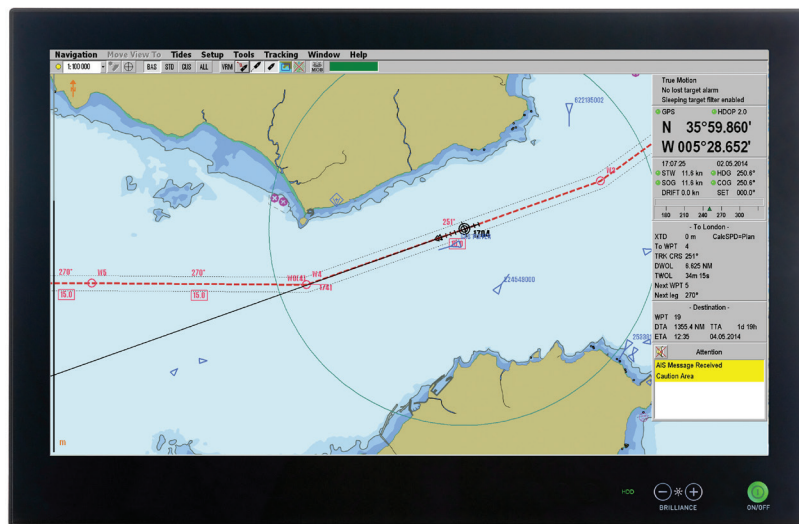




# CS68 ECDIS

## Operator Manual

**ENGLISH**



PRO.SIMRAD-YACHTING.COM

## **OPERATOR MANUAL**

# **SIMRAD CS68 ECDIS**

Chart System

988-10707-001

English

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This manual is a reference guide for operating the Simrad CS68 Chart System.

In this manual, names of dialog boxes, menu commands and menu keys are written in boldface (e.g. **Navigation** menu **Edit** command, **OK** key). References to keys on the keyboard and on the optional operator panels are written in boldface, but in a different text style (e.g. **F9** key).

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

**Note**

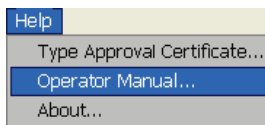
*Used to draw the reader's attention to a comment or some important information.*

**Caution**

*Used for warning the reader that a risk of damage to the equipment exists if care is not exercised.*

**WARNING**

***Used when it is necessary to warn personnel that a risk of injury or death exists if care is not exercised.***



The CS system includes the complete CS68 Operator manual in pdf format. The manual is displayed by tapping **Help** followed by the **Operator Manual...** command.

If a printer is connected to the CS system, it is possible to print part of or the complete manual.

## Sections

This manual is divided in the following sections:

### **1 System description**

An overview of the CS68 system and its components.

### **2 Software configuration**

Describes how to configure the CS68 software.

### **3 User interface**

An overview of operator units and the user interface.

### **4 Getting ready to use the system**

Common procedures that have to be performed before the system is ready to use.

### **5 Setting up the display**

Standard and optional display presentations that could set for the system.

### **6 Tools for safe navigation**

Parameters and procedures used for increasing safety to navigation.

### **7 Working with routes**

Methods and parameter settings used when planning a route.

### **8 Navigating with the CS68**

Procedures for operation and for sailing along a pre-planned route.

### **9 Managing the chart database**

Description of how the chart database is automatically and manually updated.

### **10 Maintenance**

Simple maintenance procedures that should be performed by the system operator.

### **11 System messages**

A description of how system messages and indications are displayed, the different types of messages available, together with an alphabetic list of all system messages.

### **12 Terms and abbreviations**

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# **1 SYSTEM DESCRIPTION**

This section provides an overview of the CS68 system and its components.

## 1.1 Introduction

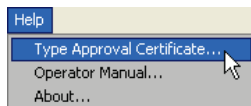
### The CS68 ECDIS system

The CS68 is a type approved Electronic Chart Display and Information System (ECDIS), and conforms to the International Maritime Organization (IMO) requirements for vessels that are subject to SOLAS regulations.

The CS68 displays the vessel position, speed and course in real time in the chart, based on information received from navigational sensors. The vessel's symbol is displayed with actual heading, and speed vectors may also be indicated. Chart information critical to safe navigation defined by IMO will always appear on the display, while other chart information may be switched off.

Based on speed and course information, the system generates danger and grounding alarms, independent of mode of operation.

The system includes route planning, and routes are planned independent of the actual vessel position. The routes are checked for dangerous position of waypoints and legs as the route is planned. The routes are stored and may be recalled whenever necessary. The system has no limitations to number of waypoints in a route.



Both hardware and software in the CS68 system are ECDIS type approved. The type approval certificates are available from the **Help** menu.

### ECDIS requirements

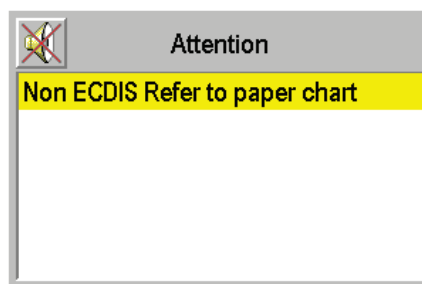
According to the SOLAS convention 3 key components must be fulfilled if a vessel is to satisfy the chart carriage requirements in SOLAS by electronic means;

- The ECDIS must conform to the International Maritime Organization (IMO). To meet these requirements the system must be type approved
- The ECDIS system must have a back-up arrangement. This could be either a folio of paper charts or other non-paper, back-up solution decided by the relevant maritime administration. This could e.g. be Simrad's type approved duplex ECDIS system (PLECDIS<sup>TM</sup>)
- The charts used on the ECDIS system must be Electronic Navigational Charts (ENCs) following standard set by the International Hydrographic Organization (IHO)



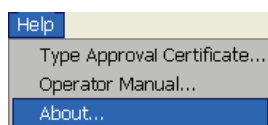
***An ECDIS system is allowed to operate optionally by using non-approved charts. The operation is however limited to only be used for those areas where approved charts not are available. When non-approved charts are used the ECDIS must be used together with an appropriate folio of up-to date paper charts!***

When not using an official chart, this will be indicated with a message as per below Attention window.

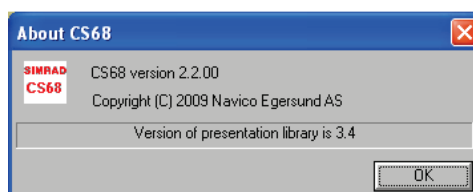


## 1.2 The software

The software for CS68 is running on Microsoft® Windows XP™ Operating system.



Software version and version of presentation library in use can be displayed by tapping **Help** followed by **About...**



*The example above may not reflect the sw version installed on your system.*

## 1.3 The chart database

The CS68 system has pre-installed charts. Charts in S57 and S63 format may also be imported to the CS system.

This database includes detailed charts, but a permit code for detailed chart zones have to be obtained, contact your local Simrad dealer before the system can be used.



*The chart database installed from factory may be outdated. Use supplied USB flash drive with databases, and install the supplied Online+ update tool (found on the same USB flash drive) to bring the charts up to date.*

The CS68 system does also allow for installing and using charts in S57 and S63 format from any other chart supplier.

Refer *Installing a chart database*, page 30.

## 1.4 Connecting the system to Internet

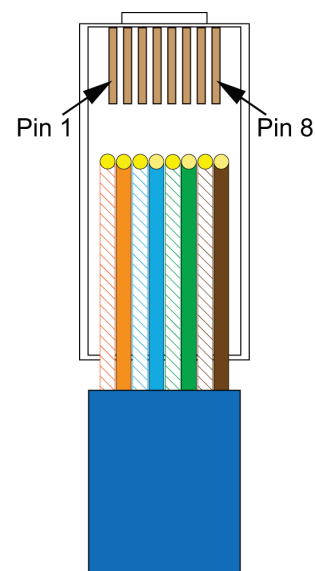
The CS68 system can be connected to Internet to utilize online chart update.

The system is connected by using an Ethernet cable.

### NOTE:

*To fulfill the ECDIS requirements, the system must be connected via a switch that electrically separates the ECDIS from the Internet! Separation can be achieved by connecting the switch on the Ethernet cable that brakes the connection on Pin 1 and 3 or pin 2 and 6!*

*The ECDIS shall only be connected to the Internet while an online update is ongoing.*



## **2 SOFTWARE CONFIGURATION**

This section describes how to configure the CS68 software.

## 2.1 The System configuration dialog

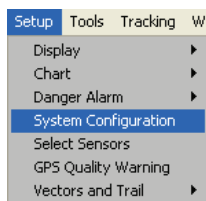
All configuration of the CS68 system is done from the **System Configuration** dialog. This dialog is the entrance to all settings that have to be done when configuring the system.

### Note

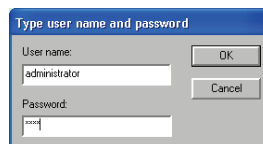
*The following pages list the settings as they appear in the dialogs. All these settings have to be performed before the CS system is ready for operation.*

To avoid unintended alteration of system parameters, the **System Configuration** dialog is password protected.

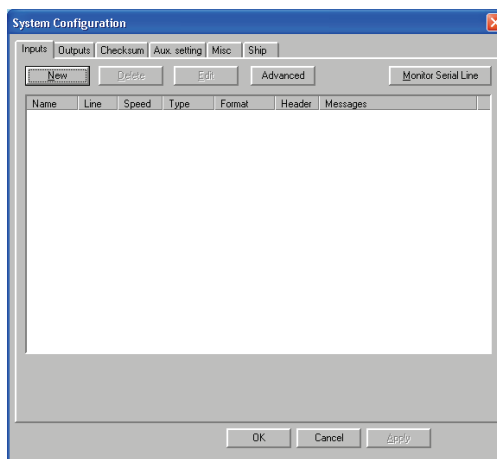
Use the following procedure to open the **System Configuration** dialog:



- 1 Press the **Setup** menu, followed by the **System Configuration** command.
  - A dialog will request a password before it is possible to enter the system configuration.



- 2 Type “1234” in the **Password** field, and confirm the entry with the **OK** button.
  - The **Input** tab in the **System Configuration** dialog will now be displayed.



**Note**

*Data entered in the **System Configuration** dialog are not taken into account until it is confirmed by clicking the **OK** or **APPLY** buttons:*

- **OK**: changes are applied, and the dialog box is removed from the display
- **APPLY**: changes are applied, and the dialog box remains displayed.

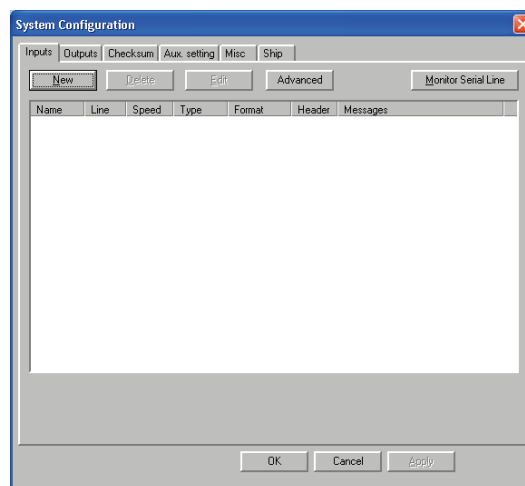
The different tabs in the **System Configuration** dialog are described in the following pages.

|                      |                                                    | Ref page: |
|----------------------|----------------------------------------------------|-----------|
| <b>Inputs:</b>       | Used to configure external devices.                | 8         |
| <b>Outputs:</b>      | Used for configuring the output format.            | 13        |
| <b>Checksum:</b>     | Used for checksum test for received data.          | 14        |
| <b>Aux settings:</b> | Used for different hardware and software settings. | 15        |
| <b>Misc:</b>         | Used for different operator parameters.            | 16        |
| <b>Ship:</b>         | Used for defining the ship size.                   | 18        |

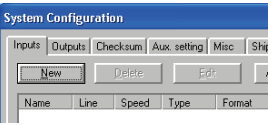
## 2.2 Input configuration

The **Inputs** tab in the **System Configuration** dialog is used for configuring the input format for each interfacing serial channel. The tab is also used to delete or edit an already defined input.

All defined input devices are listed alphabetically in the **Input** tab. If no input device is configured, the dialog will be empty.

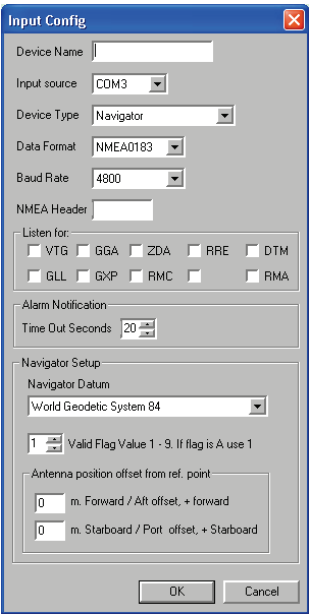


Adding new device



New devices are configured by pressing the **New** button when the **Inputs** tab in the **System Configuration** dialog is active.

The **Input Config** dialog is displayed.



Note

*Which data that is available in the **Input Config** dialog depends on which device type that is selected.*

The **Input Config** dialog has the following fields:

|                            |                                                                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Device Name</b>         | Name for the input device. The device name is limited to 8 characters.<br>The entered name will be displayed in the different user menus and will also be used in an alarm text.                                       |
| <b>Input Source</b>        | Com. port used for the device.                                                                                                                                                                                         |
| <b>Device Type</b>         | Drop down field with available device types.                                                                                                                                                                           |
| <b>Data Format</b>         | NMEA format and Baud Rate for the device. Available alternatives are dependent on selected device type.                                                                                                                |
| <b>Baud Rate</b>           |                                                                                                                                                                                                                        |
| <b>NMEA Header</b>         | NMEA header for the device. This header must be specified if multiple talkers with identical telegram type (e.g. GLL) are connected.                                                                                   |
| <b>Listen for</b>          | Selectable sentences for the device. Available sentences may be displayed by pressing the <b>Monitor Serial line</b> button. Refer page 12.<br><br>The following sentences is preferred for GPS: GGA, VTG, ZDA and DTM |
| <b>Time Out in Seconds</b> | Time-out limit for the data. If the data stops and is not received within the specified time-out limit, an alarm will be activated.                                                                                    |

Note

*If data-transmitting rate is low, e.g. ARPA or some echo sounders, a short time-out may block the data.*

|                                                |                                                                                                                   |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Navigator Datum</b>                         | Specification for differential GPS. Must be entered if <b>Navigator</b> or <b>AIS</b> is selected as device type. |
| <b>Valid flag</b>                              |                                                                                                                   |
| <b>Antenna position offset from ref. point</b> | Values for antenna offset for <b>Navigator</b> and <b>AIS</b> devices.                                            |

All sensors refer to the vessel's reference point. This point is defined in ***Ship settings***, page 18. If no reference is defined, the vessel's center of gravity will be used as reference point.

If the antennas are mounted out of the reference point, the offset x and y values for the antenna position must be entered into the system to give the correct ship position.

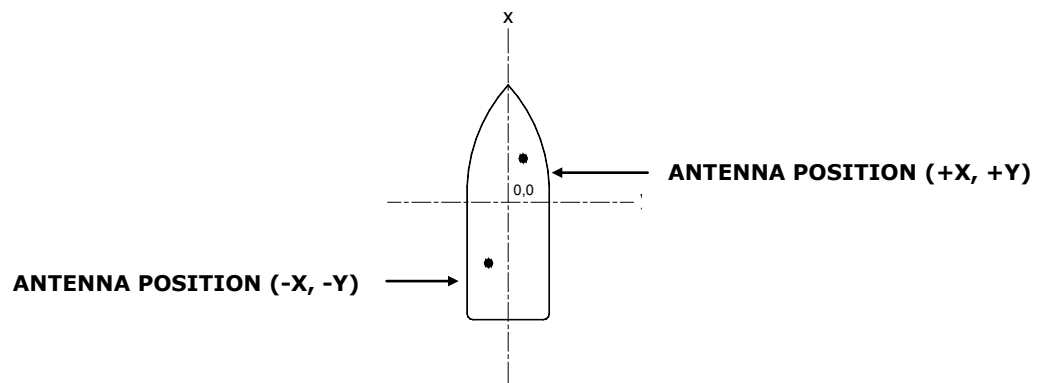


*If two equal navigators (GPS) with antennas are installed as indicated on the figure below, and if correct antenna offset is entered, there should be no position difference between them. The ship will obtain the same position in the chart even if the sensors are exchanged!*

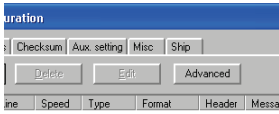


*If an ARPA/MARPA is connected to the CS system in order to receive ARPA targets, the targets have to be correctly referenced to the CCRP (no internal offset required).*

The position for a GPS is the position of the antenna. The position is given as an x and y offset relative to the vessel center, with positive value forward and to starboard.



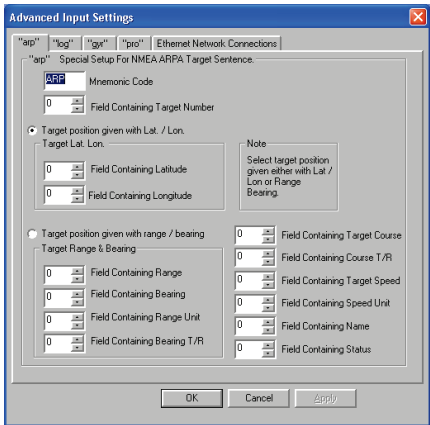
### Advanced input settings



By pressing the **Advanced** button when the **Inputs** tab in the **System Configuration** dialog is active, the **Advanced Input Settings** dialog is displayed.

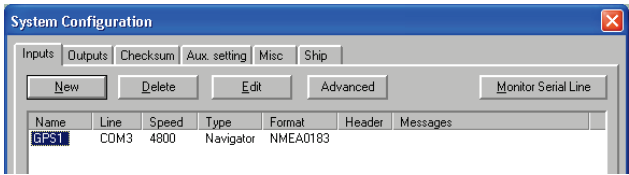
This dialog is used for advanced settings for ARPA, log, gyro, position reference sentences and Ethernet connection.

All tabs in this dialog have text specifying the different data fields as shown in the “arp” tab shown below.



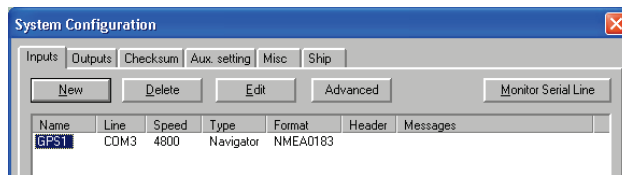
### Modifying an input device

A device can be modified by pressing the **Edit** button, or by double-clicking the specific device in the **Inputs** tab in the **System Configuration** dialog. The **Input Config** dialog will be displayed, and parameters modified as described on page 8 onwards.

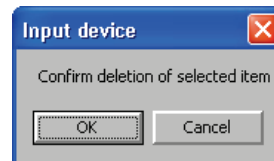


## Deleting an input device

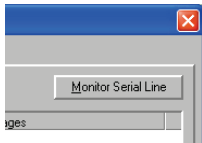
A defined input device is deleted by activating the device in the **Inputs** tab, and then pressing the **Delete** button.



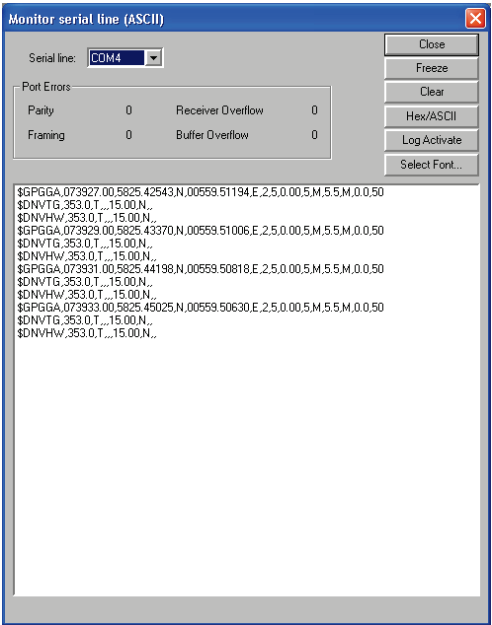
To avoid unintended removal of a device, the selection has to be confirmed by pressing the **OK** button.



## Monitoring a serial line



The **Monitor Serial Line** button in the **Input** tab in the **System Configuration** dialog makes it possible to monitor each serial line individually.

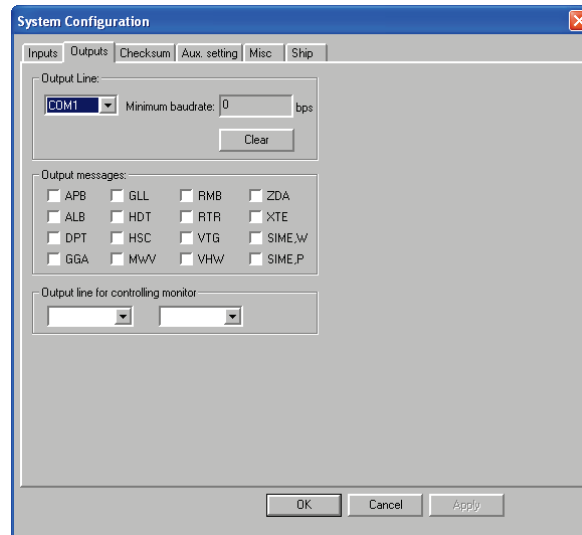


The buttons in the dialog are used as follows:

|                      |                                                                                                                                                                                                                                                      |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Close:</b>        | Closes the dialog and returns the display to the <b>Inputs</b> tab in the <b>System Configuration</b> dialog.                                                                                                                                        |
| <b>Freeze:</b>       | Stops the text from scrolling.                                                                                                                                                                                                                       |
| <b>Clear:</b>        | Clears the text field in the dialog.                                                                                                                                                                                                                 |
| <b>Hex/ASCII:</b>    | Toggles the log data between hexadecimal and ASCII characters.                                                                                                                                                                                       |
| <b>Log Activate:</b> | Saves the monitored log data to a file.<br>A new dialog for selecting file name and location will be displayed.<br>When logging is activated, the button will change to <b>Log Deactivate</b> . Pressing this button will stop logging data to file. |
| <b>Select font:</b>  | Used for changing font for the text.                                                                                                                                                                                                                 |

## 2.3 Output configuration

Serial output format are configured from the **Outputs** tab in the **System Configuration** dialog.



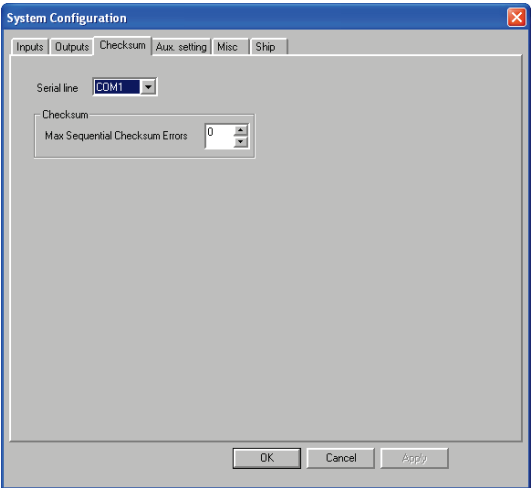
The following fields are available:

|                                            |                                                                                                                                                                                                                                                                                    |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Output line</b>                         | Drop down field for selecting serial output line to be specified.                                                                                                                                                                                                                  |
| <b>Minimum baudrate</b>                    | Value increasing as output messages are selected. <i>Note that this value not should exceed the value set for the input baudrate on the same com. line.</i>                                                                                                                        |
| <b>Clear</b>                               | Clear all selected output message sentences.                                                                                                                                                                                                                                       |
| <b>Output messages</b>                     | Available sentences for the output device. The output is NMEA 0183 Standard sentences, and at least one of these sentences must be enabled.                                                                                                                                        |
| <b>Output line for controlling monitor</b> | Used to define which COM port is used for the monitors. On MC50 based systems, check where the serial communication to the display is connected (usually COM9 or COM10), on the Hatteland Panel computer (without a separate black box and display unit it should be set to COM7). |

## 2.4 Checksum

NMEA data sent to the CS system may contain a checksum. When the CS system receives data with checksum included, it will automatically calculate the checksum and compare this sum with the checksum transmitted by the device.

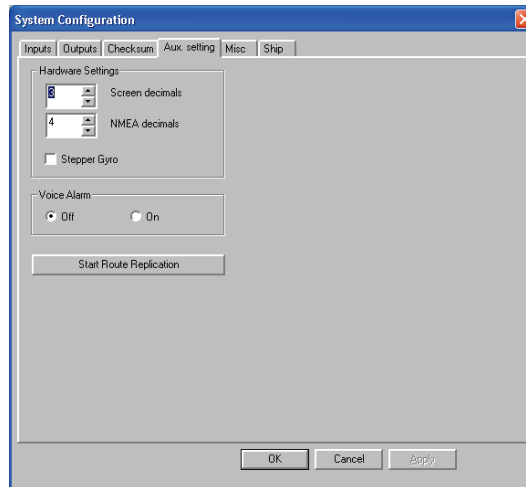
When the calculated and the received checksum not are identical, the settings in the **Checksum** tab in the **System Configuration** dialog will decide whether the CS system will use or reject these data.



Each serial line has its own checksum configuration.

