

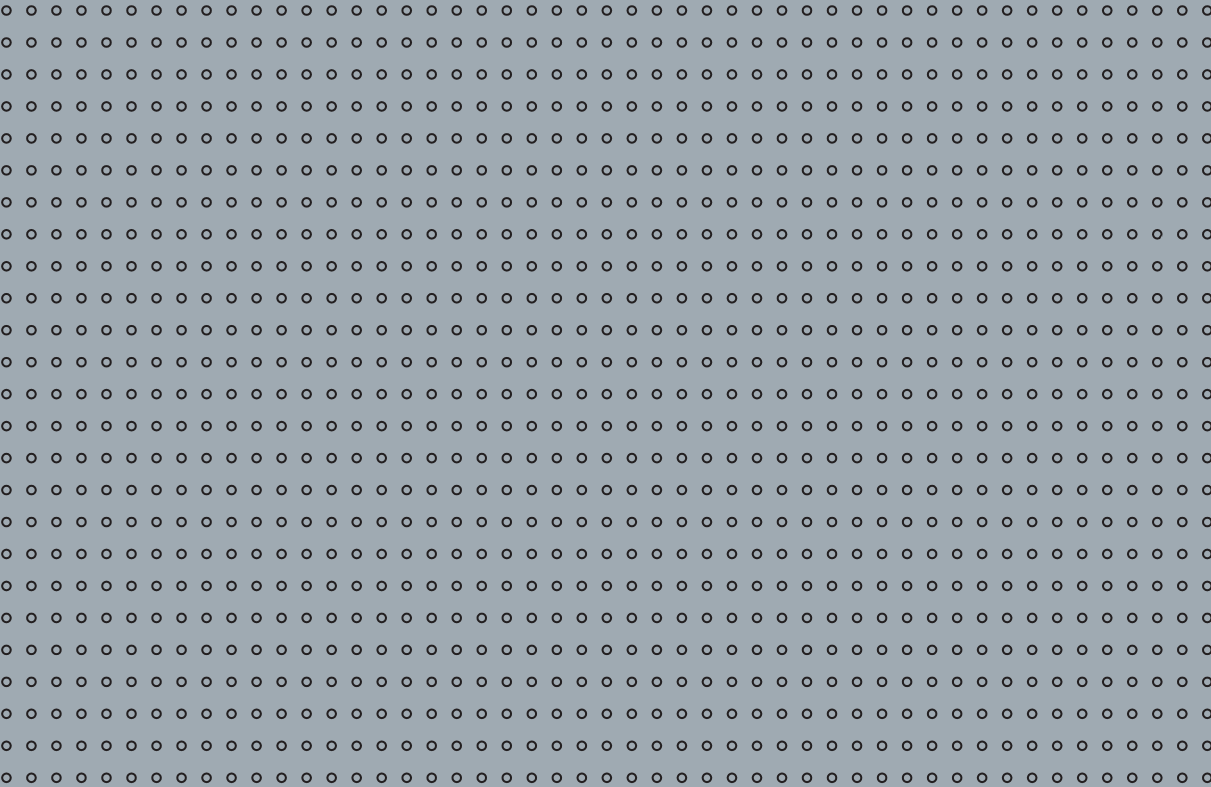


Master the Elements

# Operation Manual

## Simrad NSE8 and NSE12 Multi-function Displays

English





## Preface

### **Disclaimer**

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

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

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This manual represents the product as at the time of printing. Navico Holding AS and its subsidiaries, branches and affiliates reserve the right to make changes to specifications without notice.

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### **Feedback from you**

Your feedback is important and helps Navico ensure that this manual is a valuable resource for all marine technicians. E-mail your comments or suggestions about this manual to the following address:

tech.writing@navico.com

### **Warranty**

The warranty card is supplied as a separate document.

In case of any queries, refer to the brand web site of your display or system:

[www.simrad-yachting.com](http://www.simrad-yachting.com)

### **Declarations and conformance**

This equipment is intended for use in international waters as well as coastal sea areas administered by countries of the E.U. and E.E.A. For more information refer to the separate NSE8/NSE12 Installation manual.

### **About this manual**

This manual is a reference guide for operating the Simrad NSE8 and NSE12 systems. It assumes that all equipment is installed and configured, and that the system is ready to use.

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

The manual does not cover basic background information about how equipment such as radars, echo sounders and AIS work. Such information is available from our web site: [www.simrad-yachting.com/en/Support/Library/](http://www.simrad-yachting.com/en/Support/Library/).

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



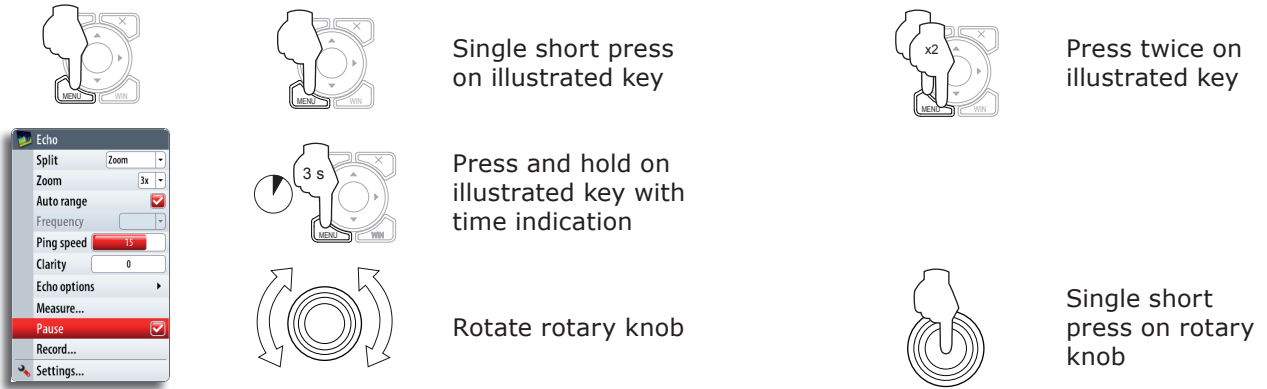
*Used to draw the reader's attention to a comment or some important information.*



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

In this manual you will see few direct text references to keys, menus and menu entries, and few step-by-step descriptions. By using graphics we will guide you to the key and the required menu selections.

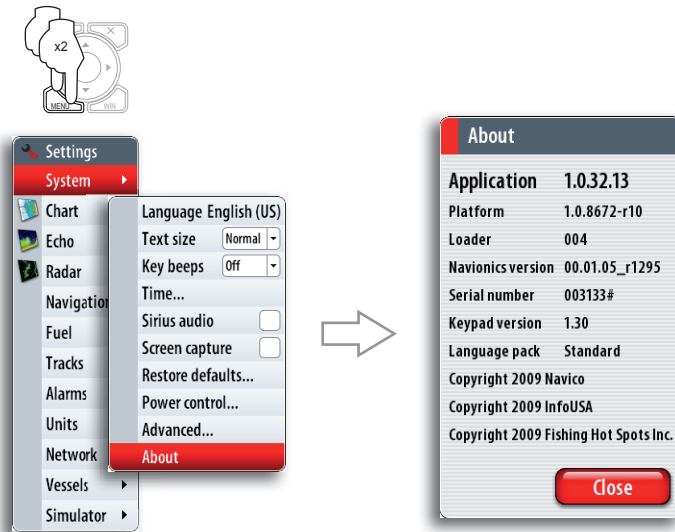
In the illustrations throughout the manual the following symbols are used:



References to keys on the operator panel are written in boldface, e.g. **WIN** key.

### The software

This manual is written for Simrad NSE Release to Market 1 (RTM1). Please check web site for details on release version.



*The About dialog above is an example only and may not match the sw installed on your unit!*

The manual will be continuously updated to match new sw releases. The latest available manual version can be downloaded from [www.simradyachting.com](http://www.simradyachting.com).

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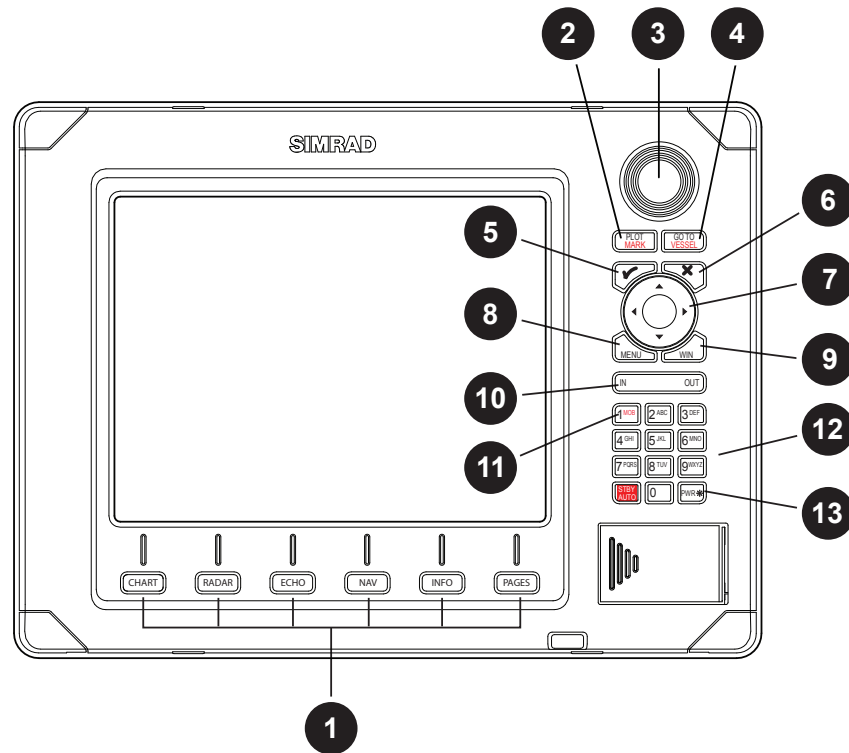
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# 1 Overview

## Front panel

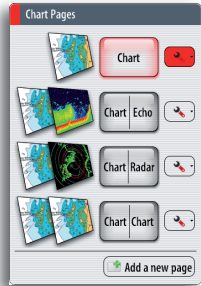
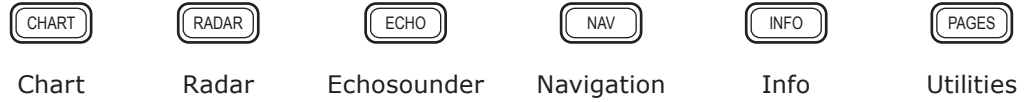


1	Direct Access Keys (DAK). Provide direct access to a page. Repeated presses of each DAK cycles through several different pages that relate to the DAK
2	PLOT/MARK key. A short press activates the Plot menu, a long press positions a waypoint at the vessel position
3	Rotary knob. Used to maneuver in the menu system, and for context specific operation
4	GOTO/VESSEL key. A short press activates the Goto menu, a long press centers the chart to vessel position
5	✓ (Tick) key. Activates/confirms current selection
6	X (Exit) key. Used to close dialogs, and to return to previous menu level. Toggles between cursor and vessel position on chart panels. Removes the cursor from the screen on radar and echosounder panels
7	Cursor keypad used to move the cursor on the display, and to maneuver in the menu system
8	MENU key. A single press displays the context menu for active panel/overlay/operation. Pressing the key twice displays the Settings menu
9	WIN key, used on multiple panels pages. A short press toggles between the panels, a long press expands active panel to a full page panel
10	Zoom keys for radar, echosounder and chart pages
11	MOB key. A long press positions a MOB waypoint at the vessel's position
12	Alpha numeric keypad used for entering numbers and text in dialog boxes. <i>NOTE: The STBY/AUTO key is reserved for future use.</i>
13	Power key. A short press activated the Light dialog, a long press turns the unit off

# The NSE screen structure

## Pages and page groups

The NSE screen is comprised of page groups, accessed by pressing one of the Direct Access Keys (DAK).



Each page group (except the Utilities pages) may include 5 pages. The first page in a page group will always be a full screen panel.

The system comes pre-configured with some commonly used pages, and you can also define your own pages. Refer the **Customizing your system** section.

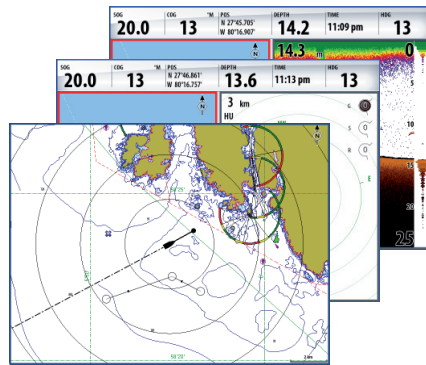
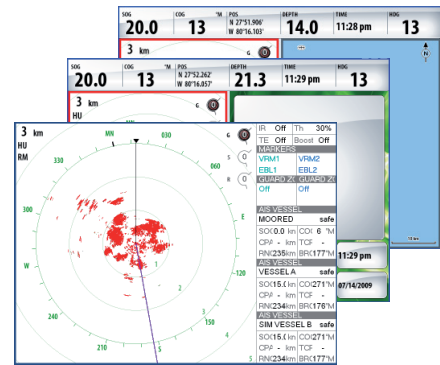


Chart page group example



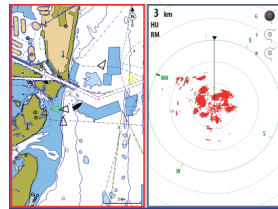
Radar page group example

## Panels

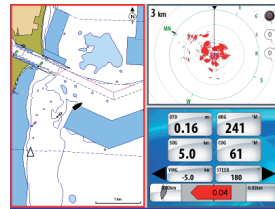
Each application connected to the NSE system is presented on panels, and you can have up to 4 panels per page.



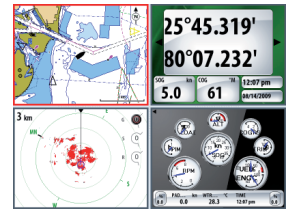
1-panel page



2-panels page



3-panels page



4-panels page

The following panels are available:

Panel	Description
Chart	Marine chart. Can be displayed as 2D or 3D (Navionics charts)
Radar	Radar PPI (Position Plan Indicator)
Echo	Echosounder
Instruments	Configurable set of screens representing live data from the vessel. Shown as digits analog/linear gauges
Steer	Navigation information
Video	Live video
Position	GPS Position, SOG/COG and time

In addition to these panels the following applications can be connected and displayed on other panels:

Application	Description
AIS	AIS information as overlay on chart and radar panels
Weather	Weather graphics and data as overlay on chart panel. Sirius Weather application is available in North America only.
Audio	Satellite radio functions as a panel along the bottom of a page. Sirius Audio application is available in North America only.

## Instrument bar

Sensors connected to the system can be viewed in an instrument bar on top of your screen.

SOG	5.4	kn	COG	096	°M	DEPTH	54.4	ft	HDG	056	°M	DATE	09/09/2009	TIME	14:28
BTW	231	°M	CTS	231	°M	POS	N 0°00.090' E 0°00.090'		TTW	---	hrs	STEER	135	DTW	25.2

Several display options are available for this bar; refer *Customizing your system* section.

## Communicating with the NSE unit

The NSE system communicates with the user by using menus and dialogs.

### Settings menu

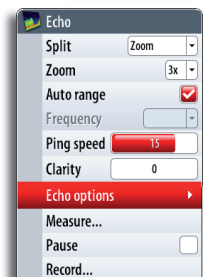
The system includes one Settings menu, accessed by pressing the **MENU** key twice. It provides access to system settings, advanced settings for each function and for vessel specific settings.



### Context menus

A context menu contains items that are relevant to the current context. A context menu is accessed by pressing the **MENU** key.

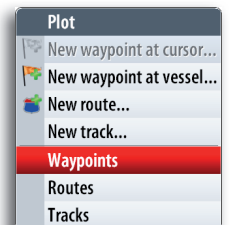
Each panel has its own context menu which gives access to basic functions for that panel.



### Plot menu

Used for creating new waypoints, routes and tracks, and for accessing the waypoints, routes and tracks library.

The menu can be accessed independent on which panel that is active. When the **PLOT** key is pressed any other menu action will be interrupted.

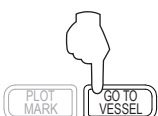


### Goto menu

Used to start the navigating function.

When the vessel is navigating the menu will be expanded to include options to stop or change navigation.

The menu can be accessed independent on which panel that is active. When the **GOTO** key is pressed any other menu action will be interrupted.

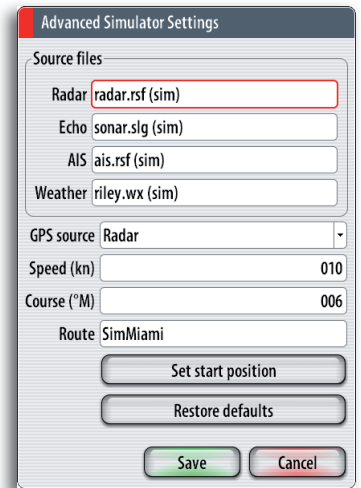
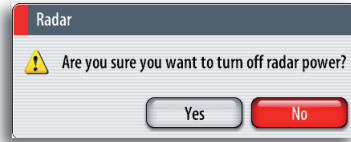


## Dialogs

Dialogs are used for entering user input or for presenting information to the user.

A dialog may be presented in full-screen, or as a popup dialog in the centre of the screen.

Depending on type of information or entry, different keys are used to confirm, cancel and close the dialog.



## Alarm messages

The NSE system will continually check for dangerous situations and system faults while the system is running.

When an alarm situation occurs, the Alarm window will pop up.


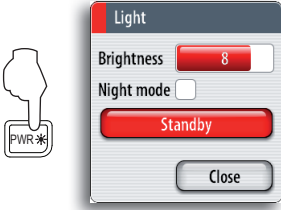

If you have enabled the siren, an audible alarm will be activated when any alarm situation occurs.

Refer to ***The alarm system*** section for further information.



## 2 Basic operation

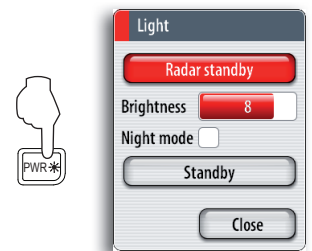
### Turning the unit on/off

POWER ON	STAND BY	POWER OFF
		

If you turn the unit ON when no external equipment is connected you will be asked to run in simulator mode.

When you turn ON the system after the first-time initialization, the system will start with the same page and with settings that were activated when the system was turned OFF.

If the radar is running you can turn it to standby mode from within the Light dialog.

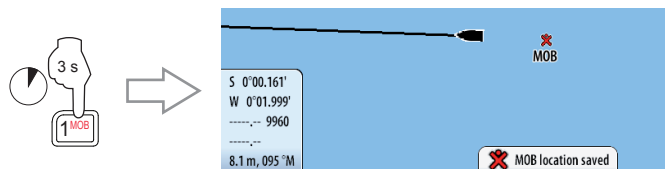


### Positioning a Man Over Board mark

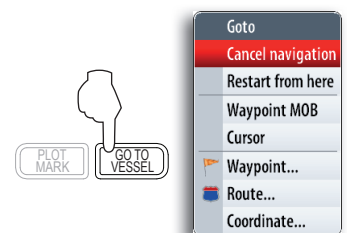
If an emergency situation should occur, you can position a Man Over Board waypoint at the vessel's current position by pressing and holding the "1" key.

