale and range rings interval (when turned on) are shown on the chart panel. You change the scale by zooming the chart in or out.

Panning the chart

You can move the chart in any direction by:

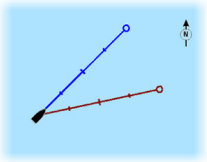
- Dragging your finger on the screen

Chart orientation



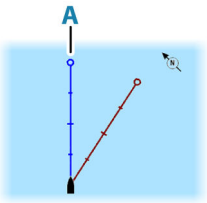
You can specify how the chart is rotated in the panel.

North up



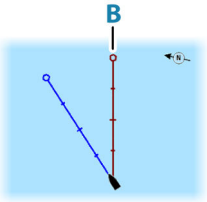
Displays the chart with north upward.

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

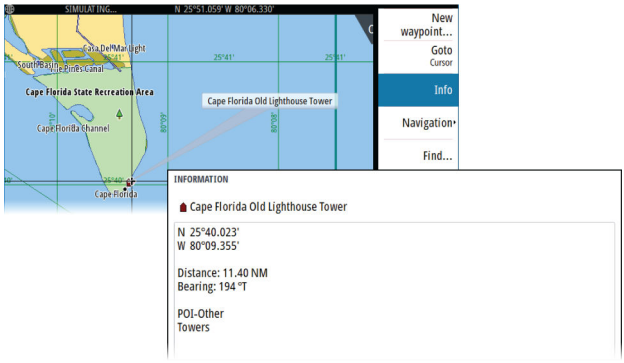
Moves the vessel icon on the panel to maximize your view ahead of the vessel.

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† pop-up to display all available information for that item. You can also activate the detailed information dialog from the menu.

¼ 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.

¼ 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

¼ Note: The cursor assist function is available if it is enabled. Refe to "Customizing the long press feature" on page 26.

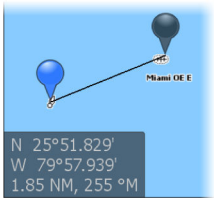
The cursor assist function allows for fine tuning and precision placement of the cursor without covering details with your finger.

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.

¼ 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, whil 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.

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:

ƒ Select the new waypoint option in the menu

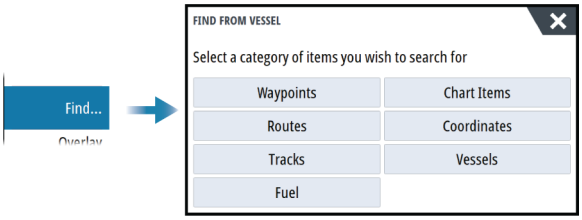
Creating routes on the chart panel

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

Find objects on chart panels

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



¼ Note: You must have a SiriusXM Marine subscription to search for fueling stations.

¼ 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.

¼ Note: All chart types work in 3D mode, but without 3D cartography for the appropriate area the chart appears flat.

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

Panning the 3D chart

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

To return the chart to vessel position use the return to vessel option

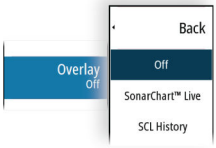
Controlling the view angle

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

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

¼ 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 36.

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.

Structure overlay

Structure (StructureMap) information can be displayed as overlay o your chart panel.

When Structure overlay is selected, the chart menu expands to include basic menu functions for the overlay. Refer to "StructureMa on page 168.

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.

¼ Note: A menu option is greyed out if the feature is not available on the chart displayed.

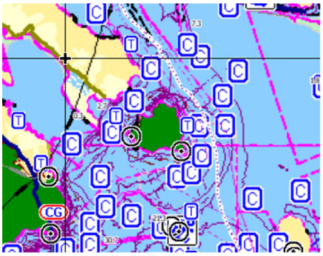
C-MAP tides and currents

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

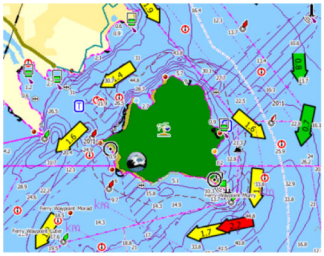
In large zoom ranges the tides and currents are displayed as a square icon including the letter T (Tides) or C (Current). When you select one of the icons, tidal or current information for that location are displayed.

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

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



Static Current and Tide icons



Dynamic Current icons

C-MAP specific chart options

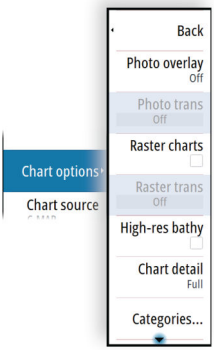


Photo overlay

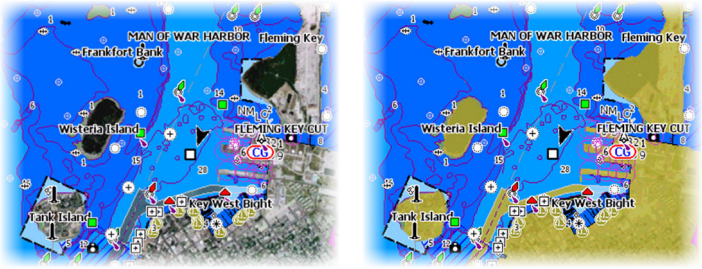
Photo overlay enables you to view satellite photo images of an area as an overlay on the chart. The availability of such photos is limited to certain regions, and cartography versions.

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

No Photo overlay | Photo overlay, land only | Full Photo overlay

Photo transparency

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



Minimum transparency | Transparency at 80

Raster charts

Changes the view to that of a traditional paper chart.

Raster transparency

Controls the transparency of raster imagery.

High resolution bathymetry
Enables and disables higher concentration of contour lines.

Chart detail

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

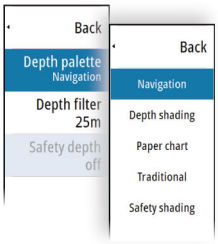
Chart categories
Several categories and sub-categories are included. You can turn on/off individually depending on which information you want to see.

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

Shaded relief
Shades seabed terrain.

No contours
Removes contour lines from the chart.

Depth palette
Controls the Depth palette used on the map.



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

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

Paper chart

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

Traditional

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

Safety shading

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

Depth filter

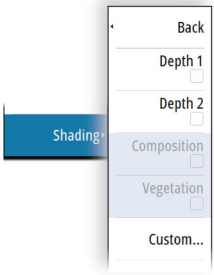
Filters out depth values shallower than the selected depth filter limit.

Safety depth

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

Shading

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



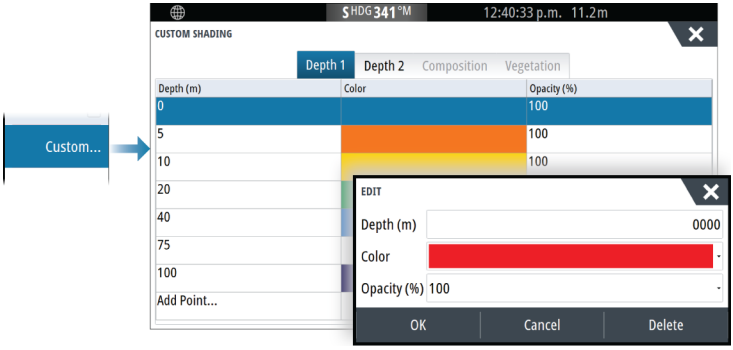
¼ Note: Composition and Vegetation shading are not applicable to C-MAP charts.

Depth 1 and Depth 2

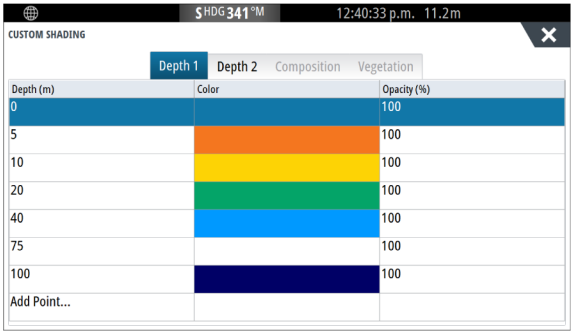
Depth presets that shade different depths in different colors.

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, colo 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.

¼ 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 t 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

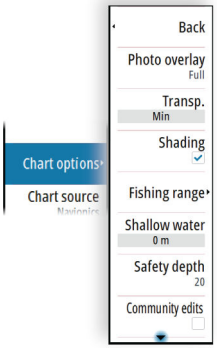


Photo overlay

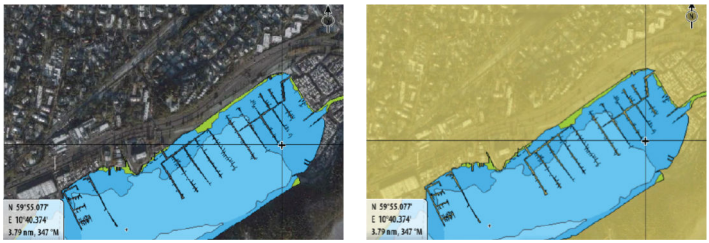
Photo overlay enables you to view satellite photo images of an area as an overlay on the chart. The availability of such photos is limited to certain regions, and cartography versions.

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

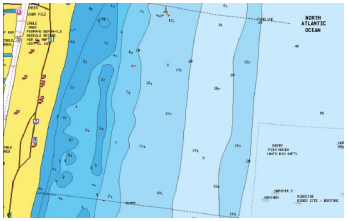
Chart shading

Shading adds terrain information to the chart.

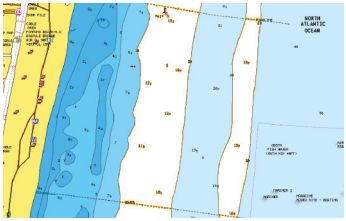
Fishing range

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 dat meaning that if the chart only contains 5 meter intervals for contour lines, the shading is rounded to the nearest available contour line.



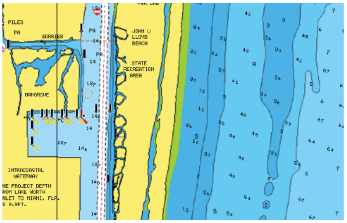
No Depth highlight range



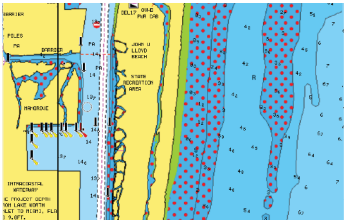
Depth highlight range: 6 m - 12 r

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 r

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.

¼ 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 use information or edits uploaded to Navionics Community by users, and made available in Navionics charts.

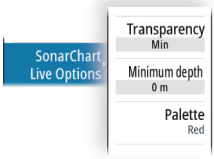
For more information, refer to Navionics information included with your chart, or to Navionics website: www.navionics.com.

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. Th 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 graduall change from a simple grey/white to red.

Palettes

Used for selecting the image†s color palette.

SCL History

Select to display previously recorded data on the chart overlay.

¼ Note: SonarChart live does not record while SCL history files ar being viewed.

SC Density

Controls the density of the SonarChart and SonarChart Live contours.

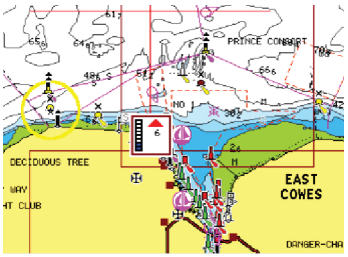
Colored seabed areas

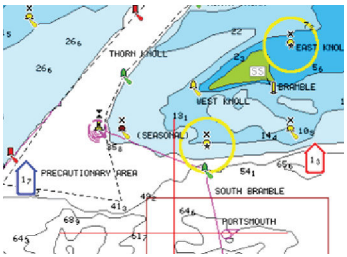
Turns ON/OFF coloring seabed areas red.

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 t 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.

¼ 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.

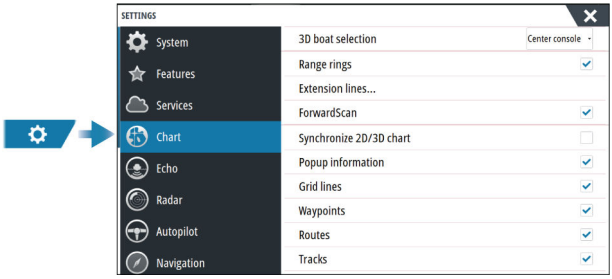
Chart details
Provides you with different levels of geographical layer information.

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

¼ Note: There is no indication on the chart showing that this feature is active.

Chart settings

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



3D boat selection

Determines which icon to use on 3D charts.

Range rings

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

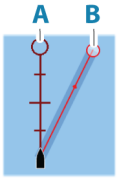
The range scale is set automatically by the system to suit the panel scale.

Extension lines

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

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

Extension length



A: Heading

B: Course Over Ground (COG)

The length of the extension line is either set as a fixed distance, or t indicate the distance the vessel moves in the selected time period. I no options are turned on for the vessel then no extension lines are shown.

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

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

ForwardScan

If you have ForwardScan and this option is selected, the ForwardScan heading extension is shown on the chart. Refer to "Heading extension" on page 174.

SonarChart Live tide correction

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

Synchronize 2D/3D chart

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

Pop-up information

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

Grid lines

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

Waypoints, Routes, and Tracks

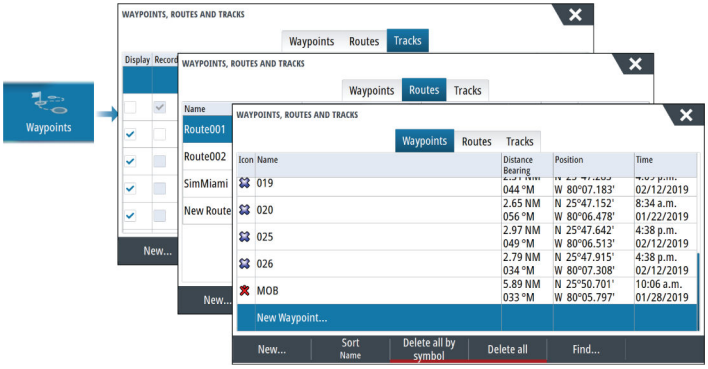
Turns on/off displaying of these items on chart panels.

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

5 Waypoints, routes, and tracks

Waypoints, Routes, and Tracks dialogs

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



Waypoints

About waypoints

A waypoint is a user generated mark positioned on the:

- chart
- echosounder image
- radar image
- navigation panel

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

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

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

Saving waypoints

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

To save a waypoint:

ƒ Select the new waypoint option in the menu

Moving a waypoint

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

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

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

Edit a waypoint

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

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

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

Deleting waypoints

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

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

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

You can delete MOB waypoints the same way.

You can back-up your waypoints, routes and tracks before deleting them, refer to "Maintenance" on page 220.

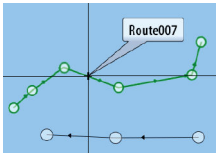
Waypoint alarm settings

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

¼ 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 199.

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 move it to a new position
5. Save the route by selecting the save option in the menu.

¼ Note: The menu changes depending on the selected edit option. All edits are confirmed or cancelled from the menu.

Creating routes using existing waypoints

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

Creating a route based on a trip

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

Converting tracks to routes

You can convert a track to a route from the edit track dialog. The dialog is activated by activating the track, and then:

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

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

Dock-to-dock Autorouting and Easy Routing

The Dock-to-dock Autorouting and Easy Routing features suggest new routepoint positions based on information in the map and on your boat†s size. Before you can start using these features the boat draught, width and height must be entered into the system. The boat settings dialog is automatically displayed if the information is missing when you start the feature. To enter boat settings, refer to "System settings" on page 214.

- 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+, 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

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

First and last routepoint

Result after automatic routing

ƒ Selection option used for autorouting part of a route.

Two routepoints selected

Result after automatic routing

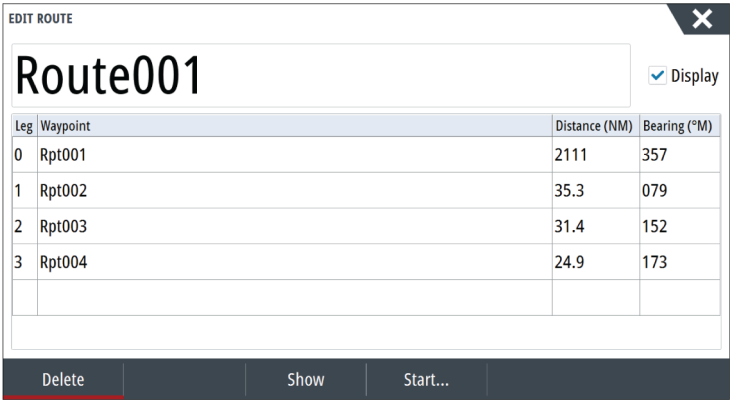
The edit route dialog

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.