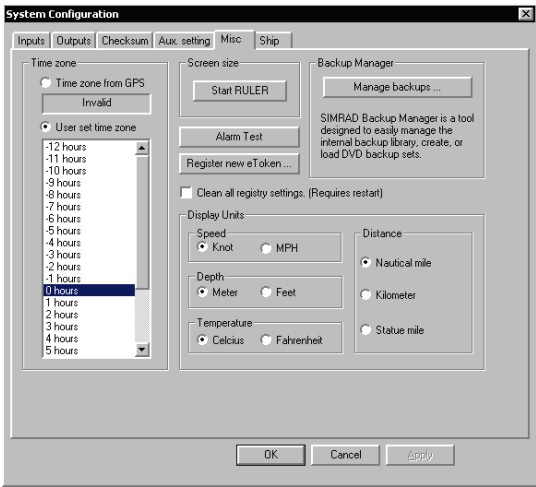
|                                       |                                                                                      |
|---------------------------------------|--------------------------------------------------------------------------------------|
| <b>Max Sequential Checksum Errors</b> | Number of sequential checksum errors detected before a checksum alarm will be given. |
|---------------------------------------|--------------------------------------------------------------------------------------|

## 2.5 Auxiliary settings



|                                |                                                                                                                                                                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Screen decimals</b>         | <p>Number of decimals displayed for the position reference in the Position Window. In the example below, 4 decimals are selected.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> GPS<br/> S 32°30.3252'<br/> E 060°54.8085' </div> |
| <b>NMEA decimals</b>           | Number of decimals used in the data output sentences.                                                                                                                                                                                                                               |
| <b>Stepper Gyro</b>            | Not used.                                                                                                                                                                                                                                                                           |
| <b>Voice Alarm</b>             | Toggles voice alarm function ON/OFF.                                                                                                                                                                                                                                                |
| <b>Start Route Replication</b> | Enables route replication between ECDIS and Backup machine in PLECDIS configurations. Routes created on one system will then automatically be copied to the other system.                                                                                                           |

2.6 Miscellaneous settings



|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Time Zone   | <p>Time data entering the ECDIS through the ZDA.<br/>Time zone from GPS: System to display UTC with the GPS given time zone offset.<br/>Enable “User set time zone” if a fixed offset to UTC is preferred to keep a local ECDS table.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Screen size | <p>Used for setting correct diagonal screen size. When pressing the <b>Start RULER</b> button, a new dialog for entering screen size is opened.</p> <div>The image shows the 'Calibrate the Screen' dialog box. It contains the text: 'For the chart to be presented in the right scale please calibrate the screen first.' Below this is a prompt: 'Provide the dimension of the screen diagonal in inches below:' followed by a text input field containing '19' and a unit dropdown set to 'in.'. There is also a note: 'If you require more accurate chart presentation, please provide exact screen measurements' and a 'Measure the Screen...' button. At the bottom is an 'OK' button.</div> <p>Press the <b>Measure the Screen</b> button to open a new dialog used for measuring a selected area directly on the monitor.</p> <div>The image shows the 'Measure the Screen' dialog box. It features a large white rectangular area for measurement. Below the area is the text: 'Measure dimensions of the white rectangle.' At the bottom, there is a section 'Enter obtained values:' with a 'Units:' dropdown set to 'Inches', and input fields for 'Width:' (containing '55') and 'Height:' (containing '55'), both with 'in.' as the unit. An 'OK' button is at the very bottom.</div> <p>Measure width and height of the white area and enter the values in inches of mm.</p> |

**Caution**

*The Screen size **MUST** be set correctly to display the correct chart scale and to place targets correctly in the chart. If the screen size is wrong AIS target in the outer end of the screen area will be positioned incorrectly.  
After Screen size has been adjusted the chart system must be restarted to synchronize the screen settings.*

|                                    |                                                                                                                                       |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Alarm Test</b>                  | By pressing this button, the built in alarm system will issue an alarm for 5 seconds.                                                 |
| <b>Backup Manager</b>              | Used for starting the backup manager. Refer the separate CS68 Operator Manual.                                                        |
| <b>Clean all registry settings</b> | Cleans all registry settings when the system is shut down. This will force the system to use default values for all system variables. |

**Caution**

*This action will remove all configured devices.*

|                            |                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------|
| <b>Display units</b>       | Units of measurement for speed, depth, temperature and distance.                                 |
| <b>Register new eToken</b> | If the eToken for some reason needs to be exchanged with a new one, press "register new eToken". |

**WARNING**

***All old licenses will be deleted from the current registered eToken.***

## 2.7 Ship settings

**System Configuration**

Inputs | Outputs | Checksum | Aux. setting | Misc | **Ship**

Ship name: MS UI Cargo Carrier 1

Type of ship: Cargo ships

Type of cargo/operation: All ships of this type

MMSI: 1234567

IMO: 9764457

Call Signal: LAPO

**Measurements**

LOA - max length: 250 m

B - max beam: 15 m

HM - mast height: 21.4 m

BL - bow length: 17 m

Tmax - max draft: 7 m

Ref. point offset - X: -100 m

Ref. point offset - Y: 0 m

Turn radius: 1.00 NM

**Navigation**

Crab Factor: 5

Wheel over time: 30 s

Turn acceleration distance: 400 meter

**Ship parameters**

Max Speed: 20 (kn)

OK Cancel Apply

|                                   |                                                                                                                                                                                                                                           |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ship name</b>                  | Parameters used when transmitting AIS information. These fields should be entered correctly to ensure that correct information will be used in the AIS system.                                                                            |
| <b>Type of ship</b>               |                                                                                                                                                                                                                                           |
| <b>Type of cargo/operation</b>    |                                                                                                                                                                                                                                           |
| <b>MMSI</b>                       |                                                                                                                                                                                                                                           |
| <b>IMO</b>                        |                                                                                                                                                                                                                                           |
| <b>Call Signal</b>                | Parameters used by the CS system to draw a ship symbol in true size. Used when the actual ship is larger than the minimum ship symbol.<br><br><i>Note that the reference offset points are calculated from the vessel's center point.</i> |
| <b>Measurements</b>               |                                                                                                                                                                                                                                           |
| <b>Turn Radius</b>                |                                                                                                                                                                                                                                           |
| <b>Crab Factor</b>                |                                                                                                                                                                                                                                           |
| <b>Wheel over time</b>            |                                                                                                                                                                                                                                           |
| <b>Max Speed</b>                  | Used as max value for speed entries.                                                                                                                                                                                                      |
| <b>Turn Acceleration distance</b> | Distance (in meters) from a rudder command is given until the vessel starts turning. This parameter is dependent on vessel characteristics, and it could be necessary to change the value when the vessel is heavily loaded.              |

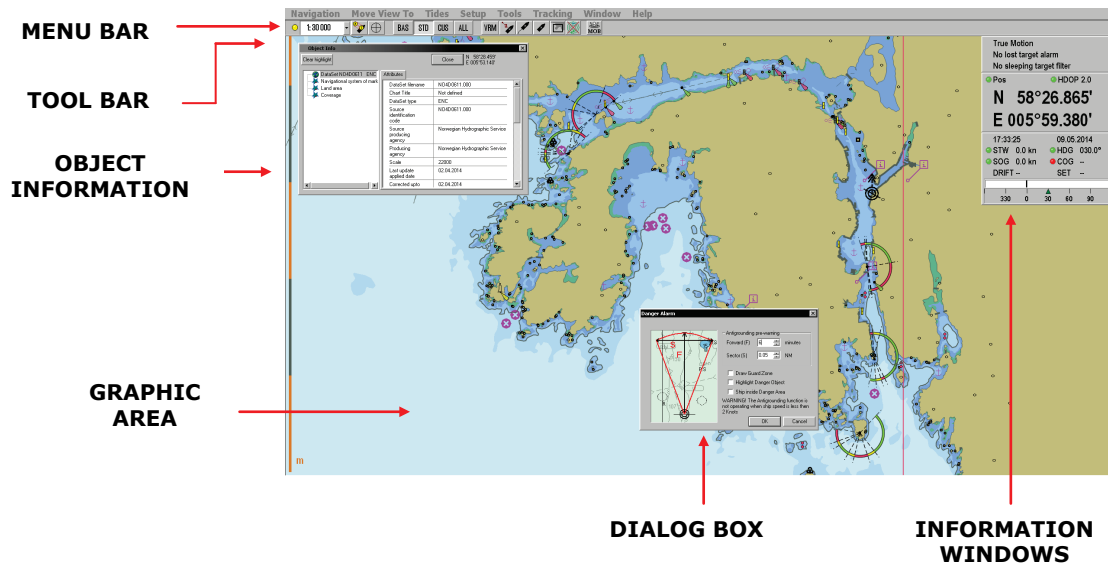
### **3 USER INTERFACE**

This section gives an overview of standard and optional CS68 operator panels and the user interface.

### 3.1 Display organization

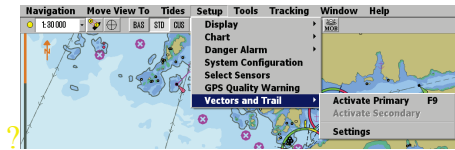
The display interface uses standard Microsoft® Windows XP™ operating features such as menus and dialog boxes.

The display is divided into predefined areas as shown in the figure below. The dialog boxes are displayed whenever activated.



## Menu bar

The menu bar provides pull down menus used for accessing commands, submenus and dialog boxes.



## Tool bar

The tool bar contains drop down list used for selecting chart scale, command keys together with a voyage status field.



When the cursor is rested over a toolbar key, the function for the selected key will appear.

Depressed key symbol indicates that the selected function is active.



## Keyboard shortcuts

The table below gives a short description of the tool bar keys, their corresponding shortcut key, and reference to pages with additional information.

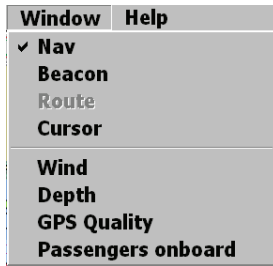
| Toolbar key | Function                                                                                                                                                                                         | Shortcut key      | Ref. page |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------|
|             | Drop down list used for selecting chart scale.<br>The lamp indicator has the following colors:<br>Green: Displayed chart is within scale limits<br>Yellow: Displayed chart is over-/under scaled |                   | 48        |
|             | Used for creating a quick route with the vessel's current position as the first waypoint.                                                                                                        | <b>F1</b>         | 90        |
|             | Places a fixed mark at the vessel's position                                                                                                                                                     | <b>F3</b>         | 63        |
|             | Keys used for selecting base, standard or custom.                                                                                                                                                | <b>F4, F5, F6</b> | 41        |
|             | Draws a circle with variable radius. The circle center may be the vessel or a position set by the cursor.                                                                                        | <b>F7</b>         | 64        |
|             | Activates the Fixed range marker function                                                                                                                                                        | <b>F8</b>         | 64        |

| Toolbar key                                                                                                                                                                                                                                                 | Function                                                                                                                                                                                                                                                           | Shortcut key                       | Ref. page |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------|
|                                                                                                                                                                            | Shows/hides the vessel's trail                                                                                                                                                                                                                                     | <b>F9</b>                          | 52        |
|                                                                                                                                                                            | Activates the follow ship function, which automatically keeps the vessel symbol in the center of the display.                                                                                                                                                      | <b>F10</b>                         | 49        |
| <br><br> | <p>Selects the best scale available for the displayed area.</p> <p>When the function is selected, the key image will change.</p> <p>When the Follow ship button is not activated, the key image will be grayed to indicate that the function is not available.</p> | <b>F11</b>                         | 48        |
|                                                                                                                                                                            | Activates/Deactivates the overlay function for selected AIS and ARPA.                                                                                                                                                                                              |                                    | 58        |
|                                                                                                                                                                            | Places a Man Over Board marker at the current vessel position.                                                                                                                                                                                                     | <b>Back-space</b>                  | 54        |
|                                                                                                                                                                            | Waypoint procedure indication.                                                                                                                                                                                                                                     | -                                  | 82        |
|                                                                                                                                                                           | Voyage indicator field.                                                                                                                                                                                                                                            | -                                  | 96        |
|                                                                                                                                                                                                                                                             | Increase the display palette                                                                                                                                                                                                                                       | <b>Page Up</b>                     | 40        |
|                                                                                                                                                                                                                                                             | Decrease the display palette                                                                                                                                                                                                                                       | <b>Page Down</b>                   |           |
|                                                                                                                                                                                                                                                             | Zoom in                                                                                                                                                                                                                                                            | <b>Arrow down/<br/>Arrow right</b> | 48        |
|                                                                                                                                                                                                                                                             | Zoom out                                                                                                                                                                                                                                                           | <b>Arrow up/<br/>Arrow left</b>    |           |
|                                                                                                                                                                                                                                                             | Activate the Start Voyage dialog                                                                                                                                                                                                                                   | <b>Insert</b>                      | 94        |
|                                                                                                                                                                                                                                                             | Stop the voyage function                                                                                                                                                                                                                                           | <b>Delete</b>                      | 95        |
|                                                                                                                                                                                                                                                             | Silence alarm sound                                                                                                                                                                                                                                                | <b>+</b>                           | 99        |

## Graphic area

The graphic area shows chart in selected scale and with selected information. Refer *Chart layout on the display*, page 41.

## Information windows



8 different information windows may be activated from the **Window** menu to show information about current vessel, sensors and cursor position. Refer *Information windows*, page 45.

In addition to these selectable windows, the **Route** window will be automatically displayed when a route is started. Refer page 93.

The Attention window will also be automatically activated if an alarm situation occurs. Refer *The ECDIS message system*, page 125.

## Dialog boxes

Data entry is achieved using dialog boxes initiated from the menus. A dialog box may cover a logical group of functions.

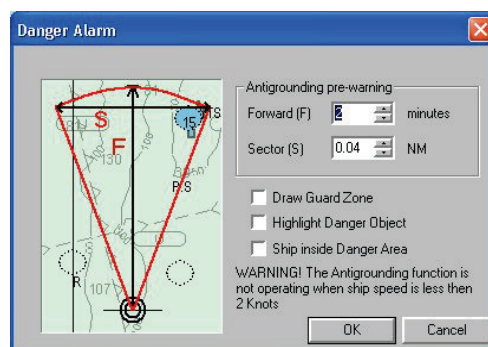
The dialog boxes “pop up” in the display area. They may be moved as required by pressing and holding the cursor over the title bar, and moving the dialog to a new location.

Data entered in a dialog box are not taken into account until it is confirmed by tapping **OK** or **APPLY**:

- **OK**: changes are applied, and the dialog box is removed from the display
- **APPLY**: changes are applied, and the dialog box remains displayed. This key is not available in all dialog boxes

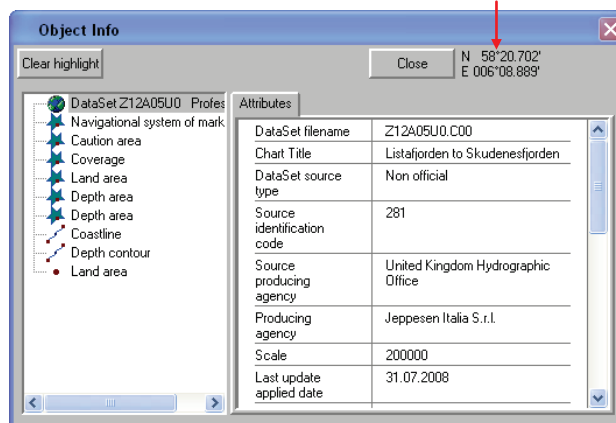
If it is not allowed to make changes to some of the entries in a dialog box, these will be unavailable (displayed dimmed).

Click **CANCEL** or the  in the upper right corner to close a dialog box without taking any action.



## Object information window

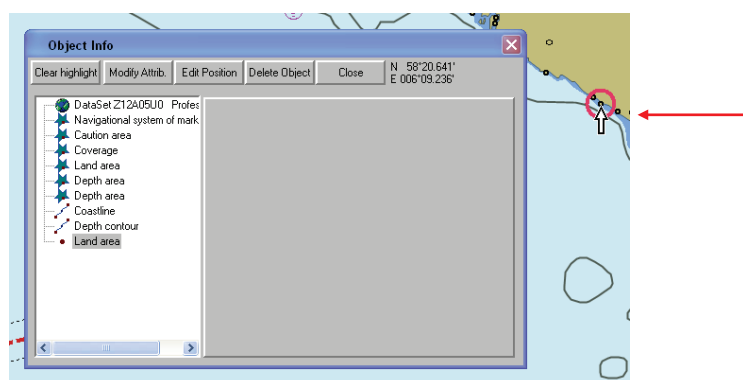
When moving the cursor to the object and clicking the right cursor key, the object information dialog will be displayed. The dialog shows a list of information for the selected object/area, together with cursor position when the right key was pressed.



List of objects in the information dialog will depend on available information for the selected area.

When an object in the information dialog is selected, available information about the object will be displayed in the right column.

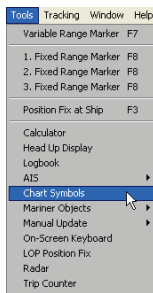
If an object is double clicked in the object information dialog, the corresponding object will be highlighted and labeled with an arrow in the chart.



If it is possible to edit information about the selected object, additional keys for moving, editing and deleting the object will be available in the information dialog.

All marks on objects in the chart will be removed when tapping **Clear highlight**.

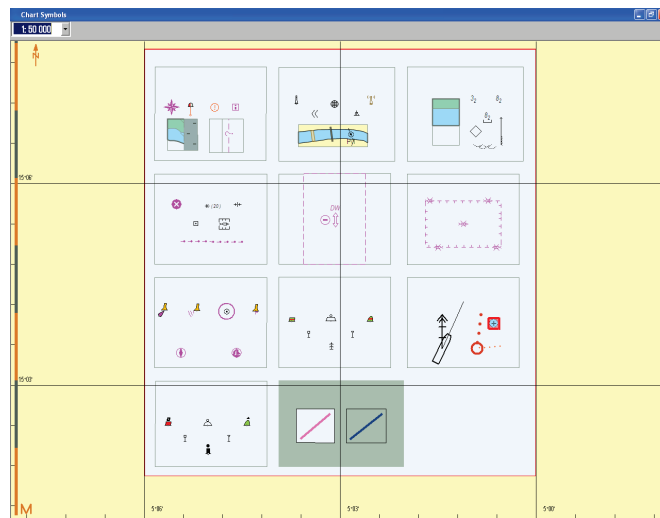
## 3.2 Chart symbols



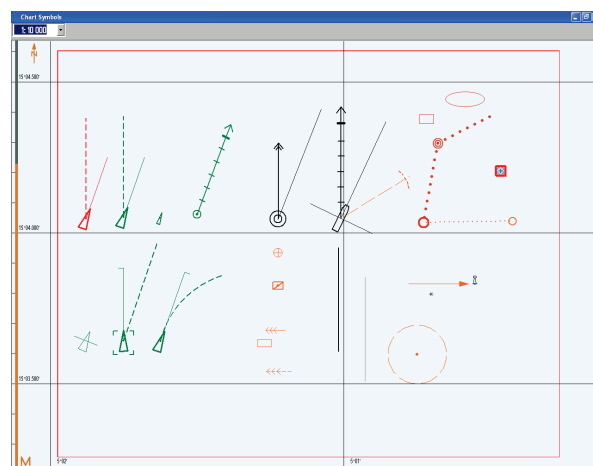
All chart symbols used by the CS system is presented in the **Chart Symbols** window.

Use the following procedure to display the symbols:

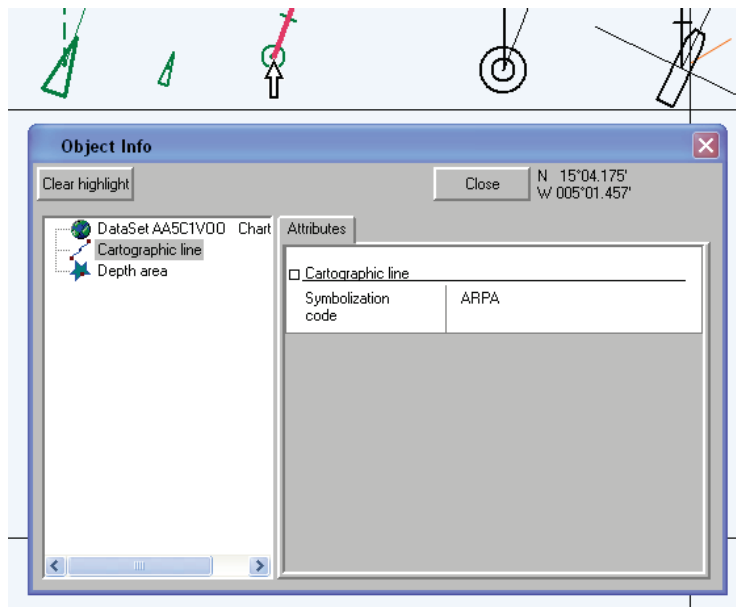
- 1 Make sure that the **ChartletsBase** database is registered. Refer page 31.
- 2 Tap the **Tools** menu followed by the **Chart Symbols** command.
  - The **Chart Symbols** window will be displayed.



- 3 Set the chart scale to 1:50 000, and enlarge the window to display all symbol groups.
- 4 Zoom in to see all symbols in the selected group.



If a chart symbol is selected by the cursor and the right cursor key pressed, the **Object information window** will be opened showing information about the selected object. Refer *Object information window*, page 24.



The **Chart Symbols** window includes a color calibration function, described in *Verifying the display color*, page 113.

### 3.3 On-Screen keyboard

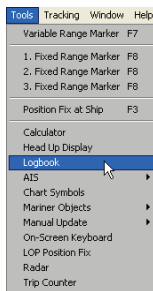


The CS system includes Microsoft On-Screen Keyboard function, activated by tapping the **Tools** menu followed by the **On-Screen Keyboard** command.



The keyboard is intended to provide a minimum level of functionality if no keyboard is available.

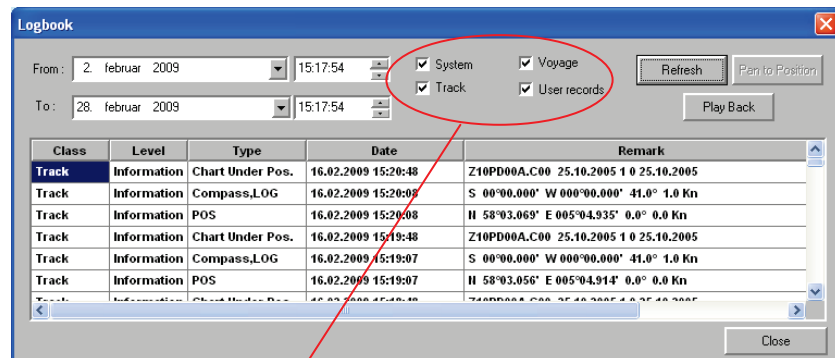
### 3.4 The logbook



In the CS68 system, system information and vessel movements will be automatically logged and saved to an internal database.

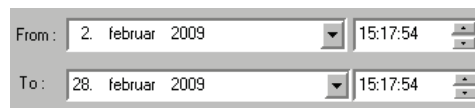
The voyage recording is defined by the IMO and includes information required to reproduce the navigation and verify the official database used during the previous 12 hours.

This information may be viewed at any time by tapping the **Tools** menu followed by the **Logbook** command.



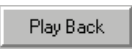
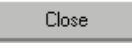
Use the toggle boxes to select which info that is displayed in the logbook.

The logging period is selected in the date and time fields.



The **Remark** column in the logbook contains additional information about the different logbook entries, such as vessel position, speed, course, and charts used during the voyage.

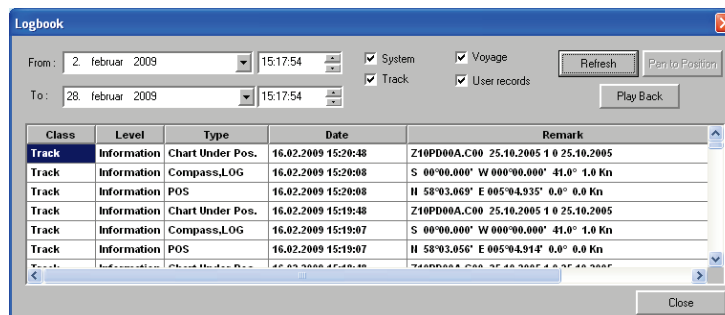
The dialog box keys are used as follows:

|                                                                                     |                                                                                                            |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
|  | Updates display information                                                                                |
|  | Centers the display on the selected position. Can only be used for information defined as <b>POS</b> type. |
|  | Switches on the Playback function. See description page 28.                                                |
|  | Removes the <b>Logbook</b> dialog from the display.                                                        |

## Playback function

All system information and vessel movements saved in the internal database may be used by the system's **Playback** function.

Start and stop time is selected in the Logbook dialog, together with which logged information that should be used for playback.

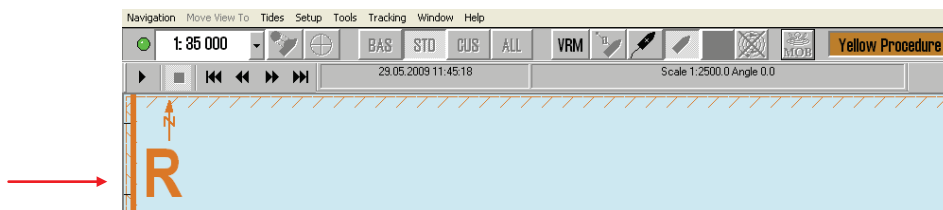


Use the following procedure to start the **Playback** function:

Play Back

### 1 Tap **Play Back**

- The **Logbook** dialog will be closed, and the playback function indicated with an “R” in the upper right corner of the display.



### 2 Start the playback function by tapping the **PLAY** key

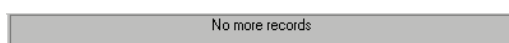
- Playback is controlled by **START**, **STOP**, **REWIND**, **STEP** and **FAST FORWARD** keys



- Date, time and action are displayed sequentially when the playback function is running



When the playback has reached end of file for the selected time period, this is indicated with **No more records**



### 3 Close the playback function by reopening the **Logbook** dialog and deactivating **Play Back**

## **4 GETTING READY TO USE THE SYSTEM**

This section holds procedures that have to be performed before the CS68 system is ready to use.

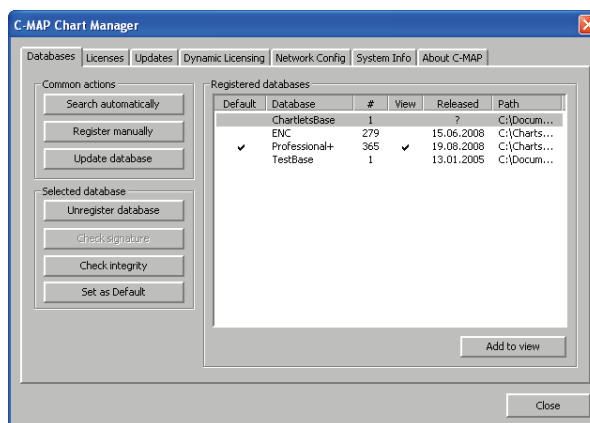
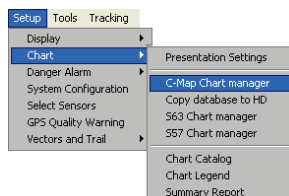
## 4.1 Installing a chart database

The CS68 system has pre-installed charts and will also allow for installing and using charts in S57 and S63 format from any other chart supplier.

### Installing C-MAP license code

The pre-installed C-MAP database includes detailed charts, but a license code for detailed chart zones have to be obtained. Contact your Simrad sales representative and add necessary licenses before the system can be used.

All C-MAP chart management is performed by using the **C-Map Chart manager**:



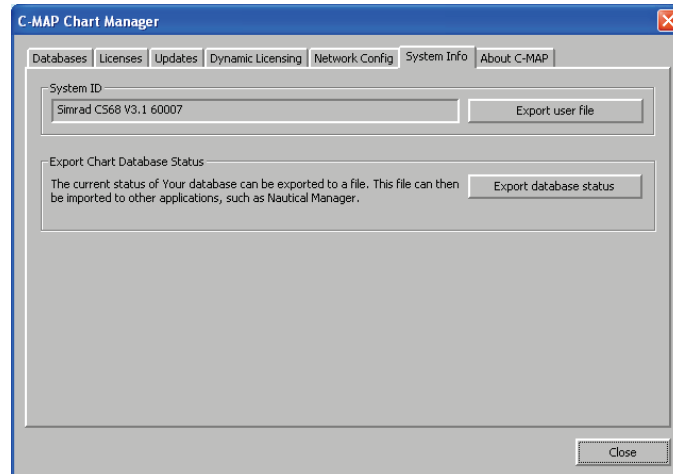
Use the following procedure to obtain and install the chart license code:

- Submitting the system identification code to your local Simrad dealer
- Registering the chart database
- Applying the license code

### Submitting the system ID

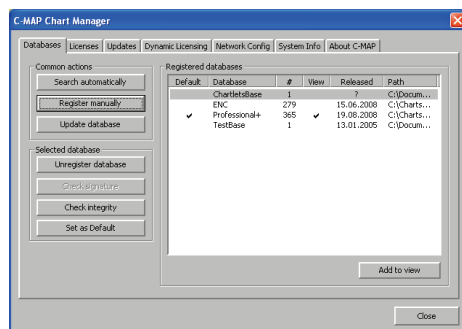
To obtain a license code system ID must be submitted to your local Simrad dealer.

The C-MAP system ID is found on the tag on the blue eToken USB key that is inserted in the ECDIS. It can also be found in the **System ID** field on the **C-MAP Chart Manager**.



### Registering the database

The chart databases installed from factory are displayed in the **Registered databases** field. If a new database is to be installed use the following procedure:

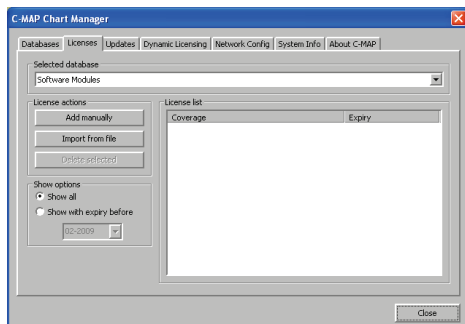


- 1 Activate the **Databases** tab in the **C-MAP Chart Manager**
- 2 Press **Register manually**, and locate the folder including the chart database
- 3 Follow any instruction on the screen to complete the installation.

When completed the chart databases will be listed in the **Registered databases** field.

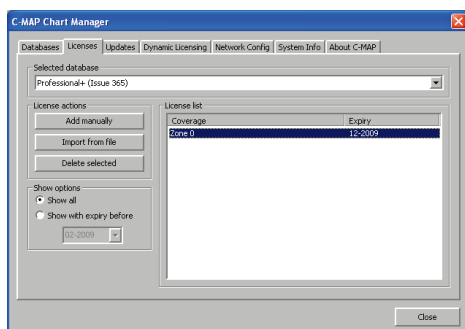
## Applying the license code

When the license code is received this has to be entered into the CS system before the C-Map charts can be used.



- 1 Activate the **Licenses** tab in the **C-MAP Chart Manager**
- 2 Select the database for which you have ordered charts in the **Selected dataset** field
- 3 Enter the code manually (**Add manually** key) or by reading it from file (**Import from file** key). Follow the instruction on the screen to complete the installation
- 4 Repeat the code entry for all databases

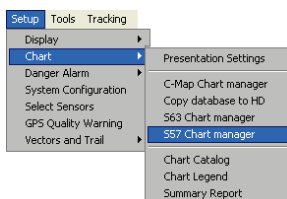
If S57/S63 charts are to be imported, a free module license can be requested from your local Simrad dealer. This module is installed under the SW-modules

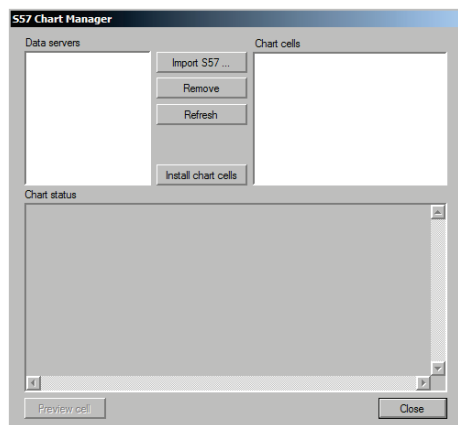


When the license code is accepted the coverage zone and the expiry date will be displayed in the **License list** field.