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

- a MOB waypoint is positioned at the vessel's position
- the display switches to a zoomed Chart panel, centered on vessel position
- the vessel starts navigating towards the MOB waypoint

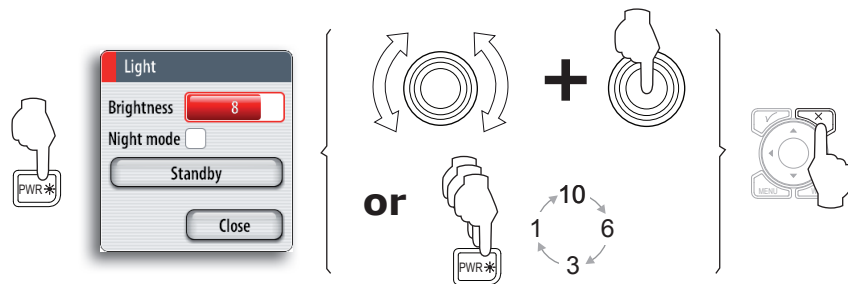


The vessel will continue navigating towards the MOB point until the waypoint is reached or until you select to stop this navigation.



## Adjusting the backlight

The backlight for LCD and keys can be adjusted at any time independent of what is on the screen.



A night mode is included and optimized for low light conditions.

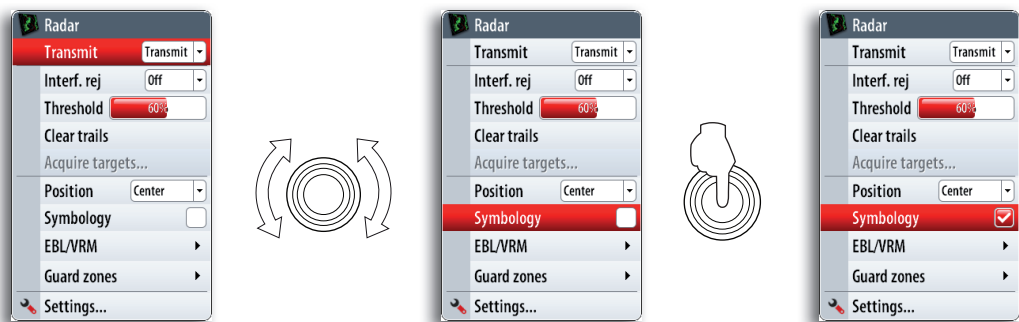


*Details on the chart may be less visible when the Night mode is selected!*

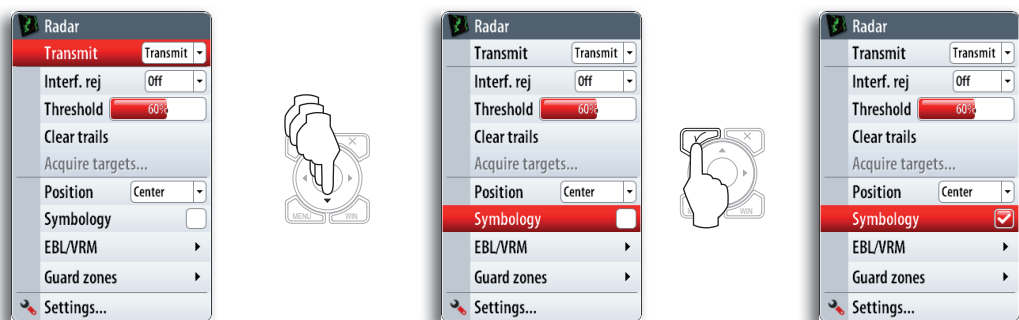
## Operating the menu system

### Selecting menu item and confirming selection

You operate a menu by using the rotary knob to select menu item, and then pressing the knob to confirm your selection.



You can also operate the menu by using the arrow keypad to select an item, and then the **Tick** key to confirm a selection.



*The illustrations for menu operation throughout this manual will refer to the rotary knob!*



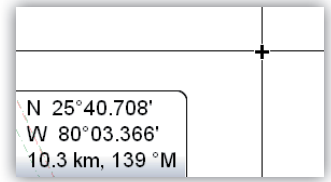
## Exiting the menu

By pressing the **X** key the menu will return to previous menu level, and then exit.

## Using the cursor

The cursor is by default not shown on any panel.

When you use one of the arrow keys on a Chart, Radar or Echosounder panel the cursor will become visible. The cursor information window will show position coordinates at the cursor position, and range and bearing to the vessel.



On an Echosounder panel the cursor information window will include the depth at cursor position.

Further use of the cursor is described in the Chart, Radar and Echosounder sections.

To remove the cursor and cursor elements from the panel, press the **X** key.

## Adding entries in dialog boxes

### Selecting entry field

You switch between the entry fields and keys in a dialog box by using the rotary knob or the arrow keys.

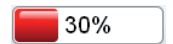
You can enter information by pressing the rotary knob or the **Tick** key when a field is highlighted.

### Adjusting values

You adjust a numeric value in a field by using the keypad or the rotary knob.



You need to press the rotary knob first to change the function from selecting fields to editing the slider.



### Entering text

The alpha numeric keypad is used for entering digits and text in dialog boxes.

If digit entries are required the keyboard will input digits only.

If both digits and letters are accepted in a dialog repeated short presses on the key will cycle through the letters for that key, while a long press will enter the respective digit.



KEY	1st press	2nd press	3rd press	4th press/or press and hold
	A	B	C	2

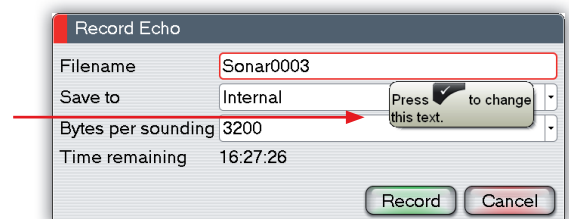


Press the **IN** key for uppercase letters and the **OUT** key for lowercase.

Depending on type of information or entry different keys are used to confirm the entries. When confirmed or cancelled the dialog box will close.

### Context help in the dialog boxes

When you select an input field, a context help for that field will be shown.



## Working with pages and panels

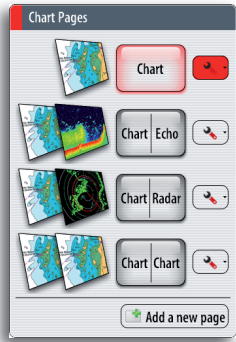
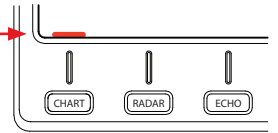
### Selecting pages

You access a page group by pressing the corresponding DAK (Direct Access Key).



Active DAK is indicated with a red symbol right above the key.

When you press a DAK for the first time, the default page for that group is displayed. When you later switch between the page groups, the last active page in each group will be displayed.



If you repress a page group's DAK a list of available pages for that group will be displayed.

### Selecting active panel

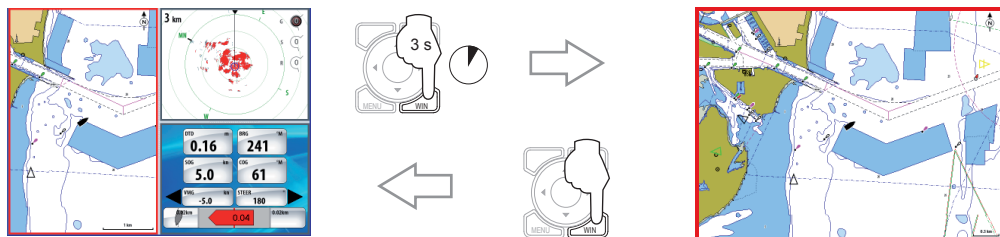
In a split screen you can have multiple panels, but only one panel can be active at a time. You will only be able to access the context menu of the active panel. Active panel is outlined with a red border.



You switch between active panels by pressing the **WIN** key.

### Maximizing active panel

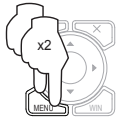
You press and hold the **WIN** key to maximize the selected panel. By repressing the **WIN** key the panel will return to the previous split screen view.



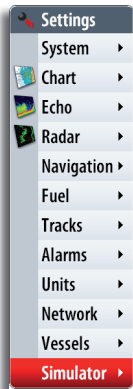
### Editing a page

You can edit any page in a page group except the first page. You can also define your own pages for each DAK as described in the **Customizing your system** section.





## 3 Using the simulator

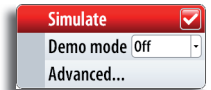


### Simulator mode

The simulation feature main data sources, so you can see how the unit works without being connected to echosounder, radar, GPS etc.

You can use the simulator to help you become familiar with your unit before using it out on the water.

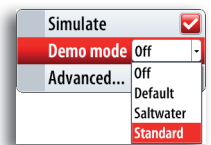
When the simulator is toggled on this is indicated in the lower part of the display.



### Demonstration mode

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

If you press a key when demo mode is running, the demonstration will pause. After a time-out period, demo mode will resume again.



### Advanced simulator settings

The advanced simulator settings allows you to define how to run the simulator. When the settings are saved these will be used as default when starting the simulator mode.



#### Source files

Selects data to be used.

A set of source files is included in your system, and you can import files by using a USB stick or a memory card. Refer to **The utilities pages** section.

You can also use your own recorded echosounder files in the simulator.

For how to record echosounder files, refer to the **Using the echosounder** section.

#### GPS source

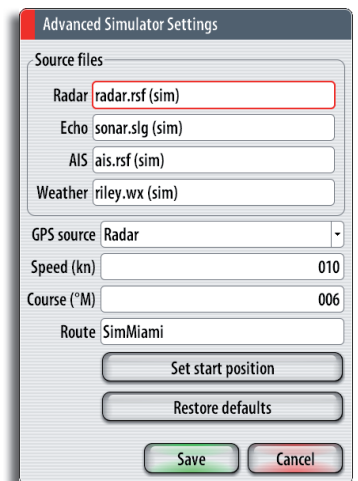
Selects where the GPS data is generated from.

#### Speed, Course and Route

Used for manually enter values when GPS source is set to **Simulated course** or **Simulated route**. Otherwise, GPS data including speed and course comes from the selected echosounder or radar files.

#### Set start position

Moves the vessel to current cursor position.



***Blank page***

## 4 Using charts

On the chart panel you can determine your vessel's position in relation to land. You can use the chart display for planning routes and sailing along a predefined route.

The chart function can also display your vessel's position relative to other chart objects, plan and navigate routes, create waypoints; overlay a radar image and display AIS targets and information.

On a chart panel you can overlay radar image, AIS information and weather symbols (North America only).

### The chart panel

The diagram illustrates the chart panel interface with various features labeled and their corresponding settings in the menu.

**Chart Panel Features:**

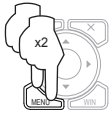
- GRID LINES \*:** A network of latitude and longitude lines overlaid on the chart.
- EXTENSION LINE \*:** A line extending from the vessel's position across the chart.
- ROUTE \*:** A planned path or route shown on the chart.
- NORTH INDICATOR:** A symbol indicating the direction of North.
- RANGE RINGS \*:** Concentric circles representing distance from the vessel.
- WAYPOINT \*:** A specific point marked on the chart.
- VESSEL:** The current vessel's position and heading.
- TRACK \*:** The vessel's previous path or track.
- CHART RANGE:** The scale of the chart, shown as 10 km.
- RANGE SCALE:** A scale for the range rings, shown as 15.0 km.

**Settings Menu:**

- Settings
  - System
  - Chart
  - Echo
  - Radar
  - Navigation
  - Fuel
  - Tracks
    - Chart data: Navionics
    - Popup information:
    - Grid lines:
    - Waypoints:
    - Routes:
    - Tracks:
  - Alarms
  - Units
  - Network
  - Vessels
  - Simulator

*\* Optional chart image items*

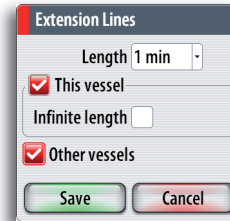
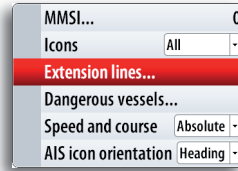
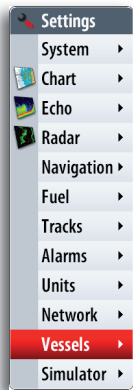
You turn the optional images on/off individually.



## The vessel symbol

When a GPS and a suitable compass sensor is connected to the system, the vessel symbol indicates vessel position and heading.

The vessel's extension line can be activated to show course over ground. The length of the line indicate the distance that the vessel will travel with current speed in selected period.



If no GPS is available the vessel symbol will include a question mark.



## Using the cursor on chart panel

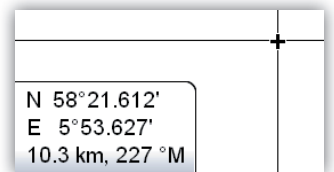
The cursor by default is not shown on the chart panel.

When you press one of the arrow keys the cursor will become visible, and the cursor position window will be activated.

When you are in cursor mode, the chart will not pan or rotate to follow the vessel.

Pressing the **X** key will toggle the chart position between the vessel and the previous cursor position.

To remove the cursor and cursor elements from the panel, press the **X** key.



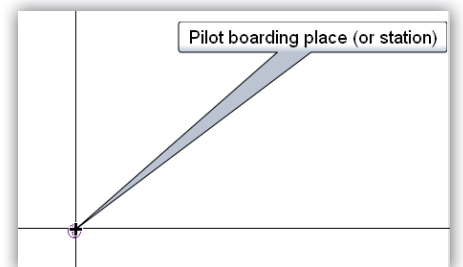
## Selecting objects

When you rest the cursor over a chart item, a waypoint, a route or a target, basic information for the selected item will be displayed.

By pressing the rotary knob or the tick key when a chart item is selected all available information about that item will be shown.



*Popup information has to be enabled.*



## Creating waypoints and routes

You can use the cursor to position waypoints and routes as described in **Waypoints, Routes and Tracks** section.

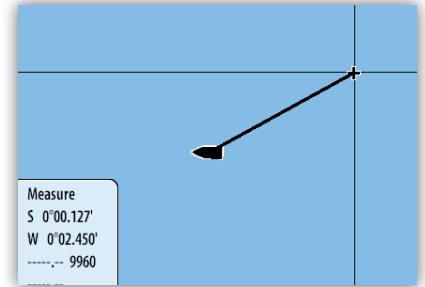


## Measuring distance

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

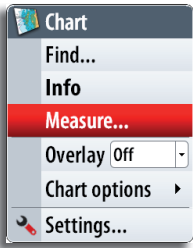
Use the following process to measure a distance.

- 1 Start the Measure function
- 2 Move the cursor towards the second measuring point
  - A line will be drawn from the vessel center to the cursor position, and the distance will be listed in the Cursor Information window



You can reset the measurement and start measuring from cursor position by pressing the **Tick** key.

You terminate the measuring function by pressing the **X** key.



## Chart scale

You zoom in and out in the chart by using the **IN/OUT** keys or by using the rotary knob.

Chart scale will be shown in the lower right corner of the chart panel.



## Searching for chart objects

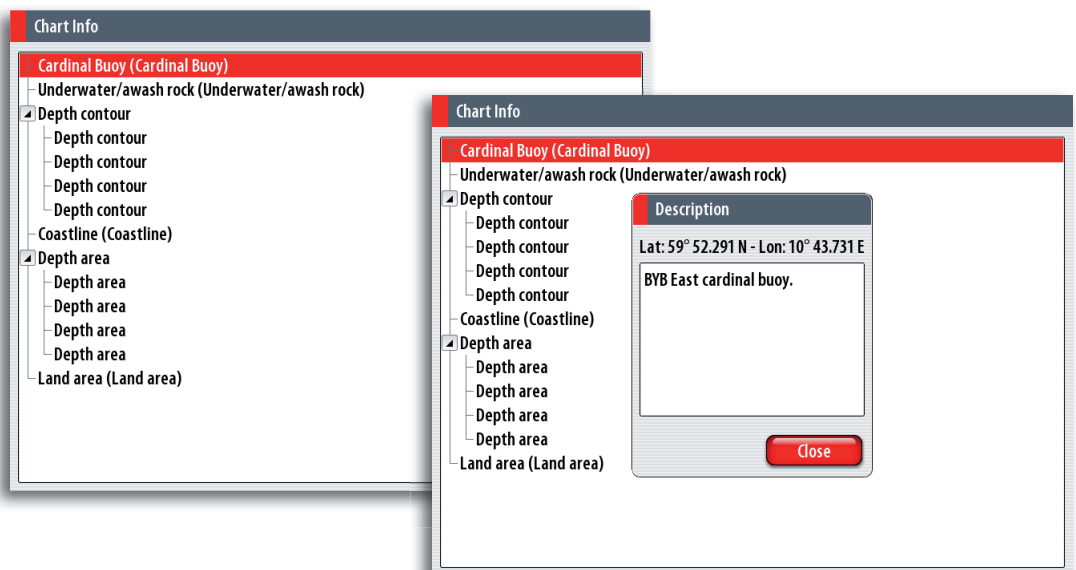
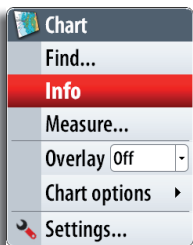
The chart context menu includes a search function used to find and display chart objects.

This function is also available from the Utilities pages.

## Displaying chart information

You can display available information for the chart and chart items in cursor or vessel position.

You can select further details about a selected item by pressing the rotary knob or the **Tick** key.



## Positioning the chart on the panel

### Selecting chart center

When the cursor is active on the panel, the chart will be centered around the cursor position (cursor mode).

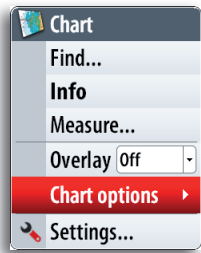
Pressing **X** key will remove the cursor, and the chart center will be positioned at the vessel (vessel mode).

You can toggle between cursor mode and vessel mode by pressing the **X** key .



### Panning

By moving the cursor to the edge of the panel, the chart will be panned in the cursor's direction.



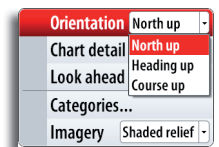
### Look ahead

This option moves the vessel backwards on the chart image so that you can have maximum view ahead of your vessel.



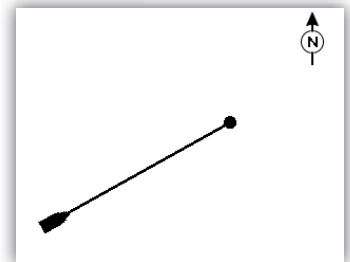
### Setting the chart orientation

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



#### North up

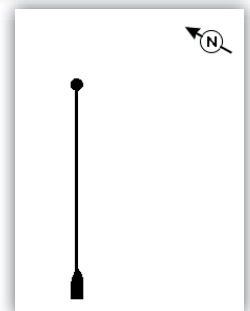
Displays the chart with the north direction upward. Corresponds to the usual orientation of nautical charts.



#### Heading up

Displays the chart with the vessel's heading directly up on the chart image.

Heading information is received from a compass. If heading is not available, then the COG from the GPS will be used.



#### Course up

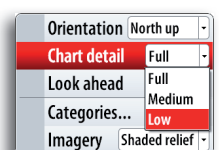
Rotates the chart in the direction of the next waypoint when in navigation mode.

This option works only when there's an active route. If no route is active the heading up orientation will be used until a route is made active.

## Selecting chart details level

### Low

This is the 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.



### Medium

This is the minimum information sufficient for navigation.

## Full

This is all available information for the chart in use.

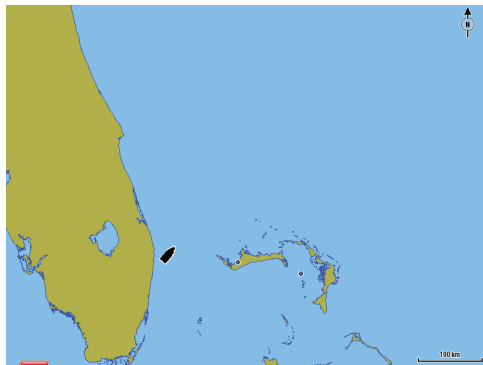
## Chart categories

This option enables you to select which chart categories you want to display on your chart.