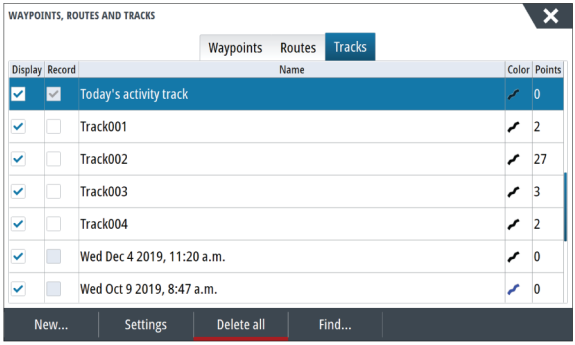
You can back-up your waypoints, routes and tracks before deleting them, refer to "Maintenance" on page 220.

Tracks

About tracks

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

Example of the Tracks dialog:



Automatic tracking

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

¼ Note: To display tracks on the chart panel, both the Display option in the Track dialog and the Tracks option in the Chart settings dialog have to be enabled.

Recording and displaying tracks

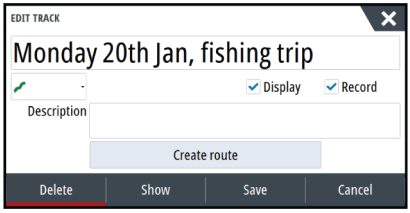
When the recording of a new track is started, the old one is hidden to de-clutter the chart panel. If Display is enabled on the old track, it will continue to show on the chart panel.

¼ Note: To display tracks on the chart panel, both the Display option in the Track dialog and the Tracks option in the Chart settings dialog have to be enabled.

Creating a new track

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

The edit tracks dialog



You can manage a track and change a track†s properties using the edit track dialog. This dialog is activated by selecting a track†s pop-up or by selecting the track in the chart menu.

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

Coloring tracks

To color tracks:

ƒ Select the track in the Tracks dialog and set the color for the entire track in the Edit Track dialog.

Deleting tracks

You can delete a track by selecting it in the tracks dialog and then deleting it in the edit track dialog.

You can delete all the tracks from the system using the tracks dialog

You can back-up your waypoints, routes and tracks before deleting them, refer to "Maintenance" on page 220.

Track logging settings

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

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

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

Using the synchronize feature

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

- Waypoints
- Routes
- Tracks

Use the MFD†s Synchronize my data option to synchronize betwee the MFD and your Simrad app account.

Requirements

- An account with the Simrad mobile app

¼ 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.

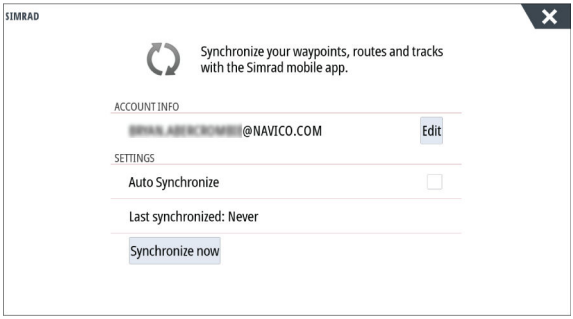
- To synchronize, the unit must be connected to the internet. To connect the unit to the internet, refer to "Internet connection" on p 201.

Synchronizing

To synchronize the MFD data and your Simrad app account data (includes your data at https://appchart.simrad-yachting.com), open the Synchronize my data feature from the System Controls dialog o 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


SIMRAD
Synchronize your waypoints, routes and tracks with the Simrad mobile app.
ACCOUNT INFO
@NAVICO.COM
Edit
SETTINGS
Auto Synchronize
Last synchronized: Never
Synchronize now

6 Navigating

About navigating

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

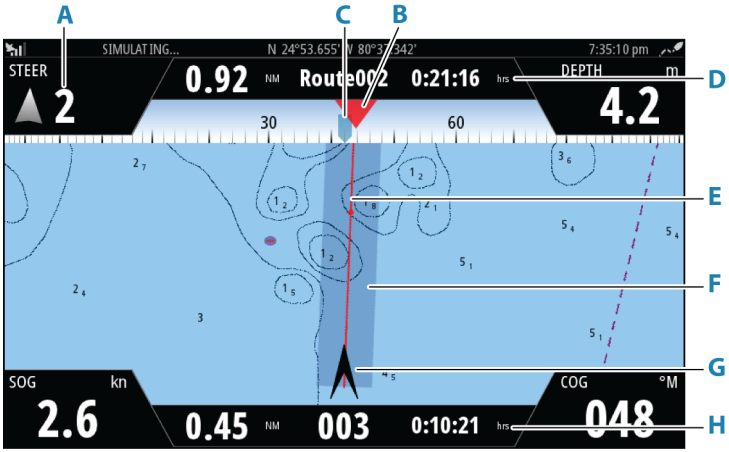
If autopilot functionality is included in your system, the autopilot can be set to automatically navigate the vessel.

For information about positioning waypoints and creating routes, refer to "Waypoints, routes, and tracks" on page 53.

Navigation panels

The Nav panel

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



A Data fields

B Vessel heading

C Bearing to next routepoint

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

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

F XTE limit
If the XTE (Cross Track Error) exceeds the defined XTE limit, this is indicated with a red arrow including the distance from the track line. Refer to "XTE limit" on page 67.

G Vessel symbol
Indicates boat position and heading.

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

The Position panels

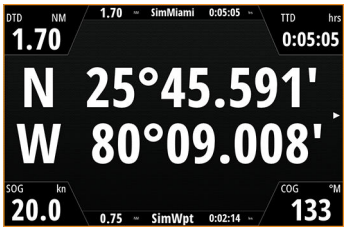
You can switch between displaying the Navigation panel or the Position panel. The Position panel is activated from the menu.

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

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

You toggle between the panels by:

- selecting the left or right arrow symbols

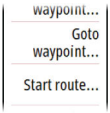


GPS position info

Loran position info

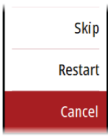
Menu options

You can use menu options to:



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

While navigating, the menu expands to provide options to:



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

Navigating with the autopilot

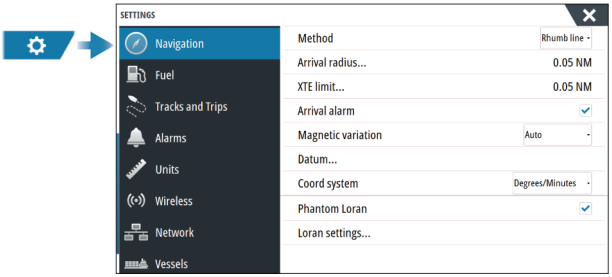
When you start navigation on a system with autopilot functionality, you are prompted to set the autopilot to navigation mode.

¼ Note: The prompt to set the autopilot to navigation mode is disabled if the boat type is set to SAIL in the Autopilot Commissioning dialog.

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

For more information about autopilot functionality, refer to the autopilot chapter of the autopilot being used.

Navigation settings



Navigation method

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

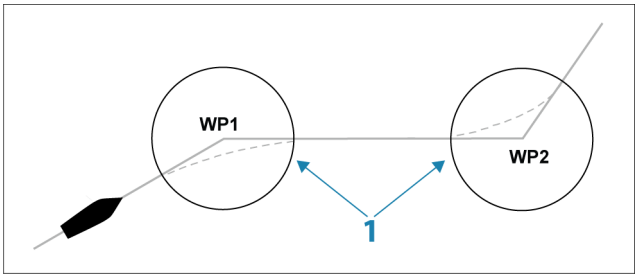
The Great circle route is the shortest path between two points. However, if you are to travel along such a route, it would be difficult to steer manually as the heading would constantly be changing (except in the case of due north, south, or along the equator).

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

Arrival radius

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

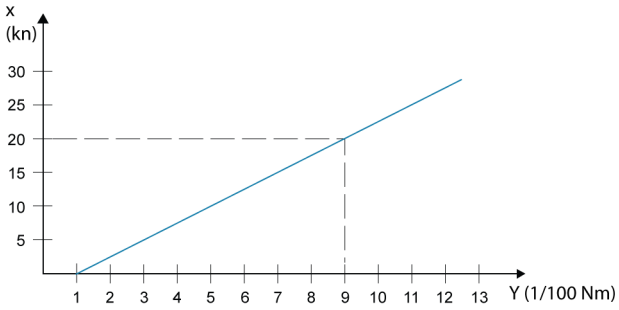
When you are navigating a route, the arrival radius defines the poin at which a turn is initiated.



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.



¼ Note: The distance between any waypoints in a route must not be smaller than the radius of the waypoint arrival circle.

XTE limit

Defines how far the vessel can deviate from the selected route. If the vessel goes beyond this limit, an alarm is activated.

Arrival alarm

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

Magnetic variation

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

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

Datum

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

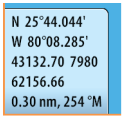
You can change the datum format to match other systems.

Coordinate system

Used to set the geographic coordinate system used on your system

Phantom Loran

Enables use of Phantom Loran positioning system.



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

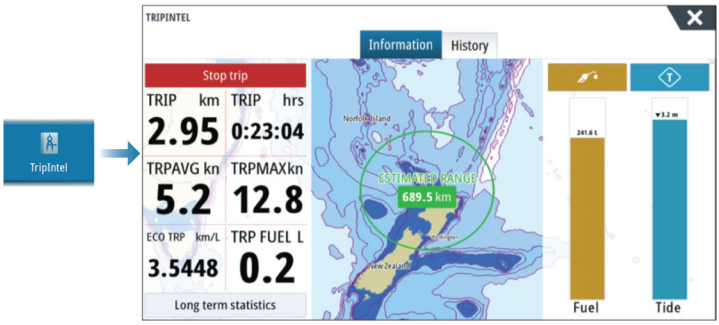
The graphic example shows a cursor position window with Loran position information.

For more information refer to your Loran system documentation.

7 TripIntel

About TripIntel

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



Current trip statistics

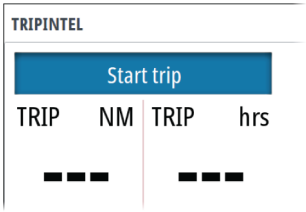
The Information tab on the TripIntel page shows current trip statistics:

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

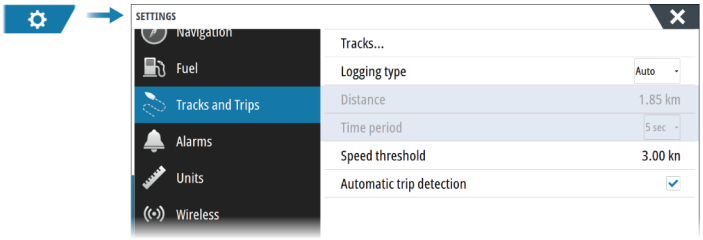
Automatic trip recording

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

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



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



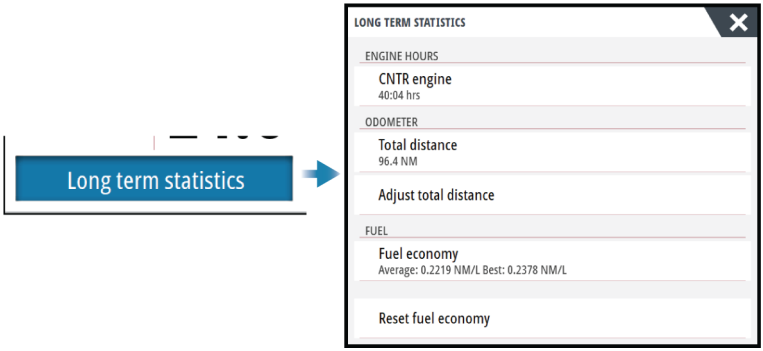
Start and stop trip recordings

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

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

Long-term statistics

Select Long Term Statistics to view seasonal trip information.



Adjust total distance

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

Reset fuel economy

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

Estimated fuel range ring

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

- Note: The Estimated fuel range ring represents fuel consumption on a one way trip only, it does not include fuel estimates for the return trip to your current location. It represents the distance in which your boat will completely run out of fuel.
- Note: The Estimated fuel range ring is calculated from the Vessel Fuel Remaining only, not level sensors. When recording your refueling, you must †Set to full† or †Add fuel† for the range ring to be accurate.

Fuel gauge

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

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

¼ Note: This is only for the TripIntel page and the economy graph.

Record your refueling

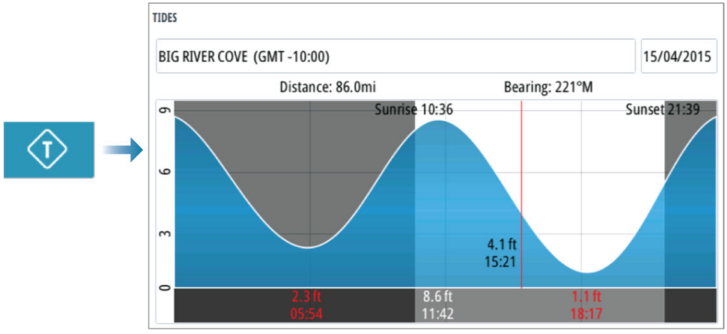
Select the Fuel button to record the amount of your refuel. The refuel information is used for calculating the Vessel Fuel Remaining amount.

Tide gauge

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

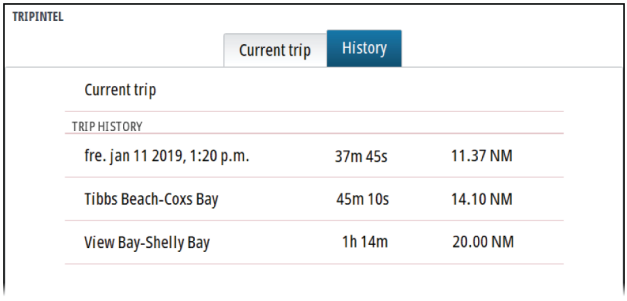
Tide graphs and stations

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



View trip recordings

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



Change trip recording names

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

8 Autopilot

Safe operation with the autopilot

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

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

¼ Note: For safety reasons a physical standby key should be available.

Do not use automatic steering when:

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

When using an autopilot:

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

Autopilot alarms

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

For more information, refer to "Alarms" on page 198.

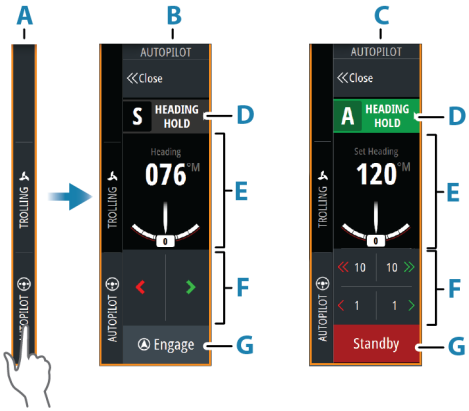
Selecting active autopilot

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

Buttons for both autopilots are shown in the control bar.

Activate an autopilot by selecting the relevant button in the control bar, then select the switch button in the autopilot controller.

The autopilot controller



A Control bar

B Autopilot controller, disengaged

C Autopilot controller, engaged

D Mode button

E Mode dependent information

F Mode dependent buttons

G Engage/Standby button

Engaging and disengaging the autopilot

To engage the autopilot:

- Select the engage button to activate last active mode
- Select the mode button to display the list of available modes, then select the preferred mode

The autopilot will engage in the selected mode, and the autopilot controller will change to show active mode options.

To disengage the autopilot:

ƒ Select the standby button

When the autopilot is in standby, the boat must be steered manually.

Autopilot indication

The status bar shows autopilot information as long as an autopilot computer is connected.

Autopilot modes

The autopilot has several steering modes. The number of modes and features within the mode depend on the autopilot computer, the boat type and available inputs.

Non-Follow Up mode (NFU)

In this mode the port and starboard buttons are used to control the rudder.

Activate this mode by selecting the port or starboard button when the autopilot is in standby.

Follow-Up mode (FU)

In this mode the rudder moves to a set rudder angle. The rudder position is maintained at the set angle.

To change the set rudder angle

ƒ Select the port or starboard button

Heading hold mode (A)

In this mode the autopilot steers the vessel on the set heading.

When the mode is activated, the autopilot selects the current compass heading as the set heading.