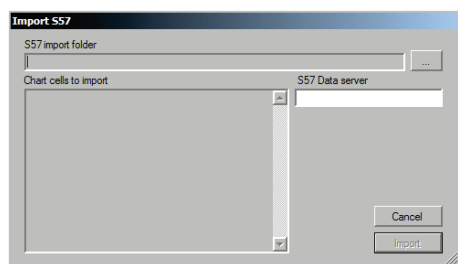
## Installing S57 charts

S57 charts are installed from the **S57 Chart Manager**.

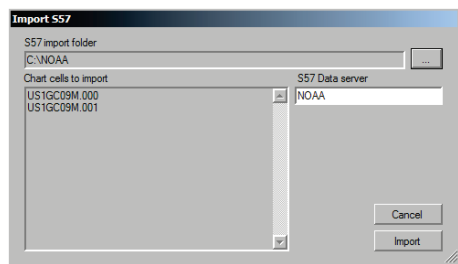




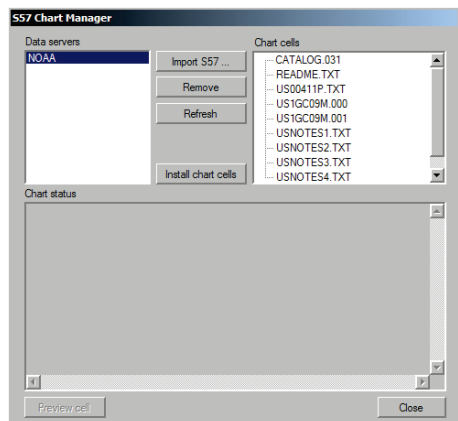
- 1 Press the **Import S57** key in the S57 Chart Manager dialog to activate the **Import S57** dialog



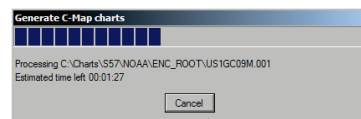
- 2 Select the ... key and browse to the folder where you have saved your S57 charts

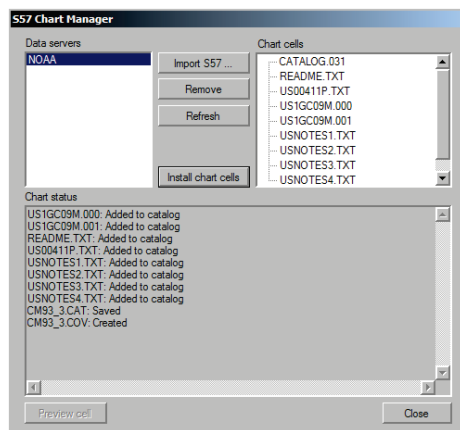


- 4 Press **Import** to start copying the chart cells to local hard disk



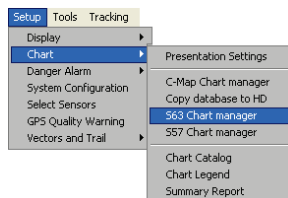
- The imported charts will be listed in the **Data servers** field
- 5 Press **Import** to start copying the chart cells to local hard disk
- The chart cells will now be copied to the ECDIS system. If several and large cells are imported this might take several hours. The progress bar will show estimated remaining time





When the import process is completed the charts are ready to be used in the CS68 system

## Installing S63 charts

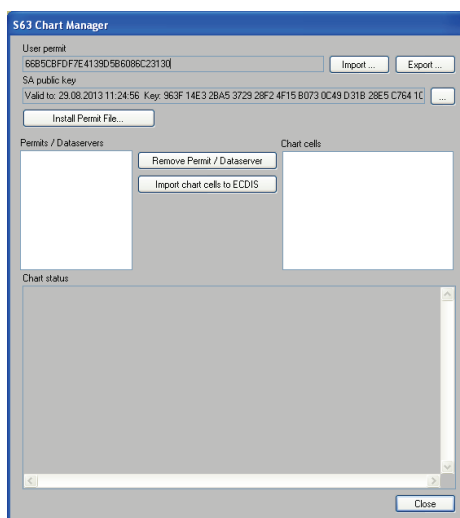


The S63 charts needs a user permit code to be installed on the CS system. This permit code is unique to your system, and it is installed when the system is delivered from factory. A permit code cannot be altered by the user.

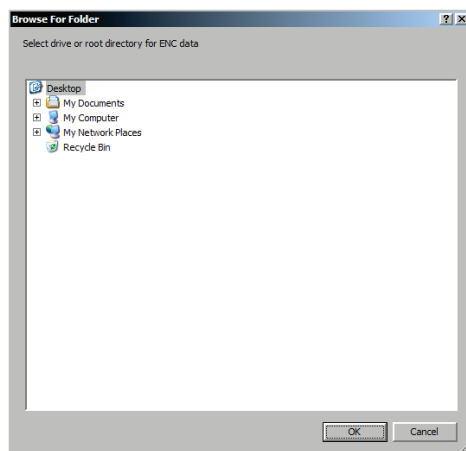
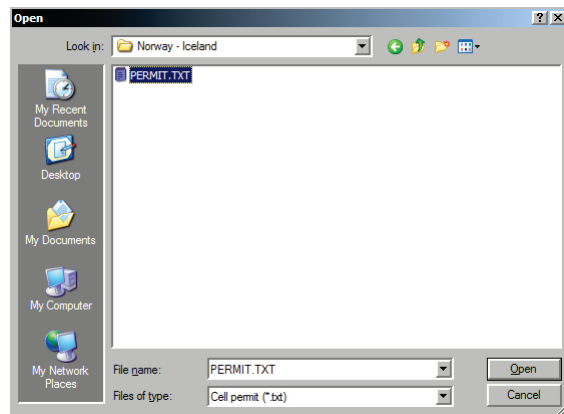
If there are 2 ECDIS system on a vessel the system might use the same permit code by exporting/importing the code between the systems.

The S63 charts will also need a certificate (\*.crt file) and public key (\*.pub file). These files identifies your chart vendor as an IMO approved chart vendor. These files will usually be supplied by the chart vendor, and will typically be located on the same CD/DVD as the charts. If no public file is supplied, a signature file may be supplied as part of the chart database. These file names are identified by a 2 letter country code, and it has a 3 digits extension, e.g. GBI4011A.001.

If no such files are supplied, the pre-installed information may be used.

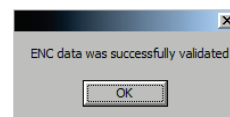


- 1 Press the ... key to install a certificate (\*.crt) and public key (\*.pub), eventually a signature file if these are supplied from your chart vendor (ref above)
- 2 Copy the User permit information from the dialog and give it to your chart vendor, who will need it to deliver charts
- 3 Press **Install Permit File** to locate and install the user permit code received from the chart vendor. The file is called **Permit.txt** and includes a list of all chart cells you are allowed to use. The file does also include expire date for the different chart cells

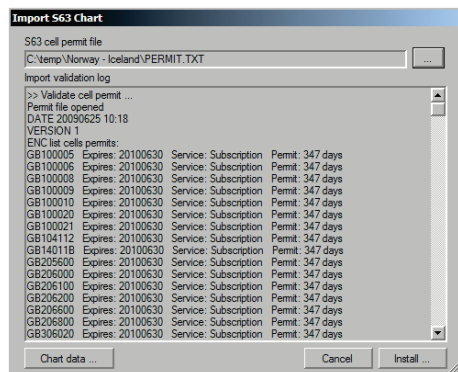


- 4 Locate the charts and confirm with the **OK** key. Make sure you select the folder that contains the ENC root folder and not the ENC root folder itself.

- When the charts are verified the following dialog will be displayed:

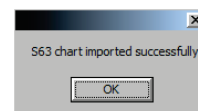


- 5 Press **OK** to continue and return to the **S63 Chart** dialog

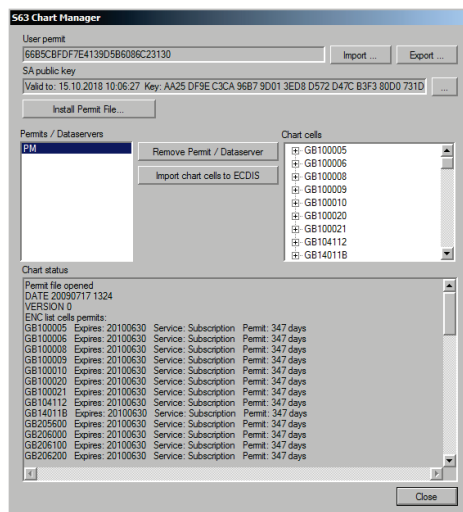


- 6 Install the chart cells by pressing **Install**

- A progress bar will be displayed while the charts are being installed, followed by a confirmation



- 7 Press OK to return to the S63 Chart Manager dialog



8 Press **Import** to start copying the chart cells to local hard disk

- The chart cells will first be converted to S-57 format, then converted again to CS93/3 format used by the ECDIS system. The conversion may take several hours

When completed the charts are ready to be used in the ECDIS system.

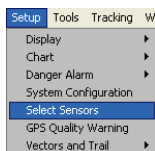
If new charts are not located immediately, go into the **C-Map Chart manager** and add dataserver charts to view, restart ECDIS afterwards.

## 4.2 Setting up primary and secondary reference systems

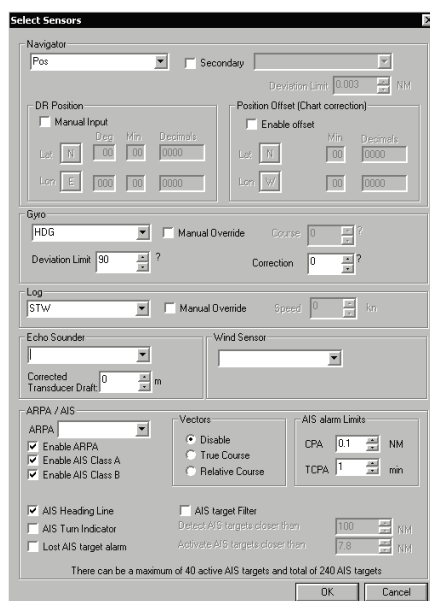
Continuous measurements of the vessel's position are essential for the CS system, and at least one positioning reference system has to be connected to the system. If a secondary reference system is selected, the CS system compares the signals from these.

A gyrocompass or a magnetic compass should also be connected to provide heading information to the system.

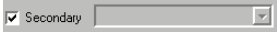
Sensors connected to the CS system are configured from the **Select Sensors** dialog, activated by tapping the **Setup** menu followed by the **Select Sensors** command.



- Which menus and keys are available in the dialog box depends on the sensors connected and setup for the system

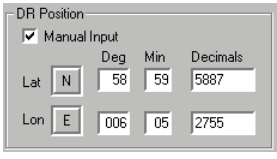


## Navigator setup

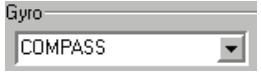
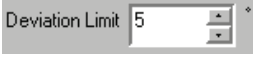
|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Primary navigator sensor is selected from the drop down field shown on the figure.</p> <p>The vessel's position in the chart will always be shown at the position received from the primary navigational source.</p> <p>If the data received from this source is invalid or missing, the CS will continue checking the data in a time-out period pre-selected during installation. If valid data is not received within this time, the CS will switch to secondary source if this is activated.</p> |
|  | <p>Secondary source is selected if dual track is wanted, for check of position difference between primary and secondary source, and for selection of source to be used if the primary source is lost.</p>                                                                                                                                                                                                                                                                                              |

### Note

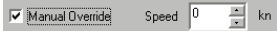
*If secondary source is not activated, the system will stop updating position and give alarm if data from primary source is lost. The vessel symbol will change to red color!*

|                                                                                     |                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | <p>Manual input fields used for entering the vessel's latitudinal and longitudinal Dead Reckoning position if no reference systems are available.</p>                                                   |
|  | <p>Used for entering fixed offset values to be added to received coordinates. When the Enable offset function is enabled, selected offset value will be indicated in the NAV window. Refer page 45.</p> |

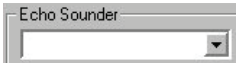
## Gyro

|                                                                                     |                                                                                                                                         |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Gyro systems are configured during installation of the CS system. Available names will be displayed in the Gyro drop down field.</p> |
|  | <p>Used for manually entering heading value.</p>                                                                                        |
|  | <p>Permitted heading deviation between primary and secondary heading source before an alarm is given.</p>                               |
|  | <p>Used for initializing correct ship heading.</p>                                                                                      |

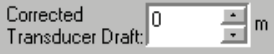
## Log

|                                                                                     |                                                                                                                                               |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Speed log systems are configured during installation of the CS68 system. Available names will be displayed in the Log drop down field.</p> |
|  | <p>Used for manually entering speed value.</p>                                                                                                |

Echo sounder



The echo sounders are configured during installation of the CS68 system. Available names will be displayed in the Echo Sounder drop down field.



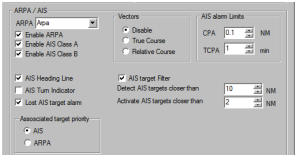
Used to enter transducer offset/draft when an echo sounder is connected. Value to be added to the depth from echo sounder if the depth values are calculated from the transducer and not from sea surface.

Wind sensor



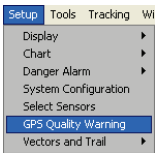
The wind sensors are configured during installation of the CS68 system. Available names will be displayed in the Wind Sensor drop down field.

ARPA/AIS

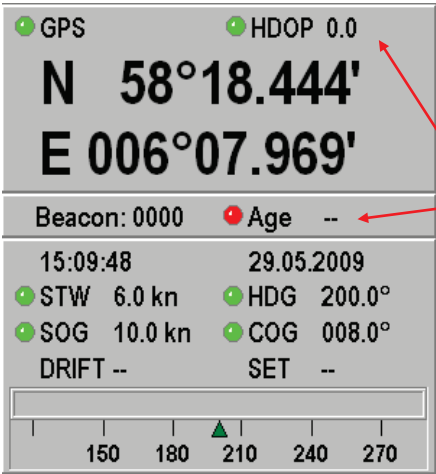
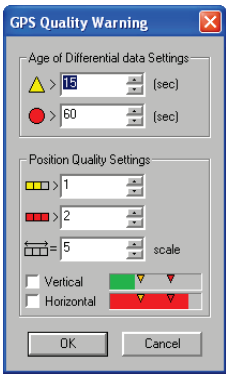


Used for defining how ARPA and AIS targets are shown on the display. Refer *Target setup*, page 58.

4.3 Defining the quality limits for the GPS signal



The quality limits for the GPS signal is set in the **GPS Quality Warning** dialog.



The signal quality is visualized by bubble color in the **Nav** and **Beacon** windows.

Refer *Information windows*, page 45.

## **5 SETTING UP THE DISPLAY**

This section describes available display settings, how to position and scale the chart, and how to turn on/off information windows.

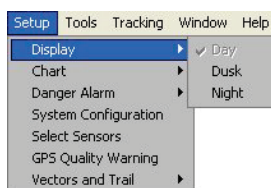
## 5.1 Display brightness

The display brightness is adjusted by the brightness button on the front panel.

Each ECDIS monitor is factory prepared, and has its individual backlight brightness setpoint where it is in accordance with the ECDIS standard.

Refer to the installation manual if basic operation information is needed.

## 5.2 Display palettes



3 different sets of display palettes are available for optimum color contrast under different light conditions.

To change the display color, click the **Setup** menu followed by the **Display** command, and select requested display palette.

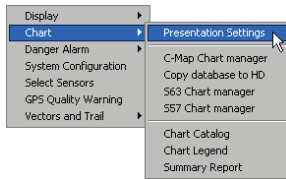
Active palette will be ticked.

### **WARNING**

***Details in the chart may be less visible when one of the dark palettes is selected. To increase the chart readability for the dark palettes, select the "Two shadings" option in chart presentation setup. Refer page 43.***

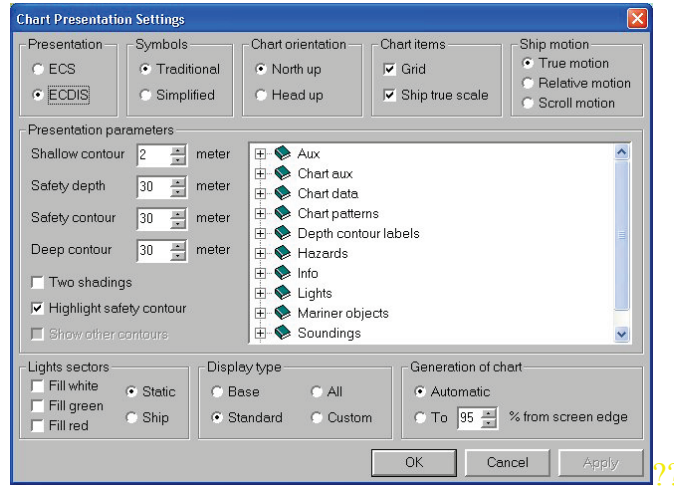
The display palette may also be changed by pressing the **Page up/Page Down** keyboard keys.

## 5.3 Chart layout on the display

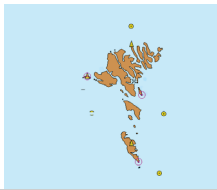
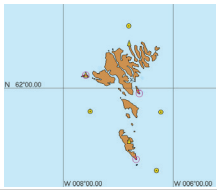


Several settings for the chart layout on the display are configured by tapping the **Setup** menu followed by **Chart** and **Presentation Settings**.

The **Chart Presentation Settings** dialog will be displayed:



The presentation is divided in logical groups as described in the following pages.

|                           |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Presentation:</b>      | Switches between ECS and ECDIS presentation of the chart content. ECDIS presentation is needed for the system to operate as approved ECDIS. |                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
| <b>Symbols:</b>           | Switches between traditional and simplified chart symbols.                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
| <b>Chart Orientation:</b> | <p><u>North up:</u></p> <p><u>Head up:</u></p>                                                                                              | <p>Displays the information with the north direction upward. Corresponds to the usual orientation of nautical charts.</p> <p>The information is shown on the display with the vessel's heading upward. The heading is updated every 1 degree.</p> <p><i>NOTE: This function is only available when the vessel symbol is set to be in the chart center. Refer Follow ship function, page 49.</i></p> |                                                                                       |
| <b>Chart items:</b>       | <u>Grid:</u>                                                                                                                                | Turns on/off a grid of meridians and parallels.                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
|                           |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                 |  |
|                           |                                                                                                                                             | <b>GRID OFF</b>                                                                                                                                                                                                                                                                                                                                                                                     | <b>GRID ON</b>                                                                        |

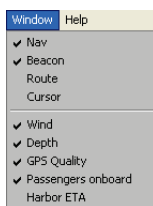
|                                 |                                |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | <u><i>Ship true scale:</i></u> | Displays the vessel symbol in true scale on the chart.                                                                                                                                                                                                                                                                                                                                                              |
| <b>Ship motion:</b>             | <u><i>True motion:</i></u>     | The display shows the vessel symbol moving with its own true motion, while the chart remains fixed. The point at which new chart is brought up on the screen can be determined automatically by the system, or the distance from edge of display can be specified by the operator through the Generation of Chart section of this dialog.                                                                           |
|                                 | <u><i>Relative motion:</i></u> | A display in which the vessel remains stationary, while the chart information move relative to the vessel position.                                                                                                                                                                                                                                                                                                 |
|                                 | <u><i>Scroll motion:</i></u>   | Display the vessel symbol in a user defined area of the display.<br><br>The area is defined by pressing the <b>Ctrl</b> and the middle cursor keys simultaneously while dragging a rectangle around the selected display area. (The cursor key has to be released before the <b>Ctrl</b> key).<br><br>If the user defines no area, the area will be automatically defined as $\pm 5\%$ of display size from center. |
|                                 |                                | The vessel's symbol will remain in the defined area as long as the Follow ship toolbar key is activated.                                                                                                                                                                                                                       |
|                                 |                                | <i>Note that the Scroll motion function not will take effect if the vessel symbol key is not activated!</i>                                                                                                                                                                                                                                                                                                         |
| <b>Presentation parameters:</b> |                                | The presentation parameters section is divided into two groups of settings: Parameters related to alarms described below, and general chart objects.                                                                                                                                                                                                                                                                |
|                                 | <u><i>Shallow contour:</i></u> | Limit for shallow waters (dark blue).                                                                                                                                                                                                                                                                                                                                                                               |
|                                 | <u><i>Safety depth:</i></u>    | Vessel's depth plus under keel clearance. To be used by the CS system for generating anti-grounding alarm.                                                                                                                                                                                                                                                                                                          |
|                                 | <u><i>Safety contour:</i></u>  | Contour related to own vessel. To be used by the CS system to distinguish between safe and unsafe water (medium blue).                                                                                                                                                                                                                                                                                              |
|                                 | <u><i>Deep contour:</i></u>    | Limit for deep waters (light blue).                                                                                                                                                                                                                                                                                                                                                                                 |

|                       |                                  |                                                                                                                                                                                                       |
|-----------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <u>Two shadings:</u>             | Only two shadows used to indicate water depth. Shallow color is used down to safety contour depth, and from safety contour and down safe water color is used.                                         |
|                       | <u>Highlight safety contour:</u> | The safety contour is normally highlighted but if the highlight cover/hides important information it can be turned off. The highlight safety contour will be reset to on when changing display types. |
|                       | <u>Show other contours:</u>      | Valid for display type All and Custom to turn on/off other contours except for safety contour.                                                                                                        |
| <b>Lights Sectors</b> | <u>Fill White:</u>               | White sectors highlighted.                                                                                                                                                                            |
|                       | <u>Fill Green:</u>               | Green sectors highlighted.                                                                                                                                                                            |
|                       | <u>Fill Red:</u>                 | Red sectors highlighted.                                                                                                                                                                              |
|                       | <u>Static:</u>                   | All sectors to be highlighted turned ON.                                                                                                                                                              |
|                       | <u>Ship:</u>                     | All sectors to be highlighted turned ON when the vessel is crossing the sector.                                                                                                                       |

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Display type:</b></p>               | <p><u>Base:</u></p> <p>This is the level of information that cannot be removed from the display, and includes information that is required in all geographic areas and during all circumstances. It is not intended to be sufficient for safe navigation.</p> <p><u>Standard:</u></p> <p>The level of information that is shown when a chart is first displayed. This is the minimum information sufficient for navigation.</p> <p><u>All:</u></p> <p>All available chart information.</p> <p><u>Custom:</u></p> <p>When this option is selected, the Chart Presentation Settings dialog will be expanded to include a Custom field where it is possible to select the objects that are to be displayed.</p> <div></div> <p>If all objects are selected, the chart presentation will be identical with the All selection in the Display type area.</p> <p>Custom selections will be automatically saved, and will be recalled whenever Custom display type is selected.</p> |
| <div></div> | <p>The display presentation may also be selected by tapping one of the toolbar keys.</p> <p>Active display presentation is indicated with depressed key symbol, and with text indication in the information key.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                             |                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Generation of chart:</b> | <p>Determines the point at which new chart will be displayed on the screen. The following options are available:</p> <p><u>Automatic:</u> The chart is redrawn automatically by the system, based on the vessel's speed and heading.</p> <p><u>To &lt; &gt;%:</u> Determines the area in percentage of full display within where the vessel may move before the display is redrawn.</p> |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 5.4 Information windows



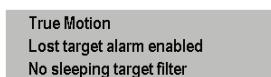
Different information windows may be activated from the **Window** menu.

Active windows are indicated with a tick.

The Route window is only available when the system is sailing on a route.

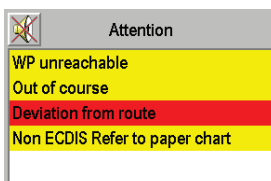
In addition to the selectable windows, a Status window will always be shown and an Attention window will be activated whenever an alarm situation occurs. Refer page 125.

### Status window



A status window will always be visible in the upper right corner to clearly state which Chart motion mode is chosen, if Lost target alarm is activated or if filtering of AIS targets is enabled/disabled. (All required in the ECDIS performance standard).

### Attention window

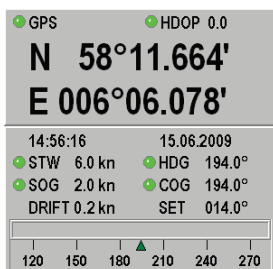


The Attention window will pop up whenever an indication or an alarm situation occurs.

There are two categories of system messages; Alarms and Indications. Alarm messages are indicated with red background and with an audible alarm, while Indications have yellow background only.

Refer *The ECDIS message system*, page 125.

## Nav window



The navigation window shows the vessel's present position and speed as measured by reference systems. In addition to time and date, the following information is shown:

- GPS:** GPS name as defined in navigator setup. Refer page 37.
- HDOP:** Quality indicator for GPS signal. Refer *Defining the quality limits for the GPS signal*, page 38.
- STW, HDG:** Speed through water and Heading as measured by log sensor and gyro compass. Heading is also shown graphically in the slide bar in the bottom of the window.
- SOG, COG:** Speed and Course over ground as measured by active sensor
- Drift, Set:** Calculated drift and set.

### Note

*Units of measurement and number of decimals used in the Nav window are configured in the System Configuration dialog (Misc and Aux. settings). Refer the separate Installation manual.*

## Beacon window

Beacon: 0050 Age: 0 Sec

- Beacon:** Beacon ID for DGPS signal transmitter for active navigator.
- Age:** Age of DGPS differential signal for active navigator. Refer *Defining the quality limits for the GPS signal*, page 38.

## Route window

- To London -

XTD -24 m CalcSPD=SOG

To WPT 2

TRK CRS 000°

DWOL 1.093 NM

TWOL 4m 17s

Next WPT 3

Next leg 039°

- Destination -

WPT 6

DTA 362.7 NM TTA 7h 26m

ETA 01:30 10.05.2014

The route window showing the route name will be automatically activated when a route is started.

It is possible to remove the window from the display by deselecting it from the **Window** menu.

The window is divided in two sections, separated by a horizontal line. The upper section shows information about current waypoint, while the lower section holds information about the route.

The window contains the following information:

|                 |                                               |
|-----------------|-----------------------------------------------|
| <b>XTD:</b>     | Cross track error                             |
| <b>CalcSPD:</b> | Speed used for ETA calculation. Refer page 96 |
| <b>To WPT:</b>  | Number and name for next waypoint             |

|                     |                                                   |
|---------------------|---------------------------------------------------|
| <b>TRK CRS</b>      | The current course to steer to keep boat on track |
| <b>Next leg:</b>    | Bearing on next leg                               |
| <b>DWOL / TWOL:</b> | Distance and time to wheel over line              |
| <b>Next WPT:</b>    | Number and name for last waypoint                 |
| <b>DTA / TTA:</b>   | Distance and time to arrival (last waypoint)      |
| <b>ETA:</b>         | Estimated time of arrival at the last waypoint    |

## Cursor window

Used for displaying cursor information as shown below.

Cursor S 32°34.858' E 061°08.150'  
Range 3.378 NM  
Bearing 225.5° 45.5°

**Cursor:** Coordinates for the cursor's present position  
**Range / Bearing:** Range and bearing from vessel to cursor's present position

## Wind window

Wind Direction 2.5 Kt 16.3°

Displays true wind.

## Depth window

Depth 71.9 m Temp 6.3°

The depth window displays depth and temperature value as measured by an echo sounder.

## GPS Quality window

No.Sat: 3

The GPS quality window visualizes the defined quality limits for the GPS signal as described in *Defining the quality limits for the GPS signal*, page 38.

The following color indication for GPS quality is used in the slide bar:



- GPS signal better than warning limit
- signal quality between warning and alarm limit
- signal quality worse than alarm limit

## Passengers onboard window

Passengers onboard: 0010 Total onboard: 0026

Displays number of passengers and total number of persons onboard.

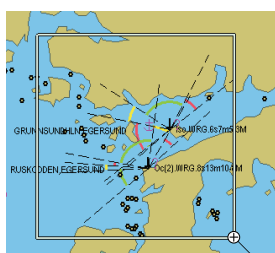
## 5.5 Selecting the chart scale



Active chart scale is indicated in the tool bar's drop down field.

The chart scale is changed by:

- selecting a scale in the scale drop down field
- by scrolling up/down with the middle cursor key (if scrollwheel is available)
- by tapping the arrow up/arrow down keys (small scale change) or the arrow left/arrow right keys (large scale change)
- by zooming to a specified rectangle area



Part of the display may be zoomed in by dragging a rectangle around the selected area. The rectangle is defined by pressing and holding the middle cursor key, and then moving the cursor to a position that makes the rectangle large enough to cover the selected area.

The magnifier symbol  indicates zooming in.

The display will be redrawn with the selected rectangle covering the entire screen.

The display is zoomed out if the **Shift** key and the middle cursor key are pressed simultaneously when the window is drawn on the display.