## Chart imagery style

The charts can be displayed in two different imagery styles.

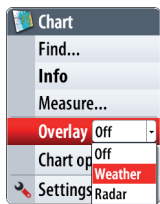
2D presents chart information in a basic mapping mode, while the shaded relief option presents chart including terrain information.



2D



Shaded relief

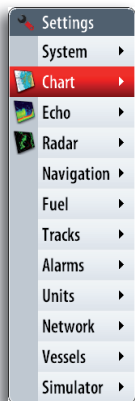


## Chart overlay

Radar and weather information can be displayed as overlay on your chart panel.

When one of the overlay options are selected the chart context menu will be expanded to include basic function for the selected overlay.

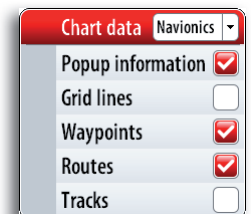
Radar and Sirius weather functions are described in separate sections in this manual.



## Chart data

The NSE system can use Simrad and Navionics chart databases.

The Navionics chart includes options that not are available in the Simrad database. Navionics options are described in the following sections.





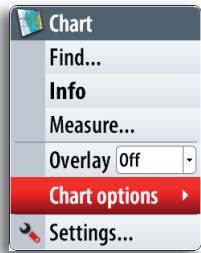
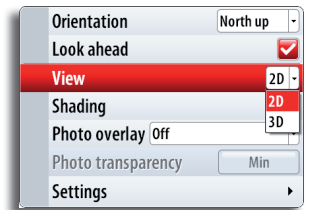
## Chart options in Navionics chart database

### Chart view

The Navionics chart database provides you with 2D and 3D view options.

2D presents chart information in a basic mapping mode, but with Navionics Platinum details.

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



### 3D Zooming

You zoom the 3D chart by using the **IN/OUT** keys.

### Viewing the chart in 3D

There are two modes available for moving the camera in 3D views; Vessel mode and Cursor mode. You switch between these two modes by pressing the **X** key.

#### *Vessel mode*

In this mode the camera follows the vessel. The vessel's position will be in center if not Look ahead option is selected. The camera angle is by default as seen from above and behind the vessel, looking forward. You can tilt the camera by using the up/down arrow keys, but you cannot rotate the camera horizontally.

#### *Cursor mode*

This mode includes two different options for moving the camera; Camera Pan and Camera Rotate. You switch between these two camera modes by pressing the rotary knob or the **√** key. Active camera mode is shown on top of the panel.

#### Camera Pan

In this mode you move the camera away from the vessel position and around in the chart by using the arrow keys, and rotate horizontally by using the rotating knob.



You can return to vessel position (vessel mode) by pressing the **X** key.

#### Camera Rotate

In this mode the camera position is fixed, and the camera can only be rotated. You rotate the camera horizontally by using the left/right arrow keys or the rotating knob. You tilt the camera vertically by pressing the up/down arrow keys.

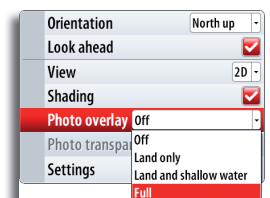


### Photo overlay

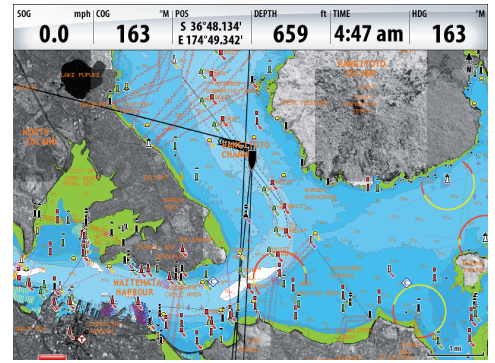
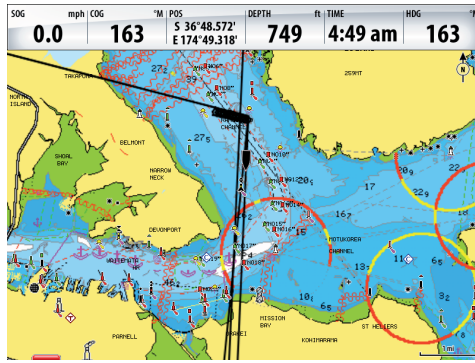
This option enables you to view satellite photo images of an area as an overlay on the chart.

The availability of such photos is limited to certain regions.

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



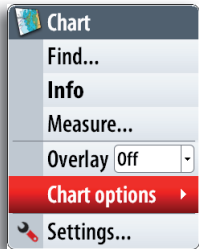
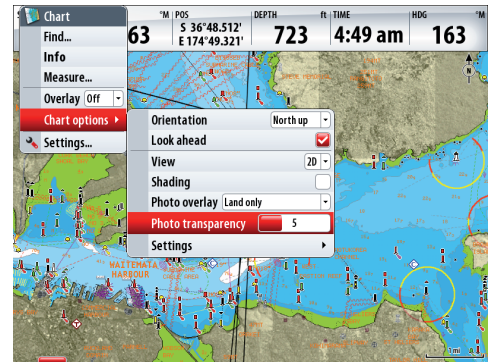
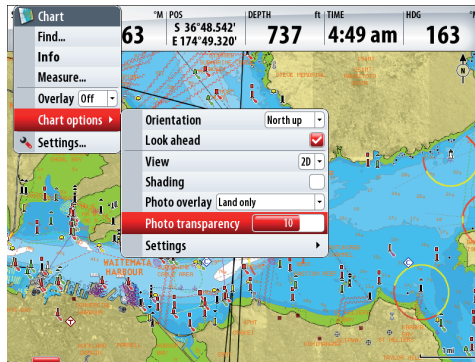




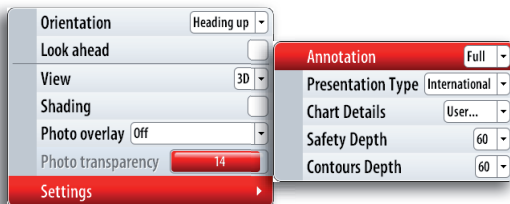
The Photo overlay function is disabled as you zoom out beyond a certain level.

## Photo transparency

The transparency sets the opaqueness of the photo overlay.



## Optional settings for Navionics charts



### Annotation

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

### Presentation type

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

### Chart details

Provides you with different levels of geographical layer information.

### Safety depth

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

The safety depth sets the limit for which depths that shall be drawn without blue this blue shading.

***Contours depth***

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

## 5 Waypoints, routes & tracks

### Waypoints

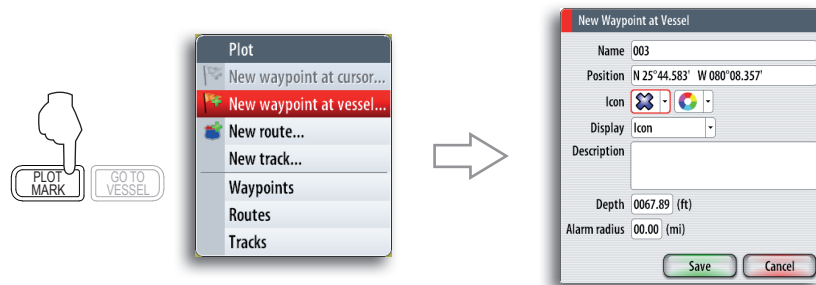
A waypoint is a mark positioned on a chart, on a radar image or on an echosounder image. Each waypoint has an exact position with latitude and longitude coordinates. A waypoint positioned on an echosounder image, will in addition to position information, have a depth value.

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.

### Positioning waypoints

You can position a waypoint at the vessel position from any panel by pressing the **PLOT** key:

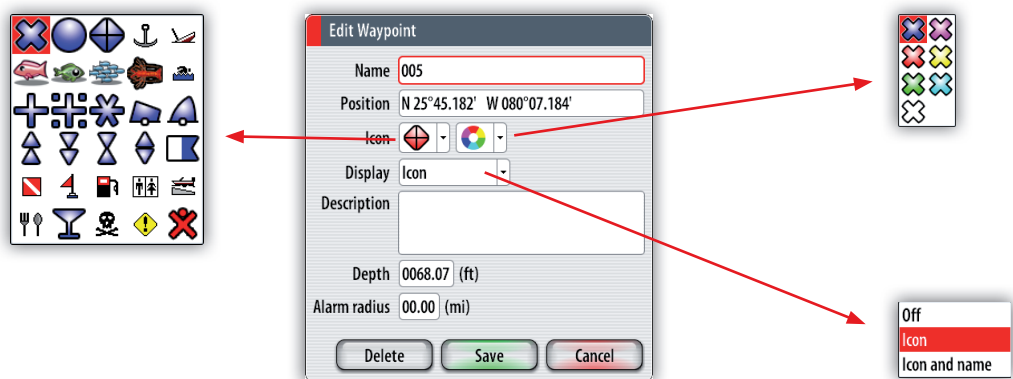
- Short press: activates the Plot menu allowing you to specify waypoint details in the Waypoint dialog
- Press and hold: plots a waypoint at the vessel's current position



You can position a waypoint at the cursor position on a chart, radar and echosounder panel by moving the cursor to selected position and then pressing the **PLOT** key.

### The waypoint dialogs

You can enter details for a waypoint in the waypoint dialog, activated by pressing the rotary knob or the Tick key when a waypoint is selected.

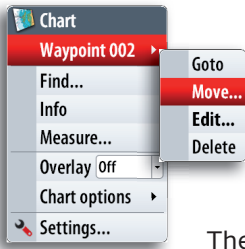


The waypoints dialog can also be activated from the Waypoint list. Refer **The Waypoints, Route and Tracks library** later in this section.



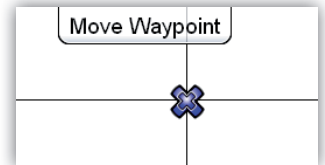
## Editing waypoints

A waypoint can be edited in the Waypoint dialog. You can also move the waypoint manually by using the cursor;



- 1 Select the waypoint by resting the cursor over it
- 2 Press the **MENU** key and select the move option
- 3 Use the arrow keys to move the cursor to a new position
- 4 Confirm the new position by pressing the rotary knob or the tick key

The moving waypoint mode is indicated on top of the panel.

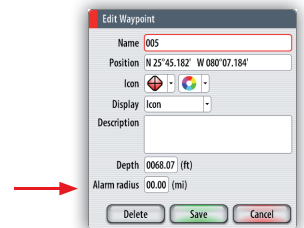


The waypoints can also be edited from the Waypoint list as described later in this section.

## Waypoint alarm settings

You can set an alarm radius for each individual waypoint you create.

When the waypoint alarm is toggled ON in the alarm panel, an alarm message will be activated when your vessel comes within the defined radius.

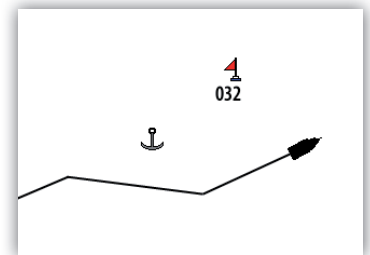


*If you want to set an alarm radius for a route point this point must first be converted to a waypoint.*

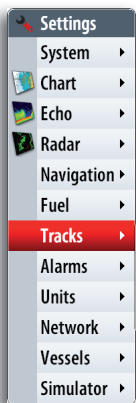
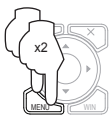
## Tracks

A track is a graphical presentation of the historical path of the vessel, allowing you to retrace your travel. A track can later be converted to a route in the Tracks dialog described later in this section.

From the factory, the system is set to automatically track the vessel's movement. The system will continue to record the track until the track length reaches the maximum trail point setting, and will then automatically begin overwriting the oldest track points.



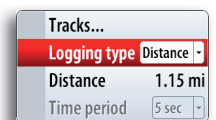
The automatic tracking function can be turned off from the Tracks library as described later in this section.



## Track settings

The track is made up of a series of track points connected by line segments whose length depends on the frequency of track recording.

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

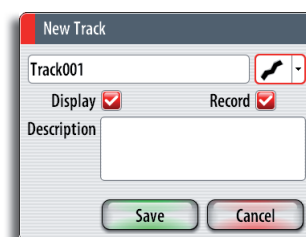
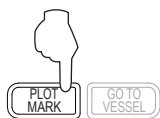


*The Tracks option must also be turned ON in the chart settings to be visible! Refer the **Chart** section.*

## Creating a new track

You define the track settings and start the new track from the Plot menu.

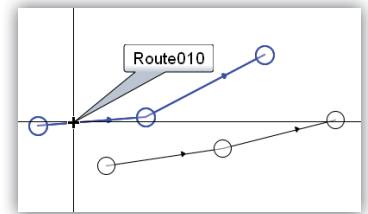
A new track can also be started from the Tracks library described later in this chapter.



## Routes

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

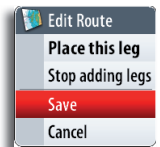
When you rest the cursor over a route, it will turn blue and the route name will be displayed.



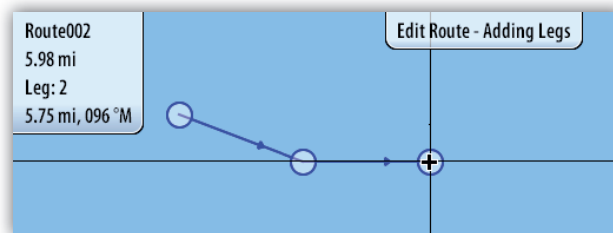
### Creating new routes by using the cursor

You can create a new route on the Chart panel as follows:

- 1 Press the **PLOT** key and select the new route option
- 2 Use the arrow keys to move the cursor to the position for the first waypoint
- 3 Confirm the position by pressing the rotary knob
- 4 Move the cursor to the position for the next waypoints, and confirm the position by pressing the rotary knob again
- 5 Repeat moving the cursor and pressing the rotary knob until all waypoints in the route are created
- 6 Press the **MENU** key to save the route



The Edit route mode and route information is indicated on top of the panel until the route is saved.

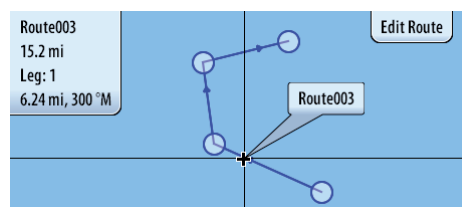


The route can also be created from the Routes list as described later in this section.

### Editing a route by using the cursor

You can edit a route on a chart panel by using the cursor;

- 1 Select the route by resting the cursor over it
  - The route will be highlighted
- 2 Press the **MENU** key and select the edit option
  - The Edit route mode and route information is indicated on top of the panel



- 3 Move the cursor to where you want to make the edit; a waypoint or a leg, and press the **MENU** key again to select edit options
  - The options available in the Edit route menu depend on if the cursor is rested over a waypoint or over a leg
- 4 Use the cursor to add, move or remove any item
- 5 Press the **MENU** key again and save your edits



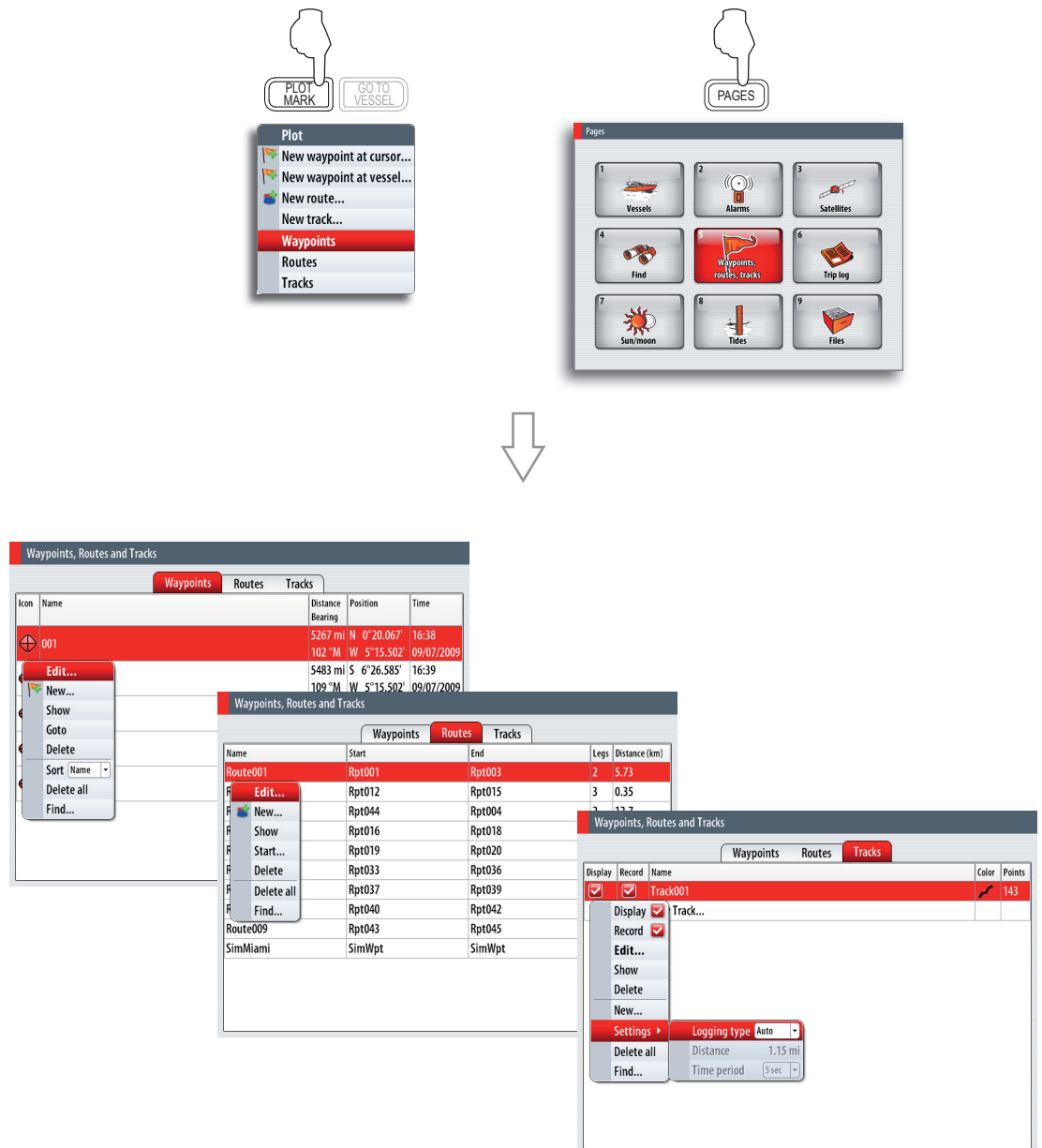
## The waypoints, route and tracks page

The Utilities pages includes a Waypoints, Routes and Tracks page. This gives access to advanced edit functions and settings for all these items available on your system.

There are several ways to access the library. A couple of them are illustrated below.

You move between the tabs in the library by using the left/right arrow keys.