¼ Note: In this mode the autopilot does not compensate for any drifting caused by current and/or wind (W).

To change the set heading

ƒ Select a port or starboard button

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

Tacking in Heading hold mode

¼ Note: Only available when the boat type is set to sail (autopilot configuration).

¼ Note: Tacking should only be performed into the wind and must be tried out in calm sea conditions with light wind to find out how it works on your vessel.

Tacking in heading hold mode changes the heading by a fixed tack angle, either to port or starboard.

The rate of turn during the tack/gybe is set by the tack time in the autopilot settings dialog. Refer to "Autopilot settings" on page 84.

To initiate a tack:

ƒ Selecting the tack button in the mode list, then selecting the tack direction.

NoDrift mode

In NoDrift mode the vessel is steered along a calculated track line, from present position and in a direction set by the user.

When the mode is activated, the autopilot will draw an invisible track line based on current heading from the vessel€s position. The autopilot will now use the position information to calculate the cross track distance, and automatically steer along the calculated track.

¼ Note: If the vessel is drifting away from the track line due to current and/or wind (W), the vessel will follow the line with a crab angle.

To change the set track line

ƒ Select a port or starboard button

NAV mode

> Warning: NAV mode should only be used in open waters. Navigation mode must not be used while sailing, as course changes may result in unexpected tacks or gybes.

Prior to entering NAV mode you must be navigating a route or towards a waypoint.

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

¼ Note: For information about navigation, refer to "Navigating" on page 63.

NAV mode options

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

Restart

Restarts the navigation from the vessel€s current position.

Skip

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

Cancel

Cancels active navigation and deselects the current route or waypoint navigation. The autopilot is switched to heading hold mode, steering the vessel on the heading that was active when the cancel button was selected.

¼ 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 give an audible warning and display a dialog with the new course information.

There is a limit for the allowed automatic course change to next waypoint in a route:

- If the required course change to the next waypoint is less than the course change limit, the autopilot will automatically change the course
- If the required course change to next waypoint is more than the set limit, you are prompted to verify that the upcoming course change is acceptable. If the turn is not accepted, the vessel will continue with the current set heading.

The course change limit setting depends on the autopilot computer. Refer to the autopilot computer documentation.

Wind mode

¼ Note: Wind mode is only available when the boat type is set to Sail. It is not possible to activate wind mode if wind information is missing.

In wind mode the autopilot captures the current wind angle as steering reference, and adjusts the heading of the boat to maintain this wind angle.

The autopilot will keep the boat on the set wind angle until a new wind angle is set.

> Warning: In wind mode the autopilot steers to the apparent or true wind angle and not to a compass heading. Any wind shift could result in the vessel steering on an undesired course.

To change the set wind reference angle

- Select a port or starboard button
- With the autopilot controller active, turn the rotary knob

An immediate change of wind reference angle takes place.

Tacking and gybing in wind mode

The tack/gybe option in wind mode mirrors the set wind angle on the opposite tack.

Tacking and gybing in wind mode can be performed when sailing with apparent or true wind as the reference. In either case the true wind angle must be less than 90ˆ (tacking) and more than 120ˆ (gybing).

The rate of turn during the tack/gybe is set by the tack time in the autopilot settings dialog. Refer to "Autopilot settings" on page 84.

To initiate a tack or gybe:

- Select the Tack/Gybe option in the mode list

Turn patterns

The system includes a number of turn patterns, available when the autopilot is in auto mode. The number of turn patterns depend on autopilot computer.

¼ Note: Turn patterns are not available if the boat type is set to sail.

To start a turn

Select the port or starboard options in the turn dialog.

Turn variables

All turn patterns, except the U-turn, have settings that you can adjust before you start a turn, or at any time when the boat is in a turn.

U-turn

Changes the current set heading by 180ˆ. 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:

ƒ Rate of turn. Increasing the value makes the vessel turn a smalle circle.

Spiral

Makes the vessel turn in a spiral with a decreasing or increasing radius.

Turn variables:

ƒ Initial radius
ƒ 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 90ˆ 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.

¼ 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.

¼ 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 that is connected to the system. If more than one autopilot is connected, the Autopilot settings dialog shows option for the active autopilot.

The settings are made during commissioning of the autopilot. Be careful of changing settings after commissioning is completed.

Common user settings

The following user settings are common to all autopilots.

Chart compass

Select to display a compass symbol around your boat on the chart panel. The compass symbol is off when the cursor is active on the panel.

Autopilot

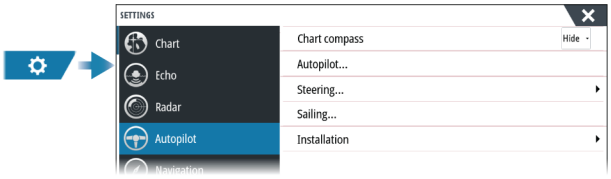
Switches the view to the last active page with the autopilot controller open.

NAC-1 specific user settings

Steering response

Used to increase or decrease the steering sensitivity. A low respons level reduces the rudder activity and provides a looser steering. A high response level increases the rudder activity and provides tighter steering. A too high response level will cause the boat to make S movements.

NAC-2/NAC-3 specific user settings



Autopilot

Switches the view to the last active page with the autopilot controller open.

Steering

These options allow for manually changing low speed and high speed parameters that were set during the commissioning of the autopilot computer. For more details, refer to the separate documentation for the autopilot computer.

Selecting the low speed option or the high speed option opens dialogs the following parameters can be changed.

- Turn rate: Preferred turn rate used while turning in degrees per minute.
- Rudder gain: This parameter determines the ratio between commanded rudder and the heading error. The higher rudder value the more rudder is applied. If the value is too small it will take a long time to compensate for a heading error, and the autopilot will fail to keep a steady course. If the value is set too high the overshoot will increase and the steering will be unstable.
- Counter rudder: Relation between change in heading error and applied rudder. Higher counter rudder will reduce applied rudder faster when approaching the set heading.
- Auto trim: Controls how aggressively the autopilot will apply rudder to compensate for a constant heading offset, e.g. when external forces such as wind or current affects the heading. Lower auto trim will give faster, limitation of a constant heading offset.

¼ Note: In VRF mode this parameter controls the time constant of the rudder estimate. A lower value makes the rudder estimate

faster, i.e. that it will more quickly catch up with the boat†s movements.

ƒ Init rudder: Defines how the system moves the rudder when switching from manual steering to an automatic mode.
  - Rudder limit: Determines the maximum rudder movement in degrees from midship position that the autopilot can command the rudder in the automatic modes. The Rudder limit setting is only active during autosteering on straight courses, not during course changes. Rudder limit does not affect Follow-up or Non-Follow-up steering.
  - Off heading limit: Sets the limit for the off heading alarm. An alarm occurs when the actual heading deviates from the set heading more than the selected limit.

ƒ Rudder limit: Determines the maximum rudder movement in degrees from midship position that the autopilot can command the rudder in the automatic modes. The Rudder limit setting is only active during autosteering on straight courses, not during course changes. Rudder limit does not affect Follow-up or Non-Follow-up steering.

ƒ Off heading limit: Sets the limit for the off heading alarm. An alarm occurs when the actual heading deviates from the set heading more than the selected limit.

ƒ Track response: Defines how fast the autopilot shall respond afte having registered a cross track distance.

ƒ Track approach angle: Defines the angle used when the vessel is approaching a leg. This setting is used both when you start navigating and when you use track offset.

ƒ Course change confirm angle: Defines the limits for course change to next waypoint in a route. If the course change is more than this set limit, you are prompted to verify that the upcoming course change is acceptable.

Sailing

¼ Note: Sailing parameters are only available when the boat type is set to Sail.

This option allows for manually changing parameters that were set during the commissioning of the autopilot computer. For more details of the settings, refer to the separate documentation for the autopilot computer.

- Tack time: Controls the rate of turn (tack time) when performing a tack in wind mode.
- Tack angle: Controls the angle that the boat will tack to between 50‰ - 150‰ in Heading hold mode.
- Wind function: Select what wind function the autopilot will use when in wind mode.
  - Auto:
    If TWA is <70‰, Wind mode will use AWA.
    If TWA is Š70‰, Wind mode will use TWA.
  - Apparent
  - True
- Manual speed: If neither boat speed or SOG data is available and or deemed reliable a manual value for speed source can be entered and used by the autopilot to aid steering calculations.

NAC-2/NAC-3 specific installation settings

For setup and commissioning of the NAC-2 or NAC-3, refer to the commissioning manual included with the autopilot computer.

NAC-D specific installation settings

For setup, commissioning, and user settings of the NAC-D, refer to the commissioning manual included with the autopilot computer.

9 Trolling motor autopilot

Safe operation with the autopilot

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

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

¼ Note: For safety reasons a physical standby key should be available.

Do not use automatic steering when:

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

When using an autopilot:

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

Autopilot alarms

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

For more information, refer to "Alarms" on page 198.

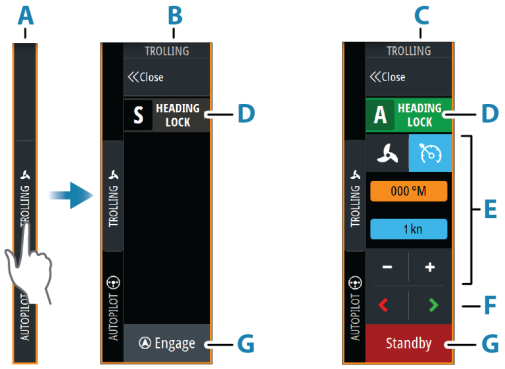
Selecting active autopilot

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

Buttons for both autopilots are shown in the control bar.

Activate an autopilot by selecting the relevant button in the control bar, then select the switch button in the autopilot controller.

The autopilot controller for trolling motor



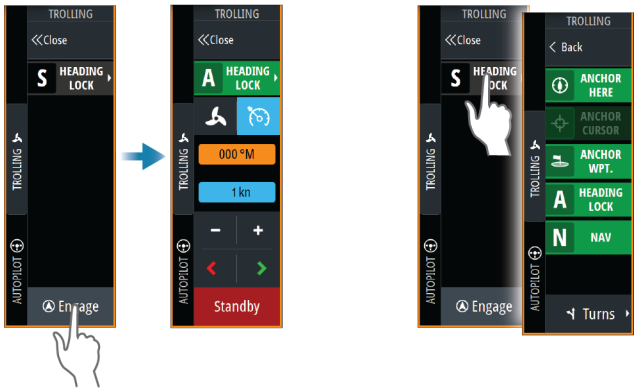
A Control bar
B Autopilot controller, disengaged
C Autopilot controller, engaged
D Mode button
E Mode dependent information
F Mode dependent buttons
G Engage/Standby button

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

Engaging and disengaging the autopilot

To engage the autopilot:

- Select the engage button to activate last active mode
- Select the mode button to display the list of available modes, then select the preferred mode



The autopilot will engage in the selected mode, and the autopilot controller will change to show active mode options.

To disengage the autopilot:

ƒ Select the standby button

When the autopilot is in standby, the boat must be steered manually.

Autopilot indication

The status bar shows autopilot information as long as an autopilot computer is connected.

Autopilot modes

The autopilot has several steering modes.

Anchor modes

In these modes the trolling motor maintains the vessel position at a selected location.

¼ Note: When in anchor mode, the vessel heading can be affected by wind or current.

The following anchor options are available:

Cursor

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

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

Here
Maintains the vessel at the current position.

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

Heading lock mode

In this mode the autopilot steers the vessel on the set heading.

When the mode is activated, the autopilot selects the current compass heading as the set heading.

¼ Note: In this mode the autopilot does not compensate for any drifting caused by current and/or wind (W).

To change the set heading

ƒ Select a port or starboard button

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

NAV mode

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

Prior to entering NAV mode you must be navigating a route or towards a waypoint.

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

When arriving at the destination, the autopilot switches to the selected arrival mode. It is important to select an arrival mode that

fits your navigation needs before NAV mode is activated. Refer to "Arrival mode" on page 95.

NAV mode options

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

Restart

Restarts the navigation from the vessel€s current position.

Skip

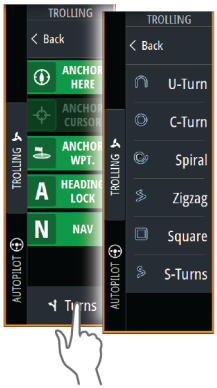
Skips the active waypoint and steers towards the next waypoint. This option is only available when navigating a route with more than one waypoint between the vessel position and the end of the route.

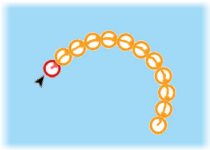
Turn pattern steering

The system includes a number of automatic turn steering features.

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

The last waypoint on the turn is the final waypoint. When the vessel reaches the final waypoint, the vessel goes into arrival mode. Refer to "Arrival mode" on page 95.





Starting a turn

ƒ 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 180ˆ.

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 90ˆ course changes.

Turn variable:

- Leg distance
- Number of legs

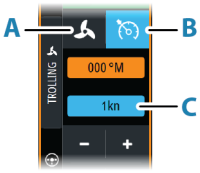
S-turn

Makes the vessel yaw around the main heading.

Turn variables:

- Turn radius
- Course change
- Number of legs

Trolling motor speed control



In Heading lock mode, Nav. mode and in Turn pattern steering the autopilot system can control the trolling motor speed.

The set target speed is displayed in the autopilot controller.

There are two ways to control the target speed of the trolling motor:

- Propeller rate, set as a percentage of power (A)
- Cruise control speed (B)

Switch between the speed options by selecting the speed icon.

The speed is increased/decreased in preset steps by selecting the plus and minus buttons. The speed can also be set manually by selecting the speed field (C).

Recording and saving a track

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

For more information, refer to "Waypoints, routes, and tracks" on pa

Autopilot settings

The options in the Autopilot settings dialog can vary.

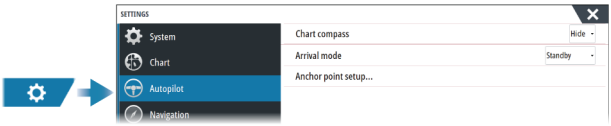


Chart compass

Select to display a compass symbol around your boat on the chart panel. The compass symbol is off when the cursor is active on the panel.

Arrival mode

The autopilot switches from navigation mode to the selected arrival mode when the vessel reaches the destination point.

Standby
Disengages the autopilot. The trolling motor is controlled by hand-held remote or by foot pedal.

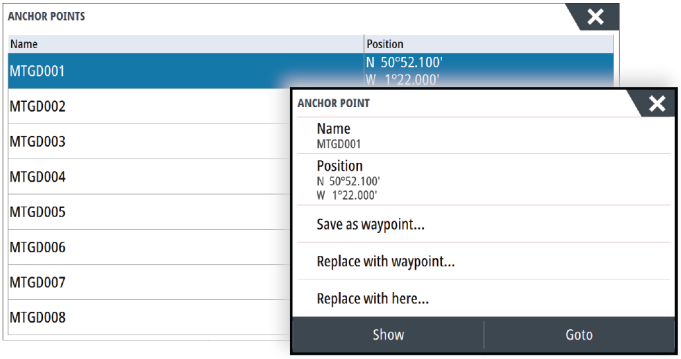
Heading lock
Locks and maintains the last vessel heading.

Anchor
Anchors the vessel at the destination point.

Anchor point setup

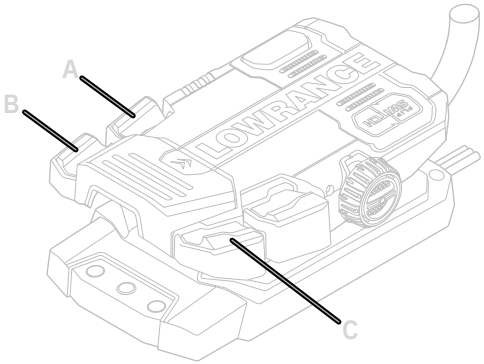
The trolling motor can store a number of anchor points, labelled with MTG prefix. Anchor points in the trolling motor are displayed in the Anchor point dialog.

These MTG anchor points can be saved as a waypoint in the MFD system. The position of an MTG anchor point can be redefined to be identical to an existing waypoint, or to the current vessel position.