The magnifier symbol will change to .

### Best scale



By tapping the **Best scale** key, the chart with best scale for the displayed area will be automatically selected.



When the key is tapped, the key image will change to indicate active function.

#### Note

*This function is only available when the CS system is set to automatically keep the vessel symbol in center of the display. Refer **Follow ship function**, page 49.*

## 5.6 Positioning the chart on the screen

### Follow ship function



When the ship symbol key is tapped, the system will automatically keep the vessel in the center of the display, either with True, Relative or Scroll motion. Refer ***Chart layout on the display***, page 41.

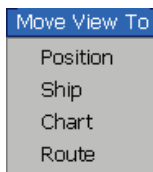
The vessel's symbol will remain in the display center as long as the key is activated.

### Panning to cursor position

To view areas of the chart that are not within the current chart limits, an adjacent area will be displayed by moving the cursor to a selected position and pressing the middle cursor key.

The chart will be moved and centered about the selected cursor position.

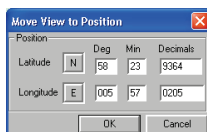
### Moving the chart center



The **Move View To** menu makes it possible to move the chart to a known position, to current vessel position, to a chart or to a preplanned route as described in the following sections.

#### Note

*The Move View To menu will not be available if the Follow ship function is active.*

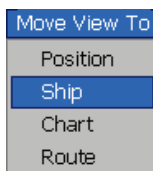


#### To a known position

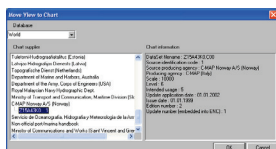
Tap the **Move View To** menu followed by the **Position** command to open the **Move View To Position** dialog.

Enter coordinates for latitude and longitude for the position that is to be the new chart center, and confirm by tapping **OK**.

#### To vessel position

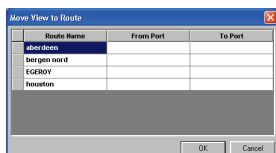


When the **Move View To** menu followed by the **Ship** command is selected, the chart will be moved to vessel position. After the display is redrawn with the vessel in center, the vessel's movement on the display will be dependent on setting for ship motion. Refer ***Ship motion***, page 42.

**To a selected chart**

Tap the **Move View To** menu followed by the **Chart** command to open the **Move View to Chart** dialog.

Select the chart that is to be drawn on the display, and confirm by tapping **OK**.

**To a preplanned route**

When the **Move View To** menu is followed by the **Route** command, the **Move View to Route** dialog will be displayed.

Selected route will be drawn on the display when **OK** is tapped.

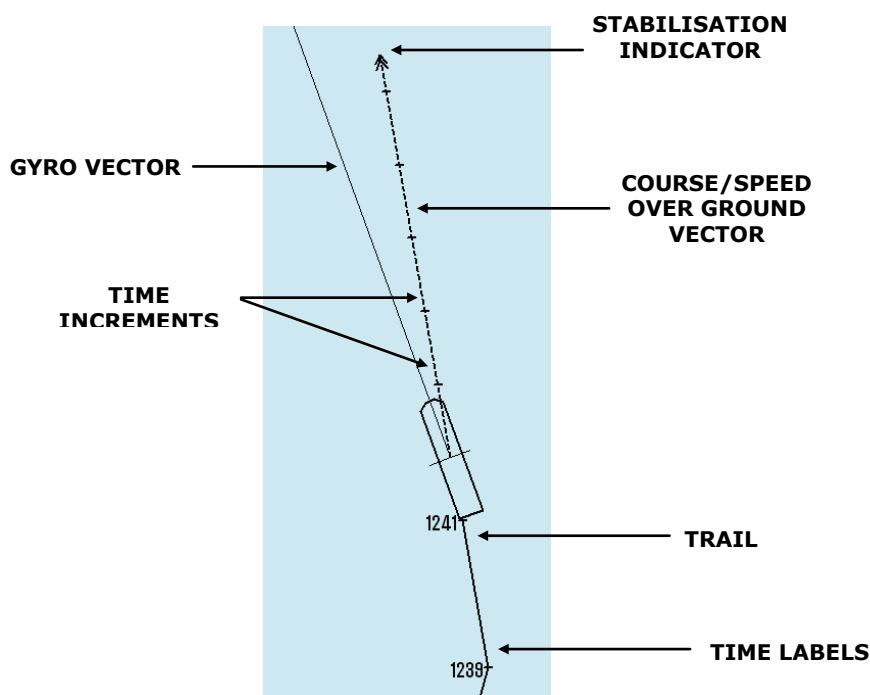
## 5.7 Displaying vectors and trails

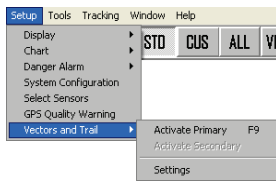
Gyro vectors and the vessel's trails may be displayed to show the vessel's movement in the chart.

Vector symbols indicate gyro and time vectors according to ship's log, and course/speed over ground based on information from both primary and secondary positioning system.

Trails are based on information from positioning system, and both primary and secondary system may be used.

It is not possible to save trails to file. If the vessel's movement should be recorded, this is done by using the **Tracking** function. Refer *Tracking a vessel's motion*, page 60 onwards.





Trails are activated by selecting the **Setup** menu followed by **Vectors and Trail** command, and then selecting the **Activate Primary** or **Activate Secondary** commands.

Active function is labeled with a tick.

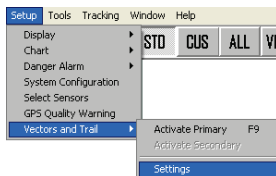


Trail based on primary source may also be displayed by selecting the **F9** keyboard key or the **Trail** toolbar key.

Trail based on secondary source can only be displayed as described in

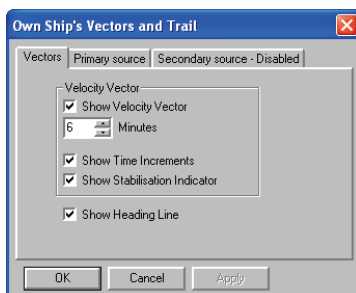
*Primary source /Secondary source*, page 52.

## Vectors and trail setup



The vectors and trail layout are defined in the **Own Ship's Vectors and Trail** dialog.

### Vectors



#### Show Velocity Vector:

Displays a vector for the course/speed over ground based on measurement from the active navigator. The length of the line is determined by the settings in the Minutes field.

#### Minutes:

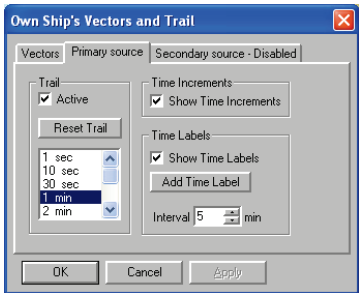
Determines the length of the vector and the position of the Stabilisation Indicator.

Show Time Increments: Shows time increment marks along the vector.

Show Stabilization Indicator: Indicates the vessel position in a number of minutes set in the Minutes field.

Show Heading Line: Toggles on the gyro vector. This vector is displayed from the vessel bow to the edge of the screen, and is drawn with dotted line.

**Primary source /Secondary source**



Trail: Toggles on/off trail based on information from primary/secondary source. The distance between each trail point is determined by the settings in the time field.

Reset trail: Restarts the trailing function from the vessel's current position.

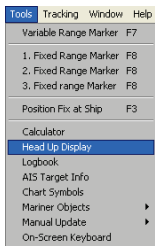
Time Increments: Toggles on/off time increments.

Time Labels: Adds a time labels. The distance between each time label is defined by the settings in the Interval field.

Interval: Sets the interval between each time labeled trail point.

**Note** *If Secondary source is not activated as described in page 37, Secondary source tab will be disabled.*

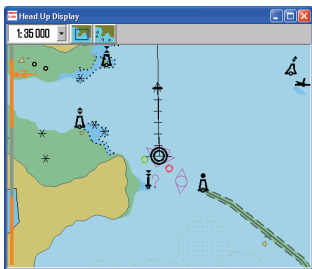
**5.8 Head up display**



The **Head Up** display makes it possible to display an overview or a detailed chart in a separate window, independent on vessel position and chart scale in the main display.

In this display the vessel is shown with head up.

The display is activated by tapping the **Tools** menu followed by **Head Up Display** command.



The following toolbar keys are available in **Head Up** display:

| KEY | FUNCTION                                                | REF. PAGE |
|-----|---------------------------------------------------------|-----------|
|     | Chart scale.                                            | 48        |
|     | Selects the best scale available for the selected area. | 48        |
|     | Displays the <b>Chart presentation settings</b> dialog. | 41        |

## **6 TOOLS FOR SAFE NAVIGATION**

This section describes available functions used for increasing the navigation safety.

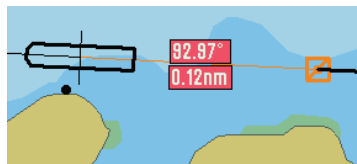
## 6.1 Man Over Board



If an emergency situation should occur, a single tap on the **Man over board** toolbar key will place a marker at the vessel's current position.



Bearing and Range from the **Man Over Board** marker to the vessel's position will be displayed as shown on the figure below.



If the cursor is moved to the marker and the left cursor key pressed, range and bearing from the **Man Over Board** marker to the cursor position will be displayed.

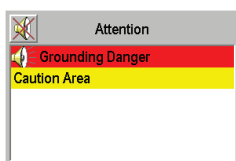
A **Man Over Board** marker cannot be moved. The marker may be removed by moving the cursor to the marker and pressing the right cursor key.

When a **Man Over Board** function is activated, the **Attention** window will pop up with relevant indication.

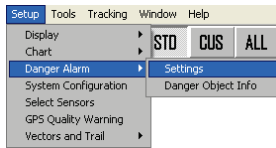
## 6.2 Danger alarm settings

The danger alarm function will give an alarm when the system is sailing towards water depths less than safety contours selected in the chart setup dialog. Refer *Presentation parameters*, page 42.

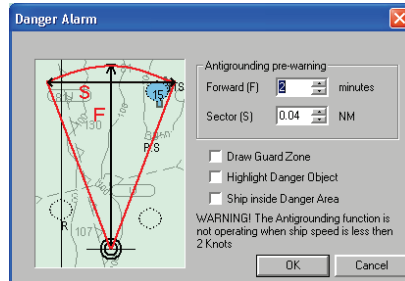
The system will also give an alarm if the ship is going to cross a prohibited area within the specified pre-warning time.



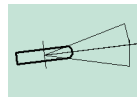
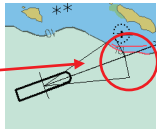
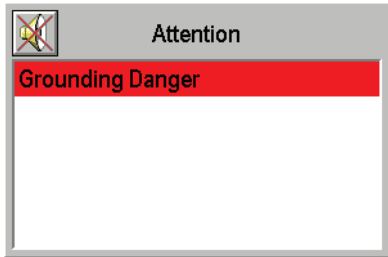
In accordance with the pre-warning time set in the **Danger Alarm** dialog, an acoustic alarm will sound and the **Attention** window pop up if the vessel is sailing towards unsafe area.

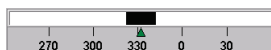


The danger alarm parameters are defined in the dialog activated by tapping the **Setup** menu followed by the **Danger Alarm** and **Settings** commands.



The following parameters have to be set:

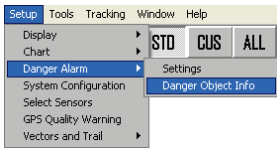
|                                 |                                                                                                                                                                                                                                                                                                |                                                                                       |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Forward (F):</b>             | Pre-warning time in minutes for the antigrinding alarm.                                                                                                                                                                                                                                        |                                                                                       |
| <b>Sector (S):</b>              | Width in meters for the pre-warning sector.                                                                                                                                                                                                                                                    |                                                                                       |
| <b>Draw Guard Zone:</b>         | Used for visualizing the guard zone.                                                                                                                                                                                                                                                           |    |
| <b>Highlight Danger Object:</b> | Highlights (red color) danger objects within the defined guard zone.<br>Danger areas will be shaded.                                                                                                                                                                                           |  |
| <b>Ship inside Danger Area</b>  | When this option is activated, an alarm will be activated when the vessel enters a danger area.<br><br>The alarm text will remain in the Attention window as long as the vessel is inside the danger area. |                                                                                       |



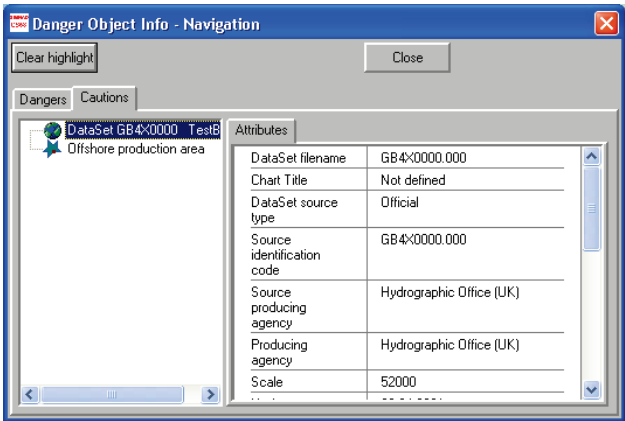
A bar graph will be displayed above the course indication field in the **Nav** window when the antigrinding function is activated. The bar graph shows course and sector for danger objects in the guard zone.

The danger alarm function is disabled when the ship speed is less than 2 knots, or when the pre-warning time is set to 0 minutes.

### 6.3 Displaying information about danger objects



When the danger alarm function is active, it is possible to view information about the objects/areas that are defined as dangerous or caution area. The dialog is activated by tapping the **Setup** menu followed by **Danger Alarm** and **Danger Objects Info** commands.

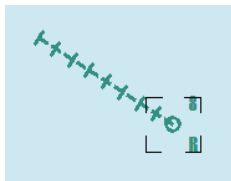


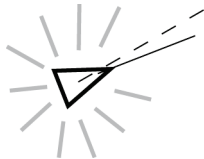
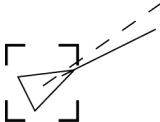
The content in the dialog will be updated according to the pre-warning time and the pre-warning sector settings. Refer ***Danger alarm settings***, page 54.

## 6.4 Other vessels' movement

Other vessels' movement may be displayed in the chart by connecting an AIS system or an ARPA radar to the CS68 system.

The different symbols for AIS and ARPA targets are as shown below.

| SYMBOL                                                                              | DESCRIPTION                                                                             |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|    | Sleeping AIS target.<br>Symbol will indicate heading or COG if no heading is available. |
|    | Active AIS target with course extension line and turn indicator                         |
|    | Active AIS target with course extension line and velocity vector                        |
|   | Real ATON (Aids To Navigation)                                                          |
|  | Virtual ATON                                                                            |
|  | AIS Search & Rescue transmitter (AIS Sart)                                              |
|  | ARPA target Referenced                                                                  |
|  | ARPA target Selected                                                                    |
|  | ARPA target tracked                                                                     |
|  | ARPA target with velocity vector and trail                                              |

|                                                                                   |                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>A dangerous target is illustrated with bold line and with red color.</p> <p>A dangerous target symbol will flash until acknowledged by the operator.</p> <p>The illustration shows a dangerous AIS target.</p> |
|  | <p>A lost target is indicated with crossed lines centered on the target symbol.</p> <p>The illustration shows a lost AIS target.</p>                                                                              |
|  | <p>A selected target is indicated with broken square around the target symbol.</p> <p>The illustration shows a selected AIS target.</p>                                                                           |

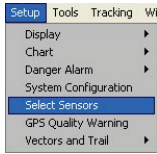


*If no heading or COG are available the symbol will be oriented toward the top of the display!*

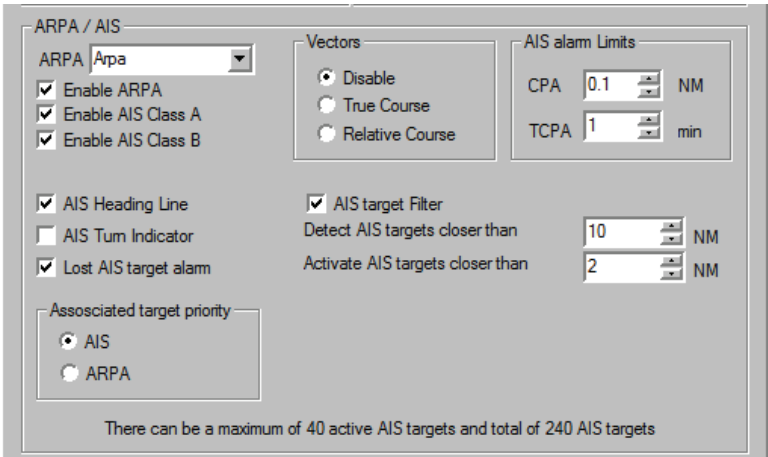


The displaying of AIS and ARPA targets are toggled on/off by pressing the **Overlay Disable** toolbar key.

### Target setup



AIS and ARPA targets layout on the display are defined in the **Select Sensors** dialog, activated by tapping the **Setup** menu followed by the **Select Sensors** command.



**PART OF SELECT SENSORS DIALOG**

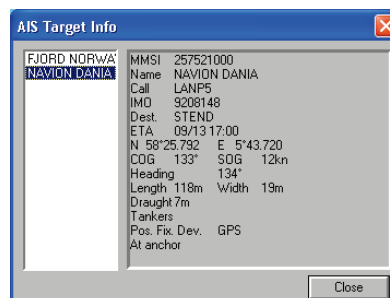
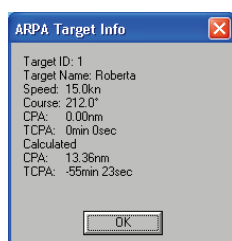
ARPA radars are identified during installation. When more than one radar is connected to the system, the ARPA names will be displayed in the combo box.

The following selections may be made for displaying the targets:

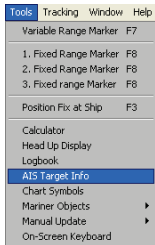
|                          |                                                                   |                                                                                                                                                                                                                                                 |
|--------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Show:</b>             | Toggles on/off all selected ARPA/AIS target options in the chart: |                                                                                                                                                                                                                                                 |
| <b>Vectors:</b>          | <u>Disable:</u>                                                   | No ARPA target vectors displayed.                                                                                                                                                                                                               |
|                          | <u>True Course:</u>                                               | Displays the ARPA target vectors with true course.                                                                                                                                                                                              |
|                          | <u>Relative Course:</u>                                           | Displays the ARPA target vectors relative to own ship.                                                                                                                                                                                          |
| <b>AIS Alarm limits:</b> | <u>CPA:</u>                                                       | Distance in Nautical miles to Closest Point of Approach for the ARPA target.                                                                                                                                                                    |
|                          | <u>TCPA:</u>                                                      | Time in minutes to Closest Point of Approach for the ARPA target before an alarm is activated.                                                                                                                                                  |
| <b>AIS target Filter</b> | <u>Detect AIS targets closer than:</u>                            | Set the outer limit for which targets that shall be displayed                                                                                                                                                                                   |
|                          | <u>Activate AIS targets closer than:</u>                          | Sets the outer limit for which targets that shall be activated                                                                                                                                                                                  |
|                          | <u>Associated target priority:</u>                                | If the CS68 system is connected to both AIS and a radar system providing ARPA targets with MMSI numbers. The targets will be filtered based on the MMSI numbers to only show one target. Select either AIS or ARPA to be shown. Default is AIS. |

## Displaying target information

By moving the cursor to a target and pressing the right cursor key, an ARPA or an AIS window showing information for the selected target will be displayed.



The **AIS Target Info** window will show a list of all AIS targets. Selecting the vessel identification will list all available information for the selected vessel in the window's right column.



The AIS Target Info window could also be activated by tapping the **Tools** menu followed by the **AIS Target Info** command.

The windows will remain in the display until **OK** or **Close** is tapped.

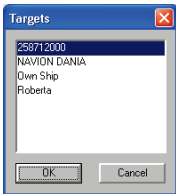
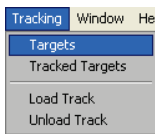
## 6.5 Tracking a vessel's motion

The CS system makes it possible to track the movement for own vessel, AIS and ARPA targets. The tracking may be shown on the display, and also saved to file.

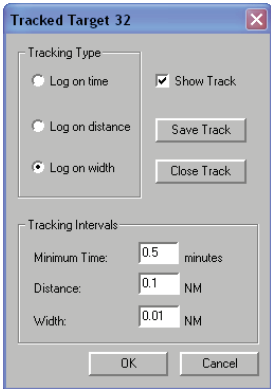
### Starting a new track

Use the following procedure to start a new track:

- 1 Tap the **Tracking** menu followed by the **Targets** command.
  - A list of all available tracking objects will be displayed.



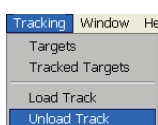
- 2 Select the vessel to be tracked, and confirm with the **OK** key.
  - The **New Track** dialog will now be displayed, showing available tracking options:



The following settings are available:

|                            |                                               |                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tracking Type:</b>      | <u>Log on time:</u>                           | Track points drawn with time lag according to Minimum Time setting.                                                                                                                                                                                                                                                                                           |
|                            | <u>Log on distance:</u>                       | Track points drawn with distance according to Distance setting.                                                                                                                                                                                                                                                                                               |
|                            | <u>Log on width:</u>                          | Track points drawn if the vessel exceeds the width entered in Width setting.                                                                                                                                                                                                                                                                                  |
| <b>Tracking Intervals:</b> | <u>Minimum Time:</u>                          | Time between each logging point.                                                                                                                                                                                                                                                                                                                              |
|                            | <u>Distance:</u>                              | Distance between each logging point.                                                                                                                                                                                                                                                                                                                          |
|                            | <u>Width:</u>                                 | Defines a deviation width for the vessel track. A track point will now be set each time the vessel shifts the defined distance to the right or left. This means that the sharper a turn is, the more track points will be set. E.g. if the vessel moves perfectly straight only two points will be set. One in the beginning and one in the end of the track. |
| <b>Show track:</b>         | Shows/hides the tracking line on the display. |                                                                                                                                                                                                                                                                                                                                                               |

- 3 Close the dialog and start tracking the selected vessel's movement by tapping **OK**
  - If the **Show Track** tick box is active, the track will be visible on the display

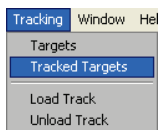


If information about a target is lost while this target is being tracked, the track will automatically be saved and displayed in the chart. The track will however not be an active track, and is removed from the display by selecting the **Tracking** menu followed by the **Unload Track** command.

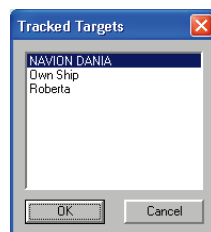
Refer *Displaying or deleting previously saved tracks*, page 63.

## Saving or closing a track

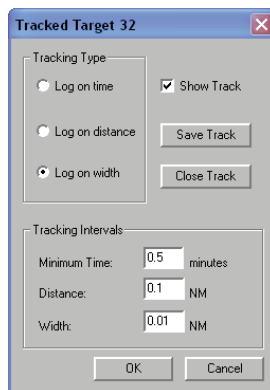
A vessel's track is saved or no longer tracked by:



- 1 Select the **Tracking** menu followed by the **Tracked Targets** command.
  - Tracked targets will be listed in the **Tracked Targets** dialog.

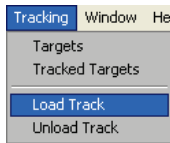


- 2 Select the tracked target that should be saved or no longer tracked, and confirm by tapping **OK**
  - **Save Track** and **Close Track** will now be available in the dialog.



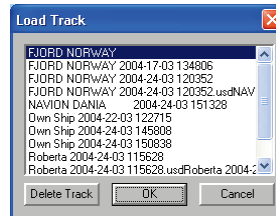
- 3 Tap **Save Track** to save the track to file, or **Close Track** to stop tracking the selected target. When a track is closed, it will also be removed from the display.

## Displaying or deleting previously saved tracks



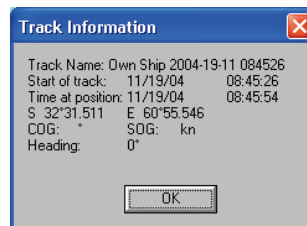
Saved track files may be displayed or deleted by tapping the **Tracking** menu followed by the **Load Track** command.

A list of all previously saved tracks will be displayed.

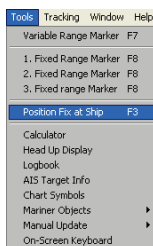


Selected track is displayed by tapping **OK**, while the track file is deleted from the CS system when tapping **Delete Track**.

Information about a track may be viewed in the **Track Information** dialog, activated by moving the cursor to the track and pressing the right cursor key.



## 6.6 Setting a fixed mark at vessel position



A fixed mark may be set at the vessel's current position by selecting the **Tools** menu followed by the **Position Fix at Ship** command. The mark will be labeled with current time.



For manually positioning fixed marks, refer to *Position fix points*, page 108.

A fixed mark may also be set by tapping the **F3** key or the **Fixed mark** toolbar key.



The mark may be moved by pressing the left cursor key on the marker, moving the cursor to a new position, and then pressing the left cursor key again.

The mark is deleted by pressing the right cursor key when the cursor is in center of the mark.

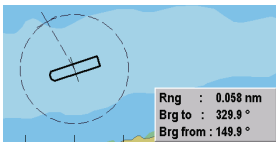
## 6.7 Variable range marker

A circle may be added to the chart to indicate a guard zone, either around the vessel or around a fixed position in the chart.

The symbol is created by selecting the **Tools** menu, followed by the **Variable Range Marker** command, by tapping the **F7** key or the **VRM** toolbar key.



A circle will be drawn with the circle center at the vessel. An information window showing range and bearing from circle center to cursor position will be opened in the lower right corner of the display.



Pressing the right cursor key will toggle the circle center between the vessel and the cursor's actual position. A marker with the circle center at the vessel will move with the vessel.

The circle radius is increased/decreased by moving the cursor. Pressing the left cursor key will fix the circle center and lock the radius.



Only one variable range marker may be active. When a marker is active, this will be indicated with a tick in the menu and with depressed **VRM** toolbar key.

The marker and the information window will remain in the display until this tick is removed or the **VRM** toolbar key deactivated.

## 6.8 Fixed range markers

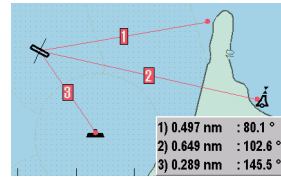


Up to three fixed range markers may be positioned on the display. The markers are used for measuring bearing or distance from the vessel to other objects in the chart.

A marker can also be set by tapping the **Tools** menu followed by one of the **Fixed Range Marker** commands, or by tapping the **F8** key on the keyboard.

When the function is activated, a line will be drawn from the vessel center to the cursor position. An information window showing range and bearing from vessel center to cursor position will be opened in the lower right corner of the display.

The range marker will be fixed at the cursor position by pressing the left cursor key.



When fixed markers are active, this will be indicated with a tick in the **Tools** menu. The marker and the information window will remain in the display until this tick is removed.

## 6.9 Manually calculating vessel position



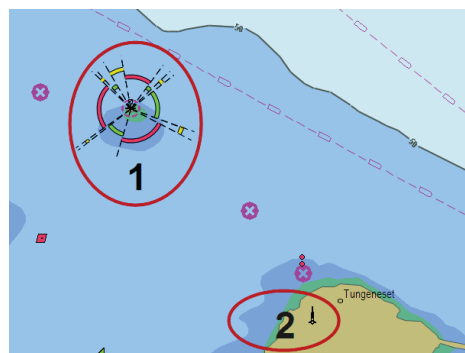
When no GPS is available, the Lines Of Position function (LOP) and a magnetic compass may be used to calculate your position.

Two LOPs will give you an estimated vessel position. To obtain a high degree of accuracy (position fix) three LOPs must be used.

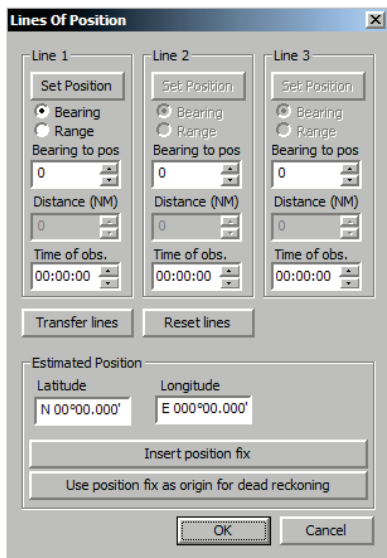
### NOTE:

*An accurate position can only be estimated if the vessel maintains a steady course!*

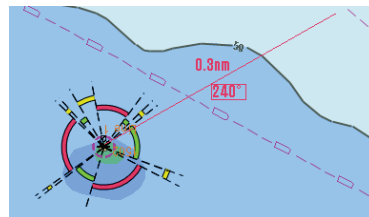
In the following example one lighthouse (1) and one mast (2) are used as known objects to position 2 LOPs.