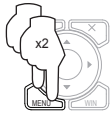
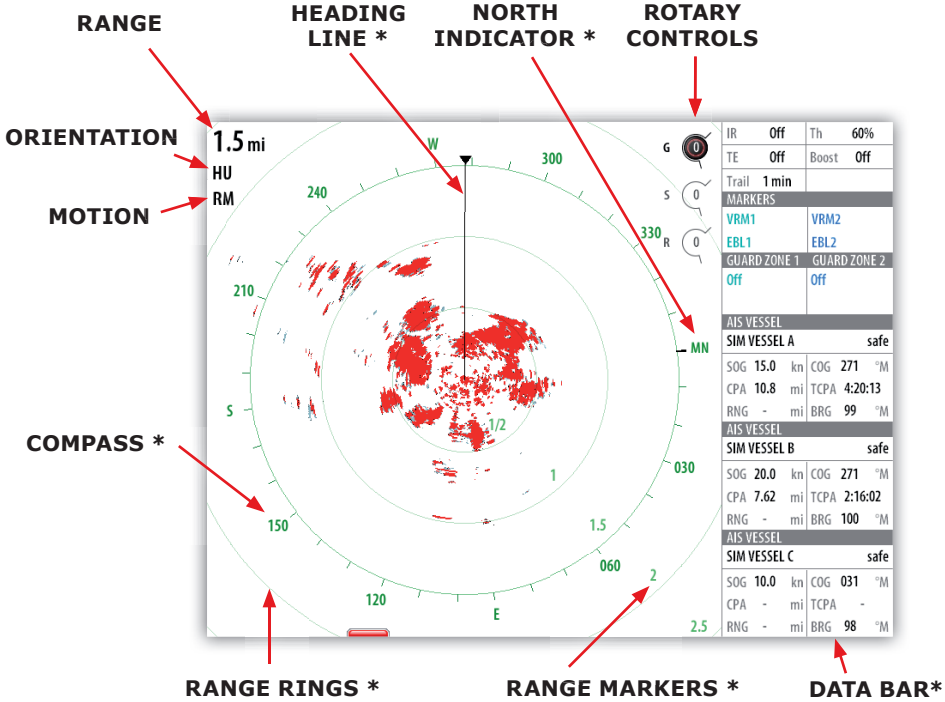
The edit and settings options are accessed by pressing the **MENU** key when one of the items is selected.



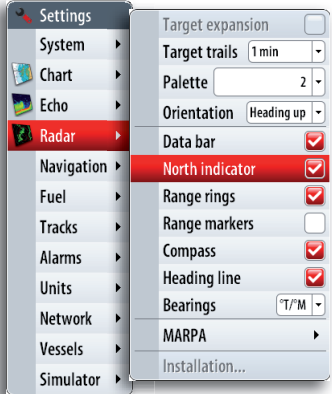
# 6 Using the radar

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 to existing 2D chart views and 3D for Navionics. Refer to the **Chart** section.

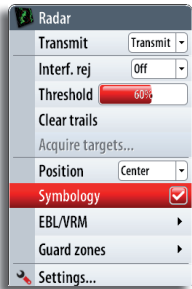
## The radar panel



\* *Optional radar symbology*



You can turn the optional symbology on/off individually.

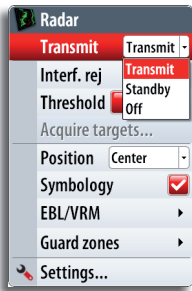


The activate symbology can be turned on/off collectively.



## The radar operational modes

The radar's operational modes are controlled from the NSE unit. The following modes are available:



### Off

The power to the radar scanner is turned off

### Standby

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

The radar can also be turned to standby mode by pressing the **PWR** key.



### Transmit

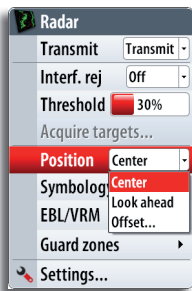
The scanner is on and transmitting signals to detect surrounding targets. When transmitting is will always be communication with the NSE system.

## Setting up the radar image

### Positioning the radar center

You can move the radar center to different positions within the radar panel.

The following options are available:



#### Center

Default setting. The radar center is centered on the radar panel.

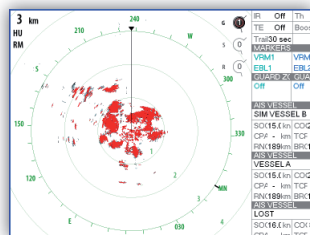
#### Look Ahead

Moves the radar center to the bottom of the panel to give maximum view ahead.

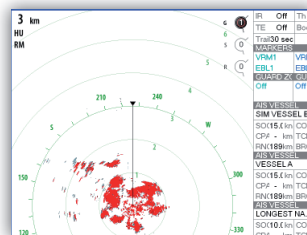
#### Offset

Allows you to move the center to any location on the radar panel.

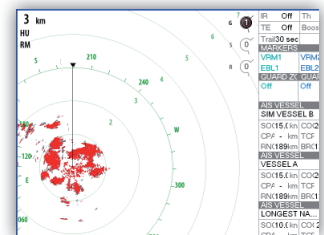
- 1 Select the offset option
- 2 Use the arrow keys to position the radar center
- 3 Confirm the settings with the **Tick** key



Center



Look ahead



Custom





## Setting the radar orientation

### Heading up

Rotates the radar image to display the current heading directly up on the radar image.

### North up

Rotates the radar image with the north direction upwards.

### Course up

Rotates the radar image to display the current navigation course directly up.

This option works only when the vessel is navigating. If the vessel not is navigating the heading up orientation will be used until the navigation function is started.



## Setting the radar motion

You can select how your vessel symbol moves on the radar image.

The radar motion can only be changed when the radar is transmitting. If there's no heading data or COG, only Relative Motion mode is available.

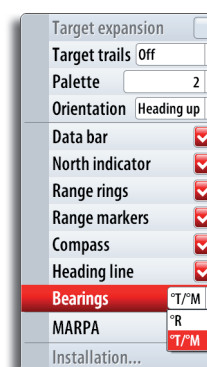
### True motion (not included in sw RTM1)

Your vessel, and moving targets, move across the Radar screen as you travel. All stationary objects remain in a fixed position.

### Relative motion

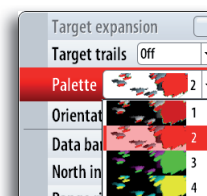
Your vessel remains in a fixed location on the Radar screen and all other objects move relative to your position. You can choose the position of the fixed location, refer as described in **Positioning the radar center**.

Relative motion is the default setting.



## Changing the image color

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



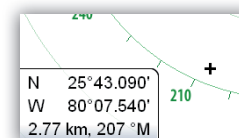
## Using the cursor on the radar panel

The cursor is by default not shown on the radar image.

When you press one of the arrow keys the cursor will be visible, the cursor position window will be activated.

The cursor can be used to measure a distance to a target, and to select targets as described later in this section.

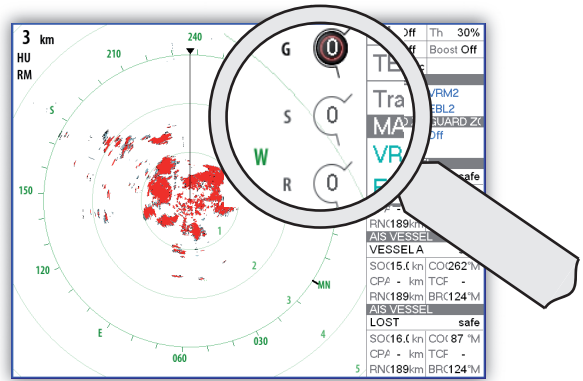
To remove the cursor and cursor elements from the panel, press the **X** key.



## Optimizing the radar image

You may be able to improve the radar image by adjusting the radar sensitivity, and by filtering the signals from effect of random echoes from sea and weather conditions.

The parameters are adjusted by using the rotary knob. You select between the control images by pressing the rotary knob. Active control will expand and display its name in full. You can then adjust the value by turning the knob



### 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 2 modes; Auto and Manual. You cycle through the modes by pressing and holding the rotary knob. You can only adjust the gain value by turning the rotary knob when it is in manual mode.

### Sea clutter

Sea clutter is used to filter the effect of random echo returns from waves or rough water near the vessel.

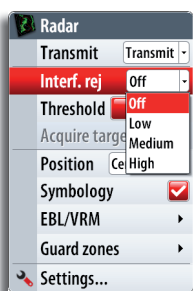
When you increase Sea Clutter filtering the on-screen clutter caused by the echoes of waves will be reduced.

Sea clutter has 3 modes: auto harbor, auto offshore and manual. A long-press on the rotary knob will cycle through the modes. You can only adjust the clutter value by turning the rotary knob when it is in manual mode.

### Rain Clutter

The Rain clutter is used to reduce the effect of rain, snow or other weather conditions on the radar image.

The value should not be increased too much as this may filter out real targets.



### Rejecting radar interference

Interference could be caused by radar signals from other radar units operating in the same frequency band.

A high setting will reduce the interference from other radars.

In order to not miss weak targets, the interference rejection should be set low when no interference exists.

### Target boost

This feature increases the size of radar targets, making them easier to see on the radar panel.

### Setting the radar threshold

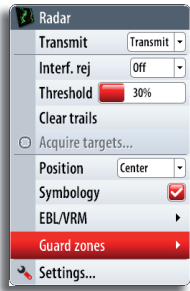
The threshold sets required signal strength for the lowest radar signals. Radar returns below this limit will be filtered and not displayed.

Default value: 30%.



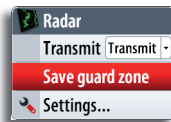
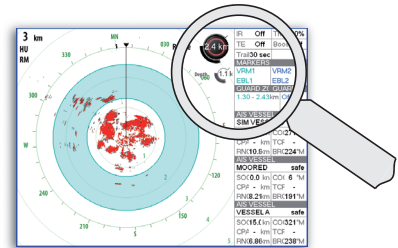
## Setting a guard zone around your vessel

A guard zone is a region (either circular or a sector) that you can define on the radar image. You can also define if an alarm is activated when a radar target enters or exits the zone.



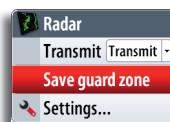
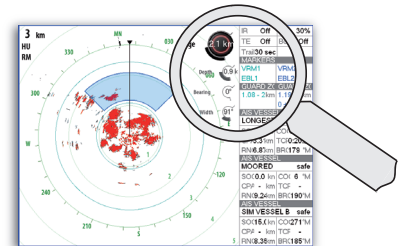
### Defining a circular zone

- 1 Activate one of the guard zones
- 2 Select circular shape
  - A circular guard zone will now be positioned on the radar image
- 3 Select the menu option used for adjusting the zone
  - The menu will be removed from the display, and the rotary symbol for range will be enlarged
- 4 Use the rotary knob to adjust the range and depth.
  - You switch between the range and depth settings by pressing the rotary knob
- 5 Press the **Menu** key to save the guard zone settings



### Defining a sector zone

- 1 Activate one of the guard zones
- 2 Select a sector shape
  - A sector guard zone will now be positioned on the radar image
- 3 Select the menu option used for adjusting the zone
  - The menu will be removed from the display, and the rotary symbol for range will be enlarged.
- 4 Use the rotary knob to adjust the range, depth, bearing and width. You switch between the adjustable settings by pressing the rotary knob
- 5 Press the **Menu** key to save the guard zone settings

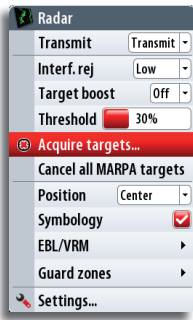




## Other vessels on the radar image

If MARPA radar(s) or AIS devices are connected to the NSE system, any targets detected by these devices will be displayed as an overlay on the chart and on the radar image. You can also see messages and position for DSC transmitting devices within range.

For more information refer to the **Other vessels on chart and radar image** section.

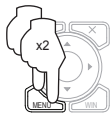


## Target tracking

Any MARPA target detected by the NSE system can be tracked by the radar.

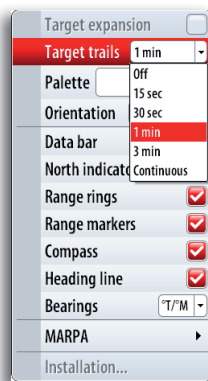
- 1 Select **Acquire targets** from the menu
- 2 Position the cursor over the target, and press the tick key to confirm
- 3 Repeat process for more targets

Once your targets are identified, it may take up to 10 radar sweeps to acquire and then track the target.



## Target setup

### Target trails

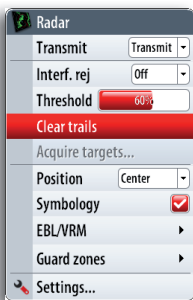


You can define how long time the trail that each target leaves should remain on your radar panel. You can also turn OFF target trails.



## Clearing target trails from the panel

You can clear target trails from your radar panel temporarily. The target trails will start to appear again unless you switch them off as described above.



### Target expansion

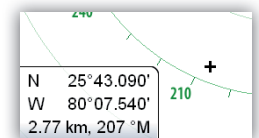
You can select to increase the size for all thin targets on the radar panels.

## Measuring range and bearing to a target

### Using the cursor

When you move the cursor on a radar panel the cursor information window will be activated.

The cursor window shows range and bearing from your vessel to cursor position.



### Range rings

The range rings are displayed at preset distances from the vessel based on the radar range.

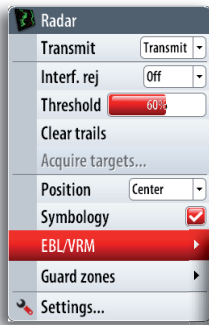
You can use the range ring to estimate the distance between a radar echo and your vessel.



## EBL/VRM

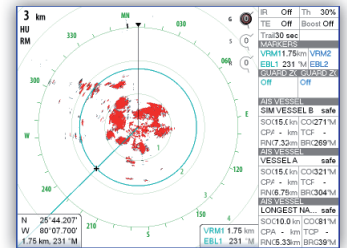
The electronic bearing line (EBL) is a line from the center of the vessel. The line's bearing remains constant as the vessel moves. The variable range marker (VRM) is a user-controlled range ring that surrounds the vessel.

The EBL/VRM function is used to measure distance and bearing from the vessel's position to a target. Two different EBL/VRMs can be placed on the radar image.



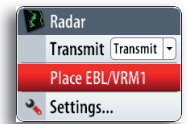
### Positioning an EBL/VRM

- 1 Move the cursor to a selected object
- 2 Press the **Menu** key
- 3 Select one of the EBL/VRM options
  - The menu will be removed from the display, and the EBL line and the VRM circle will be drawn on the radar image.



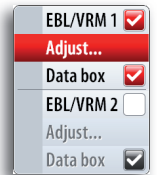
- The EBL/VRM information window will display range and bearing from the vessel to the marker

- 4 If required, use the arrow keys to reposition the marker
- 5 Press the **Menu** key again to save the position



You can reposition a fixed EBL/VRM, turn Off the EBL/VRM info window and remove the marker from the same menu.

When you reposition the EBL/VRM marker you use the cursor and save the position as described above.



## 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.

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

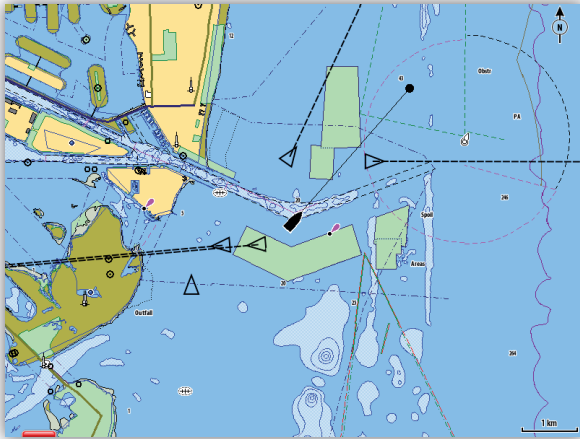
More information on Radar Overlay is available in the **Using chart** section of this manual.

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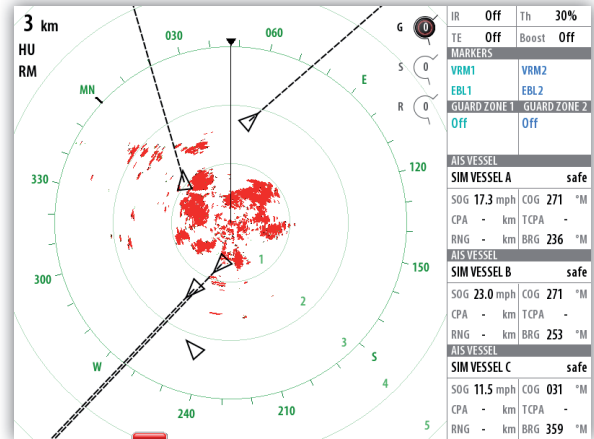
## 7 Other vessels on chart and radar image

If MARPA radar(s) or AIS devices are connected to the NSE system, any targets detected by these devices can be displayed as an overlay on the chart. You can also see messages and position for DSC transmitting devices within range.

You can define alarms to notify you if a target gets too close or if the target is lost.



AIS vessels on a chart panel

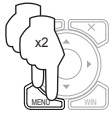


AIS vessels on a radar panel

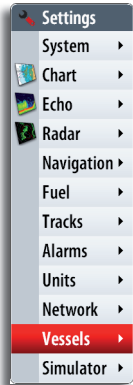
### Target symbols

The NSE system use the target symbols shown below:

Symbol	Description	
	Sleeping AIS target (not moving or at anchor).	
	Moving and safe AIS target with course extension line.	
	Acquiring MARPA target. Typically it takes up to 10 full rotations of scanner	
	Tracking MARPA target, not moving or at anchor.	
	Tracking and safe MARPA target with extension lines.	
	Dangerous AIS target, illustrated with bold line.	A target is defined as dangerous based on the CPA, TCPA and AIS Range settings. Refer <b>Defining alarm limits</b> later in this section.
	Dangerous MARPA target	
	Lost AIS target.	When no signals have been received within a time limit a target will be defined as lost. The target symbol represents the last valid position of the target before the reception of data was lost.
	Lost MARPA target	
	Selected AIS target, activated by positioning the cursor over a target symbol.	The target will return to default target symbol when the cursor is moved.
	Selected MARPA target	



## How to display other vessels



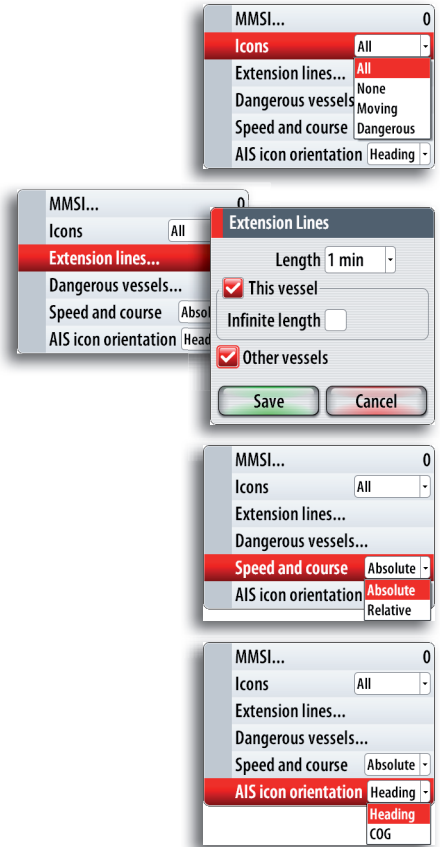
Selects which targets to display.

Sets the length of the extension line for your vessel and for other vessels.

The length of the extension line indicates the distance the vessel will move in the selected time period.

Selects how to use the extension line to indicate speed and course for targets; either as true motion in the chart or relative to your vessel.

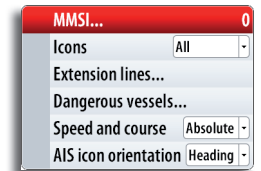
Sets the orientation of the AIS icon; either based on heading or COG information.



## Receiving MMSI messages

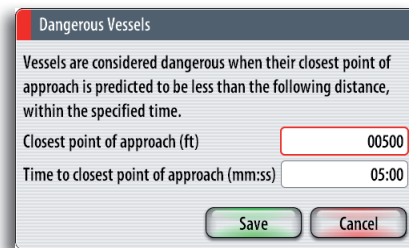
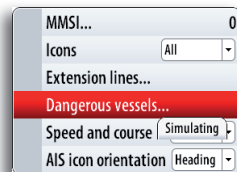
You need to have your own MMSI number entered in the NSE system to be able to receive addressed messages from AIS and DSC vessels.