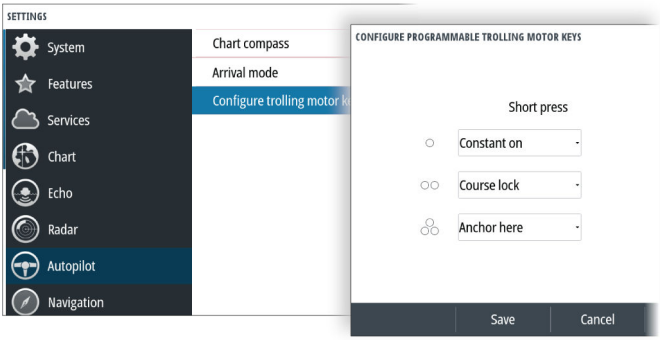


Configure the Ghost trolling motor foot pedal keys

You can configure three of the actions keys (A, B and C) 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.


SETTINGS
System
Features
Services
Chart
Echo
Radar
Autopilot
Navigation
Chart compass
Arrival mode
Configure trolling motor k
CONFIGURE PROGRAMMABLE TROLLING MOTOR KEYS
Short press
Constant on
Course lock
Anchor here
Save
Cancel

10 Outboard autopilot

Safe operation with the autopilot

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

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

¼ Note: For safety reasons a physical standby key should be available.

Do not use automatic steering when:

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

When using an autopilot:

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

Autopilot alarms

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

For more information, refer to "Alarms" on page 198.

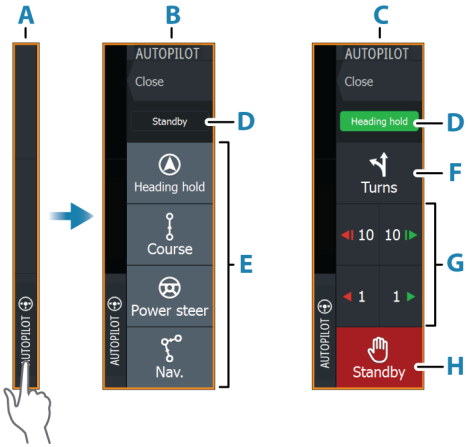
Selecting active autopilot

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

Buttons for both autopilots are shown in the control bar.

Activate an autopilot by selecting the relevant button in the control bar, then select the switch button in the autopilot controller.

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 engage button to activate last active mode
- Select the mode button to display the list of available modes, then select the preferred mode

The autopilot will engage in the selected mode, and the autopilot controller will change to show active mode options.

To disengage the autopilot:

ƒ Select the standby button

When the autopilot is in standby, the boat must be steered manually.

Autopilot indication

The status bar shows autopilot information as long as an autopilot computer is connected.

Autopilot modes

The autopilot has several steering modes. The number of modes and features within the mode depend on the autopilot computer, the boat type and available inputs.

Non-Follow Up mode (NFU)

In this mode the port and starboard buttons are used to control the rudder.

Activate this mode by selecting the port or starboard button when the autopilot is in standby.

To change the rudder position

ƒ Select a port or starboard button.

The rudder moves as long as the button is pressed.

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.

¼ Note: In this mode the autopilot does not compensate for any drifting caused by current and/or wind (W).

To change the set heading

ƒ Select a port or starboard button

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

NoDrift mode

In NoDrift mode the vessel is steered along a calculated track line, from present position and in a direction set by the user.

When the mode is activated, the autopilot will draw an invisible track line based on current heading from the vessel€s position. The autopilot will now use the position information to calculate the cross track distance, and automatically steer along the calculated track.

¼ Note: If the vessel is drifting away from the track line due to current and/or wind (W), the vessel will follow the line with a crab angle.

To change the set track line

ƒ Select a port or starboard button

NAV mode

> Warning: NAV mode should only be used in open waters. Navigation mode must not be used while sailing, as course changes may result in unexpected tacks or gybes.

Prior to entering NAV mode you must be navigating a route or towards a waypoint.

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

¼ Note: For information about navigation, refer to "Navigating" on page 63.

NAV mode options

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

Restart

Restarts the navigation from the vessel€s current position.

Skip

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

Cancel

Cancels active navigation and deselects the current route or waypoint navigation. The autopilot is switched to heading hold mode, steering the vessel on the heading that was active when the cancel button was selected.

¼ 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 give an audible warning and display a dialog with the new course information.

There is a limit for the allowed automatic course change to next waypoint in a route:

ƒ If the required course change to the next waypoint is less than the course change limit, the autopilot will automatically change the course
ƒ 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, available when the autopilot is in auto mode. The number of turn patterns depend on autopilot computer.

¼ Note: Turn patterns are not available if the boat type is set to sail.

To start a turn

ƒ Select the port or starboard button

Turn variables

All turn patterns, except the U-turn, have settings that you can adjust before you start a turn, or at any time when the boat is in a turn.

U-turn

Changes the current set heading by 180ˆ. 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 smalle 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 90ˆ 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.

¼ 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.

¼ 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 that is connected to the system. If more than one autopilot is connected, the Autopilot settings dialog shows option for the active autopilot.

Chart compass

Select to display a compass symbol around your boat on the chart panel. The compass symbol is off when the cursor is active on the panel.

Installation and commissioning the NAC-1 autopilot

For installation and commissioning instructions, refer to the unit†s installation manual section for NAC-1 autopilot specific installation settings.

11 Radar

¼ Note: Radar is available if the unit has a Radar connection on the back.

The radar panel can be set up as a full screen view or combined with other panels.

The radar image can also be displayed as an overlay on a chart panel. For more information, see "Radar overlay" on page 108.

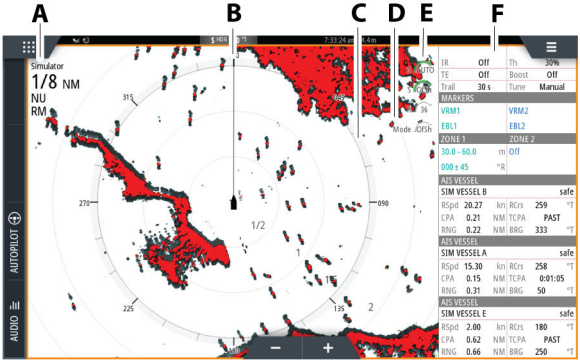
¼ Note: Radar overlay requires data from a heading sensor or compass to ensure proper orientation with the chart.

About radar

Several radar sensors are supported.

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

The Radar panel



A Radar information window

B Heading line*

C Compass*

D Range rings*

E Quick access buttons **

F Data bar *

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

** The quick access buttons are accessed by touch operation.

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.

¼ Note: A heading sensor must be present in the system for radar overlay.

When the radar overlay is selected, basic radar operational function 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.

Dual radar

You can use a dual panel page to show radar images from two different radar sources.

¼ 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 vessel. 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.

Selecting the radar source

You specify the radar in the radar panel by selecting one of the available radars in the radar source menu option. If you have a multiple radar panel page, the radar is set individually for each rada 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.

¼ Note: The 3-digit radar source number is the last 3 digits of the radar†s serial number.

Radar operational modes

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

Standby

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

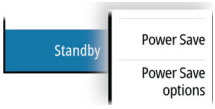
¼ Note: You can also put the radar in standby mode from the System Controls dialog.

Power off

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

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

Power save

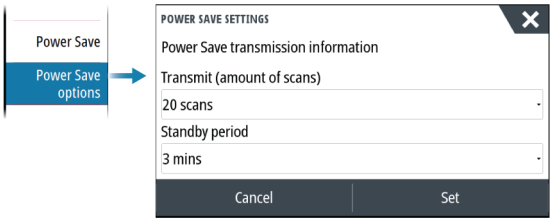


The power save menu option applies the settings made in the power save settings dialog to the radar source. The power save menu option is only available when the radar is in standby mode.

Select the standby option, and then the transmit option to return to normal transmit mode.

Power save options

Opens the power save settings dialog. The power save options menu option is only available when the radar source is in standby mode.



The settings made in the power save settings dialog are applied when the Set option is selected.

Use the power save settings dialog to specify the number of scans while transmitting and the amount of time the radar source will be in standby, during power save mode.

When in standby during power save mode, the radar image freezes and becomes grey-scaled. When the specified standby time period ends, the radar will commence transmitting until the completion of the number of scans specified is reached. The radar will then go int power save standby again. The power save cycle will continue until the radar source is in standby mode, transmit mode or powered off.

If a radar control is adjusted during the standby time period, the radar will commence transmitting until the completion of the number of scans specified is reached.

Guard Zone alarms remain available while power save mode is active. If an alarm is triggered while in power save mode, the radar will remain transmitting indefinitely. Power save mode will need to be re-enabled manually in this event.

Power save settings will be applied to both radar ranges in dual range mode.

Transmit

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

¼ Note: You can also put the radar in transmit mode from the system controls dialog.

Adjusting the radar range

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

Use the zoom buttons to increase or decrease the range.

Dual range

¼ Note: Halo 20 does not support dual range.

When connected to a Halo radar (other than Halo 20), it is possible to run the radar in Dual Range mode.

The radar appears in the radar sources menu as two virtual radar sources A and B. Range and radar controls for each virtual radar source are fully independent and the source can be selected for a particular chart or radar panel in the same manner as dual radar described in "Selecting the radar source" on page 111.

¼ Note: Some controls that are related to physical properties of the radar itself are not independent of source. These are Fast Scan, Antenna Height, Sector Blanking and Bearing alignment.

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

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

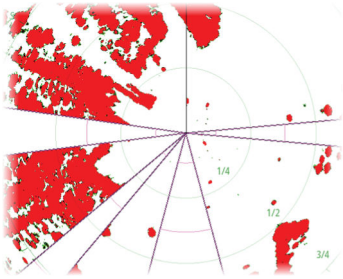
Sector blanking

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.

The sector blanking option is available in the radar installation dialog. Refer to the installation manual.

¼ 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.

¼ 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

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

¼ Note: The cursor assist function is available if it is enabled. Refe to "Customizing the long press feature" on page 26.

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.

Adjusting the radar image

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

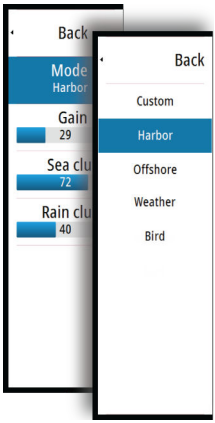
You can adjust the gain, sea clutter, and rain clutter by selecting the relevant icon in the top right corner of the radar panel or from the radar panel main menu.

¼ 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 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 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. The radar is set up for maximum sensitivity. 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
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
(Halo Radar only)

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, bo 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

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 setting you make in the menu and the vessels and tracked targets dialog.

You can set up tracking zones. Refer to "Target tracking zones" on 116. The system will track targets that enter the zones, which meet the settings you make in the vessels and tracked targets dialog.

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

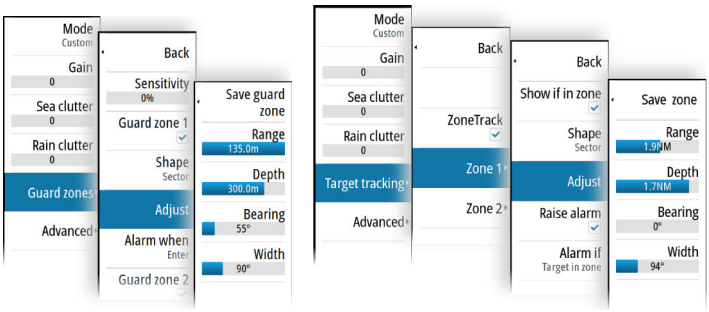
Target tracking zones

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

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

To specify which targets are displayed in the radar panel, use the vessels and tracked targets dialog to define dangerous targets, targets of interest and create target filters. Refer to "Vessels and tra targets" on page 134.

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



Guard zones Target tracking zones

Two zones can be defined, each with individual settings.

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

ZoneTrack

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

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

¼ Note: The ZoneTrack target limit is 50 targets per zone. The target limit cannot be changed.

Setting a guard zone around your vessel

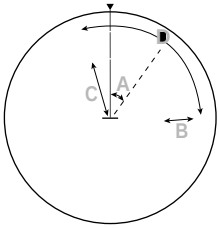
A guard zone is an area (either circular or a sector) that you can define on the radar image. When activated, an alarm alerts you when a radar target enters or exits the zone.

Creating guard zones or target tracking zones

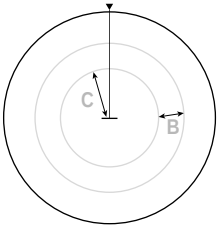
A guard zone or target tracking zone is an area (either circular or a sector) that you can define on the radar image. When activated, an alarm alerts you when a radar target enters or exits the zone.

Defining a guard zone or a target tracking zone

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



Shape: Sector



Shape: Circle

5. Select the save option to save your settings.

Guard zone or target tracking zone alarm settings

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

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

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

Sensitivity

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

Watching targets

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

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

Stop watching targets

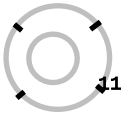
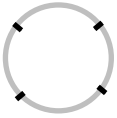
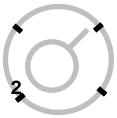
You can stop watching targets which no longer need special attention.

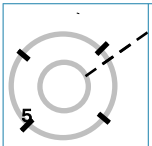
To stop watching specific targets, select a watched target on the radar image, then the Stop watching option. The stop watching option is available in the menu while a watched target is selected.

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

Radar target symbols

The system uses the target symbols shown below.

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

	Tracked moving radar target with course extension. Shows the tracked target ring and the target ID number.
	Tracked dangerous radar moving target (yellow), with trail when target history is enabled. The yellow color is shown when the radar palette is black/red or black/green. Shows the tracked target ring and the target ID number.
	Tracked dangerous radar moving target (purple), with trail when the target history is enabled. The purple color is shown when the radar palette is white/red. Shows the tracked target ring and the target ID number.
	Tracked dangerous radar moving target (red), with trail when target history is enabled. The red color is shown when the radar palette is black/yellow. Shows the tracked target ring and the target ID number.
	Tracked associated target. Shows the tracked target ring and the target ID number. When the radar and the AIS signal acquire the same target for tracking, the system will display the target with one symbol. This reduces the number of AIS symbols and radar targets on the PPI. The association function also compensates for a possible failure in one of the two targets, e.g., if the radar tracked target is positioned behind an island, the system keeps tracking and visualizing the AIS target. ¼ 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 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 manua adjustments of sea and rain controls, or by selecting the automatic control option. For more details, see "Adjusting the radar image" on 113.

Radar interference

Other radars operating in the same frequency band can generate interference. Normally this is seen on the radar screen as a series o 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 "Rejectin radar interference" on page 125.

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 125.

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 th 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" page 115.

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 pag 111.

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, o 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 tr targets" on page 134.

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 Vesse 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:

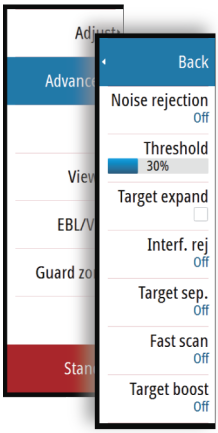
ƒ Disable, closes the message dialog and cancels the dangerous target alert for all vessels. You can re-enable the dangerous vess alert in the Vessels section of the Alarms settings dialog.

¼ 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.

ƒ 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 dangerou again.

ƒ 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.

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.

¼ 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.

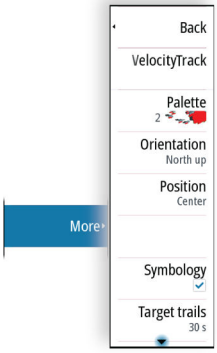
¼ Note: Maximum speed may not be achieved depending on the radar Settings, Mode, and Range selected. The radar will only rotate as fast as the current control settings allow.

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 spe 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.

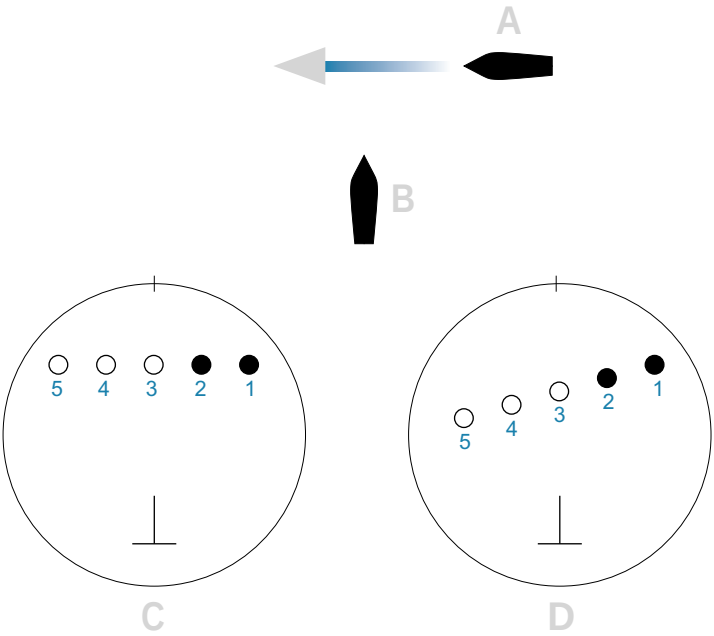
The speed threshold can be defined to apply for the radar source of the selected radar panel only, or to all radar sources connected to the system. The setting is only applied to those radars powered and connected at the time the setting is made. If the all radar sources

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 i 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 0ˆ, and speed is 0 knots.