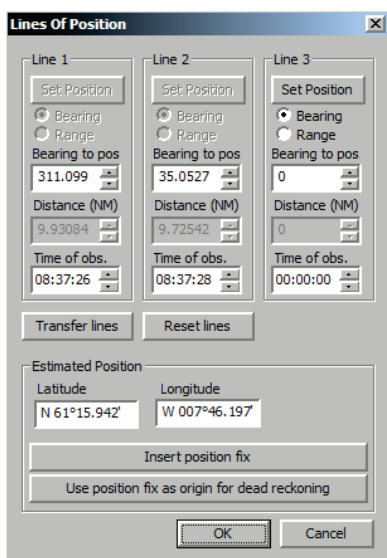
- 1 Point your magnetic compass to the lighthouse and to the mast and note the readings



- 2 Activate the **Lines Of Position** dialog
- 3 Press the **Set Position** key for Line 1
- 4 Move the cursor to the lighthouse symbol and press the left cursor button to position the first end point of the LOP
- 5 Drag the cursor away from the lighthouse symbol to create the line. Ensure that the direction for the line is the same as read when pointing the compass to the lighthouse



- 6 Go back to the **Lines Of Position** dialog, press the **Line 2** key and repeat the procedure to position a LOP from the mast



- The **Lines Of Position** dialog will now show bearing for both lines
- 7 Adjust the bearing value to exactly match your readings from the magnetic compass
  - 8 As soon as possible, find a third object and repeat the procedure for the third line
    - If the vessel has moved between the different line positioning, use the **Transfer lines** key to re-position the two first lines

- 9 Press the **Estimate** key to let the CS system calculate your position

- 10 Insert a position fix or move the vessel to the estimate position by pressing the corresponding key in the **Lines Of Position** dialog

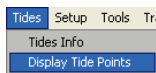
If the range to the objects is known, enter distance instead of bearing in the Lines Of Position dialog.



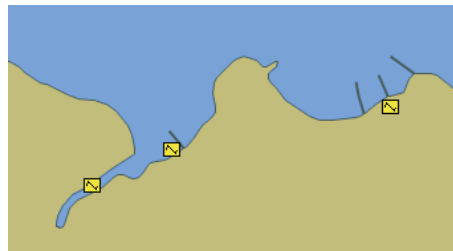
*Active sensor must be set to Dead Reckoning to be able to move the vessel to estimated position!*

## 6.10 Tidal predictions

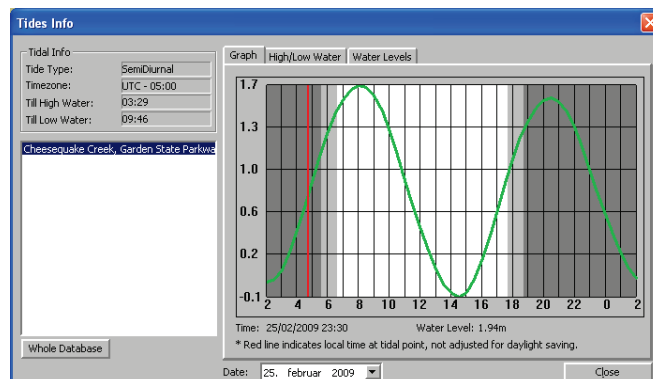
### C-Map



The C-MAP Professional + chart database contains about 4000 tide prediction points around the world. These predictions points may be loaded and displayed by selecting the **Tides** menu, followed by the **Display Tide Points** command.



Click the right cursor button inside one of these diamonds to see the tidal prediction for the selected point.



The tidal diagram is calculated for the current date (today), and the time is standard time for the country concerned. The date is displayed in the **Date** field.

## Graphic view

A graphic view of the tidal prediction is shown by activating the **Graph** tab. This is the default view when the tidal diagram is opened.

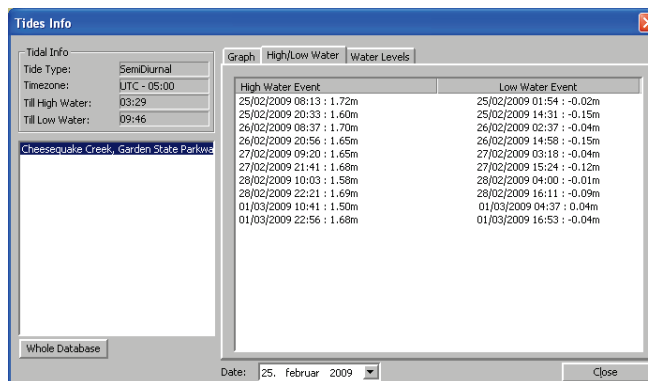
The tidal height is graphically expressed with three background colors indicating time of the day:

- Dark gray: Night time
- Light gray: Twilight
- White: Daytime

The graphic's max height is automatically set equal to maximum tide height.

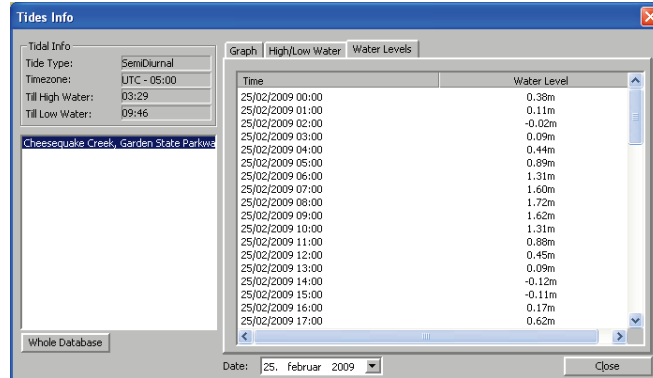
## Predicted high/low water events

Press the **High/Low Water** tab to display the high and low water events represented with date and numeric values for water height.



## Predicted water levels

By activating the **Water Levels** tab the dialog will show water levels in 1 hour's step for the selected date and the following 2 days.



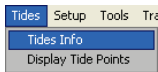
## Selecting prediction date

It is possible to display tidal predictions for future days. By pressing the downward arrow in the **Date** field, a calendar function will be opened.



The diagram is returned to today's date by pressing the **Today:** field in the lower part of the calendar.

### Displaying all tide points

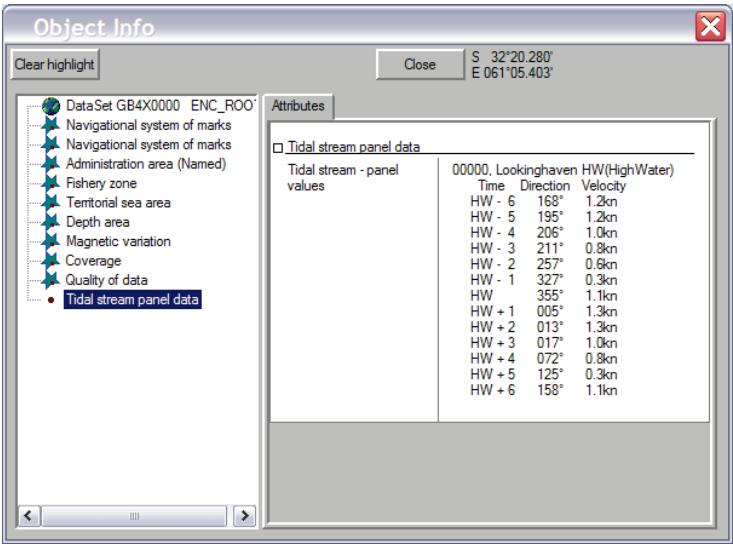
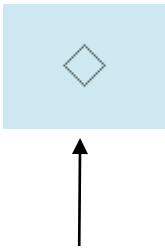


A list of all tide prediction points around the world is displayed by selecting the **Tides** menu followed by the **Tides Info** command, or by pressing the **Whole Database** button in the **Tides Info** dialog.

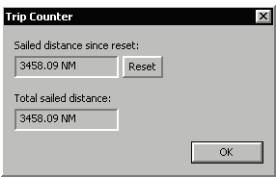
### Other databases

Other databases might contain tidal predictions.

When working with other databases, tidal information will be shown with a tidal diamond. Right click on the diamond will bring up the tidal stream panel with data for the area. Typically you get time, direction and velocity data.



### 6.11 Trip Counter



The CS68 is equipped with a **Trip Counter** that measures the distance the ship have traveled. It shows two values, one that will run from installation of system and one that can be reset any time by pressing the **Reset** button.

## **7 WORKING WITH ROUTES**

This section holds description for the different methods that may be used when creating and saving a route. The section also includes guidance for modifying, copying and printing a route.

## 7.1 General

Routes may be planned independent of the actual vessel position. The routes may be stored and recalled whenever necessary. There are no limitations to number of waypoints in a route that can be stored in the system.

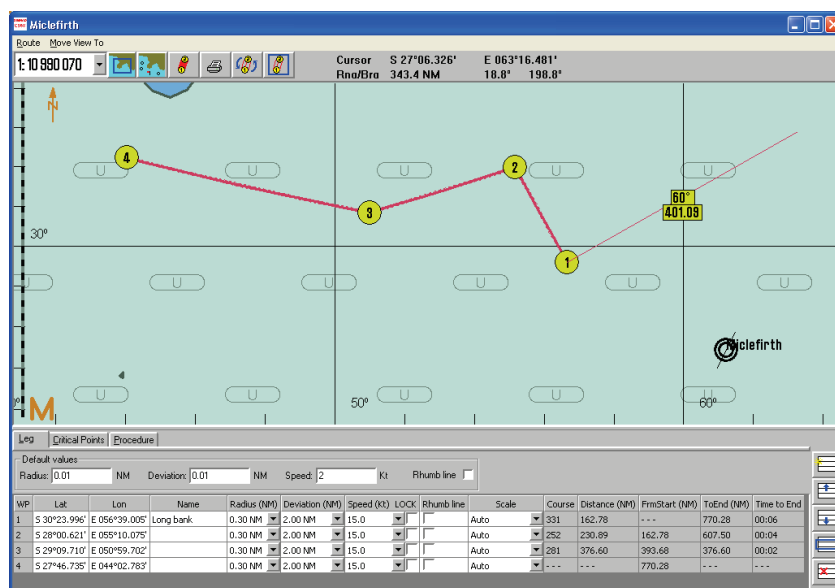
Route planning is performed as described in page 77 onwards. A simplified route planning may also be done using the quick route function. Refer page 90.

The SOLAS convention requires that all charts must be updated for intended voyages. Before planning a new route or prior to updating an existing voyage, it is required to receive the latest chart updates.

For automatic or manual updating of the chart, refer *Official chart updates*, page 101 onwards.

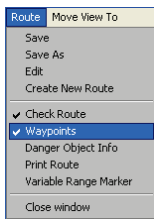
## 7.2 The Route Editor window

In the CS68 system, routes are planned in a separate **Route Editor** window. This window is activated when a new route is created, or when an existing route is modified.



This window will be displayed on top of the normal chart view. The display layout and the scale is setup as for the graphic area, but independent of this setup.

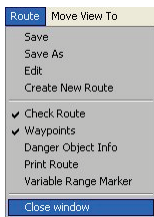
The window may be minimized, resized and moved.



The lower part of the window contains the waypoint table for active route. When a new route is to be created, the waypoint table is empty. This waypoint table may be removed from the window by tapping the **Route** menu and toggling off the **Waypoints** command.

The toolbar keys in **Route Editor** window have the following function:

| Key | Function                                                 | Shortcut key | Ref. page |
|-----|----------------------------------------------------------|--------------|-----------|
|     | Drop down list used for selecting chart scale.           |              | 48        |
|     | Selects the best scale available for the displayed area. |              | 48        |
|     | Displays the <b>Chart presentation settings</b> dialog.  |              | 41        |
|     | Checks the legs.                                         |              | 80        |
|     | Prints the route.                                        |              | 87        |
|     | Reverses route.                                          |              | 86        |
|     | Displays the <b>Move View to Route</b> dialog.           |              | 50        |

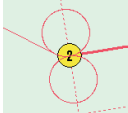
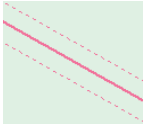
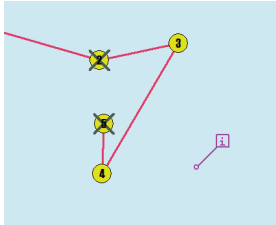


The **Route Editor** window is closed by tapping the in the window's upper right corner, or by selecting the **Route** menu followed by the **Close window** command.

If the window is closed before a route is saved, the route command will be aborted.

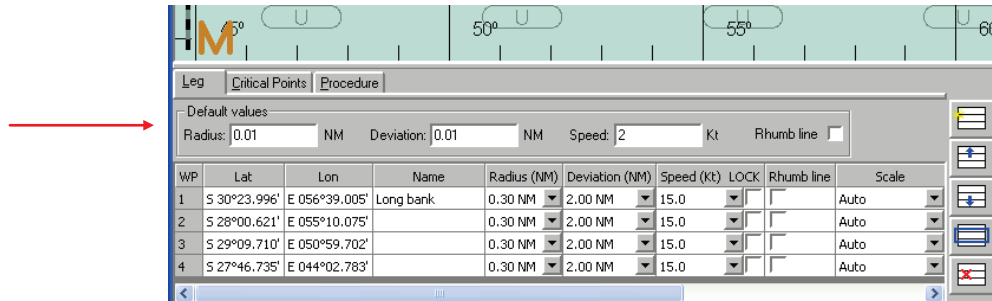
## 7.3 Route symbols

The following route symbols are used in the CS system:

|                                                                                     |                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | First waypoint with waypoint number and route name.                                                                                                                                                                                                           |
|    | Fixed waypoint with waypoint number and turn radius.                                                                                                                                                                                                          |
|    | Range and bearing between two waypoints.                                                                                                                                                                                                                      |
|    | Active waypoint.                                                                                                                                                                                                                                              |
|    | Movable waypoint.<br>A movable waypoint is deleted by pressing the right cursor key.                                                                                                                                                                          |
|    | Additional waypoint to be inserted between two existing waypoints.                                                                                                                                                                                            |
|   | Leg with accepted deviation. A route that is under construction will be drawn with red legs. When the route is saved, the legs will be black.                                                                                                                 |
|  | Leg checked and found unsafe or dangerous with the Check route option activated.<br>Orange color used for unsafe routes; while red color is used to indicate a dangerous route.<br>The color indication will remain on the leg also after the route is saved. |
|  | When in route planning mode, waypoints that violate the boats given turn radius will be marked with a grey cross. (Check turn radius in System configuration – Tab: ship)                                                                                     |

## 7.4 Route parameters

When a waypoint is added to a route, the system will use the default parameter values shown in the waypoints section of the Route window:

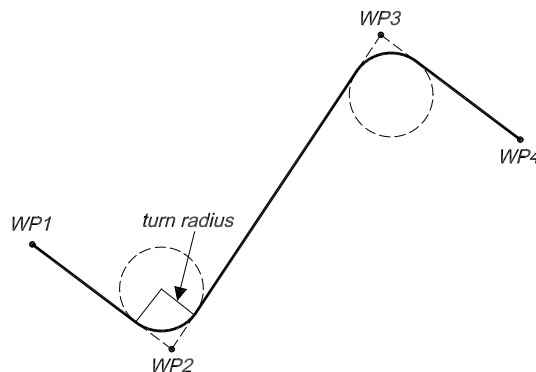


### Note

*Route settings for an active route may be changed by tapping the **Navigation** menu and then selecting the **Route Settings** command. Refer page 96.*

## Radius

A route consists of a series of waypoints joined together with straight lines. Each waypoint in a route, except the first and the last, has an associated turn radius defined. This turn radius will make the ship turn over before the waypoint is reached.

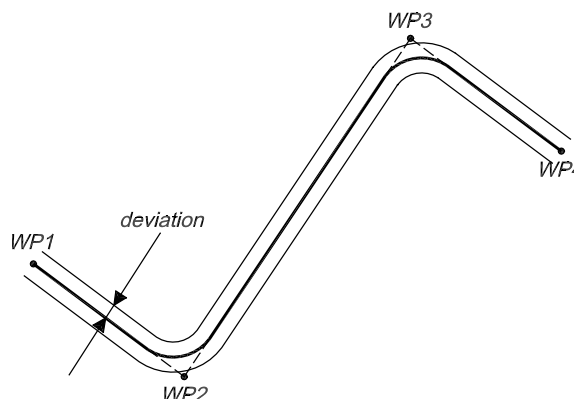


Default turn radius for the vessel is set in the **System Configuration** dialog (Ship tab). Refer the separate CS Installation manual.

The turn radius may be set individually for each waypoint in the route. Refer **Modifying a route by using the Waypoint dialog**, page 85.

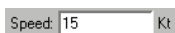
## Deviation

This parameter defines the vessel's offset distance from leg before an alarm is given.



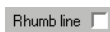
The deviation may be set individually for each leg in the route. Refer *Modifying a route by using the Waypoint dialog*, page 85.

## Speed



This is the speed used by the CS68 system for calculating estimated time for the route.

## Rhumb line



Option for selecting Rhumb Line computation when calculating the distance between two waypoints.

If the checkbox not is activated Great Circle computation will be used.

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.

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).

## 7.5 Creating a new route

Two methods could be used when creating a new route:

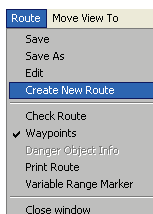
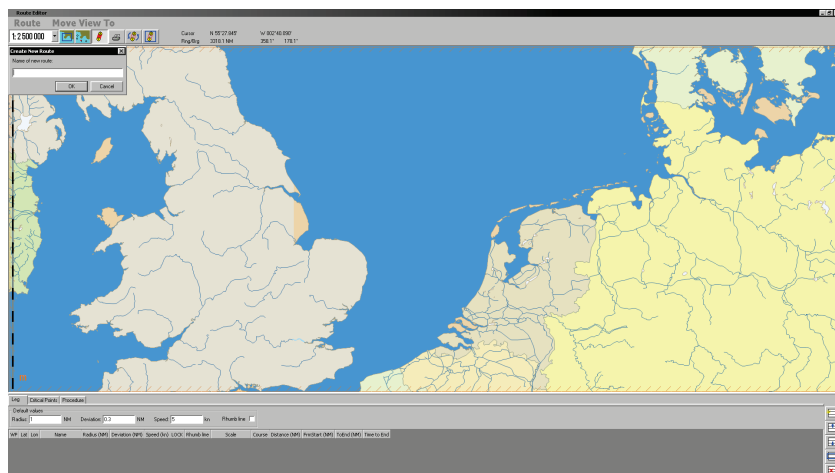
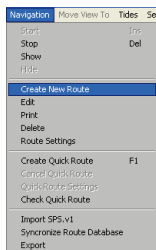
- using the cursor. Refer page 78
- manually enter waypoints into a waypoint table as described in page 79

Using the cursor for entering waypoints is used when a rough position of the waypoints is sufficient, while the waypoint's coordinates may be exactly defined in the dialog.

Generally, a combination of these two methods may be the best. The waypoints are entered by using the cursor, and then modified to accurate coordinates by using the waypoint dialog.

A new route is started by tapping the **Navigation** menu followed by **Create New Route** command.

- The **Route Editor** window and the **Create new Route** dialogs are displayed.



If the **Route Editor** window already is active, a new route is created by tapping the **Route** menu followed by the **Create New Route** command.

Enter the route name in the **Create New Route** dialog, and confirm the entries by tapping **OK**.

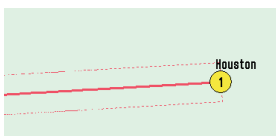
- The dialog will be closed and the system is ready for entering waypoints.

## Creating a route by using the cursor

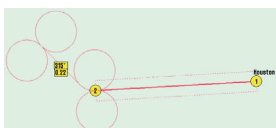
For route symbols, refer page 74.

Before the cursor may be used for entering waypoints, the chart center has to be set according to the position for the first waypoint. Refer *Selecting the chart scale*, page 48 onwards.

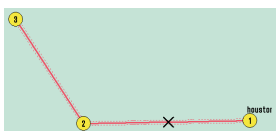
Use the following procedure for entering waypoints:



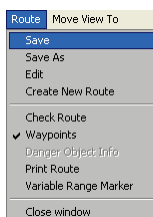
- 1 Move the cursor to the position of the first waypoint, and press the left cursor key.
  - The waypoint with waypoint number and route name will be positioned on the chart.



- 2 Continue entering new waypoints by moving the cursor to new positions and pressing the left cursor key.



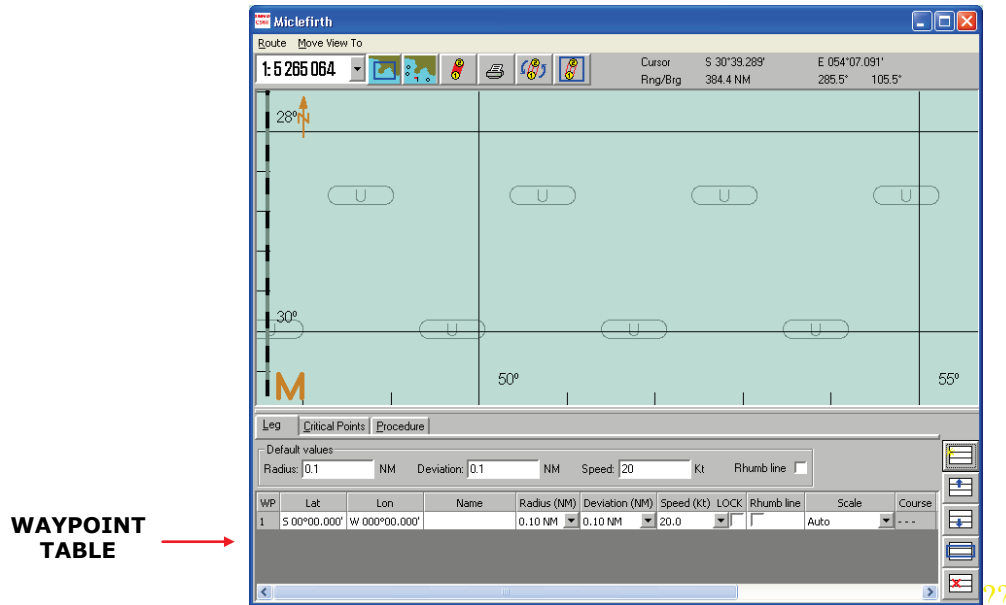
- 3 Insert an additional waypoint between two waypoints by moving the cursor along a leg and pressing the left cursor key.
  - A movable waypoint symbol will be displayed at the cursor position.
- 4 Move the cursor to selected position and press the left cursor key to fix the new waypoint.
- 5 Change the waypoint radius by moving the cursor to a waypoint, and then pressing and holding the **Ctrl** keyboard key while using the scrolling function on the “mouse”.
  - *Note that the radius is not validated by the system!*
- 6 Save the route by tapping the **Route** menu followed by the **Save** command.



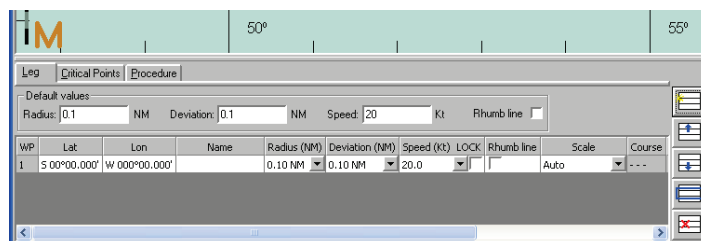
If it should be necessary to move the chart while using the cursor for planning a route, this can be done by moving the cursor to the point for the new chart center and pressing the middle cursor key.

## Numeric entries of waypoints

If latitude and longitude for waypoint positions are known, these values may be entered into the Waypoint table in the lower part of the **Route Editor** window.



- 1 If the Waypoints table is not visible, toggle it on by tapping the **Route** menu followed by the **Waypoints** command
- 2 Make sure that default values for the route are correct
- 3 Tap the **Insert new waypoint** key to insert the first waypoint in the route
  - The first row will be inserted in the table, with zero values in Lat and Lon fields



- 4 Enter correct latitude and longitude value for the first waypoint.
- 5 Continue entering new waypoints by tapping the **Insert new waypoint** key. Sequence waypoint numbers will be given automatically.

The remaining keys on the right side of the waypoint table are used as follows:

|                                                                                   |                                                                    |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|
|  | Moves highlighted waypoint one place up/down in the waypoint table |
|  |                                                                    |
|  | Displays the highlighted waypoint in center of the display         |
|  | Deletes the highlighted waypoint                                   |

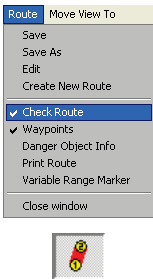
The waypoint table is also used for entering information about critical points in the route. Refer *Specifying critical waypoints*, page 82.

Checking the route

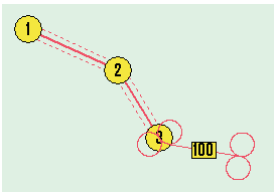
For route symbols, refer page 74.

When a route is created or modified, the legs will be automatically checked if the **Check Route** function is activated.

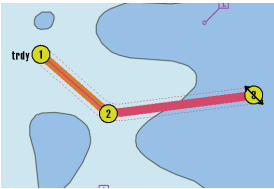
The function is activated by tapping the **Route** menu followed by the **Check Route** command, or by tapping the **Check Route** menu key.



The route will not be approved if it is crossing own ship's safety contour, crossing the boundary of a prohibited area or a geographical area for which special conditions exist.

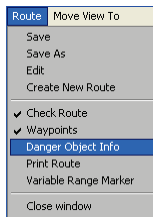


While the system is checking the route, the legs will be drawn with a wide blue line.



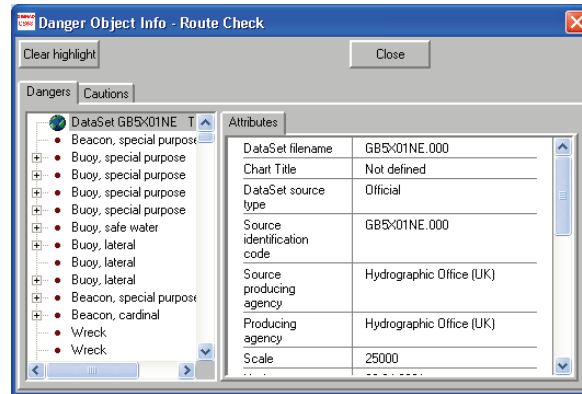
When a leg is checked and approved, this will be indicated with a wide orange line.

When a leg that is checked and not approved, this will be indicated with a wide red line.



### Displaying information about danger objects

When the **Check Route** function is activated, information about danger objects may be displayed by tapping the **Route** menu followed by the **Danger Object Info** command. The **Danger Object Info** dialog will be displayed.

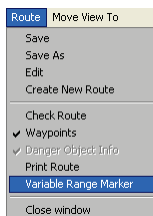


This dialog will display all items that cause the route to not be approved.

#### Note

*The **Danger Object Info** dialog will only be available when the **Check Route** function is active.*

### Using Variable range marker

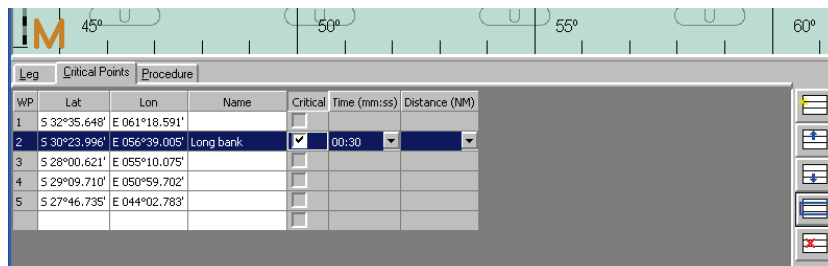


The VRM function used for indicating a guard zone may also be used when planning a route. The function is started by tapping the **Route** menu followed by the **Variable Range Marker** command.

Refer *Variable range marker*, page 64.

## Specifying critical waypoints

Each named waypoint in a route may be defined as critical in the **Critical Points** tab in the **Waypoint** table.



| WP | Lat          | Lon           | Name      | Critical                            | Time (mm:ss) | Distance (NM) |
|----|--------------|---------------|-----------|-------------------------------------|--------------|---------------|
| 1  | S 32°35.648' | E 061°18.591' |           | <input type="checkbox"/>            |              |               |
| 2  | S 30°23.996' | E 056°39.005' | Long bank | <input checked="" type="checkbox"/> | 00:30        |               |
| 3  | S 28°00.621' | E 055°10.075' |           | <input type="checkbox"/>            |              |               |
| 4  | S 29°09.710' | E 050°59.702' |           | <input type="checkbox"/>            |              |               |
| 5  | S 27°46.735' | E 044°02.783' |           | <input type="checkbox"/>            |              |               |

When a waypoint is defined as critical, a **Critical warning** will be displayed in the Toolbar before the vessel reaches the waypoint.