The Vessel message option in the alarm settings must be toggled on if any MMSI message shall be displayed, refer to next page.



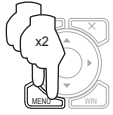
## Defining a guard zone around you vessel

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

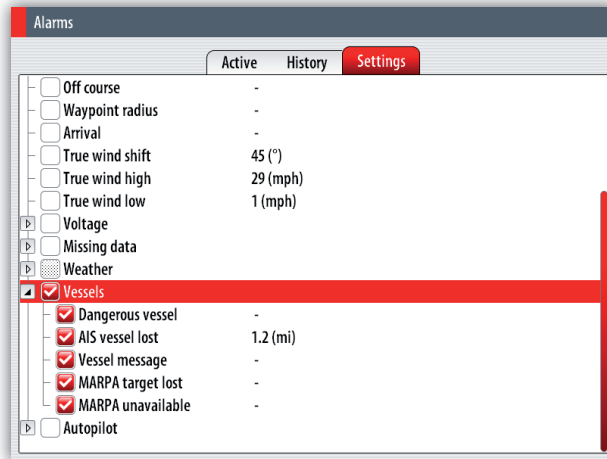
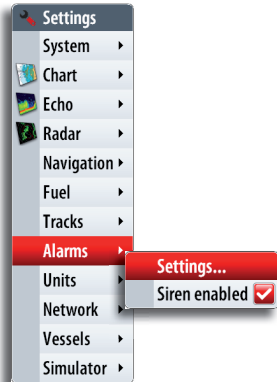




## Target alarm settings



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



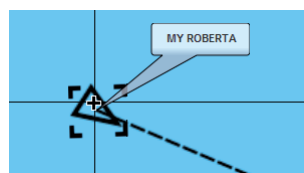
The following alarms can be set:

Alarm ID	Description
Dangerous vessel	Controls whether an alarm shall be activated when a vessel comes within the predefined guard zone. <i>The check box controls whether the alarm pop-up box is displayed and if the siren will sound. The guard zone defines when a vessel is dangerous regardless of the enabled/disabled state.</i>
AIS vessel lost	Sets the range for lost vessels. If a vessel is lost within this range this will trigger an alarm
Vessel message	Controls whether an alarm shall be activated when a message is received from an AIS target
MARPA target lost	Controls whether an alarm shall be activated when a MARPA target is lost
MARPA unavailable	Controls whether an alarm shall be activated if you do not have the required inputs for MARPA to work (valid GPS position and heading sensor connected to the radar server)

## Viewing information about targets

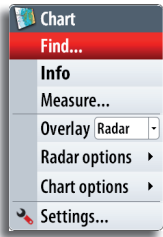
When you select a vessel on the chart the symbol will change to Selected target symbol, and the vessel name will be displayed.

You can display detailed information for a selected target by pressing the rotary knob or the **MENU** key.





You can also display information about other vessels from the **Vessels page** as described in the **Utilities pages** section.



## Finding other AIS vessels

You can search for other vessels equipped with suitable AIS devices from your chart menu or from the **Find** or **Vessels** feature in the utilities pages (refer to the **Utilities pages** section).

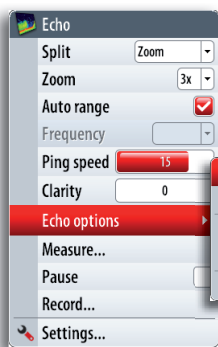
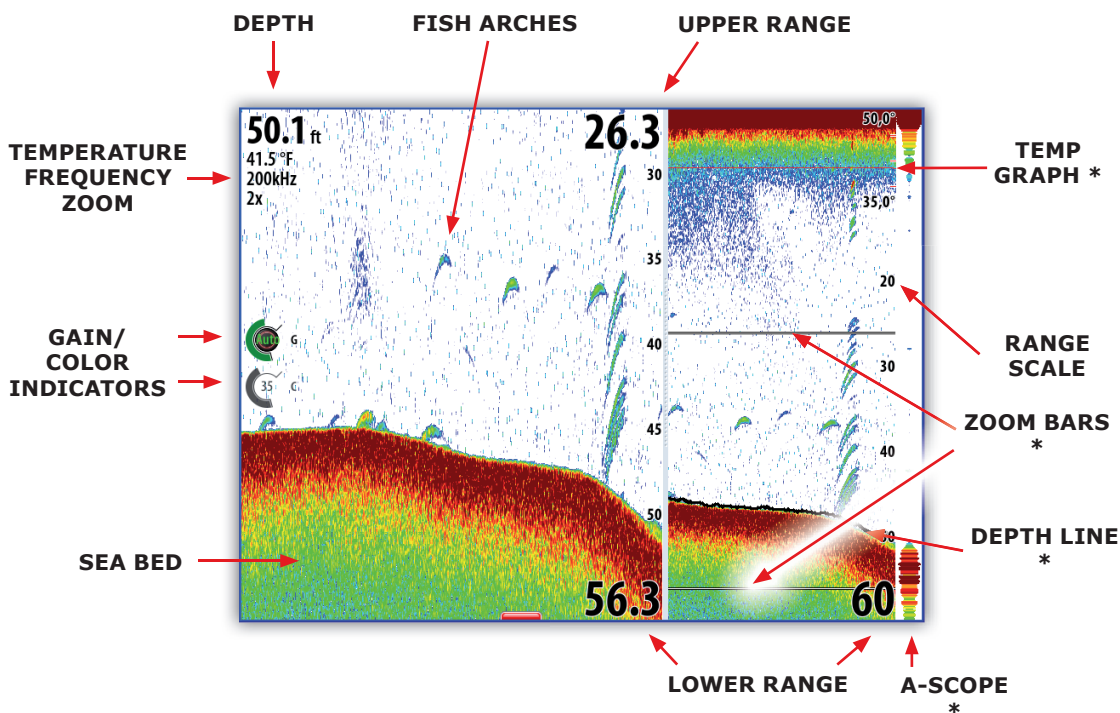
## 8 Using the echosounder

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

### The echosounder image

The echosounder displays the water column moving from right to left on the panel.

You can select between single panel view and several split views as described later in this chapter.



\* *Optional echosounder image items*

You turn the optional echosounder images on/off individually.

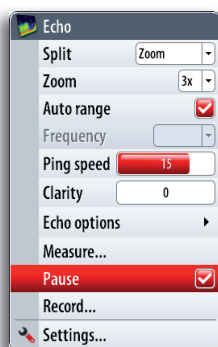
### Pausing the sounder image

It is not possible to turn OFF the sounder transmission from the NSE unit. When the echosounder is connected and configured the sounder information will be transferred to the NSE system as long as the echosounder is running.

You can freeze the sounder image, allowing you to examine the sounder echoes.

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

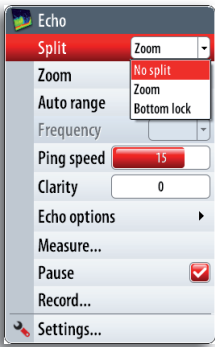
When the image is paused the echosounder will continue to run and the depth indication on the panel will be updated.





## Setting up the sounder display

The echosounder panel can be setup as a single view, or with split view where the left and the right side presents different images.

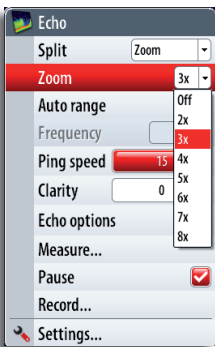
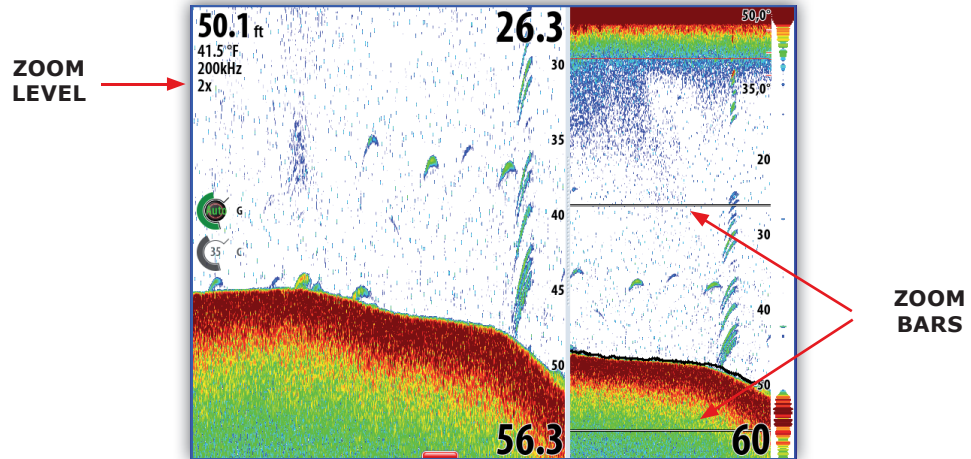


### Split screen options

#### Zoom

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.

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 will be reduced. You will see this as reduced distance between the zoom bars.

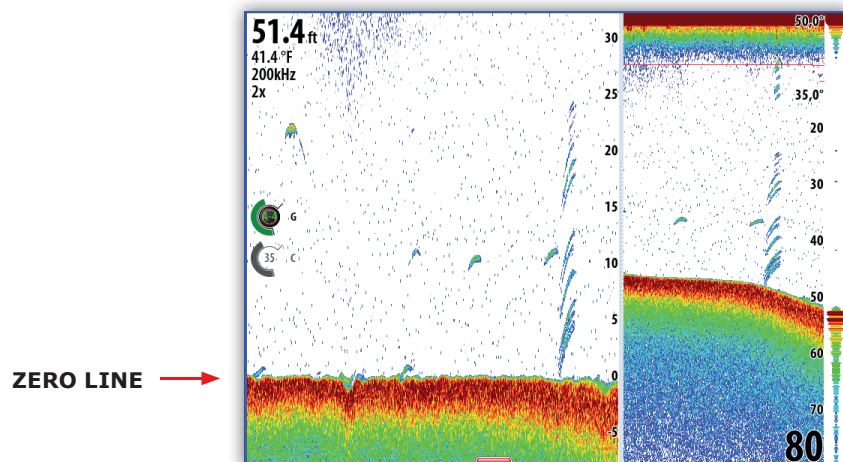


When Zoom mode is selected, the context menu will expand to include a drop down menu from where you can select the zoom factor.

#### Bottom lock

The bottom lock mode is useful when you want to view echoes 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 will always be shown on the left image, independent on range scale.



The scaling factor for the image on the left side of the panel is adjusted as described for Zoom mode.



## Setting the echosounder range

The range setting determines the depth shown on the display.

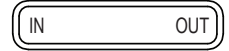
### Auto

If you select **Auto**, the system will automatically display the whole range from the water surface to the bottom.

Auto range will automatically be turned off once you adjust the range manually.

### Manually changing the range

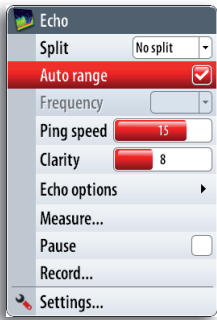
You can increase or decrease the range by pressing the zoom keys.



Pressing and holding one of the zoom keys will toggle between auto and manual range. Autorange is resumed by pressing the "0" key.

When manually change the range the lower depth line will be moved upwards or downwards. The upper depth line will always be at the water surface.

This options allows you to focus on echoes at the upper part of the water column.



## The echosounder frequency

This NSE unit supports several transducer frequencies. Available frequencies depend on what transducer that is connected.

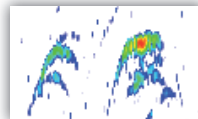
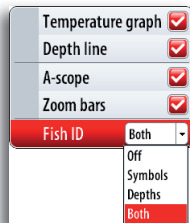
You can view two frequencies at the same time by setting up a echosounder split screen.

## Selecting the ping speed

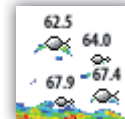
The Ping Speed controls the rate the transducer uses to send echosounder waves into the water. A higher ping speed will yield the best results when you are moving across the water at a high rate of speed or fishing from a dock. The reverberation of too much ping speed can cause interference on the screen.

## The fish echoes

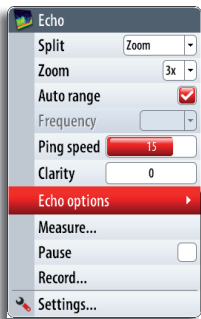
You can select how you want the echoes to appear on the echosounder image.



**TRADITIONAL FISH ECHOES**



**FISH SYMBOLS AND DEPTH INDICATION**



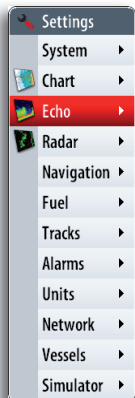
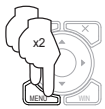
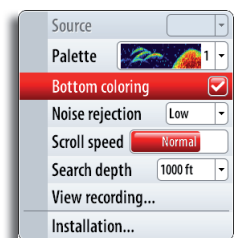
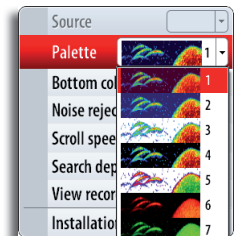
## Using colors

### Color palette

Several display color templates with varying degrees of color and brightness are available.

### Bottom coloring

The bottom coloring option colors the entire bottom area in one brown shade. This will clearly separate fish and structure from the bottom.



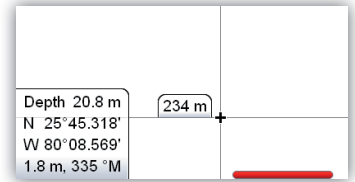
## Using the cursor on the echosounder panel

The cursor is by default not shown on the sounder image.

When you press one of the arrow keys the cursor will be visible, the depth at the cursor position will be shown, the information window and the history bar will be activated.

You use the arrow keys to move the cursor in any direction on the display.

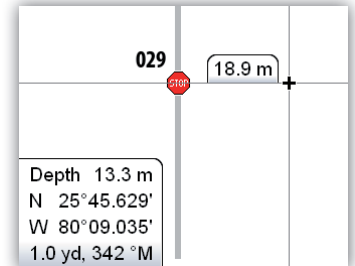
To remove the cursor and cursor elements from the panel, press the **X** key.



## Using the cursor to position a waypoint

You can position a waypoint at the cursor position by pressing the **PLOT** key as described in the **Waypoints, routes and tracks** section.

When the key is pressed the waypoint symbol and ID are positioned at the cursor position.



## Viewing sounder history

Whenever the cursor is shown on a sounder panel, the red scroll bar is also shown. The scroll bar shows the image you are currently viewing in relation to the total echosounder image history stored.

When the scroll bar is on the far right side it indicates that you are viewing the latest soundings. If you move the cursor to the left side of the screen the history bar will start scrolling towards left, and the automatic scrolling as new soundings are received will be turned off.

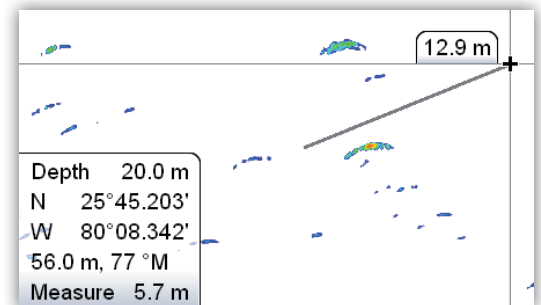
To resume echosounder scrolling, move the cursor to the right until the red history bar reaches the right side of the image, or press the **X** key.

## Measuring distance

The cursor can be used to measure the distance between the position of two observations on the sounder image. It is easier to use the measure function when the sounder image is paused.

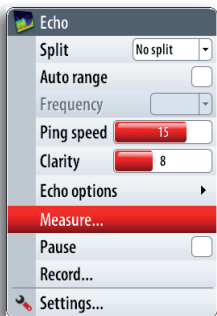
Use the following process to measure a distance:

- 1 Move the cursor to the first measuring point
- 2 Start the Measure function
- 3 Move the cursor towards the second measuring point
  - A line will be drawn from the first point to the cursor, and the distance will be listed in the Information window



You can reset the measurement by pressing the **Tick** key.

When you press the **X** key the echosounder will resume to normal scrolling.



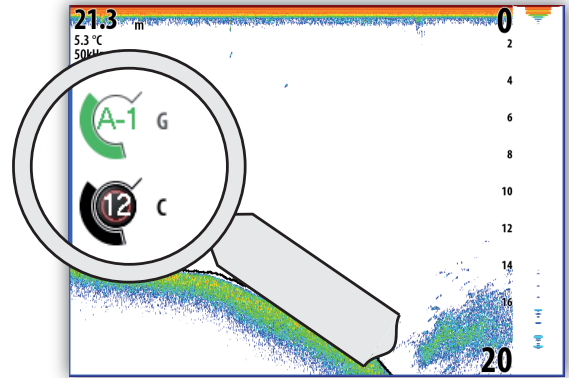
## Optimizing the echosounder image

Several parameters can be adjusted to optimize the sounder image.

### Gain

The gain controls the sensitivity of the echosounder.

The more you increase the gain, the more details will be shown on the image. However, a higher gain setting may introduce more background clutter on the image. Conversely, if the gain is set too low weak echoes may not be displayed.



### Auto gain

The Auto gain option will keep the sensitivity at a level that works well under most conditions.

With the gain in auto mode, you can set a positive or negative offset that gets applied to the auto gain. This is indicated as A-40 - A40.

### Color

The strength of the echo is symbolized by colors. A strong return will be shown with reddish-brown color, while a weak signal will be light blue (depending on which palette you select).

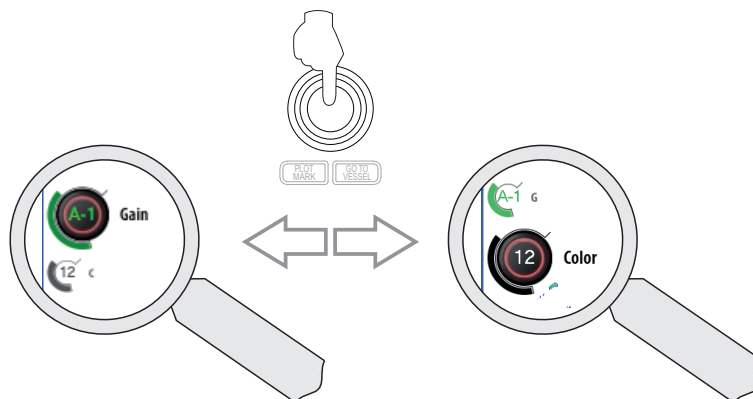
The more you increase the Color, the more echoes will be displayed as reddish-brown.

### Adjusting the Gain and Color gain settings

Gain and Color are adjustable by using the rotary knob.

You select between Gain and Color by pressing the rotary knob. The active control will expand and display its name in full. You can then adjust the value by turning the knob.

If you press and hold the rotary knob when Gain is selected, you switch between Auto and Manual gain option.



If no adjustments are made within 3 seconds the controls will return to default size.

### Noise rejection

Echosounder signal interference from bilge pumps, engine vibration and air bubbles can clutter the sounder image.

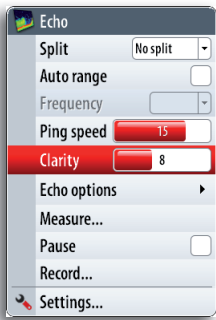
The noise rejection option filters the impact of echosounder signal interference by reducing the on-screen clutter.