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

In both examples, the target COG is 270ˆ, and the speed is 20 knot

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 0ˆ 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.

¼ 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 0ˆ 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

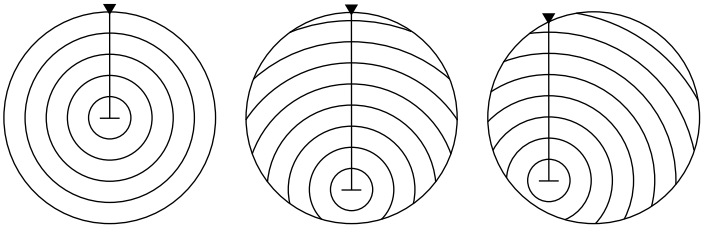
In course up mode, the top of the bearing scale indicates the ship€s true course measured from north at the time course up was

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, 180ˆ opposite the top of the display.

¼ 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 pane as either TM (True motion) or RM (Relative motion).

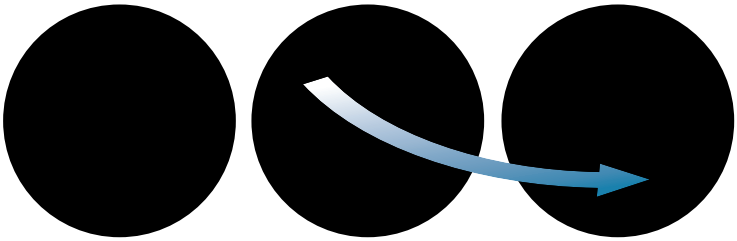
Relative motion

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 "Offsetti the PPI center" on page 129.

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) 180ˆ 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 rada image and vessel symbol to its starting position.

¼ Note: True motion is only available when the PPI is in either north up or course up orientation mode.

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 133).

Target trails

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

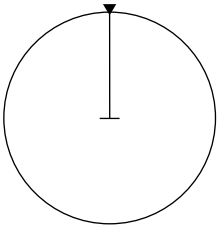
Target trails show where a target used to be, and the function is useful for quickly assessing the movement of targets relative to you own vessel.

You can set the length of the trails. The length represents the time i 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

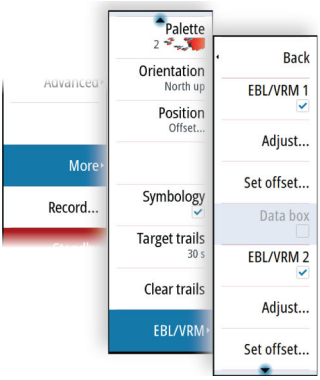


The electronic bearing line (EBL) and variable range marker (VRM) allows quick measurements of range and bearing to vessels and landmasses within radar range. Two different EBL/VRMs can be placed on the radar image.

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

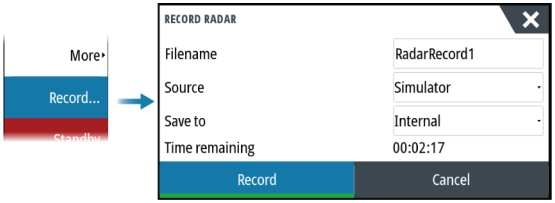
1. Position the cursor on the radar image
2. Activate the menu
3. Select one of the EBL/VRM markers
   - The EBL line and the VRM circle are positioned according to the cursor position.

Offsetting an EBL/VRM marker

1. Ensure that the cursor is not active
2. Activate the menu, 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

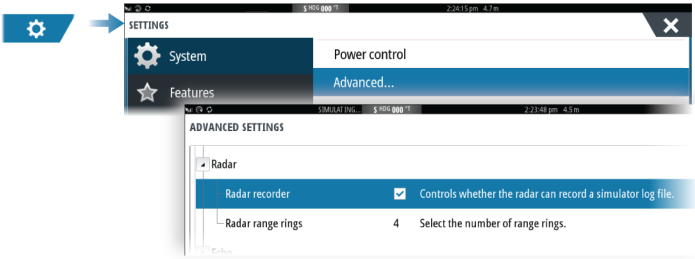
Recording radar data



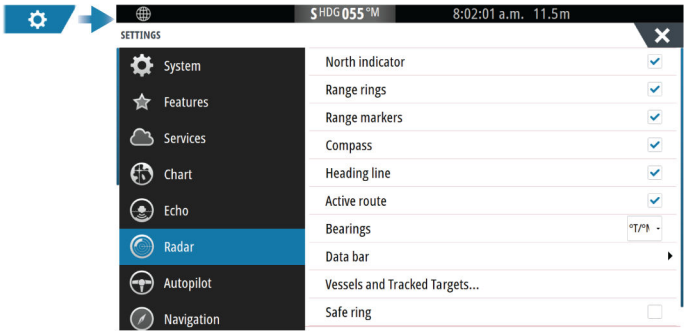
You can record radar data and save the file internally in the unit, or save it onto a storage device connected to the unit.

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

¼ Note: The record menu option is available if recording is turned on in the Advanced system settings.



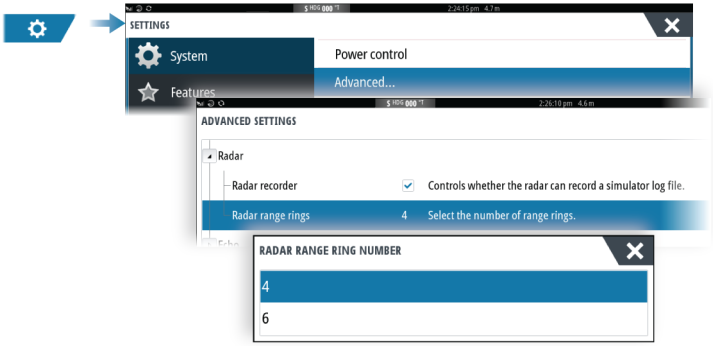
Radar settings



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 (ˆT/ˆM), or relative to own vessel (ˆR).

¼ Note: True bearing can only be selected when a compass is available.

Data bar

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

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

Vessels and tracked targets

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

Use this option to specify:

ƒ 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 135.

ƒ 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.

ƒ 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 t "Vessels and tracked targets" on page 134.

Installation

The Installation option is used for making radar installation settings. Installation settings must be made before using the radar. Installation setup settings are described in the separate Radar or th display unit†s installation manuals.

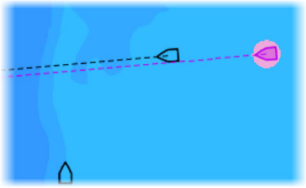
12 AIS

About AIS

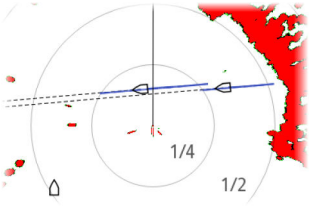
If a compatible AIS (Automatic Identification System) is connected to the system, AIS targets can be displayed and tracked. You can also see messages and position for DSC transmitting devices within range.

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.

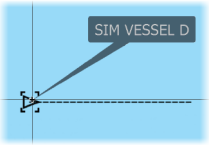


AIS vessels on a chart panel



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.

¼ Note: Pop-up information must be enabled to see the vessel†s name. Refer to "Chart settings" on page 50.

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.

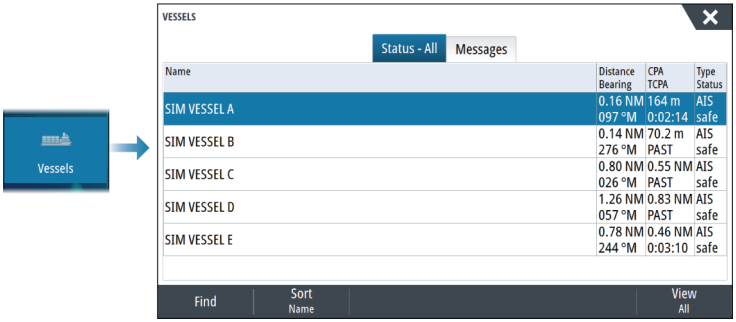
Displaying target information

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 selected target type.

The vessels dialog also lists received AIS messages.

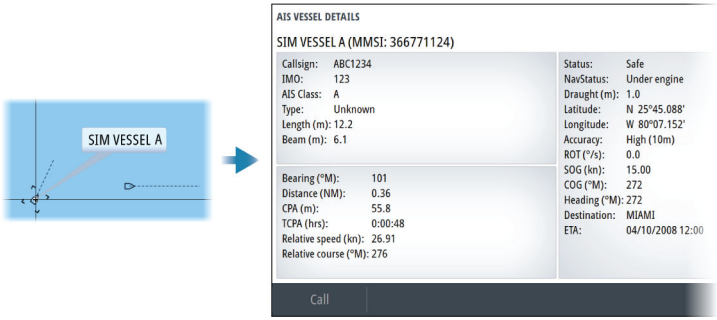


AIS vessel details

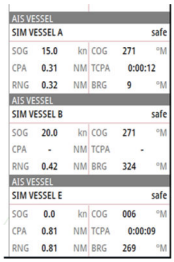
Detailed information about an AIS target is available from the AIS vessels details dialog.

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 th vessel status dialog. Refer to "Displaying target information" on pag

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 distre 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 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 transmitte 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:

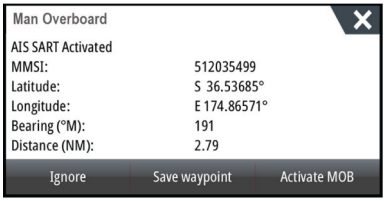
- An AIS SART icon is located on the chart in the position received from the AIS SART.
  The AIS SART icon is red when in †Active† state. It is green whe †Test† state.
- An alarm message is displayed.

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

¼ 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.

¼ Note: If you ignore the alarm, the AIS SART icon remains visible on your chart, and the AIS SART remains in the vessels list.

ƒ 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.

ƒ 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.

¼ Note: If the MOB function is already active, this will be terminated and replaced by the new route towards the AIS SART position.

¼ 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.

¼ 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 tr targets" on page 144.

Dangerous target alerts

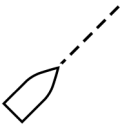
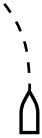
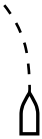
When a vessel meets the dangerous target criteria set in the Vesse and tracked targets dialog (TCPA/CPA settings) and if the Dangerous target alert option in the Alarms settings dialog is enabled, a dangerous target alert message dialog is displayed. The following options are available in the message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

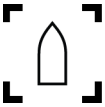
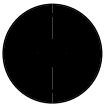
- Disable, closes the message dialog and cancels the dangerous target alert for all vessels. You can re-enable the dangerous vess alert in the Vessels section of the Alarms settings dialog.

  ¼ 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 dangerou 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.

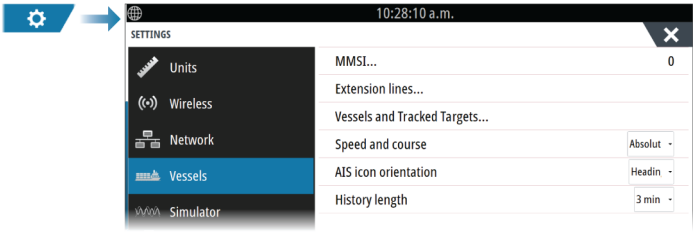
AIS target symbols and icons

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.
	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.

Symbol	Description
	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.
	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. ¼ Note: The radar target continues to be analyzed by the system when the target association is active.

Symbol	Description
	Selected AIS target, indicated with square corners around the target symbol.
	Lost AIS target, indicated with a line on the target symbol. The symbol is located at the last received position from the target
	AIS AtoN (Aids To Navigation) target symbol.
	AIS AtoN (Aids To Navigation) target symbol.
	AIS AtoN (Aids To Navigation) dangerous target. The yellow color is shown when the radar palette is black/red or black/green.
	AIS AtoN (Aids To Navigation) dangerous target. The purple color is shown when the radar palette is white/red.
	AIS AtoN (Aids To Navigation) dangerous target. The red color is shown when the radar palette is black/yellow.
	AIS SART †active† icons are red.
	AIS SART †tests† icons are green.

Vessel settings



MMSI

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

Extension lines

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

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

Your own vessel heading information is read from the active heading sensor, and COG information is received from the active GPS. For other vessels COG data is included in the message recei from the AIS system.

Vessels and tracked targets

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

¼ Note: For radar specific settings, refer to "Vessels and tracked t on page 134.

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, o to filter the icons based on security settings, distance, and vessel speed using this option.

Use this option to specify:

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

Speed and course

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

AIS icon orientation

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

History length

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

The history length defines the time presentation of the trail.

13 Echosounder

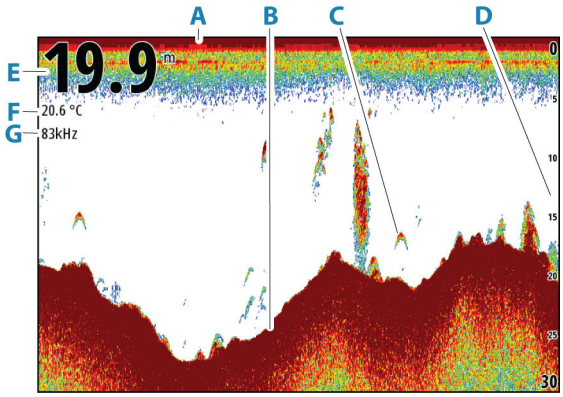
About

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

Requirements

The unit has a built-in echosounder. A compatible echosounder transducer is required.

The image



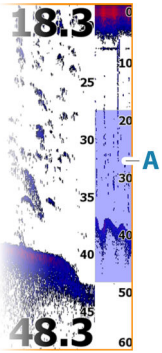
A Surface
B Bottom
C Fish arches
D Range scale
E Depth
F Temperature
G Frequency

Zooming the image

You can zoom the image.

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

Zoom bar



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

¼ Note: The zoom bar is displayed if the zoom bar menu option is selected, refer to "Zoom bar" on page 154.

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

Using the cursor on the panel

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

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

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

¼ Note: The cursor assist function is available if it is enabled. Refe to "Customizing the long press feature" on page 26.

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 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

¼ 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.

Saving waypoints

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

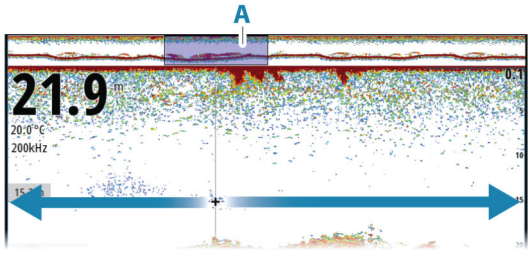
¼ Note: The new waypoint menu option is not available unless the cursor is placed on the image.

Viewing history

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

You can view history by panning the image.

To resume normal scrolling, clear the cursor.



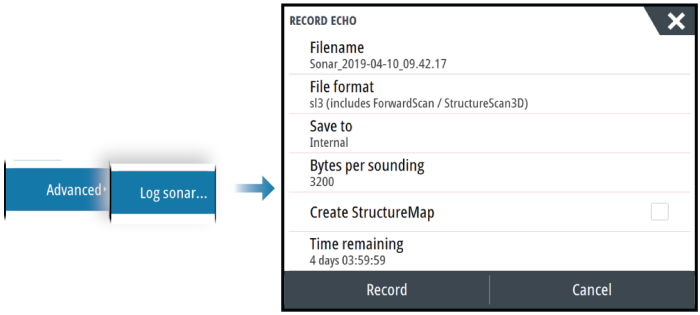
Recording log data

Start recording log data

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

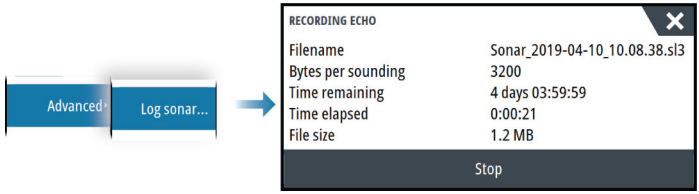
When the data is being recorded, there is a flashing red symbol in the top left corner and a message appears periodically at the bottom of the screen.