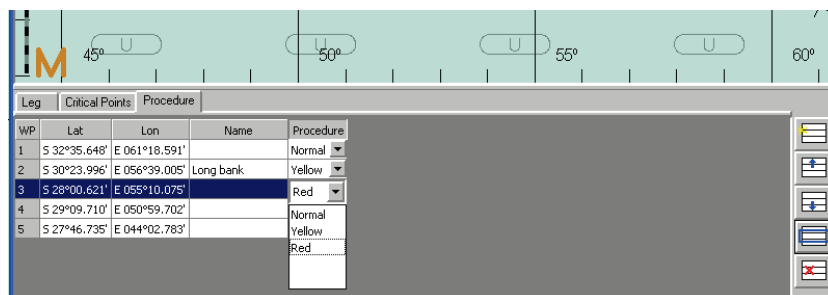
The time for when the message should be shown is defined in the **Time** (in minutes) or the **Distance** (NM) fields in the **Waypoint** table.

## Defining waypoint procedures

By defining a procedure for a waypoint, an automatic procedure alarm will be activated before the vessel reaches the waypoint.

Activate the procedure as follows:

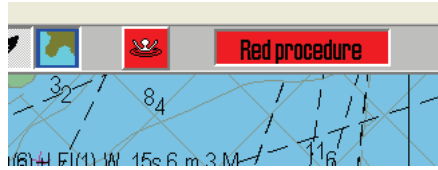
- 1 Create a new route or open the route that should include a Procedure alarm
- 2 Activate the **Procedure** tab in the Waypoint table
- 3 Press the down-arrow in the **Procedure** column for the waypoint that is to have a procedure alarm defined



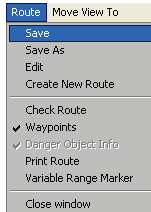
| WP | Lat          | Lon           | Name      | Procedure |
|----|--------------|---------------|-----------|-----------|
| 1  | S 32°35.648' | E 061°18.591' |           | Normal    |
| 2  | S 30°23.996' | E 056°39.005' | Long bank | Yellow    |
| 3  | S 28°00.621' | E 055°10.075' |           | Red       |
| 4  | S 29°09.710' | E 050°59.702' |           | Normal    |
| 5  | S 27°46.735' | E 044°02.783' |           | Yellow    |

- It is possible to define a waypoint with normal, yellow or red procedure
- 4 Save the file when procedure alarms are defined for all waypoints.

When the vessel reaches a waypoint with defined procedure alarm, an alarm field will be displayed in the tool bar showing procedure color.

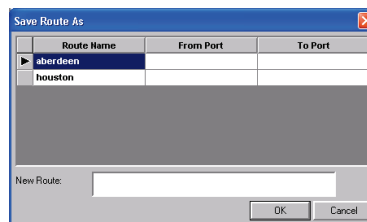


## Saving a route



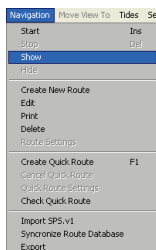
When all waypoints are entered or when a route is modified, the route is saved by tapping the **Route** menu and selecting **Save**.

If the route is to be saved with a different name, the **Save As** command must be selected. The following dialog for entering the route name will be displayed:

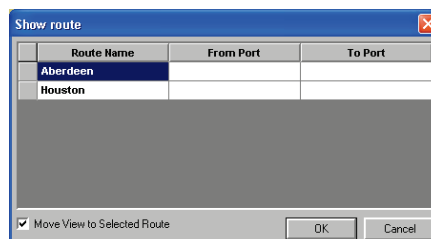


Enter the new name for the route in the **New Route** field, confirm the entry and close the dialog by tapping **OK**.

## 7.6 Displaying routes



Preplanned routes may be displayed by selecting the **Navigation** menu followed by the **Show** command. Select the route that is to be displayed from the **Show Route** dialog.



The **Move View to Selected Route** option is only available if the Follow ship function is not active. Refer page 49.

If **Move View to Selected Route** is activated, the selected route will be drawn with black color in the chart. If this option is not activated, the route will be displayed with orange legs and waypoints.

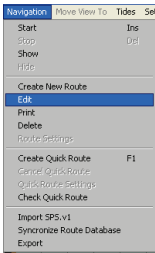
There is no limitation to number of routes that may be shown simultaneously.



A displayed route is removed from the display from the **Hide Route** dialog. This dialog is activated by selecting the **Navigation** menu followed by the **Hide** command.

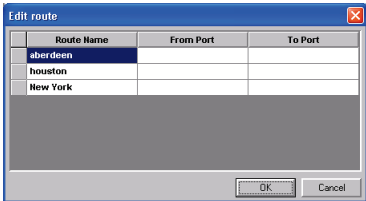
## 7.7 Modifying routes

Any parameter in a route may be modified after the route has been created and saved.



A route is modified by tapping the **Navigation** menu followed by the **Edit** command.

- The **Edit Route** dialog will be opened in the **Route Editor** window.



Select the route that is to be modified from the list.

When the selection is confirmed by tapping **OK**, the route will be displayed in the **Route Editor** window.

The route may now be modified by:

- using the cursor
- manually edit waypoint parameters into a waypoint table

## Using the cursor for modification

When the route that is to be modified is displayed, the cursor may be used to edit the route.



To move a waypoint, activate the waypoint by positioning the cursor over selected waypoint.



Press the left cursor key, and move the cursor to the new position. Accept the new position by repressing the left cursor key.



Additional waypoint can be inserted between two existing waypoints by moving the cursor along the selected leg. Accept the new waypoint by pressing the left cursor key, and press the left cursor key again when the waypoint is moved to selected position.

A waypoint is deleted from the route by locating the cursor over the waypoint and pressing the right cursor key.

Save the route as described in page 83.

## Modifying a route by using the Waypoint dialog

After the route that is to be modified is selected and displayed, the Waypoints list can be displayed in the lower part of the **Route Editor** window.

The waypoints may now be modified in the table as described in *Numeric entries of waypoints*, page 79.

The screenshot shows the 'Waypoint' dialog window with the 'Leg' tab selected. Below the 'Default values' section, there is a table with the following data:

| WP | Lat          | Lon           | Name      | Radius (NM) | Deviation (NM) | Speed (kt) | LOCK                     | Rhumb line               | Scale |
|----|--------------|---------------|-----------|-------------|----------------|------------|--------------------------|--------------------------|-------|
| 1  | S 30°23.996' | E 056°39.005' | Long bank | 0.30 NM     | 2.00 NM        | 15.0       | <input type="checkbox"/> | <input type="checkbox"/> | Auto  |
| 2  | S 28°00.621' | E 055°10.075' |           | 0.30 NM     | 2.00 NM        | 15.0       | <input type="checkbox"/> | <input type="checkbox"/> | Auto  |
| 3  | S 29°09.710' | E 050°59.702' |           | 0.30 NM     | 2.00 NM        | 15.0       | <input type="checkbox"/> | <input type="checkbox"/> | Auto  |
| 4  | S 27°46.735' | E 044°02.783' |           | 0.30 NM     | 2.00 NM        | 15.0       | <input type="checkbox"/> | <input type="checkbox"/> | Auto  |

Save the route as described in page 83.

### Reversing a route



A route may be reversed by tapping the **Reverse Route** toolbar key in the **Route Editor** window. The waypoints will immediately be shown in reversed order, both in the Waypoint table and in the chart.

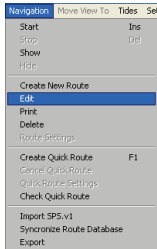
Save the route as described in page 83.

The route may also be reversed from the **Start Voyage** dialog. Refer *Starting a voyage*, page 94.



**Do not reverse an active route!**

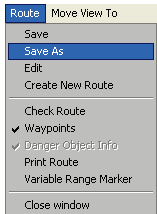
### 7.8 Copying a route



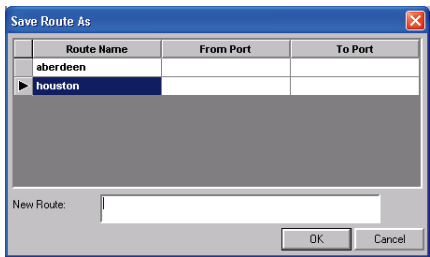
A route may be copied by opening the route and saving it with a new name.

Open the **Route Editor** window by tapping **Navigation** menu followed by the **Edit** command, and select the route that is to be copied.

If the **Route Editor** window already is open, the route is selected by tapping the **Route** menu followed by the **Edit** command.



The route may now be saved with a new name by tapping the **Route** menu followed by the **Save As** command. The **Save Route As** dialog will be displayed.



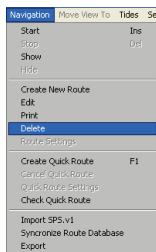
Enter a new name for the route in the **New Route** field, and confirm by tapping **OK**.

## 7.9 Printing a route

All waypoints in a route may be printed if a printer is connected to the CS system. The function is started by using one of the following procedures:

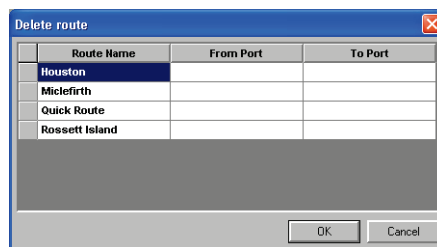
- Tapping the **Navigation** menu followed by the **Print** command
- When the **Route Editor** window is active, tapping the **Route** menu followed by the **Print Route** command
- By tapping the **Print** key in the **Route Editor** window

## 7.10 Deleting a route

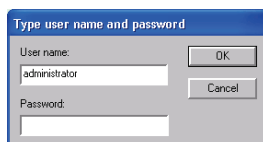


A saved route is deleted from the CS68 system by selection the **Navigation** menu followed by the **Delete** command.

- The **Delete route** dialog is displayed.



Select the route that is to be deleted, and confirm the entry by tapping **OK**.



To avoid that a route is unintentionally deleted, the command is password protected.

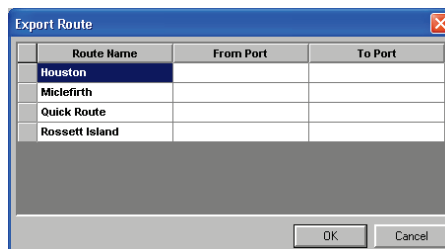
Type “1234” in the **Password** field, and confirm the entry by tapping **OK**.

## 7.11 Exporting routes

Routes created in a CS68 system may be exported for use in other CS68 systems, or as a backup routine.

A saved route is exported by selection the **Navigation** menu followed by the **Export** command.

- The dialog box for selecting route name will be displayed.



Select the route that is to be exported and confirm the entry by tapping **OK**.

A new dialog for entering route name and destination folder is displayed. The route is saved by tapping **Save** in this dialog.

## 7.12 Importing routes

Route created on a remote computer may be imported to the CS68 system. Two different methods are available for import:

- Routes imported individually by tapping the **Navigation** menu followed by the **Import SPS.v1** command. The route to be imported is selected from the **Open** dialog.
- All routes imported by tapping the **Navigation** menu followed by the **Synchronize Route Database** command. All routes in the default route directory will now be automatically imported to the CS system.

## **8 NAVIGATING WITH THE CS68**

This section holds procedures for operation and for sailing along a preplanned route.

## 8.1 General

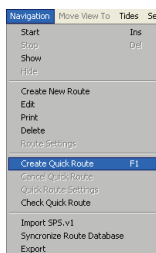
When the CS system is set up and charts installed according to instructions in the previous pages, the system will display the vessel in real time on the chart. The vessel's position will continuously be determined in relation to land, charted objects, aids-to-navigation, and unseen hazards.

The system may be used as a monitoring system, or by sailing manually along a predefined route as described in the following sections.

## 8.2 Creating and sailing along a quick route

The CS68 offers a sail to position function by creating a route from the vessel's current position to a cursor position.

Use the following procedure to start the quick route function:

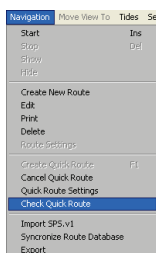
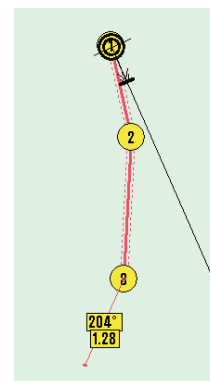


- 1 Select the **Navigation** menu followed by the **Create Quick Route** command. The function may also be started by tapping the **F1** key.

- The first waypoint will now be located at the vessel position.

- 2 Continue entering waypoints by moving the cursor to new positions and pressing the left cursor key.

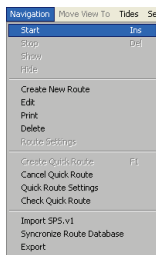
- Waypoints may be moved, added and removed when the route is created as described in page 84 onwards.



If the quick route is created in a dangerous area, it is recommended to have the route automatically checked as the waypoints are entered. This function is enabled by selecting the **Navigation** menu followed by the **Check Quick Route** command.

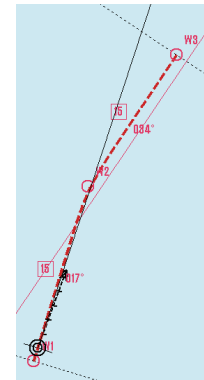
Active function is indicated with a tick in front of the command as shown on the figure.

The quick route function is aborted by tapping the **Navigation** menu followed by the **Cancel Quick Route** command.



3 Start sailing along the quick route by selecting the **Navigation** menu and tapping the **Start** command. It is also possible to start the function by tapping the **F1**.

- When activated the AIS voyage data dialog will pop up. By selecting **Update AIS** the AIS will be automatically updated if connected with a two-way communication to the AIS system.



- The display will now change to show bearing and planned speed as shown in the figure to right.

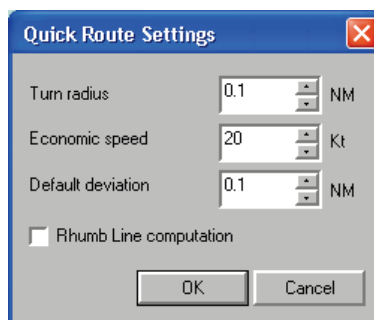
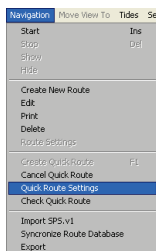
When the route is started, it will automatically be saved as **Quick Route**, and may be treated as any preplanned route created in the **Route Editor** window.

When a quick route is started it will automatically overwrite previously saved quick routes.

The voyage is aborted by tapping the **Navigation** menu followed by the **Stop** command.

## Parameter setting for the quick route

Parameters used when creating a quick route are defined in the **Quick Route Settings** dialog. The dialog is activated when a route is under construction by tapping the **Navigation** menu followed by the **Quick Route Settings** command.



### Note

*The Quick Route Settings command is only available when a quick route is under construction.*

## 8.3 Sailing along a predefined route

The voyage function in the CS system makes it possible to sail along any preplanned route and the system will give an alarm if the vessel's heading or position differs from predefined values defined when the route was planned. The system will also give a wheel over warning before a planned turn.

Voyage

When the voyage function is started, the voyage information field in the tool bar will be activated to show current voyage information.

|                 |          |             |
|-----------------|----------|-------------|
| - To London -   |          |             |
| XTD             | -24 m    | CalcSPD=SOG |
| To WPT          | 2        |             |
| TRK CRS         | 000°     |             |
| DWOL            | 1.093 NM |             |
| TWOL            | 4m 17s   |             |
| Next WPT        | 3        |             |
| Next leg        | 039°     |             |
| - Destination - |          |             |
| WPT             | 6        |             |
| DTA             | 362.7 NM | TTA 7h 26m  |
| ETA             | 01:30    | 10.05.2014  |

The **Route** window will also be automatically activated when the voyage function is started. It is possible to remove this window from the display by deselecting it from the **Window** menu.

The window is divided in two sections, separated by a horizontal line. The upper section shows information about current waypoint, while the lower section holds information about the route.

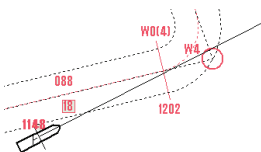
The window contains the following information:

|                     |                                                         |
|---------------------|---------------------------------------------------------|
| <b>XTE:</b>         | Cross track error                                       |
| <b>CalcSPD:</b>     | Speed used for ETA calculation. Refer page 96           |
| <b>To WP:</b>       | Number and name for next waypoint                       |
| <b>TRK CRS</b>      | The current course to steer to keep boat on track       |
| <b>Next leg:</b>    | Bearing on next leg                                     |
| <b>DWOL / TWOL:</b> | Distance and time to wheel over line                    |
| <b>Next WPT:</b>    | Number and name for last waypoint                       |
| <b>DTA / TTA:</b>   | Distance and time to arrival (last waypoint)            |
| <b>ETA:</b>         | Estimated time and date of arrival at the last waypoint |

## Selecting the start position

A predefined route may be started from any leg on the route, and the system will automatically select the leg that is closest to the vessel's actual position.

### Note



The route will not start if:

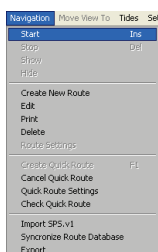
- The difference between vessel heading and bearing on leg exceeds  $2 \times \text{Off course limit}$ . Refer **Alarm Limit**, page 95
- The difference between vessel heading and bearing on leg is more than  $90^\circ$

If the vessel is outside the accepted deviation or if the first waypoint is unreachable, the voyage will not be started.

## Starting a voyage

When the vessel's position is within the deviation set for the route, the voyage can be started by tapping the **Navigation** menu followed by the **Start** command.

The **Start Voyage** dialog will be displayed.



**Start Voyage**

| Route Name               | From Port | To Port |
|--------------------------|-----------|---------|
| To Kiel                  |           |         |
| To London                |           |         |
| To Stavanger from Bergen |           |         |

From Way Point:

| WP | Name |
|----|------|
|    |      |

Departure: 20:26 09.05.2014

To Way Point:

| WP | Name |
|----|------|
|    |      |

Arrival: 20:26 09.05.2014

Operator signal:

Wheel over warning: 1 min      Wheel over: 30 sec

Alarm Limit: Off Course 10 ?

Leg Display Properties:

☒ Leg heading    ☒ Speed

☐ Reverse Route

ETA calculation:

☐ Use fixed speed 12 kn

☐ Use planned speed

☒ Use SOG

☒ Always use SOG for current leg (will also override speed lock for current leg)

The selected speed calculation will be active for all legs except:

- For legs where speed lock is active
- When 'use SOG for current leg' is checked

OK      Cancel

The selections in the dialog are used as follows:

- Route Name:** Lists all predefined routes.
- From/To Port:** Shows additional information about the route.
- From/To Waypoint:** Shows additional information for waypoints.  
If other than last waypoint is selected, the route will be defined from WP1 to the selected waypoint.
- Departure/Arrival:** Displays estimated time for departure and arrival for selected waypoints.
- Operator signal:** Wheel over warning:  
Specifies the time in minutes before reaching the wheel over point at which a wheel over warning will be given.  
Wheel over alarm:  
Specifies the warning time in seconds before reaching a wheel over point. This time has to be min.15 seconds less than the time defined for Wheel over warning.
- Alarm Limit** Sets the off course limit before an alarm is activated.
- ETA calculation** Speed type used for calculating estimated time of arrival.
- Leg Display Properties** Toggles on/off the display of leg heading and speed.
- Reverse Route:** Activated if the route is to be reversed.  
Select the route that is to be started and confirm the entry by tapping **OK**.  
Selected route will be displayed with dotted red color for all legs. The **Route** window will be displayed, and the Voyage information field will show voyage status. Refer page 96.

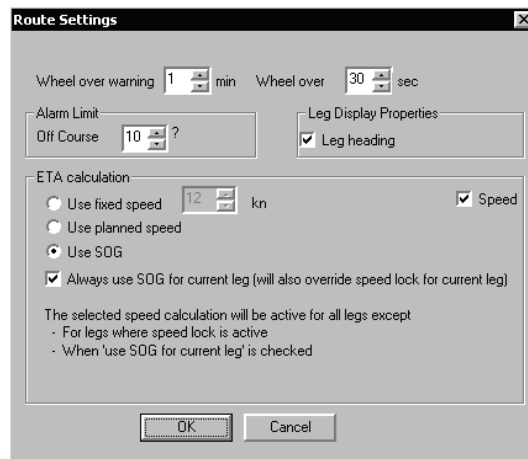
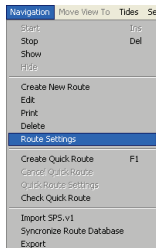
## Stopping the voyage

The voyage is stopped by tapping the **Navigation** menu followed by the **Stop** command.

.

## Changing route operation parameters

Route operation parameters may be modified when a route is active by tapping the **Navigation** menu followed by the **Route Operation Settings** command.



The following parameters may be changed:

**Operator signal:** Wheel over warning:

Specifies the time in minutes before reaching the wheel over point at which a wheel over warning will be given.

Wheel over:

Specifies the warning time in seconds before reaching a wheel over point. This time has to be min.15 seconds less than the time defined for Wheel over warning.

**Alarm Limit** Sets the off course limit before an alarm is activated.

**Leg Display Properties** Toggles on/off the display of leg heading and speed.

**ETA calculation** Speed type used for calculating estimated time of arrival.

## Voyage messages

### Voyage

When a route is activated, voyage messages and warnings will be indicated in the **Voyage** information field. The following indications and colors are used:

| TEXT                 | COLOR  | MESSAGE EXPLANATION                                                                                                  |
|----------------------|--------|----------------------------------------------------------------------------------------------------------------------|
| Voyage               | Grey   | No voyage activated.                                                                                                 |
| Voyage               | Green  | Normal voyage with no warnings.                                                                                      |
| Deviation from route | Red    | The vessel's position is more off track than the given tolerance. Refer <b>Deviation</b> , page 76.                  |
| Off course           | Yellow | The vessel's heading differs more than the given tolerance from planned heading. Refer <b>Alarm Limit</b> , page 95. |
| Wheel over warning   | Yellow | Wheel over point pre-warning.                                                                                        |
| Wheel over           | Red    | Wheel over warning. Refer <b>Operator signal</b> , page 95.                                                          |
| Turning              | Yellow | The vessel is in a route turn.                                                                                       |
| End of route         | Yellow | The vessel has reached the end of the route.                                                                         |
| Waypoint unreachable | Red    | Waypoint unreachable.                                                                                                |
| Error                | Red    | Route navigation generic error.                                                                                      |

Yellow message indications are warning messages. They indicate conditions that, if ignored, could result in critical situations. A yellow message activates the Attention window.

A red message indication is an alarm message. All of the alarm messages are accompanied by an audible alarm, and with an alarm message in the Attention window.

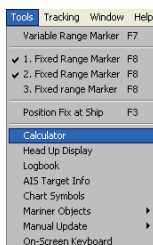
## 8.4 Calculating position and range/bearing

The calculator included in the CS68 is used for two calculating functions:

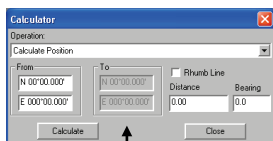
- Calculating position
- Calculating range and bearing

Both functions may be used with great-circle or rhumb line computation.

The function is activated by tapping the **Tools** menu followed by the **Calculator** command.



## Calculate position



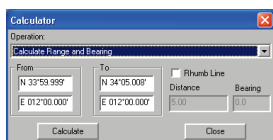
Used for calculating the coordinates for a new point from a given position, and with known range and bearing from this position.

The position may be calculated by using different methods:

- Entering the known position, distance and bearing in the **From**, **Distance** and **Bearing** fields, and then tapping **Calculate**
- Positioning the cursor in the chart and pressing the left cursor key to set the **From** position, entering known values for **Distance** and **Bearing**, and then tapping **Calculate**

Calculated position is displayed in the grayed fields.

## Calculate range and bearing



Used for calculating range and bearing between two known positions.

The range and bearing are calculated by using one of the methods described below:

- Entering coordinates for known positions in the **From** and **To** fields, and then tapping **Calculate**
- Positioning the cursor in the chart and pressing the left cursor key to set the **From** position, and entering known values **To** field. Range and bearing will be calculated by tapping **Calculate**
- Positioning the cursor in the chart and pressing the left cursor key to set the **To** and **From** positions. A line will then be drawn in the chart between the **To** and **From** points, and range and bearing will be calculated by tapping **Calculate**

The line is removed from the display by moving the cursor to one of the end points and pressing the right cursor key.

Calculated range and bearing are displayed in the grayed fields.

## 8.5 Alarm messages

The CS68 system will continually check for danger situations and system faults while the system is running.

When an alarm situation occurs, the Attention window with an alarm message will be displayed, and an audible alarm will be activated.

The CS68 includes voice alarms. These alarms will replace some of the audible alarms if the function is activated in the **System Configuration** dialog (Aux. settings tab). Refer the separate CS68 Installation manual.

There are three categories of system messages:

### Alarm messages

Alarm messages are generated when conditions are detected that critically effect the capability or performance of the system.

You must critically examine all alarm messages to determine their cause and effect.

### Warning messages

Warning messages inform you of the occurrence of conditions that could result in unwanted system response or eventual failure.

### Information messages:

These messages inform you of conditions that are noteworthy, but that have no serious effect on the performance of the system.



An alarm or a warning message is silenced by tapping the silence icon in the Attention window.

The audible alarm will sound again and the light start flashing if another alarm situation is reported.

All alarm messages will remain in the Attention window until the reason for the alarm is removed.

Refer **SYSTEM MESSAGES**, page 124 onwards.

## **9 MANAGING THE CHART DATABASE**

This section includes description of how the chart database is automatically and manually updated.

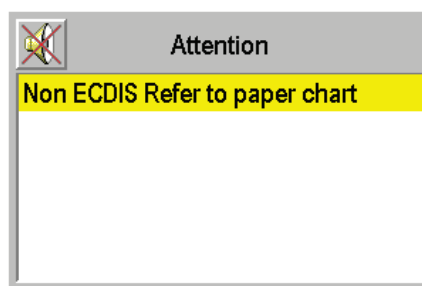
## 9.1 General

The chart database should always be updated with the latest available information, and all chart suppliers will offer an update service. Refer to separate information from the supplier that has delivered charts to your CS system.

In addition to official chart updates, it is possible for the user to enter mariner objects to the chart database.

### Caution

*The CS68 system must use authorized charts to be ECDIS approved. When not using an official chart, this will be indicated as per below message in the Attention window.*



## 9.2 Official chart updates

SOLAS convention requires that all charts must be updated for intended voyages. Before planning a new route or prior to updating an existing voyage, it is required to receive the latest chart updates.

All chart updates will be stored in a separate update database, and it will be possible to review any updates whenever selected.

### Automatic chart updates

The chart suppliers will offer different updating procedures for the chart subscribers. It can be done by connecting the system to the supplier's server, by CD, DVD, floppy or USB flash disk. If using charts supplied from Simrad, please contact your Simrad dealer to get your charts updated, a USB flash drive following the CS68 system (or ordered separately) contains three worldwide databases that can be updated online at all times on any computer onboard connected to the internet. New USB flash drive with updated chart databases can be obtained by contacting your Simrad dealer if you don't have one.

There are two ways to automatically update the charts used on the ECDIS system:

- 1 Exchange the entire database that you find outdated with a new release of the entire database.

- 2 Update the already installed database with additional info published between the full database releases.

The full database release is called **Base releases**.

The intermediate releases will typically contain most (or all) changes between publications of base releases and are called **Update releases**.

If the the following databases are used, updates and new **Base releases** are easily available:

- Jeppesen ENC
- Jeppesen Professional +
- JeppesenPrimar

### **Download Update release**

The build-in update feature on the C-Map Chart Manager can be used to update the current database with the updates that are made since the database was installed.

#### **Note**

*This update type will contain updates to current cells in the database, but will not contain new cells or cancellation of outdated cells. Typically selected as an in-between update, since it can be achieved very quickly.*

Follow these instructions to use the build-in update feature:

- 1 In the **Setup** menu under **Charts** and **C-Map Chart Manager**, choose the tab **Updates**.
- 2 Select the database to update and if the ECDIS is connected to the Internet, press the button **Update via Internet** (see section 1.4 for more information about connection to internet).
- 3 After a couple of minutes you will receive a message confirming that the selected database is updated.

If the computer is not directly connected to Internet, an update of the database can still be achieved using the same tool:

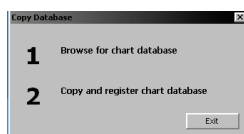
- 1 In the **Setup** menu under **Charts** and **C-Map Chart Manager**, choose the tab **Updates**.
- 2 Select the database to update and if the ECDIS is not connected to the Internet, press the button **Create update order**.
- 3 A new dialog appears: **Browse for folder**. Choose the removable flash drive that you have inserted and let the program store the update file on the selected disc.