## Clarity

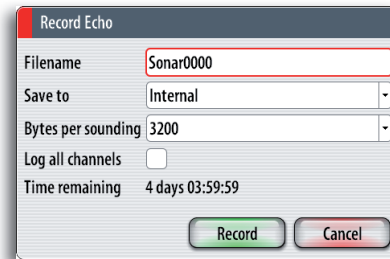
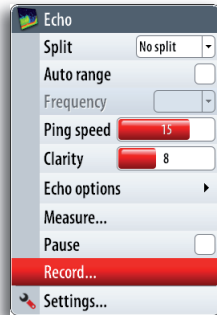
Wave action, boat wakes and temperature inversion can cause on-screen clutter near the surface.

The surface clarity option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.



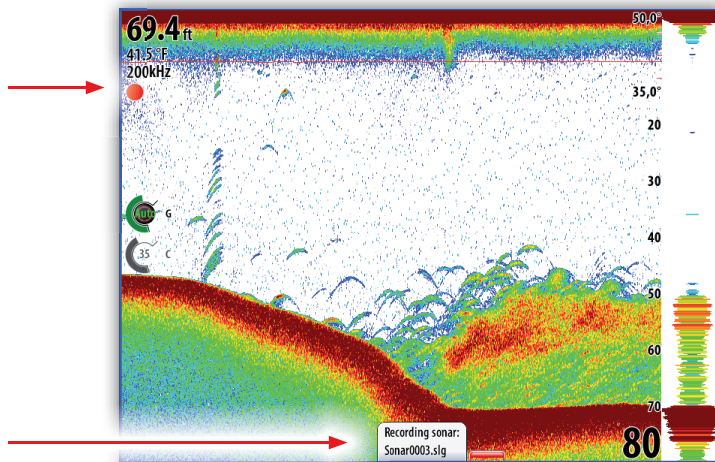
## Recording the echosounder data

You can record echosounder data and save the file internally in the HDS unit.

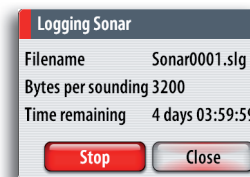


You can select how many bytes per seconds that is to be used when saving the log file. More bytes yields better resolution, but will cause the record file to increase in size compared to using lower byte settings.

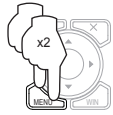
When the echosounder image is being recorded, there will be a flashing red symbol and a logging message will appear periodically at the bottom of the screen.



The sounder recording is stopped by repressing the **MENU** key.

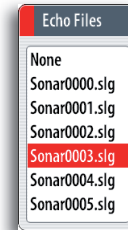
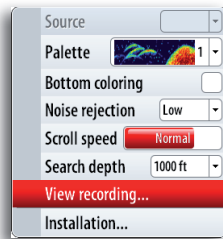




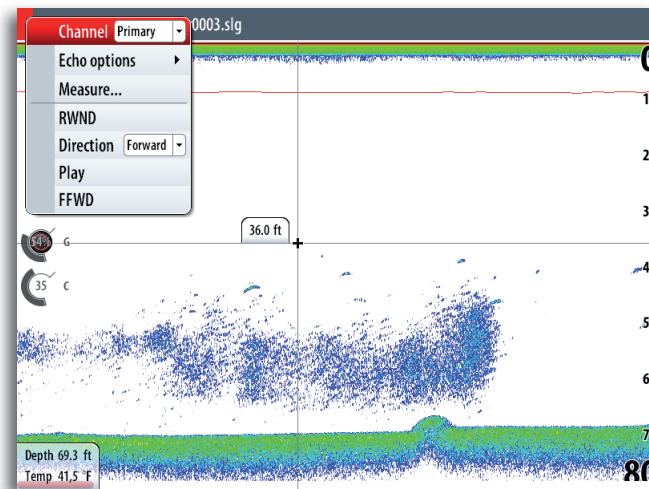


## Viewing the recorded sounder data

The recorded sounder images are stored internally in the HDS unit, and can be reviewed when selected.



The log file is displayed as a paused image, and you get access to the replay and echo options by pressing the **MENU** key.



You exit the replay mode by pressing the **X** key.

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## 9 Navigating

The navigation function included in the NSE allows you to navigate towards the cursor position, a position defined by latitude and longitude values, a waypoint or along a predefined route.

For information about positioning waypoints and creating routes, refer the **Waypoints, Tracks and Routes** section.



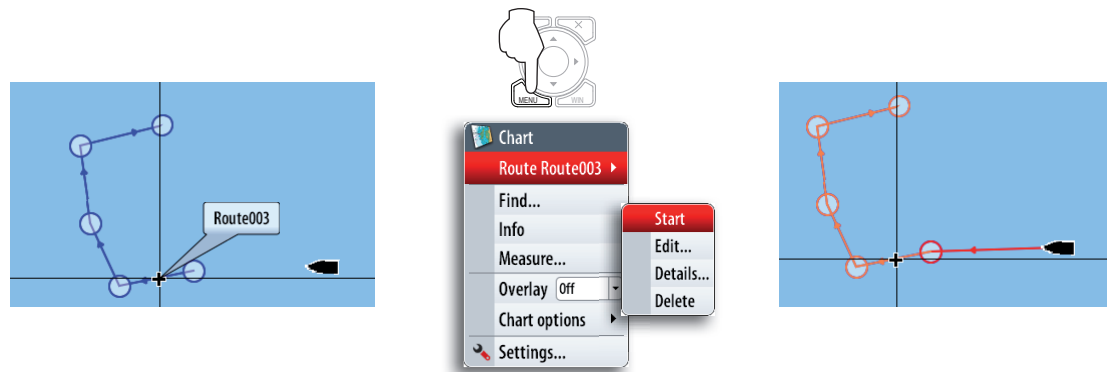
### Start navigating

#### Using the GOTO key

You can start navigation from any panel by pressing the **GOTO** key. The go to cursor option will only be available when the cursor is active on a Chart, Radar or Echosounder panel.

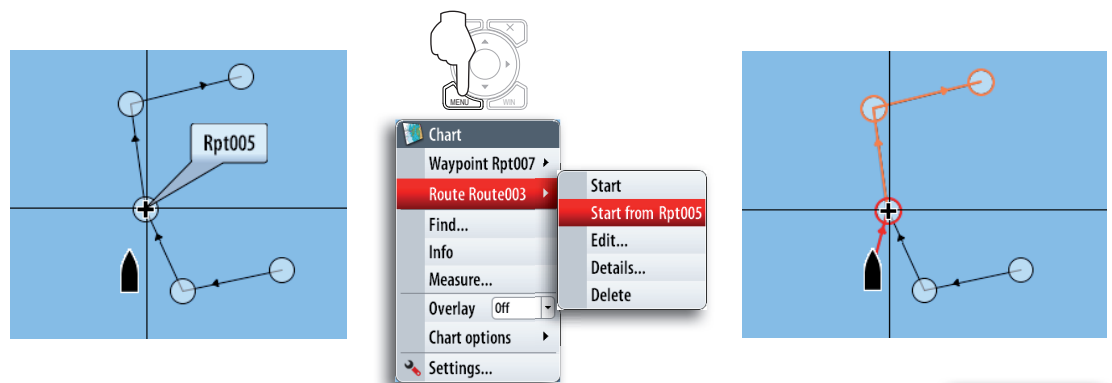
#### Using the cursor

You can start navigating a route on a chart panel by moving the cursor over the route and then pressing the **MENU** key.



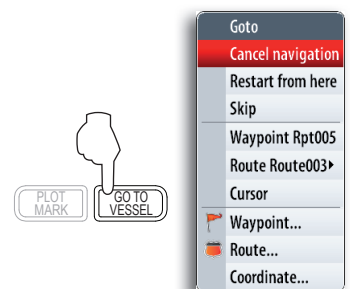
#### Selecting start point

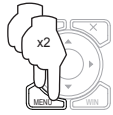
You can navigate a route starting from any waypoint by positioning the cursor over the selected waypoint and pressing the **MENU** key.



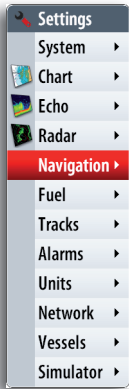
### Cancel navigation

You cancel navigation by pressing the **GOTO** key.





## Navigation parameters

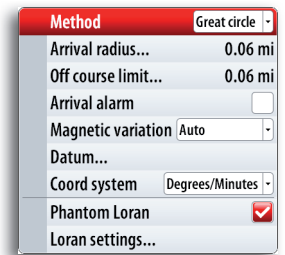


### Navigation method

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

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

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



### Steering alarm limits

#### Arrival radius

Sets an invisible radius around the destination waypoint.

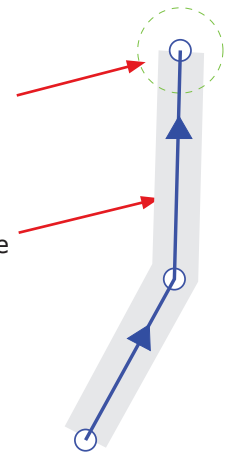
When the arrival alarm is activated, an alarm will appear when the vessel is within this radius.

#### Off course limit

This parameter defines the vessel's accepted offset distance from the leg. If the vessel goes beyond this limit an alarm will be activated.



*Off course alarm must be enabled/disabled in the alarm panel.*



### Magnetic variation

Converts magnetic north data to true north, increasing the accuracy of navigation information.

Auto automatically converts magnetic north to true north. When using manual mode, you will have to input the local magnetic variance.

### Datum

Most paper charts are done by using the WGS84 format, which also is used by the NSE system.

If your paper charts are made by using a different format you can change the settings accordingly on the NSE system to match your paper charts.

### Coordinate system

Controls the format for lat./lon coordinates displayed on the panels.

### Phantom Loran

Enables phantom loran, for waypoint entry, vessel and cursor position display.

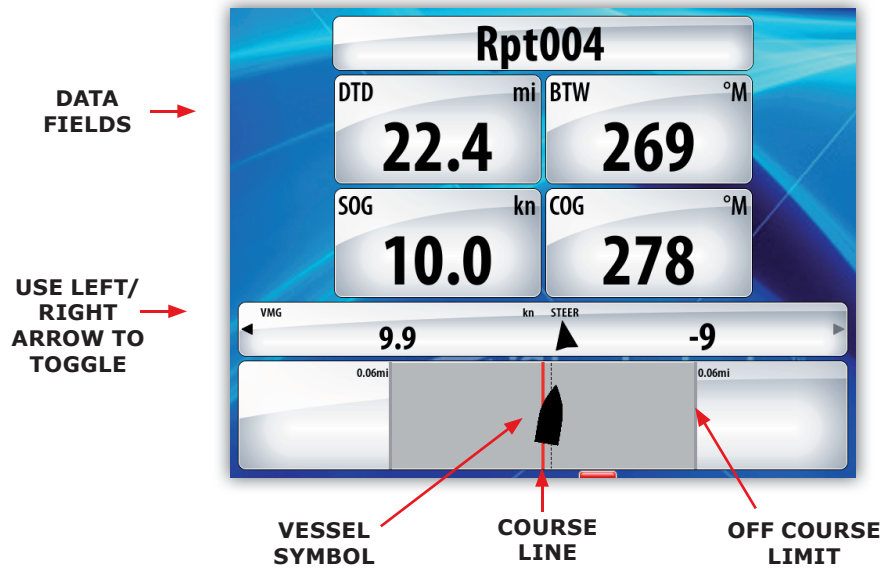
### Loran settings

Allows setting of GRI and preferred TD pairs for vessel and cursor position display.

## Navigation panels

The Steer and Position panels can be used to display information when you are navigating.

### The Steer panel



#### Data fields

The Steer panel offers the following information:

- DTD      Distance to destination
- BTW      Bearing to waypoint
- SOG      Speed over ground
- COG      Course over ground
- TTD:      Time to destination
- ETA:      Estimated time of arrival at next waypoint
- VMG:      Velocity Made Good towards next waypoint.
- STEER:    Course to steer towards next waypoint

#### The course line

When travelling on a route the course 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 course line will show the intended course from the point at which navigation was started towards the next waypoint.

#### Vessel symbol

The vessel symbol indicates distance and bearing relative to the intended course.



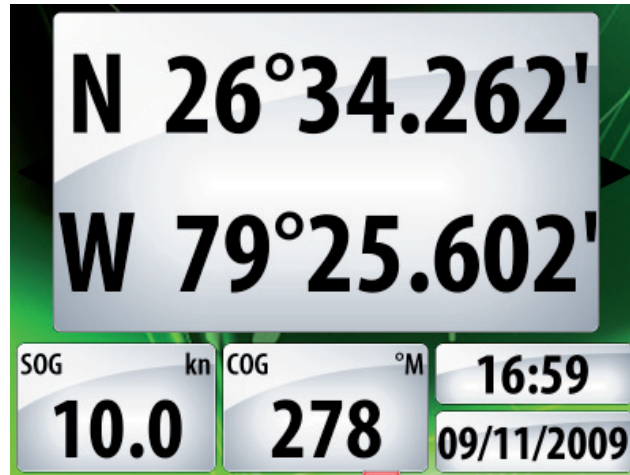
#### Off course limit

If the XTE exceeds the defined off course limit (refer below), this will be indicated with a red arrow including the distance from the track line



If the off course alarm is enabled, the alarm will activate if the XTE exceeds the defined off course limit.

## Position panel



### *Data fields*

Position in lat. and lon.

Time and date

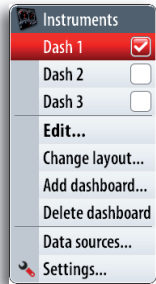
SOG      Speed over ground

COG      Course over ground

## 10 The instrument panel



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

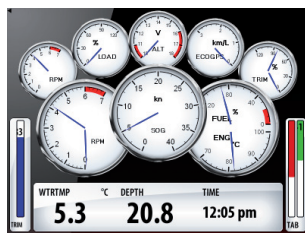


### Switching between dashboards

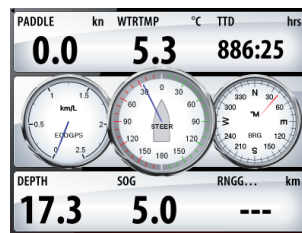
You switch between a panel's dashboards by using the left and right arrow keys or by selecting the dashboard from the menu.

### Dashboard styles

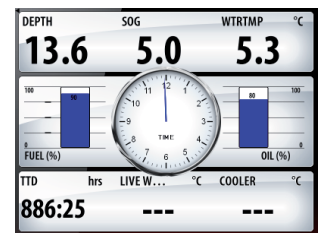
Three dashboard layouts are predefined to display gauges showing information about vessel, navigation information and angler requirement.



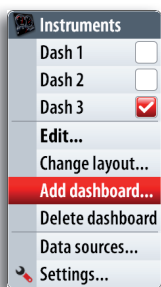
Vessel dashboard



Navigation dashboard

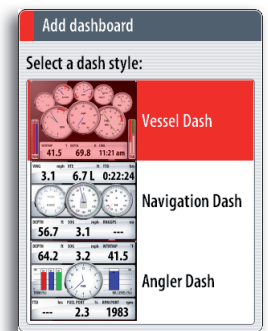


Angler dashboard



### Adding dashboards

There can be up to 10 dashboards within each instrument panel. In addition to the 3 predefined dashboards you can design your own based on the predefined dashboard styles.



### Customizing a dashboard

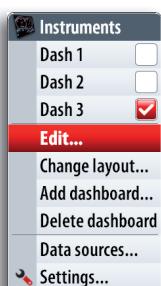
You can customize a dashboard by changing the dashboard style, and by changing the data for each of the gauges in the dashboard. You can also set limits of analog gauges.

Available editing options will depend on type of gauge and which data sources that are connected to your system.

When a dashboard is in editing mode, this will be indicated in the upper right corner.



- 1 Select the dashboard you want to edit
- 2 Press **MENU** key to enter edit mode
  - The upper right gauge will be selected. Active gauge will be indicated with red border
- 3 Use the arrow key to select the gauge you want to change
- 4 Repress the **MENU** key to select edit options
- 5 Repeat until all edits are done
- 6 Press the **MENU** key to save your changes



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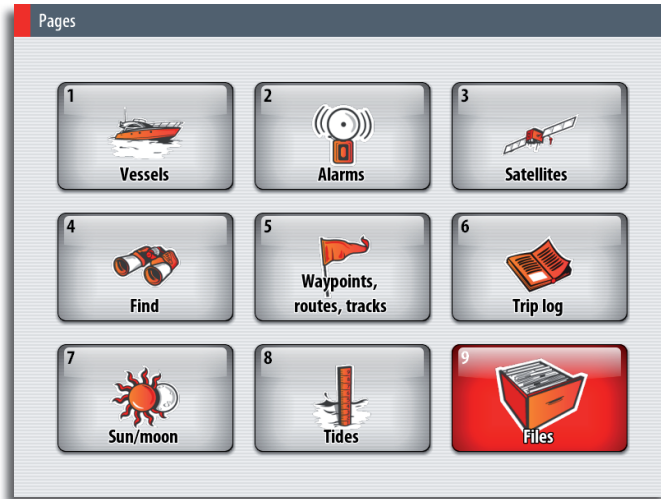


# 11 The utilities pages

The utilities pages includes options and tools that are not specific to any panel.

These pages act different to the chart, radar, echo etc. They are always full screen, and you cannot use them in a split page with any other panels.

A utility page will open on top of your previous page. When you close a dialog in one of the utilities pages the utilities function will close and the display will return to last active page.



The utilities pages are accessed and operated as for normal menu operation.

You switch between different tabs in a page by using the arrow keys. You can also access a page by using the numeric key as indicated on each icon.

Any listing in the utilities pages has a context menu, giving access to available options for the selected item. The context menu is displayed by pressing the **MENU** key.



## Vessels

### Status listing

List of all AIS, MARPA, and DSC vessels with available information.

### Message listing

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

Name	Distance By	CPA TCPA	Type Status
LONGEST NAME IS 20 C	3.60 km 57 *M	- -	AIS safe
LOST	4.57 km 79 *M	- -	AIS lost
MOORED	1.16 km 153 *M	- -	AIS safe
SIM VESSEL B	0.34 km 190 *M	- -	AIS safe
VESSEL A	0.48 km 128 *M	67.9 m 0:01.04 hrs	AIS danger



## Alarms

### Active alarms

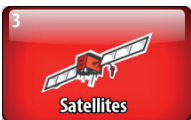
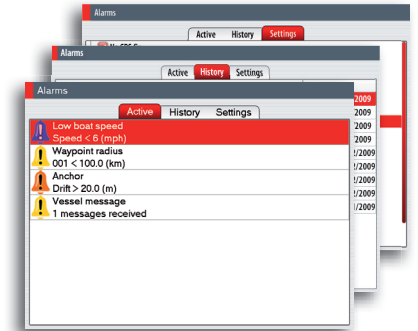
List of active alarms.

### Alarm history

List of all alarms with time stamp.

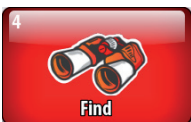
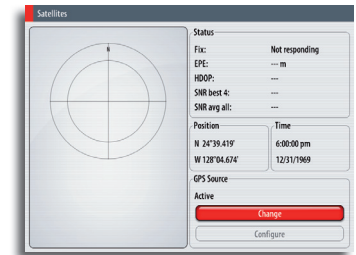
### Alarm settings

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



## Satellites

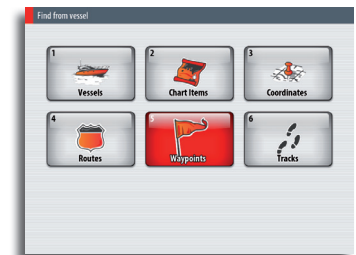
Status page for active satellites.