Specify recording settings in the recording dialog.



Stop recording log data

Use the stop logging option to stop recording log data.



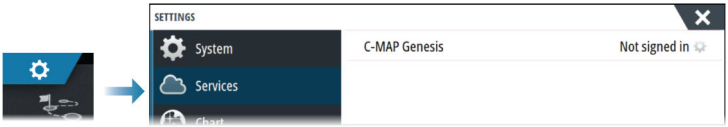
Viewing recorded data

Both internally and externally stored sounder records can be reviewed when the view sonar log option is selected in the echo settings dialog. Refer to "Echosounder settings" on page 156.

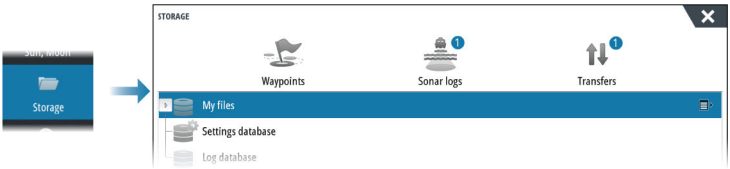
Upload sonar logs to C-MAP Genesis

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.

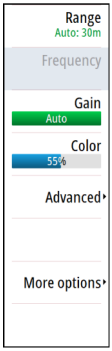


Echosounder data sharing

When connected to the Ethernet network, 12" GO units can access and display networked Echosounder data from other 12" GO units, and other capable sonar modules and display units. Refer to "Settin for the 12" units" on page 157.

Customizing the image

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



Range

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

¼ 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

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

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

Gain

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

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

Color

Strong and weak echo signals have different colors to indicate the different signal strengths. The colors used depend on which palette you select.

The more you increase the color setting, the more echoes are displayed in the color at the strong return end of the scale.

Source

¼ Note: Available only if multiple sources with the same capability are available.

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

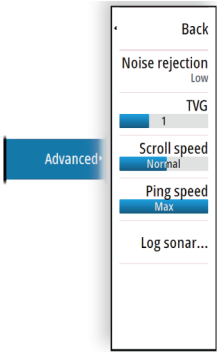
You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

¼ Note: Using transducers at the same frequency can cause interference.

For source setup information, refer to the unit†s Installation Manual

Advanced options

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



Noise rejection

Filters out signal interference and reduces on-screen clutter.

TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutt 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.

¼ Note: In certain conditions it may be necessary to adjust the scroll speed to get a more useful image. Such as adjusting the image to a faster speed when vertically fishing without moving.

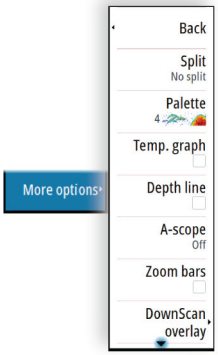
Ping Speed

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

Log sonar

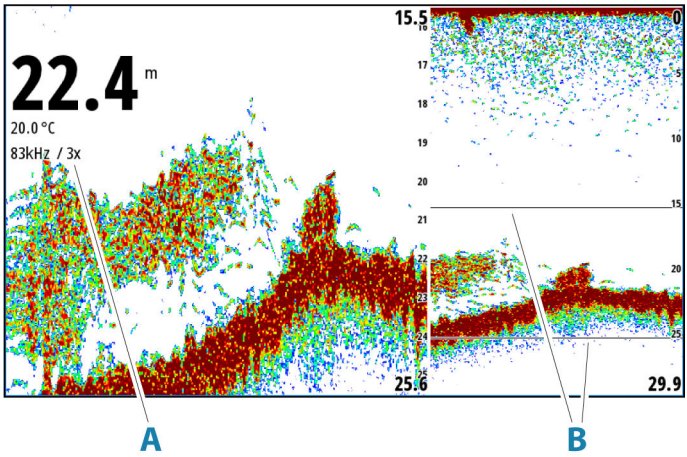
Select to start and stop recording of echosounder log data. For more information, refer to "Recording log data" on page 149.

More options



Split screens

Zoom



A Zoom level

B Zoom bars

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

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

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

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

Bottom lock

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

Palettes

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.

Zoom bar

Select to display the zoom bar while the image is zoomed. For information how to use the zoom bar, refer to "Zoom bar" on page 1

Overlay DownScan

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

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

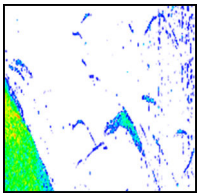
Pause

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

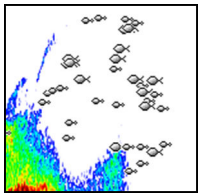
The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

Fish ID

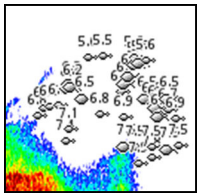
You can select how you want the fish targets to appear on the screen. You can also select if you want to be notified by a beep when a fish ID appears on the panel.



Traditional fish arches



Fish symbols

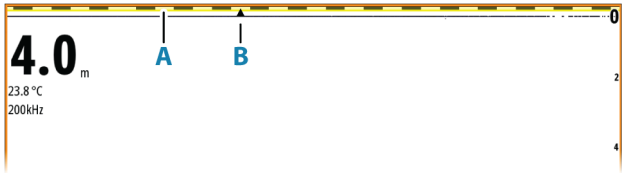


Fish symbols and depth indication

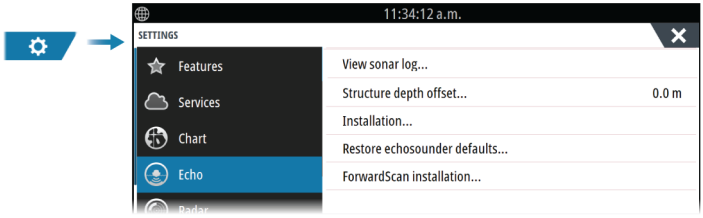
¼ Note: Not all fish symbols are actual fish.

Minute marker

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



Echosounder settings



View sonar log

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

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

Structure depth offset

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

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

Installation

Used for installation and setup. See the separate Installation manua

Restore echosounder defaults

Restore echosounder settings to the factory supplied defaults.

ForwardScan installation

Available when a ForwardScan transducer is connected.

For setup information, refer to "ForwardScan installation settings" o 175.

Settings for the 12" units

The 12" GO units can share echosounder data over the Ethernet network with other 12" GO units, other capable sonar modules and display units.

¼ Note: The 12" units cannot share StructureScan 3D data over the Ethernet network.

The following echosounder settings are available for setting up the sharing of the data.

Internal Echosounder

When selected, the internal echosounder is available for selection i the echosounder panel menu.

When unselected, this option disables the internal echosounder in the unit. It will not be listed as an echosounder source for any unit on the network. Unselect this option on units which do not have a transducer connected.

Network Echosounder

Select to share transducers from this unit with other units connected on the Ethernet network. In addition, the setting must be selected in order to see other enabled sonar devices on the network.

When unselected, transducers connected to this unit cannot be shared with other units connected on the network, nor can it see other sources on the network that have this feature enabled.

For more information about how to setup the echosounder, refer to the separate Installation manual.

Network echosounder mode

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

- Note: Single source is automatically selected if there are older legacy echosounders on the network. You cannot change this setting if older legacy echosounders are on the network. Multi-source mode should be selected if no legacy echosounder is connected to the network.
- Note: When changing the mode to multi-source you must wait 30 seconds and then power down all sources. Wait 1 minute, then restart all connected sources.

Use network depth and temp data

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

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

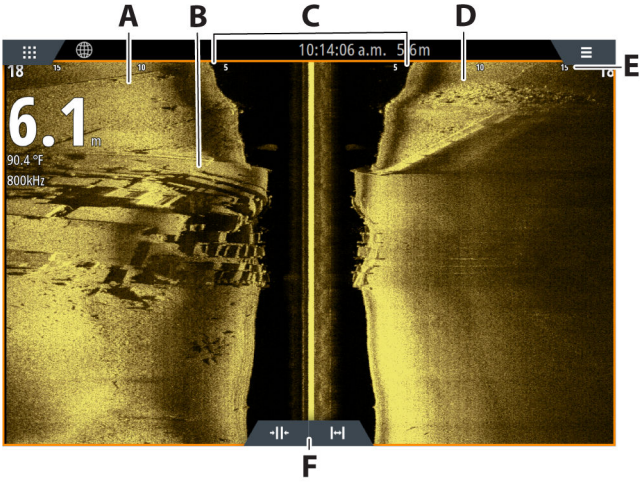
14 SideScan

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 transdu 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

Use the range buttons or change the range menu setting to specify the distance out to the left and right of the center displayed in the image. A change in the range causes a zoom in or out of the image

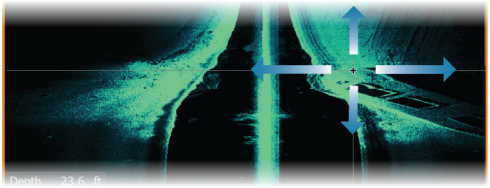
Using the cursor on the panel

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

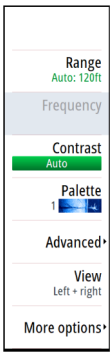


Recording SideScan data

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 149.

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

¼ 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.

¼ Note: Using transducers at the same frequency can cause interference.

For source setup information, refer to the unit†s Installation Manual

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.

Frequencies

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.

Contrast

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

¼ Note: We recommend that you use the auto contrast option.

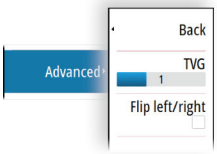
Palettes

Used for selecting the image†s color palette.

View

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

Advanced options



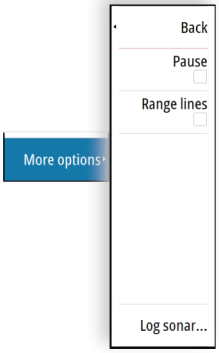
TVG

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

Flipping the image left/right

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

More options



Pause

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

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

Range Lines

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

Recording SideScan data

Displays the record log dialog. SideScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to "Recording log data" on page 149.

Echosounder settings

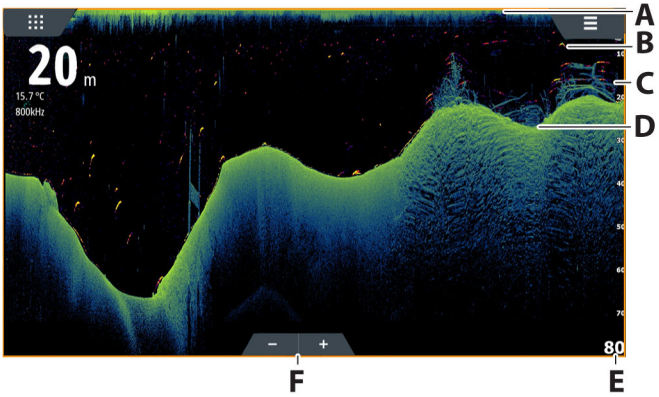
Use the echosounder settings dialog to make settings to your echosounder system. Refer to "Echosounder settings" on page 156

15 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

You can zoom the image.

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

Using the cursor on 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

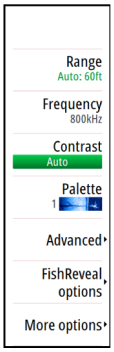
You can pan the image history by dragging the image to the left and right.

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 149.

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

¼ 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.

¼ Note: Using transducers at the same frequency can cause interference.

For source setup information, refer to the unit†s Installation Manual

Range

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

¼ Note: Setting a deep range in shallow water may cause the system to lose track of the depth.

Frequencies

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.

Contrast

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

¼ Note: We recommend that you use the auto contrast option.

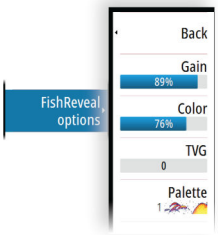
Palettes

Use for selecting the image†s color palette.

FishReveal

Select FishReveal to display fish arches in the image.

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



Gain

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

Color

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

TVG

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

Palette

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

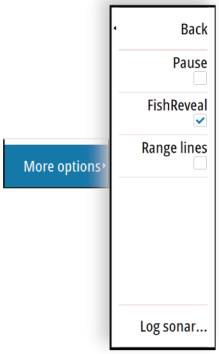
¼ Note: Palette choice is often a user preference, and may vary depending on the fishing conditions. It is best to select a palette that provides good contrast between the image details and FishReveal arches.

Advanced options

TVG

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

More options



Pause

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

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

FishReveal option

When FishReveal is enabled, displays fish arches in the image. Ref to "FishReveal" on page 165.

Range lines

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

Recording DownScan data

Displays the record log dialog. DownScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to "Recording log data" on page 149.

Echosounder settings

Use the echosounder settings dialog to make settings to your echosounder system. Refer to "Echosounder settings" on page 156

16 StructureMap

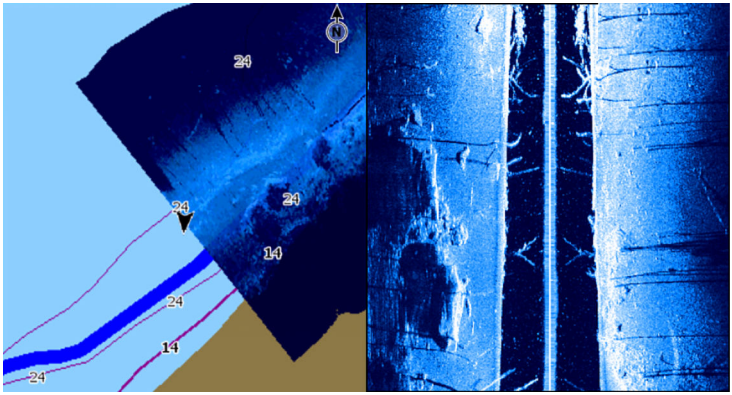
About StructureMap

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

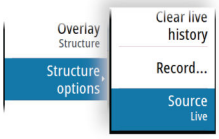
The StructureMap image

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, bu 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 displaye 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 o the SideScan transducer is reduced, but the width and the length of the image history is increased.

¼ 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.

¼ Note: When saved files are used as the source, all StructureMa 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

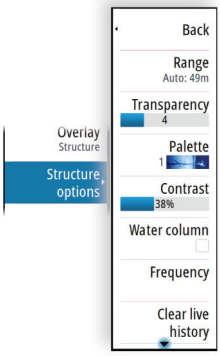
ƒ To get a picture of taller structures (a wreck, etc.) Œ do not drive over it, instead, steer the boat so the structure is on the left or right side of your vessel.
ƒ Do not use Autorange when using StructureScan. Set your structure range to a significantly greater level (two-to-three times) than the water depth to ensure a complete scan and to maximize conversion accuracy.
ƒ 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 embedded cartography as well as Navionics, Insight 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 use as the source. Unavailable options are greyed.

Range

Sets the search range.

Transparency

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

Palettes

Used for selecting the image†s color palette.

Contrast

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

Water column

Shows/hides the water column in Live mode.

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

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

Frequencies

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.

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

Source

Selects StructureMap source.

17 ForwardScan

About ForwardScan

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

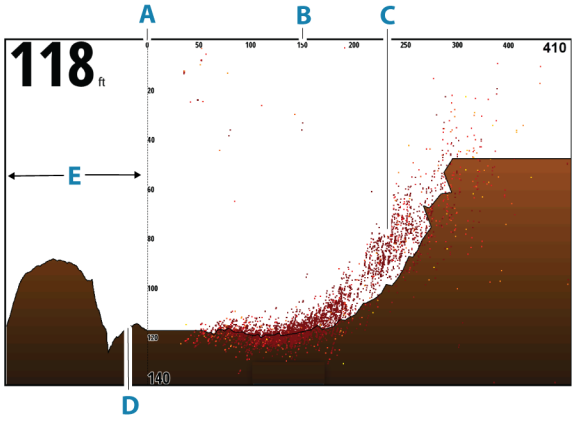
To use the ForwardScan feature you must have a ForwardScan transducer mounted on your vessel.

The ForwardScan transducer must be connected to a compatible sonar module (or another unit which has built-in sonar shared over the network).

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

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

The ForwardScan image

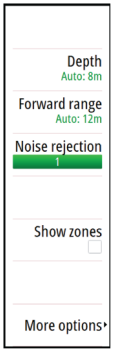


A	Depth range scale and vessel position
B	Forward range scale
C	Point data

D Bottom

E Depth history

Setting up the ForwardScan image



Source

¼ 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.