- 4 Unplug the flash drive after completion.  
You can now send the update file as an attachment to *updates@c-map.no* through your usual e-mail program on another computer with internet connection.
- 5 Give the automatic update server a couple of minutes to generate your update file and wait for a reply. Copy the attached file in the reply e-mail to the USB flash drive and plug it back into the ECDIS.
- 6 Select again from the **Update tab** in the **C-Map Chart Manager** to **Update from file**.
- 7 Select the file with the new dialog **Browse for folder** and click **OK**. After a couple of minutes you will receive a message confirming that the selected database is updated.

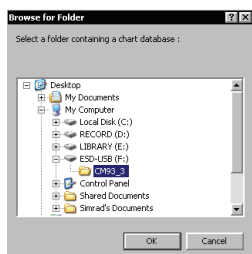
### **Download Base release**

Changing the entire database can be done if you have a complete new database available on an external media such as a DVD or USB flash drive. It will delete the entire existing database and replace it with the new one. Such upgrades can take a little longer, but you will ensure that you now have a database with all new cells, all P&T messages and outdated cells are cancelled.

Enter the USB flash drive or connect an external DVD unit to enter a disc-based distribution, in an available USB port.  
(Preferably use the 2.0 high speed USB port and not the 1.1 USB port that have 10% of the transfer rate available compared to USB v2.0).



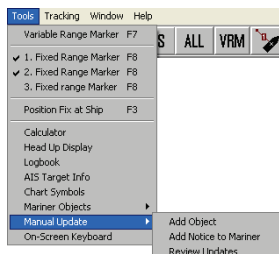
- 1 In the **Setup** menu, select **Charts** and **Copy database to HD**.



- 2 A new dialog will require that you point to where the database is currently stored, it could be on a USB flash drive or on a DVD disc. On the external device in the file tree, locate and select the database root folder and press **OK**.
- 3 The database will be copied to the correct location on the ECDIS and will overwrite existing databases of same type. (the program detects the type of database and overwrites the existing version of same type). Other databases are not affected by this.

## Manual updates

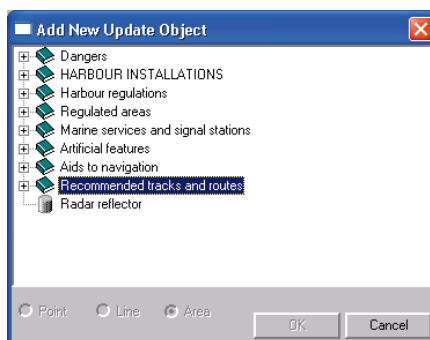
Manual update is only to be used for official chart updates. Other chart information can be added to the chart by using the Mariner Object function. Refer *Adding Mariner objects*, page 106.



Manual updates are added to the chart by tapping the **Tools** menu and **Manual Update** command, and then selecting either **Add Object** or **Add Notice To Mariner** commands.

**Add Object** command is used when entering chart updates without references to official Notice to Mariners, while **Add Notice To Mariner** command demands information obtained in Notice to mariners received from the authorities.

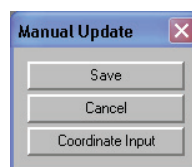
When **Add Object** command is selected, the **Add New Update Object** dialog is displayed.



The dialog is used for selecting object category. Each category may hold one or more sub-categories.

Select the type of object that should be added, and confirm the entry by tapping **OK**.

A symbol for the selected type of object will now be placed in the display center, and the **Manual Update** dialog will be displayed:



The object may now be located by the cursor or by entering coordinates if the symbol is a single point.

The object is saved by tapping **Save**.

To secure the chart update function, the operator's name or initials must be entered before the entry is accepted.

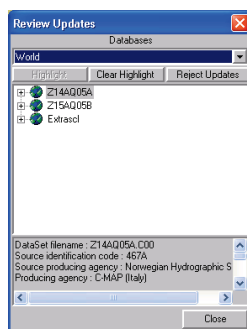


The update will be displayed on the screen with symbol according to selected object category.



When **Add Notice To Mariner** is selected, a dialog for entering information according to received updates is displayed.

Enter information in all fields, and confirm the entry by tapping **OK**.



### ***Review and rejecting manual chart updates***

All manual chart updates can be reviewed by tapping the **Tools** menu followed by the **Manual Update** and the **Review Updates** commands.

Date and editor information for an object is displayed by tapping the  symbol.

If **Highlight** is selected, the selected object will be highlighted and labeled with an arrow in the chart.

By tapping **Reject Updates**, all updates for the selected dataset are rejected.

### **Caution**

***Reject Updates is not a reversible command, and should not be used if not absolutely sure that all updates for the selected dataset are to be removed.***

### **Note**

*It is not possible to reject a single update by using this command. If a single update is to be removed or edited, this is done by using the Object Information window as described in page 24.*

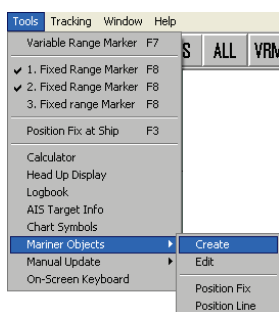
## 9.3 Adding Mariner objects

The CS68 system makes it possible for the user to plot own markers or areas to identify events, hazards etc in the chart. All entered user information is automatically saved, and will be visible in the chart independent of chart presentation settings.

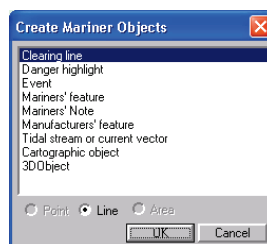
Information about objects created by the user may be obtained from the **Object Information** window (pressing the right cursor key). Refer page 24.

### Creating and saving a mariner object

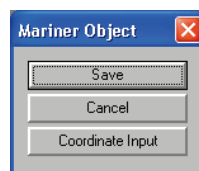
Mariner objects are positioned in the chart by selecting the **Tools** menu followed by the **Mariner Object** and **Create** commands.



The **Create Mariner Objects** dialog will be displayed, showing a list of different points, lines and areas that may be added to the chart.



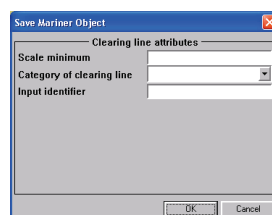
When the selection is confirmed by tapping **OK**, a symbol for the selected type of object will be placed in the display center, and the Mariner Object dialog will be shown:



The object may now be located by the cursor or by entering coordinates if the symbol is a single point.

The object is saved by tapping **Save**.

The **Save Mariner Object** dialog box for entering information about the object is displayed.



Enter all information necessary for later identification of the object, and tap **OK** to remove the dialog from the display.

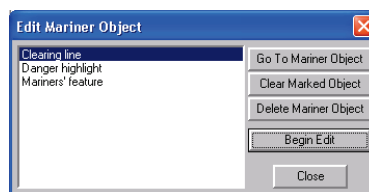
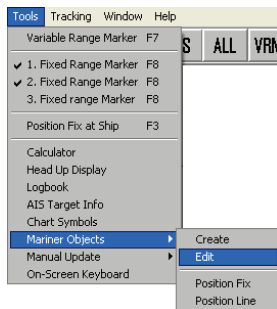
The displayed attributes in the **Save Mariner Object** dialog are dependent of which type of mariner objects you have selected.

The mariner object will now be displayed in the chart. Information about the object is obtained by pressing the right cursor key. Refer *Object information window*, page 24.

## Modifying and deleting a mariner object

A mariner object may be edited or removed from the display by tapping the **Tools** menu followed by **Mariner Objects** and **Edit** commands.

The **Edit Mariner Object** dialog will be displayed.



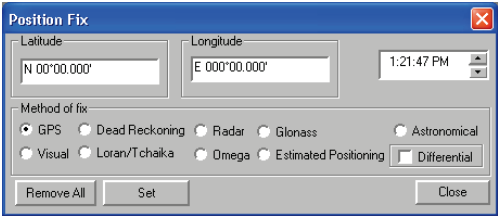
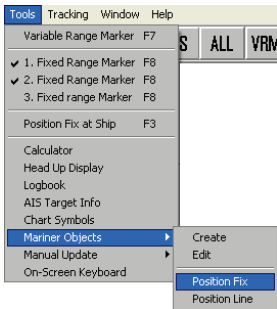
The keys in the dialog box have the following function:

|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Go To Mariner Object</b>                                                                                                                                                                          | Moves the display center to the selected mariner object, and highlights the object in the display.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Clear Marked Object</b>                                                                                                                                                                           | Clear the highlight on the object in the display.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Delete Mariner Object</b>                                                                                                                                                                         | Deletes the selected mariner object.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Begin Edit</b>                                                                                                                                                                                    | <p>Removes the Edit Mariner Object dialog from the display, and highlights the selected object in the screen. The Mariner Object dialog will be displayed.</p> <p>Use the cursor to edit the object as shown below.</p> <div>            A diagram showing a red line with three points labeled 271, 273, and 252. A cursor is positioned near point 273, and an arrow indicates it is being moved to a new position.         </div> <div>            A diagram showing a red line with three points labeled 271, 273, and 252. A cursor is positioned between points 271 and 273, and an arrow indicates a new point is being inserted.         </div> <div> <p>Move a point by pressing the left cursor key and moving the cursor to a new position.</p> </div> <div> <p>Delete a point by pressing the right cursor key.</p> </div> <div> <p>Insert a new point by pressing the left cursor key and moving the cursor to a new position.</p> </div> |
| A screenshot of the 'Mariner Object' dialog box. It has a title bar 'Mariner Object' and a close button. The main area contains a 'Save' button, a 'Cancel' button, and a 'Coordinate Input' button. | The changes are saved or rejected by tapping <b>Save</b> or <b>Cancel</b> in the <b>Mariner Object</b> dialog.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

Position fix points

The operator may manually place a position fix point, with a corresponding time label in the chart display.

The dialog for setting up a manual position fix point is accessed by tapping the **Tools** menu followed by **Mariner Objects** and **Position Fix** commands.



The time when the position fix is drawn may be set manually in the dialog.

The position fix point may now be set by moving the cursor to selected position and pressing the left cursor key. Latitude and longitude fields in the dialog will change to indicate accurate position for the point.

A position fix point is removed from the chart by moving the cursor to the symbol and pressing the right cursor key.

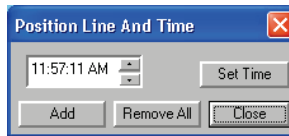
All position fix points are removed from the chart by tapping **Remove All**.



## Position lines

The operator may manually draw a position line on the display, and specify the time when the position line is drawn manually.

Tap the **Tools** menu followed by **Mariner Objects** and **Position Line** commands to access the **Position Line** dialog.



The keys in the dialog are used as follows:

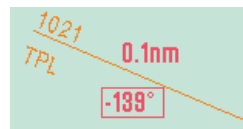
|                   |                                                                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Add</b>        | Activates the function. When this key is tapped, the position line may be added by moving the cursor to selected position and pressing the left cursor key. |
| <b>Remove All</b> | Removes all defined position lines                                                                                                                          |
| <b>Close</b>      | Closes the dialog                                                                                                                                           |



## Moving and deleting a position line

A Position line may be modified at any time by moving the cursor to the line and pressing the left cursor key.

The line will move as the cursor moves, and range and bearing from the line's original position will be displayed at the line. A position line that has been moved will be identified with TPL (Transferred Position Line) as shown on the figure below.

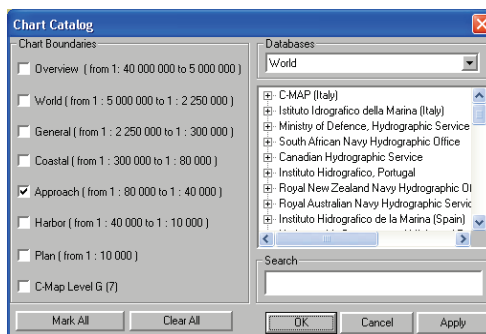
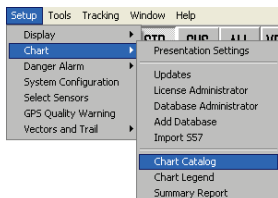


A position line may be removed from the display by pressing the right cursor key when the cursor is exactly on top of the position line.

## 9.4 Viewing available charts, chart legend and summary report

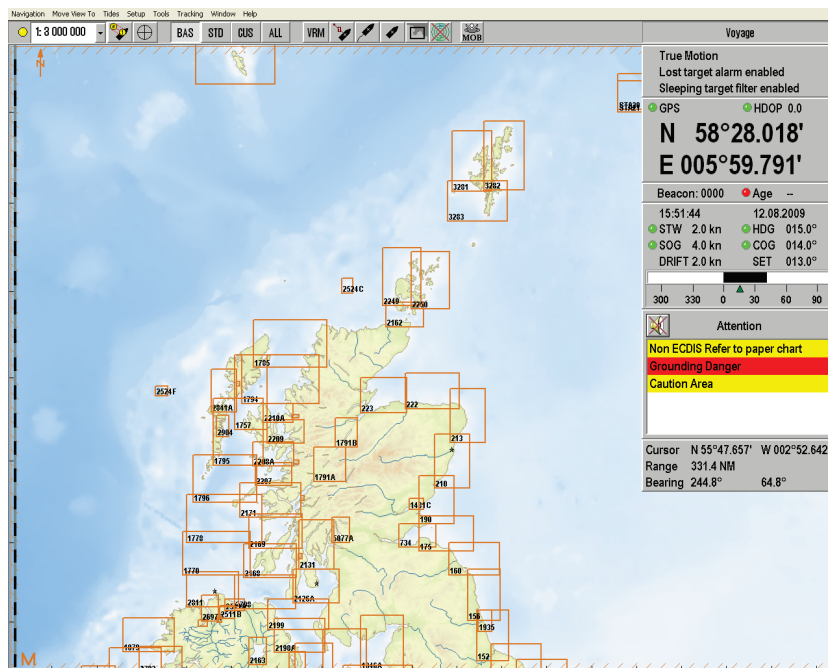
### Chart catalogue

All available charts may be viewed by tapping the **Setup** menu followed by **Chart** and **Chart Catalog** commands.



Select the chart category that should be displayed, and confirm by tapping **OK**.

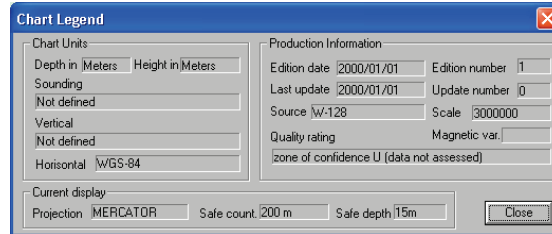
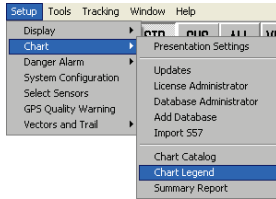
The dialogue will be closed, and all charts in selected category will be indicated with a red outline in the display:



The red outlines will remain in the display until the **Chart Catalog** dialog is re-activated, and **Clear All** tapped.

## Chart legend

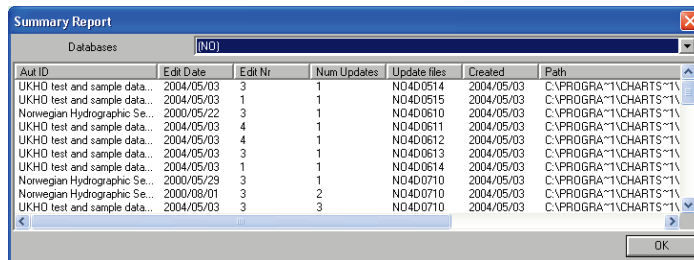
Information about active chart may be displayed by tapping the **Setup** menu followed by **Chart** and **Chart Legend** commands.



## Summary report

A summary report of official authority's update files may be displayed by selecting the **Setup** menu followed by **Chart** and **Summary Report** commands.

The summary report is displayed through a dialog as illustrated on the figure below:



The report contains the following information:

|                     |                                                                |
|---------------------|----------------------------------------------------------------|
| <b>Aut. ID</b>      | Identification of issuing authority.                           |
| <b>Edit Date</b>    | Date for issued update.                                        |
| <b>Edit Nr.:</b>    | Edition number for issued update.                              |
| <b>Num Updates</b>  | Number of updates in the affected cells for the issued update. |
| <b>Update Files</b> | Cell identifier of cell affected.                              |
| <b>Created</b>      | Date of application to SENC format.                            |
| <b>Path</b>         | Path where the update is stored on computer.                   |

## **10 MAINTENANCE**

This section holds descriptions for simple maintenance procedures that should be performed by the system operator.

## 10.1 Maintenance philosophy

All units in the CS system are “repair by replacement” units, and the operator is therefore required to perform only a very limited amount of preventive maintenance.

## 10.2 Cleaning the operator panel and the computer surface

Use a vacuum cleaner with a soft brush to avoid damage to the keys and the panel. If required, clean the keys and panel with a non-abrasive cloth moistened with mild soap solution.

## 10.3 Checking the connectors

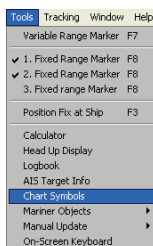
The connectors should be checked by visual inspection only. Push the connector plugs into the connector. If the connector plugs are equipped with a lock, ensure that this is in correct position.

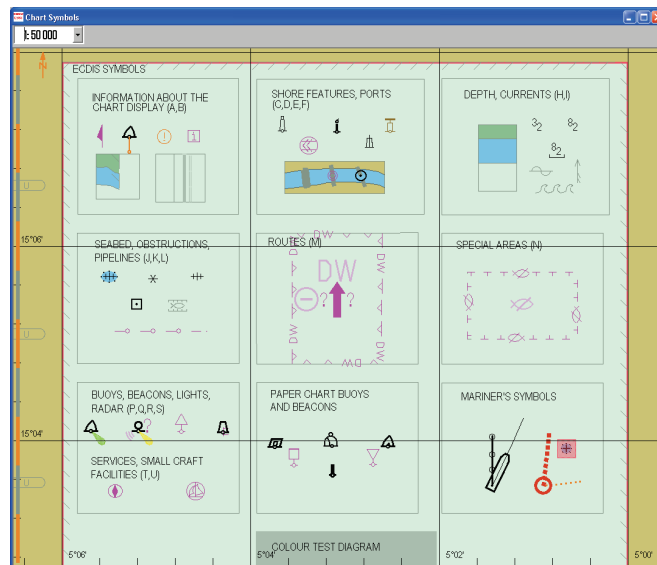
## 10.4 Verifying the display color

The **Chart Symbols** window includes a color test area to enable the mariner to detect the stage at which the display can no longer be used to discriminate important features by color.

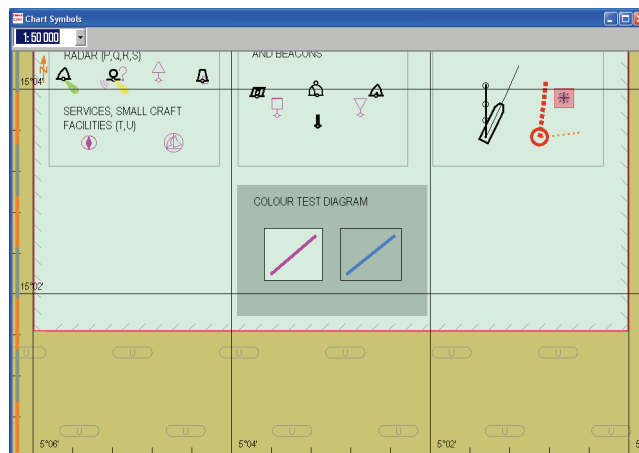
Use the following procedure to display the color test area:

- 1 Make sure that the **ChartletsBase** database is registered. Refer page 29.
- 2 Tap the **Tools** menu followed by the **Chart Symbols** command.
  - The **Chart Symbols** window will be displayed.





- 3 Set the scale to 1:50 000.
- 4 Enlarge the window to cover the complete screen by tapping the **Maximize** key.
- 5 Move the cursor to the middle of the color test diagram in the lower part of the area, and press the middle cursor key to center the display on this position.



- 6 Set the chart scale to 1:10 000.
  - A set of color tests will now be displayed.



- 7 Verify that the color for the diagonal lines can be clearly distinguished from each other. If not, the monitor has to be sent to Simrad for recalibration.

## 10.5 Backup and restore procedures

### General

The system does not include a DVD writer, but any DVD writer supporting Windows XP can be connected through one of the USB 2.0 ports to backup and restore the system.

It is recommended to have backup routines that are carried out regularly. The backup files may be restored if the original files are damaged or lost.



*It is strongly recommended to make a complete system backup when the system is installed and configured.*



*The Simrad Recovery Console and Simrad Backup Manager are programs that shall not be used under sailing conditions and when need for navigation is present. The programs are meant for service purpose only. If the ECDIS stops working, the voyage must be continued on the backup system (Simrad PLECDIS) or officially updated paper charts. The system can be recovered on previous backups, but this must not sacrifice safety on the bridge.*

### Simrad Recovery Console

The Simrad Recovery Console contains the following functions:

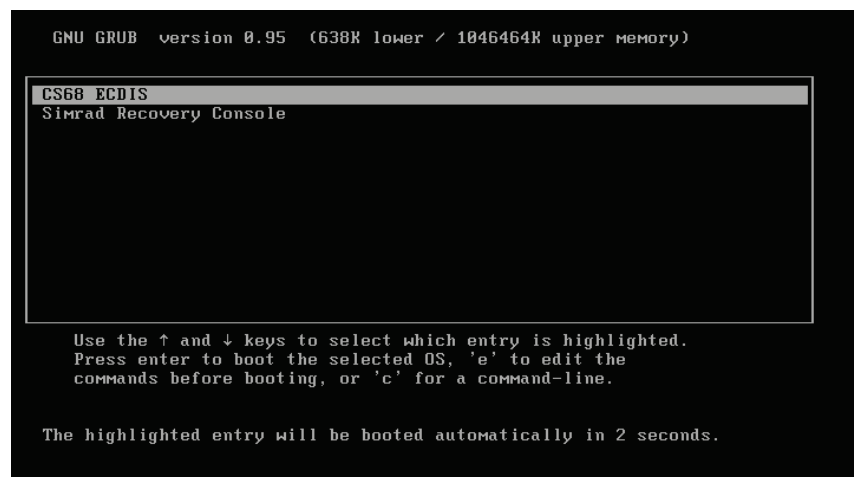
- 1 Recover the factory default settings
- 2 Make new backups to be stored in the library
- 3 Restore from library backup

### **Simrad Backup Manager**

The Simrad Backup manager is a program for writing library backups to a DVD for safe storage. You can also write backups from a DVD to the library. It is strongly recommended to store important backups on a DVD because the library is not considered as a safe storage for backup. All installations should have at least one set of DVDs to recover the default installation.

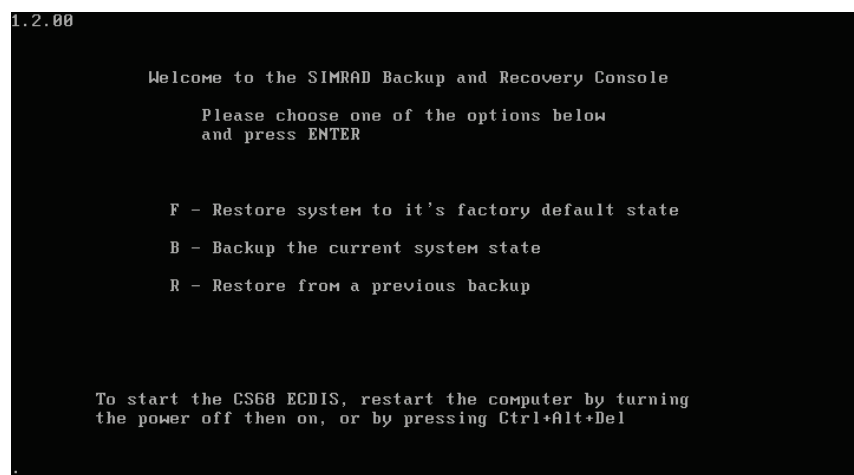
### **Entering the Simrad Recovery Console**

The recovery console mode has to be selected at start up. The picture below is shown for some seconds at turn on. When the picture is shown, select Simrad Recovery Console by using the keyboard arrows. If this is not performed, the unit automatically starts in the ECDIS mode.



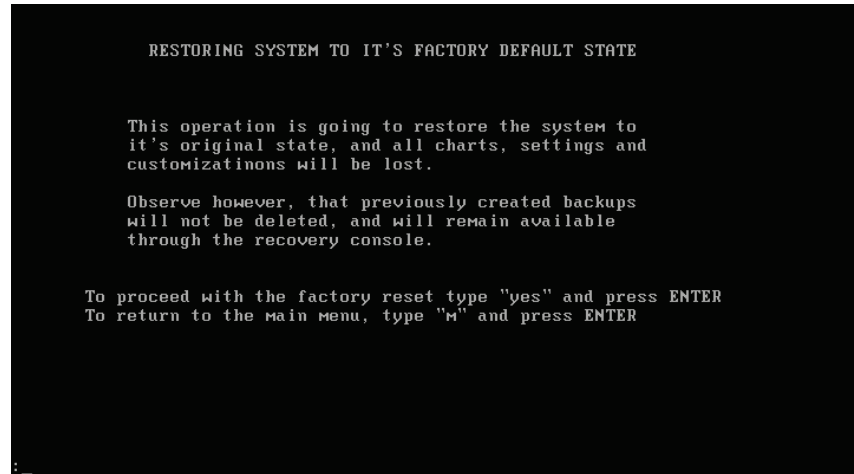
In the Simrad Recovery Console mode the following screen is shown with three alternatives:

- Press F to restore system to its factory default state
- Press B to backup the current system state
- Press R to restore from a previous backup

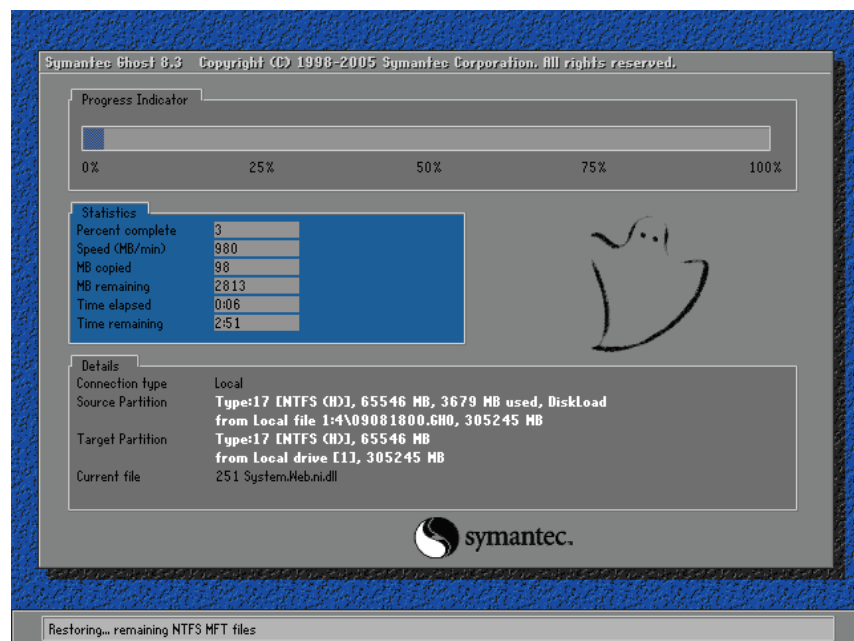


### Factory restore

When F is pressed followed by Enter the following picture is shown. Type yes followed by Enter to start the restore. (Press M to return to the menu).



When data is restored the following screen is shown:



When the restoring process is finished you will be asked to restart the computer or press CTRL+Alt+Del.

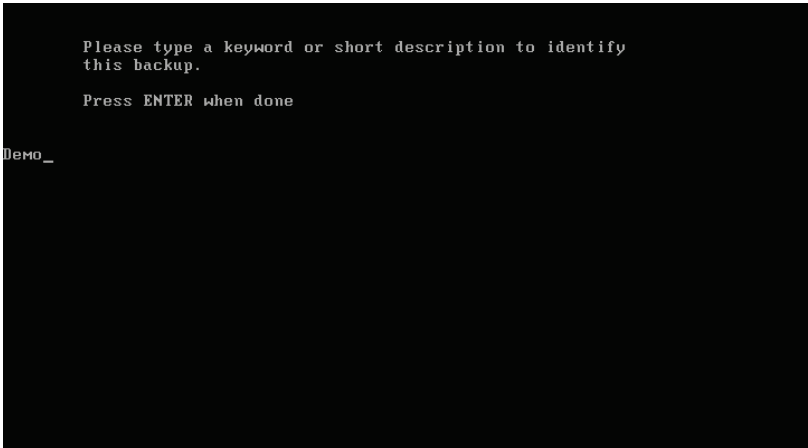


System restore completed.  
Restart the system by pressing CTRL+ALT+DEL or by  
turning the power off then on.