## Find

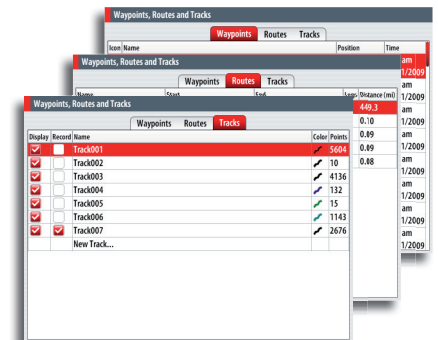
Search function for several chart items.

By pressing the **MENU** key you get access to available options for the selected item.



## Waypoints/routes/tracks

List of waypoints, routes and tracks with details.





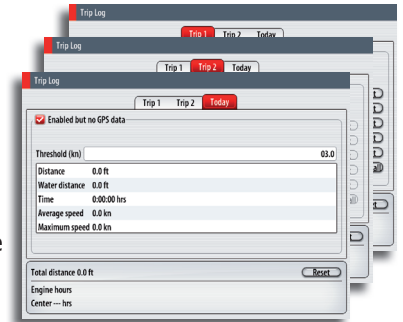
## Trip Log

### Trip 1 / Trip 2

Displays voyage and engine information, with reset option for all data fields.

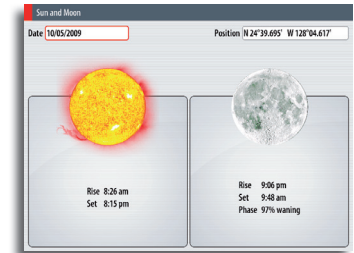
### Today

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



## Sun/moon

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

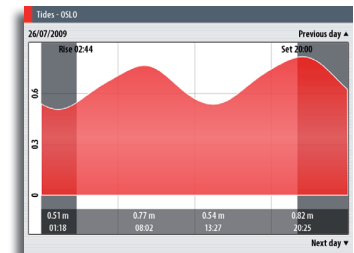


## Tides

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

You can use the arrow keys to page to selected date.

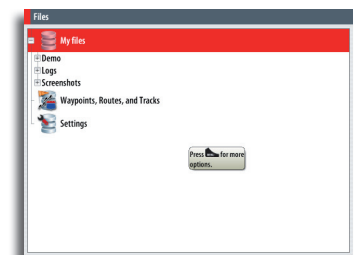
Available tide stations can be selected by using the **MENU** key.



## Files

File management system for files, waypoints, routes, tracks and settings.

By pressing the **MENU** key you get access to available options for the different file types.



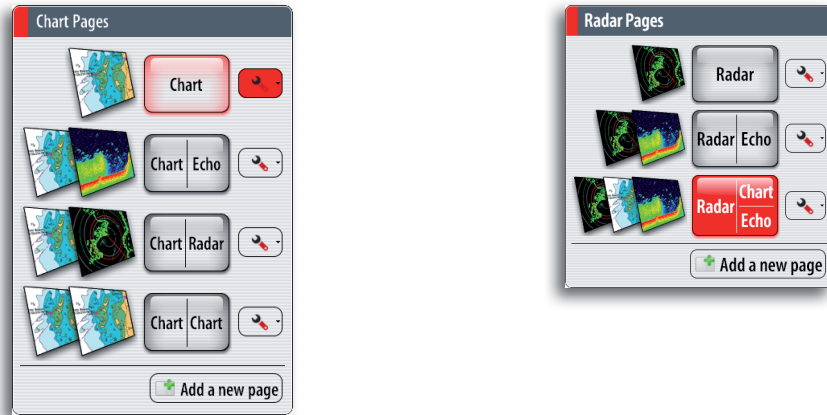
***Blank page***

## 12 Customizing your system

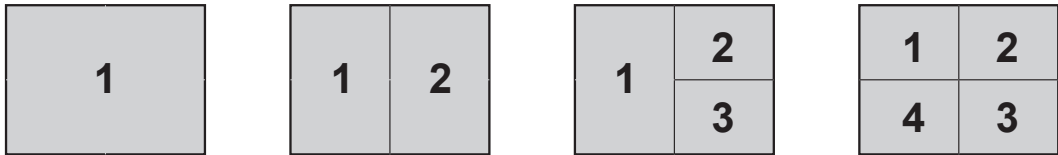
### Page setup

Your NSE system includes a set of predefined pages for each page group accessed by the Direct Access Key (DAK). The list of available pages is displayed when you press the DAK for the active page.

Each page group can have up to 5 pages, organized as single panels or as a combination of panels. The first item in each page list will always be a full size page for the panel related to that page group.



There can be up to 4 panels on each page, and the layout can be arranged as illustrated below. The numbers indicated on each page shows the order in which the panels will be added.

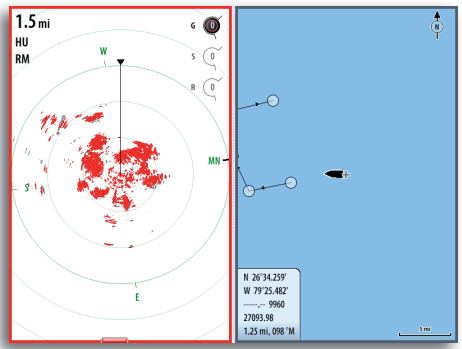


The graphics on the next page illustrates how a page is added and panels defined for the RADAR page group. The process is identical for each page group.

You can add, remove and replace panels from the same menu.



*The illustration does not indicate how you use the rotary knob to maneuver in the menu and confirm a selection. This is described in the **Basic Operation** section.*



Radar Pages

Radar

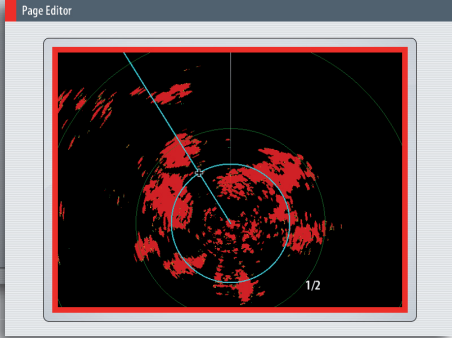
Radar Chart

Add a new page

Page Editor

Select panel to add

- Chart
- Radar**
- Echo
- Instruments
- Steer
- Video
- Position



Add...

Remove

Replace...

Move...

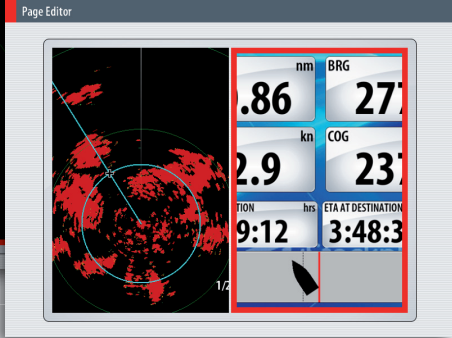
Save

Cancel

Page Editor

Select panel to add

- Chart
- Echo
- Instruments
- Steer**
- Video
- Position



Add...

Remove

Replace...

Move...

Save

Cancel

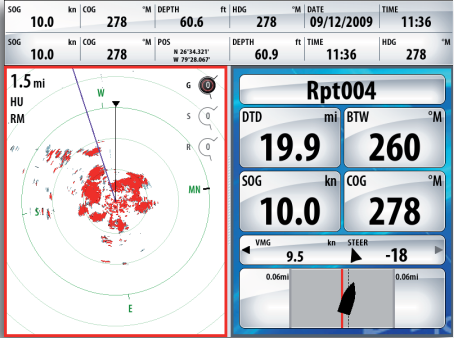
Radar Pages

Radar

Radar Chart

Radar Steer

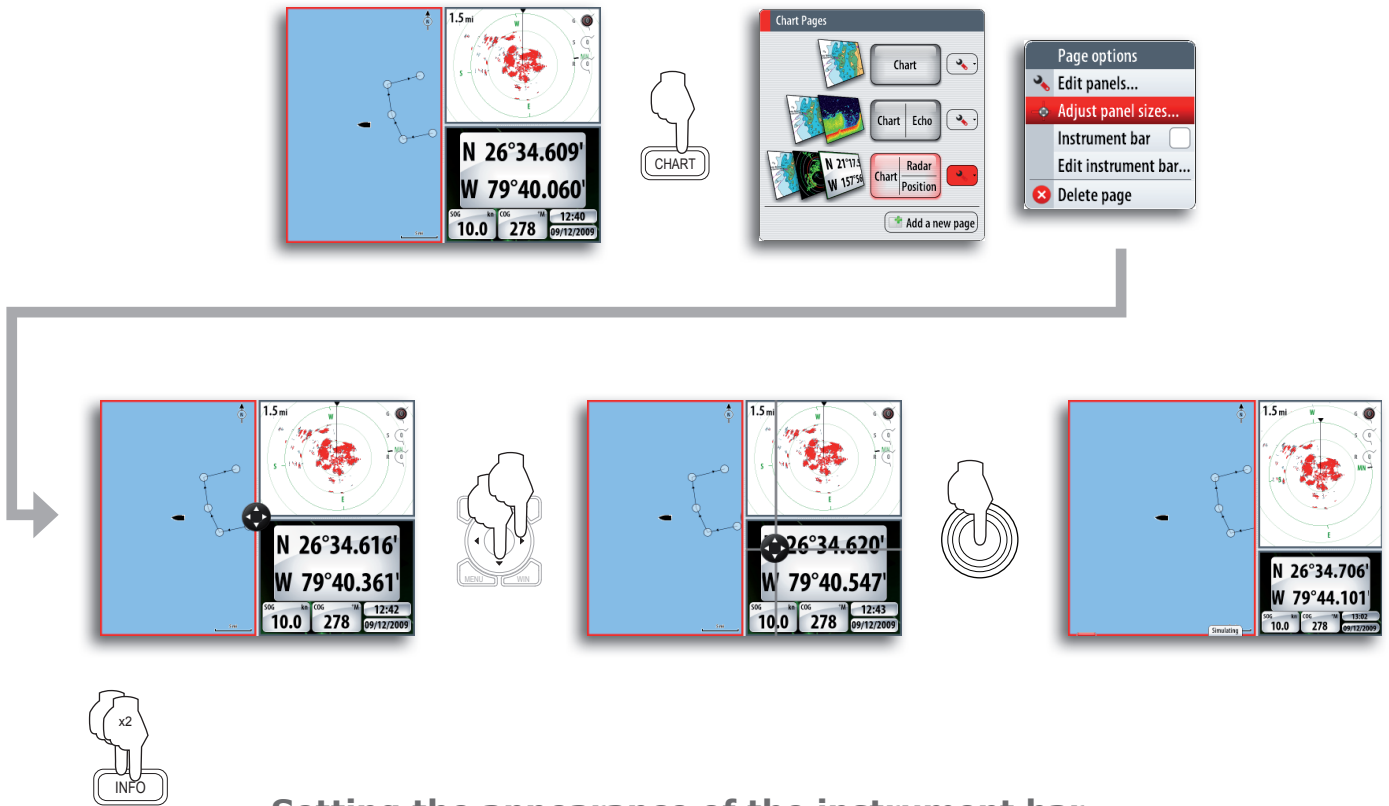
Add a new page



## Adjusting panel size

You can adjust the size of the panels in a multi panel's page by pressing the page group's DAK.

The illustration below shows how you change the size of a 3-panels Chart page.

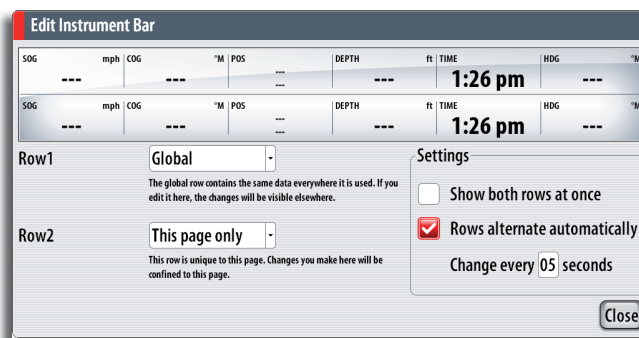
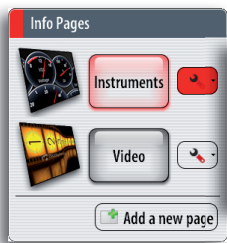


## Setting the appearance of the instrument bar

Data sources connected to the system can be viewed in an instrument bar on top of your screen.

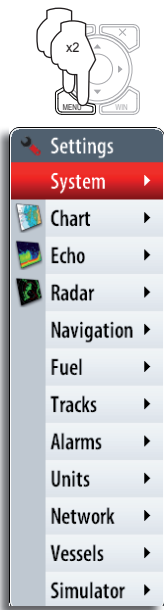
You can choose to turn the instrument bar off; display either one or two rows, or set it to alternate the rows automatically.

You can also select to show it on a specific page only, or on all pages.



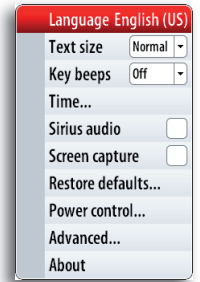
## Selecting data sources

- 1 Turn the rotary knob to highlight the instrument bar on top of the dialog
- 2 Press the rotary knob to highlight the first instrument field
- 3 Rotate the knob to select data source, and press the knob to confirm
- 4 Use the rotary knob to move to next data field
- 5 Continue using the rotary knob until all data fields are defined
- 6 Press the X key to return to normal operation



## Changing system settings

The system settings menu provides access to advanced settings for your NSE unit and determines the way your NSE unit displays various user interface information on the display.



### Selecting language

When you select your desired language; all panels, menus and dialogs will change accordingly.

### Text size

Used for adjusting the size of the text on the menus.

Default setting: Normal

### Key beeps

A tone (key beep) will sound when any key is pressed on your NSE unit.

Default settings: On

### Time

Allows you to select time format, date format and account for differences in time zone when using the NSE unit in a different time zone (Local Offset).

### Sirius Audio

Used for activating the Sirius satellite radio function (US only).

### Screen capture

Saves images of your unit's screen.

The image files can be moved or copied to USB or memory card. Refer to the **Utilities pages** section.

### Restore defaults

Allows you to restore all settings back to factory default.

### Power control

Defines how power is controlled on NSE units in a networked system.

### Advanced

Contains advanced setup features.

### About

Displays your NSE unit's current software version.



# 13 Sirius audio and weather (North America only)

When connected to a Navico Weather Module MKII, you can subscribe and include Sirius audio and Sirius Marine Weather Service on your NSE system.

Sirius audio and weather service covers inland US waters and coastal areas into the Atlantic and Pacific oceans, Gulf of Mexico and the Caribbean Sea.

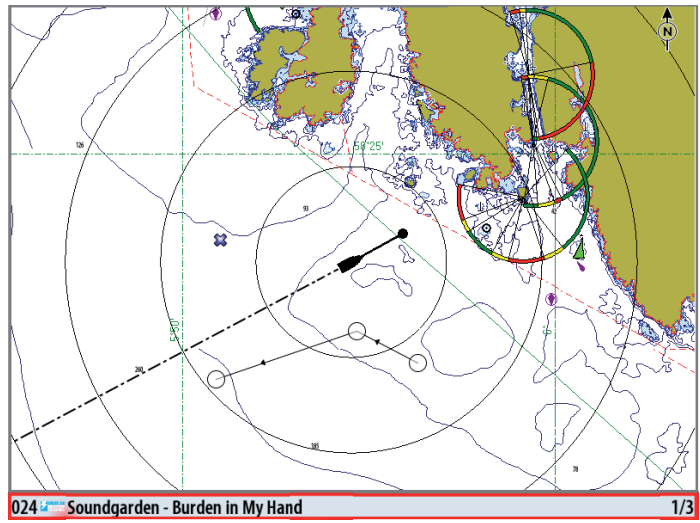
The audio and weather products received vary depending on your selected subscription package. For more information refer to [www.sirius.com](http://www.sirius.com).



## Sirius audio

When the Sirius audio is turned on, a scrolling media bar will appear at the bottom of the active panel.

The media bar acts as a panel, and you switch focus between other panels and the media bar by pressing the **WIN** key.



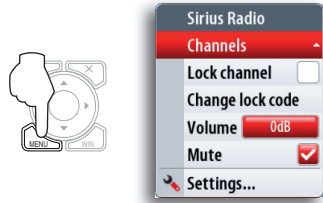
**ACTIVE CHANNEL**      **MEDIA BAR**      **SIGNAL STRENGTH**

## Operating the Sirius audio

When the media bar is active on your screen, you can operate the audio by using the following keys:

	Increase/decrease volume
	Up/down arrow keys to page to next/previous radio channel

The audio can be muted and the volume adjusted from the Sirius Radio menu.





## The radio channels list

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



Chan	Description	Favorite	Status
089	energie2	<input type="checkbox"/>	Subscribed
090	JBL JBC-Korean Radio	<input type="checkbox"/>	Subscribed
091	ESPN Deportes	<input type="checkbox"/>	Subscribed
092	CNN en Espanol	<input type="checkbox"/>	Subscribed
094	Premiere Plus	<input type="checkbox"/>	Subscribed
095	RCI Plus	<input type="checkbox"/>	Subscribed
096	Sports Extra	<input type="checkbox"/>	Subscribed
097	Sports Express	<input type="checkbox"/>	Subscribed
098	Hardcore Sports	<input type="checkbox"/>	Subscribed
099	Howard 100	<input type="checkbox"/>	Subscribed
100	Howard 101	<input type="checkbox"/>	Subscribed
101	SIRIUS XM Stars	<input type="checkbox"/>	Subscribed
102	Blue Collar Radio	<input type="checkbox"/>	Subscribed
103	Raw Dog Comedy	<input type="checkbox"/>	Subscribed

### *Adding channels to favorites list*

You can create a list of your favorite channels from within the channels list.

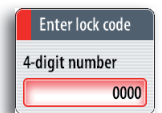
When a favorite list is available, you page through this list when you use arrow keys; not through the entire list of subscribed channels.

### **Locking channels**

You can lock selected channels from being broadcast unless an unlock code is entered.

When the function is activated, the lock code dialog will be displayed and a 4 digit code must be entered before the locking is activated.

The same dialog will be displayed and correct code must be entered before a locked channel can be released.

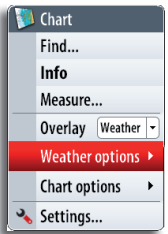
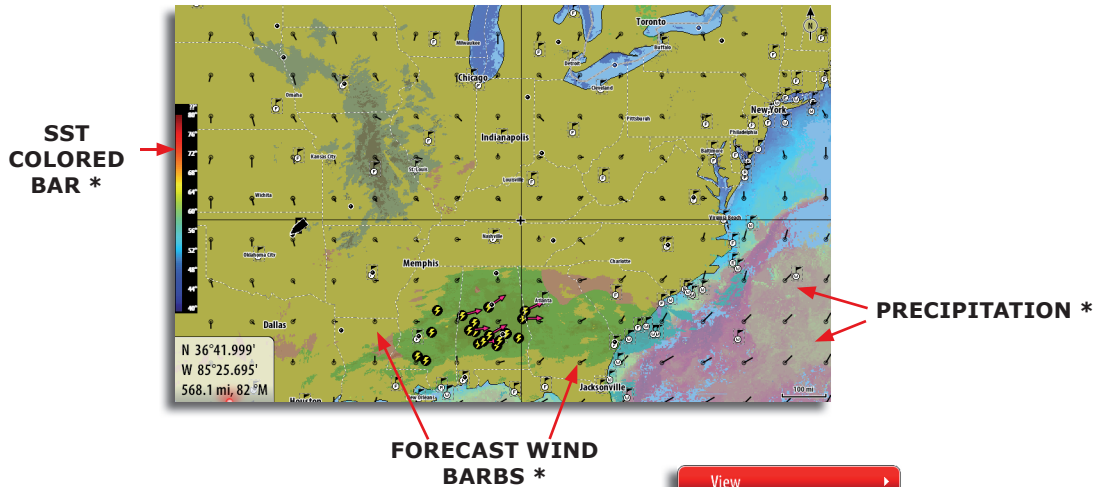
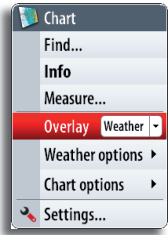




## Sirius weather

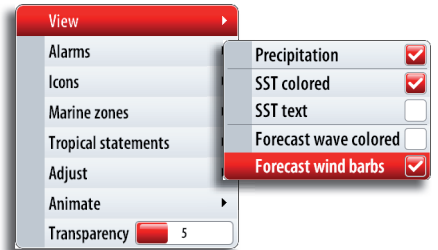
The Sirius weather option can be displayed as overlay to your chart panel.