¼ Note: Using transducers at the same frequency can cause interference.

For source setup information, refer to the unit†s Installation Manual

Depth

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

Forward range

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

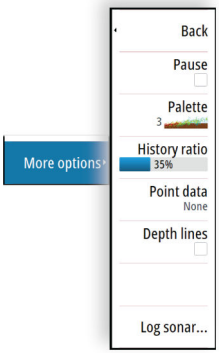
Noise rejection

Filters out signal interference and reduces on-screen clutter.

Show zones

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

More options



Pause

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

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

Palettes

Use for selecting the image†s color palette.

History ratio

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

Point data

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

Depth lines

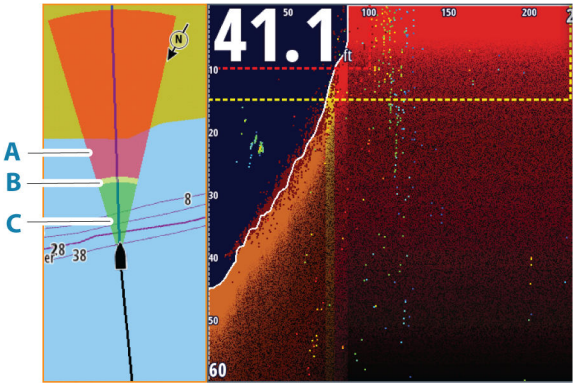
Displays lines on the screen that make it easier to quickly estimate depth and the underwater objects.

Recording ForwardScan data

Displays the record dialog. ForwardScan log data can be recorded by selecting the correct file format (sl3) in the record dialog. For more information, refer to "Recording log data" on page 149.

Heading extension

Use the chart heading extension to monitor ForwardScan on the chart panel. Heading extension colors are based on the ForwardScan alarm values.



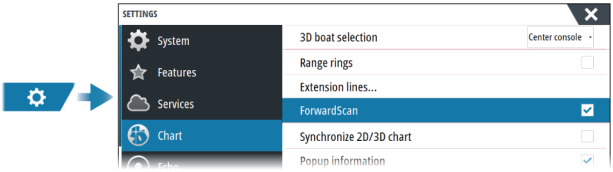
A Red - Critical

B Yellow - Warning

C Green - Safe

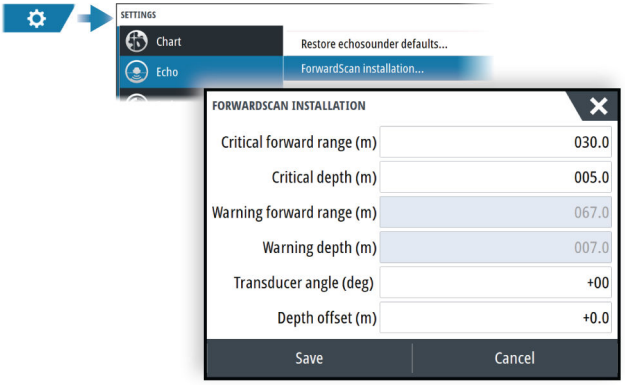
Setting up ForwardScan extensions

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



ForwardScan installation settings

Specify the setup in the ForwardScan installation dialog.



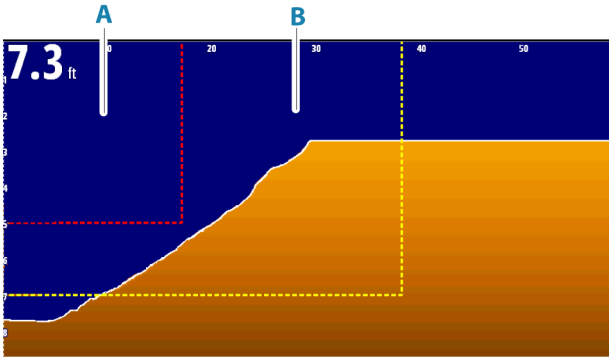
Critical forward range and Critical depth

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

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

To receive Critical Zone alarms, enable the Forward range alarm in the Alarm settings dialog. For more information about enabling alarms, refer to "Alarms" on page 198.

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



A Critical zone

B Warning zone

Warning forward range and warning depth

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

Offset angle

The offset angle is used to fine tune the transducer angle if the transducer is not installed parallel to the waterline.

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

The angle can be adjusted from 0 (vertical) to 20ˆ.

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

Depth offset

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

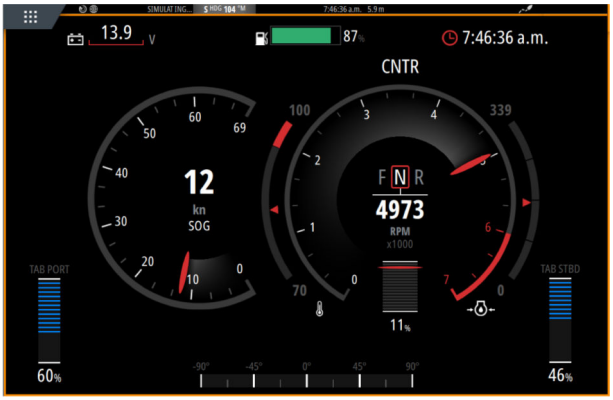
- To show the depth from the lowest point of the vessel to the bottom, set the offset equal to the vertical distance between the transducer and the lowest part of the vessel, A (negative value).
- To show the depth from the water surface to the bottom, set the offset equal to the vertical distance between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

18 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 ba gauges. Pre-defined dashboards and templates are included.

Example:



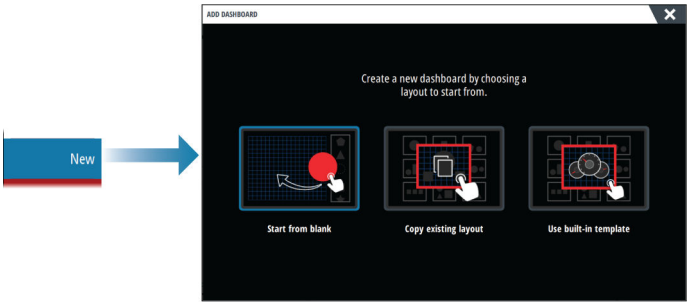
Selecting a dashboard

You switch between the dashboards by:

- swiping left or right on the panel
- selecting the dashboard from the menu

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

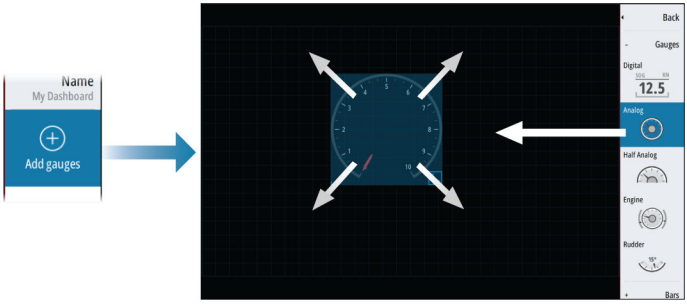
You can use edit menu options to:

- change the data for each of the gauges in any dashboard
- set limits for analog gauges
- change the dashboard layout

¼ Note: You cannot change the layout of pre-defined dashboards or dashboards you have created using built-in templates.

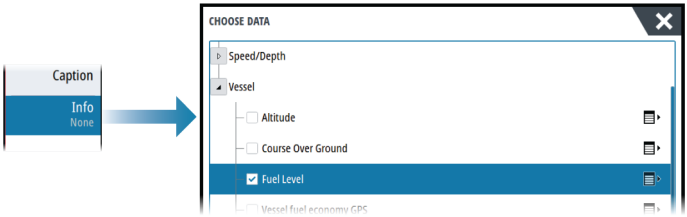
Adding gauges

Select a gauge in the menu and then position it on the dashboard.



Choosing gauge data

Select the gauge in the dashboard and then the info menu option to choose the data to be shown on the gauge.



19 Audio

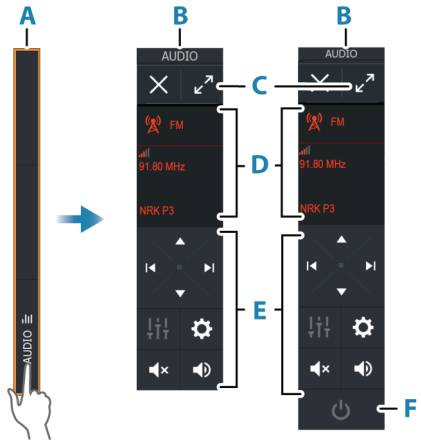
About the audio function

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.

For audio device installation, setup and connection information, refer to the documentation included with the audio device. For display unit wire connection information refer to the unit†s installation manual.

The Audio controller

The control buttons, tools and options vary from one audio source to another.



A Control bar

B Audio controller, small and large displays

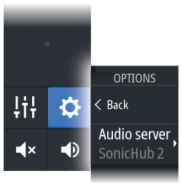
C Maximize button, expands the audio controller

D Source and source information

E Control buttons

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

Setting up the audio system

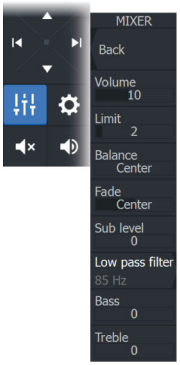


Audio server

If multiple audio sources are connected to the same network, one of the devices must be selected as the audio server. If only one device is present, it is the selected audio server by default.

Setting up the speakers

¼ 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.

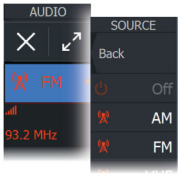
You can adjust balance, volume and volume limit settings individually for each zone. Adjustments to the bass and tremble settings will alter all zones.

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



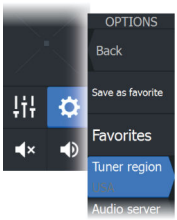
Use the source button to display the list of audio source. The number of sources depends on the active audio server.

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 smart phone or tablet.

Using an AM/FM radio



Selecting the tuner region

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

Radio channels

To tune in to an AM/FM radio channel:

ƒ press and hold the left or right audio control button

To save a channel as a favorite:

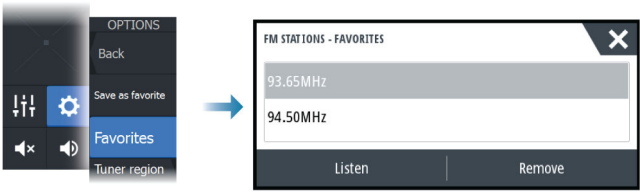
ƒ select the favorite menu option

To page through favorite channels:

ƒ select the up or down audio control button

List of favorite channels

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



Sirius radio

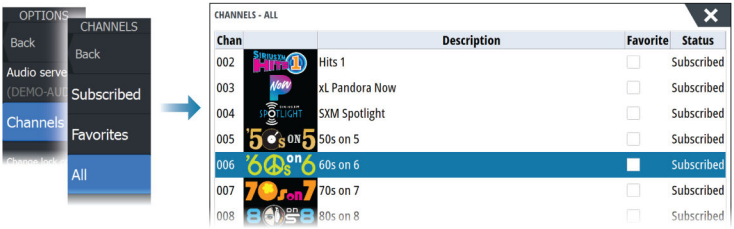
¼ Note: Sirius radio is available in North America only.

If you have a compatible Sirius XM receiver connected to your system, you can control the receiver from the Audio control bar.

Sirius service covers inland U.S. waters and coastal areas into the Atlantic and Pacific oceans, Gulf of Mexico, and the Caribbean Sea The SiriusXM products received vary depending on your selected subscription package. For more information, refer to www.siriusXM.com and the server documentation.

Lists of Sirius channels

Several options are available for displaying the Sirius channels.



Sirius favorite channels

You can create your favorite channels from within the list of all channels and the list of subscribed channels.

Selecting a Sirius channel

To select a channel:

- select the left or right audio control button

To page through favorite channels:

- select the up or down audio control button

Locking channels

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

20 Weather

About the weather feature

The system includes weather functionality that allows the user to view forecast data overlaid on the chart. This helps gaining a clear understanding of the weather conditions that are likely to appear.

The system supports weather data in GRIB format, available for download from various weather service suppliers.

The system also supports weather data from SIRIUS Marine Weath Service. This service is available only in North America.

Wind barbs

The rotation of the wind barbs indicate the relative wind direction, with the tail showing the direction the wind is coming from. In the graphics below, the wind comes from the northwest.

Wind speed is indicated by a combination of small and large barbs at the end of the wind tail.

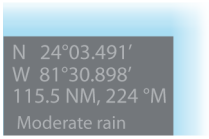
	Zero knots / Indeterminate wind direction
	Small barb = 5 knots
	Large barb = 10 knots
	Arrow barb = 50 knots

If a combination of 5 and 10 knot barbs are shown on a tail, then add them together to give you the total wind speed. The example below shows 3 x large barb + 1 x small barb = 35 knots, and 60 knots indicated with 1 x arrow barb + 1 x large barb.

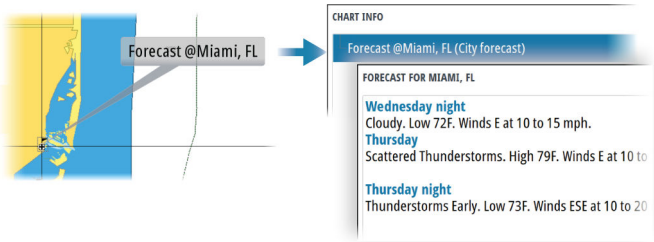
Wind speed: 35 knots

Wind speed: 60 knots

Showing weather details



If pop-up is enabled, you can select a weather icon to display the identity of the observation. If you select the pop-up, more information about the observation is displayed.



You can also display weather information from the menu when the weather icon is selected and the †Info - Weather item† menu option is selected.

GRIB weather

A GRIB file contains forecast information for a set number of days. It is possible to animate the weather data, which shows how weather systems are developing.

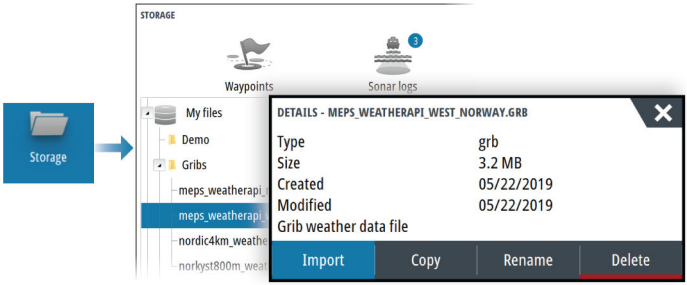
Importing GRIB data

GRIB data imported into memory can be displayed as chart overlay. The file can be imported from any location that can be seen in the storage manager.

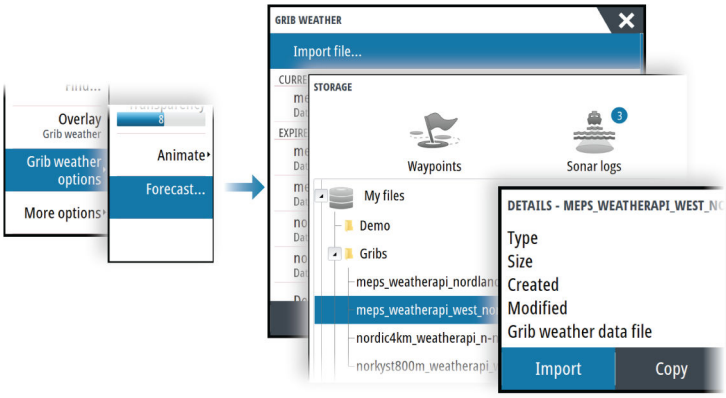
¼ Note: GRIB data that is imported overwrites the GRIB data in memory.

You can import the GRIB files:

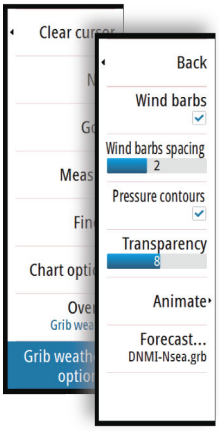
ƒ From the storage manager



ƒ From the forecast menu option on the chart panel. The Grib weather option is only available if Grib weather is set as the overlay on the chart.