### ***Making a backup***

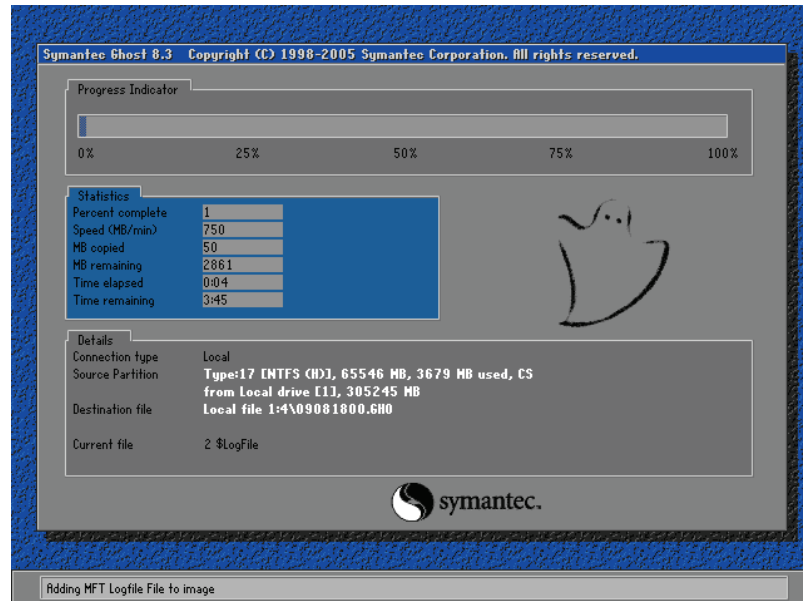
In the ‘Welcome to the Simrad Backup and Recovery Console’ screen, press **B** and the following picture is shown.

Type a keyword or a short description to identify the backup.  
This identification text will help you to select the correct backup  
when you are going to burn the backup to a DVD in the Simrad  
Backup manager:



Please type a keyword or short description to identify  
this backup.  
  
Press ENTER when done  
  
Demo\_

When the backup procedure is running the following screen is shown:



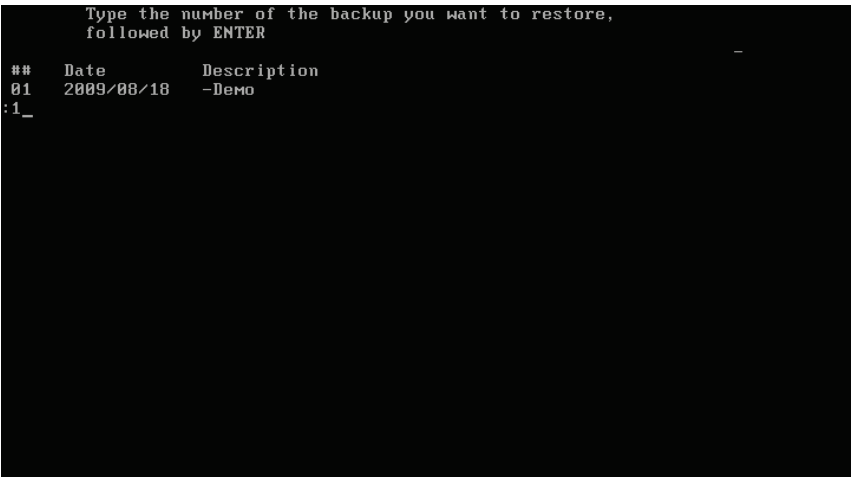
At the end of the procedure, the screen below is shown. Press any key to continue to the menu.



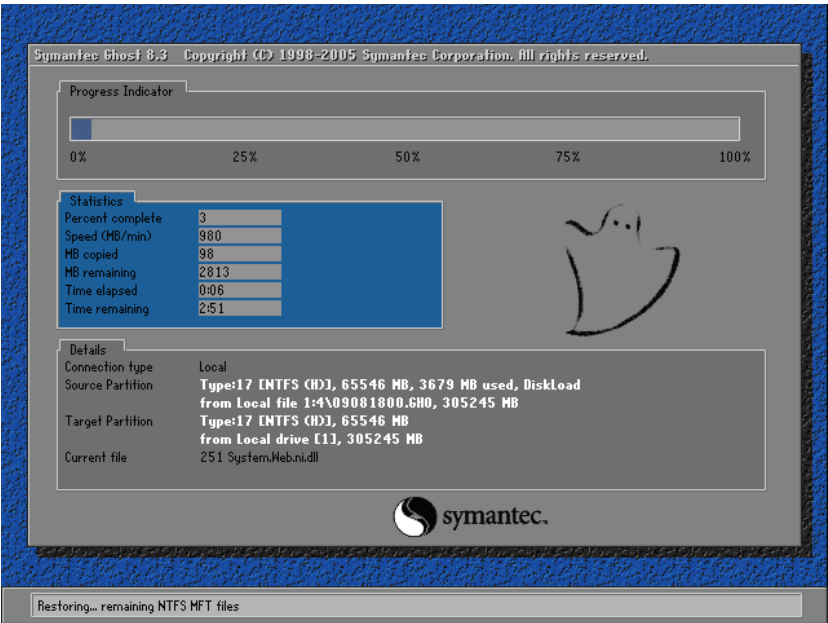
### ***Restore from previous backup***

In the ‘Welcome to the Simrad Backup and Recovery Console’ screen, press **R** to restore data from previous backup.

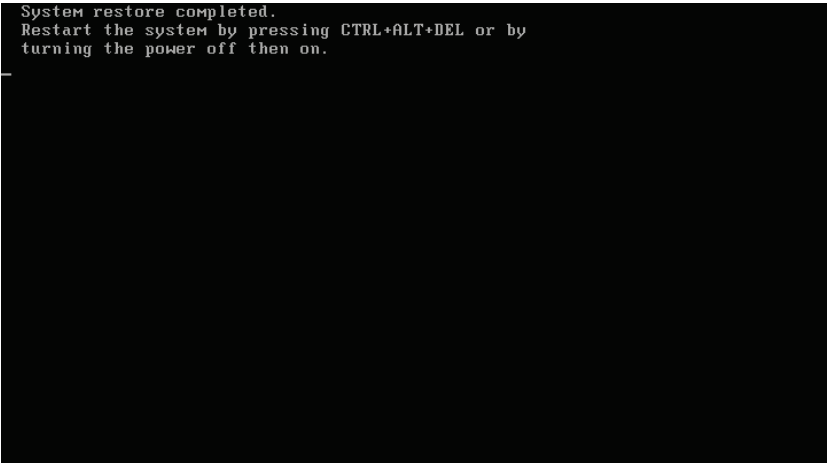
The following picture is shown. Type the name of the backup you want to restore.



When the restore process is running the following screen is shown:



When the restore process is finished the following screen is shown:



## Simrad Backup Manager

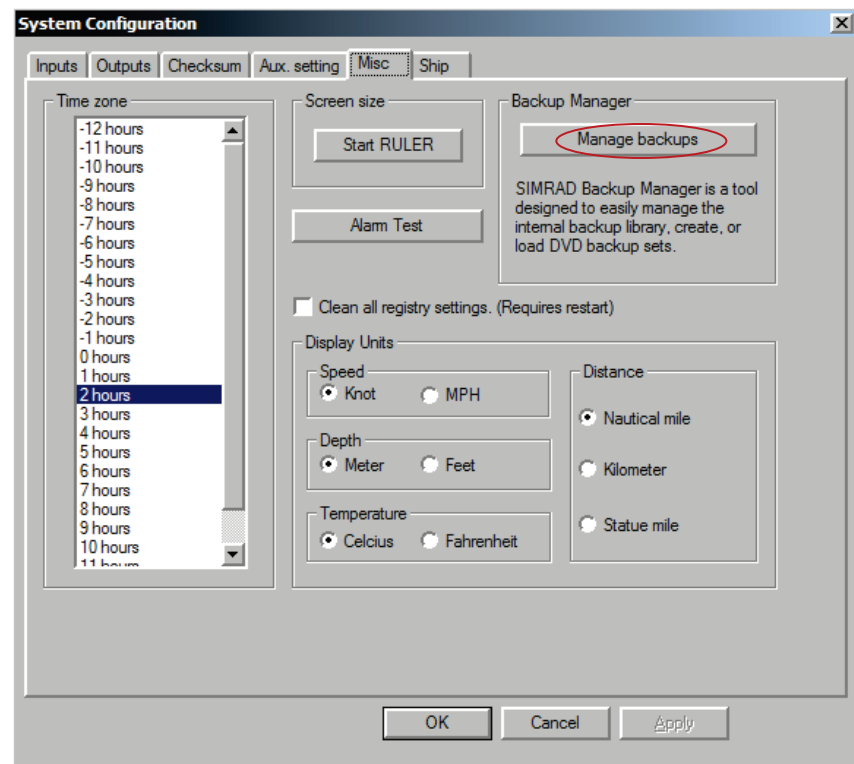
To open the **Simrad Backup Manager** the unit must have been started in the normal way (CS68 ECDIS mode).



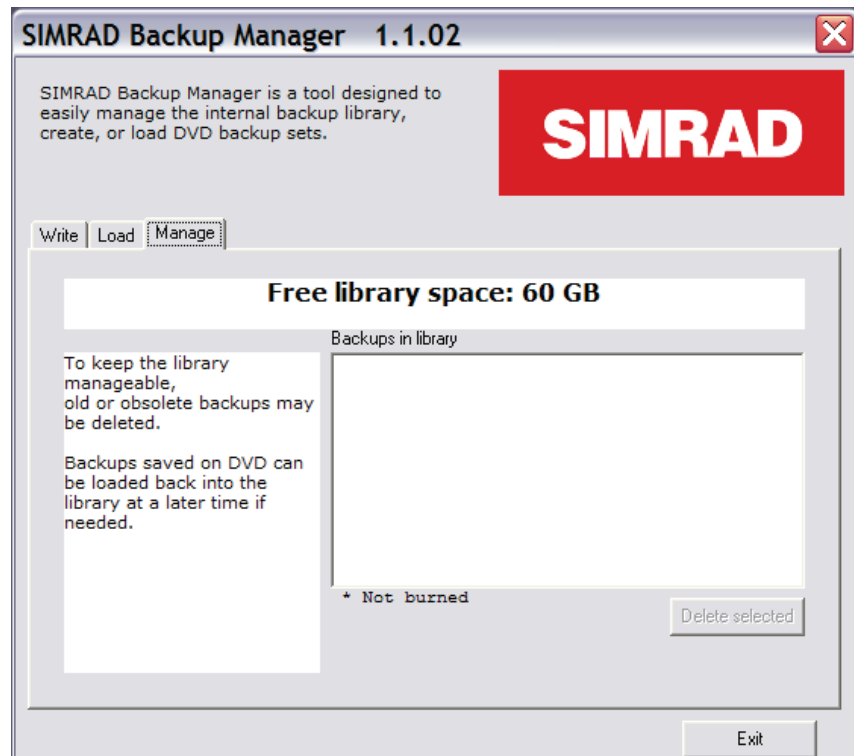
*Do not make backups when the ECDIS is used for navigation*

The Simrad Backup Manager is started from the **Tools** menu. Select **System Configuration** (Password: 1234)

Select the **Misc** tab and press **Manage Backups**.



The **Simrad Backup Manager** starts and the following screen is shown:



The screen shows free library space, burned backups and backups to be burned. Old and obsolete backups may be deleted from the library.

### ***Burn backups to DVD***

Select the **Write** tab to burn backups to the DVD. The following screen is shown:



Select the backup in the library that you want to burn to the DVD. Press **Burn selected**.

If there is one backup you don't want to burn to the DVD but keep in the library, you can mark it and press **Do not ask again**.

Two different sizes of DVDs are available. The standard one with a disc capacity of 4.7 gigabytes and a dual layer disc with a capacity of 8.5 gigabytes. When the program asks for it, select the disc you will use.

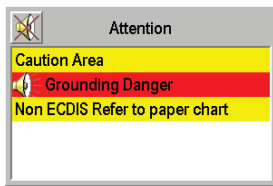
### ***Restore backups from a DVD***

If a backup file has been erased from the library but is available on a DVD, it can be restored. Select the **Load** tab and insert a DVD. If the **Backup Manager** doesn't recognize the DVD, terminate the **Backup Manager** and restart with the DVD inserted. Each DVD contains information about the number of discs in the set and which number you have inserted. The backups are now available in the Simrad Recovery Console.

## **11 SYSTEM MESSAGES**

This section provides a description of the different type of messages used in the CS68 system.

## 11.1 The ECDIS message system



The CS68 system will continually check for danger situations and system faults while the system is running.

When an alarm situation occurs, the Attention window will be displayed.

There are two categories of system messages as described below.

### Alarm messages



Alarm messages are generated when conditions are detected that critically effect the capability or performance of the system.

Alarms are indicated in the Attention window with flashing text with red background color, and with an audible alarm. The alarm message will flash until the alarm is acknowledged.

You must critically examine all alarm messages to determine their course and effect.

### Muting alarms



All alarms will be muted by pressing the loudspeaker icon in the Attention window heading. The alarm on the central alarm system will then also be muted.

The audible alarm will sound again if the same alarm situation reoccurs or another alarm situation is reported.

### Acknowledging alarm messages



To acknowledge an alarm, tap the alarm message in the Attention window. If several alarm messages are active they must be acknowledged separately.

The alarm text will stop flashing, and the alarm sound will be muted.

All alarm messages will remain in the Attention window until the reason for the alarm is removed.

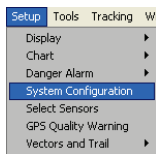
### Indications



These messages inform you of conditions that are noteworthy for the Operator.

Indication messages are indicated with yellow background color.

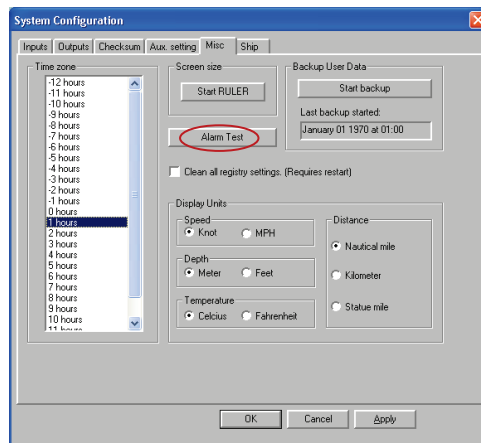
## 11.2 Testing the alarm system



Alarms and indicators may be tested by tapping the **Setup** menu followed by the **System Configuration** command.

To prevent unauthorized use of the system configuration entries, the entry has been password protected. Enter “**1234**” in the password field when system setup password is requested, and confirm by tapping **OK**.

Select the **Misc** tab, and tap **Alarm Test**.



**Testing alarm**

The Attention window will now be activated showing **Testing Alarm**, and an audible alarm will sound.

The alarm test will run until the alarm is acknowledged.

### AIS alarm messages

If an AIS system is connected to the CS system, the AIS may send alarm messages to the CS system. For any AIS related alarms, refer to the separate AIS manual.

## Alphabetic alarm listing

The next pages show a complete alphabetic listing of all alarm messages that may occur in the CS system.

| ALARM TEXT                                 | ALARM TYPE | TIMEOUT |
|--------------------------------------------|------------|---------|
| <Input> timed out                          | A          | 20      |
| AIS Antenna Exceeds Limit                  | I          | 60      |
| AIS capacity 95%                           | I          | 5       |
| AIS capacity exceeded                      | I          | 5       |
| AIS Course Over Ground Lost/Invalid        | I          |         |
| AIS CPU/Program Failure                    | I          |         |
| AIS External Positions Lost/Invalid        | I          |         |
| AIS GNSS Module Status Wrong               | I          |         |
| AIS Heading Lost/Invalid                   | I          | 60      |
| AIS Message Received <target ID>           | I          | 60      |
| AIS No Position Available                  | I          |         |
| AIS Power Failure                          | I          | 60      |
| AIS Program Memory                         | I          |         |
| AIS Rate Or Turn Lost/Invalid              | I          | 60      |
| AIS Rx Ch 1 Malfunction                    | I          | 60      |
| AIS Rx Ch 2 Malfunction                    | I          | 60      |
| AIS Rx Ch 70 Malfunction                   | I          | 60      |
| AIS Speed Over Ground Lost/Invalid         | I          |         |
| AIS Stored Variable Data                   | I          |         |
| AIS Tx Output Power Failure                | I          | 60      |
| AIS Tx Power Too Low                       | I          | 60      |
| AIS Tx Synth Not Locked                    | I          | 60      |
| AIS Tx Too Long On The Air                 | I          | 60      |
| AIS Using Fall-back Position (GNSS module) | I          |         |
| AIS UTC Clock Lost                         | I          | 60      |
| Approach to <wp no/name>                   | A          | 30      |
| ARP Error                                  | I          | 60      |
| ARPA capacity 95%                          | I          | 5       |
| ARPA capacity exceeded                     | I          | 5       |
| Caution Area                               | A/I        | 20      |
| COG Error                                  | I          | 60      |
| Com <port no> Error                        | I          | 20      |
| Dangerous AIS target                       | A          | 60      |
| Datum Difference                           | I          | 30      |

| ALARM TEXT                               | ALARM TYPE | TIMEOUT  |
|------------------------------------------|------------|----------|
| Datum Lost                               | I          | 20       |
| default                                  | A          | variable |
| Deviation from route                     | A          | 20       |
| Difference Navigators                    | I          | 20       |
| Different geodetic datum                 | A          | 20       |
| End Of Route                             | I          | 60       |
| ERROR <Device name>                      | I          | 20       |
| Grounding Danger                         | A          | 20       |
| Gyro Difference                          | I          | 20       |
| Gyro Error                               | I          | 20       |
| HPR Error                                | I          | 60       |
| HPR Simulation                           | I          | 60       |
| Information overscale                    | I          | 5        |
| Inside Danger Area                       | A          | 60       |
| Internal AIS Unit Error                  | I          | 60       |
| Invalid Log Speed                        | I          | 60       |
| JRC Arpa Error                           | I          | 60       |
| Jump To <device name>                    | I          | 20       |
| Krupp Error                              | I          | 60       |
| Larger scale ENC available               | I          | 5        |
| LCD Com Error                            | I          | 20       |
| Lost AIS target                          | A          | 5        |
| Lost ARPA target                         | A          | 5        |
| Man Over Board                           | I          | 20       |
| Missing 24 volt alarm supply             | I          | 20       |
| Nav RRE Error (GPS quality error)        | I          | 20       |
| New VHF <sector no>                      | I          | 5        |
| No ENC available                         | I          | 5        |
| Non ECDIS Refer to paper chart           | I          | 30       |
| Not Valid <device name>                  | I          | 20       |
| Out Of Course                            | I          | 20       |
| Outside Danger Area                      | I          | 15       |
| Pilot Timeout                            | I          | 5        |
| Positioning system failure <Device name> | A          | 20       |
| Positioning system failure <Device name> | A          | 20       |
| Raytheon ARPA Error                      | I          | 60       |
| Rec Wpt Error                            | I          | 20       |
| Route across safety contour              | I          | 30       |

| ALARM TEXT                            | ALARM TYPE | TIMEOUT |
|---------------------------------------|------------|---------|
| Route across specified area           | I          | 30      |
| Rt Rcv Cr Err                         | I          | 20      |
| RTA Error (ARPA radar target error)   | I          | 20      |
| Safety contour set to default         | I          | 60      |
| Seismic Data Error                    | I          | 60      |
| SOG Error                             | I          | 60      |
| Testing Alarm                         | A          | 5       |
| Tidal error                           | I          |         |
| Tidallog Error                        | I          | 20      |
| Tide Calc Error                       | I          | 20      |
| Tide Start Error                      | I          | 20      |
| Trainer Active                        | I          | 20      |
| Trainer Started                       | I          | 20      |
| TTM ARPA Error (NEMA0183 TTM message) | I          | 60      |
| Wheel Over Acknowledge                | I          | 30      |
| Wheel Over Warning                    | I          | 60      |
| Wire Angle Warning                    | I          | 20      |
| Wire Length Warning                   | I          | 20      |
| Wire Lift Warning                     | I          | 20      |
| Wire Touch Warning                    | I          | 20      |
| WP Unreachable                        | I          | 60      |
| Wpt Head Error                        | I          | 20      |
| Wpt Msg Error                         | I          | 20      |
| Write Error Line <no>                 | I          | 30      |

## **12 TERMS AND ABBREVIATIONS**

This section presents a list of terms and abbreviations found in this manual.

|         |                                                                                                                                                                                                                                            |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIS     | Automatic Identification System. System where vessel information (location, course, speed, etc.) is broadcast by VHF radio, for use by other vessels in navigation and collision avoidance.                                                |
| APIS    | Automatic Passenger Information System                                                                                                                                                                                                     |
| ARPA    | Automatic Radar Plotting Aid                                                                                                                                                                                                               |
| ASCII   | American Standard Code for Information Interchange. Numerical representation of characters.                                                                                                                                                |
| ATON    | Aids To Navigation                                                                                                                                                                                                                         |
| BAS     | Base (Chart display button)                                                                                                                                                                                                                |
| TRK CRS | Track Course. Bearing between two waypoints i.e. From Waypoint and to Waypoint.                                                                                                                                                            |
| CalcSPD | Speed used for ETA calculation                                                                                                                                                                                                             |
| CD      | Compact Disc                                                                                                                                                                                                                               |
| CIE     | Comité International de l'Eclairage                                                                                                                                                                                                        |
| COG     | Course Over Ground. The actual direction of progress of a vessel, between two points, with respect to the surface of the earth. The vessel's heading may differ from the course over ground due to the effects of wind, tide and currents. |
| COP     | Operating Panel for the Simrad Common Operator Station                                                                                                                                                                                     |
| CPA     | Distance in Nautical miles to Closest Point of Approach for the ARPA target                                                                                                                                                                |
| CS      | Chart System                                                                                                                                                                                                                               |
| CUS     | Custom (Chart display button)                                                                                                                                                                                                              |
| DR      | Dead-reckoned                                                                                                                                                                                                                              |
| DTA     | Distance to last waypoint                                                                                                                                                                                                                  |
| DTM     | NMEA 0183 message containing Datum reference                                                                                                                                                                                               |
| DVD     | Digital Versatile Disc                                                                                                                                                                                                                     |
| DVI     | Digital Visual Interface                                                                                                                                                                                                                   |
| DWOL    | Distance to wheel over point                                                                                                                                                                                                               |
| EBL     | Electronic Bearing Line                                                                                                                                                                                                                    |
| ECDIS   | Electronic Chart Display and Information System, type approved ECS system according the ECDIS regulations.                                                                                                                                 |
| ECS     | Electronic Chart System, for advanced navigation steering with preset radius in routes of waypoints                                                                                                                                        |
| ENC     | Electronic Navigational Chart                                                                                                                                                                                                              |
| EP      | Estimated Position                                                                                                                                                                                                                         |
| EPFS    | Electronic position-fixing system                                                                                                                                                                                                          |
| ETA     | Estimated Time of Arrival                                                                                                                                                                                                                  |
| EUT     | Equipment under test                                                                                                                                                                                                                       |
| GGA     | NMEA 0183 message that contains time, position, and fix related data                                                                                                                                                                       |
| GLL     | NMEA 0183 message that specifies position fix, time of position fix, and status                                                                                                                                                            |
| GMDSS   | Global Maritime Distress and Safety System                                                                                                                                                                                                 |

|           |                                                                                                                                                                                                                                                                                                                                        |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GPS       | Global Positioning System.                                                                                                                                                                                                                                                                                                             |
| HDG       | Heading                                                                                                                                                                                                                                                                                                                                |
| HDOP      | Quality indicator for GPS signal.                                                                                                                                                                                                                                                                                                      |
| HDS       | Heading as measured by log sensor and gyro compass                                                                                                                                                                                                                                                                                     |
| Hex       | Hexadecimal. Numeral system with a base of 16                                                                                                                                                                                                                                                                                          |
| HO        | Hydrographic office                                                                                                                                                                                                                                                                                                                    |
| I/O       | In/Out                                                                                                                                                                                                                                                                                                                                 |
| IHO       | International Hydrographic Organization                                                                                                                                                                                                                                                                                                |
| IMO       | International Maritime Organization                                                                                                                                                                                                                                                                                                    |
| IP        | Ingress Protection rating. Classifies the degrees of protection provided against the intrusion of solid objects (including body parts like hands and fingers), dust, accidental contact, and water in electrical enclosures.                                                                                                           |
| kt        | Knot(s)                                                                                                                                                                                                                                                                                                                                |
| LCD       | Liquid Crystal Display                                                                                                                                                                                                                                                                                                                 |
| LED       | Light Emitting Diode                                                                                                                                                                                                                                                                                                                   |
| Leg       | The straight segments of a route between waypoints. A route with four waypoints has three legs.                                                                                                                                                                                                                                        |
| LOP       | Line Of Position                                                                                                                                                                                                                                                                                                                       |
| MMSI      | Maritime Mobile Service Identity. Nine digit numbers used by maritime digital selective calling (DSC), automatic identification systems (AIS) and certain other equipment to uniquely identify a ship or a coast radio station.                                                                                                        |
| MOB       | Man overboard                                                                                                                                                                                                                                                                                                                          |
| Msg       | Message                                                                                                                                                                                                                                                                                                                                |
| NA        | Not applicable                                                                                                                                                                                                                                                                                                                         |
| NM        | Nautical mile(s)                                                                                                                                                                                                                                                                                                                       |
| NMEA      | National Marine Electronics Association                                                                                                                                                                                                                                                                                                |
| NMEA 0183 | A format (language) designed to permit communication between various types of marine electronic equipment. In essence this is a two-wire shielded, serial data link, permitting one device to talk while other devices listen. Numerous different sentences are available, permitting communication between various different devices. |
| PLECDIS   | Paperless ECDIS system.                                                                                                                                                                                                                                                                                                                |
| PMPO      | Peak Music Power Output. A rating of the peak power capacity of amplifiers and speakers.                                                                                                                                                                                                                                               |
| Route     | A stored sequence of waypoints. These waypoints will be listed in the order in which you desire to follow them.                                                                                                                                                                                                                        |
| RX        | Receiver                                                                                                                                                                                                                                                                                                                               |
| SOG       | Speed Over Ground. The actual speed of the vessel relative to the ocean floor.                                                                                                                                                                                                                                                         |
| SOLAS     | SOLAS is the IMO convention to ensure Safety Of Life At Sea.                                                                                                                                                                                                                                                                           |
| SPD       | Speed                                                                                                                                                                                                                                                                                                                                  |

|      |                                                                                                                                                                                                                                                                                                              |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STD  | Standard (Chart display button)                                                                                                                                                                                                                                                                              |
| STW  | Speed Through Water                                                                                                                                                                                                                                                                                          |
| TBA  | To be announced                                                                                                                                                                                                                                                                                              |
| TCPA | Time in minutes to Closest Point of Approach for the target before an alarm is activated                                                                                                                                                                                                                     |
| TPL  | Transferred Position Line. Position line that has been moved.                                                                                                                                                                                                                                                |
| TTA  | Time to last waypoint                                                                                                                                                                                                                                                                                        |
| TTM  | NMEA 0183 Tracked Target Message                                                                                                                                                                                                                                                                             |
| TWOL | Time to wheel over point                                                                                                                                                                                                                                                                                     |
| TX   | Transmitter                                                                                                                                                                                                                                                                                                  |
| USB  | Universal Serial Bus                                                                                                                                                                                                                                                                                         |
| UTC  | Universal Time Coordinates, which is equal to standard time in London (GMT). UTC is not affected by the local summertime adjustments.                                                                                                                                                                        |
| VGA  | Video Graphics Array                                                                                                                                                                                                                                                                                         |
| VRM  | Variable Range Marker                                                                                                                                                                                                                                                                                        |
| VTG  | NMEA message (Velocity True Ground) that identifies the actual track made good and speed over ground                                                                                                                                                                                                         |
| WP   | Waypoint. A discrete point, stored in a navigator, located on the surface of the earth. Normally this point will be identified by Lat/Lon coordinates although in some systems it may be shown by T.D.'s.                                                                                                    |
| WPT  | Waypoint                                                                                                                                                                                                                                                                                                     |
| XTD  | Cross Track Error. Used to identify a vessel's position relative to a straight line drawn between two waypoints. The amount the vessel is off to the left or to the right of this line is known as the Cross Track Error. It is normally displayed in thousands of a nautical mile, equal to 6 ft or 1.85 m. |
| ZDA  | NMEA 0183 message that identifies UTC time, day, month, and year, local zone number, and local zone minutes                                                                                                                                                                                                  |

## 13 INDEX

This index is divided into two parts:

**General index** ..... page 135

A comprehensive index of essential terms used in this CS68 Operator Manual.

**Menu index** ..... page 140

References to all pull-down menus and their commands used in the CS system.

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