When activated, weather options become available in the Chart menu.



\* Optional weather image items

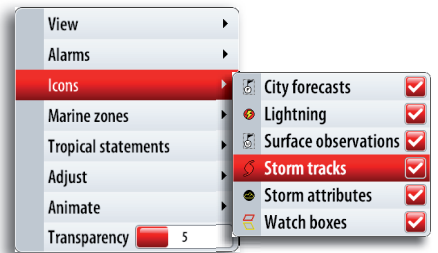
You turn the optional weather graphics on/off individually.



## Setting up the weather image

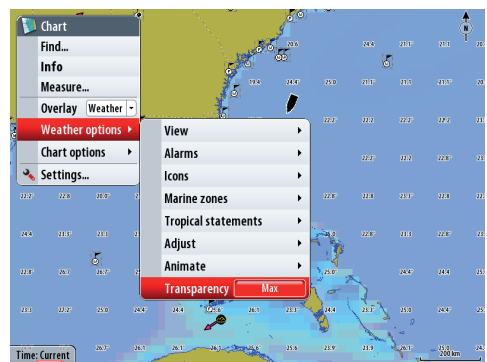
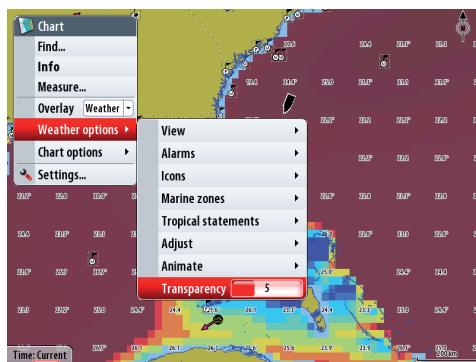
### Weather icons

The NSE system use different icons to present weather conditions. The weather icons can be turned on/off individually.



### Weather overlay transparency

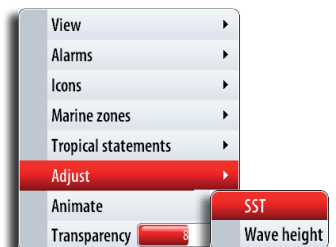
The transparency sets the opaqueness of the weather overlay.



### Color codes

The system uses shades of color on the weather image to indicate sea surface temperature (SST), and also for indicating wave height.

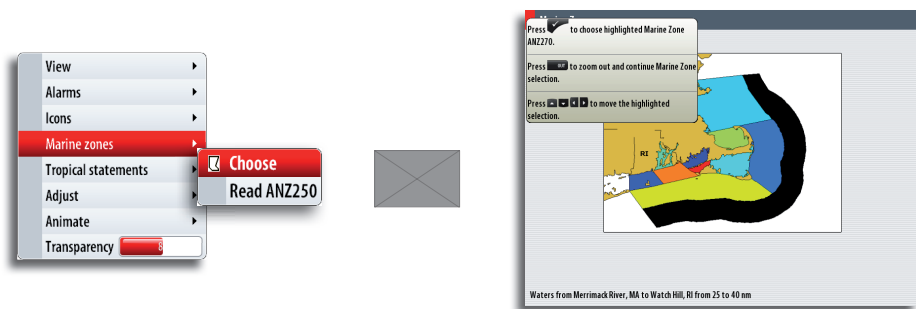
By adjusting these limits you can select how the system uses the color scheme to separate between warm/cool water and minimum/maximum wave height.



## Weather forecast

### Selecting a marine forecast zone

You can setup the system to read the forecast for a selected area.



The context help in the dialog shows how to use the keys to select marine zone.

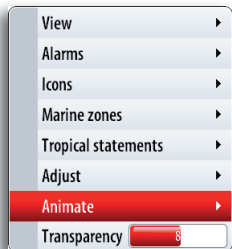
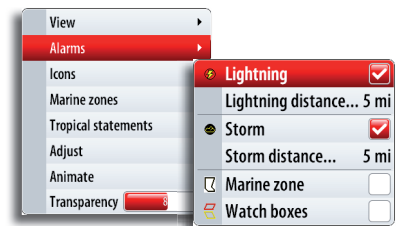
If no area is selected the system will read the forecast for your current vessel position.

### Tropical statements

You can read tropical statements including information about tropical weather conditions. These statements are available only for specific areas.

### Weather alarm settings

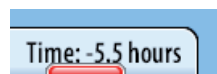
You can define several alarms to warn you when severe weather forecast is received within the specified range of your vessel, within your selected marine zone or within a specific range from your vessel (watch box).



### Animating weather graphics

The animated weather options gives you a graphic overview of how the weather conditions changed for a selected period. This can be used as a guide to potential fishing and sailing conditions in the immediate future.

When activated the time for the current graphic animation will be displayed in the lower left corner of the chart panel.



## 14 Using video

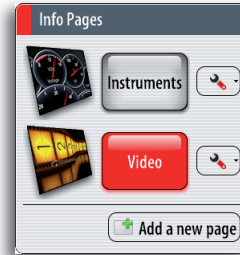
The video function allows you to connect optional cameras to your NSE system.



*The video images will not be shared with other NSE units via the network!*

### The video panel

The video panel is accessed via the INFO key.

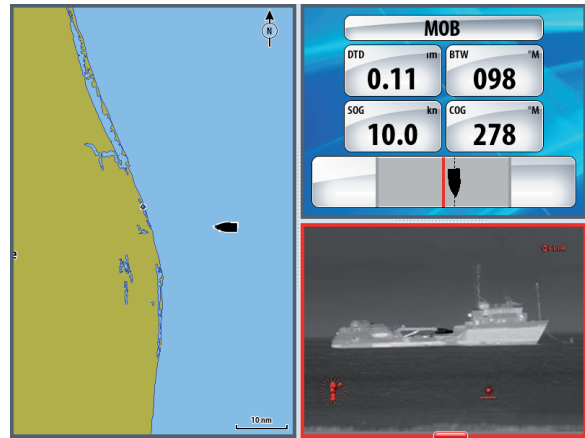


The video panel can also be set up in one of the other page groups accessed by the DAK keys. It can be set up as single panel or as one of the panels in a multi-panel page.

The video image will be proportionally scaled to fit into the video panel. Area not covered by the image will be colored black.

If a multi-panel page layout is selected for the video image, it is recommended to adjust the panel size to fit the image size. For how to adjust panel size, refer to the **Customizing your NSE system** section.

The graphics below show images from a thermal imaging camera.



### Customizing your video settings

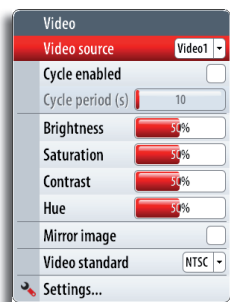
#### Selecting video source

NSE supports two video input channels. You can select to view one channel only, or to cycle the image between available video cameras.

The cycle period can be set from 5 to 120 seconds.

#### Mirroring the video image

Video input can be set to display a mirror image. This setting can be helpful for rear-facing cameras used to back-down the vessel.



## **Optimizing the video image**

You can optimize the video display by adjusting the video image settings.

Default for all settings: 50%.

## **Selecting video standard**

NSE supports NTSC and PAL video. The two channels are set up individually. Check the local video standard or the standard of your cameras.

## 15 The alarm system

The NSE system will continuously check for dangerous situations and system faults while the system is running. When an alarm situation occurs, an alarm message will pop up on the screen.

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

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

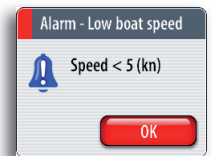
### Type of messages

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

COLOR	IMPORTANCE
Red	Vital
Orange	Important
Yellow	Standard
Blue	Warning
Green	Light warning

### Single alarms

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



### Multiple alarms

If more than one alarm is activated simultaneously, the alarm message will display a list of up to 3 alarms. The alarms are listed in the order they occur with the alarm activated first at the top. The remaining alarms are available in the Alarm listing. Refer to ***The utilities pages*** section.

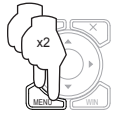


### Acknowledging a message

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

OPTION	RESULT
OK	Sets the alarm state to acknowledged, meaning that you are aware of the alarm condition. The siren / buzzer will stop and the alarm dialog will be removed.  The alarm will however remain active in the alarm listing until the reason for the alarm has been removed.
Disable	Disables the current alarm setting. The alarm will not show again unless you turn it back on in the Alarm settings dialog.

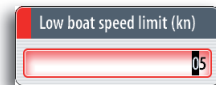
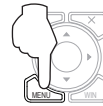
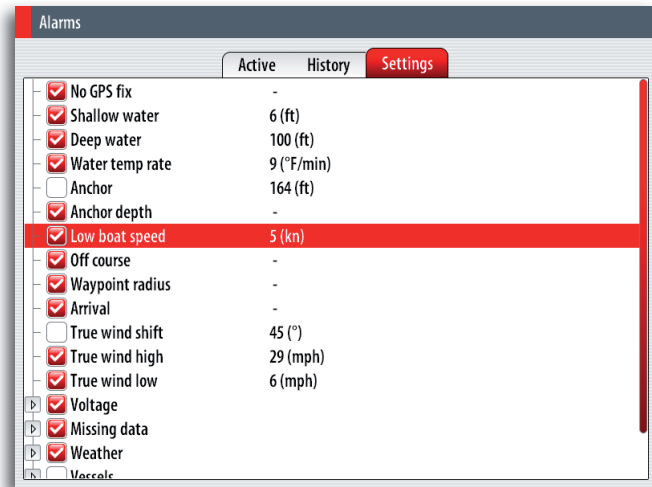
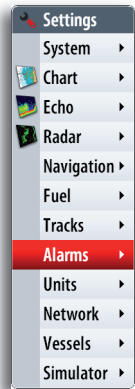
There is no time-out on the alarm message or siren. These remain until you acknowledge it or until the reason for the alarm is removed.



## Customizing the alarm settings

The alarms can be setup in Settings tab in the Alarms page. This page also includes information about active alarms and alarm history.

The Alarms page can also be activated from the Utilities pages.



The alarms are described in the chapter describing the corresponding feature. E.g. vessel alarms are described in the **Tracking other vessel's movement** section.



## 16 Maintenance

### Preventive maintenance

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

It is recommended that you always fit the supplied protective sun cover when the unit not is in use.

### Simple maintenance procedures

#### Cleaning the display unit

Clean the housing and the front glass of the NSE8/12 unit with a damp cloth and mild detergent.

#### Checking the keys

Make sure that no keys are stuck in the down position. However, if one is stuck, wiggle the key to free it back to normal.

#### Checking the connectors

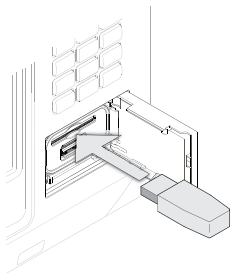
The connectors should be checked by visual inspection only.

Push the connector plugs into the connector, if the connector plugs are equipped with a lock; ensure that this is in the correct position.

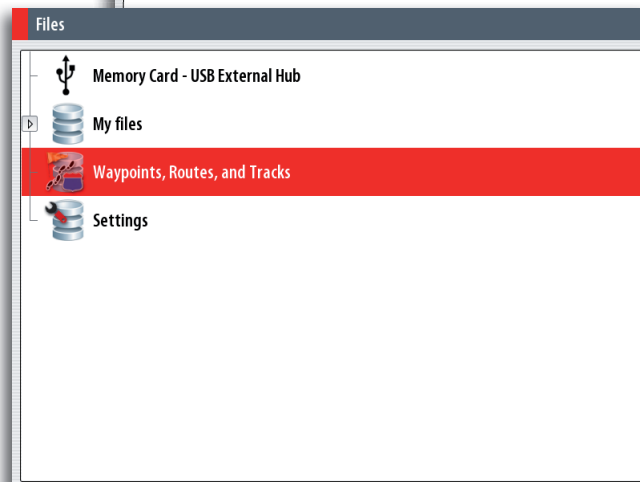
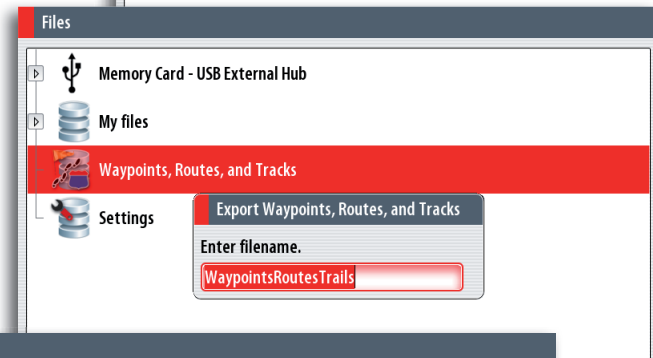
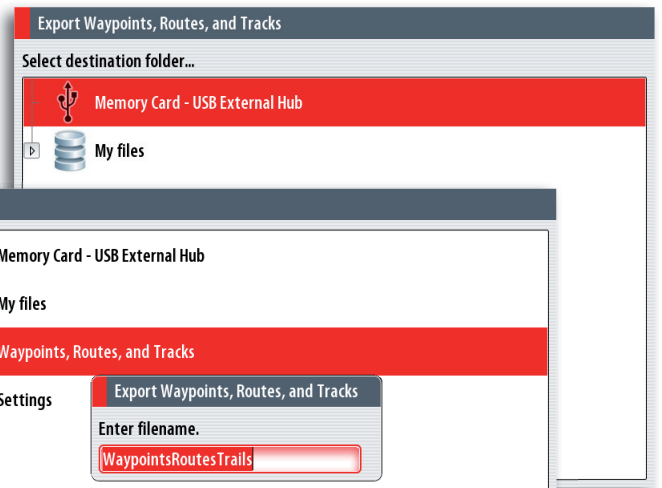
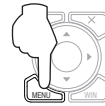
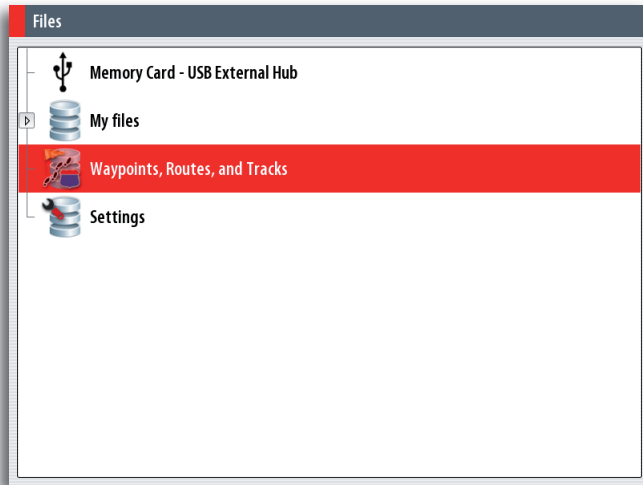
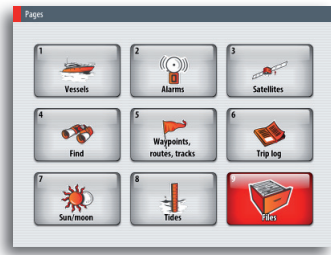
#### Backing up your system data

Waypoints, routes, tracks that you create on your system are filed on your system. It is recommended to regularly export these files and your settings file as part of your back-up routine.

The files are exported to a memory stick or SD card inserted in the card slot on the front of your unit.



An illustration on the next page shows the process when exporting waypoints, routes and tracks. Other files are exported by the same process.



# 17 Menu overview

## Settings menus

### System

Language	English (US)
Text size	Normal
Key beeps	Off
Time...	
Sirius audio	<input type="checkbox"/>
Screen capture	<input type="checkbox"/>
Restore defaults...	
Power control...	
Advanced...	
About	

### Chart

Chart data	Navionics
Popup information	<input checked="" type="checkbox"/>
Grid lines	<input type="checkbox"/>
Waypoints	<input checked="" type="checkbox"/>
Routes	<input checked="" type="checkbox"/>
Tracks	<input type="checkbox"/>

### Echo

Source	
Palette	3
Bottom coloring	<input type="checkbox"/>
Noise rejection	Low
Scroll speed	Normal
Search depth	1000 ft
View recording...	
Installation...	

### Radar

Target expansion	<input type="checkbox"/>
Target trails	1 min
Palette	2
Orientation	Heading up
Data bar	<input checked="" type="checkbox"/>
North indicator	<input checked="" type="checkbox"/>
Range rings	<input checked="" type="checkbox"/>
Range markers	<input type="checkbox"/>
Compass	<input checked="" type="checkbox"/>
Heading line	<input checked="" type="checkbox"/>
Bearings	T/M
MARPA	
Installation...	

### Navigation

Method	Great circle
Arrival radius...	0.06 mi
Off course limit...	0.06 mi
Arrival alarm	<input type="checkbox"/>
Magnetic variation	Auto
Datum...	
Coord system	Degrees/Minutes
Phantom Loran	<input checked="" type="checkbox"/>
Loran settings...	

### Fuel

Refuel...	
Fuel used	
Vessel setup...	

### Tracks

Tracks...	
Logging type	Distance
Distance	1.15 mi
Time period	5 sec

### Alarms

Settings...	
Siren enabled	<input checked="" type="checkbox"/>

### Units

Distance	mi
Distance small	ft
Speed	kn
Wind speed	mph
Depth	ft
Altitude	ft
Heading	M
Temperature	F
Volume	gal
Economy	Distance/Volume
Pressure	PSI
Baro pressure	mb

### Network

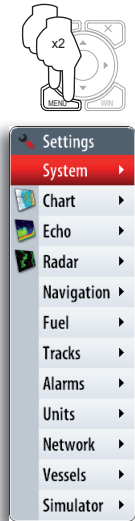
Sources...	
Device list	
Diagnostics	
SimNet groups...	
Damping...	
Sirius status	
NMEA2000 receive waypoint	<input checked="" type="checkbox"/>
NMEA2000 send waypoint	<input checked="" type="checkbox"/>
NMEA0183 receive waypoint	<input checked="" type="checkbox"/>
NMEA0183 baud	4800 (default)
NMEA0183 output	<input type="checkbox"/>
NMEA0183 output sentences...	

### Vessels

MMSI...	0
Icons	All
Extension lines...	
Dangerous vessels...	
Speed and course	Absolute
AIS icon orientation	Heading

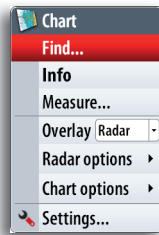
### Simulator

Simulate	<input checked="" type="checkbox"/>
Demo mode	Off
Advanced...	

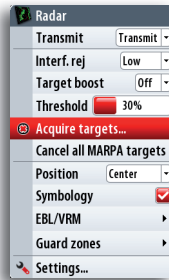


## Context menus

### Chart



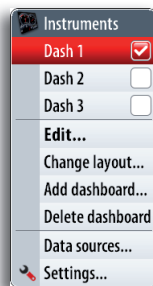
### Radar



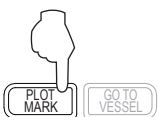
### Echo



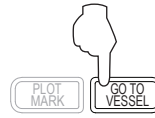
### Info



## Plot menu



## Goto menu



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