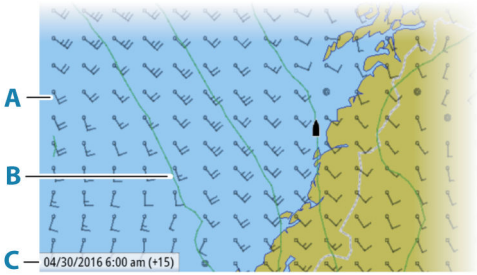


Displaying GRIB weather as overlay



Imported GRIB weather data can be displayed as an overlay on you chart panel.

When the GRIB weather overlay option is selected, the chart menu increases to show GRIB weather options. From this menu you can select which weather symbols you want to display, set the distance between the barbs, and adjust the opaqueness of the weather symbols.



A Wind barbs

B Pressure contours

C GRIB information window

GRIB information window

The GRIB information window shows the date and time for the GRIB weather forecast, and the selected forecast time in brackets. A negative value in the brackets indicates historic weather data.

If you select a position on the chart, the information window expands to include weather details for the selected position.

Animating GRIB weather forecast

The GRIB data contains forecast information for a set number of days. It is possible to animate the weather data and to show the predicted forecast for a specific time and date. The time scales vary depending on the file you are using.

The time shift is shown in brackets in the GRIB information window. The time is relative to the current time as provided by a GPS device connected to the system.

Select time and animation speed from the menu.

SiriusXM weather

About SiriusXM weather

¼ Note: SiriusXM weather is available for North America only.

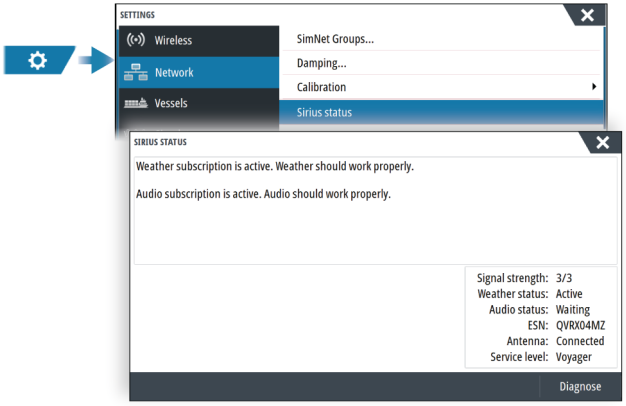
When a supported Navico satellite weather receiver module is connected to your system and with the appropriate subscription, SiriusXM marine weather information is available.

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.

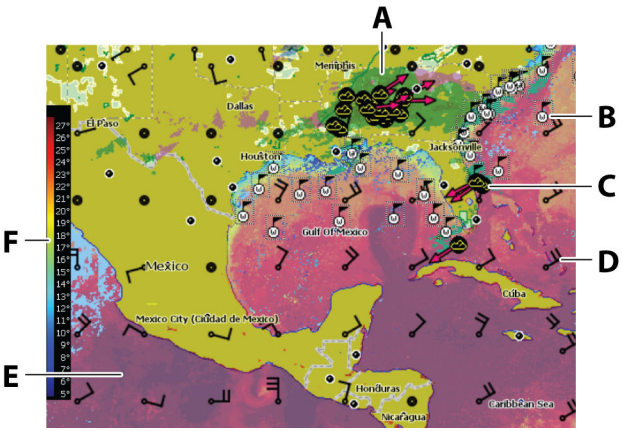


The status panel shows signal strength is indicated as 1/3 (weak), 2/3 (good) or 3/3 (preferred). It also includes antenna status, service level, and the electronic serial number for the weather module.

Sirius weather panel

Sirius weather can be displayed as an overlay on your chart panel.

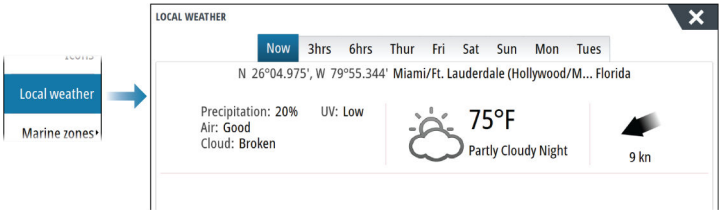
When weather overlay is selected, the chart menu increases to show the available weather options.



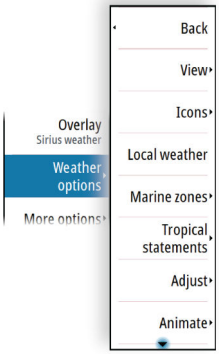
A Precipitation color shading
B Surface observations
C Storm icon
D Wind barb
E Sea Surface Temperature (SST) color shading
F SST color bar

Local weather

The local weather dialog shows current weather and weather forecast for your current location.



Weather options



View options

Precipitation

Shades of color are used to show precipitation type and intensity. The darkest color indicates the highest intensity.

Rain	From light green (light rain) - yellow - orange - to dark red (heavy rain)
Snow	Blue
Mixed	Pink

Sea Surface Temperature (SST)

You can show the SST as color shading or as text.

When color coding is selected, the SST color bar is shown on the le side of the display.

You define how the color codes are used to identify SST. Refer to "Adjusting color codes" on page 194.

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 194.

Forecast wind barbs

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

Surface features

Turns surface features on/off. Surface features include fronts, isoba and pressure points. Surface features cannot be shown at the same time as Wind.

Cloud tops

Turn Cloud tops on/off. Cloud tops indicate the height of the top of the clouds. The color palette used is grey with darker greys

indicating lower clouds. Cloud tops cannot be shown at the same time as Precipitation or Echo Tops.

¼ Note: This feature is only available for certain SiriusXM subscriptions.

Echo tops

Turns Echo tops on/off. Echo tops indicate the tops of storms. The color palette used is the same as for Precipitation. Echo tops canno be shown at the same time as Precipitation or Cloud Tops.

¼ Note: This feature is only available for certain SiriusXM subscriptions.

Weather icons

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

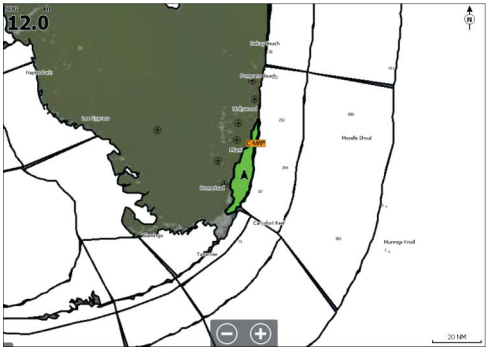
Select an icon to display detailed weather information.

	Surface observation
	Tropical storm tracking; past (grey) - present (red) - future (yellow)
	Hurricane (category 1-5) tracking; past (grey) - present (red) - future (yellow)
	Tropical disturbance/depression tracking; past (grey) - present (red) - future (yellow)
	Storm attributes
	Lightning
	Watch box location and warning
	Marine zone location

Marine zone

Depending on your selected subscription, SiriusXM services includes access to weather reports for U.S. and Canadian marine zones, with the exception of the high seas zones.

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



Tropical statements

You can read tropical statements including information about tropical weather conditions. These statements are available for the entire Atlantic and the Eastern Pacific.

Adjusting color codes

You can define the sea surface temperature 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.

ƒ 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.

Time: -3 hours

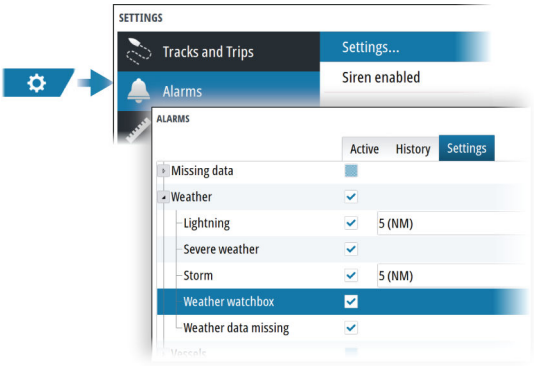
Transparency
Adjusts the transparency of the overlay.

Weather alarms

You can setup lightning or storm alarms to occur when the conditions are within a certain range of your vessel.

You can also set up an alarm as a severe weather forecast alarm issued for your chosen marine zone.

A watchbox is defined by the National weather service. When the alarm for watchbox is turned on, an alarm occurs when your vessel is entering or inside a watchbox.



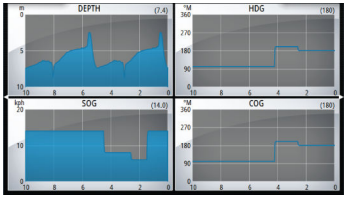
21 Time plots

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

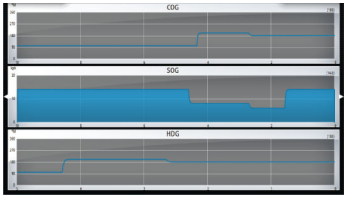
The Time plot panel

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

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



Layout 1



Layout 2

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

Missing data

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

Selecting data

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

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

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

22 Alarms

About the alarm system

The system continuously checks for dangerous situations and system faults while the system is running.

Type of messages

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

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

Alarm indication

An alarm situation is indicated with:

- an alarm pop up message
- an alarm icon in the status bar, and with the status bar pulsing with the color of the alarm

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

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

If more than one alarm is active at the same time, the alarm pop-up can display 3 alarms. The alarms are listed in the order they occur with the last activated alarm at the top. The remaining alarms are available in the alarms dialog.

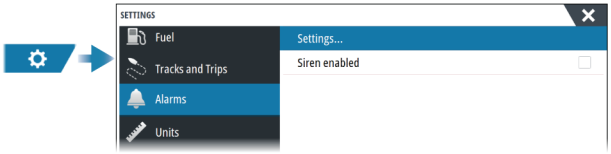
Acknowledging a message

The alarm dialog options for acknowledging a message vary depending on the alarm:

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

There is no time-out on a message or the siren. They remain active until they are acknowledged or until the reason for the message is rectified.

Alarms

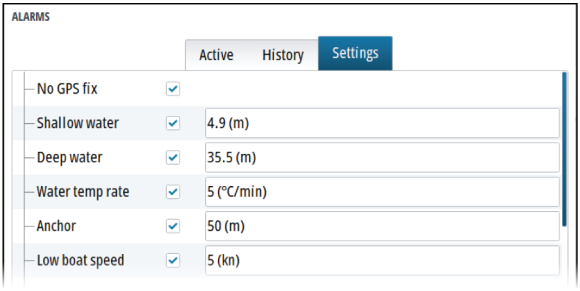


Siren enable

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

Alarm dialogs

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



Active alarms
Lists all active alarms with details. Alarms remain active until the alarm is acknowledged or the reason for the alarm is removed.

Alarms history
Lists the alarm history with time stamp. The alarms remain in the lis until they are manually cleared.

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

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

23 Internet connection

Internet usage

Some features in this product use an internet connection to perform data downloads and uploads.

Internet usage via a connected mobile/cell phone internet connection or a pay-per-MB type internet connection may require large data usage. Your service provider may charge you based on the amount of data you transfer. If you are unsure, contact your service provider to confirm rates and restrictions.

Ethernet connection

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

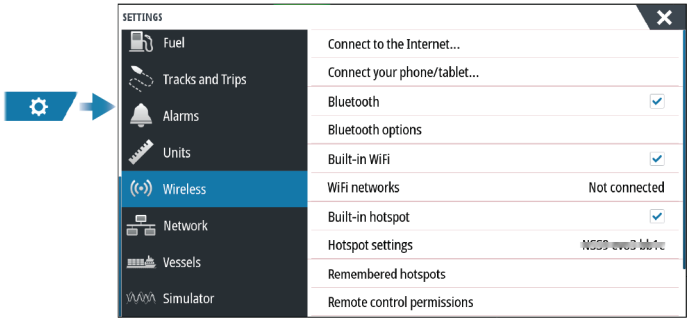
WiFi connection

Use the WiFi functionality to:

- Connect the unit to the internet. For more information, refer to "Wireless settings" on page 201.
- Connect the unit to wireless devices such as smart-phones and tablets. The smart-phones and tablets can then be used to remote view and control the unit. For more information, refer to "Remote control of the MFD" on page 205.

Wireless settings

Provides configuration and setup options for the wireless functionality.



Connect to the internet

Used for connecting to a hotspot which has internet access.

When connected, the text changes to include Already connected.

Connect your phone/tablet

Used for connecting a phone or tablet to the MFD. Refer to "Remote control of the MFD" on page 205.

Bluetooth

Enables the built-in Bluetooth functionality.

Bluetooth options

Opens the Bluetooth dialog. This dialog lists Bluetooth enabled devices.

¼ 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 WiFi

Select this option to enable or disable the internal WiFi.

Disabling the internal WiFi reduces the unit€s power consumption.

WiFi networks

Shows the WiFi network connection status. If the MFD is connected to the internet (WiFi hotspot), the hotspot name (SSID) is shown.

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 controllers

When a wireless device (smart phone or tablet) is connected, it should appear in the Remote controllers list. Selecting the always allow option means the device can automatically connect without needing to re-enter a password. This dialog also allows you to disconnect devices that no longer require access.

Wireless devices

This dialog shows the available wireless devices.

Select a device to display additional details.

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 ma 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.

24 Remote control of the MFD

Remote control options

The following options are available for remotely controlling your MFD:

- a smartphone or a tablet, connected to the same WiFi hotspot as the MFD(s)
- a smartphone or a tablet, connected to an MFD acting as a WiFi access point

¼ Note: For safety reasons, some functions cannot be controlled from a remote unit.

Smartphones and tablets

The Link app

The Link app must be used to connect a phone or tablet to the MFD.

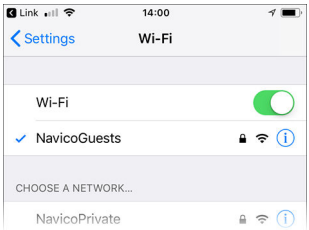
When connected, the Link app on the phone or tablet can be used to:

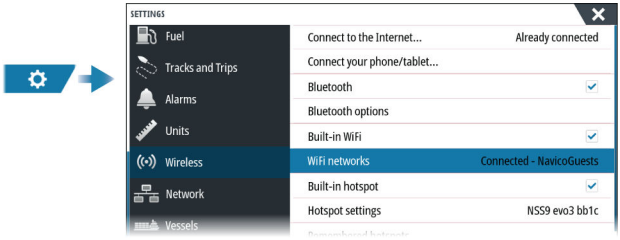
- Remotely view and control the system
- Back-up and restore settings
- Back-up and restore waypoints, routes and tracks

The Link app can be downloaded from the relevant phone/tablet application store.

Connecting via a hotspot

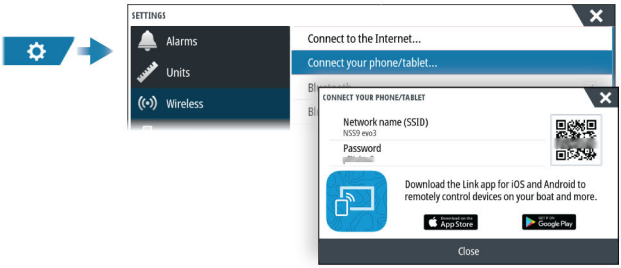
If you connect a phone/tablet and the MFD(s) to the same hotspot, you can use your phone/tablet to control all MFDs on the same network.





Connecting to an MFD acting as an access point

If you do not have access to a WiFi network, you can connect your phone/tablet directly to the MFD.

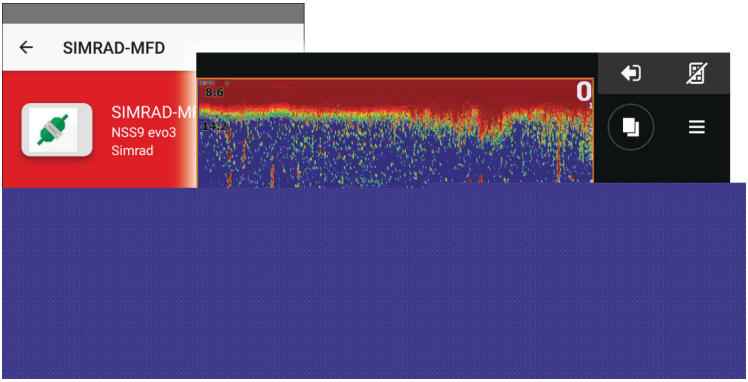


The MFD network name (SSID) will be displayed as an available network in the phone/tablet.

Using the Link app

Start the Link app to display MFD(s) available for remote control. Th list includes both connected and not connected MFDs.

Select the MFD you want to control. If the MFD is not connected, follow the instructions on the MFD and on the table/phone to connect.



Managing WiFi connected remotes

You can change the access level and remove the WiFi connected remote controllers.